TOSHIBA
Leading Innovation

AIR CONDITIONER (MULTI TYPE)

Installation Manual

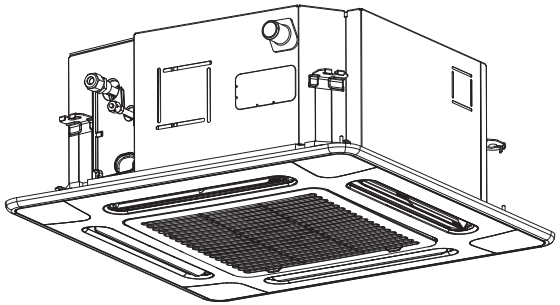
HFC
R410A

Indoor Unit

Model name:

Compact 4-way Cassette type

MMU-AP0074MH-E
MMU-AP0094MH-E
MMU-AP0124MH-E
MMU-AP0154MH-E
MMU-AP0184MH-E



Original instruction

Please read this Installation Manual carefully before installing the Air Conditioner.
- This Manual describes the installation method of the indoor unit.
- For installation of the outdoor unit, follow the Installation Manual attached to the outdoor unit.

ADOPTION OF NEW REFRIGERANT

This Air Conditioner uses R410A an environmentally friendly refrigerant.

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Thank you for purchasing this Toshiba air conditioner.
Please read carefully through these instructions that contain important information which complies with the "Machinery" Directive (Directive 2006/42/EC), and ensure that you understand them.
After completing the installation work, hand over this Installation Manual as well as the Owner's Manual provided with the outdoor unit to the user, and ask the user to keep them in a safe place for future reference.

Generic Denomination: Air Conditioner

Definition of Qualified Installer or Qualified Service Person

The air conditioner must be installed, maintained, repaired and removed by a qualified installer or qualified service person. When any of these jobs is to be done, ask a qualified installer or qualified service person to do them for you.
A qualified installer or qualified service person is an agent who has the qualifications and knowledge described in the table below.

Agent	Qualifications and knowledge which the agent must have
Qualified installer	• The qualified installer is a person who installs, maintains, relocates and removes the air conditioners made by Toshiba Carrier Corporation. He or she has been trained to install, maintain, relocate and remove the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such operations by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to these operations. • The qualified installer who is allowed to do the electrical work involved in installation, relocation and removal has the qualifications pertaining to this electrical work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to electrical work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work. • The qualified installer who is allowed to do the refrigerant handling and piping work involved in installation, relocation and removal has the qualifications pertaining to this refrigerant handling and piping work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to refrigerant handling and piping work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work. • The qualified installer who is allowed to work at heights has been trained in matters relating to working at heights with the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.
Qualified service person	• The qualified service person is a person who installs, repairs, maintains, relocates and removes the air conditioners made by Toshiba Carrier Corporation. He or she has been trained to install, repair, maintain, relocate and remove the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such operations by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to these operations. • The qualified service person who is allowed to do the electrical work involved in installation, repair, relocation and removal has the qualifications pertaining to this electrical work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to electrical work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work. • The qualified service person who is allowed to do the refrigerant handling and piping work involved in installation, repair, relocation and removal has the qualifications pertaining to this refrigerant handling and piping work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to refrigerant handling and piping work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work. • The qualified service person who is allowed to work at heights has been trained in matters relating to working at heights with the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.

Definition of Protective Gear

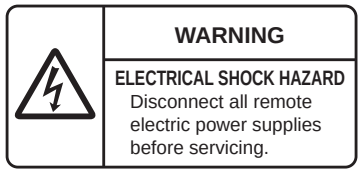
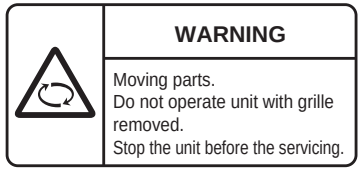
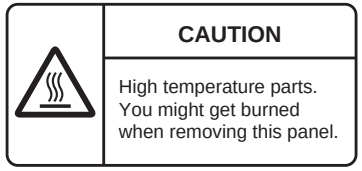
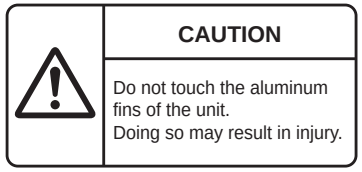
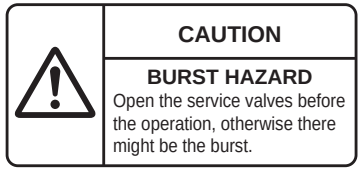
When the air conditioner is to be transported, installed, maintained, repaired or removed, wear protective gloves and 'safety' work clothing.

In addition to such normal protective gear, wear the protective gear described below when undertaking the special work detailed in the table below.

Failure to wear the proper protective gear is dangerous because you will be more susceptible to injury, burns, electric shocks and other injuries.

Work undertaken	Protective gear worn
All types of work	Protective gloves 'Safety' working clothing
Electrical-related work	Gloves to provide protection for electricians and from heat Insulating shoes Clothing to provide protection from electric shock
Work done at heights (50 cm or more)	Helmets for use in industry
Transportation of heavy objects	Shoes with additional protective toe cap
Repair of outdoor unit	Gloves to provide protection for electricians and from heat

■ Warning indications on the air conditioner unit

Warning indication	Description
	**WARNING** **ELECTRICAL SHOCK HAZARD** Disconnect all remote electric power supplies before servicing.
	**WARNING** Moving parts. Do not operate unit with grille removed. Stop the unit before the servicing.
	**CAUTION** High temperature parts. You might get burned when removing this panel.
	**CAUTION** Do not touch the aluminium fins of the unit. Doing so may result in injury.
	**CAUTION** **BURST HAZARD** Open the service valves before the operation, otherwise there might be the burst.

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1 Precautions for Safety

The manufacturer shall not assume any liability for the damage caused by not observing the description of this manual.

⚠ WARNING

General

- Before starting to install the air conditioner, read through the Installation Manual carefully, and follow its instructions to install the air conditioner.
- Only a qualified installer or service person is allowed to do installation work. Inappropriate installation may result in water leakage, electric shock or fire.
- Do not use any refrigerant different from the one specified for complement or replacement. Otherwise, abnormally high pressure may be generated in the refrigeration cycle, which may result in a failure or explosion of the product or an injury to your body.
- Before opening the intake grille of the indoor unit or service panel of the outdoor unit, set the circuit breaker to the OFF position. Failure to set the circuit breaker to the OFF position may result in electric shocks through contact with the interior parts. Only a qualified installer(*1) or qualified service person(*1) is allowed to remove the intake grille of the indoor unit or service panel of the outdoor unit and do the work required.
- Before carrying out the installation, maintenance, repair or removal work, set the circuit breaker to the OFF position. Otherwise, electric shocks may result.
- Place a “Work in progress” sign near the circuit breaker while the installation, maintenance, repair or removal work is being carried out. There is a danger of electric shocks if the circuit breaker is set to ON by mistake.
- Only a qualified installer(*1) or qualified service person(*1) is allowed to undertake work at heights using a stand of 50 cm or more or to remove the intake grille of the indoor unit to undertake work.
- Wear protective gloves and safety work clothing during installation, servicing and removal.
- Do not touch the aluminium fin of the unit. You may injure yourself if you do so. If the fin must be touched for some reason, first put on protective gloves and safety work clothing, and then proceed.
- Do not climb onto or place objects on top of the outdoor unit. You may fall or the objects may fall off of the outdoor unit and result in injury.
- When work is performed at heights, use a ladder which complies with the ISO 14122 standard, and follow the procedure in the ladder's instructions. Also wear a helmet for use in industry as protective gear to undertake the work.
- Before cleaning the filter or other parts of the outdoor unit, set the circuit breaker to OFF without fail, and place a “Work in progress” sign near the circuit breaker before proceeding with the work.
- Before working at heights, put a sign in place so that no-one will approach the work location, before proceeding with the work. Parts and other objects may fall from above, possibly injuring a person below. While carrying out the work, wear a helmet for protection from falling objects.
- The refrigerant used by this air conditioner is the R410A.
- The air conditioner must be transported in stable condition. If any part of the product is broken, contact the dealer.
- When the air conditioner must be transported by hand, carry it by two or more people.
- Do not move or repair any unit by yourself. There is high voltage inside the unit. You may get electric shock when removing the cover and main unit.

Selection of installation location

- When the air conditioner is installed in a small room, provide appropriate measures to ensure that the concentration of refrigerant leakage occur in the room does not exceed the critical level.
- Do not install in a location where flammable gas leaks are possible. If the gas leak and accumulate around the unit, it may ignite and cause a fire.
- To transport the air conditioner, wear shoes with additional protective toe caps.
- To transport the air conditioner, do not take hold of the bands around the packing carton. You may injure yourself if the bands should break.
- Install the indoor unit at least 2.5 m above the floor level since otherwise the users may injure themselves or receive electric shocks if they poke their fingers or other objects into the indoor unit while the air conditioner is running.
- Do not place any combustion appliance in a place where it is directly exposed to the wind of air conditioner, otherwise it may cause imperfect combustion.

Installation

- When the indoor unit is to be suspended, the designated hanging bolts (M10 or W3/8) and nuts (M10 or W3/8) must be used.
- Install the air conditioner securely in a location where the base can sustain the weight adequately. If the strength is not enough, the unit may fall down resulting in injury.
- Follow the instructions in the Installation Manual to install the air conditioner. Failure to follow these instructions may cause the product to fall down or topple over or give rise to noise, vibration, water leakage or other trouble.
- Carry out the specified installation work to guard against the possibility of high winds and earthquake. If the air conditioner is not installed appropriately, a unit may topple over or fall down, causing an accident.
- If refrigerant gas has leaked during the installation work, ventilate the room immediately. If the leaked refrigerant gas comes in contact with fire, noxious gas may generate.
- Use forklift to carry in the air conditioner units and use winch or hoist at installation of them.

Refrigerant piping

- Install the refrigerant pipe securely during the installation work before operating the air conditioner. If the compressor is operated with the valve open and without refrigerant pipe, the compressor sucks air and the refrigeration cycles is over pressurized, which may cause a injury.
- Tighten the flare nut with a torque wrench in the specified manner. Excessive tighten of the flare nut may cause a crack in the flare nut after a long period, which may result in refrigerant leakage.
- After the installation work, confirm that refrigerant gas does not leak. If refrigerant gas leaks into the room and flows near a fire source, such as a cooking range, noxious gas may be generated.
- When the air conditioner has been installed or relocated, follow the instructions in the Installation Manual and purge the air completely so that no gases other than the refrigerant will be mixed in the refrigerating cycle. Failure to purge the air completely may cause the air conditioner to malfunction.
- Nitrogen gas must be used for the airtight test.
- The charge hose must be connected in such a way that it is not slack.

Electrical wiring

- Only a qualified installer(*1) or qualified service person(*1) is allowed to carry out the electrical work of the air conditioner. Under no circumstances must this work be done by an unqualified individual since failure to carry out the work properly may result in electric shocks and / or electrical leaks.
- To connect the electrical wires, repair the electrical parts or undertake other electrical jobs, wear gloves to provide protection for electricians and from heat, insulating shoes and clothing to provide protection from electric shocks. Failure to wear this protective gear may result in electric shocks.
- Use wiring that meets the specifications in the Installation Manual and the stipulations in the local regulations and laws. Use of wiring which does not meet the specifications may give rise to electric shocks, electrical leakage, smoking and / or a fire.
- Connect earth wire. (Grounding work)
  Incomplete grounding causes an electric shock.
- Do not connect earth wires to gas pipes, water pipes, and lightning conductor or telephone earth wires.
- After completing the repair or relocation work, check that the earth wires are connected properly.
- Install a circuit breaker that meets the specifications in the installation manual and the stipulations in the local regulations and laws.
- Install the circuit breaker where it can be easily accessed by the agent.
- When installing the circuit breaker outdoors, install one which is designed to be used outdoors.
- Under no circumstances the power wire must not be extended. Connection trouble in the places where the wire is extended may give rise to smoking and / or a fire.
- Electrical wiring work shall be conducted according to law and regulation in the community and installation manual. Failure to do so may result in electrocution or short circuit.

Test run

- Before operating the air conditioner after having completed the work, check that the electrical parts box cover of the indoor unit and service panel of the outdoor unit are closed, and set the circuit breaker to the ON position. You may receive an electric shock if the power is turned on without first conducting these checks.
- If there is any kind of trouble (such as an error display has appeared, smell of burning, abnormal sounds, the air conditioner fails to cool or heat or water is leaking) has occurred in the air conditioner, do not touch the air conditioner yourself but set the circuit breaker to the OFF position, and contact a qualified service person. Take steps to ensure that the power will not be turned on (by marking “out of service” near the circuit breaker, for instance) until qualified service person arrives. Continuing to use the air conditioner in the trouble status may cause mechanical problems to escalate or result in electric shocks or other trouble.
- After the work has finished, use an insulation tester set (500 V Megger) to check the resistance is 1 MΩ or more between the charge section and the non-charge metal section (Earth section). If the resistance value is low, a disaster such as a leak or electric shock is caused at user’s side.
- Upon completion of the installation work, check for refrigerant leaks and check the insulation resistance and water drainage. Then conduct a test run to check that the air conditioner is operating properly.

Explanations given to user

- Upon completion of the installation work, tell the user where the circuit breaker is located. If the user does not know where the circuit breaker is, he or she will not be able to turn it off in the event that trouble has occurred in the air conditioner.
- If the fan grille is damaged, do not approach the outdoor unit but set the circuit breaker to the OFF position, and contact a qualified service person(*1) to have the repairs done. Do not set the circuit breaker to the ON position until the repairs are completed.

Relocation

- Only a qualified installer(*1) or qualified service person(*1) is allowed to relocate the air conditioner. It is dangerous for the air conditioner to be relocated by an unqualified individual since a fire, electric shocks, injury, water leakage, noise and / or vibration may result.
- When carrying out the pump-down work shut down the compressor before disconnecting the refrigerant pipe. Disconnecting the refrigerant pipe with the service valve left open and the compressor still operating will cause air or other gas to be sucked in, raising the pressure inside the refrigeration cycle to an abnormally high level, and possibly resulting in rupture, injury or other trouble.

⚠CAUTION

New Refrigerant Air Conditioner Installation

- **THIS AIR CONDITIONER ADOPTS THE NEW HFC REFRIGERANT (R410A) WHICH DOES NOT DESTROY OZONE LAYER.**
- The characteristics of R410A refrigerant are; easy to absorb water, oxidizing membrane or oil, and its pressure is approx. 1.6 times higher than that of refrigerant R22. Accompanied with the new refrigerant, refrigerating oil has also been changed. Therefore, do not let water, dust, former refrigerant, or refrigerating oil enter the refrigerating cycle during installation work.
- To prevent charging an incorrect refrigerant and refrigerating oil, the sizes of connecting sections of charging port of the main unit and installation tools are changed from those for the conventional refrigerant.
- Accordingly the exclusive tools are required for the new refrigerant (R410A).
- For connecting pipes, use new and clean piping designed for R410A, and please care so that water or dust does not enter.

To Disconnect the Appliance from Main Power Supply.

- This appliance must be connected to the main power supply by means of a switch with a contact separation of at least 3 mm.

The installation fuse (all types can be used) must be used for the power supply line of this conditioner.

(*1) Refer to the “Definition of Qualified Installer or Qualified Service Person.”

2 Accessory Parts

Part name	Q’ty	Shape	Usage
Installation Manual	1	This manual	(Hand over to customers) (For other languages that do not appear in this Installation Manual, please refer to the enclosed CD-R.)
CD-ROM	1	—	Installation Manual
Heat insulating pipe	2		For heat insulation of the pipe connecting section
Installation pattern	1	—	For checking of ceiling opening and the main unit position
Installation gauge	2		For positioning of the ceiling position (To be used with the installation pattern)
Pattern fixing screw	4	M5 × 16L	For attach the installation pattern
Heat insulator	1		For heat insulation of drain connecting section
Washer	8		For hanging unit
Hose band	1		For connecting drain pipe
Flexible hose	1		For adjusting core-out of drain pipe
Heat insulator A	1		For sealing of wire connecting port
Heat insulator B	1		For sealing of wire connecting port

■ Separate sold parts

The Ceiling panel and remote controller are sold separately. For the installation of these products, follow the Installation Manuals supplied with them.

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3 Selection of Installation Place

⚠WARNING

- **Install the air conditioner securely in a location where the base can sustain the weight adequately.**
  If the strength is not enough, the unit may fall down resulting in injury.
- **Install the air conditioner at a height 2.5 m or more from the floor.**
  If you insert your hands or others directly into the unit while the air conditioner operates, it is dangerous because you may contact with revolving fan or active electricity.

⚠CAUTION

- **Do not install in a location where flammable gas may leaks are possible.**
  If the gas leak and accumulate around the unit, it may ignite and cause a fire.

Upon approval of the customer, install the air conditioner in a place that satisfies the following conditions.

- Place where the unit can be installed horizontally.
- Place where a sufficient servicing space can be ensured for safety maintenance and check.
- Place where drained water will not cause any problem.

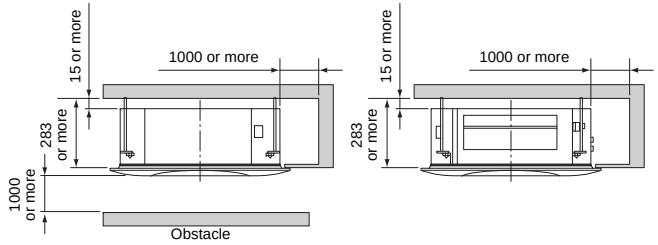
Avoid installing in the following places.

- Place exposed to air with high salt content (seaside area), or place exposed to large quantities of sulfide gas (hot spring).
  (The unit should be used in these places, special protective measures are needed.)
- A restaurant kitchen where a lot of oil is used or place near machines in a factory (Oil adhering to the heat exchanger and resin part (turbo fan) in the indoor unit may reduce the performance, generate mist or dew drop, or deform or damage resin parts.)
- Place where organic solvent is used nearby.
- Place close to a machine generating high frequency.
- Place where the discharged air blows directly into the window of the neighbour house. (Outdoor unit)
- Place where noise of the outdoor unit is easily transmitted.
  (When the outdoor unit is installed on the boundary with the neighbour, pay due attention to the level of noise.)
- Place with poor ventilation. (Before air duct work, check whether value of fan speed, static pressure and duct resistance are correct.)
- Do not use the air conditioner for special purposes such as preserving food, precision instruments, or art objects, or where breeding animals or growing plants are kept. (This may degrade the quality of preserved materials.)
- Place where any of high-frequency appliances (including inverter devices, private power generators, medical equipment, and communication equipment) and inverter-type fluorescent light is installed.
  (A malfunction of the air conditioner, abnormal control, or problems due to noise to such appliances / equipment may occur.)
- When the wireless remote control is used in a room equipped with an inverter-type fluorescent light or at a place exposed to direct sunlight, signals from the remote control may not be received correctly.
- Place where organic solvent is used.
- Place near a door or window exposed to humid outside air (Dew drop may form.).
- Place where special spray is used frequently.

■ Installation space

Ensure there is sufficient space to install the unit and to perform maintenance work as and when required. Keep 15 mm or more for clearance between top plate of the indoor unit and the ceiling surface.

unit: mm



■ Selection of installation place

Continual operation of the indoor unit under high-humidity conditions as described below, dew may condense and water may drop.
Especially, high-humidity atmosphere (dew point temperature: 23 °C or more) may generate dew inside the ceiling.

1. Unit is installed inside the ceiling with slated roof.
2. Unit is installed at a location using inside of the ceiling as fresh air take-in path.
3. Kitchen

Advice

- Set a service check opening panel at right side of the unit (size: 450 × 450 mm or more) for piping, maintenance, and servicing.
- If installing a unit at such place, put insulating material (such as glass wool) additionally on all the positions of the indoor unit which come to contact with high-humidity atmosphere.

REQUIREMENT

When the humidity inside the ceiling seems to be higher than 80 %, attach a heat insulator to the side (top) surface of the indoor unit. (Use a heat insulator that is 10 mm or more thick.)

■ Ceiling height

Unit : m

Model MMU-	Installable ceiling height
AP007 to AP012 type	Up to 2.7
AP015 to AP018 type	Up to 3.5

When the height of the ceiling exceeds the distance of the item Standard / 4-way in below table, the warm air is difficult to reach the floor.
It is necessary to change the setup value of the high ceiling setting or discharge direction.

▼Height list of ceiling possible to be installed

Unit : m

Indoor unit Capacity type	AP007 to AP012 type	AP015 type	AP018 type	Setup of high ceiling
Discharge direction	4-way	4-way	4-way	Setup data
Standard (At shipment)	2.7	2.9	3.2	0000
High ceiling (2)	—	3.2	3.4	0002
High ceiling (3)	—	3.5	3.5	0003

REQUIREMENT

When high ceiling (2) or (3) is used with 4-way blowing, a draft is easily recognized due to drop of discharge temperature.

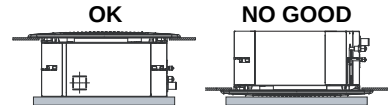
The lighting time of the filter sign (notification of filter cleaning) on the remote control can be changed according to installation conditions.
When it is difficult to obtain satisfactory heating due to location place of the indoor unit or the structure of the room, the detection temperature of heating can be raised.
Refer to “8. Applicable Controls” in this manual for the setting procedure.

4 Installation

⚠WARNING

The installation of the air conditioning unit must be positioned in a location that can sufficiently support its weight and give protection against adverse environmental conditions.
Failure to do so may result in unit damage and possible human injury.
Any incomplete installation may also cause possible risk of human injury.

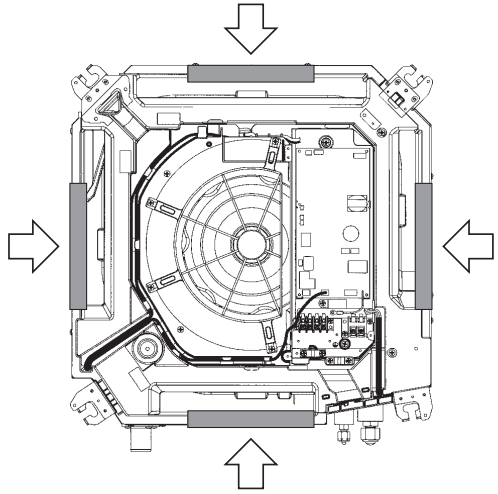
- Unpack the package, take out the product and then place it on the floor so that the same surface directs underneath as it is placed in the package.
  If the both sides are turned over, a deformation of mounting metal of the ceiling panel which is sold separately may be caused.
  Accordingly the product may be damaged and the installation becomes impossible in some cases.



REQUIREMENT

Strictly comply with the following rules to prevent damage of the indoor units and human injury.

- Do not put a heavy article on the indoor unit. (Even units are packaged)
- Carry in the indoor unit as it is packaged if possible. If carrying in the indoor unit unpacked by necessity, use buffering cloth or other soft cloth to not damage the unit.
- To move the indoor unit, hold the hooking metals (4 positions) only.
  Do not apply force to the other parts (refrigerant pipe, drain pan, foamed parts, or resin parts).
- Carry the package by two or more persons, and do not bundle it with plastic band at positions other than specified.



⚠CAUTION

Do not tear off the tape adhered to the cabinet; otherwise vibration is caused from the cabinet.

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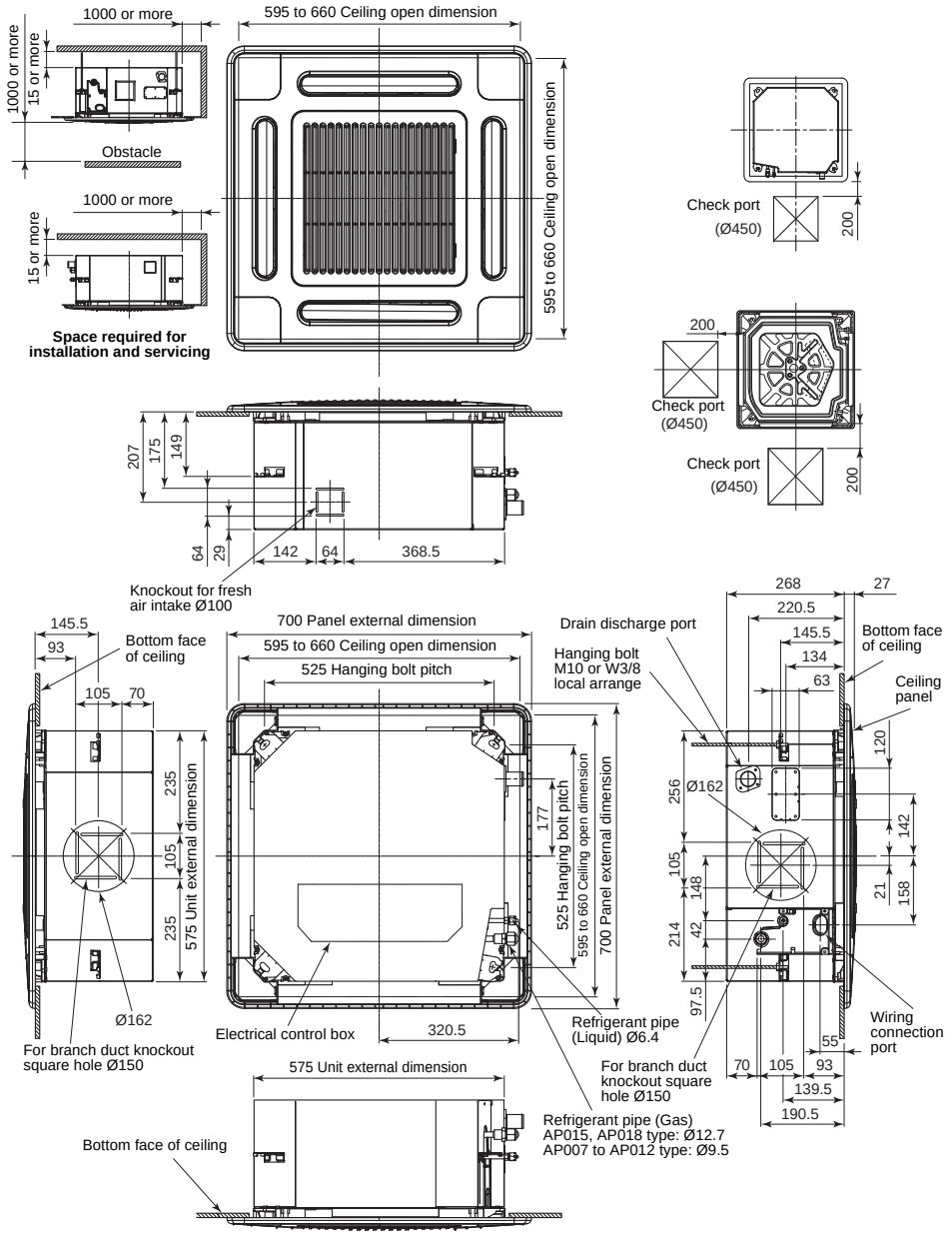
■ External view

Unit: mm



■ Opening a ceiling and installation of hanging bolts

- Consider the piping / wiring after the unit is hung to determine the location of the indoor unit installation and orientation.
- After the location of the indoor unit installation has been determined, open the ceiling and install hanging bolts.
- The dimensions of the ceiling opening and hanging bolt pitches are given in the outline drawing and the attached installation pattern.
- When a ceiling already exists, lay the drain pipe, refrigerant pipe, control wires, and remote control wires to their connection locations before hanging the indoor unit.

Procure hanging bolts and nuts for installing the indoor unit (these are not supplied).

Hanging bolt	M10	4 pieces
Nut	M10	12 pieces

Using the installation pattern (accessory)

The installation pattern is provided inside the packaging cap.

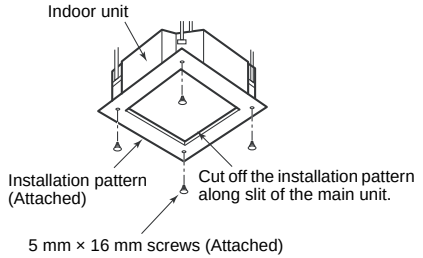
<For existing ceiling>

Use the installation pattern positioning a ceiling opening and hanging bolts.

<For new ceiling>

Use the installation pattern to position the ceiling opening when a ceiling is hanged.

- After the hanging bolts have been installed, install the indoor unit.
- To use the supplied pattern attach it to the indoor unit using the supplied fixing screws 5 mm × 16 mm 4 pcs. (Screw pattern to the ceiling panel hanging brackets of the indoor unit)
- Before hanging a ceiling, open the ceiling along the outside dimensions of the installation pattern.



These screws are exclusive to the installation pattern. When installing the ceiling panel, the other exclusive screws attached to the ceiling panel (sold separately) are used.

Treatment of ceiling

The ceiling differs according to structure of building. For details, consult your constructor or interior finish contractor.

In the process after the ceiling board has been removed, it is important to reinforce ceiling foundation (frame) and to keep horizontal level of installed ceiling correctly in order to prevent vibration of ceiling board.

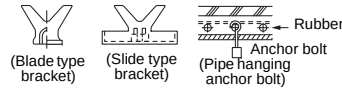
1. Cut and remove the ceiling foundation.
2. Reinforce the cut surface of ceiling foundation, and add ceiling foundation for fixing the end of ceiling board.

Installation of hanging bolt

Use M10 hanging bolts (4 pcs, to be local procure). Matching to the existing structure, set pitch according to size in the unit external view as shown below.

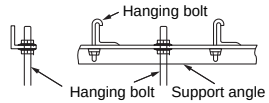
New concrete slab

Install the bolts with insert brackets or anchor bolts.



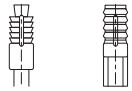
Steel flame structure

Use existing angles or install new support angles.

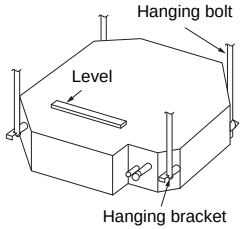


Existing concrete slab

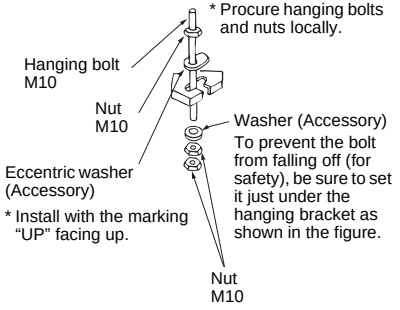
Use a hole-in anchors, hole-in plugs, or a hole-in bolts.

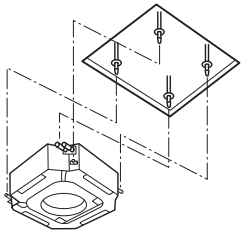


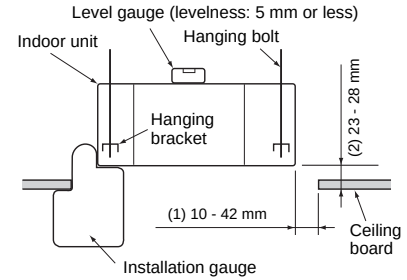
Installation of ceiling opening and hanging bolt

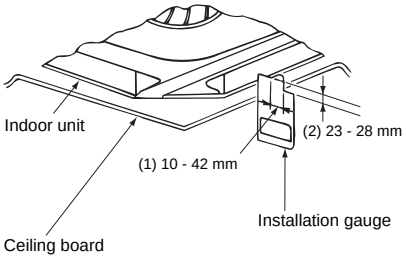


- Attach a nut (M10: not supplied) and the Ø34 mm washer (supplied) to each hanging bolt.
- Insert a washer on both sides of the T groove of the hanging bracket of the indoor unit, and hang the indoor unit.
- Check that the four sides of the indoor unit are level using a level gauge (levelness: 5 mm or less).
- Detach the installation gauge (accessory) from the installation pattern.
- Using the installation gauge, check and adjust the positional relation between the indoor unit and the ceiling opening (1) (10 - 42 mm: 4 sides) and the hanging-up height (2) (23 - 28 mm: 4 corners). (How to use the installation gauge is printed on the gauge.)









⚠ CAUTION

Before installation of the indoor unit, remove the tape that holds the fan and bell mouth. Running the unit without removing the tape may damage the fan motor.

■ Installation of ceiling panel (Sold separately)

Install the ceiling panel according to Installation Manual attached with it after piping / wiring work has completed.

Check that installation of indoor unit and ceiling opening part is correct, and then install it.

REQUIREMENT

- Joint the connecting sections of ceiling panel, ceiling surface, ceiling panel and indoor unit closely. Any gap between them will cause air leakage and the generate condensation or water leakage.
- Remove the adjust corner caps at the four corners of the ceiling panel, and then install the ceiling panel onto the indoor unit.

■ Installation of remote controller (Sold separately)

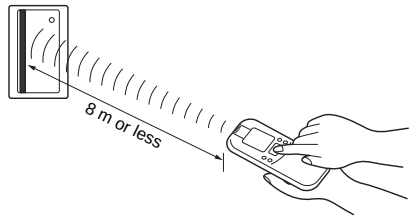
For installation of the wired remote controller, follow the Installation Manual attached with the remote controller.

- Pull out the remote controller cord together with the refrigerant pipe or drain pipe. Pass the remote controller cord through upper side of the refrigerant pipe and drain pipe.
- Do not leave the remote controller at a place exposed to the direct sunlight and near a stove.

■ Wireless remote controller

The sensor of indoor unit with wireless remote controller can receive a signal by distance within approx. 8 m. Based upon it, determine a place where the remote controller is operated and the installation place.

- Operate the remote controller, confirm that the indoor unit receives a signal surely, and then install it.
- Keep 1 m or more from the devices such as television, stereo. (Disturbance of image or noise may generate.)
- To prevent a malfunction, select a place where is not influenced by a fluorescent light or direct sunlight.
- Two or more (Up to 6 units) indoor units with wireless type remote controller can be installed in the same room.



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5 Drain Piping

⚠CAUTION

Following the Installation Manual, perform the drain piping work so that water is properly drained, and apply a heat insulation so as not to cause a dew drop.
Inappropriate piping work may result in water leakage in the room and wet of furniture.

■ Piping / Heat insulating material

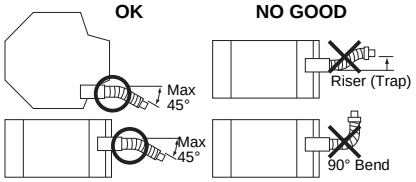
Require the following materials for piping and heat insulating at site.

Piping	Hard vinyl chloride pipe VP25 (Outer dia.: Ø32 mm)
Heat insulator	Foam polyethylene: Thickness 10 mm or more

■ Flexible hose

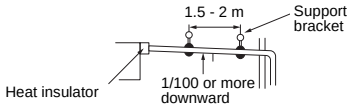
Use the attached flexible hose to adjust centre discrepancy of the hard vinyl chloride pipe or to adjust the angle.

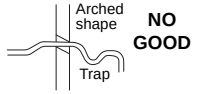
- Do not use the flexible hose as stretched, or do not deform it more extent than that in the following figure.
- Fix the soft end of the flexible hose with the attached hose band.
- Use the flexible hose on a horizontal level.



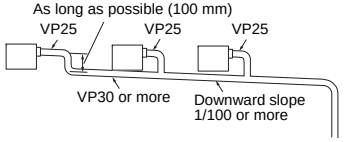
REQUIREMENT

- Perform heat insulation of the drain pipes of the indoor unit.
- Perform heat insulation of the connecting part with the indoor unit.
  An incomplete heat insulation causes dew drop.
- Set the drain pipe with downward slope (1/100 or more), and do not make swelling or trap on the piping. It may cause an abnormal sound.
- For length of the traversing drain pipe, restrict to 20 m or less.
  In case of a long pipe, provide support brackets with interval of 1.5 - 2 m in order to prevent waving.

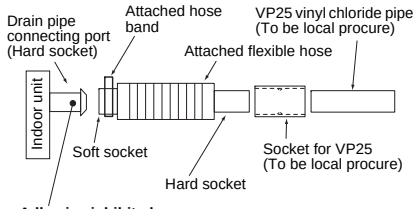




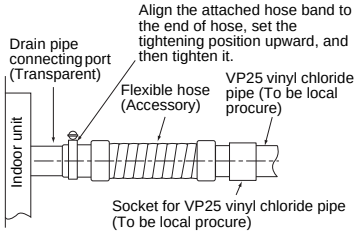
- Set the collective piping as shown in the below figure.



- Do not apply force to the connecting part of the drain pipe.
- The hard vinyl-chloride pipe cannot be directly connected to the drain pipe connecting port of the indoor unit.
  For connection with the drain pipe connecting port, fix the attached flexible hose with the hose band, otherwise a damage or water leak is caused on the drain pipe connecting port.



Adhesive inhibited:
Use the attached flexible hose and hose band for connecting the drain hose to the clear drain socket.
If applying the adhesive, socket will be damaged and cause water leakage.



■ Connecting drain pipe

- Connect a hard socket (procured locally) to the hard socket of the attached supplied flexible hose.
- Connect a drain pipe (procured locally) to the connected hard socket.

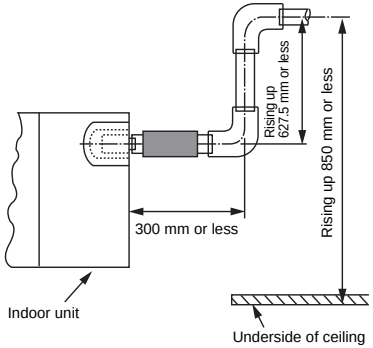
REQUIREMENT

- Connect hard vinyl chloride pipes securely using an adhesive for vinyl chloride to avoid water leakage.
- It takes some time until the adhesive is dried and hardened (refer to the manual of the adhesive). Do not apply stress to the joint with the drain pipe during this time period.

■ Drain up

When a down-gradient cannot be secured for the drainpipe, drain-up piping is possible.

- The height of the drain pipe must be 850 mm or less from the bottom of the ceiling.
- Take the drain pipe out of the drain pipe joint with the indoor unit in 300 mm or less, and bend up the pipe vertically.
- Immediately after the pipe is bent up vertically, lay the pipe making a down-gradient.
- Set downward grading immediately after raising up vertically.

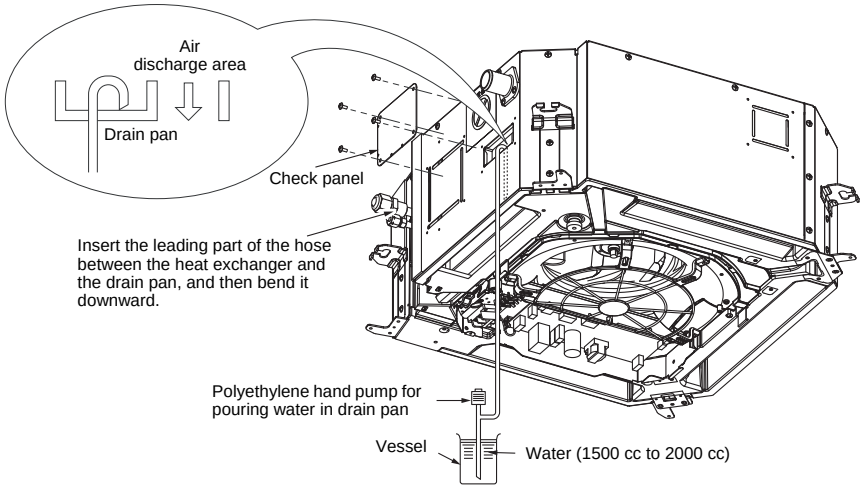


■ Check the draining

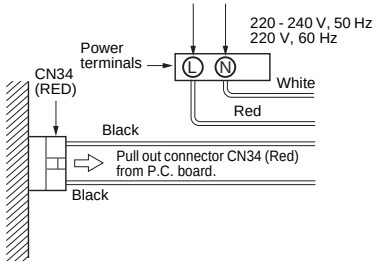
In the test run, check that water drain is properly performed and water does not leak from the connecting part of the pipes.
Check draining also when installed in heating period.
By using a pitcher or hose, pour water (1500 - 2000 cc) into the discharge port before installation of the ceiling panel.
Pour water gradually so that water does not spread on the motor of the drain pump.

⚠CAUTION

Pour water gently so that it does not spread around inside the indoor unit, which may cause a malfunction.

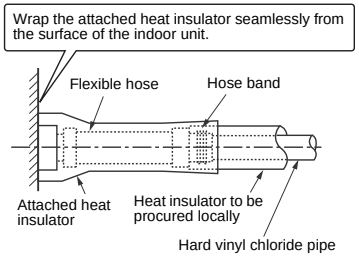


- After the electric work has finished, pour water during COOL mode operation.
- If the electric work has not yet finished, pull out the float switch connector (CN34: Red) from the electrical control box, and check draining by plugging the single phase 220 - 240 V power to the terminal blocks R(L) and S(N).
  If doing so, the drain pump motor operates.
- Test water drain while checking the operation sound of the drain pump motor.
  (If the operation sound changes from continuous sound to intermittent sound, water is normally drained.)
  After the check, the drain pump motor runs, connecting the float switch connector.
  (In case of check by pulling out the float switch connector, be sure to return the connector to the original position.)



■ Perform heat insulating

- As shown in the figure, cover the flexible hose and hose band with the attached heat insulator up to the bottom of the indoor unit without gap.
- Cover the drain pipe seamlessly with a heat insulator to be procured locally so that it overlaps with the attached heat insulator of the drain connecting section.



* Direct the slits and seams of the heat insulator upward to avoid water leakage.

6 Refrigerant Piping

■ Refrigerant piping

1. Use copper pipe with 0.8 mm or more thickness.
2. Flare nut and flare works are also different from those of the conventional refrigerant.
   Take out the flare nut attached to the main unit of the air conditioner, and use it.

REQUIREMENT

When the refrigerant pipe is long, provide support brackets at intervals of 2.5 - 3 m to clamp the refrigerant pipe. Otherwise, abnormal sound may be generated.

⚠ CAUTION

IMPORTANT 4 POINTS FOR PIPING WORK
1. Remove dust and moisture from the inside of the connecting pipes.
2. Tight connection (between pipes and unit)
3. Evacuate the air in the connecting pipes by using VACUUM PUMP.
4. Check the gas leakage. (Connected points)

■ Pipe size

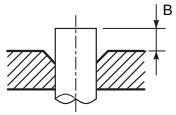
Model name	MMU-	AP007, AP009, AP012 type	AP015, AP018 type
Pipe size	Gas side	9.5 mm	12.7 mm
	Liquid side	6.4 mm	6.4 mm

■ Permissible piping length and height difference

They vary according to the outdoor unit.
For details, refer to the Installation Manual attached to the outdoor unit.

Flaring

- Cut the pipe with a pipe cutter.
  Remove burrs completely.
  Remaining burrs may cause gas leakage.
- Insert a flare nut into the pipe, and flare the pipe.
  As the flaring sizes of R410A differ from those of refrigerant R22, the flare tools newly manufactured for R410A are recommended.
  However, the conventional tools can be used by adjusting projection margin of the copper pipe.



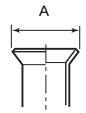
▼ Projection margin in flaring: B (Unit: mm)
Rigid (Clutch type)

Outer dia. of copper pipe	R410A tool used	Conventional tool used
	R410A	R410A
6.4, 9.5	0 - 0.5	1.0 - 1.5
12.7		

▼ Flaring dia. meter size: A (Unit: mm)

Outer dia. of copper pipe	$A^{+0}_{-0.4}$
	R410A
6.4	9.1
9.5	13.2
12.7	16.6

* In case of flaring for R410A with the conventional flare tool, pull it out approx. 0.5 mm more than that for R22 to adjust to the specified flare size.
The copper pipe gauge is useful for adjusting projection margin size.



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Tightening connection

⚠CAUTION

Do not apply excessive torque. Otherwise, the nut may crack depending on the conditions.

Unit: N•m

Outer dia. of copper pipe	Tightening torque
6.4 mm	14 - 18 (1.4 to 1.8 kgf•m)
9.5 mm	33 - 42 (3.3 to 4.2 kgf•m)
12.7 mm	50 - 62 (5.0 to 6.2 kgf•m)

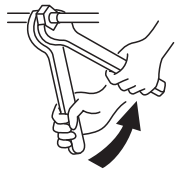
▼ Tightening torque of flare pipe connections

Pressure of R410A is higher than that of R22.

(Approx. 1.6 times) Use a torque wrench, tighten the flare pipe connecting sections which connect the indoor and outdoor units of the specified tightening torque.

Incorrect connections may cause not only a gas leak, but also a trouble of the refrigeration cycle.

Align the centres of the connecting pipes and tighten the flare nut as far as possible with your fingers. Then tighten the nut with a spanner and torque wrench as shown in the figure.



Work using double spanner

REQUIREMENT

Tightening with an excessive torque may crack the nut depending on installation conditions.
Tighten the nut within the specified tightening torque.

Piping with outdoor unit

Shape of valve differs according to the outdoor unit. For details of installation, refer to the Installation Manual of the outdoor unit.

■ Leak check test, evacuation and other procedure

For leak check test, evacuation, addition of refrigerant, and gas leak check, refer to the Installation Manual attached to the outdoor unit.

REQUIREMENT

Do not supply power to the indoor unit until the leak check test and evacuation are completed. (If the indoor unit is powered on, the pulse motor valve is fully closed, which extends the time for vacuuming.)

Open the valve fully

Open the valve of the outdoor unit fully.

For details, refer to the Installation Manual attached to the outdoor unit.

Heat insulation process

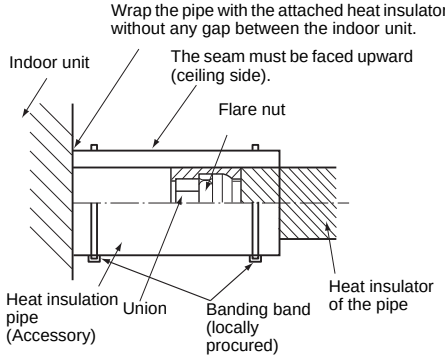
Apply heat insulation for the pipes separately at liquid side and gas side.

For the heat insulation to the pipes at gas side, use the material with heat-resisting temperature 120 °C or higher.

Apply the attached heat insulation to the pipe connecting section of the indoor unit securely without gap.

REQUIREMENT

- Apply the heat insulation to the pipe connecting section of the indoor unit securely up to the root without exposure of the pipe. (The pipe exposed to the outside may causes water leak.)
- Wrap heat insulator with its slits facing up (ceiling side).



7 Electrical Connection

⚠WARNING

- **Use the specified wires for wiring connect the terminals. Securely fix them to prevent external forces applied to the terminals from affecting the terminals.**
  Incomplete connection or fixation may cause a fire or other trouble.
- **Connect earth wire. (grounding work)**
  Incomplete grounding cause an electric shock.
  Do not connect earth wires to gas pipes, water pipes, lightning conductor or telephone earth wires.
- **Appliance shall be installed in accordance with national wiring regulations.**
  Capacity shortage of power circuit or incomplete installation may cause an electric shock or a fire.

⚠CAUTION

- If incorrect / incomplete wiring is carried out, it will cause an electrical fire or smoke.
- Install an earth leakage breaker that is not tripped by shock waves.
  If an earth leakage breaker is not installed, an electric shock may be caused.
- Use the cord clamps attached to the product.
- Do not damage or scratch the conductive core and inner insulator of power and inter-connecting wires when peeling them.
- Use the power cord and Inter-connecting wire of specified thickness, type, and protective devices required.
- Do not connect 220 V – 240 V power to the terminal blocks (Ⓤ1, Ⓤ2, Ⓐ, Ⓑ) for control wiring. (Otherwise, the system will fail.)
- Do not damage or scratch the conductive core and inner insulator of power and inter-connecting wires when peeling them.
- Perform the electric wiring so that it does not come to contact with the high-temperature part of the pipe. The coating may melt resulting in an accident.

REQUIREMENT

- For power supply wiring, strictly conform to the Local Regulation in each country.
- For wiring of power supply of the outdoor units, follow the Installation Manual of each outdoor unit.
- Perform the electric wiring so that it does not come to contact with the high-temperature part of the pipe.The coating may melt resulting in an accident.
- After connecting wires to the terminal blocks, provide a trap and fix wires with the cord clamp.
- Run the refrigerant piping line and control wiring line in the same line.
- Do not turn on the power of the indoor unit until vacuuming of the refrigerant pipes completes.

■ Power supply wire and communication wires specifications

Power supply wire and communication wires are procured locally.

For the power supply specifications, follow to the table below. If capacity is little, it is dangerous because overheat or burnout may be caused.

For specifications of the power capacity of the outdoor unit and the power supply wires, refer to the Installation Manual attached to the outdoor unit.

Indoor unit power supply

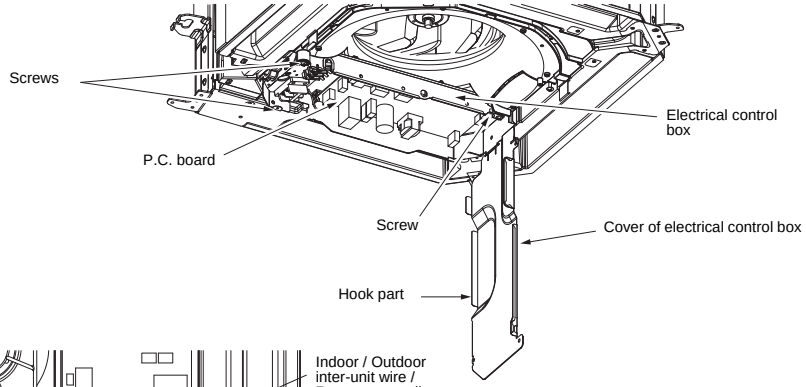
- For the power supply of the indoor unit, prepare the exclusive power supply separated from that of the outdoor unit.
- Arrange the power supply, circuit breaker, and main switch of the indoor unit connected to the same outdoor unit so that they are commonly used.
- Power supply wire specification: Cable 3-core 2.5 mm², **in conformity with Design 60245 IEC 57**.

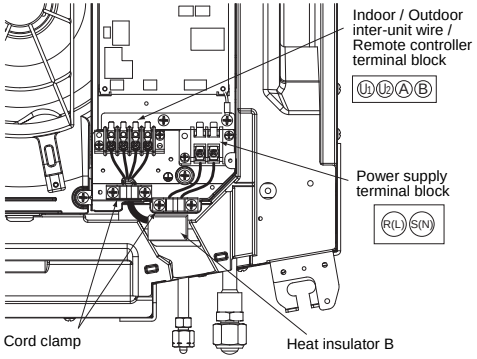
■ Wire connection

REQUIREMENT

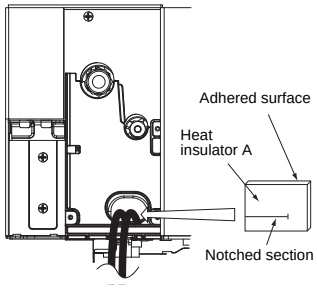
- Connect the wires matching the terminal numbers. Incorrect connection causes a trouble.
- Route the wire through the wire connection port of the indoor unit.
- The low-voltage circuit is provided for the control wire and remote control wire. (Do not connect the high-voltage circuit.)

- Remove the cover of the electrical control box by removing the mounting screws (3 pcs.) and push the hooking section. (The cover of the electrical control box remains hanged to the hinge.)
- Tighten the screws on the terminal block and secure the wires with cord clamp fitted to the electrical control box. (Do not apply tension to the connecting section of the terminal block.)
- Using the supplied heat insulator for the sealing of the wire connecting port, seal the wire connecting port. (Otherwise dew condensation may be caused.)
- Mount the cover of the electrical control box ensuring the wires are not pinched. (Mount the cover after the ceiling panel has been wired to the electric box.)





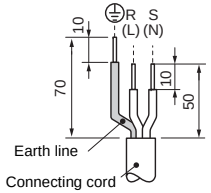
Heat insulator to wiring connecting port



■ Power supply wires and earth wire

1. Strip the wire ends.
   Power supply wire: 10 mm
   Earth wire: 10 mm
2. Match the wire colours with the terminal numbers on the indoor units' and circuit breakers' terminal blocks and firmly screw the wires to the corresponding terminals.
3. Secure the earth wire with the earth screw.
4. Fix the wires with a cord clamp.

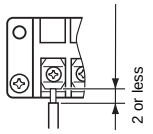
Unit: mm



⚠ CAUTION

Firmly tighten the screws of the terminal block.

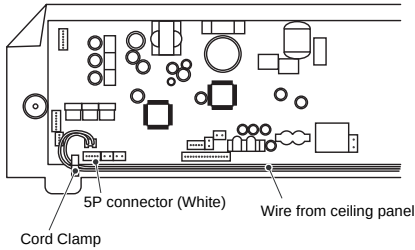
Keep the wire length as shown in figure below when it is connected to the terminal block.



Power supply wires and control wire

■ Wiring on the ceiling panel

According to the Installation Manual of the ceiling panel, connect the connector (2P: Red) of the ceiling panel to the connector (5P: White) on P.C. board of the electrical control box.



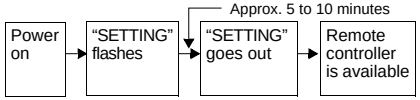
■ Address setup

Set up the addresses as per the Installation Manual supplied with the outdoor unit.

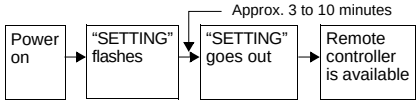
8 Applicable Controls

REQUIREMENT

- When this air conditioner is used for the first time, it takes approx. 5 minutes until the remote controller becomes available after power-on. This is normal.
  <When power is turned on for the first time after installation>
  It takes **approx. 5 to 10 minutes** until the remote control becomes available.



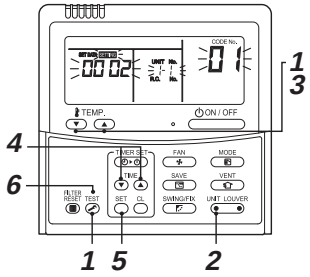
  <When power is turned on for the second (or later) time>
  It takes **approx. 3 to 10 minute** until the remote controller becomes available.



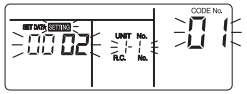
- Normal settings were made as factory default. Change the indoor unit settings as required.
- Use the wired remote controller to change the settings.
  * The settings cannot be changed using the wireless remote controller, simple wired remote controller, or central control system. Therefore, install the wired remote controller to change the settings.

■ Basic procedure for changing settings

Change the settings while the air conditioner is not working.
(Stop the air conditioner before making settings.)

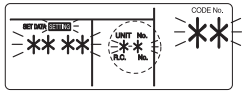


1 Push (TEST) button and temp. setup (▼) button simultaneously for 4 seconds or more.
After a while, the display flashes as shown in the figure.
Confirm that the CODE No. is [01].
- If the CODE No. is not [01], push (TEST) button to erase the display content, and repeat the procedure from the beginning.
  (No operation of the remote controller is accepted for a while after (TEST) button is pushed.)
  (While air conditioners are operated under the group control, "ALL" is displayed first.
  When (UNIT LOUVER) button is pushed, the indoor unit number displayed following "ALL" is header unit.)



(* Display content varies with the indoor unit model.)

2 Each time (UNIT LOUVER) button is pushed, indoor unit numbers in the control group change cyclically. Select the indoor unit to change settings for.
The fan of the selected unit runs and the louvers start swinging. The indoor unit can be confirmed for which to change settings.

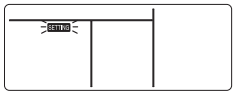


3 Specify CODE No. [✳✳] with temp. setup (▼) / (▲) buttons.

4 Select SET DATA [✳✳✳✳] with timer time (▼) / (▲) buttons.

5 Push (SET) button. When the display changes from flashing to lit, the setup is completed.
- To change settings of another indoor unit, repeat from Procedure ***2***.
- To change other settings of the selected indoor unit, repeat from Procedure ***3***.
  Use (SET) button to clear the settings.
  To make settings after (SET) button was pushed, repeat from Procedure ***2***.

6 When settings have been completed, push (TEST) button to determine the settings.
When (TEST) button is pushed, "SETTING" flashes and then the display content disappears and the air conditioner enters the normal stop mode.
(While "SETTING" is flashing, no operation of the remote controller is accepted.)



■ Installing indoor unit on high ceiling

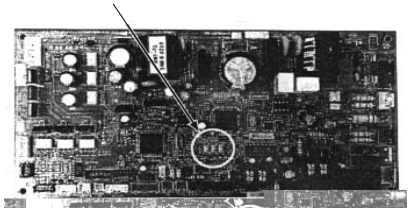
When an indoor unit is installed on a ceiling higher than the standard height, make the high-ceiling setting for fan speed adjustment.
Follow to the basic operation procedure
(***1*** → ***2*** → ***3*** → ***4*** → ***5*** → ***6***).
- For the CODE No. in Procedure ***3***, specify [5d].
- Select the SET DATA for Procedure ***4*** from the "Height list of ceiling possible to be installed" table in this manual.

Remote controller-less setting
To set the unit to high ceiling setting, there is a method that requires the changing of the jumper blocks on the indoor P.C. board. The details are shown in the below table.
This method is only to be used where a wired remote controller (Group control) is not used.
* However, once the setting is changed, it is necessary to reset the SET DATA back to 0000 that placing the jumper blocks back to the factory default position and rewriting the SET DATA back to 0000 with wired remote controller. (The setting can be changed to 0001 and 0003 without resetting.)

- **Select by exchange of jumper blocks on indoor P.C. board.**

Jumper block position (Short / Open)	SET DATA	Note
CN112 CN111 CN110	0000	Standard (Factory default)
CN112 CN111 CN110	0002	High ceiling (2)
CN112 CN111 CN110	0003	High ceiling (3)

- **Jumper blocks position (CN112, CN111, CN110 from the left)**



EN

Wireless remote controller

1 **Remove a small screw which fixes the nameplate of the receiver unit.**

Remove the nameplate of the sensor section by inserting a flat-blade screwdriver into the notch at the bottom of the plate, and set the Dip switch to [TEST RUN ON].

2 **Execute a test operation with ⏻ ON / OFF button on the wireless remote controller.**

- ⏻, 🕘, and ❁ LED flash during test operation.
- Under status of [TEST RUN ON], the temperature adjustment from the wireless remote controller is invalid.

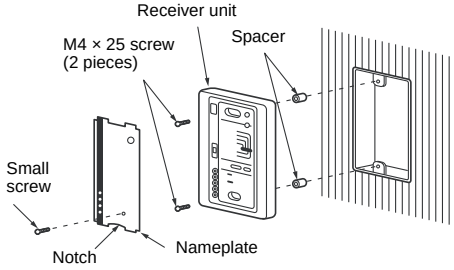
Do not use this method in the operation other than test operation because the equipment is damaged.

3 **Use either COOL or HEAT operation mode for a test operation.**

*The outdoor unit does not operate approx. 3 minutes after power-ON and operation stop.

4 **After the test operation finished, stop the air conditioner from the wireless remote controller, and return Dip switch of the receiver section as before.**

(A 60-minutes timer clearing function is attached to the receiver section in order to prevent a continuous test operation.)



10 Maintenance

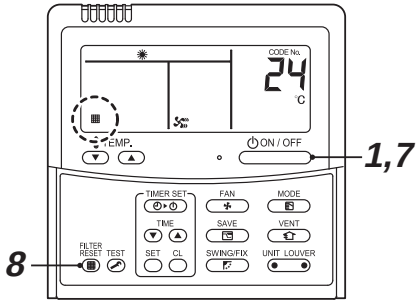
<Daily maintenance>

▼Cleaning of air filter

- If ▦ is displayed on the remote controller, maintain the air filter.

1 **Push the ON / OFF button to stop the operation, then turn off the circuit breaker.**

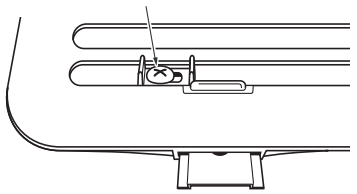
After the cooling or dry operation, the ventilation fan keeps running for self-cleaning. Push the ON / OFF button twice to stop the operation.



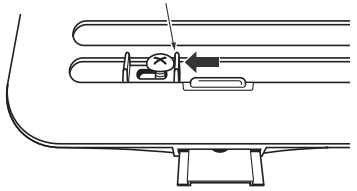
- Take out the air filter.

2 **Open the air intake grille.**

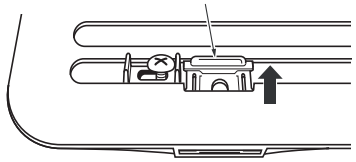
1) Loosen the fixing screw.

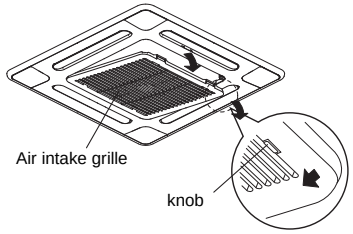


2) Slide the fixing bracket toward the outside.



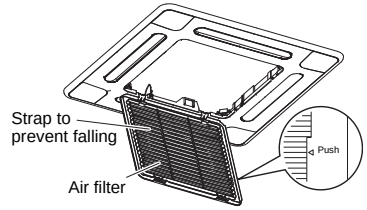
3) Slide the air intake grille buttons to detach the air intake grille from the ceiling panel. Lower the grille slowly whilst holding.





3 **Take out the air filter.**

- Push the extrusion of the air filter away from the grille and remove.



4 **Cleaning with water or vacuum cleaner.**

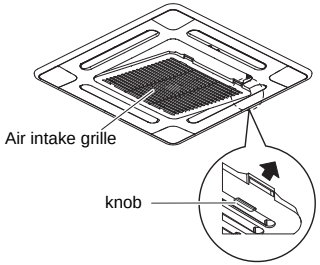
- If dirt is heavy, clean the air filter using tepid water with a neutral detergent or just water.
- After cleaning with water, dry the air filter sufficiently in a shaded place.

EN

5 **Mount the air filter.**

6 **Close the air intake grille.**

- In inverse process of 1, firmly attach the knob, fixing bracket and fixing screw.



7 **Turn on the circuit breaker, then push the ON / OFF button on the remote controller to start the operation.**

8 **After cleaning, push FILTER RESET.**

▦ display disappears.

⚠CAUTION

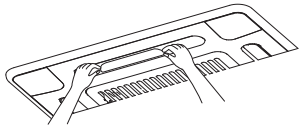
- Do not start the air conditioner while leaving air filter removed.
- Push the filter reset button. (▦ indication will be turn off.)

Cleaning of louver

The louver can be removed to clean if necessary.

1 **Remove the louver.**

- Holding both ends of the louver, remove it by sagging the centre downwards.

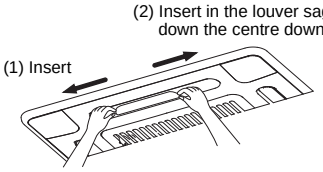


2 **Clean the louver with water.**

- If dirt is heavy, clean the louver using tepid water with neutral detergent or just water.

3 **Mount the louver.**

- First push in the one side, and insert the opposite side by sagging the centre downwards.



NOTE

Insert the louver in the correct direction.
Insert the louver with the printed mark facing upwards, and the arrow on the louver pointing in the outward direction.

▼Periodic Maintenance

- For environmental conservation, it is strongly recommended that the indoor and outdoor units of the air conditioner in use be cleaned and maintained regularly to ensure efficient operation of the air conditioner. When the air conditioner is operated for a long time, periodic maintenance (once a year) is recommended. Furthermore, regularly check the outdoor unit for rust and scratches, and remove them or apply rustproof treatment, if necessary.
  As a general rule, when an indoor unit is operated for 8 hours or more daily, clean the indoor unit and outdoor unit at least once every 3 months. Ask a professional for this cleaning / maintenance work.
  Such maintenance can extend the life of the product though it involves the owner's expense.
  Failure to clean the indoor and outdoor units regularly will result in poor performance, freezing, water leakage, and even compressor failure.

Inspection before maintenance

Following inspection must be carried out by a qualified installer or qualified service person.

Parts	Inspection method
Heat exchanger	Access from inspection opening and remove the access panel. Examine the heat exchanger if there is any clogging or damages.
Fan motor	Access from inspection opening and check if any abnormal noise can be heard.
Fan	Access from inspection opening and remove the access panel. Examine the fan if there are any waggles, damages or adhesive dust.
Filter	Go to installed location and check if there are any stains or breaks on the filter.
Drain pan	Access from inspection opening and remove the access panel. Check if there is any clogging or drain water is polluted.

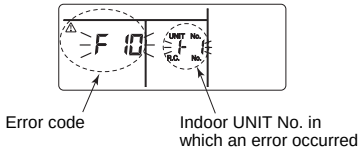
▼Maintenance List

Part	Unit	Check (visual / auditory)	Maintenance
Heat exchanger	Indoor / outdoor	Dust / dirt clogging, scratches	Wash the heat exchanger when it is clogged.
Fan motor	Indoor / outdoor	Sound	Take appropriate measures when abnormal sound is generated.
Filter	Indoor	Dust / dirt, breakage	• Wash the filter with water when it is contaminated. • Replace it when it is damaged.
Fan	Indoor	• Vibration, balance • Dust / dirt, appearance	• Replace the fan when vibration or balance is terrible. • Brush or wash the fan when it is contaminated.
Air inlet / outlet grilles	Indoor / outdoor	Dust / dirt, scratches	Fix or replace them when they are deformed or damaged.
Drain pan	Indoor	Dust / dirt clogging, drain contamination	Clean the drain pan and check the downward slope for smooth drainage.
Ornamental panel, louvres	Indoor	Dust / dirt, scratches	Wash them when they are contaminated or apply repair coating.
Exterior	Outdoor	• Rust, peeling of insulator • Peeling / lift of coat	Apply repair coating.

11 Troubleshooting

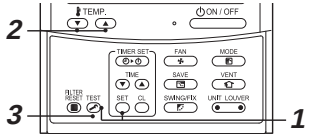
■ Confirmation and check

When an error occurred in the air conditioner, an error code and indoor UNIT No. appear on the display part of the remote controller.
The error code is only displayed during the operation.
If the display disappears, operate the air conditioner according to the following “Confirmation of error log” for confirmation.

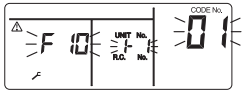


■ Confirmation of error log

When an error occurred on the air conditioner, the error log can be confirmed with the following procedure.
(The error log is stored in memory up to 4 errors.)
The log can be confirmed from both operating status and stop status.



1 When SET and TEST buttons are pushed simultaneously for 4 seconds or more, the following display appears.
If 🔧 is displayed, the mode enters in the error log mode.
- [**01**: Order of error log] is displayed in CODE No..
- [Error code] is displayed in CHECK.
- [Indoor unit address in which an error occurred] is displayed in Unit No..



2 Every pushing of TEMP. button used to set temperature, the error log stored in memory is displayed in order.
The numbers in CODE No. indicate CODE No.
[**01**] (latest) → [**04**] (oldest).

REQUIREMENT

Do not push CL button because all the error log of the indoor unit will be deleted.

3 After confirmation, push TEST button to return to the usual display.

Check method

On the wired remote controller, central control remote controller and the interface P.C. board of the outdoor unit (I/F), a check display LCD (Remote controller) or 7-segment display (on the outdoor interface P.C. board) to display the operation is provided. Therefore the operation status can be known. Using this self-diagnosis function, a trouble or position with error of the air conditioner can be found as shown in the table below.

Check code list

The following list shows each check code. Find the check contents from the list according to part to be checked.

- In case of check from indoor remote controller: See “Wired remote controller display” in the list.
- In case of check from outdoor unit: See “Outdoor unit 7-segment display” in the list.
- In case of check from AI-NET central control remote controller: See “AI-NET central control display” in the list.
- In case of check from indoor unit with a wireless remote controller: See “Sensor block display of receiving unit” in the list.

○: Lighting, ☼: Flashing, ●: Goes off
AI-NET: Artificial Intelligence
IPDU: Intelligent Power Drive Unit
ALT: Flashing is alternately when there are two flashing LED.
SIM: Simultaneous flashing when there are two flashing LED.

Check code				Wireless remote controller				Check code name	Judging device
Wired remote controller display	Outdoor unit 7-segment display		AI-NET central control display	Sensor block display of receiving unit					
		Auxiliary code		Operation	Timer	Ready	Flash		
E01	—	—	—	☼	●	●		Communication error between indoor unit and remote controller (Detected at remote controller side)	Remote controller
E02	—	—	—	☼	●	●		Remote controller transmission error	Remote controller
E03	—	—	97	☼	●	●		Communication error between indoor unit and remote controller (Detected at indoor unit side)	Indoor unit
E04	—	—	04	●	●	☼		Communication circuit error between indoor / outdoor unit (Detected at indoor unit side)	Indoor unit
E06	E06	No. of indoor units in which sensor has been normally received	04	●	●	☼		Decrease of No. of indoor units	I/F
—	E07	—	—	●	●	☼		Communication circuit error between indoor / outdoor unit (Detected at outdoor unit side)	I/F
E08	E08	Duplicated indoor unit addresses	96	☼	●	●		Duplicated indoor unit addresses	Indoor unit • I/F
E09	—	—	99	☼	●	●		Duplicated master remote controllers	Remote controller
E10	—	—	CF	☼	●	●		Communication error between indoor unit MC	Indoor unit
E12	E12	01:Indoor / Outdoor units communication 02:Outdoor / Outdoor units communication	42	☼	●	●		Automatic address start error	I/F
E15	E15	—	42	●	●	☼		No indoor unit during automatic addressing	I/F
E16	E16	00:Capacity over 01 ~:No. of connected units	89	●	●	☼		Capacity over / No. of connected indoor units	I/F
E18	—	—	97, 99	☼	●	●		Communication error between header and follower units Indoor unit	Indoor unit
E19	E19	00:No header 02:Two or more header units	96	●	●	☼		Outdoor header units quantity error	I/F
E20	E20	01:Outdoor unit of other line connected 02:Indoor unit of other line connected	42	●	●	☼		Other line connected during automatic address	I/F
E21	E21	02:No header unit 00:Multiple number of header units	42	●	●	☼		Error in number of heat storage master units	I/F
E22	E22	—	42	●	●	☼		Reduction in number of heat storage units	I/F
E23	E23	—	15	●	●	☼		Sending error in communication between outdoor units Error in number of heat storage units (trouble with reception)	I/F
E25	E25	—	15	●	●	☼		Duplicated follower outdoor addresses	I/F
E26	E26	No. of outdoor units which received signal normally	15	●	●	☼		Decrease of No. of connected outdoor units	I/F
E28	E28	Detected outdoor unit number	d2	●	●	☼		Follower outdoor unit error	I/F
E31	E31	Number of IPDU (*1)	CF	●	●	☼		IPDU communication error	I/F

SMMS Compact 4-way Cassette Installation Manual

Check code				Wireless remote controller				Check code name	Judging device
Wired remote controller display	Outdoor unit 7-segment display		AI-NET central control display	Sensor block display of receiving unit					
		Auxiliary code		Operation	Timer	Ready	Flash		
F01	—	—	0F	☼	☼	●	ALT	Indoor unit TCJ sensor error	Indoor unit
F02	—	—	0d	☼	☼	●	ALT	Indoor unit TC2 sensor error	Indoor unit
F03	—	—	93	☼	☼	●	ALT	Indoor unit TC1 sensor error	Indoor unit
F04	F04	—	19	☼	☼	○	ALT	TD1 sensor error	I/F
F05	F05	—	A1	☼	☼	○	ALT	TD2 sensor error	I/F
F06	F06	01:TE1 sensor 02:TE2 sensor	18	☼	☼	○	ALT	TE1 sensor error TE2 sensor error	I/F
F07	F07	—	18	☼	☼	○	ALT	TL sensor error	I/F
F08	F08	—	1b	☼	☼	○	ALT	TO sensor error	I/F
F10	—	—	OC	☼	☼	●	ALT	Indoor unit TA sensor error	Indoor unit
F12	F12	—	A2	☼	☼	○	ALT	TS1 sensor error	I/F
F13	F13	01:Comp. 1 side 02:Comp. 2 side 03:Comp. 3 side	43	☼	☼	○	ALT	TH sensor error	IPDU
F15	F15	—	18	☼	☼	○	ALT	Outdoor unit temp. sensor miscabling (TE, TL)	I/F
F16	F16	—	43	☼	☼	○	ALT	Outdoor unit pressure sensor miscabling (Pd, Ps)	I/F
F22	F22	—	B2	☼	☼	○	ALT	TD3 sensor error	I/F
F23	F23	—	43	☼	☼	○	ALT	Ps sensor error	I/F
F24	F24	—	43	☼	☼	○	ALT	Pd sensor error	I/F
F29	—	—	12	☼	☼	●	SIM	Indoor unit other error	Indoor unit
F31	F31	—	1C	☼	☼	○	SIM	Indoor unit EEPROM error	I/F
H01	H01	01:Comp. 1 side 02:Comp. 2 side 03:Comp. 3 side	IF	●	☼	●		Compressor break down	IPDU
H02	H02	01:Comp. 1 side 02:Comp. 2 side 03:Comp. 3 side	1d	●	☼	●		Compressor trouble (lock)	IPDU
H03	H03	01:Comp. 1 side 02:Comp. 2 side 03:Comp. 3 side	17	●	☼	●		Current detect circuit system error	IPDU
H04	H04	—	44	●	☼	●		Comp. 1 case thermo operation	I/F
H05	H05	—	—	●	☼	●		TD1 sensor miswiring	I/F
H06	H06	—	20	●	☼	●		Low pressure protective operation	I/F
H07	H07	—	d7	●	☼	●		Oil level down detective protection	I/F
H08	H08	01:TK1 sensor error 02:TK2 sensor error 03:TK3 sensor error 04:TK4 sensor error 05:TK5 sensor error	d4	●	☼	●		Oil level detective temp sensor error	I/F
H14	H14	—	44	●	☼	●		Comp. 2 case thermo operation	I/F
H15	H15	—	—	●	☼	●		TD2 sensor miswiring	I/F
H16	H16	01:TK1 oil circuit system error 02:TK2 oil circuit system error 03:TK3 oil circuit system error 04:TK4 oil circuit system error 05:TK5 oil circuit system error	d7	●	☼	●		Oil level detective circuit error	I/F
H25	H25	—	—	●	☼	●		TD3 sensor miswiring	I/F
L03	—	—	96	☼	●	☼	SIM	Indoor unit centre unit duplicated	Indoor unit
L04	L04	—	96	☼	○	☼	SIM	Outdoor unit line address duplicated	I/F

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Check code				Wireless remote controller				Check code name	Judging device
Wired remote controller display	Outdoor unit 7-segment display		AI-NET central control display	Sensor block display of receiving unit					
		Auxiliary code		Operation	Timer	Ready	Flash		
L05	—	—	96	☼	●	☼	SIM	Duplicated indoor units with priority (Displayed in indoor unit with priority)	I/F
L06	L06	No. of indoor units with priority	96	☼	●	☼	SIM	Duplicated indoor units with priority (Displayed in unit other than indoor unit with priority)	I/F
L07	—	—	99	☼	●	☼	SIM	Group line in individual indoor unit	Indoor unit
L08	L08	—	99	☼	●	☼	SIM	Indoor unit group / Address unset	Indoor unit, I/F
L09	—	—	46	☼	●	☼	SIM	Indoor unit capacity unset	Indoor unit
L10	L10	—	88	☼	○	☼	SIM	Outdoor unit capacity unset	I/F
L17	—	—	46	☼	○	☼	SIM	Outdoor unit type mismatch error	I/F
L20	—	—	98	☼	○	☼	SIM	Duplicated central control addresses	AI-NET, Indoor unit
L26	L26	Number of heat storage units connected	46	☼	○	☼	SIM	Too many heat storage units connected	I/F
L27	L27	Number of heat storage units connected	46	☼	○	☼	SIM	Error in number of heat storage units connected	I/F
L28	L28	—	46	☼	○	☼	SIM	Too many outdoor units connected	I/F
L29	L29	Number of IPDU (*1)	CF	☼	○	☼	SIM	No. of IPDU error	I/F
L30	L30	Detected indoor unit address	b6	☼	○	☼	SIM	Indoor unit outside interlock	Indoor unit
—	L31	—	—	—				Extended I/C error	I/F
P01	—	—	11	●	☼	☼	ALT	Indoor fan motor error	Indoor unit
P03	P03	—	1E	☼	●	☼	ALT	Discharge temp. TD1 error	I/F
P04	P04	01:Comp. 1 side 02:Comp. 2 side 03:Comp. 3 side	21	☼	●	☼	ALT	High-pressure SW system operation	IPDU
P05	P05	00: 01:Comp. 1 side 02:Comp. 2 side 03:Comp. 3 side	AF	☼	●	☼	ALT	Phase missing detection / Power failure detection Inverter DC voltage error (comp.) Inverter DC voltage error (comp.) Inverter DC voltage error (comp.)	I/F
P07	P07	01:Comp. 1 side 02:Comp. 2 side 03:Comp. 3 side	IC	☼	●	☼	ALT	Heat sink overheat error	IPDU, I/F
P09	P09	Detected heat storage address	47	●	☼	☼	ALT	No heat storage unit water error	Heat storage unit
P10	P10	Detected indoor unit address	Ob	●	☼	☼	ALT	Indoor unit overflow error	Indoor unit
P12	—	—	11	●	☼	☼	ALT	Indoor unit fan motor error	Indoor unit
P13	P13	—	47	●	☼	☼	ALT	Outdoor liquid back detection error	I/F
P15	P15	01:TS condition 02:TD condition	AE	☼	●	☼	ALT	Gas leak detection	I/F
P17	P17	—	bb	☼	●	☼	ALT	Discharge temp. TD2 error	I/F
P18	P18	—	E2	☼	●	☼	ALT	Discharge temp. TD3 error	I/F
P19	P19	Detected outdoor unit number	O8	☼	●	☼	ALT	4-way valve inverse error	I/F
P20	P20	—	22	☼	●	☼	ALT	High-pressure protective operation	I/F
P22	P22	0*:IGBT circuit 1*:Position detective circuit error 3*:Motor lock error 4*:Motor current detection C*:TH sensor error D*:TH sensor error E*:Inverter DC voltage error (outdoor unit fan)	1A	☼	●	☼	ALT	Outdoor unit fan IPDU error Note: Ignore 0 to F displayed in “*” position.	IPDU
P26	P26	01:Comp. 1 side 02:Comp. 2 side 03:Comp. 3 side	14	☼	●	☼	ALT	G-TR short protection error	IPDU

SMMS Compact 4-way Cassette Installation Manual

Check code				Wireless remote controller				Check code name	Judging device
Wired remote controller display	Outdoor unit 7-segment display		AI-NET central control display	Sensor block display of receiving unit					
		Auxiliary code		Operation	Timer	Ready	Flash		
P29	P29	01:Comp. 1 side 02:Comp. 2 side 03:Comp. 3 side	16	☼	●	☼	ALT	Comp. position detective circuit system error	IPDU
P31	—	—	47	☼	●	☼	ALT	Other indoor unit error (Group follower indoor unit error)	Indoor unit
—	—	—	b7	By alarm device			ALT	Error in indoor unit group	AI-NET
—	—	—	97	—				AI-NET communication system error	AI-NET
—	—	—	99	—				Duplicated network adapters	AI-NET

*1 Number of IPDU
01: Comp. 1
02: Comp. 2
03: Comp. 1 + Comp. 2
04: Comp. 3
05: Comp. 1 + Comp. 3
06: Comp. 2 + Comp. 3
07: Comp. 1 + Comp. 2 + Comp. 3
08: Fan
09: Comp. 1 + Fan
0A: Comp. 2 + Fan
0B: Comp. 1 + Comp. 2 + Fan
0C: Comp. 3 + Fan
0D: Comp. 1 + Comp. 3 + Fan
0E: Comp. 2 + Comp. 3 + Fan
0F: Comp. 1 + Comp. 2 + Comp. 3 + Fan

Error detected by TCC-LINK central control device

Check code				Wireless remote controller				Check code name	Judging device
Central control device indication	Outdoor unit 7-segment display		AI-NET central control display	Sensor block display of receiving unit					
		Auxiliary code		Operation	Timer	Ready	Flash		
C05	—	—	—	—				Sending error in TCC-LINK central control device	TCC-LINK
C06	—	—	—	—				Receiving error in TCC-LINK central control device	TCC-LINK
C12	—	—	—	—				Batch alarm of general-purpose equipment control interface	General-purpose equipment, I/F
P30	Differs according to error contents of unit with occurrence of alarm							Group control follower unit error	TCC-LINK
	—	—	(L20 is displayed.)					Decrease of No. of indoor units	

TCC-LINK: TOSHIBA Carrier Communication Link.

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12 Specifications

Model	Sound power level (dBA)		Weight (kg) Main unit (Ceiling panel)
	Cooling	Heating	
MMU-AP0074MH-E	*	*	17 (3)
MMU-AP0094MH-E	*	*	17 (3)
MMU-AP0124MH-E	*	*	17 (3)
MMU-AP0154MH-E	*	*	17 (3)
MMU-AP0184MH-E	*	*	17 (3)

* Under 70 dBA

Declaration of Conformity

Manufacturer: Toshiba Carrier Corporation
336 Tadehara, Fuji-shi, Shizuoka-ken 416-8521 JAPAN

Authorized Representative / TCF holder: Nick Ball
Toshiba EMEA Engineering Director
Toshiba Carrier UK Ltd.
Porsham Close, Belliver Industrial Estate,
PLYMOUTH, Devon, PL6 7DB.
United Kingdom

Hereby declares that the machinery described below:

Generic Denomination: Air Conditioner

Model / type: MMU-AP0074MH-E, MMU-AP0094MH-E, MMU-AP0124MH-E, MMU-AP0154MH-E, MMU-AP0184MH-E

Commercial name: Super Modular Multi System Air Conditioner
Super Heat Recovery Multi System Air Conditioner
Mini-Super Modular Multi System Air Conditioner (MiNi-SMMS series)

Complies with the provisions of the “Machinery” Directive (Directive 2006/42/EC) and the regulations transposing into national law

Complies with the provisions of the following harmonized standard:

EN 378-2: 2008+A1: 2009

NOTE

This declaration becomes invalid if technical or operational modifications are introduced without the manufacturer’s consent.

Warnings on Refrigerant Leakage

Check of Concentration Limit

The room in which the air conditioner is to be installed requires a design that in the event of refrigerant gas leaking out, its concentration will not exceed a set limit.

The refrigerant R410A which is used in the air conditioner is safe, without the toxicity or combustibility of ammonia, and is not restricted by laws to be imposed which protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its concentration should rise excessively. Suffocation from leakage of R410A is almost non-existent. With the recent increase in the number of high concentration buildings, however, the installation of multi air conditioner systems is on the increase because of the need for effective use of floor space, individual control, energy conservation by curtailing heat and carrying power etc.

Most importantly, the multi air conditioner system is able to replenish a large amount of refrigerant compared with conventional individual air conditioners. If a single unit of the multi conditioner system is to be installed in a small room, select a suitable model and installation procedure so that if the refrigerant accidentally leaks out, its concentration does not reach the limit (and in the event of an emergency, measures can be made before injury can occur).

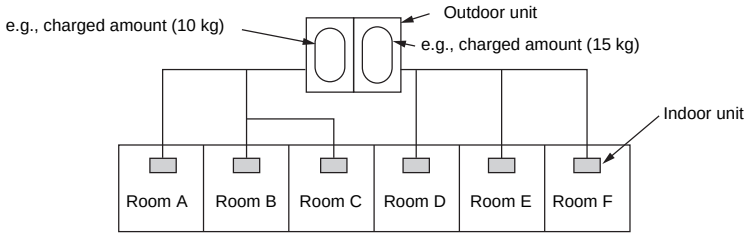
In a room where the concentration may exceed the limit, create an opening with adjacent rooms, or install mechanical ventilation combined with a gas leak detection device.The concentration is as given below.

$$\frac{\text{Total amount of refrigerant (kg)}}{\text{Min. volume of the indoor unit installed room (m}^3\text{)}} \leq \text{Concentration limit (kg/m}^3\text{)}$$

The concentration limit of R410A which is used in multi air conditioners is 0.3 kg/m^3.

▼NOTE 1

If there are 2 or more refrigerating systems in a single refrigerating device, the amounts of refrigerant should be as charged in each independent device.



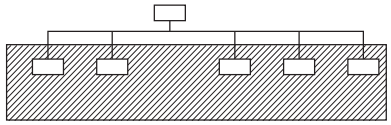
For the amount of charge in this example:

The possible amount of leaked refrigerant gas in rooms A, B and C is 10 kg.
The possible amount of leaked refrigerant gas in rooms D, E and F is 15 kg.

▼NOTE 2

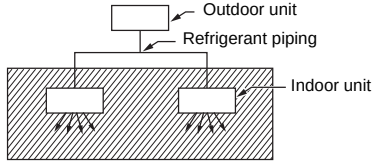
The standards for minimum room volume are as follows.

1) No partition (shaded portion)

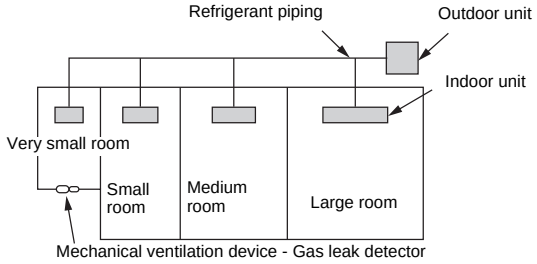


Important

2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15 % or larger than the respective floor spaces at the top or bottom of the door).

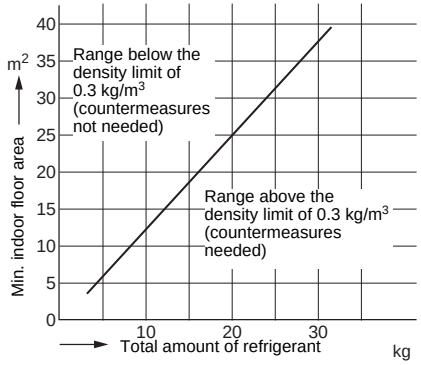


3) If an indoor unit is installed in each partitioned room and the refrigerant piping is interconnected, the smallest room of course becomes the object. But when a mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the volume of the next smallest room becomes the object.



▼NOTE 3

The minimum indoor floor area compared with the amount of refrigerant is roughly as follows:
(When the ceiling is 2.7 m high)



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■ Confirmation of indoor unit setup

Prior to delivery to the customer, check the address and setup of the indoor unit, which has been installed in this time and fill the check sheet (Table below). Data of four units can be entered in this check sheet. Copy this sheet according to the No. of the indoor units. If the installed system is a group control system, use this sheet by entering each line system into each installation manual attached to the other indoor units.

REQUIREMENT

This check sheet is required for maintenance after installation. Fill this sheet and then pass this Installation Manual to the customers.

Indoor unit setup check sheet

Indoor unit	Indoor unit	Indoor unit	Indoor unit
Room name	**Room name**	**Room name**	**Room name**
Model	**Model**	**Model**	**Model**

Check indoor unit address. (For check method, refer to APPLICABLE CONTROLS in this manual.)
*In case of a single system, it is unnecessary to enter the indoor address. (CODE NO.: Line [12], Indoor [13], Group [14], Central control [03])

Line	Indoor	Group	Line	Indoor	Group	Line	Indoor	Group	Line	Indoor	Group

Central control address	Central control address	Central control address	Central control address

Various setup	Various setup	Various setup	Various setup

Have you changed high ceiling setup? If not, fill check mark [×] in [NO CHANGE], and fill check mark [×] in [ITEM] if changed, respectively.
(For check method, refer to APPLICABLE CONTROLS in this manual.) * In case of replacement of jumper blocks on indoor microcomputer P.C. board, setup is automatically changed.

High ceiling setup (CODE NO. [5d])	High ceiling setup (CODE NO. [5d])	High ceiling setup (CODE NO. [5d])	High ceiling setup (CODE NO. [5d])
☐ NO CHANGE	☐ NO CHANGE	☐ NO CHANGE	☐ NO CHANGE
☐ STANDARD [0001]	☐ STANDARD [0001]	☐ STANDARD [0001]	☐ STANDARD [0001]
☐ HIGH CEILING 2 [0002]	☐ HIGH CEILING 2 [0002]	☐ HIGH CEILING 2 [0002]	☐ HIGH CEILING 2 [0002]
☐ HIGH CEILING 3 [0003]	☐ HIGH CEILING 3 [0003]	☐ HIGH CEILING 3 [0003]	☐ HIGH CEILING 3 [0003]

Have you changed lighting time of filter sign? If not, fill check mark [×] in [NO CHANGE], and fill check mark [×] in [ITEM] if changed, respectively.
(For check method, refer to APPLICABLE CONTROLS in this manual.)

Filter sign lighting time (CODE NO. [01])	Filter sign lighting time (CODE NO. [01])	Filter sign lighting time (CODE NO. [01])	Filter sign lighting time (CODE NO. [01])
☐ NO CHANGE	☐ NO CHANGE	☐ NO CHANGE	☐ NO CHANGE
☐ NONE [0000]	☐ NONE [0000]	☐ NONE [0000]	☐ NONE [0000]
☐ 150H [0001]	☐ 150H [0001]	☐ 150H [0001]	☐ 150H [0001]
☐ 2500H [0002]	☐ 2500H [0002]	☐ 2500H [0002]	☐ 2500H [0002]
☐ 5000H [0003]	☐ 5000H [0003]	☐ 5000H [0003]	☐ 5000H [0003]
☐ 10000H [0004]	☐ 10000H [0004]	☐ 10000H [0004]	☐ 10000H [0004]

Have you changed detected temp. shift value? If not, fill check mark [×] in [NO CHANGE], and fill check mark [×] in [ITEM] if changed, respectively.
(For check method, refer to APPLICABLE CONTROLS in this manual.)

Detected temp. shift value setup (CODE NO. [06])	Detected temp. shift value setup (CODE NO. [06])	Detected temp. shift value setup (CODE NO. [06])	Detected temp. shift value setup (CODE NO. [06])
☐ NO CHANGE	☐ NO CHANGE	☐ NO CHANGE	☐ NO CHANGE
☐ NO SHIFT [0000]	☐ NO SHIFT [0000]	☐ NO SHIFT [0000]	☐ NO SHIFT [0000]
☐ +1°C [0001]	☐ +1°C [0001]	☐ +1°C [0001]	☐ +1°C [0001]
☐ +2°C [0002]	☐ +2°C [0002]	☐ +2°C [0002]	☐ +2°C [0002]
☐ +3°C [0003]	☐ +3°C [0003]	☐ +3°C [0003]	☐ +3°C [0003]
☐ +4°C [0004]	☐ +4°C [0004]	☐ +4°C [0004]	☐ +4°C [0004]
☐ +5°C [0005]	☐ +5°C [0005]	☐ +5°C [0005]	☐ +5°C [0005]
☐ +6°C [0006]	☐ +6°C [0006]	☐ +6°C [0006]	☐ +6°C [0006]

Incorporation of parts sold separately	Incorporation of parts sold separately	Incorporation of parts sold separately	Incorporation of parts sold separately

Have you incorporated the following parts sold separately? If incorporated, fill check mark [×] in each [ITEM].
(When incorporating, the setup change is necessary in some cases. For setup change method, refer to Installation Manual attached to each part sold separately.)

☐ Others ( )	☐ Others ( )	☐ Others ( )	☐ Others ( )
☐ Others ( )	☐ Others ( )	☐ Others ( )	☐ Others ( )

MEMO

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