TOSHIBA
Leading Innovation >>>

*AIR CONDITIONER (MULTI TYPE)*

# Installation Manual

HFC
R410A

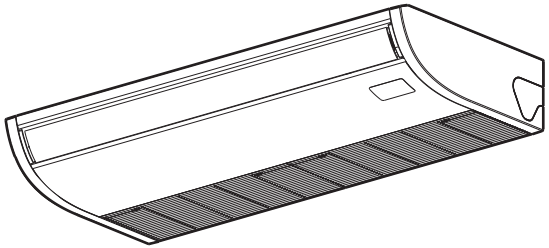
## Indoor Unit

For commercial use

**Model name:**

Ceiling Type

# MMC-AP0158HP Series
# MMC-AP0188HP Series
# MMC-AP0248HP Series
# MMC-AP0278HP Series
# MMC-AP0368HP Series
# MMC-AP0488HP Series
# MMC-AP0568HP Series



English

**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.

# Contents

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 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.<br>• 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.<br>• 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.<br>• 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.<br>• 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.<br>• 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.<br>• 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<br>Insulating shoes<br>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 |

## ■Warning indications on the air conditioner unit

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

# 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 (*1) or qualified service person (*1) 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.
- Before opening the intake grille, set the circuit breaker to the OFF position. Failure to set the circuit breaker to the OFF position may result in injury through contact with the rotation parts. Only a qualified installer (*1) or qualified service person (*1) is allowed to remove the intake grille and do the work required.
- 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.
- 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.
- This appliance is intended to be used by expert or trained users in shops, in light industry, or for commercial use by lay persons.

**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.

- 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, 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 control 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 (*1). 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 (*1) 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.
- After the installation work, follow the Owner's Manual to explain to the customer how to use and maintain the unit.

**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.

(*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)<br>(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 pipe connecting section |
| Washer | 4 | M10 × Ø25 | For holding down unit |
| Hose band | 2 |  | For connecting drain pipe |
| Drain hose | 1 |  | For connecting drain pipe |
| Bushing | 1 |  | For protection of edge at power taking-in port |
| Heat insulator | 1 |  | For heat insulation of drain hose (10 t × 190 × 190) |
| Heat insulator of top plate | 1 |  | For upper pipe hole of indoor unit (6 t × 120 × 160) |
| Banding band | 6 |  | For heat insulation of pipe connecting section (n=4) and drain hose heat insulator (n=2). |

# 3 Selection of installation place

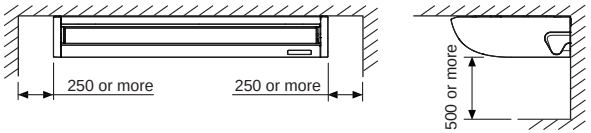
**Avoid installing in the following places.**

Select a location for the indoor unit where the cool or warm air will circulate evenly.
Avoid installation in the following kinds of locations.

- Saline area (coastal area).
- Locations with acidic or alkaline atmospheres (such as areas with hot springs, factories where chemicals or pharmaceuticals are made and places where the exhaust air from combustion appliances will be sucked into the unit).
  Doing so may cause the heat exchanger (its aluminum fins and copper pipes) and other parts to become corroded.
- Places where iron or other metal dust is present. If iron or other metal dust adheres to or collects on the interior of the air conditioner, it may spontaneously combust and start a fire.
- Locations with atmospheres with mist of cutting oil or other types of machine oil.
  Doing so may cause the heat exchanger to become corroded, mists caused by the blockage of the heat exchanger to be generated, the plastic parts to be damaged, the heat insulators to peel off, and other such problems to result.
- Locations where vapors from food oils are formed (such as kitchens where food oils are used).
  Blocked filters may cause the air conditioner's performance to deteriorate, condensation to form, the plastic parts to be damaged, and other such problems to result.
- Locations near obstructions such as ventilation openings or lighting fixtures where the flow of the blown air will be disrupted (a disruption of the air flow may cause the air conditioner's performance to deteriorate or the unit to shut down).
- Locations where an in-house power generator is used for the power supply.
  The power line frequency and voltage may fluctuate, and the air conditioner may not work properly as a result.
- On truck cranes, ships or other moving conveyances.
- The air conditioner must not be used for special applications (such as for storing food, plants, precision instruments or art works).
  (The quality of the items stored may be degraded.)
- Locations where high frequencies are generated (by inverter equipment, in-house power generators, medical equipment or communication equipment).
  (Malfunctioning or control trouble in the air conditioner or noise may adversely affect the equipment's operation.)
- Locations where there is anything under the unit installed that would be compromised by wetness.
  (If the drain has become blocked or when the humidity is over 80 %, condensation from the indoor unit will drip, possibly causing damage to anything underneath.)
- In the case of the wireless type of system, rooms with the inverter type of fluorescent lighting or locations exposed to direct sunlight.
  (The signals from the wireless remote controller may not be sensed.)
- Locations where organic solvents are being used.
- The air conditioner cannot be used for liquefied carbonic acid cooling or in chemical plants.
- Location near doors or windows where the air conditioner may come into contact with high-temperature, high-humidity outdoor air.
  (Condensation may occur as a result.)
- Locations where special sprays are used frequently.

## ■Installation space (Unit: mm)

Reserve sufficient space required for installation or service work.




## ■Ceiling height

| Model MMC- | Possible installed ceiling height |
|---|---|
| AP015 to AP027 | Up to 4.0 m |
| AP036 to AP056 | Up to 4.3 m |

If height of ceiling exceeds 3.5 m, hot air becomes difficult to reach the floor surface, and then the change of setup of high ceiling is necessary.
For the change method of high ceiling, refer to the application control, “Installing indoor unit on high ceiling” in this Manual.

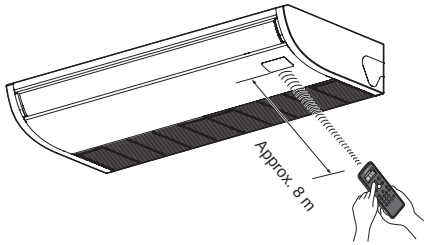
**▼Height list of ceiling possible to be installed**

| Model MMC- | AP015 to AP027 | AP036 to AP056 | SET DATA |
|---|---|---|---|
| Standard (Factory default) | Up to 3.5 m | Up to 3.5 m | 0000 |
| High ceiling (1) | Up to 4.0 m | Up to 4.3 m | 0003 |

The lighting time of the filter sign (notification of filter cleaning) on the remote controller 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.
For change the setup time, refer to the application control, “Filter sign setting” and “To secure better effect of heating” in this Manual.

## ■In case of wireless type

Decide the position which remote controller is operated and the installation place.
And then refer to the Installation Manual of the wireless remote controller kit sold separately.
(The signal of the wireless type remote controller can be received within approx. 8 m. This distance is a criterion and varies a little according to capacity of the battery)
• To prevent malfunction, select a place where is not affected by a fluorescent lamp or direct sunlight.
• Two wireless-type indoor units can be set in a room.





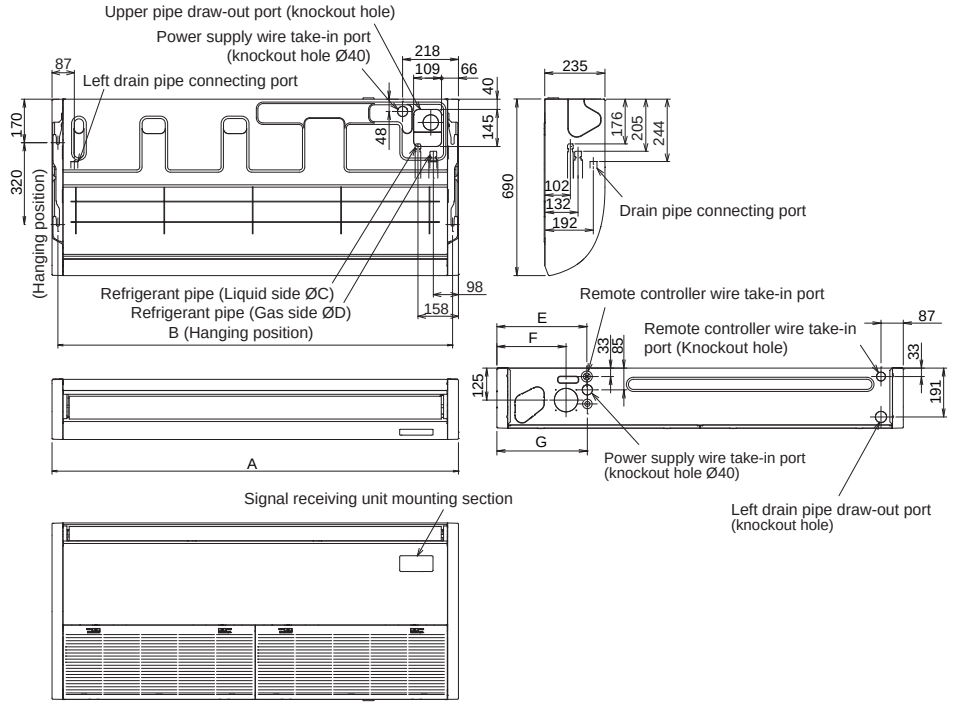

# 4 Installation

### ⚠ CAUTION

**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 or let a person get on it. (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 material to not damage the unit.
- Carry the package by two or more persons, and do not bundle it with plastic band at positions other than specified.
- To install vibration isolation material to hanging bolts, confirm that it does not increase the unit vibration.

## ■External dimensions (Unit: mm)




| Model MMC- | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| AP015, AP018 | 950 | 906 | Ø6.4 | Ø12.7 | 351 | 270 | 353 |
| AP024, AP027 | 1270 | 1223 | Ø9.5 | Ø15.9 | | | |
| AP036 to AP056 | 1586 | 1540 | | | 376 | 303 | 378 |

## ■Installation of hanging bolt

- 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, install hanging bolts.
- For the dimensions of the hanging bolt pitches, refer to the external view and installation pattern.

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

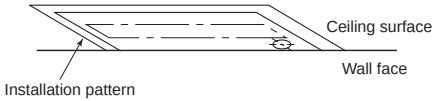
| | | |
|---|---|---|
| Hanging bolt | M10 or W3/8 | 4 pieces |
| Nut | M10 or W3/8 | 8 pieces |

- To fasten the hanging bracket from above and below, twelve pieces of nuts are required.

### How to use attached installation pattern

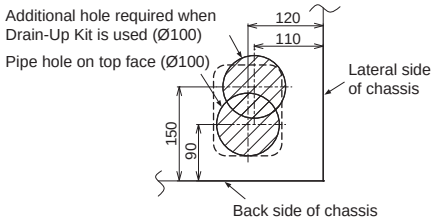
Using the pattern, positioning of the hanging bolt and pipe hole can be performed.
The installation pattern is printed on the packing carton. Cut it off the carton.

* As an error to some degree may generate on the pattern size due to temperature and humidity, be sure to confirm the size.



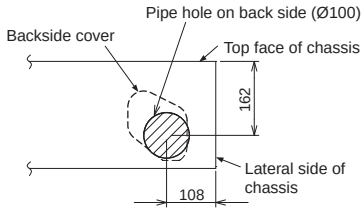

### Hole for drawing out pipe from top face

**(Bottom View)**



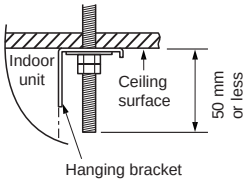

### Hole for drawing out pipe from back side

**(Front View)**



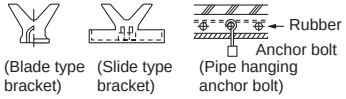

### Installation of hanging bolt

Use M10 hanging bolts (4 pcs, locally procured). Matching to the existing structure, set pitch according to size in the “External dimensions”.



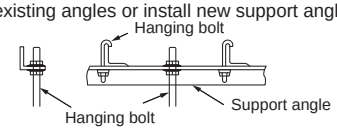

**New concrete slab**

Install the bolts with insert brackets or anchor bolts.



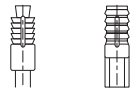

**Steel flame structure**

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 remote controller (Sold separately)

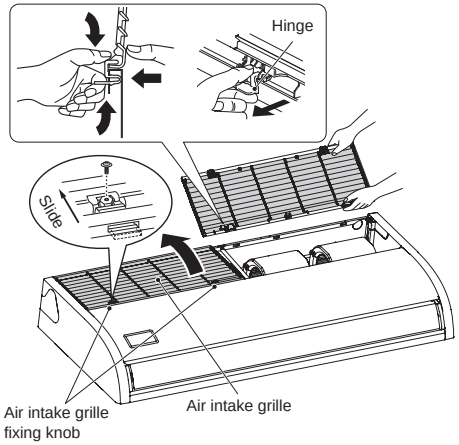
For installation of the remote controller, follow the Installation Manual attached with the remote controller.

- 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.
- Operate the remote controller, confirm that the indoor unit receives a signal surely, and then install it. (Wireless type)
- Keep 1 m or more from the devices such as television, stereo.
  (Disturbance of image or noise may generate.)
  (Wireless type)

## ■Before installation

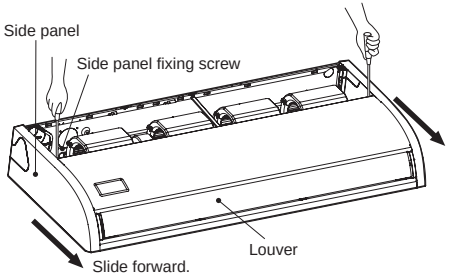
### *1* Removal of air intake grille

1) Remove the screws of air intake grille fixing knob on a side of each filter.
2) Slide the air intake grille fixing knobs (two positions) toward the arrow direction (OPEN), and then open the air intake grille.
3) With the air intake grille open, hold the hinge from above and below with one hand and take out the air intake grille with the other hand while gently pushing it. (There are two air intake grilles.)

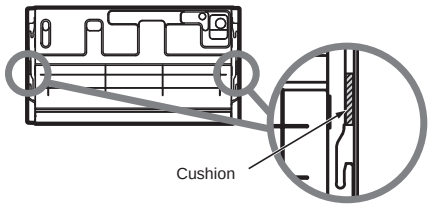



### *2* Removal of side panel

After removing the side panel fixing screws (1 each at right and left), slide the side panel forward and then remove it.




### ⚠ CAUTION




Cushions are inserted between the side panel and hanging hook for transportation.
(In the two places shown above)
Remove them before installation.

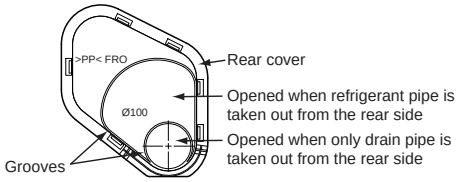
## ■Draw-out direction of pipe / wire

Decide installation place of the unit and draw-out direction of pipe and wire.

## ■Pipe knockout hole

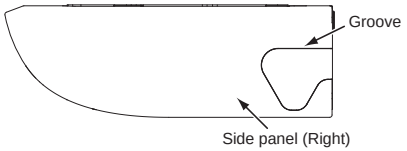
**In case of taking pipe from the rear side**

* Cut off the groove section with a plastic cutter.




**<In case of taking pipe from right side>**

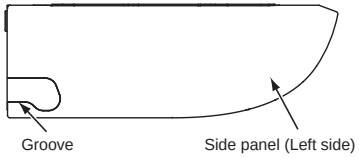
* Cut off the groove section with a metal saw or plastic cutter.




**<In case of taking pipe from left side>**

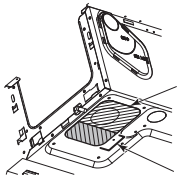
**Taking pipe from left side is applied only to the drain pipe.**
**The refrigerant pipe cannot be taken out from the left side.**

* Cut off the groove section with a metal saw or plastic cutter.




**<In case of taking pipe from upper side>**

**Taking pipe from upper side is applied only to the refrigerant pipe.**
**When taking out the drain pipe from the upper side, use a drain up kit sold separately.**
Open the upper pipe draw-out port (Knockout hole) shown in the external dimensions.



Make the diagonally shaded hole when you do not use the Elbow Piping Kit.

Make only this knockout hole when you use the separately sold Elbow Piping Kit.

After piping, cut off the attached heat insulator of the top plate to pipe shape, and then seal the knockout hole.

## ■Knockout hole of power wire take-in port

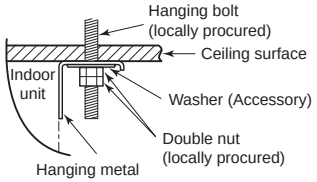
Open the power wire take-in port (Knockout hole) shown in the “External dimensions” and then mount the attached bushing.

## ■Installation of indoor unit

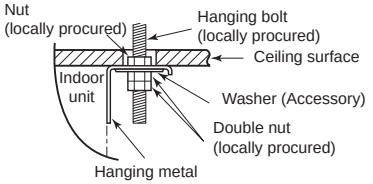
### ◆ Preparation before holding down main unit

* Confirm the presence of the ceiling material beforehand because the fixing method of hanging metal when the ceiling material is set differs from that when the ceiling material is not set.

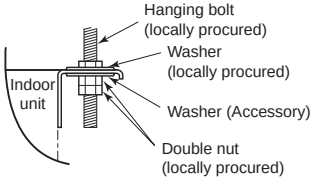
**<There is ceiling material>**




- Fix the hanging bracket as shown below if the ceiling is bent upwards when you fasten lower nuts to the hanging bracket.



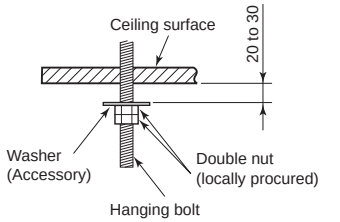

**<There is no ceiling material>**



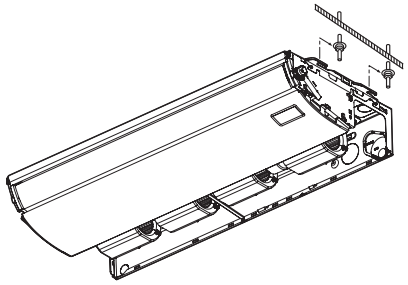

### ◆ Holding down of main unit

**<Hanging the indoor unit directly from the ceiling>**

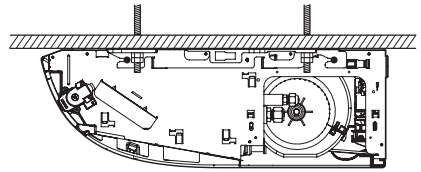
***1*** **Attach washer and nuts to the hanging bolt.**




***2*** **Hang the unit to the hanging bolt as shown the figure below.**

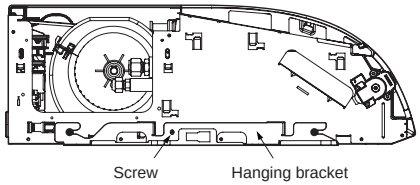


***3*** **As shown in the figure below, fix the ceiling material securely with the double nuts.**

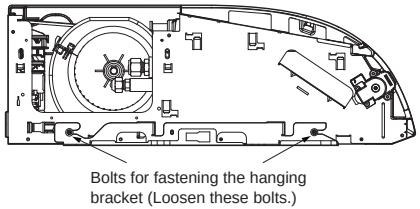


## ◆ Attaching the hanging bracket first

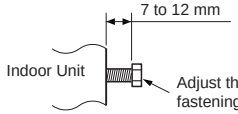
**1** **Remove the screws fastening hanging bracket onto the indoor unit.**



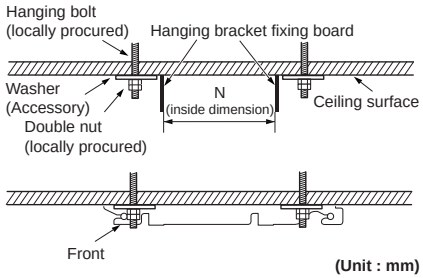

**2** **Loosen the bolts fastening hanging bracket onto the indoor unit and remove the hanging bracket.**




**3** **Adjust the length of the two bolts for fastening the hanging bracket, as shown below.**



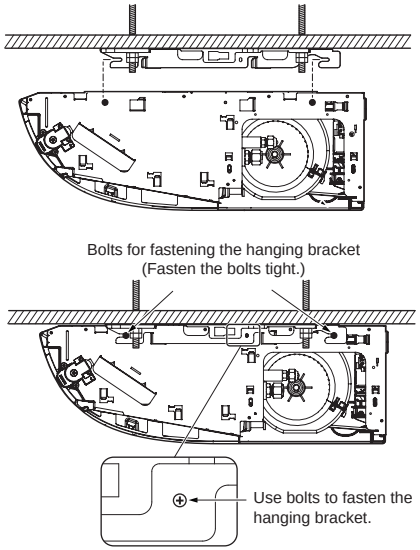

**4** **Fasten the hanging bracket with the hanging bolts and ensure that the bracket is level from front to back and from side to side.**




**(Unit : mm)**

| Model MMC- | N |
|---|---|
| AP015, AP018 | 867 to 872 |
| AP024, AP027 | 1184 to 1189 |
| AP036 to AP056 | 1501 to 1506 |

**5** **Attach the indoor unit onto the hanging bracket and fasten it tight with the bolts and screws.**




### ⚠ CAUTION

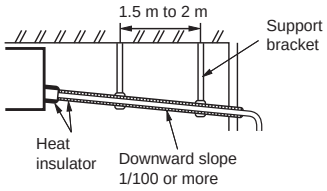
- The ceiling is not always level. Use the level gauge to measure the level of the ceiling in the width and depth directions. Adjust the bolts for the hanging brackets so that the level error will be within 5 mm.
- Do not lower the air discharge side and the side opposite to the selected drain pipe withdraw.

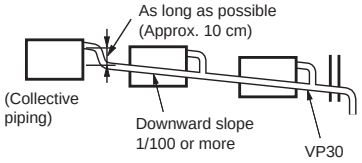
# 5 Drain piping

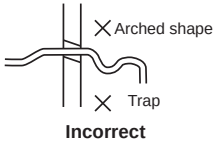
### ⚠ CAUTION

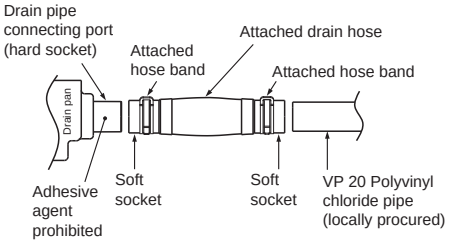
**Following the Installation Manual, perform the drain piping work so that water is properly drained. Apply a heat insulation so as not to cause a dew condensation.**
**Inappropriate piping work may result in water leakage in the room and wet furniture.**

- Provide the indoor drain piping with proper heat insulation.
- Provide the area where the pipe connects to the indoor unit with proper heat insulation. Improper heat insulation will cause condensation to form.
- The drain pipe must be sloping downward (at an angle of 1/100 or more), and do not run the pipe up and down (arched shape) or allow it to form traps. Doing so may cause abnormal sounds.
- Restrict the length of the traversing drain pipe to 20 meters or less. For a long pipe, provide support brackets at intervals of 1.5 to 2 meters to prevent flapping.
- Install the collective piping as shown in the following figure.
- Do not provide any air vents. Otherwise, the drain water will spout, causing water to leak.
- Do not allow any force to be applied to the connection area with the drain pipe.
- A hard PVC pipe cannot be connected to the drain pipe connecting port of the indoor unit. Be absolutely sure to use the flexible hose provided for the connections with the drain pipe connecting port.
- Adhesive agents cannot be used for the drain pipe connecting port (hard socket) of the indoor unit. Be absolutely sure to secure the pipe using the hose bands provided. Use of an adhesive agent may damage the drain pipe connecting port or cause water to leak.




## ■Pipe material, size and insulator

The following materials for piping work and insulating process are procured locally.

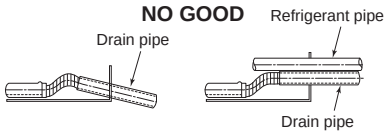
| | |
|---|---|
| **Pipe material** | Hard vinyl chloride pipe VP20 (Nominal outer diameter Ø26 mm) |
| **Insulator** | Foamed polyethylene foam, thickness: 10 mm or more |

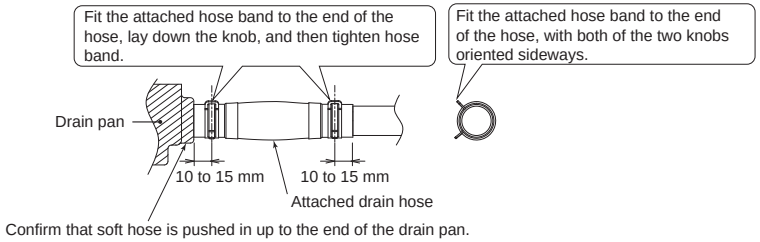
## ■Connection of drain hose

- Insert the attached drain hose into the drain pipe connecting port on the drain pan up to the end.
- Fit the attached hose band to the end of the pipe connecting port, and then tighten it securely.

**REQUIREMENT**

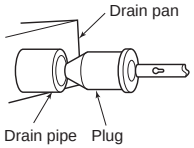
- Fix the drain hose with the attached hose band, and set the tightening position upward.
- As the draining is the natural water draining, arrange the pipe outside of the unit on the down slope.
- If piping is performed as shown in the figure, drain cannot be discharged.




## ■Connecting drain pipe

Connect the hard vinyl chloride pipe (locally procured) to the mounted drain hose which was attached. When Plug is detached, the drain pipe is not damaged. It causes the water leak.




**In case of taking pipe from the left side**

In case of taking pipe from the left side, exchange the plug from left to right. Push in the plug of which end is not sharp up to the end.

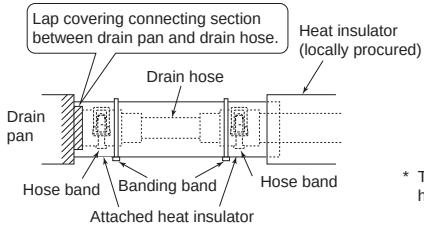
## ■Drain up

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

- The height of the drain pipe must be 600 mm or less from the underside of the indoor unit.
- When Drain Pump Kit (sold separately) is installed, drain pipe and refrigerant pipe can only be connected from upper direction.

## ■Heat insulating process

- Using the attached drain hose heat insulator, lap the connecting section and the drain hose without clearance, and then tighten with two handing band so that heat insulator does not open.
- Covering the attached drain hose heat insulator, lap the heat insulator (locally procured) to the drain pipe without clearance.




* Fasten the binding bands in such a manner as to not squeeze the attached insulating material excessively.

Lap the attached heat insulation so that the one end is put on the other end at the upper side.

* Tighten the banding band so that attached heat insulator is not pushed excessively.

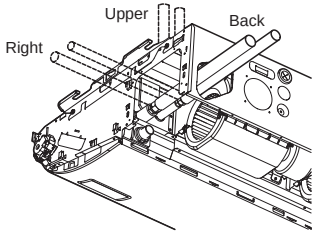
# 6 Refrigerant piping

**⚠ CAUTION**

When the refrigerant pipe is long, provide support brackets at intervals of 2.5 m to 3 m to clamp the refrigerant pipe. Otherwise, abnormal sound may be generated.
Use the flare nut attached with the indoor unit or R410A flare nut.

## ■Take out direction of refrigerant pipe

- The refrigerant pipe connecting sections are located as shown below. (Pipes can be taken out from one of the three directions.)
- Make a pipe knockout hole, referring to the section “Pipe knockout hole”.




* When Drain Pump Kit (sold separately) is installed, a refrigerant pipe can only be taken out from upper direction.

## ■Permissible piping length and height difference

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

## ■Pipe size

| Model MMC- | Pipe size (mm) | |
|---|---|---|
| | Gas side | Liquid side |
| AP015 to AP018 | Ø12.7 | Ø6.4 |
| AP024 to AP056 | Ø15.9 | Ø9.5 |

## ■Connecting refrigerant piping

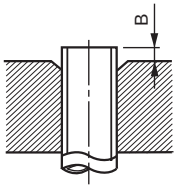
### Flaring

**1** **Cut the pipe with a pipe cutter.**
Remove burrs completely. (Remaining burrs may cause gas leakage.)

**2** **Insert a flare nut into the pipe, and flare the pipe.**
Use the flare nut provided with the unit or the one used for the R410A refrigerant. The flaring dimensions for R410A are different from the ones used for the conventional R22 refrigerant. A new flare tool manufactured for use with the R410A refrigerant is recommended, but the conventional tool can still be used if the projection margin of the copper pipe is adjusted to be as shown in the following table.

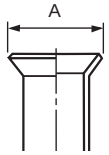
**Projection margin in flaring: B (Unit: mm)**

| Outer dia. of copper pipe | R410A tool used | Conventional tool used |
|---|---|---|
| 6.4, 9.5 | 0 to 0.5 | 1.0 to 1.5 |
| 12.7, 15.9 | | |

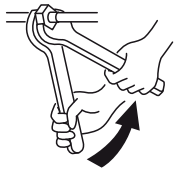



**Flaring diameter size: A (Unit: mm)**

| Outer dia. of copper pipe | A +0 −0.4 |
|---|---|
| 6.4 | 9.1 |
| 9.5 | 13.2 |
| 12.7 | 16.6 |
| 15.9 | 19.7 |




* 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.
- The sealed gas was sealed at the atmospheric pressure so when the flare nut is removed, there will no “whooshing” sound: This is normal and is not indicative of trouble.
- Use two wrenches to connect the indoor unit pipe.



Work using double spanner

- Use the tightening torque levels as listed in the table below.

| Outer dia. of connecting pipe (mm) | Tightening torque (N•m) |
|---|---|
| 6.4 | 14 to 18 (1.4 to 1.8 kgf•m) |
| 9.5 | 34 to 42 (3.4 to 4.2 kgf•m) |
| 12.7 | 49 to 61 (4.9 to 6.1 kgf•m) |
| 15.9 | 63 to 77 (6.3 to 7.7 kgf•m) |

- Tightening torque of flare pipe connections. Pressure of R410A is higher than that of R22. (Approx. 1.6 times) Therefore, using 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.

**⚠ CAUTION**

Tightening with an excessive torque may crack the nut depending on installation conditions.

## ■Evacuation

Perform vacuuming from the charge port of valve of the outdoor unit by using a vacuum pump.
For details, follow to the Installation Manual attached to the outdoor unit.
- Do not use the refrigerant sealed in the outdoor unit for evacuation.

**REQUIREMENT**

For the tools such as charge hose, use those manufactured exclusively for R410A.

### Refrigerant amount to be added

For addition of the refrigerant, add refrigerant “R410A” referring to the attached Installation Manual of outdoor unit.
Use a scale to charge the refrigerant of specified amount.

**REQUIREMENT**

- Charging an excessive or too little amount of refrigerant causes a trouble of the compressor. Charge the refrigerant of specified amount.
- A personnel who charged the refrigerant should write down the pipe length and the added refrigerant amount in the F-GAS label of the outdoor unit. It is necessary to fix the compressor and refrigeration cycle malfunction.

### Open the valve fully

Open the valve of the outdoor unit fully. A 4 mm-hexagonal wrench is required for opening the valve.
For details, refer to the Installation Manual attached to the outdoor unit.

### Gas leak check

Check with a leak detector or soap water whether gas leaks or not, from the pipe connecting section or cap of the valve.

**REQUIREMENT**

Use a leak detector manufactured exclusively for HFC refrigerant (R410A, R134a).

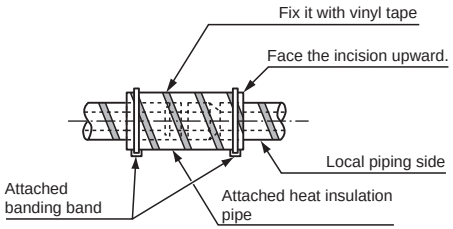
### Heat insulation process

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.
- To use the attached heat insulation pipe, apply the 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 causes water leak.)
- Wrap heat insulator with its slits facing up (ceiling side).




# 7 Electrical connection

**⚠ CAUTION**

- If incorrect / incomplete wiring is carried out, it will cause an electrical fire or smoke.
- Use the cord clamps attached to the product.
- Do not damage or scratch the conductive core and inner insulator of power and system interconnection wires when peeling them.
- Use the power cord and system interconnection wire of specified thickness, type, and protective devices required.
- Do not connect 220-240 V power to the terminal blocks (Ⓤ1, Ⓤ2, Ⓐ, Ⓑ) for control wiring. (Otherwise, the system will fail.)
- 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.
- 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 locally procured.
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**.

**▼Power supply**

| | | |
|---|---|---|
| Power supply | 220-240 V ~, 50 Hz<br>220 V ~, 60 Hz | |
| Power supply switch / circuit breaker or power supply wiring / fuse rating for indoor units should be selected by the accumulated total current values of the indoor units. | | |
| Power supply wiring | Below 50 m | 2.5 mm² |

## Control wiring, Central controller wiring

- 2-core with polarity wires are used for the Control wiring between indoor unit and outdoor unit and Central controller wiring.
- To prevent noise trouble, use 2-core shield wire.
- The length of the communication line means the total length of the inter-unit wire length between indoor and outdoor units added with the central control system wire length.

**▼Communication line**

| | | |
|---|---|---|
| Control wiring between indoor units, and outdoor unit (2-core shield wire) | Wire size | (Up to 1000 m) 1.25 mm²<br>(Up to 2000 m) 2.0 mm² |
| Central control line wiring (2-core shield wire) | Wire size | (Up to 1000 m) 1.25 mm²<br>(Up to 2000 m) 2.0 mm² |

## Remote controller wiring

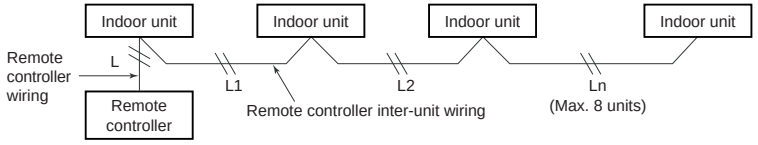
- 2-core with non-polarity wire is used for wiring of the remote controller wiring and group remote controllers wiring.

| | |
|---|---|
| Remote controller wiring, remote controller inter-unit wiring | Wire size: 0.5 mm² to 2.0 mm² |

| | | |
|---|---|---|
| Total wire length of remote controller wiring and remote controller inter-unit wiring = L + L1 + L2 + … Ln | In case of wired type only | Up to 500 m |
| | In case of wireless type included | Up to 400 m |
| Total wire length of remote controller inter-unit wiring = L1 + L2 + … Ln | | Up to 200 m |

## ⚠ CAUTION

**The remote controller wire (Communication line) and AC 220-240 V wires cannot be parallel to contact each other and cannot be stored in the same conduits. If doing so, a trouble may be caused on the control system due to noise or other factor.**




# ◆ Wire connection

**REQUIREMENT**

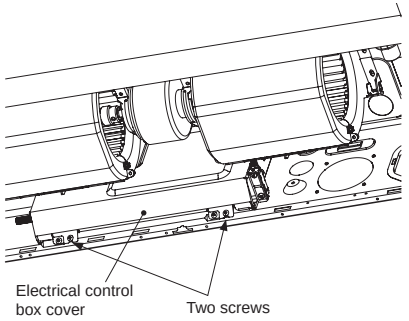
- Connect the wires matching the terminal numbers. Incorrect connection causes a trouble.
- Pass the wires through the bushing of wire connection holes of the indoor unit.
- Keep a margin (Approx. 100 mm) on a wire to hang down the electrical control box at servicing.
- The low-voltage circuit is provided for the remote controller. (Do not connect the high-voltage circuit)

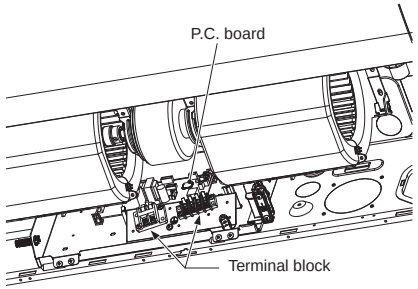
**1** **Loosen the cover mounting screws (2 positions) of the electrical control box, and then remove the cover.**

**2** **Connect the indoor power supply wire, system interconnection wires and the remote controller wire to the terminal block of the electrical control box.**

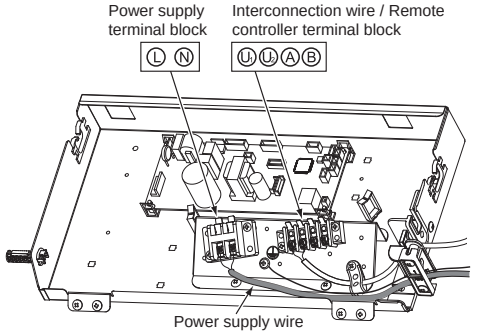
**3** **Tighten screws of the terminal block securely, and fix the wires with code clamp attached to the electrical control box. (Do not apply tension to the connecting section of the terminal block.)**

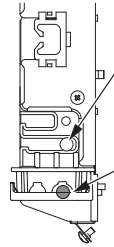
**4** **Mount the cover of the electrical control box so that it does not pinch the wires.**



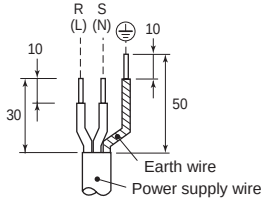

**▼Connecting power supply wire and the system interconnection wire**

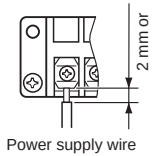


**System interconnection wires**
Run the system interconnection wire here through the clamp base and fix it with a cord clamp.

**Power supply wire**
Run the power supply wire here through the clamp base and fix it with a cord clamp.



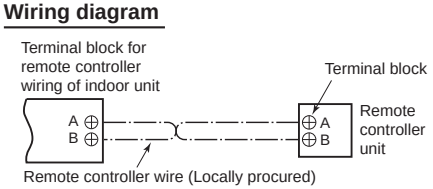



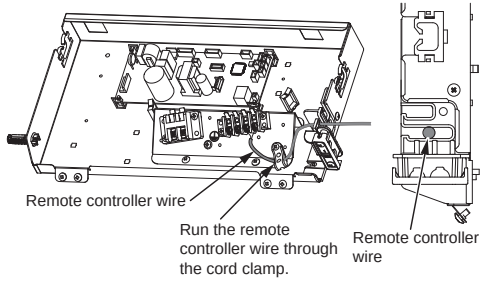

See the figure on the left for connecting wires to the terminal block.

## ■Remote controller wiring

Strip off approx. 9 mm the wire to be connected.

### Wiring diagram



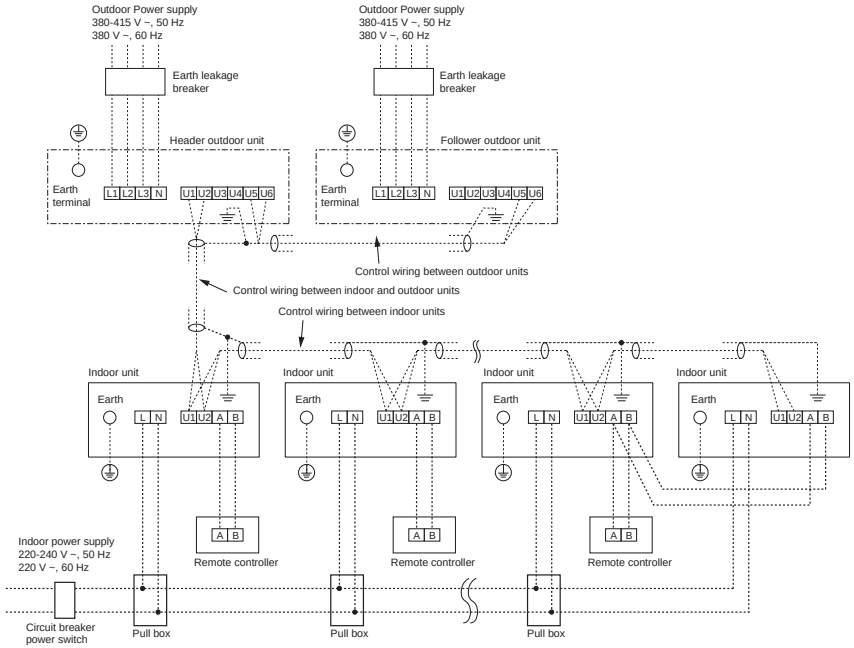




## ■Wiring between indoor and outdoor units

**NOTE**

An outdoor unit connected with control wiring between indoor and outdoor units wire becomes automatically the header unit.

**▼ Wiring example**




## ■Address setup

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



# 8 Applicable controls

**REQUIREMENT**

When the air conditioner is used for the first time, it will take some moments after the power has been turned on before the remote controller becomes available for operations: This is normal and is not indicative of trouble.

- Concerning the automatic addresses (The automatic addresses are set up by performing operations on the outdoor interface circuit board.)
  While the automatic addresses are being set up, no remote controller operations can be performed. Setup takes up to 10 minutes (usually about 5 minutes).
- When the power is turned on after automatic address setup.
  It takes up to 10 minutes (usually about 3 minutes) for the outdoor unit to start operating after the power has been turned on.

Before the air conditioner was shipped from the factory, all units are set to [STANDARD] (factory default). If necessary, change the indoor unit settings. The settings are changed by operating the wired remote controller.

* The settings cannot be changed using only a wireless remote controller, simple remote controller or group control remote controller by itself so install a wired remote controller separately as well.

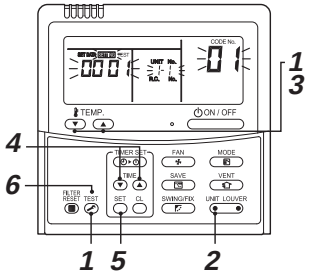
## ■Basic procedure for changing settings

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

### ⚠ CAUTION

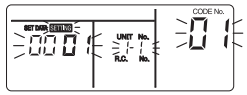
Set only the CODE No. shown in the following table: Do NOT set any other CODE No.
If a CODE No. not listed is set, it may not be possible to operate the air conditioner or other trouble with the product may result.

* The displays appearing during the setting process differ from the ones for previous remote controllers (AMT31E). (There are more CODE No.)




**1 Push and hold button (TEST) and "TEMP." (▼) button simultaneously for at least 4 seconds. After a while, the display flashes as shown in the figure. Confirm that the CODE No. is [01].**

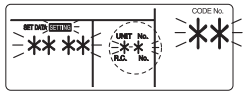
- If the CODE No. is not [01], push (TEST) button to clear the display content, and repeat the procedure from the beginning. (No operation of the remote controller is accepted for a while after (TEST) button is pushed.)
  (While air conditioners are operated under the group control, "ALL" is displayed first. When (UNIT. LOUVER) is pushed, the indoor unit number displayed following "ALL" is the 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 for change settings can be confirmed.




**3** **Specify CODE No. [✳✳] with "TEMP." ▼ / ▼ buttons.**

**4** **Select SET DATA [✳✳✳✳] with "TIME" ▼ / ▲ buttons.**

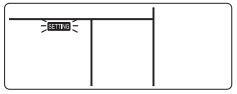
**5** **Push SET button. When the display changes from flashing to lit, the setup is completed.**

- 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 the height of the ceiling to be installed exceeds 3.5 m, adjustment of air volume is necessary.
Set up the high ceiling.

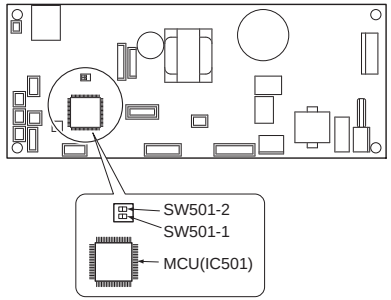
- Set according to the basic operation procedure (***1*** → ***2*** → ***3*** → ***4*** → ***5*** → ***6***).
- CODE No. in Procedure specifies [5d].
- Select [SET DATA] in Procedure from "List of installable ceiling height" in this Manual.
- For the CODE No. in Procedure ***3***, specify [5d].
- For the CODE No. in Procedure ***4***, select the SET DATA of ceiling height to be set up from the table on the below.

| Model MMC- | AP015 to AP027 | AP036 to AP056 | SET DATA |
|---|---|---|---|
| Standard (Factory default) | Up to 3.5 m | Up to 3.5 m | 0000 |
| High ceiling (1) | Up to 4.0 m | Up to 4.3 m | 0003 |

### ◆ Remote controller-less setting

Change the high-ceiling setting with the DIP switch on the indoor unit P.C. board.

* Once the setting is changed, setting to 0003 is possible, however setting to 0000 requires a setting data change to 0000 using the wired remote controller (separately sold) with the normal switch setting (factory default).




| SET DATA | SW501-1 | SW501-2 |
|---|---|---|
| **0000 (Factory default)** | OFF | OFF |
| **0003** | OFF | ON |

**To restore the factory defaults**
To return the DIP switch settings to the factory defaults, set SW501-1 and SW501-2 to OFF, connect a separately sold wired remote controller, and then set the data of CODE No. [5d] to "**0000**".

## ■Filter sign setting

According to the installation condition, the filter sign term (Notification of filter cleaning) can be changed.
Follow to the basic operation procedure (***1*** → ***2*** → ***3*** → ***4*** → ***5*** → ***6***).

- For the CODE No. in Procedure ***3***, specify [01].
- For the [SET DATA] in Procedure ***4***, select the SET DATA of filter sign term from the following table.

| SET DATA | Filter sign term |
|---|---|
| **0000** | None |
| **0001** | 150H |
| **0002** | 2500H (Factory default) |
| **0003** | 5000H |
| **0004** | 10000H |

## ■To secure better effect of heating

When it is difficult to obtain satisfactory heating due to installation place of the indoor unit or structure of the room, the detection temperature of heating can be raised. Also use a circulator or other device to circulate heat air near the ceiling.
Follow to the basic operation procedure (***1*** → ***2*** → ***3*** → ***4*** → ***5*** → ***6***).

- For the CODE No. in Procedure ***3***, specify [06].
- For the set data in Procedure ***4***, select the SET DATA of shift value of detection temperature to be set up from the following table.

| SET DATA | Detection temperature shift value |
|---|---|
| **0000** | No shift |
| **0001** | +1 °C |
| **0002** | +2 °C (Factory default) |
| **0003** | +3 °C |
| **0004** | +4 °C |
| **0005** | +5 °C |
| **0006** | +6 °C |

## ■Group control

In a group control, a remote controller can control up to maximum 8 units.

- For wiring procedure and wiring method of the individual line (Identical refrigerant line) system, refer to "Electrical connection" in this Manual.
- Wiring between indoor units in a group is performed in the following procedure.
  Connect the indoor units by connecting the remote controller inter-unit wires from the remote controller terminal blocks (A/B) of the indoor unit connected with a remote controller to the remote controller terminal blocks (A/B) of the other indoor unit. (Non-polarity)
- For address setup, refer to the Installation Manual attached to the outdoor unit.

## ■Remote controller sensor

The temperature sensor of the indoor unit senses room temperature usually. Set the remote controller sensor to sense the temperature around the remote controller.
Select items following the basic operation procedure (***1*** → ***2*** → ***3*** → ***4*** → ***5*** → ***6***).

- Specify [32] for the CODE No. in Procedure ***3***.
- Select the following data for the SET DATA in Procedure ***4***.

| SET DATA | 0000 | 0001 |
|---|---|---|
| Remote controller sensor | Not used (factory default) | Used |

When flashes, the remote controller sensor is defective.
Select the SET DATA [0000] (not used) or replace the remote controller.

# 9 Test run

## ■Before test run

- Before turning on the power supply, carry out the following procedure.
  1) Using 500 V-megger, check that resistance of 1 MΩ or more exists between the terminal block of the power supply and the earth (grounding). If resistance of less than 1 MΩ is detected, do not run the unit.
  2) Check the valve of the outdoor unit being opened fully.
- To protect the compressor at activation time, leave power-ON for 12 hours or more be for operating.
- Never press the electromagnetic contactor to forcibly perform a test run. (This is very dangerous because the protective device does not work.)
- Before starting a test run, be sure to set addresses following the installation manual supplied with the outdoor unit.

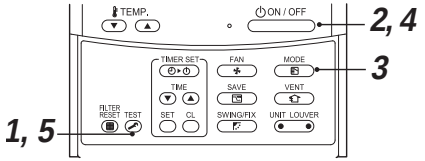
## ■Execute a test run

Operate the unit with the wired remote controller as usual.
For the procedure of the operation, refer to the attached Owner's Manual.
A forced test run can be executed in the following procedure even if the operation stops by thermostat-OFF.
In order to prevent a serial operation, the forced test run is released after 60 minutes have passed and returns to the usual operation.

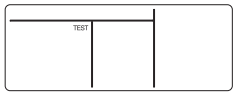
### ⚠ CAUTION

Do not use the forced test run for cases other than the test run because it applies an excessive load to the devices.

### Wired remote controller



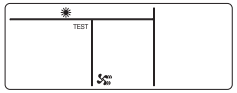

**1 Push TEST button for 4 seconds or more. [TEST] is displayed on the display part and the selection of mode in the test mode is permitted.**




**2 Push ON / OFF button.**

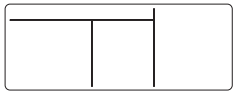
**3 Select the operation mode with MODE button, [❄ Cool] or [☀ Heat].**

- Do not run the air conditioner in a mode other than [❄ Cool] or [☀ Heat].
- The temperature controlling function does not work during test run.
- The detection of error is performed as usual.




**4 After the test run, push ON / OFF button to stop a test run.**
(Display part is same as procedure **1**.)

**5 Push TEST button to cancel (release from) the test run mode.**
([TEST] disappears on the display and the status returns to a normal.)



### Wireless remote controller

**NOTE**

- Be sure to operate the unit, following the instruction manual
- Do not run the air conditioner in forced cooling mode for a long time since it overloads the air conditioner.
- Forced heating is not available for trial runs. To perform a test run, set the unit to heating mode with the remote controller. The unit might not operate in heating mode, however, depending on temperature conditions.

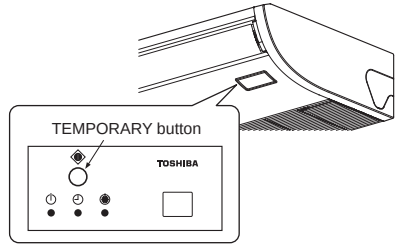
**1 Hold down the TEMPORARY button for over 10 seconds. With a beep sound, the unit is set to the forced cooling mode.**
In approximately three minutes, it is forced to start in cooling mode. Determine that cool air comes out of the unit. If the unit won't start, check the wiring.

**2 Push the TEMPORARY button again (for about one second) to stop a trial run.**
The upper and lower wind direction changing blades close, and the unit stops operation.

**Checking remote transmission**

1. Push the ON/OFF button on the remote controller to determine that it works properly.

- Pushing the TEMPORARY button once (for about one second) causes the unit to enter auto operation mode. Hold down the TEMPORARY button for over 10 seconds to begin forced cooling.
- Even if you select cooling with a remote controller, the unit does not always perform cooling operation, depending on temperature conditions. Check the wiring and piping of the indoor and outdoor units in forced cooling mode.



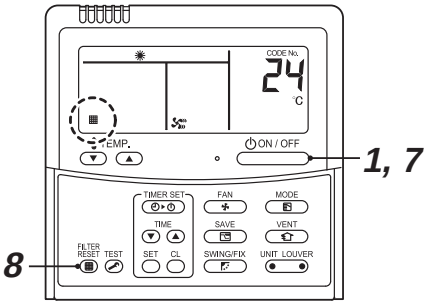
# 10 Maintenance

## <Daily maintenance>

**▼Cleaning of air filter**

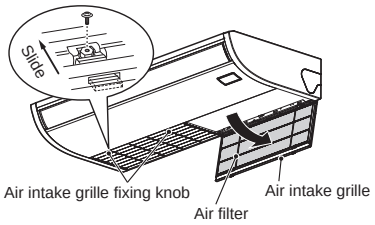
- If ▦ is displayed on the remote controller, maintain the air filter.

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



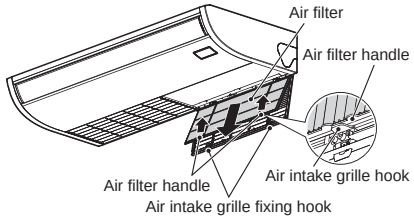

**2** **Open the air intake grille.**

- Remove the screws of air intake grille fixing knob on a side of each filter.
- Slide the air intake grille fixing knobs (two positions) toward the arrow direction (OPEN), and then open the air intake grille.



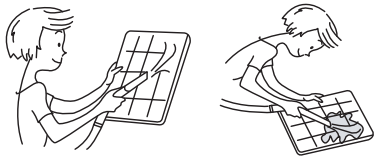

**3** **Take out air filter.**

- Push the handle of the air filter, and remove the hook of the air intake grille. Pull out the air filter toward you.




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

- If dust is heavy, wash it with tepid water including neutral detergent or water.

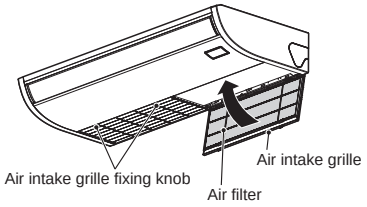


- After cleaning with water, dry it completely in the shade.

**5** **Mount the air filter.**

**6** **Close the air intake grille.**

- Close the air intake grille, and then fix it securely while sliding knob closed side (CLOSE).
- Fix the screws of air intake grille fixing knob on a side of each filter.




**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.)

**▼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 | Look through the air discharge port to check the part. Examine the heat exchanger if there is any clogging or damages. |
| Fan motor | Check if any abnormal noise can be heard. |
| Fan | Check if any abnormal noise can be heard. |
| Filter | Go to installed location and check if there are any stains or breaks on the filter. |
| Drain pan | Look through the air discharge port to check the part. Check if there is any clogging or drain water is polluted. |

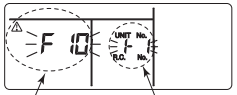
**▼Maintenance List**

| 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.<br>• Replace it when it is damaged. |
| Fan | Indoor | • Vibration, balance<br>• Dust / dirt, appearance | • Replace the fan when vibration or balance is terrible.<br>• Brush or wash the fan when it is contaminated. |
| Air intake / discharge 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<br>• 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.

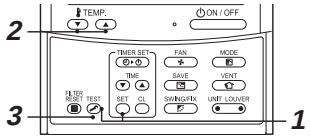



Error code

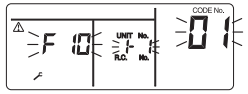
Indoor UNIT No. in which an error occurred

## ■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 indoor unit with a wireless remote controller: See “Sensor block display of receiving unit” in the list.

○ : Lighting, ☼ : Flashing, ● : Goes off
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 | | 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 | – | – | ☼ | ● | ● | | Communication error between indoor unit and remote controller (Detected at indoor unit side) | Indoor unit |
| E04 | – | – | ● | ● | ☼ | | 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 | ● | ● | ☼ | | 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 | ☼ | ● | ● | | Duplicated indoor unit addresses | Indoor unit • I/F |
| E09 | – | – | ☼ | ● | ● | | Duplicated master remote controllers | Remote controller |
| E10 | – | – | ☼ | ● | ● | | Communication error between indoor unit MC | Indoor unit |
| E11 | – | – | ☼ | ● | ● | | Communication error between Application control kit and indoor unit | Indoor unit<br>Application control kit |
| E12 | E12 | 01:Indoor / Outdoor units communication<br>02:Outdoor / Outdoor units communication | ☼ | ● | ● | | Automatic address start error | I/F |
| E15 | E15 | – | ● | ● | ☼ | | No indoor unit during automatic addressing | I/F |
| E16 | E16 | 00:Capacity over<br>01 ~:No. of connected units | ● | ● | ☼ | | Capacity over / No. of connected indoor units | I/F |
| E18 | – | – | ☼ | ● | ● | | Communication error between header and follower units Indoor unit | Indoor unit |
| E19 | E19 | 00:No header<br>02:Two or more header units | ● | ● | ☼ | | Outdoor header units quantity error | I/F |
| E20 | E20 | 01:Outdoor unit of other line connected<br>02:Indoor unit of other line connected | ● | ● | ☼ | | Other line connected during automatic address | I/F |
| E21 | E21 | 02:No header unit<br>00:Multiple number of header units | ● | ● | ☼ | | Error in number of heat storage master units | I/F |
| E22 | E22 | – | ● | ● | ☼ | | Reduction in number of heat storage units | I/F |
| E23 | E23 | – | ● | ● | ☼ | | Sending error in communication between outdoor units<br>Error in number of heat storage units (trouble with reception) | I/F |
| E25 | E25 | – | ● | ● | ☼ | | Duplicated follower outdoor addresses | I/F |
| E26 | E26 | No. of outdoor units which received signal normally | ● | ● | ☼ | | Decrease of No. of connected outdoor units | I/F |
| E28 | E28 | Detected outdoor unit number | ● | ● | ☼ | | Follower outdoor unit error | I/F |
| E31 | E31 | Number of IPDU (*1) | ● | ● | ☼ | | IPDU communication error | I/F |

| Check code | | | Wireless remote controller | | | | Check code name | Judging device |
|---|---|---|---|---|---|---|---|---|
| Wired remote controller display | Outdoor unit 7-segment display | | Sensor block display of receiving unit | | | | | |
| | | Auxiliary code | Operation | Timer | Ready | Flash | | |
| F01 | – | – | ¤ | ¤ | ● | ALT | Indoor unit TCJ sensor error | Indoor unit |
| F02 | – | – | ¤ | ¤ | ● | ALT | Indoor unit TC2 sensor error | Indoor unit |
| F03 | – | – | ¤ | ¤ | ● | ALT | Indoor unit TC1 sensor error | Indoor unit |
| F04 | F04 | – | ¤ | ¤ | ○ | ALT | TD1 sensor error | I/F |
| F05 | F05 | – | ¤ | ¤ | ○ | ALT | TD2 sensor error | I/F |
| F06 | F06 | 01:TE1 sensor<br>02:TE2 sensor | ¤ | ¤ | ○ | ALT | TE1 sensor error<br>TE2 sensor error | I/F |
| F07 | F07 | – | ¤ | ¤ | ○ | ALT | TL sensor error | I/F |
| F08 | F08 | – | ¤ | ¤ | ○ | ALT | TO sensor error | I/F |
| F10 | – | – | ¤ | ¤ | ● | ALT | Indoor unit TA sensor error | Indoor unit |
| F12 | F12 | – | ¤ | ¤ | ○ | ALT | TS1 sensor error | I/F |
| F13 | F13 | 01:Comp. 1 side<br>02:Comp. 2 side<br>03:Comp. 3 side | ¤ | ¤ | ○ | ALT | TH sensor error | IPDU |
| F15 | F15 | – | ¤ | ¤ | ○ | ALT | Outdoor unit temp. sensor miscabling (TE, TL) | I/F |
| F16 | F16 | – | ¤ | ¤ | ○ | ALT | Outdoor unit pressure sensor miscabling (Pd, Ps) | I/F |
| F22 | F22 | – | ¤ | ¤ | ○ | ALT | TD3 sensor error | I/F |
| F23 | F23 | – | ¤ | ¤ | ○ | ALT | Ps sensor error | I/F |
| F24 | F24 | – | ¤ | ¤ | ○ | ALT | Pd sensor error | I/F |
| F29 | – | – | ¤ | ¤ | ● | SIM | Indoor unit other error | Indoor unit |
| F31 | F31 | – | ¤ | ¤ | ○ | SIM | Indoor unit EEPROM error | I/F |
| H01 | H01 | 01:Comp. 1 side<br>02:Comp. 2 side<br>03:Comp. 3 side | ● | ¤ | ● | | Compressor break down | IPDU |
| H02 | H02 | 01:Comp. 1 side<br>02:Comp. 2 side<br>03:Comp. 3 side | ● | ¤ | ● | | Compressor trouble (lock) | IPDU |
| H03 | H03 | 01:Comp. 1 side<br>02:Comp. 2 side<br>03:Comp. 3 side | ● | ¤ | ● | | Current detect circuit system error | IPDU |
| H04 | H04 | – | ● | ¤ | ● | | Comp. 1 case thermo operation | I/F |
| H05 | H05 | – | ● | ¤ | ● | | TD1 sensor miswiring | I/F |
| H06 | H06 | – | ● | ¤ | ● | | Low pressure protective operation | I/F |
| H07 | H07 | – | ● | ¤ | ● | | Oil level down detective protection | I/F |
| H08 | H08 | 01:TK1 sensor error<br>02:TK2 sensor error<br>03:TK3 sensor error<br>04:TK4 sensor error<br>05:TK5 sensor error | ● | ¤ | ● | | Oil level detective temp sensor error | I/F |
| H14 | H14 | – | ● | ¤ | ● | | Comp. 2 case thermo operation | I/F |
| H15 | H15 | – | ● | ¤ | ● | | TD2 sensor miswiring | I/F |
| H16 | H16 | 01:TK1 oil circuit system error<br>02:TK2 oil circuit system error<br>03:TK3 oil circuit system error<br>04:TK4 oil circuit system error<br>05:TK5 oil circuit system error | ● | ¤ | ● | | Oil level detective circuit error | I/F |
| H25 | H25 | – | ● | ¤ | ● | | TD3 sensor miswiring | I/F |
| L03 | – | – | ¤ | ● | ¤ | SIM | Indoor unit centre unit duplicated | Indoor unit |

| Check code | | | Wireless remote controller | | | | Check code name | Judging device |
|---|---|---|---|---|---|---|---|---|
| Wired remote controller display | Outdoor unit 7-segment display | | Sensor block display of receiving unit | | | | | |
| | | Auxiliary code | Operation | Timer | Ready | Flash | | |
| L04 | L04 | – | ¤ | ○ | ¤ | SIM | Outdoor unit line address duplicated | I/F |
| L05 | – | – | ¤ | ● | ¤ | SIM | Duplicated indoor units with priority (Displayed in indoor unit with priority) | I/F |
| L06 | L06 | No. of indoor units with priority | ¤ | ● | ¤ | SIM | Duplicated indoor units with priority (Displayed in unit other than indoor unit with priority) | I/F |
| L07 | – | – | ¤ | ● | ¤ | SIM | Group line in individual indoor unit | Indoor unit |
| L08 | L08 | – | ¤ | ● | ¤ | SIM | Indoor unit group / Address unset | Indoor unit, I/F |
| L09 | – | – | ¤ | ● | ¤ | SIM | Indoor unit capacity unset | Indoor unit |
| L10 | L10 | – | ¤ | ○ | ¤ | SIM | Outdoor unit capacity unset | I/F |
| L17 | – | – | ¤ | ○ | ¤ | SIM | Outdoor unit type mismatch error | I/F |
| L20 | – | – | ¤ | ○ | ¤ | SIM | Duplicated central control addresses | AI-NET, Indoor unit |
| L26 | L26 | Number of heat storage units connected | ¤ | ○ | ¤ | SIM | Too many heat storage units connected | I/F |
| L27 | L27 | Number of heat storage units connected | ¤ | ○ | ¤ | SIM | Error in number of heat storage units connected | I/F |
| L28 | L28 | – | ¤ | ○ | ¤ | SIM | Too many outdoor units connected | I/F |
| L29 | L29 | Number of IPDU (*1) | ¤ | ○ | ¤ | SIM | No. of IPDU error | I/F |
| L30 | L30 | Detected indoor unit address | ¤ | ○ | ¤ | SIM | Indoor unit outside interlock | Indoor unit |
| – | L31 | – | – | | | | Extended I/C error | I/F |
| P01 | – | – | ● | ¤ | ¤ | ALT | Indoor fan motor error | Indoor unit |
| P03 | P03 | – | ¤ | ● | ¤ | ALT | Discharge temp. TD1 error | I/F |
| P04 | P04 | 01:Comp. 1 side<br>02:Comp. 2 side<br>03:Comp. 3 side | ¤ | ● | ¤ | ALT | High-pressure SW system operation | IPDU |
| P05 | P05 | 00:<br>01:Comp. 1 side<br>02:Comp. 2 side<br>03:Comp. 3 side | ¤ | ● | ¤ | ALT | Phase missing detection / Power failure detection<br>Inverter DC voltage error (comp.)<br>Inverter DC voltage error (comp.)<br>Inverter DC voltage error (comp.) | I/F |
| P07 | P07 | 01:Comp. 1 side<br>02:Comp. 2 side<br>03:Comp. 3 side | ¤ | ● | ¤ | ALT | Heat sink overheat error | IPDU, I/F |
| P09 | P09 | Detected heat storage address | ● | ¤ | ¤ | ALT | No heat storage unit water error | Heat storage unit |
| P10 | P10 | Detected indoor unit address | ● | ¤ | ¤ | ALT | Indoor unit overflow error | Indoor unit |
| P12 | – | – | ● | ¤ | ¤ | ALT | Indoor unit fan motor error | Indoor unit |
| P13 | P13 | – | ● | ¤ | ¤ | ALT | Outdoor liquid back detection error | I/F |
| P15 | P15 | 01:TS condition<br>02:TD condition | ¤ | ● | ¤ | ALT | Gas leak detection | I/F |
| P17 | P17 | – | ¤ | ● | ¤ | ALT | Discharge temp. TD2 error | I/F |
| P18 | P18 | – | ¤ | ● | ¤ | ALT | Discharge temp. TD3 error | I/F |
| P19 | P19 | Detected outdoor unit number | ¤ | ● | ¤ | ALT | 4-way valve inverse error | I/F |
| P20 | P20 | – | ¤ | ● | ¤ | ALT | High-pressure protective operation | I/F |
| P22 | P22 | 0*:IGBT circuit<br>1*:Position detective circuit error<br>3*:Motor lock error<br>4*:Motor current detection<br>C*:TH sensor error<br>D*:TH sensor error<br>E*:Inverter DC voltage error (outdoor unit fan) | ¤ | ● | ¤ | ALT | Outdoor unit fan IPDU error<br>Note: Ignore 0 to F displayed in “*” position. | IPDU |
| P26 | P26 | 01:Comp. 1 side<br>02:Comp. 2 side<br>03:Comp. 3 side | ¤ | ● | ¤ | ALT | G-TR short protection error | IPDU |

| Check code | | | Wireless remote controller | | | | Check code name | Judging device |
|---|---|---|---|---|---|---|---|---|
| Wired remote controller display | Outdoor unit 7-segment display | | Sensor block display of receiving unit | | | | | |
| | | Auxiliary code | Operation | Timer | Ready | Flash | | |
| P29 | P29 | 01:Comp. 1 side<br>02:Comp. 2 side<br>03:Comp. 3 side | ☼ | ● | ☼ | ALT | Comp. position detective circuit system error | IPDU |
| P31 | – | – | ☼ | ● | ☼ | ALT | Other indoor unit error<br>(Group follower indoor unit error) | Indoor unit |
| – | – | – | By alarm device | | | ALT | Error in indoor unit group | AI-NET |
| – | – | – | – | | | | AI-NET communication system error | AI-NET |
| – | – | – | – | | | | 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 |
|---|---|---|---|---|---|---|---|---|
| Wired remote controller display | Outdoor unit 7-segment 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 | |

# 12 Specifications

| Model | Sound power level (dBA) | | Weight (kg) |
|---|---|---|---|
| | Cooling | Heating | |
| MMC-AP0158HP Series | * | * | 24 |
| MMC-AP0188HP Series | * | * | 24 |
| MMC-AP0248HP Series | * | * | 30 |
| MMC-AP0278HP Series | * | * | 30 |
| MMC-AP0368HP Series | * | * | 39 |
| MMC-AP0488HP Series | * | * | 39 |
| MMC-AP0568HP Series | * | * | 39 |

* Under 70 dBA

# Declaration of Conformity

Manufacturer: **TOSHIBA CARRIER (THAILAND) CO., LTD.**
144 / 9 Moo 5, Bangkadi Industrial Park, Tivanon Road, Tambol Bangkadi,
Amphur Muang, Pathumthani 12000, Thailand

TCF holder: TOSHIBA CARRIER EUROPE S.A.S
Route de Thil 01120 Montluel FRANCE

Hereby declares that the machinery described below:

Generic Denomination: Air Conditioner

Model / type: MMC-AP0158HP Series, MMC-AP0188HP Series, MMC-AP0248HP Series, MMC-AP0278HP Series, MMC-AP0368HP Series, MMC-AP0488HP Series, MMC-AP0568HP Series

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+A2: 2012

**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

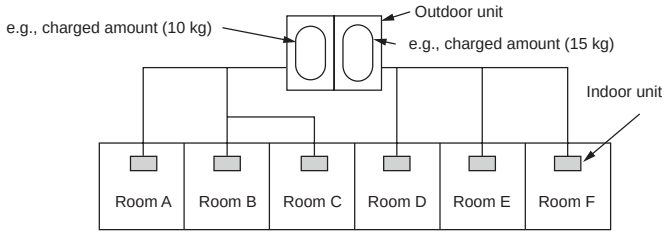
**The room in which the air conditioner is to be installed requires a design that in the event of refrigerant gas leaking out, its concentration will not exceed a set limit.**
The refrigerant R410A which is used in the air conditioner is safe, without the toxicity or combustibility of ammonia, and is 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/m³.

**▼ NOTE 1**

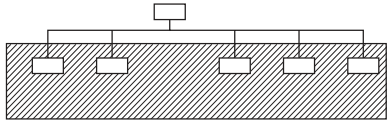
If there are 2 or more refrigerating systems in a single refrigerating device, the amounts of refrigerant should be as charged in each independent device.




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**

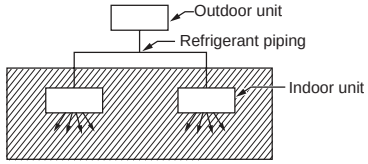
The standards for minimum room volume are as follows.
1) No partition (shaded portion)



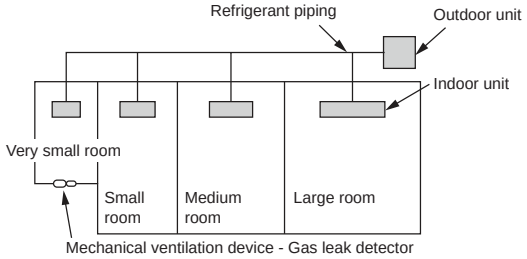


**Important**

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).

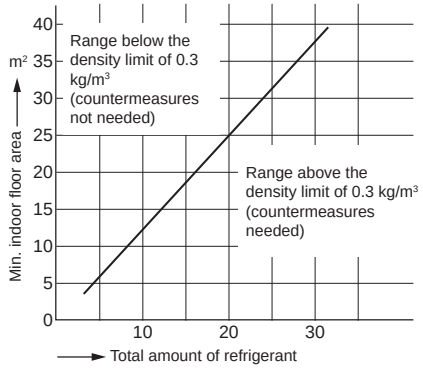



3) If an indoor unit is installed in each partitioned room and the refrigerant piping is interconnected, the smallest room of course becomes the object. But when a mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the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