TOSHIBA

TCTC-E22-VRF006-4

**Model name:**

# *MMY-SUG__1MT8(J)P-E*

SHRM
SUPER HEAT RECOVERY MULTI
ADVANCE

# Engineering Data Book

## Outdoor units

Notice: Toshiba is committed to continuously improving its products to ensure the highest quality and reliability standards, and to meet local regulations and market requirements. All features and specifications are subject to change without prior notice.

# Contents

# Safety caution

## Precautions for safety

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

### ⚠ WARNING

- Before starting to install the air conditioner, read through the Installation Manual carefully, and follow the instructions to install the air conditioner. Otherwise, falling down of the unit may occur, or the unit may cause noise, vibration or water leakage.
- Only a qualified installer(*1) or qualified service person(*1) is allowed to do installation work. If installation is carried out by an unqualified individual, a fire, electric shocks, injury, water leakage, noise and/or vibration may result.
  If using separately sold products, make sure to use Toshiba specified products only. Using unspecified products may cause fire, electric shock, water leak or other failure.
- 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 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 service panel of the outdoor unit and do the work required.
- Before carrying out the installation, maintenance, repair or removal work, be sure to set the circuit breakers for both the indoor and outdoor units to the OFF position. Otherwise, electric shock 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 outdoor unit. You may injure yourself if you do so. If the fin must be touched for some reason, first put on protective gloves and safety work clothing, and then proceed.
- Do not climb onto or place objects on top of the outdoor unit. You may fall or the objects may fall off of the outdoor unit and result in injury.
- When working at height, put a sign in place so that no-one will approach the work location before proceeding with the work. Parts or other objects may fall from above, possibly injuring a person below. Also, be sure that workers put on helmets.
- When 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.
- The refrigerant used by this air conditioner is the R32.
- You shall ensure that the air conditioner is transported in stable condition. If you find any part of the product broken, contact your dealer.
- Do not disassemble, modify or move the product yourself. Doing so may cause fire, electric shock, injury or water leaks.
- This appliance is intended to be used by expert or trained users in shops, in light industry, or for commercial use by lay persons.
- We do not take any responsibility on the local design.

## Selection of installation location

- Due to the use of the mildly flammable refrigerant R32, there are safety and legal installation conditions for installing equipment such as indoor units, outdoor units, and FS units. Install each unit according to the section "Installation of R32 Refrigerant Model".
- Do not install in a location where flammable gas may leaks are possible. If the gas should leak and accumulate around the unit, it may ignite and cause a fire.
- When transporting the air conditioner, wear shoes with protective toe caps, protective gloves and other protective clothing.
- When transporting the air conditioner, do not take hold of the bands around the packing carton. You may injure yourself if the bands should break.
- Install the indoor unit at least 2.5 m above the floor level since otherwise the users may injure themselves or receive electric shocks if they poke their fingers or other objects into the indoor unit while the air conditioner is running.
- Do not place any combustion appliance in a place where it is directly exposed to the wind of air conditioner, otherwise it may cause imperfect combustion.
- Do not install outdoor units where the operation sound may cause a disturbance. (Especially at the boundary line with a neighbour, install the air conditioner while considering the noise.)

## Installation

- 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 failure.
- The designated bolts (M12) and nuts (M12) for securing the outdoor unit must be used when installing the unit.
- Install the outdoor unit property in a location that is durable enough to support the weight of the outdoor unit. Insufficient durability may cause the outdoor unit to fall, which may result in injury.
- Install the unit in the prescribed manner for protection against strong wind and earthquake. Incorrect installation may result in the unit falling down, or other accidents.
- Be sure to fix the screws back which have been removed for installation or other purposes.

## Refrigerant piping

- Install the refrigerant pipe securely during the installationwork 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.
- Ventilate the air if the refrigerant gas leaks during installation. If the leaked refrigerant gas comes into contact with fire, toxic gas may be produced.
- 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, it may ignite the R32 refrigerant and so noxious gas may be generated. For prevention, Install according to the section "Installtion of R32 refrigerant model".
- 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.
- If refrigerant gas leaked during the installation work, ventilate the room immediately. If the leaked refrigerant gas comes in contact with fire, it may ignite the R32 refrigerant and so noxious gas may be generated. For prevention,Install according to the section "Precautions of equipment using R32 refrigerant".

## 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.
- When connecting the electrical wires, repairing the electrical parts or undertaking other electrical jobs, wear gloves to provide protection for electricians and from heat, insulating shoes and clothing to provide protection from electric shocks. Failure to wear this protective gear may result in electric shocks.
- When executing address setting, test run, or troubleshooting through the checking window on the electrical control box, put on insulated heat-proof gloves, insulated shoes and other clothing to provide protection from electric shock. Otherwise you may receive an electric shock. 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.
- Check that the product is properly earthed. (grounding work) Incomplete earthing may cause electric shock.
- Do not connect the earth line to a gas pipe, water pipe, lightning conductor, or a telephone earth line.
- After completing the repair or relocation work, check that the ground 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 must the power cable be extended. Connection trouble in the places where the cable 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.
- Do not supply power from the power terminal block equipped on the outdoor unit to another outdoor unit. Capacity overflow may occur on the terminal block and may result in fire.
- When carrying out electric connection, use the wire specified in the Installation Manual and connect and fix the wires securely to prevent them applying external force to the terminals. Improper connection or fixing may result in fire.

## ⚠ CAUTION

**This air conditioner adopts the HFC refrigerant (R32) which does not destroy the ozone layer**.

- R32 refrigerant has a high working pressure and is apt to be affected by impurities such as water, oxidizing membrane,and oils. Therefore, during installation work, be careful that water, dust, previous refrigerant, refrigerating machine oil, or other substances do not enter the R32 refrigeration cycle.
- Special tools for R32 or R410A refrigerant are required for installation.
- For connecting pipes, use new and clean piping materials, and make sure that water and/or dust does not enter.

**To Disconnect the Appliance from Main Power Supply.**

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

**Do not wash air conditioners with pressure washers.**

- Electric leaks may cause electric shocks or fi res.

Since the mildly flammable refrigerant R32 is used, for the installation conditions and safety precautions for indoor units, outdoor units, FS units, etc., refer to the following "Precautions for using R32 refrigerant" and do the installation works.

## Precautions for using R32 refrigerant

Make sure installation, servicing, maintenance and repair comply with instructions from TOSHIBA and with applicable legislation (for example, national gas regulation) and are executed only by authorised people.

These safety cautions describe important matters concerning safety to prevent injury to users or other people and damages to property. Please read Safety caution after understanding the contents below (meanings of indications), and be sure to follow the description;

**Meanings of symbols displayed on the unit**

| | | |
|---|---|---|
|  | **WARNING**<br>(Risk of fire) | This mark is for R32 refrigerant only.<br>In case that refrigerant type is R32, this unit uses a flammable refrigerant.<br>If refrigerant leaks and comes in contact with fire or heating part, it will create harmful gas and there is risk of fire. |
|  | Read the OWNER'S MANUAL carefully before operation. | |
|  | Service personnel are required to carefully read the OWNER'S MANUAL and INSTALLATION MANUAL before operation. | |
|  | Further information is available in the OWNER'S MANUAL, INSTALLATION MANUAL, and the like. | |

### ⚠ WARNING

- Models that use refrigerant R32 and R410A have a different charging port thread diameter to prevent erroneous charging with refrigerant R22 and for safety.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacture.
- The appliance shall be stored in a room without continuously operating lignition sources. (For examp: open flames, an operating gas appliance or an operating electric heater.)
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odor.
- The manufacturer may provide other suitable examples or may provide addition information about the refrigerant odor.

### ⚠ CAUTION

When a flammable refrigerant is used, all appearance shall be charged with refrigerant location or charged on site as recommended by the manufacturer.

A part of an appliance that is charged on site, which required brazing or welding in the installation shall not be shipped with a flammable refrigerant charge. Joints made in the installation between parts of the refrigerating system, with at least one part charged, shall be made in accordance with the following.

- A brazed, welded, or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the refrigerating system parts. A vacuum valve shall be provided to evacuate the interconnecting pipe and/or any uncharged refrigerating system part.

- Refrigerant tubing shall be protected or enclosed to avoid damage. Flexible refrigerant connectors (such as connecting lines between the indoor and outdoor unit) that may be displaced during normal operatios shall be protected against mechanical damage.

• Piping shall be protected from damage during installation, operation and maintenance.

• When installing piping in the occupied space, protect the piping from accidental damage.

• Check the piping as described in [8 Refrigerant piping] [Airtightness test]. in the installation manual.

• Wherever possible, protection, piping and fixtures shall be protected against the environment and weather resistance.

• You must prepare for long-term expansion and contraction of piping.

• Indoor equipment and plumbing must be safely installed and protected from accidental rupture of equipment or plumbing from events such as furniture movements or home renovations.

## General (Installation space / area)

• The installation of pipe-work shall be kept to a minimum.

• Pipe-work shall be protected from physical damage.

• The compliance with national gas regulations shall be observed.

• The mechanical connections shall be accessible for maintenance purposes.

• In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.

• When disposing of the product is used, be based on national regulations with properly processed. The servicing shall be performed only as recommended by the manufacturer.

• Where the appliance using flammable refrigerants is installed, Be aware that;

- The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.

- The appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and ignition sources (for example an operating electric heater).

- The appliance shall be stored so as to prevent mechanical damage from occurring.

• Equipment piping in the occupied space shall be installed in such a way to protect against accidental damage in operation and service.

• Precautions shall be taken to avoid excessive vibration or pulsation to refrigerating piping.

• Protection devices, piping and fittings shall be protected as far as possible against adverse environmental effects, for example, the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris.

• Provision shall be made for expansion and contraction of long runs of piping.

• Piping in refrigerating systems shall be so designed and installed to minimize the likelihood hydraulic shock damaging the system.

• Solenoid valves shall be correctly positioned in the piping to avoid hydraulic shock.

• Install the system according to this IM and avoid the likelihood hydraulic shock damaging the system.

• Solenoid valves shall not block in liquid refrigerant unless adequate relief is provided to the refrigerant system low pressure side.

• Install the system according to this IM so that it does not shut off in the liquid refrigerant.

• Steel pipes and components shall be protected against corrosion with a rustproof coating before applying any insulation.

• Flexible pipe elements shall be protected against mechanical damage, excessive stress by torsion, or other forces. They should be checked for mechanical damage annually.

• The indoor equipment and pipes shall be securely mounted and guarded such that accidental rupture of equipment cannot occur from such events as moving furniture or reconstruction activities.

• Where safety shut off valves are specified, the minimum room area may be determined based on the maximum amount of refrigerant that can be leaked as determined in installation Manual.

- Where safety shut off valves are specified, the location of the valve in the refrigerating system relative to the occupied spaces shall be as described Installation Manual.
- When installing the system that uses flammable refrigerant in a non-ventilated space, it shall be installed in the large space or with safety equipments as designated below, so as to prevent the refrigerant from staying and causing a fire or explosion by the refrigerant leak.
- The total refrigerant charge in the system cannot exceed the requirements for minimum floor area of the smallest room that is served. For minimum floor area requirements for indoor units, see the Installation and Owner's Manual of the outdoor unit.
- When connecting to an outdoor unit of the R32 refrigerant and using a leak detector, always turn on the power of the indoor unit after installation except during service in order to detect refrigerant leakage and take safety measures.
- Precautions shall be taken to avoid excessive vibration or pulsation to refrigerating piping.
- Only mechanical fittings can be used. (Example: Brazing + flame connection)
- Refrigerating systems shall use only permanent joints indoors except for site-made joints directly connecting the indoor unit to the refrigerant piping, or factory made mechanical joints in compliance with ISO 14903.

## Unventilated area

- The appliance shall be stored so as to prevent mechanical damage from occurring.

## Information on servicing

**1. Check to the area**

- Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that risk of ignition is minimized. For repair to the refrigerating system, the precautions in item 2 to 6 shall be complied with prior to conducting work on the system.

**2. Work procedure**

- Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapour being present while the work is being performed.
- When connecting to an outdoor unit of R32 refrigerant and using a leak detector, the fan may automatically operate even if the air conditioner is stopped when a refrigerant leak is detected. Be careful not to get injured by the fan.
- All installers and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

**3. General work area**

- All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out.
- Work in confined spaces shall be avoided.
- The area around the workspace shall be sectioned off.
- Ensure that the conditions within the area have been made safe by control of flammable material.
- Only equipment approved by the manufacturer shall be used for duct work.

**4. Checking for presence of refrigerant**

- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.
- Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non sparking, adequately sealed or intrinsically safe.

**5. Presence of fire extinguisher**

- If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available on hand.
- Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

**6.No ignition sources**

- No person carrying out work in relation to a refrigeration system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.
- All possible ignition sources including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space.
- Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.
- Make sure that the exhaust port of the vacuum pump is not close to the ignition source and that ventilation is possible.

**7. Ventilated area**

- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.
- A degree of ventilation shall continue during the period that the work is carried out.
- The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

**8. Checks to the refrigeration equipment**

- Where electrical components are being changed, installer shall be fit for the purpose and to the correct specification.
- At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt consult the manufacturer's technical department for assistance.
- The following checks shall be applied to installations using flammable refrigerants.
  - The charge size is in accordance with the room size within which the refrigerant containing parts are installed.
  - The ventilation machinery and outlets are operating adequately and are not obstructed.
  - If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.
  - Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected.
  - Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

**9. Checks to electrical devices**

- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
- If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.
- If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.
- Initial safety checks shall include:
  - That capacitors are discharged to avoid possibility of sparking.
  - That there no live electrical components and wiring are exposed while charging, recovering or purging the system.
  - That there is continuity of earth bonding.

**10. Repairs to sealed components**

- During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc.
- If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
- Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. . This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.
- Ensure that apparatus is mounted securely.
- Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres.
- Replacement parts shall be in accordance with the manufacturer's specifications.

**NOTE**

The use of silicon sealant may inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

**11.Repair to intrinsically safe components**

- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
- Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere.
- The test apparatus shall be at the correct rating.
- Replace components only with parts specified by the manufacturer.
- Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

**12.Cabling**

- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.
- Check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

**13.Detection of flammable refrigerants**

- Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks.
- A halide torch (or any other detector using a naked flame) shall not be used.
- Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
- Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25% maximum) is confirmed.
- Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode containing chlorine.
- If a leak is suspected, all naked flames shall be removed/extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

**14.Leak detection methods**

- Electronic leak detectors shall be used to detect flammable refrigerants leak, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
- Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25% maximum) is confirmed.
- Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipework.
- If a leak is suspected, all naked flames shall be removed / extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.
- Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

**15. Removal and evacuation**

- When breaking into the refrigerant circuit to make repairs or for any other purpose, Conventional procedures shall be used. However, it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:
  - remove refrigerant;
  - purge the circuit with inert gas;
  - evacuate;
  - purge again with inert gas;
  - open the circuit by cutting or brazing;
- The refrigerant charge shall be recovered into the correct recovery cylinders.
- The system shall be "Flushed" with OFN to render the unit safe.
- This process may need to be repeated several times.
- Compressed air or oxygen shall not be used for purging refrigerant systems.
- Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum . This process shall be repeated until no refrigerant is within the system.
- When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
- This operation is absolutely vital if brazing operations on the pipe work are to take place.
- Ensure that the outlet for the vacuum pump is not close to any ignition sources and that ventilation available.

**16.Charging procedures**

- In addition to conventional charging procedures, the following requirements shall be followed.
  - Ensure that contamination of different refrigerants does not occur when using charging equipment.
  - Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
  - Cylinders shall be kept upright.
  - Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
  - Label the system when charging is complete (if not already).
  - Extreme care shall be taken not to overfill the refrigeration system.
- Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas.
- The system shall be leak tested on completion of charging but prior to commissioning.
- A follow up leak test shall be carried out prior to leaving the site.

**17.Decommissioning**

- Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details.
- It is recommended good practice that all refrigerants are recovered safely.
- Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required to reuse of reclaimed refrigerant.
- It is essential that electrical power is available before the task is commenced.
    a) Become familiar with the equipment and its operation
    b) Isolate system electrically.
    c) Before attempting the procedure ensure that:
        - Mechanical handling equipment is available, if required, for handling refrigerant cylinders:
        - All personal protective equipment is available and being used correctly;
        - The recovery process is supervised at all times by a competent person:
        - Recovery equipment and cylinders conform to the appropriate standards.
    d) Pump down refrigerant system, if possible.
    e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
    f) Make sure that cylinder is situated on the scales before recover takes place.
    g) Start the recovery machine and operate in accordance with manufacturer's instructions.
    h) Do not overfill cylinders. (No more than 80% volume liquid charge.)
    i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
    j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
    k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

**18.Labelling**

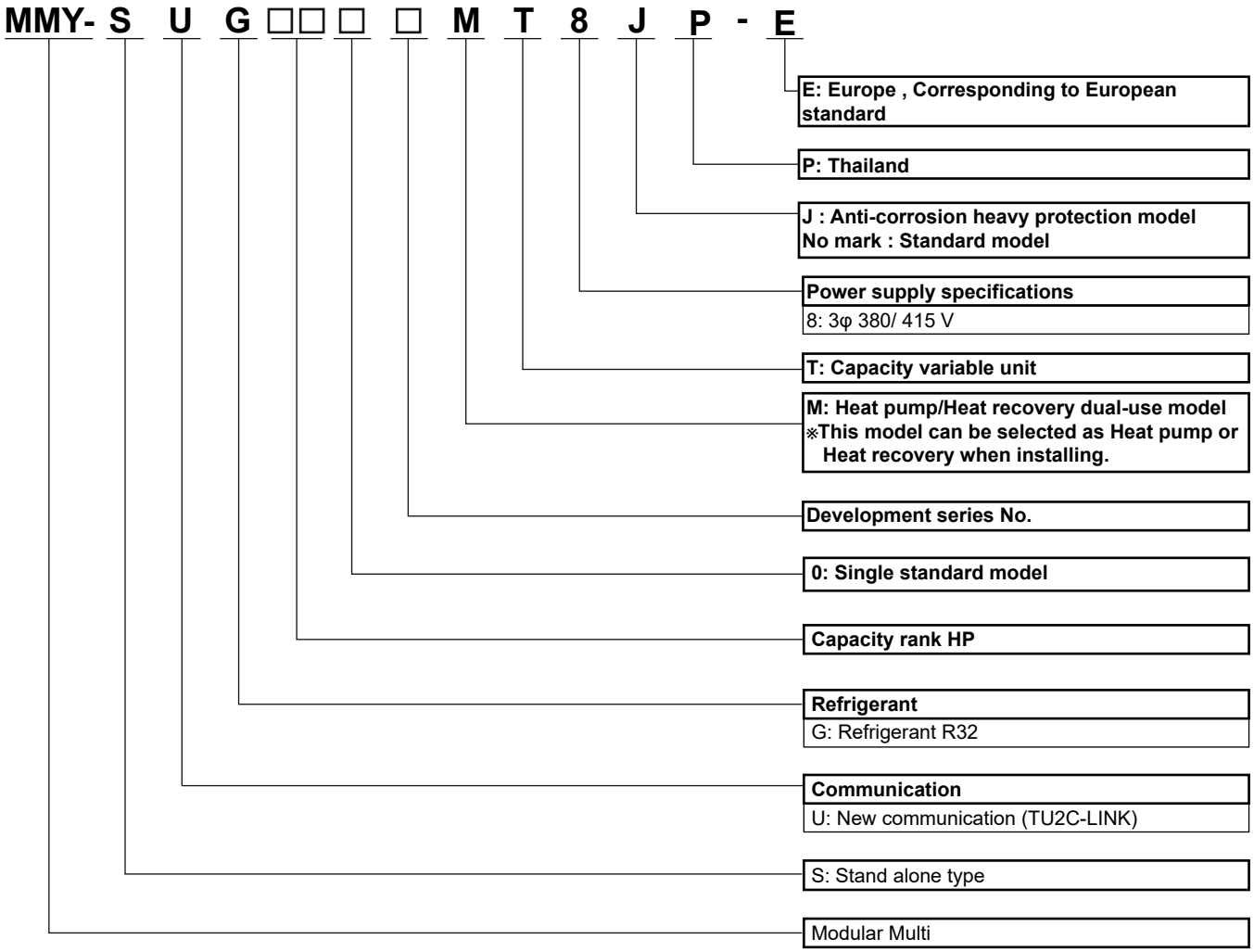
- Equipment shall be labelled stating that it has been decommissioned and emptied of refrigerant.
- The label shall be dated and signed.
- Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

**19.Recovery**

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
- Ensure that the correct number of cylinders for holding the total system charge are available.
- All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).
- Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order.
- Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriated refrigerants. . In addition, a set of calibrated weighing scales shall be available and in good working order.
- Hoses shall be complete with leak-free disconnect couplings and in good condition.
- Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release.
- Consult manufacturer if in doubt.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged.
- Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.
- The evacuation process shall be carried out prior to returning the compressor to the suppliers.
- Only electric heating to the compressor body shall be employed to accelerate this process.
- When oil is drained from a system, it shall be carried out safely.
- Do not use the unit until it is confirmed that the portion from which the refrigerant leaked is repaired.
- When installing, relocating, or servicing the air conditioner, use only the specified refrigerant (R32) to charge the refrigerant lines. Do not mix it with any other refrigerant and do not allow air to remain in the lines.

## 1-1. Allocation standard of model name

### SHRM advance



## 1-2. Summary of system equipments

### 1-2-1. Outdoor units

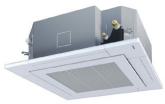
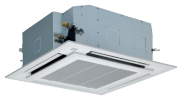
■ **Basic outdoor unit**

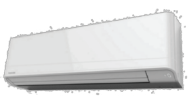
| Corresponding HP | | 8HP | 10HP | 12HP | 14HP | 16HP | 18HP |
|---|---|---|---|---|---|---|---|
| Model name | | MMY-SUG 0801MT8P-E | MMY-SUG 1001MT8P-E | MMY-SUG 1201MT8P-E | MMY-SUG 1401MT8P-E | MMY-SUG 1601MT8P-E | MMY-SUG 1801MT8P-E |
| Cooling capacity (kW) | | 22.4 | 28.0 | 33.5 | 40.0 | 45.0 | 50.4 |
| Heating capacity (kW) | Rated | 22.4 | 28.0 | 33.5 | 40.0 | 45.0 | 50.4 |
| | Max | 25.0 | 31.5 | 37.5 | 45.0 | 50.0 | 56.0 |
| No. of connectable indoor units | | 18 | 22 | 27 | 31 | 36 | 40 |

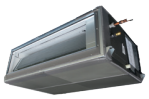
| Corresponding HP | | 20HP | 22HP | 24HP |
|---|---|---|---|---|
| Model name | | MMY-SUG 2001MT8P-E | MMY-SUG 2201MT8P-E | MMY-SUG 2401MT8P-E |
| Cooling capacity (kW) | | 56.0 | 61.5 | 67.0 |
| Heating capacity (kW) | Rated | 56.0 | 61.5 | 67.0 |
| | Max | 63.0 | 69.0 | 70.0 |
| No. of connectable indoor units | | 45 | 49 | 54 |

| Model name | System | |
|---|---|---|
| MMY-SUG0801* | Heat recovery | Heat pump |
| MMY-SUG1001* | | |
| MMY-SUG1201* | | |
| MMY-SUG1401* | | |
| MMY-SUG1601* | | |
| MMY-SUG1801* | | |
| MMY-SUG2001* | | |
| MMY-SUG2201* | | |
| MMY-SUG2401* | | |

## 1-2-2. Indoor unit

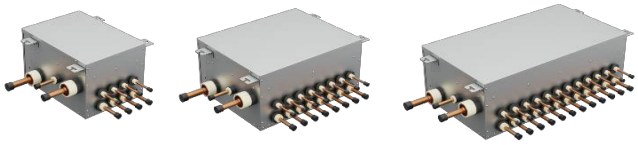
| Type | Appearance | Model name | Capacity rank | Capacity code | Cooling capacity (kW) | Heating capacity (kW) | PMV Kit |
|---|---|---|---|---|---|---|---|
| 4-Way Air Discharge Cassette Type |  | MMU-UP0091H-E | 009 type | 1.00 | 2.8 | 3.2 | Available |
| | | MMU-UP0121H-E | 012 type | 1.25 | 3.6 | 4.0 | Available |
| | | MMU-UP0151H-E | 015 type | 1.70 | 4.5 | 5.0 | Available |
| | | MMU-UP0181H-E | 018 type | 2.00 | 5.6 | 6.3 | Available |
| | | MMU-UP0241H-E | 024 type | 2.50 | 7.1 | 8.0 | Available |
| | | MMU-UP0271H-E | 027 type | 3.00 | 8.0 | 9.0 | Available |
| | | MMU-UP0301H-E | 030 type | 3.20 | 9.0 | 10.0 | - |
| | | MMU-UP0361H-E | 036 type | 4.00 | 11.2 | 12.5 | - |
| | | MMU-UP0481H-E | 048 type | 5.00 | 14.0 | 16.0 | - |
| | | MMU-UP0561H-E | 056 type | 6.00 | 16.0 | 18.0 | - |
| |  | MMU-UP0091HP-E | 009 type | 1.00 | 2.8 | 3.2 | Available |
| | | MMU-UP0121HP-E | 012 type | 1.25 | 3.6 | 4.0 | Available |
| | | MMU-UP0151HP-E | 015 type | 1.70 | 4.5 | 5.0 | Available |
| | | MMU-UP0181HP-E | 018 type | 2.00 | 5.6 | 6.3 | Available |
| | | MMU-UP0241HP-E | 024 type | 2.50 | 7.1 | 8.0 | Available |
| | | MMU-UP0271HP-E | 027 type | 3.00 | 8.0 | 9.0 | Available |
| | | MMU-UP0301HP-E | 030 type | 3.20 | 9.0 | 10.0 | - |
| | | MMU-UP0361HP-E | 036 type | 4.00 | 11.2 | 12.5 | - |
| | | MMU-UP0481HP-E | 048 type | 5.00 | 14.0 | 16.0 | - |
| | | MMU-UP0561HP-E | 056 type | 6.00 | 16.0 | 18.0 | - |
| Compact 4-way Cassette Type |  | MMU-UP0051MH-E | 005 type | 0.60 | 1.7 | 1.9 | Available |
| | | MMU-UP0071MH-E | 007 type | 0.80 | 2.2 | 2.5 | Available |
| | | MMU-UP0091MH-E | 009 type | 1.00 | 2.8 | 3.2 | Available |
| | | MMU-UP0121MH-E | 012 type | 1.25 | 3.6 | 4.0 | Available |
| | | MMU-UP0151MH-E | 015 type | 1.70 | 4.5 | 5.0 | Available |
| | | MMU-UP0181MH-E | 018 type | 2.00 | 5.6 | 6.3 | Available |
| 2-Way Air Discharge Cassette Type |  | MMU-UP0071WH-E | 007 type | 0.80 | 2.2 | 2.5 | Available |
| | | MMU-UP0091WH-E | 009 type | 1.00 | 2.8 | 3.2 | Available |
| | | MMU-UP0121WH-E | 012 type | 1.25 | 3.6 | 4.0 | Available |
| | | MMU-UP0151WH-E | 015 type | 1.70 | 4.5 | 5.0 | Available |
| | | MMU-UP0181WH-E | 018 type | 2.00 | 5.6 | 6.3 | Available |
| | | MMU-UP0241WH-E | 024 type | 2.50 | 7.1 | 8.0 | Available |
| | | MMU-UP0271WH-E | 027 type | 3.00 | 8.0 | 9.0 | Available |
| | | MMU-UP0301WH-E | 030 type | 3.20 | 9.0 | 10.0 | - |
| | | MMU-UP0361WH-E | 036 type | 4.00 | 11.2 | 12.5 | - |
| | | MMU-UP0481WH-E | 048 type | 5.00 | 14.0 | 16.0 | - |
| | | MMU-UP0561WH-E | 056 type | 6.00 | 16.0 | 18.0 | - |
| 1-Way Air Discharge Cassette Type |  | MMU-UP0031YHP-E | 003 type | 0.30 | 0.9 | 1.3 | Available |
| | | MMU-UP0051YHP-E | 005 type | 0.60 | 1.7 | 1.9 | Available |
| | | MMU-UP0071YHP-E | 007 type | 0.80 | 2.2 | 2.5 | Available |
| | | MMU-UP0091YHP-E | 009 type | 1.00 | 2.8 | 3.2 | Available |
| | | MMU-UP0121YHP-E | 012 type | 1.25 | 3.6 | 4.0 | Available |
| | | MMU-UP0151YHP-E | 015 type | 1.70 | 4.5 | 5.0 | Available |
| | | MMU-UP0181YHP-E | 018 type | 2.00 | 5.6 | 6.3 | Available |
| | | MMU-UP0241YHP-E | 024 type | 2.50 | 7.1 | 8.0 | Available |
| | | MMU-UP0271YHP-E | 027 type | 3.00 | 8.0 | 9.0 | Available |
| |  | MMU-UP0151SH-E | 015 type | 1.70 | 4.5 | 5.0 | Available |
| | | MMU-UP0181SH-E | 018 type | 2.00 | 5.6 | 6.3 | Available |
| | | MMU-UP0241SH-E | 024 type | 2.50 | 7.1 | 8.0 | Available |

| Type | Appearance | Model name | Capacity rank | Capacity code | Cooling capacity (kW) | Heating capacity (kW) | PMV Kit |
|---|---|---|---|---|---|---|---|
| Concealed Duct Type |  | MMD-UP0051BHP-E | 005 type | 0.60 | 1.7 | 1.9 | Available |
| | | MMD-UP0071BHP-E | 007 type | 0.80 | 2.2 | 2.5 | Available |
| | | MMD-UP0091BHP-E | 009 type | 1.00 | 2.8 | 3.2 | Available |
| | | MMD-UP0121BHP-E | 012 type | 1.25 | 3.6 | 4.0 | Available |
| | | MMD-UP0151BHP-E | 015 type | 1.70 | 4.5 | 5.0 | Available |
| | | MMD-UP0181BHP-E | 018 type | 2.00 | 5.6 | 6.3 | Available |
| | | MMD-UP0241BHP-E | 024 type | 2.50 | 7.1 | 8.0 | Available |
| | | MMD-UP0271BHP-E | 027 type | 3.00 | 8.0 | 9.0 | Available |
| | | MMD-UP0301BHP-E | 030 type | 3.20 | 9.0 | 10.0 | - |
| | | MMD-UP0361BHP-E | 036 type | 4.00 | 11.2 | 12.5 | - |
| | | MMD-UP0481BHP-E | 048 type | 5.00 | 14.0 | 16.0 | - |
| | | MMD-UP0561BHP-E | 056 type | 6.00 | 16.0 | 18.0 | - |
| Slim Duct Type |  | MMD-UP0031SPHY-E | 003 type | 0.30 | 0.9 | 1.3 | Available |
| | | MMD-UP0051SPHY-E | 005 type | 0.60 | 1.7 | 1.9 | Available |
| | | MMD-UP0071SPHY-E | 007 type | 0.80 | 2.2 | 2.5 | Available |
| | | MMD-UP0091SPHY-E | 009 type | 1.00 | 2.8 | 3.2 | Available |
| | | MMD-UP0121SPHY-E | 012 type | 1.25 | 3.6 | 4.0 | Available |
| | | MMD-UP0151SPHY-E | 015 type | 1.70 | 4.5 | 5.0 | Available |
| | | MMD-UP0181SPHY-E | 018 type | 2.00 | 5.6 | 6.3 | Available |
| | | MMD-UP0241SPHY-E | 024 type | 2.50 | 7.1 | 8.0 | Available |
| | | MMD-UP0271SPHY-E | 027 type | 3.00 | 8.0 | 9.0 | Available |
| Concealed Duct High Static Pressure Type |  | MMD-UP0181HP-E | 018 type | 2.00 | 5.6 | 6.3 | Available |
| | | MMD-UP0241HP-E | 024 type | 2.50 | 7.1 | 8.0 | Available |
| | | MMD-UP0271HP-E | 027 type | 3.00 | 8.0 | 9.0 | Available |
| | | MMD-UP0361HP-E | 036 type | 4.00 | 11.2 | 12.5 | - |
| | | MMD-UP0481HP-E | 048 type | 5.00 | 14.0 | 16.0 | - |
| | | MMD-UP0561HP-E | 056 type | 6.00 | 16.0 | 18.0 | - |
| | | MMD-UP0721HP-E1 | 072 type | 8.00 | 22.4 | 25.0 | - |
| | | MMD-UP0961HP-E1 | 096 type | 10.00 | 28.0 | 31.5 | - |
| Ceiling Type |  | MMC-UP0151HP-E | 015 type | 1.70 | 4.5 | 5.0 | Available |
| | | MMC-UP0181HP-E | 018 type | 2.00 | 5.6 | 6.3 | Available |
| | | MMC-UP0241HP-E | 024 type | 2.50 | 7.1 | 8.0 | Available |
| | | MMC-UP0271HP-E | 027 type | 3.00 | 8.0 | 9.0 | Available |
| | | MMC-UP0361HP-E | 036 type | 4.00 | 11.2 | 12.5 | - |
| | | MMC-UP0481HP-E | 048 type | 5.00 | 14.0 | 16.0 | - |
| | | MMC-UP0561HP-E | 056 type | 6.00 | 16.0 | 18.0 | - |
| High Wall Type |  | MMK-UP0031HP-E | 003 type | 0.30 | 0.9 | 1.3 | Available |
| | | MMK-UP0051HP-E | 005 type | 0.60 | 1.7 | 1.9 | Available |
| | | MMK-UP0071HP-E | 007 type | 0.80 | 2.2 | 2.5 | Available |
| | | MMK-UP0091HP-E | 009 type | 1.00 | 2.8 | 3.2 | Available |
| | | MMK-UP0121HP-E | 012 type | 1.25 | 3.6 | 4.0 | Available |
| | | MMK-UP0151HP-E | 015 type | 1.70 | 4.5 | 5.0 | Available |
| | | MMK-UP0181HP-E | 018 type | 2.00 | 5.6 | 6.3 | Available |
| | | MMK-UP0241HP-E | 024 type | 2.50 | 7.1 | 8.0 | Available |
| | | MMK-UP0271HP-E | 027 type | 3.00 | 8.0 | 9.0 | Available |
| | | MMK-UP0301HP-E | 030 type | 3.20 | 9.0 | 10.0 | - |
| | | MMK-UP0361HP-E | 036 type | 4.00 | 11.2 | 12.5 | - |
| |  | MMK-UP0031HPL-E | 003 type | 0.30 | 0.9 | 1.3 | Available |
| | | MMK-UP0051HPL-E | 005 type | 0.60 | 1.7 | 1.9 | Available |
| | | MMK-UP0071HPL-E | 007 type | 0.80 | 2.2 | 2.5 | Available |
| | | MMK-UP0091HPL-E | 009 type | 1.00 | 2.8 | 3.2 | Available |
| | | MMK-UP0121HPL-E | 012 type | 1.25 | 3.6 | 4.0 | Available |
| | | MMK-UP0151HPL-E | 015 type | 1.70 | 4.5 | 5.0 | Available |
| | | MMK-UP0181HPL-E | 018 type | 2.00 | 5.6 | 6.3 | Available |
| | | MMK-UP0241HPL-E | 024 type | 2.50 | 7.1 | 8.0 | Available |

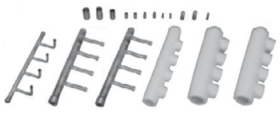
| Type | Appearance | Model name | Capacity rank | Capacity code | Cooling capacity (kW) | Heating capacity (kW) | PMV Kit |
|---|---|---|---|---|---|---|---|
| Hot Water Module |  | MMW-UP0271LQ-E | 027 type | 2.50 | - | 8.0 | - |
| | | MMW-UP0561LQ-E | 056 type | 5.00 | - | 16.0 | - |
| Fresh Air Intake Indoor unit Type |  | MMD-UP0481HFP-E | 048 type | 5.00 | 14.0 | 8.9 | - |
| | | MMD-UP0721HFP-E1 | 072 type | 8.00 | 22.4 | 13.9 | - |
| | | MMD-UP0961HFP-E1 | 096 type | 10.00 | 28.0 | 17.4 | - |
| | | MMD-UP1121HFP-E1 | 112 type | 12.00 | 33.5 | 20.8 | - |

Hot Water Module and Fresh Air Intake Indoor unit Type should not be used together

## 1-2-3. FS units(Flow selector units)

| Model name | Appearance | Remarks |
|---|---|---|
| RBM-Y1801FU4PE |  | |
| RBM-Y1801FU8PE | | |
| RBM-Y1801FU12PE | | |
| RBM-Y1121FUPE |  | |
| RBM-Y1801FUPE | | |
| RBM-Y2801FUPE | | |

## 1-2-4. Branching joints and headers

| Name | Model name | Appearance | Remarks |
|---|---|---|---|
| Y-shape branching joint | RBM-BY55FE<br>RBM-BY105FE<br>RBM-BY205FE |  | For 3 piping |
| | RBM-BY55E<br>RBM-BY105E |  | For 2 piping |
| 4-branching header | RBM-HY1043FE<br>RBM-HY2043FE |  | For 3 piping |
| | RBM-HY1043E | | For 2 piping |
| 8-branching header | RBM-HY1083FE<br>RBM-HY2083FE |  | For 3 piping |
| | RBM-HY1083E | | For 2 piping |

## 1-2-5. PMV Kits

| Name | Model name | Appearance | Remarks |
|---|---|---|---|
| PMV Kits | RBM-PMV0361U-E |  | |
| | RBM-PMV0901U-E | | |

## 1-2-6. Optional PCB of outdoor unit

| Name | Appearance | Model name | Remarks |
|---|---|---|---|
| Power peak-cut control board |  | TCB-PCDM4E | |
| External master ON/OFF control board |  | TCB-PCMO4E | |
| Output control board |  | TCB-PCIN4E | |

## 1-2-7. Remote controllers

| Name | Model name | Remarks |
|---|---|---|
| Wired remote controller | RBC-AMSU**-ES<br>RBC-AMSU**-EN | -EN : English, Italian, Polish, Greece, Russian, Turkish<br>-ES : English, Spanish, Portuguese, French, Dutch, German |
| | RBC-AMTU**-E | |
| | RBC-ASCU**-E | |
| Wireless remote controller kit | RBC-AXU31U-E | For 4-Way Air Discharge cassettes (HP) |
| | RBC-AXU41U-E | For 4-Way Air Discharge cassettes (H) |
| | RBC-AXU**UM-E | For Compact 4-way Cassette |
| | RBC-AXU**UW-E | For 2-way Air Discharge Cassette |
| | RBC-AXU**C-E | For Ceiling, 1-way Air Discharge Cassette (SH) |
| | RBC-AX33UYP-E | For 1-way Air Discharge Cassette(YHP 1.7-3.0HP) |
| | TCB-AXU31-E | For Other unit |

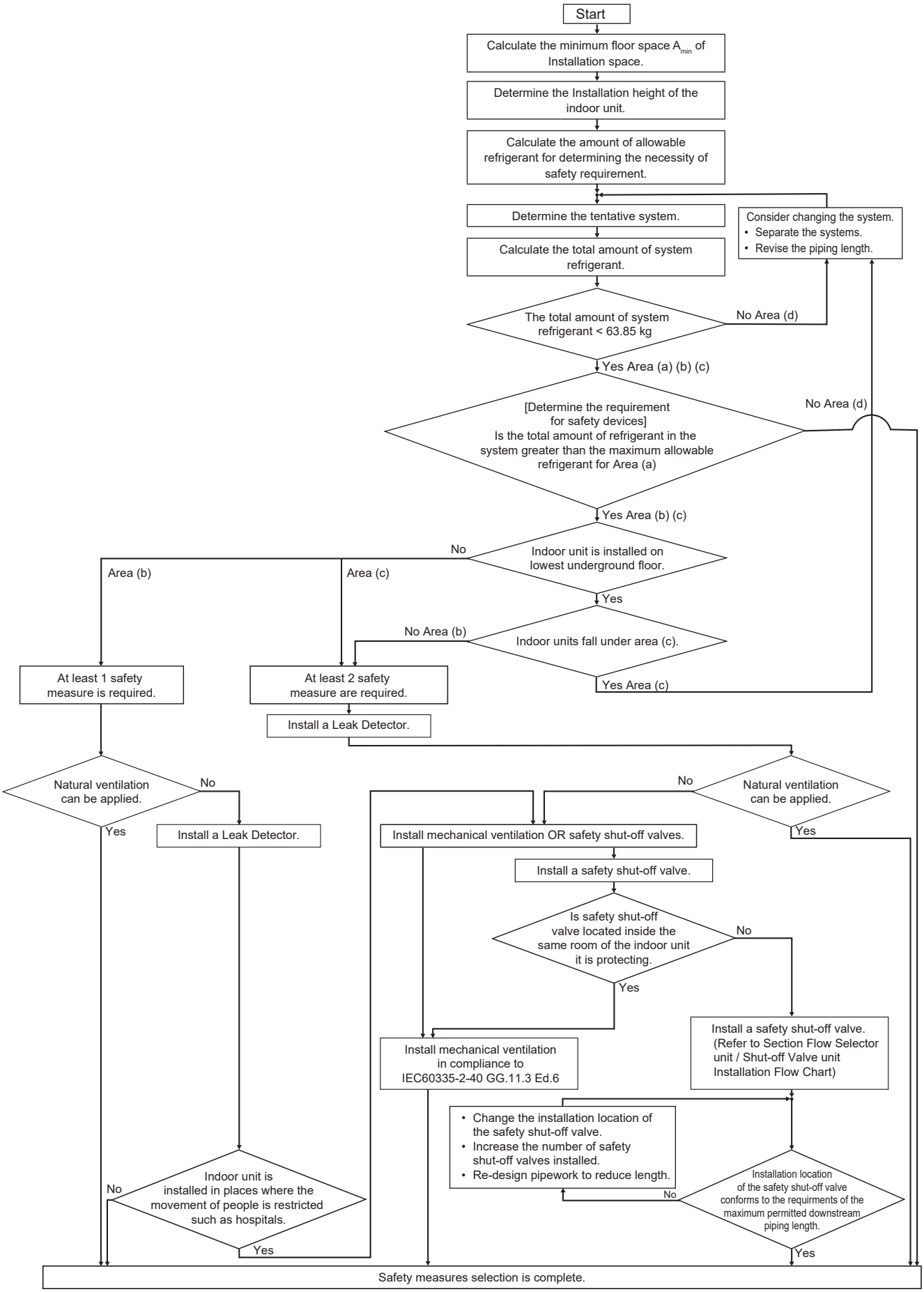
## 1-2-8. Controls

| Name | Model name | Remarks |
|---|---|---|
| Touch Screen Controller | BMS-CT5121E | |
| Touch Screen Controller | BMS-CT2560U-E | |
| Smart manager | BMS-SM1280HTLE | |
| Smart manager with data analyzer | BMS-SM1281ETLE | |
| 64 Central remote controller | TCB-SC640U-E | |
| Schedule timer | TCB-EXS21TLE | |
| Relay Interface | BMS-IFLSV4E | |
| Energy Monitoring Relay Interface | BMS-IFWH5E | |
| Digital I/O Relay Interface | BMS-IFDD03E | |
| LonWorks LN Interface | TCB-IFLN642TLE | |
| Modbus Interface | BMS-IFMB1280U-E | |
| Analog Interface | TCB-IFCB640TLE | |
| BN Interface | BMS-IFBN640U-E | |

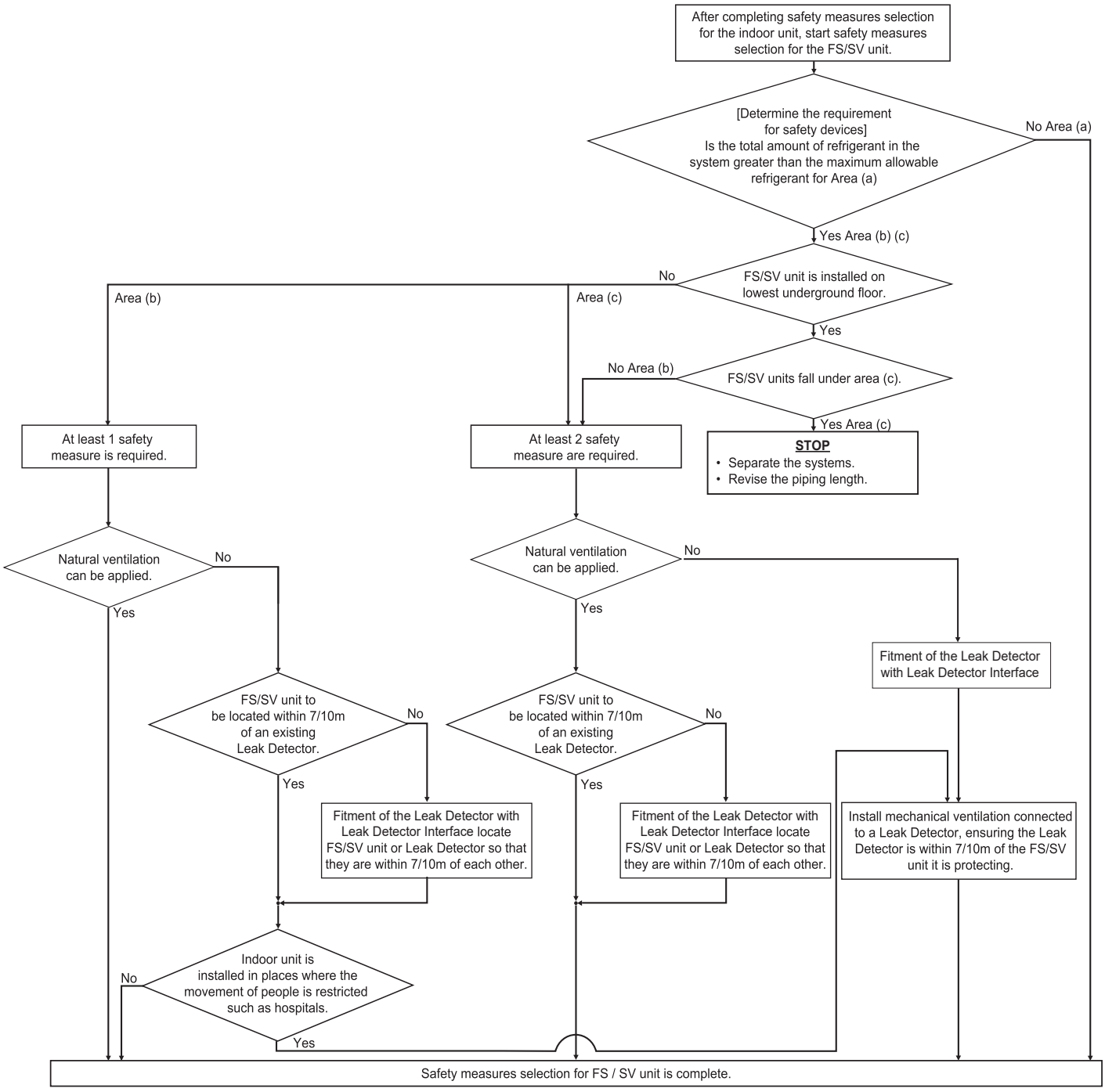
### 1-2-9. Safety equipments

| Model name | Model name | Remarks |
|---|---|---|
| SV unit (Shut-off valve unit) | RBM-SV1121HUPE | |
| | RBM-SV1801HUPE | |
| | RBM-SV6701HUPE | |
| Leak Detector | TCB-LD3UPE | |
| Leak Detector Interface | TCB-BT1UPE | |
| Battery kit | TCB-LDA1UPE | |

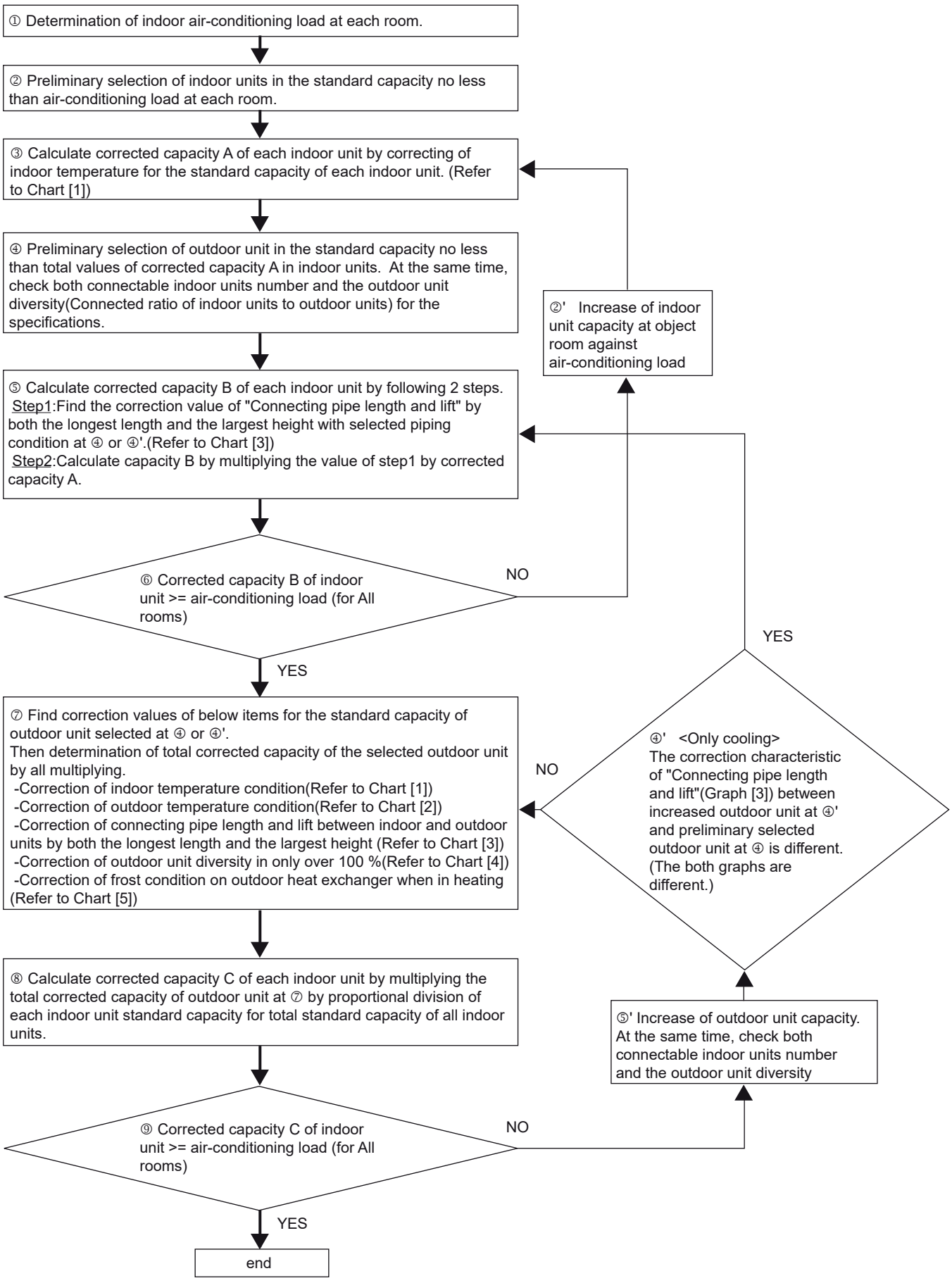
## 2-1. Indoor unit installation flow chart



## 2-2. Flow Selector unit / Shut-off Valve unit Installation Flow Chart



## 2-3. Selection flow chart



## 2-4. Combination conditions for indoor unit and outdoor unit

Indoor unit can connect 70% to 200% of Outdoor unit capacity.

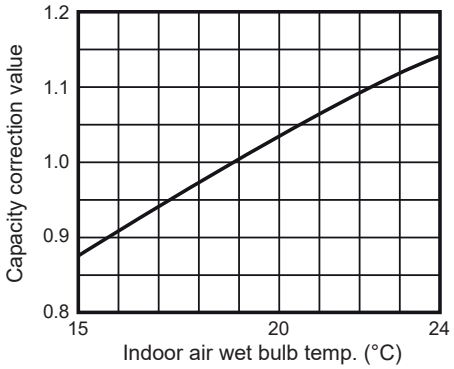
**NOTE:**

- Height difference between indoor units is less than 15 m and single outdoor unit system, combination condition for indoor and outdoor unit is 70% to 200%
- Height difference between indoor unit is more than 15 m, combination condition for indoor and outdoor unit is 70% to 105%
- If Smart 4-Way Air Discharge Cassette Type (MMU-UP＊＊＊H-E) is include in the system, combination condition for indoor and outdoor unit is 70% to 105%

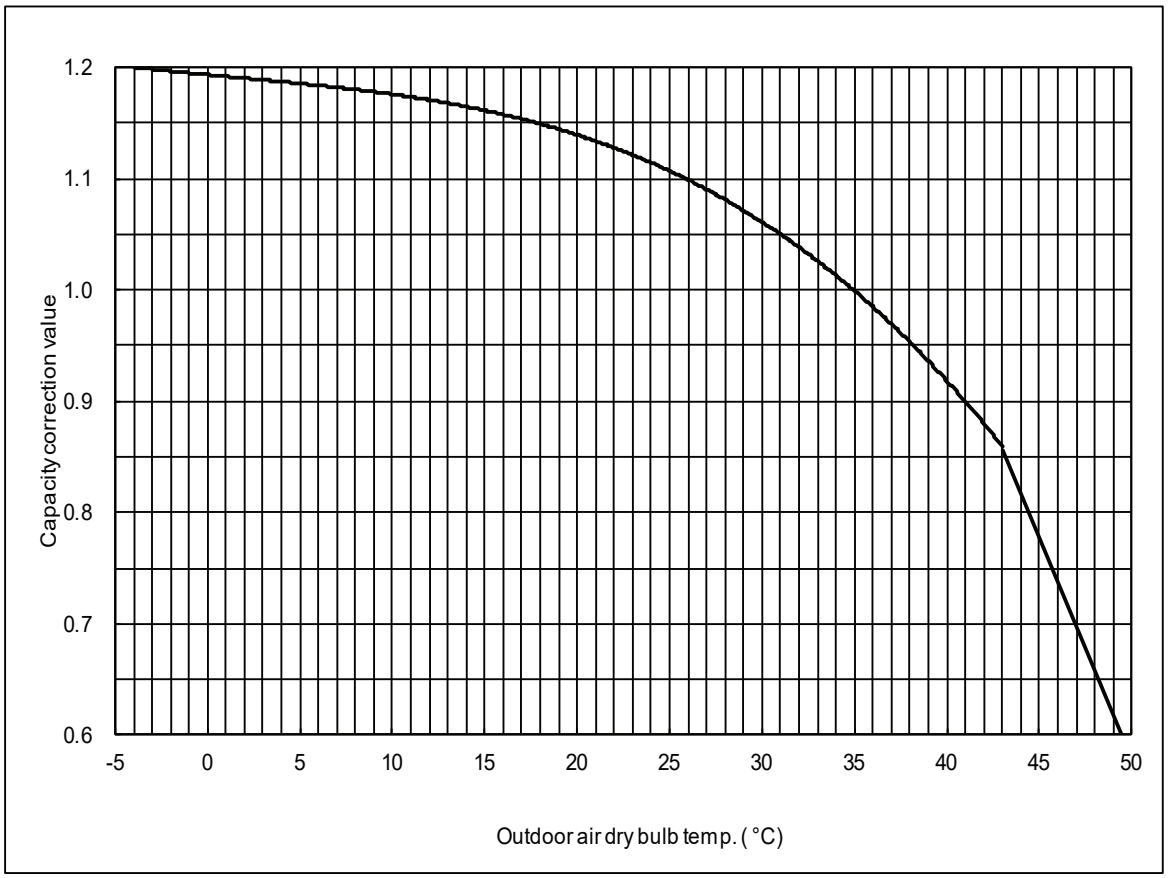
## 2-5. Cooling/heating capacity characteristics

### 2-5-1. Correction charts for cooling capacity calculation

[1] Indoor air wet bulb temperature vs. capacity correction value

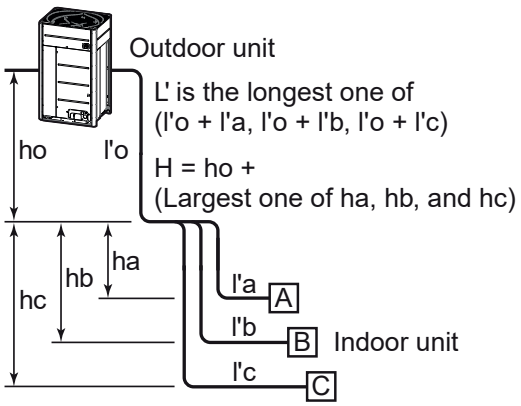


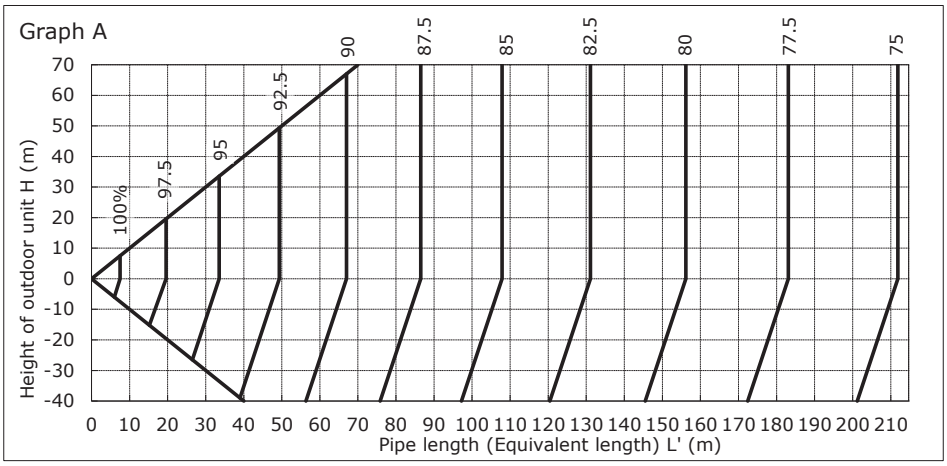

[2] Outdoor air dry bulb temperature vs.capacity correction value

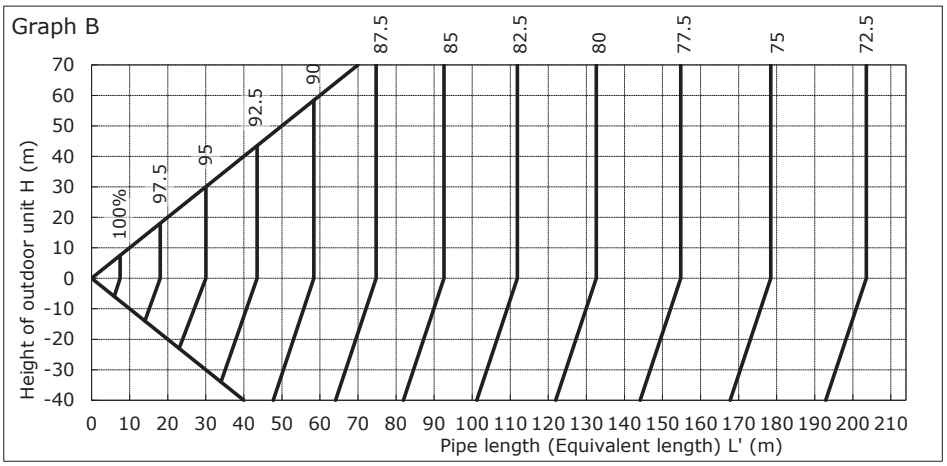


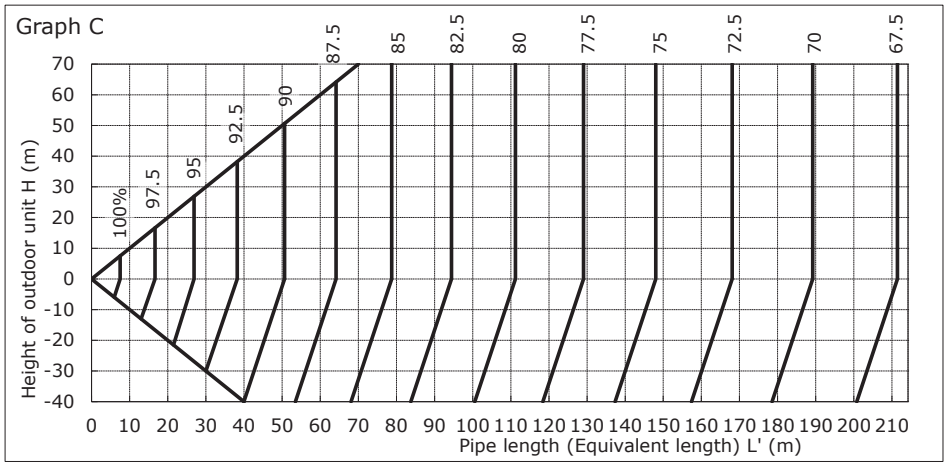
[3] Connecting pipe length and lift difference between indoor and outdoor units vs. capacity correction value

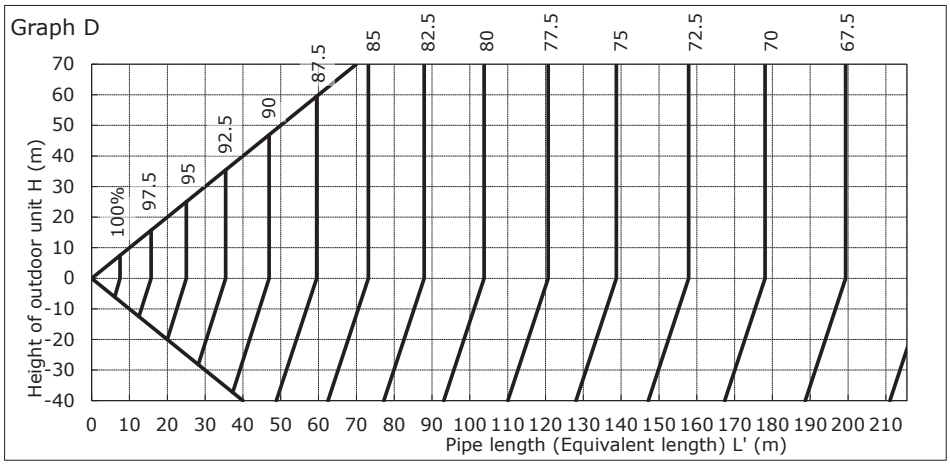
| Capacity HP | Graph | Combination HP | Pipe length [m] |
|---|---|---|---|
| 8 | D | 8 | 210 |
| 10 | C | 10 | 210 |
| 12 | A | 12 | 210 |
| 14 | A | 14 | 210 |
| 16 | B | 16 | 210 |
| 18 | C | 18 | 210 |
| 20 | C | 20 | 210 |
| 22 | C | 22 | 210 |
| 24 | A | 24 | 210 |



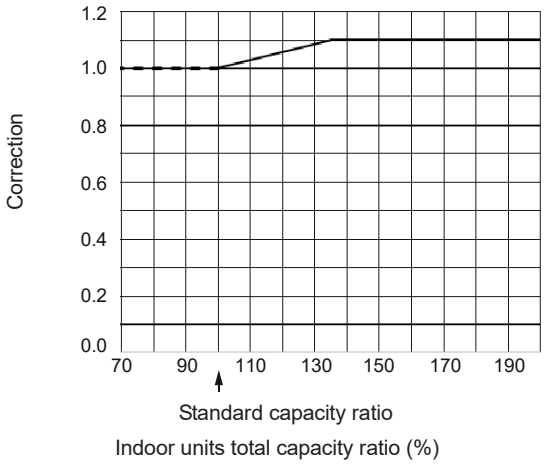





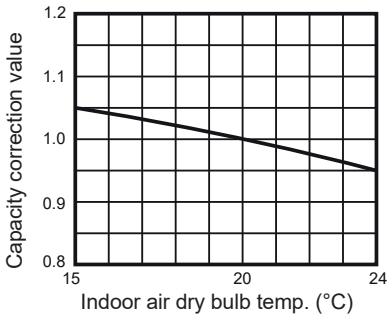

[4]* Correction of outdoor unit diversity



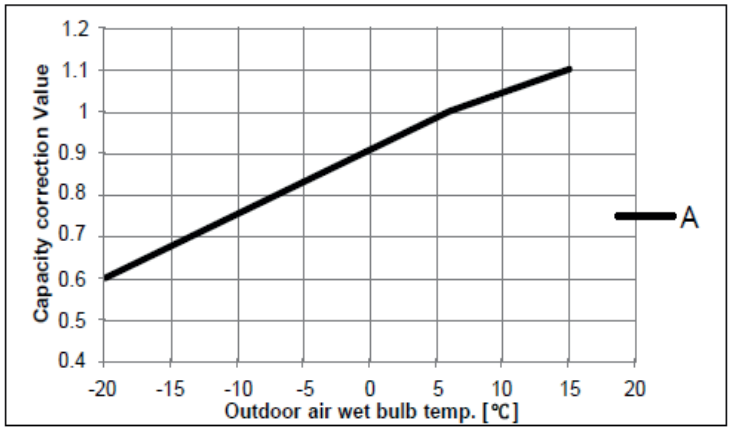

*: Coefficient to use for the correction of the outdoor unit capacity when the total capacity of the indoor units are not equal to the outdoor unit capacity.

## 2-5-2. Correction charts for heating capacity calculation

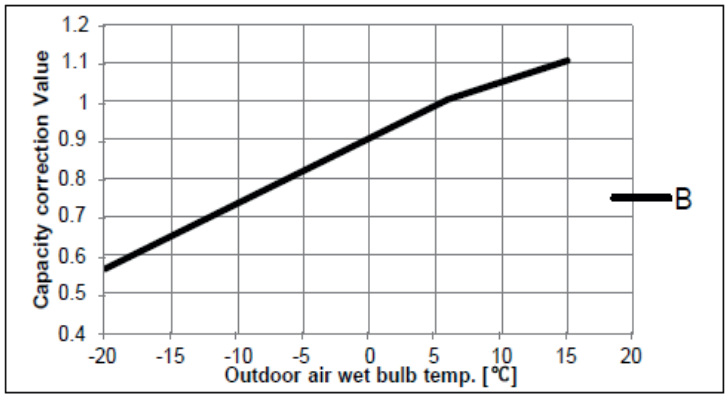
[1] Indoor air dry bulb temperature vs. capacity correction value

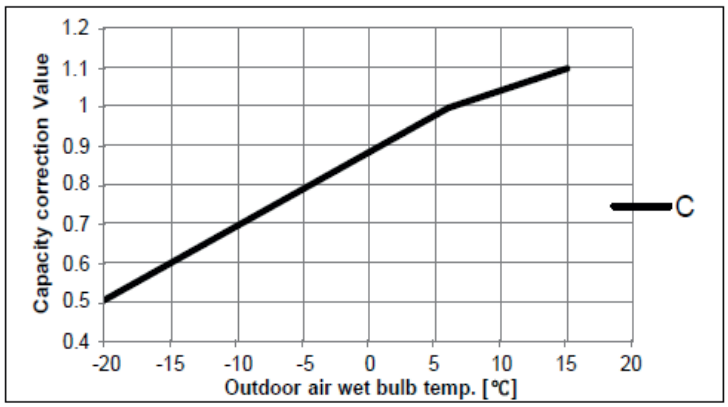



[2] Outdoor air wet bulb temperature vs. capacity correction value

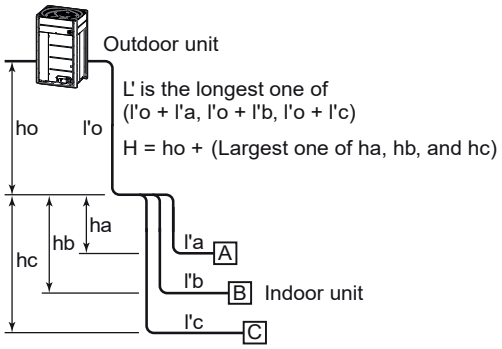


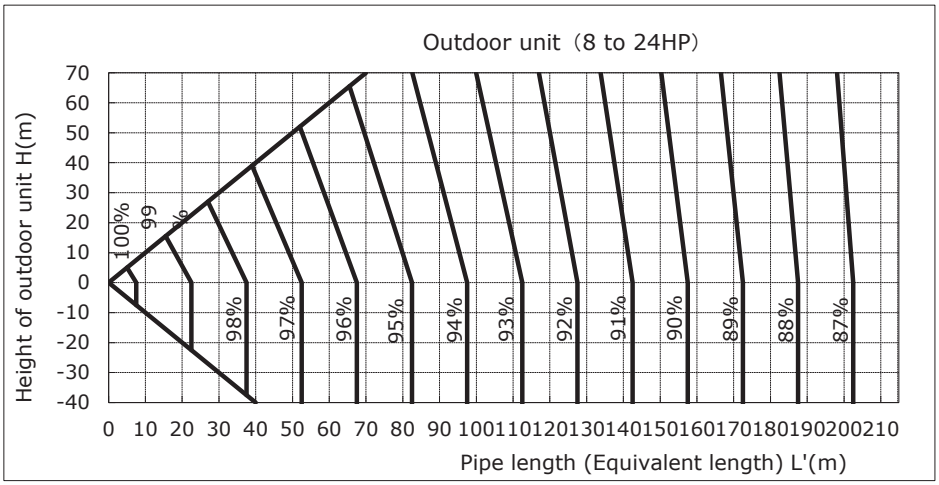

| capacity HP | Graph | Combination HP |
|---|---|---|
| 8 | A | 8 |
| 10 | B | 10 |
| 12 | C | 12 |
| 14 | C | 14 |
| 16 | A | 16 |
| 18 | B | 18 |
| 20 | A | 20 |
| 22 | B | 22 |
| 24 | C | 24 |



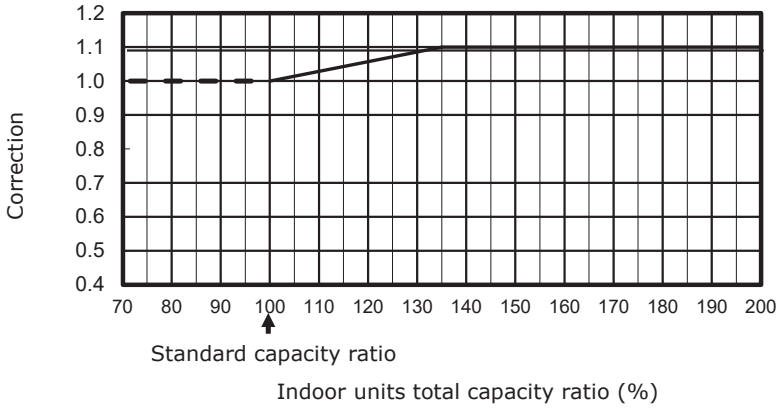



[3] Connecting pipe length and lift difference between indoor and outdoor units vs. capacity correction value




[4]* Correction of outdoor unit diversity




*: Coefficient to use for the correction of the outdoor unit capacity when the total capacity of the indoor units are not equal to the outdoor unit capacity.

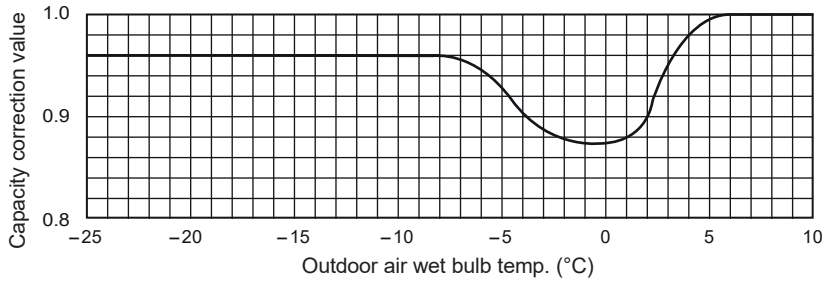
### 2-5-3. Capacity correction in case of frost on the outdoor heat exchanger when in heating

Correct the heating capacity when frost can be found on the outdoor heat exchanger.

Heating capacity = Capacity after correction of outdoor unit x Correction value of capacity resulted from frost

(Capacity after correction of outdoor unit: Heating capacity calculated in the above item 2.)

[5] Capacity correction in case of frost on the outdoor heat exchanger




### 2-5-4. Rated conditions

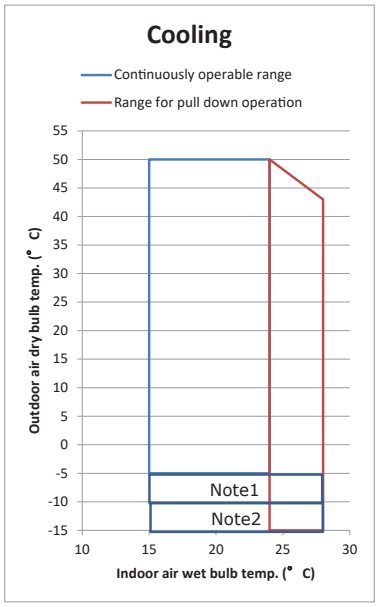
Cooling: Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB

Heating: Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB

## 2-6. Operational temperature range

| Continuously operable range | |
|---|---|
| 15 | -5 |
| 15 | 50 |
| 24 | 50 |
| 24 | -5 |
| 15 | -5 |

| Range for pull down operation | |
|---|---|
| 24 | -15 |
| 24 | 50 |
| 28 | 43 |
| 28 | -15 |
| 24 | -15 |




Note 1

1. NOT SUITABLE FOR APPLICATIONS,WHICH REQUIRE ROOM TEMPERATURE CONTROL,DUE TO INCREASED RISK OF INDOOR ON/OFF CONTROL AND POTENTIAL LOW AIR OFF TEMPERATURES.
2. FOR AREAS THAT DO DEMAND A PRECISE ROOM TEMPERATURE CONTROL, WE WOULD RECOMMEND THE INSTALLATION OF A SECONDARY SYSTEM, WHICH HAS BEEN DESIGNED SOLELY FOR THE PURPOSE OF LOW AMBIENT COOLING.
3. NO HEIGHT DIFFERENCE BETWEEN INDOOR UNITS.
4. THE COOLING PERFORMANCE MAY DECLINE CONSIDERABLY WHEN TOTAL OPERATION CAPACITY OF COOLING INDOOR UNITS IS LESS THAN 4HP WHILE AMBIENT TEMPERATURE IS BELOW -5 C.

Note 2

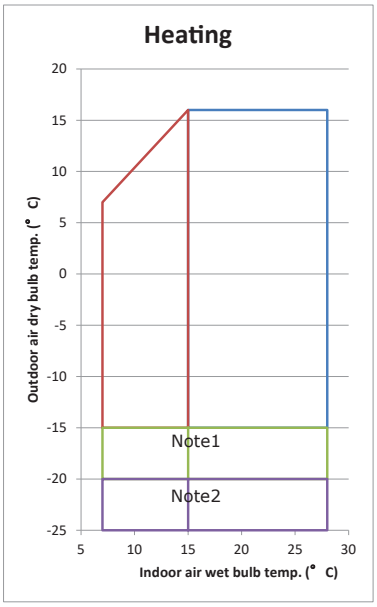
1. ALL CONNECTED INDOOR UNITS NEED TO OPERATE

| Continuously operable range | |
|---|---|
| 15 | -15 |
| 15 | 16 |
| 28 | 16 |
| 28 | -15 |
| 15 | -15 |

| Range for pull down operation | |
|---|---|
| 7 | -15 |
| 7 | 7 |
| 15 | 16 |
| 15 | -15 |
| 7 | -15 |

| note1 | |
|---|---|
| 15 | -20 |
| 15 | -15 |
| 28 | -15 |
| 28 | -20 |
| 15 | -20 |
| 15 | -20 |
| 7 | -20 |
| 7 | -15 |
| 15 | -15 |

| note2 | |
|---|---|
| 15 | -25 |
| 15 | -20 |
| 28 | -20 |
| 28 | -25 |
| 15 | -25 |
| 15 | -25 |
| 7 | -25 |
| 7 | -20 |
| 15 | -20 |




Note 1:The unit will operate down to an outdoor temperature of -25°C, however considerable performance decrease will be expected below -15°C. Therefore please consider installation location/surroundings and system design when expected to operate between -15°C and -20°C.

Note 2: Low ambient heating (-20°C or less) for extended periods of time is not allowed .

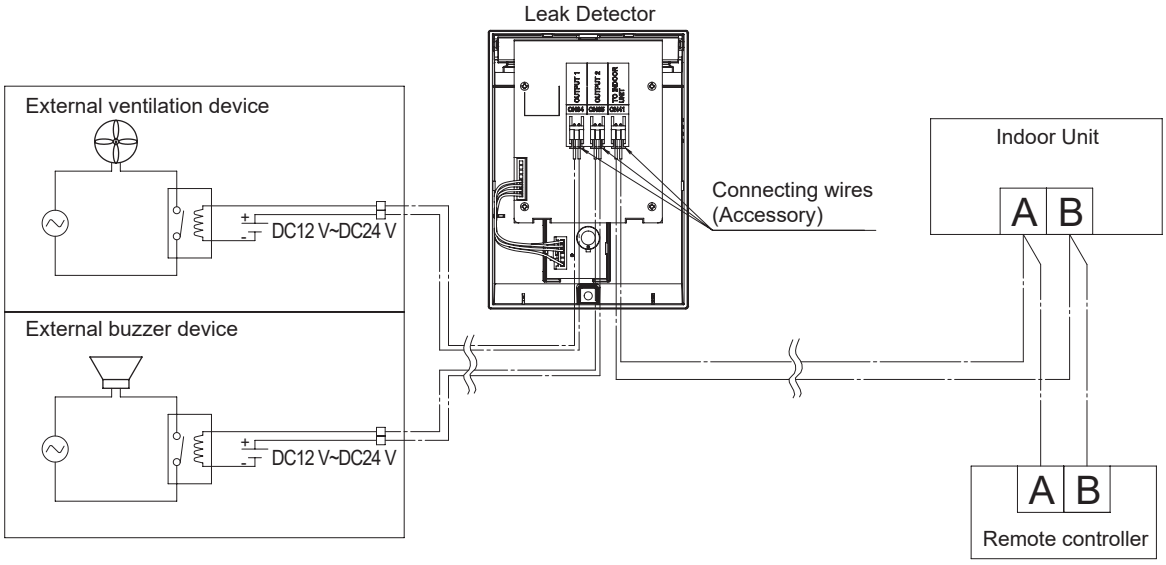
# 2-7. External ventillation

## 2-7-1. General

Mechanical ventilation can be used by using the external output contact of Leak Detector as a safety measures.
For details on areas requiring safety measures, refer to the Installation Manual of outdoor unit.

## 2-7-2. External ventilation wiring diagram

- Interconnecting cable wire are produced locally.
- Using the specified wires, ensure to connect the wires and fix wires securely, so that the external tension to the wires does not affect the connecting part of the terminals. Incomplete connection or fixation may cause.




Output connector can be connected the external device. (Ventilation, external buzzer device and etc.) When the Leak Detector detects leakage, outputs the signal to these device.
When the buzzer is stopped, Output 1(CN64) will keep to output, Output 2(CN65) will stop the output.
So the external buzzer is recommended to connect the Output 2(CN65).

## 2-7-3. Required airflow

To skip the airflow calculation, use the value of 130.3 m3/h. however as a result, it provides higher airflow value.
To calculate the airflow, see following formula:

- For Q × 0.25*LFL/10 < 1,
  The actual airflow of the mechanical ventilation shall be at least the quantity that satisfies following Formula:

$$mc = -\frac{10 \times V}{Q} \ln\left(1 - \frac{Q \times 0.25 \times LFL}{10}\right)$$

- For Q × 0.25*LFL/10 ≥ 1,
  The airflow shall be determined according to following Formula:

$$Q = \frac{10}{0.25 \times LFL} = 130.3$$

Consider losses caused by ducts or other components.

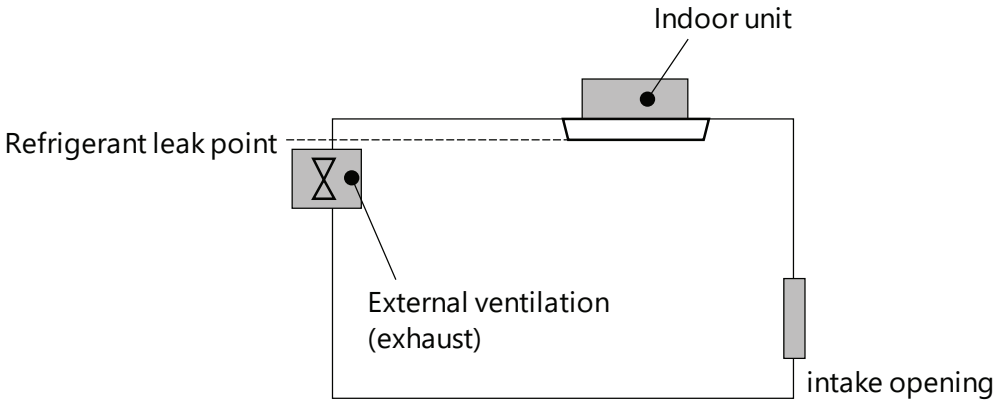
mc is the refrigerant charge, expressed in kg.
V is the room volume in m3.
10 is the expected maximum leak rate in kg/h.
Q is the ventilation airflow in m3/h.
LFL is the lower flammability limit in kg/m3. For R32 is 0.307.

## 2-7-4. Required location

The upper edge of the air extraction opening from the room shall be located equal or below the refrigerant release point of indoor units.

Exhaust opening and intake opening shall be located a sufficient distance.

In addition, if there are local regulations and laws, shall be in accordance with local regulations.

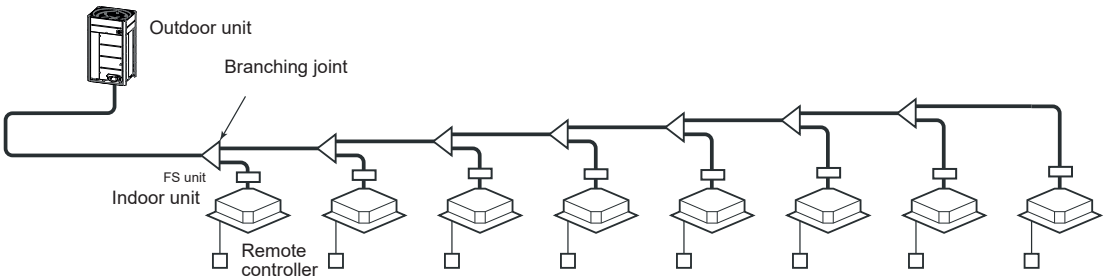
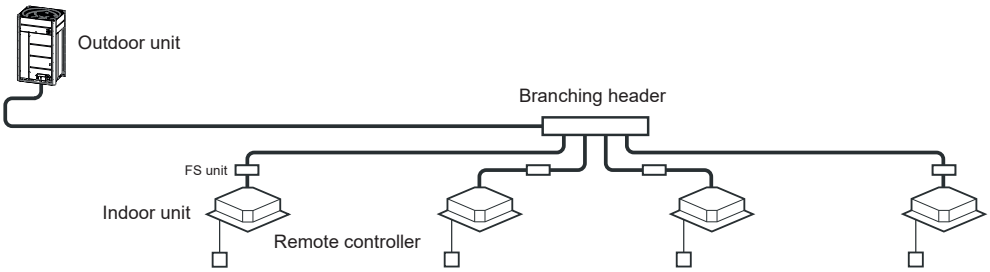
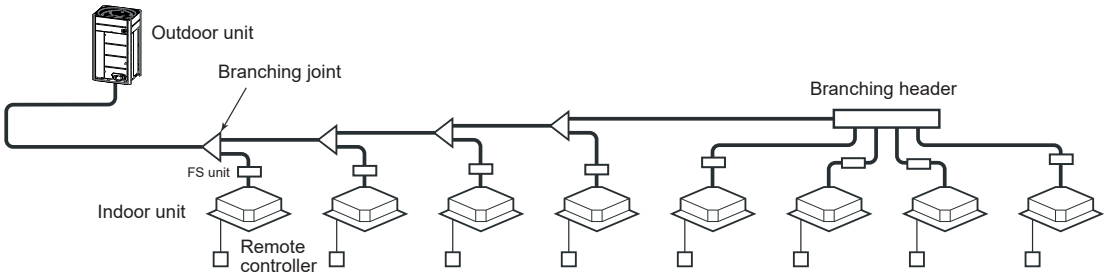
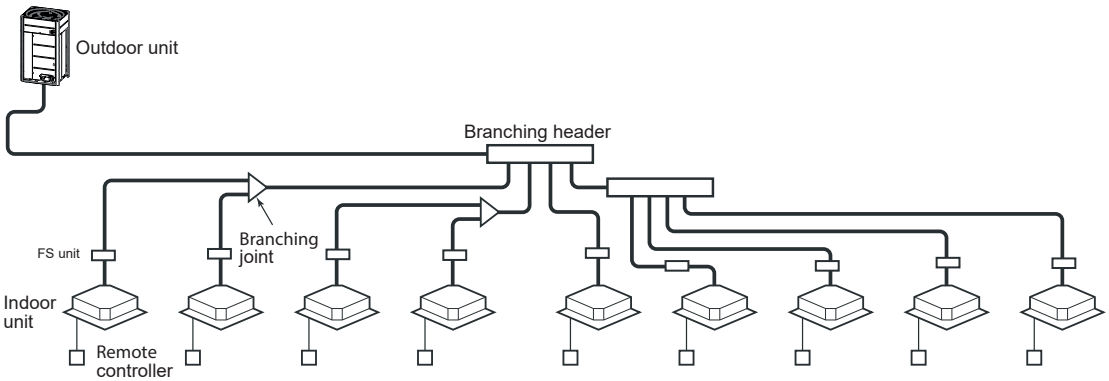



Exhaust opening and intake opening shall be located a sufficient distance.

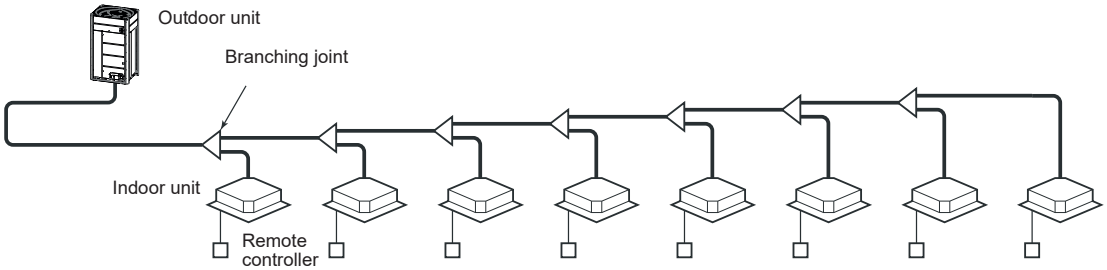
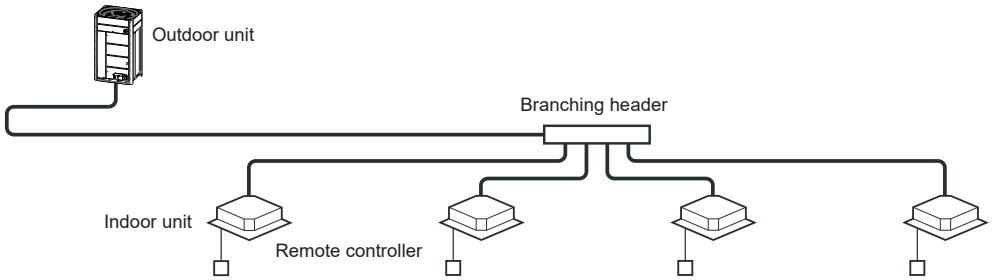
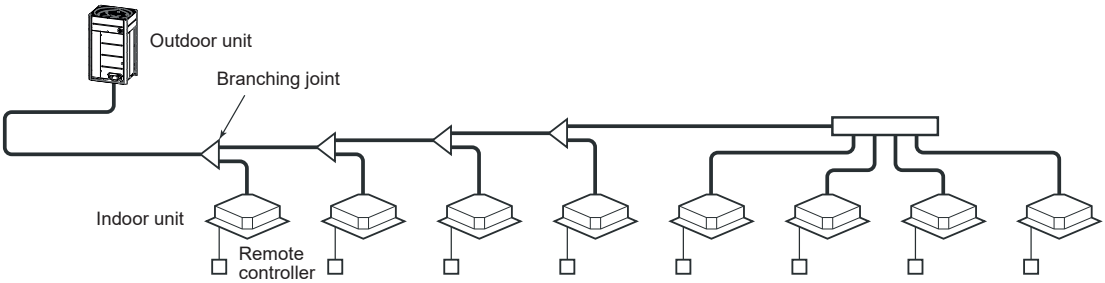
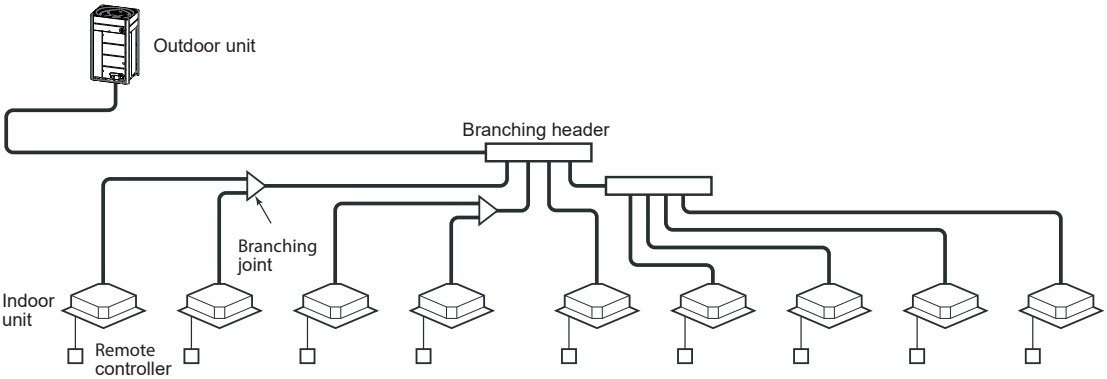
## 3-1. Free branching system

[1] Line branching system
[2] Header branching system
[3] Header branching system after line branching
[4] Line branching system after header branching
[5] Header branching system after header branching
The above five branching systems enable to dramatically increase the flexibility of refrigerant piping design.

**3 Pipe system**

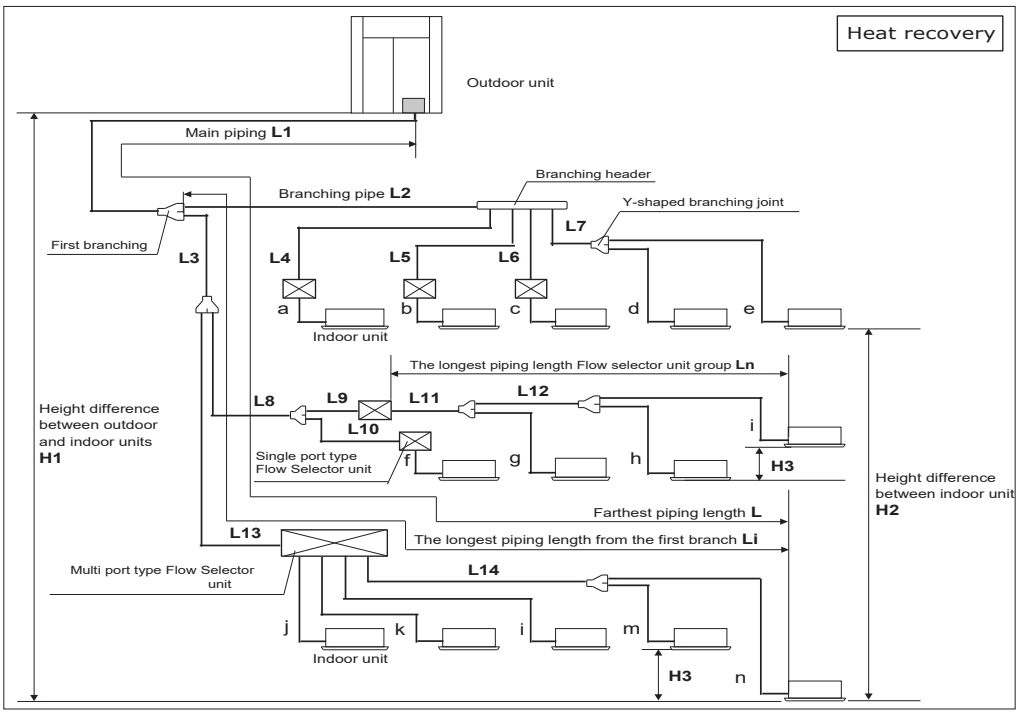
| | |
|---|---|
| Line branching system |  |
| Header branching system |  |
| Header branching system after line branching |  |
| Line branching system after header branching<br>Header branching system after header branching |  |

**2 Pipe system**

| | |
|---|---|
| Line branching system |  |
| Header branching system |  |
| Header branching system after line branching |  |
| Line branching system after header branching<br>Header branching system after header branching |  |

# 3-2. Allowable length/height difference of refrigerant piping

## 3-2-1. 3 Pipe system




### ◆System restriction

| | | |
|---|---|---|
| Outdoor unit combination | Only 1 unit | |
| Max capacity of outdoor units | Up to 24HP | |
| Indoor unit connection | Up to 54 units | |
| Total capacity of indoor units<br>(Varies depending on the height difference between indoor units.) | H2≦15m | 200% of outdoor units' capacity(*1) |
| | H2＞15m | 105% of outdoor unitS' capacity |

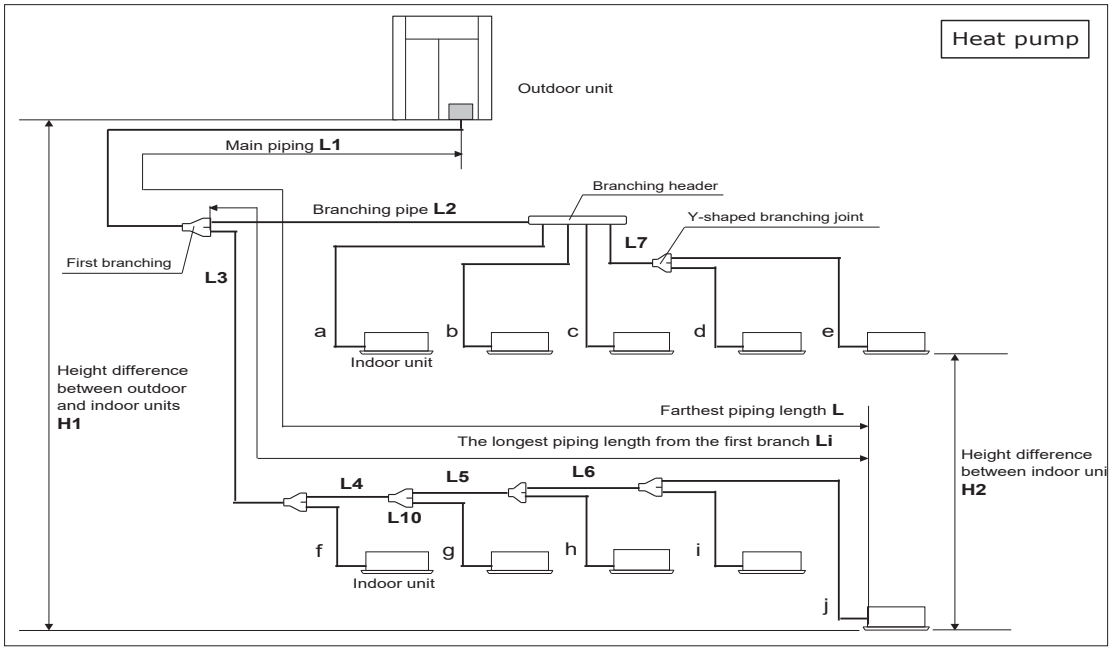
(*1): If it exceeds 135%, there is a limits to the maximum number of indoor units that can be connected
(*2)Multi port type Flow Selector unit is considered a branch.

### ◆Allowable length and allowable height diffefence of refrigerant piping

| Item | | | | Allowable Value | Piping section |
|---|---|---|---|---|---|
| Pipe length | Total extension of pipe (liquid pipe,real length) | | | 500 m (*1) | L1 + L2 + L3 + L4 + L5 + L6 + L7 + L8 + L9 + L10 + L11 + L12 + L13 + L14 + a + b + c + d + e + f + g + h + I + j + k + l + m +n |
| | Farthest piping length **L** | Equivalent length | | 190 m | L1 + L3 + L13 + L14 + n |
| | | Real length | | 165 m | |
| | Max.equivalent length of Main piping **L1** | Equivalent length | | 125 m | L1 |
| | | Real length | | 100 m | |
| | Equivalent length of farthest piping from 1 st branching **Li** | | H1>3m | 50 m | L3 + L13 + L14 + n |
| | | | H1≦3m | 65 m | |
| | Max. real length of piping from the end branch to the indoor unit | | | 50 m | L4 + a、L5 + b、L6 + c、d、e、L10 + f、g、h、i、j、k、l、m、n |
| | Max. equivalent length between branches | | | 50 m | L2、L3、L4、L5、L6、L7、L8、L9、L10、L11、L12、L13、L14 |
| | Max. real length of piping from Flow selector unit to the indoor unit **Ln** | | | 50 m | L11 + g、L11+ L12 + h、L11 + L12 + i、L14 + m、L14 + n |
| | The total piping length in one Multi port type Flow Selector unit | 4 branches | Max | 120 m | L14 + j + k + l + m + n |
| | | 8 or 12 branches (*3) | Max | 180 m | |
| Difference in height | Height difference between outdoor and indoor unit **H1** | Upper outdoor unit | H2>3m | 50 m | ----- |
| | | | H2≦3m | 70 m<br>90 m(*2) | |
| | | Lower outdoor unit | | 40 m | |
| | Height difference between indoor units **H2** | Upper outdoor unit | | 40 m | ----- |
| | | Lower outdoor unit | | 30 m | |
| | Height difference between indoor units connected to the same Flow selector unit **H3** | | | 15 m | ----- |

(*1):The total amount of system refrigerant should be 63.8kg or less.
(*2):Extension up till 90 m is possible with conditions below :
-Connected ratio of indoor units to outdoor units is below 105%
-Liquid side has been increased 1 size from standard size
-Change the connection method of the indoor unit from flare connection to welding connection.
(*3)When using a Multi port tyape Flow Selector unit, be sure to set the piping length between the indoor and the Flow Selector unit at least 10 m.
If a piping length of 10 m or longer is not secured, refrigerant noise generated from the Multi port type Flow Selector unit may propagate to the indoor unit.
(*4):For installation conditions, refer to the precautions of equipment using R32.

## 3-2-2. 2 Pipe system




### ◆System restriction

| | | |
|---|---|---|
| Outdoor unit combination | Only 1 unit | |
| Max capacity of outdoor units | Up to 12HP | |
| Indoor unit connection | Up to 27 units | |
| Total capacity of indoor units (Varies depending on the height difference between indoor units.) | H2≦15m | 200% of outdoor units' capacity(*1) |
| | H2＞15m | 105% of outdoor unitS' capacity |

(1*):If it exceeds 135%, there is a limit to the maximum number of indoor units that can be connected.

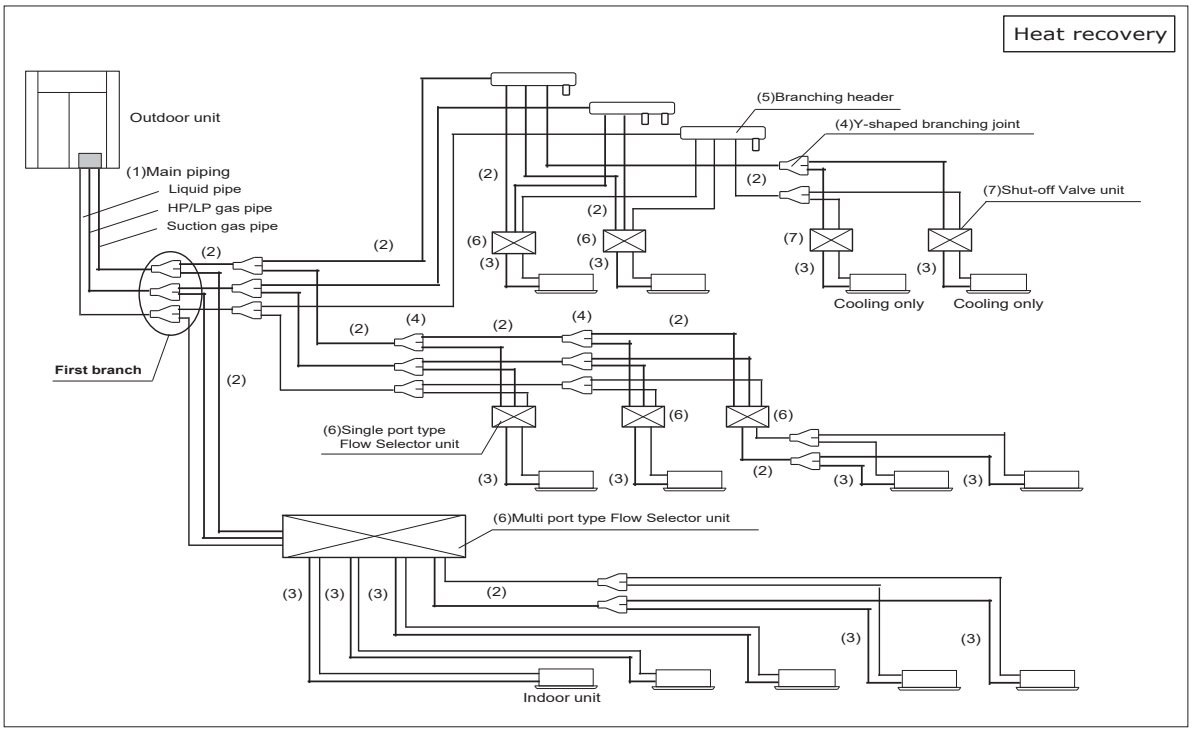
### ◆Allowable length and allowable height diffefence of refrigerant piping

| Item | | | | Allowable Value | Piping section |
|---|---|---|---|---|---|
| Pipe length | Total extension of pipe (liquid pipe,real length) | | | 500 m (*1) | L1 + L2 + L3 + L4 + L5 + L6 + L7+a +b +c +d + e + f + g + h + i + j |
| | Farthest piping length **L** | Equivalent length | | 215 m | L1 + L3 + L4 + L5 + L6 + j |
| | | Real length | | 190 m | |
| | Max.equivalent length of Main piping **L1** | Equivalent length | | 125 m | L1 |
| | | Real length | | 100 m | |
| | Equivalent length of farthest piping from 1 st branching **Li** | | H1>3m | 65 m | L3 + L4 + L5 + L6 + j |
| | | | H1≦3m | 90 m | |
| | Max. real length of indoor unit connecting piping | | | 50 m | a、b、c、d、e、f、g、h、i、j |
| | Max. equivalent length between branches | | | 50 m | L2、L3、L4、L5、L6、L7 |
| Difference in height | Height difference between outdoor and indoor unit **H1** | Upper outdoor unit | H2>3m | 50 m | ----- |
| | | | H2≦3m | 70 m 90 m(*2) | |
| | | Lower outdoor unit | | 40 m | |
| | Height difference between indoor units **H2** | | | 40 m | ----- |

(*1):The total amount of system refrigerant should be 63.8kg or less.
(*2):Extension up till 90 m is possible with conditions below :
-Connected ratio of indoor units to outdoor units is below 105%
-Liquid side has been increased 1 size from standard size
-Change the connection method of the indoor unit from flare connection to welding connection.
(*3):For installation conditions, refer to the precautions of equipment using R32.

# 3-3. Selection of refrigerant piping

## 3-3-1. 3 Pipe system




**(1) Main piping (*7)**

| Model name | Capacity code | Liquid side(*8) | | | HP/LP gas side (mm) | Suction gas side (mm) |
|---|---|---|---|---|---|---|
| | Equivalent to capacity (HP) | Standard size (mm) | Refrigerant saving size (mm) | Farthest piping length | | |
| MMY-SUG080* | 8 | 12.7 | 9.5 | 90 m | 15.9 | 19.1 |
| MMY-SUG100* | 10 | 12.7 | 9.5 | 60 m | 19.1 | 22.2 |
| MMY-SUG120* | 12 | 12.7 | 9.5 | 50 m | 19.1 | 22.2 |
| MMY-SUG140* | 14 | 12.7 | 9.5 | 40 m | 19.1 | 28.6 |
| MMY-SUG160* | 16 | 15.9 | 12.7 | 130 m | 22.2 | 28.6 |
| MMY-SUG180* | 18 | 15.9 | 12.7 | 100 m | 22.2 | 28.6 |
| MMY-SUG200* | 20 | 15.9 | 12.7 | 90 m | 22.2 | 28.6 |
| MMY-SUG220* | 22 | 15.9 | 12.7 | 70 m | 22.2 | 28.6 |
| MMY-SUG240* | 24 | 15.9 | 12.7 | 60 m | 22.2 | 28.6 |

**(2) Branching pipe (*1) (*2) (*7)**

| Total capacity code of indoor units at downstream side | Liquid side (mm) | HP/LP gas side (mm) | Suction gas side (mm) |
|---|---|---|---|
| Equivalent to capacity (HP) | | | |
| Below 6.4 | 9.5 | 12.7 | 15.9 |
| 6.4 to below 8.4 | 12.7 | 15.9 | 19.1 |
| 8.4 to below 16.2 | 12.7 | 19.1 | 22.2 |
| 16.2 to below 20.2 | 15.9 | 19.1 | 28.6 |
| 20.2 or more | 15.9 | 22.2 | 28.6 |

**3)Indoor unit connecting pipe(*2)(*7)**

| Capacity rank (Type) | Capacity code<br>Equivalent to capacity (HP) | Liquid side (mm) | Gas side (mm) | Real piping length (m) |
|---|---|---|---|---|
| 003 ~ 012 | 0.3 ~ 1.25 | 6.4 | 9.5 | 15 or less |
| | | 6.4 | 12.7 | Exceeds 15 |
| 015 ~ 018 | 1.5 ~ 2.0 | 6.4 | 12.7 | 15 or less |
| | | 9.5 | 15.9 | Exceeds 15 |
| 024 ~ 056 | 2.5 ~ 6.0 | 9.5 | 15.9 | |
| 072, 096 | 8.0, 10.0 | 12.7 | 22.2 | |
| 112 | 12 | 12.7 | 22.2 | |

**(4) Y-shaped branching joint (*3) (*4)**

| Total capacity code of indoor units at downstream side | Model name | |
|---|---|---|
| Equivalent to capacity (HP) | For 3 piping | For 2 piping |
| Below 6.4 | RBM-BY55FE | RBM-BY55E |
| 6.4 to below 14.2 | RBM-BY105FE | RBM-BY105E |
| 14.2 or more | RBM-BY205FE | - |

| Model name | Liquid side | HP/LP gas side | Suction gas side |
|---|---|---|---|
| RBM-BY55FE (3 piping) | Ø9.5 Ø9.5 Ø9.5 | Ø15.9 Ø15.9 Ø15.9 | Ø15.9 Ø15.9 Ø15.9 |
| RBM-BY105FE (3 piping) | Ø15.9 Ø15.9 Ø15.9 | Ø22.2 Ø22.2 Ø22.2 | Ø22.2 Ø22.2 Ø22.2 |
| RBM-BY205FE (3 piping) | Ø15.9 Ø15.9 Ø15.9 | Ø22.2 Ø22.2 Ø22.2 | Ø31.8 Ø28.8 Ø28.6 |

**(5) Branching header (*4) (*5) (*6)**

| Number of branches | Total capacity code of indoor units at downstream side<br>Equivalent to capacity (HP) | Model name<br>For 3 piping | <br>For 2 piping |
|---|---|---|---|
| "For 4 branches" | Below 14.2 | RBM-HY1043FE | RBM-HY1043E |
| | 14.2 or more | RBM-HY2043FE | - |
| "For 8 branches" | Below 14.2 | RBM-HY1083FE | RBM-HY1083E |
| | 14.2 or more | RBM-HY2083FE | - |

| Model name | Liquid side | HP/LP gas side | Suction gas side |
|---|---|---|---|
| RBM-HY1043FE (For 4 branches) | ø9.5 ø 15.9 | ø15.9 ø22.2 | ø15.9 ø22.2 |
| RBM-HY2043FE (For 4 branches) | ø9.5 ø15.9 | ø15.9 ø22.2 | ø15.9 ø31.8 |
| RBM-HY1083FE (For 8 branches) | ø9.5 ø15.9 | ø15.9 ø22.2 | ø15.9 ø22.2 |
| RBM-HY2083FE (For 8 branches) | ø9.5 ø15.9 | ø15.9 ø22.2 | ø15.9 ø31.8 |

**(6) Flow selector unit(*9)(*10)(*11)**

| Port type | Total capacity code of indoor units at downstream side<br>Equivalent to capacity (HP) | Model name | Number of branches | Maximum number of connectable indoor units |
|---|---|---|---|---|
| Single port | Below 4.0 | RBM-Y1121FUPE | – | 6 |
| | 4.0 to below 6.4 | RBM-Y1801FUPE | – | 10 |
| | 6.4 to 10.0 or less | RBM-Y2801FUPE | – | 16 |
| Multi port | Below 25.6 (1 branch: below 6.4) | RBM-Y1801FU4PE | 4 | Max. 10 units per branch |
| | Below 38.4 (1 branch: below 6.4) | RBM-Y1801FU8PE | 8 | |
| | Below 38.4 (1 branch: below 6.4) | RBM-Y1801FU12PE | 12 | |

| Model name | Piping size |
|---|---|
| RBM-Y1121FUPE<br>RBM-Y1801FUPE | ⌀12.7<br>⌀15.9<br>⌀9.5<br>⌀15.9<br>⌀9.5 |
| RBM-Y2801FUPE | ⌀19.1<br>⌀22.2<br>⌀12.7<br>⌀22.2<br>⌀12.7 |
| RBM-Y1801FU4PE<br>RBM-Y1801FU8PE<br>RBM-Y1801FU12PE | ⌀28.6<br>⌀15.9<br>⌀22.2<br>⌀9.5 ⌀15.9 |

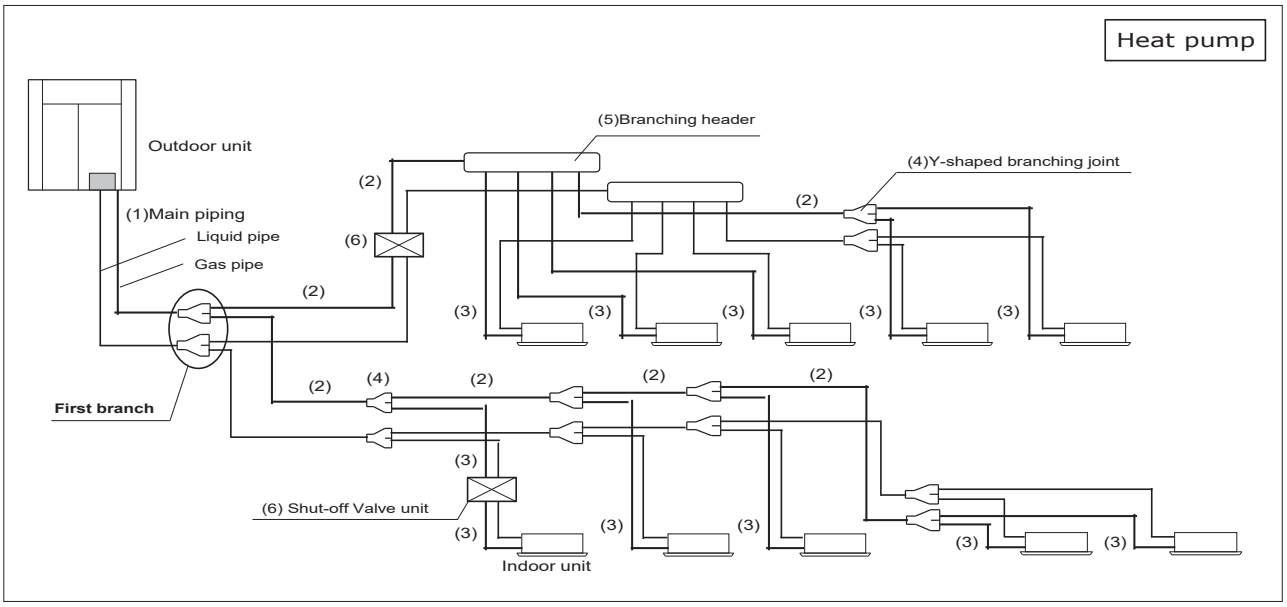
**(7)Shut-off Valve unit(*9)**

| Total capacity code of indoor units<br>Equivalent to capacity (HP) | Model name<br>For 2 piping | Maximum number of connectable indoor units |
|---|---|---|
| Below 4.0 | RBM-SV1121HUPE | 6 |
| 4.0 to below 6.4 | RBM-SV1801HUPE | 10 |
| 6.4 to 32.4 or less | RBM-SV6701HUPE | 16 |

| Model name | Piping size |
|---|---|
| RBM-SV1121HUPE<br>RBM-SV1801HUPE | Ø15.9<br>Ø9.5<br>Ø15.9<br>Ø9.5 |
| RBM-SV6701HUPE | Ø28.6<br>Ø15.9<br>Ø28.6<br>Ø15.9 |

(*1): Use the same size as the main pipe if it is larger than the main pipe.
(*2): Use a suction gas pipe and a liquid pipe for the two pipes branching downstream from the flow selector unit and the dedicated cooling circuit.
(*3): Select the branch pipe of the first branch according to the outdoor capacity code.
(*4): Select according to the outdoor unit capacity code if the total of the indoor capacity codes exceeds the outdoor unit capacity code.
(*5): It is possible to select up to a maximum capacity code total 6 HP for each one branch of the branching header.
(*6): When using a branch header for the first branch with an outdoor unit capacity code of 12 HP or more and 24 HP or less, use RBM-HY2043FE(4 branches) and RBM-HY2083FE(8 branches) regard less of the total value of the capacity codes of the downstream indoor units
(*7): If the pipe size is ⌀19.0 or more, use a suitable material as detailed in the installation manual.
(*8): When making the liquid pipe of the main pipe a refrigerant saving size, make height difference between indoor units smaller than 15 m.
In addition, the farthest piping real length wil be limited.
(*9):For installation conditions, refer to the precautions of equipment using R32.
(*10):Please contact our sales representative when merging downstream piping of multi port type.
(*11): Group connection of multiple indoor unit is possible up to 8 units within one SV unit.

## 3-3-2. 2 Pipe system




**(1) Main piping (*5)**

| Model name | Capacity code | Liquid side(*6) | | | Gas side (mm) |
|---|---|---|---|---|---|
| | Equivalent to capacity (HP) | Standard size (mm) | Refrigerant saving size (mm) | Farthest piping length | |
| MMY-SUG080* | 8 | 12.7 | 9.5 | 90 m | 19.1 |
| MMY-SUG100* | 10 | 12.7 | 9.5 | 60 m | 22.2 |
| MMY-SUG120* | 12 | 12.7 | 9.5 | 50 m | 22.2 |

**(2) Branching pipe (*1) (*5)**

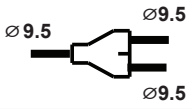
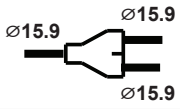
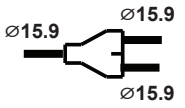
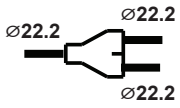
| Total capacity code of indoor units at downstream side | Liquid side (mm) | Gas side (mm) |
|---|---|---|
| Equivalent to capacity (HP) | | |
| Below 2.4 | 9.5 | 12.7 |
| 2.4 to Below 6.4 | 9.5 | 15.9 |
| 6.4 to below 8.4 | 12.7 | 19.1 |
| 8.4 to below 16.2 | 12.7 | 22.2 |
| 16.2 or more | 15.9 | 22.2 |

**(3) Indoor unit connecting pipe (*5)**

| Capacity rank (Type) | Capacity code<br>Equivalent to capacity (HP) | Liquid side (mm) | Gas side (mm) | Real piping length (m) |
|---|---|---|---|---|
| 003 ~ 012 | 0.3 ~ 1.25 | 6.4 | 9.5 | 15 or less |
| | | 6.4 | 12.7 | Exceeds 15 |
| 015 ~ 018 | 1.5 ~ 2.0 | 6.4 | 12.7 | |
| 024 ~ 056 | 2.5 ~ 6.0 | 9.5 | 15.9 | |
| 072, 096 | 8.0, 10.0 | 12.7 | 22.2 | |
| 112 | 12 | 12.7 | 22.2 | |

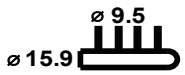
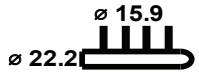
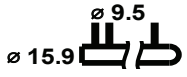
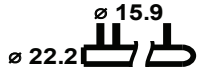
**(4) Y-shaped branching joint (*2) (*3)**

| Total capacity code of indoor units at downstream side | Model name |
|---|---|
| Equivalent to capacity (HP) | For 2 piping |
| Below 6.4 | RBM-BY55E |
| 6.4 or more | RBM-BY105E |

| Model name | Liquid side | Gas side |
|---|---|---|
| RBM-BY55E |  |  |
| RBM-BY105E |  |  |

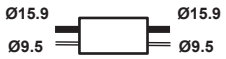
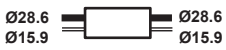
**(5) Branching header (*3) (*4)**

| Number of branches | Total capacity code of indoor units at downstream side<br>Equivalent to capacity (HP) | Model name |
|---|---|---|
| “For 4 branches” | Below 14.2 | RBM-HY1043E |
| “For 8 branches” | Below 14.2 | RBM-HY1083E |

| Model name | Liquid side | Gas side |
|---|---|---|
| RBM-HY1043E<br>(For 4 branches) |  |  |
| RBM-HY1083E<br>(For 8 branches) |  |  |

**6)Shut-off Valve unit(*7)(*8)**

| Total capacity code of indoor units at downstreamside | Model name | Maximum number of connectable indoor units |
|---|---|---|
| Equivalent to capacity (HP) | For 2 piping | |
| Below 4.0 | RBM-SV1121HUPE | 6 |
| 4.0 to below 6.4 | RBM-SV1801HUPE | 10 |
| 6.4 or more | RBM-SV6701HUPE | 16 |

| Model name | Piping size |
|---|---|
| RBM-SV1121HUPE<br>RBM-SV1801HUPE |  |
| RBM-SV6701HUPE |  |

(*1):Use the same size as the main pipe if it is larger than the main pipe.

(*2):Select the branch pipe of the first branch according to the outdoor capacity code.

(*3):Select according to the outdoor unit capacity code if the total of the indoor capacity codes exceeds the outdoor unit capacity code.

(*4):It is possible to select up to a maximum capacity code total 6 HP for each one branch of the branching header.

(*5):If the pipe size is ∅19.0 or more, use a suitable material as detailed in the installation manual.

(*6):When making the liquid pipe of the main pipe a refrigerant saving size, make height difference between indoor units smaller than 15 m. In addition, the farthest piping real length wil l be limited.

(*7):For installation conditions, refer to the precautions of equipment using R32.

(*8): Group connection of multiple indoor unit is possible up to 8 units within one SV unit.

(*9): The downstream starting point is the main pipe.

## 3-4. Charging requirement with additional refrigerant

**Calculation of additional refrigerant charge amount**
Refrigerant charge amount at shipment from the factory does not include the refrigerant for pipes at the local site. For refrigerant to be charged in pipes at the local site, calculate the amount and charge it additionally.

**NOTE**

If the additional refrigerant amount indicates minus as the result of calculation, use the air conditioner without additional refrigerant.

| Outdoor unit type | SUG0801 | SUG1001 | SUG1201 | SUG1401 | SUG1601 | SUG1801 | SUG2001 | SUG2201 | SUG2401 |
|---|---|---|---|---|---|---|---|---|---|
| Charging amount (kg) | 6.0 | | | | 9.0 | | | | |

**Additional refrigerant charge amount at site = [1] + [2] + [3] + [4]**
[1] Compensation by system HP (Table 1)*
[2] Real Length of liquid pipe X additional refrigerant charge amount per 1 m liquid pipe (Table 2)
[3] Corrective amount of refrigerant depending on the Indoor units (Table 3-1, and 3-3)
[4] Corrective amount of refrigerant depending on the outdoor unit diversity (Connected ratio of indoor units to outdoor units). (Table 4)

**Table 1**
**Standard**

| System HP | Conbination HP |
|---|---|
| 8 | 0.5 |
| 10 | 0.7 |
| 12 | 1.2 |
| 14 | 1.2 |
| 16 | -0.3 |
| 18 | 0.6 |
| 20 | 1.2 |
| 22 | 1.4 |
| 24 | 1.6 |

※ This table is common for both heat pump and heat recovery models.

**Table 2**

| Liquid pipe dia. (mm) | | 6.4 | 9.5 | 12.7 | 15.9 | 19.1 |
|---|---|---|---|---|---|---|
| Heat pump | LAdditional refregerant amount per 1m liquid pipe (kg/m) | 0.024 | 0.052 | 0.100 | 0.152 | 0.238 |
| Heat recovery | Additional refregerant amount per 1m liquid pipe (kg/m) | 0.025 | 0.055 | 0.105 | 0.160 | 0.250 |

**Table 3-1**

Corrective amount of refrigerant varies according to indoor unit capacity rank.

| Indoor unit Capacity rank | 003 | 005 | 007 | 008 | 009 | 010 | 012 | 014 | 015 | 018 | 020 | 024 | 027 | 030 | 036 | 048 | 056 | 072 | 096 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Capacity code (Equivalent to HP) | 0.3 | 0.6 | 0.8 | 0.9 | 1 | 1.1 | 1.25 | 1.5 | 1.7 | 2 | 2.25 | 2.5 | 3 | 3.2 | 4 | 5 | 6 | 8 | 10 |
| Corrective amount of refrigerant (kg) | 0.2 | | | | | | | | 0.4 | | | | | | 0.6 | | | 1.0 | |

- If the Fresh Air Intake Indoor Unit (MMD-UP ✻✻✻✻ HFP ✻ ) is connected, the correction amount refrigerant for Fresh Air Intake Indoor Unit is 0 Kg.

**Table 3-3**

Corrective amount of refrigerant varies for Hot Water Module

| Indoor unit Capacity rank | 027 | 056 |
|---|---|---|
| Capacity code (Equivalent to HP) | 2.5 | 5 |
| Corrective amount of refrigerant (kg) | 0.2 | |

**Table 3-4**

Corrective amount of refrigerant varies for (MMU-UP ✻✻✻ H-E) High Efficiency 4 way cassette

| Indoor unit capacity rank | 009 | 012 | 015 | 018 | 024 | 027 | 030 | 036 | 048 | 056 |
|---|---|---|---|---|---|---|---|---|---|---|
| Capacity code (Equivalent to HP) | 1 | 1.25 | 1.7 | 2 | 2.5 | 3 | 3.2 | 4 | 5 | 6 |
| Corrective amount of refrigerant (kg) | 0.2 | | 0.6 | | | | | | | |

**Charging of refrigerant**

- Keeping the valve of the outdoor unit closed, be sure to charge the liquid refrigerant into the service port at the liquid side.
- If the specified amount of refrigerant cannot be charged, fully open the valves of the outdoor unit at liquid and gas sides, operate the air conditioner in COOL mode, and then charge refrigerant into service port at the gas side. In this time, choke the refrigerant slightly by operating the valve of the canister to charge liquid refrigerant.
- The liquid refrigerant may be charged suddenly, therefore be sure to charge refrigerant gradually.

**Table 4**

Corrective amount of refrigerant varies according to the outdoor unit diversity

| Diversity D (%) | Corrective amount of refrigerant (kg) |
|---|---|
| 50% ≤ D < 60% | -2.5 |
| 60% ≤ D < 70% | -2.0 |
| 70% ≤ D < 80% | -1.5 |
| 80% ≤ D < 90% | -1.0 |
| 90% ≤ D < 95% | -0.5 |
| 95% ≤ D | 0 |

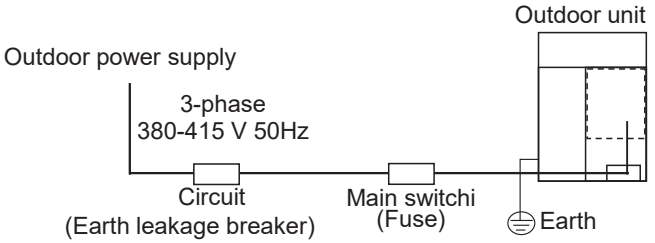
## 4-1. General

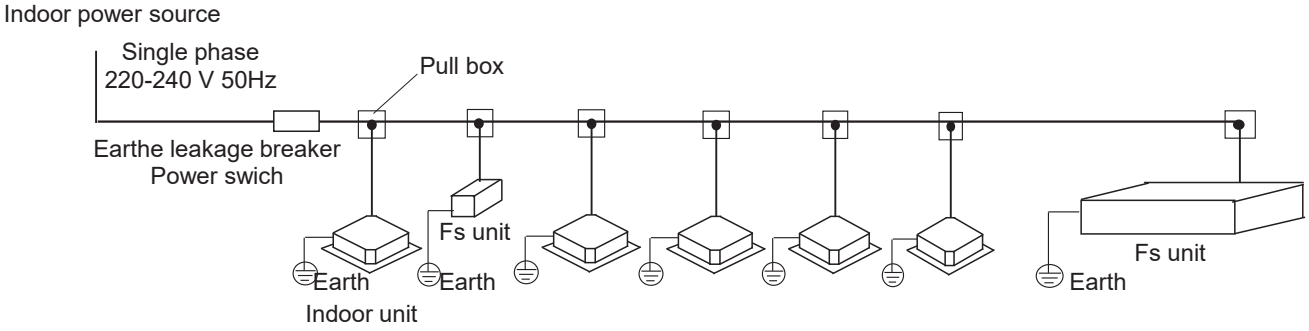
- Perform wiring of the power supply in conformance with the regulations of the local electric company.
- For cabling of the power supply of the indoor unit and the inter-unit cabling between indoor and outdoor units, refer to the Installation Manual of indoor unit.
- Never connect power supply to the terminal block (Uv, Uh, Uc) for control wiring. (The equipment breaks down.)
- Arrange the cables so that the electric wires do not come to contact with high-temperature part of the pipe; otherwise coating melts and an accident may be caused.
- After connecting cable to the terminal block, take off the trap and then fix the cable with cable clamp.
- Do not turn on power of the indoor unit until vacuuming of the refrigerant pipe will finish

## 4-2. Summary of wiring design

| | |
|---|---|
| **Design of outdoor unit power supply** | ・Select the wiring depending on MCA.<br>・Be sure to set the earth leakage breaker from the viewpoint of safety. |
| **Design of indoor unit power supply** | ・Select the wiring depending on total current of indoor units.<br>・Determine the wire size for the length rules.<br>・Be sure to set the earth leakage breaker from the viewpoint of safety. |
| **Design of FS unit power supply** | ・Select the wiring depending on total current of FS units.<br>・Determine the wire size for the length rules.<br>・Be sure to set the earth leakage breaker from the viewpoint of safety. |
| **Design of Leak Detector Interface power supply** | ・Select the wiring depending on total current of FS units.<br>・Determine the wire size for the length rules.<br>・Be sure to set the earth leakage breaker from the viewpoint of safety. |
| **Design of control wiring** | ・Design each control wiring.<br>Between outdoor and indoor units.<br>Between indoor units/door units.<br>Between indoor unit and remote controller, central control, BMS<br>・Select the wire size and type depending on the length rules. |

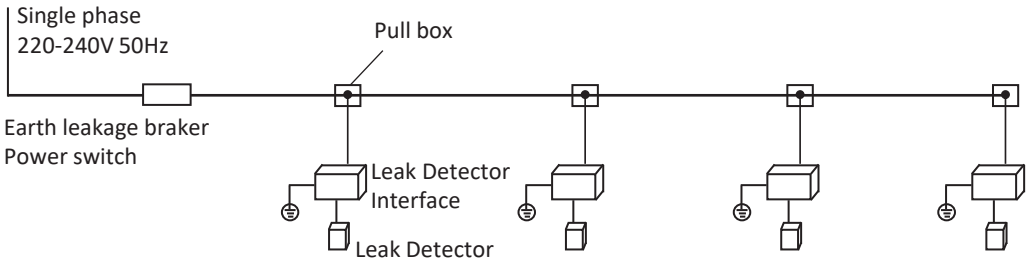
## 4-3. Electrical wiring design




・Wirning size must comply with the applicable local and national code.
・Determine the wire size for the indoor and FS unit according to the number of connected indoor and FS units downstream.

Leak Detector Interface power source




・Wiring size must comply with the applicable local and national code.

・The power supply for Leak Detector Interface should be independent of refrigerant system and mechanical ventilation.

## 4-4. Outdoor unit power supply

・ Select the power supply cabling and fuse of each outdoor unit from the following specifications: cable 4-core, in conformance with Design 60245 IEC 66

・ Do not connect the outdoor units by crossing outside of them, but connect them via the terminal block (L1, L2, L3, N).

### Outdoor unit data

| HP | Model name | Power Supply | Voltage Range | | | Compressor | Fan Motor | MCA | MOCP |
|---|---|---|---|---|---|---|---|---|---|
| | | Phase and frquency | Nominal Voltage | Minimum (V) | Maximum (V) | (kW) | (kW) | (A) | (A) |
| 8 | MMY-SUG0801MT8P-E | 3N~50Hz | 380-400-415V | 342 | 456 | 4.74 | 1 | 17 | 20 |
| 10 | MMY-SUG1001MT8P-E | 3N~50Hz | 380-400-415V | 342 | 456 | 6.40 | 1 | 23 | 32 |
| 12 | MMY-SUG1201MT8P-E | 3N~50Hz | 380-400-415V | 342 | 456 | 8.29 | 1 | 27 | 32 |
| 14 | MMY-SUG1401MT8P-E | 3N~50Hz | 380-400-415V | 342 | 456 | 11.4 | 1 | 31 | 40 |
| 16 | MMY-SUG1601MT8P-E | 3N~50Hz | 380-400-415V | 342 | 456 | 5.63×2 | 1.0×2 | 34 | 40 |
| 18 | MMY-SUG1801MT8P-E | 3N~50Hz | 380-400-415V | 342 | 456 | 6.84×2 | 1.0×2 | 38 | 50 |
| 20 | MMY-SUG2001MT8P-E | 3N~50Hz | 380-400-415V | 342 | 456 | 7.16×2 | 1.0×2 | 40 | 50 |
| 22 | MMY-SUG2201MT8P-E | 3N~50Hz | 380-400-415V | 342 | 456 | 8.48×2 | 1.0×2 | 57 | 63 |
| 24 | MMY-SUG2401MT8P-E | 3N~50Hz | 380-400-415V | 342 | 456 | 11.5×2 | 1.0×2 | 60 | 80 |

・Wirning size must comply with the applicable local and national code.

・Determine the wire size for the indoor unit according to the number of connected indoor units downstream.

## 4-5. Indoor units power supply

• **Electrical characteristics**

| Type | Model name | Nominal Voltage (V-Ph-Hz) | Voltage Range | | Fan Motor | | Power Supply | |
|---|---|---|---|---|---|---|---|---|
| | | | Min | Max | kW | FLA | MCA | MOCP |
| 4-Way Air Discharge Cassette Type | MMU-UP0091H-E | 230-1-50 | 198 | 264 | 0.060 | 0.20 | 0.25 | 15 |
| | MMU-UP0121H-E | 230-1-50 | 198 | 264 | 0.060 | 0.20 | 0.25 | 15 |
| | MMU-UP0151H-E | 230-1-50 | 198 | 264 | 0.130 | 0.22 | 0.28 | 15 |
| | MMU-UP0181H-E | 230-1-50 | 198 | 264 | 0.130 | 0.29 | 0.36 | 15 |
| | MMU-UP0241H-E | 230-1-50 | 198 | 264 | 0.130 | 0.42 | 0.52 | 15 |
| | MMU-UP0271H-E | 230-1-50 | 198 | 264 | 0.130 | 0.53 | 0.66 | 15 |
| | MMU-UP0301H-E | 230-1-50 | 198 | 264 | 0.130 | 0.66 | 0.83 | 15 |
| | MMU-UP0361H-E | 230-1-50 | 198 | 264 | 0.130 | 1.03 | 1.29 | 15 |
| | MMU-UP0481H-E | 230-1-50 | 198 | 264 | 0.130 | 1.06 | 1.32 | 15 |
| | MMU-UP0561H-E | 230-1-50 | 198 | 264 | 0.130 | 1.07 | 1.33 | 15 |
| 4-Way Air Discharge Cassette Type | MMU-UP0091HP-E | 230-1-50 | 198 | 264 | 0.060 | 0.63 | 0.79 | 15 |
| | MMU-UP0121HP-E | 230-1-50 | 198 | 264 | 0.060 | 0.63 | 0.79 | 15 |
| | MMU-UP0151HP-E | 230-1-50 | 198 | 264 | 0.060 | 0.80 | 1.00 | 15 |
| | MMU-UP0181HP-E | 230-1-50 | 198 | 264 | 0.060 | 0.80 | 1.00 | 15 |
| | MMU-UP0241HP-E | 230-1-50 | 198 | 264 | 0.060 | 0.87 | 1.09 | 15 |
| | MMU-UP0271HP-E | 230-1-50 | 198 | 264 | 0.060 | 0.87 | 1.09 | 15 |
| | MMU-UP0301HP-E | 230-1-50 | 198 | 264 | 0.060 | 0.87 | 1.09 | 15 |
| | MMU-UP0361HP-E | 230-1-50 | 198 | 264 | 0.130 | 1.15 | 1.44 | 15 |
| | MMU-UP0481HP-E | 230-1-50 | 198 | 264 | 0.130 | 1.15 | 1.44 | 15 |
| | MMU-UP0561HP-E | 230-1-50 | 198 | 264 | 0.130 | 1.15 | 1.44 | 15 |
| Compact 4-way Cassette Type | MMU-UP0051MH-E | 230-1-50 | 198 | 264 | 0.060 | 0.18 | 0.23 | 15 |
| | MMU-UP0071MH-E | 230-1-50 | 198 | 264 | 0.060 | 0.26 | 0.33 | 15 |
| | MMU-UP0091MH-E | 230-1-50 | 198 | 264 | 0.060 | 0.28 | 0.35 | 15 |
| | MMU-UP0121MH-E | 230-1-50 | 198 | 264 | 0.060 | 0.29 | 0.36 | 15 |
| | MMU-UP0151MH-E | 230-1-50 | 198 | 264 | 0.060 | 0.32 | 0.40 | 15 |
| | MMU-UP0181MH-E | 230-1-50 | 198 | 264 | 0.060 | 0.53 | 0.66 | 15 |
| 2-way Air Discharge Cassette Type | MMU-UP0071WH-E | 230-1-50 | 198 | 264 | 0.060 | 0.24 | 0.30 | 15 |
| | MMU-UP0091WH-E | 230-1-50 | 198 | 264 | 0.060 | 0.24 | 0.30 | 15 |
| | MMU-UP0121WH-E | 230-1-50 | 198 | 264 | 0.060 | 0.24 | 0.30 | 15 |
| | MMU-UP0151WH-E | 230-1-50 | 198 | 264 | 0.094 | 0.25 | 0.31 | 15 |
| | MMU-UP0181WH-E | 230-1-50 | 198 | 264 | 0.094 | 0.32 | 0.40 | 15 |
| | MMU-UP0241WH-E | 230-1-50 | 198 | 264 | 0.094 | 0.43 | 0.54 | 15 |
| | MMU-UP0271WH-E | 230-1-50 | 198 | 264 | 0.094 | 0.43 | 0.54 | 15 |
| | MMU-UP0301WH-E | 230-1-50 | 198 | 264 | 0.094 | 0.50 | 0.63 | 15 |
| | MMU-UP0361WH-E | 230-1-50 | 198 | 264 | 0.139 | 0.58 | 0.73 | 15 |
| | MMU-UP0481WH-E | 230-1-50 | 198 | 264 | 0.139 | 0.65 | 0.81 | 15 |
| | MMU-UP0561WH-E | 230-1-50 | 198 | 264 | 0.139 | 0.89 | 1.11 | 15 |
| 1-way Air Discharge Cassette Type | MMU-UP0031YHP-E | 230-1-50 | 198 | 264 | 0.030 | 0.32 | 0.40 | 15 |
| | MMU-UP0051YHP-E | 230-1-50 | 198 | 264 | 0.030 | 0.32 | 0.40 | 15 |
| | MMU-UP0071YHP-E | 230-1-50 | 198 | 264 | 0.030 | 0.32 | 0.40 | 15 |
| | MMU-UP0091YHP-E | 230-1-50 | 198 | 264 | 0.030 | 0.32 | 0.40 | 15 |
| | MMU-UP0121YHP-E | 230-1-50 | 198 | 264 | 0.030 | 0.32 | 0.40 | 15 |
| | MMU-UP0151YHP-E | 230-1-50 | 198 | 264 | 0.042 | 0.58 | 0.73 | 15 |
| | MMU-UP0181YHP-E | 230-1-50 | 198 | 264 | 0.042 | 0.58 | 0.73 | 15 |
| | MMU-UP0241YHP-E | 230-1-50 | 198 | 264 | 0.059 | 0.80 | 1.00 | 15 |
| | MMU-UP0271YHP-E | 230-1-50 | 198 | 264 | 0.059 | 0.80 | 1.00 | 15 |
| | MMU-UP0151SH-E | 230-1-50 | 198 | 264 | 0.094 | 0.39 | 0.49 | 15 |
| | MMU-UP0181SH-E | 230-1-50 | 198 | 264 | 0.094 | 0.41 | 0.51 | 15 |
| | MMU-UP0241SH-E | 230-1-50 | 198 | 264 | 0.094 | 0.62 | 0.78 | 15 |

| Type | Model name | Nominal Voltage (V-Ph-Hz) | Voltage Range | | Fan Motor | | Power Supply | |
|---|---|---|---|---|---|---|---|---|
| | | | Min | Max | kW | FLA | MCA | MOCP |
| Concealed Duct Type | MMD-UP0051BHP-E | 230-1-50 | 198 | 264 | 0.150 | 0.75 | 0.94 | 15 |
| | MMD-UP0071BHP-E | 230-1-50 | 198 | 264 | 0.150 | 0.75 | 0.94 | 15 |
| | MMD-UP0091BHP-E | 230-1-50 | 198 | 264 | 0.150 | 0.75 | 0.94 | 15 |
| | MMD-UP0121BHP-E | 230-1-50 | 198 | 264 | 0.150 | 0.75 | 0.94 | 15 |
| | MMD-UP0151BHP-E | 230-1-50 | 198 | 264 | 0.150 | 1.24 | 1.55 | 15 |
| | MMD-UP0181BHP-E | 230-1-50 | 198 | 264 | 0.150 | 1.24 | 1.55 | 15 |
| | MMD-UP0241BHP-E | 230-1-50 | 198 | 264 | 0.150 | 1.58 | 1.98 | 15 |
| | MMD-UP0271BHP-E | 230-1-50 | 198 | 264 | 0.150 | 1.58 | 1.98 | 15 |
| | MMD-UP0301BHP-E | 230-1-50 | 198 | 264 | 0.150 | 1.78 | 2.23 | 15 |
| | MMD-UP0361BHP-E | 230-1-50 | 198 | 264 | 0.250 | 2.19 | 2.74 | 15 |
| | MMD-UP0481BHP-E | 230-1-50 | 198 | 264 | 0.250 | 2.66 | 3.33 | 15 |
| | MMD-UP0561BHP-E | 230-1-50 | 198 | 264 | 0.250 | 2.66 | 3.33 | 15 |
| Slim Duct Type | MMD-UP0031SPHY-E | 230-1-50 | 198 | 264 | 0.050 | 0.39 | 0.49 | 15 |
| | MMD-UP0051SPHY-E | 230-1-50 | 198 | 264 | 0.050 | 0.41 | 0.51 | 15 |
| | MMD-UP0071SPHY-E | 230-1-50 | 198 | 264 | 0.050 | 0.46 | 0.57 | 15 |
| | MMD-UP0091SPHY-E | 230-1-50 | 198 | 264 | 0.050 | 0.48 | 0.60 | 15 |
| | MMD-UP0121SPHY-E | 230-1-50 | 198 | 264 | 0.050 | 0.51 | 0.63 | 15 |
| | MMD-UP0151SPHY-E | 230-1-50 | 198 | 264 | 0.094 | 0.54 | 0.67 | 15 |
| | MMD-UP0181SPHY-E | 230-1-50 | 198 | 264 | 0.094 | 0.61 | 0.76 | 15 |
| | MMD-UP0241SPHY-E | 230-1-50 | 198 | 264 | 0.094 | 0.80 | 1.00 | 15 |
| | MMD-UP0271SPHY-E | 230-1-50 | 198 | 264 | 0.095 | 0.85 | 1.06 | 15 |
| Concealed Duct High Static Pressure Type | MMD-UP0181HP-E | 230-1-50 | 198 | 264 | 0.250 | 1.43 | 1.79 | 15 |
| | MMD-UP0241HP-E | 230-1-50 | 198 | 264 | 0.250 | 1.55 | 1.94 | 15 |
| | MMD-UP0271HP-E | 230-1-50 | 198 | 264 | 0.250 | 1.86 | 2.33 | 15 |
| | MMD-UP0361HP-E | 230-1-50 | 198 | 264 | 0.350 | 2.02 | 2.53 | 15 |
| | MMD-UP0481HP-E | 230-1-50 | 198 | 264 | 0.350 | 2.57 | 3.21 | 15 |
| | MMD-UP0561HP-E | 230-1-50 | 198 | 264 | 0.350 | 3.25 | 4.06 | 15 |
| | MMD-UP0721HP-E1 | 230-1-50 | 198 | 264 | 1.000 | 4.30 | 5.40 | 15 |
| | MMD-UP0961HP-E1 | 230-1-50 | 198 | 264 | 1.000 | 5.50 | 6.90 | 15 |
| Ceiling Type | MMC-UP0151HP-E | 230-1-50 | 198 | 264 | 0.094 | 0.42 | 0.53 | 15 |
| | MMC-UP0181HP-E | 230-1-50 | 198 | 264 | 0.094 | 0.42 | 0.53 | 15 |
| | MMC-UP0241HP-E | 230-1-50 | 198 | 264 | 0.094 | 0.75 | 0.94 | 15 |
| | MMC-UP0271HP-E | 230-1-50 | 198 | 264 | 0.094 | 0.75 | 0.94 | 15 |
| | MMC-UP0361HP-E | 230-1-50 | 198 | 264 | 0.139 | 0.89 | 1.11 | 15 |
| | MMC-UP0481HP-E | 230-1-50 | 198 | 264 | 0.139 | 0.89 | 1.11 | 15 |
| | MMC-UP0561HP-E | 230-1-50 | 198 | 264 | 0.139 | 0.89 | 1.11 | 15 |
| High Wall Type | MMK-UP0031HP-E | 230-1-50 | 198 | 264 | 0.030 | 0.16 | 0.21 | 15 |
| | MMK-UP0051HP-E | 230-1-50 | 198 | 264 | 0.030 | 0.16 | 0.21 | 15 |
| | MMK-UP0071HP-E | 230-1-50 | 198 | 264 | 0.030 | 0.17 | 0.21 | 15 |
| | MMK-UP0091HP-E | 230-1-50 | 198 | 264 | 0.030 | 0.18 | 0.23 | 15 |
| | MMK-UP0121HP-E | 230-1-50 | 198 | 264 | 0.030 | 0.20 | 0.25 | 15 |
| | MMK-UP0151HP-E | 230-1-50 | 198 | 264 | 0.042 | 0.30 | 0.38 | 15 |
| | MMK-UP0181HP-E | 230-1-50 | 198 | 264 | 0.042 | 0.33 | 0.41 | 15 |
| | MMK-UP0241HP-E | 230-1-50 | 198 | 264 | 0.042 | 0.48 | 0.60 | 15 |
| | MMK-UP0271HP-E | 230-1-50 | 198 | 264 | 0.061 | 0.66 | 0.83 | 15 |
| | MMK-UP0301HP-E | 230-1-50 | 198 | 264 | 0.061 | 0.66 | 0.83 | 15 |
| | MMK-UP0361HP-E | 230-1-50 | 198 | 264 | 0.061 | 0.66 | 0.83 | 15 |
| High Wall Type (Without PMV) | MMK-UP0031HPL-E | 230-1-50 | 198 | 264 | 0.030 | 0.16 | 0.21 | 15 |
| | MMK-UP0051HPL-E | 230-1-50 | 198 | 264 | 0.030 | 0.16 | 0.21 | 15 |
| | MMK-UP0071HPL-E | 230-1-50 | 198 | 264 | 0.030 | 0.17 | 0.21 | 15 |
| | MMK-UP0091HPL-E | 230-1-50 | 198 | 264 | 0.030 | 0.18 | 0.23 | 15 |
| | MMK-UP0121HPL-E | 230-1-50 | 198 | 264 | 0.030 | 0.20 | 0.25 | 15 |
| | MMK-UP0151HPL-E | 230-1-50 | 198 | 264 | 0.042 | 0.30 | 0.38 | 15 |
| | MMK-UP0181HPL-E | 230-1-50 | 198 | 264 | 0.042 | 0.33 | 0.41 | 15 |
| | MMK-UP0241HPL-E | 230-1-50 | 198 | 264 | 0.042 | 0.48 | 0.60 | 15 |
| Hot Water Module | MMW-UP0271LQ-E | 230-1-50 | 198 | 264 | - | - | 0.90 | 15 |
| | MMW-UP0561LQ-E | 230-1-50 | 198 | 264 | - | - | 0.90 | 15 |
| Fresh Air Intake Indoor unit Type | MMD-UP0481HFP-E | 230-1-50 | 198 | 264 | 0.350 | 1.42 | 1.77 | 15 |
| | MMD-UP0721HFP-E1 | 230-1-50 | 198 | 264 | 1.000 | 1.83 | 2.29 | 15 |
| | MMD-UP0961HFP-E1 | 230-1-50 | 198 | 264 | 1.000 | 2.26 | 2.82 | 15 |
| | MMD-UP1121HFP-E1 | 230-1-50 | 198 | 264 | 1.000 | 2.53 | 3.18 | 15 |

- **Wiring size**

**Must be independent from the outdoor unit power supply**

| Item / Model | Power supply wiring | |
|---|---|---|
| | Wire size | |
| All models of indoor units | 2.0 mm² (AWG#14) Max. 20 m | 3.5 mm² (AWG#12) Max. 50 m |

**NOTE:**

The above connecting lengths stated in the table, indicate the length from the isolator to the outdoor unit. When the power supply of the indoor units are connected in parallel, it is assumed that no more than a 2 % voltage drop will occur. If the connecting length is to exceed the stated lengths, select a suitable wire in accordance with the local wiring standards.

## 4-6. Flow selector unit and Shut-off Valve unit

- **Electrical characteristics**

| Type | Model name | Nominal Voltage (V-Ph-Hz) | Voltage Range(V) | | Power Supply(A) | |
|---|---|---|---|---|---|---|
| | | | Min | Max | MCA | MOCP |
| Flow Selector unit Single port | RBM-Y1121FUPE | 230-1-50 | 198 | 264 | 0.4 | 15 |
| | RBM-Y1801FUPE | 230-1-50 | 198 | 264 | 0.4 | 15 |
| | RBM-Y2801FUPE | 230-1-50 | 198 | 264 | 0.4 | 15 |
| Flow Selector unit Multi port | RBM-Y1801FU4PE | 230-1-50 | 198 | 264 | 0.6 | 15 |
| | RBM-Y1801FU8PE | 230-1-50 | 198 | 264 | 0.9 | 15 |
| | RBM-Y1801FU12PE | 230-1-50 | 198 | 264 | 1.2 | 15 |
| Shut-off Valve unit | RBM-SV1121HUPE | 230-1-50 | 198 | 264 | 0.3 | 15 |
| | RBM-SV1801HUPE | 230-1-50 | 198 | 264 | 0.3 | 15 |
| | RBM-SV6701HUPE | 230-1-50 | 198 | 264 | 0.5 | 15 |

- **Wirring size**

**Must be independent from the outdoor unit power supply**

| Item / Model | Power supply wiring |
|---|---|
| | Wire size |
| Flow selector unit<br>Shut-off Valve unit | 2.5mm$^2$(AWG#13) Max.50m |

## 4-7. Leak Detector Interface

- **Electrical characteristics / Wiring size**

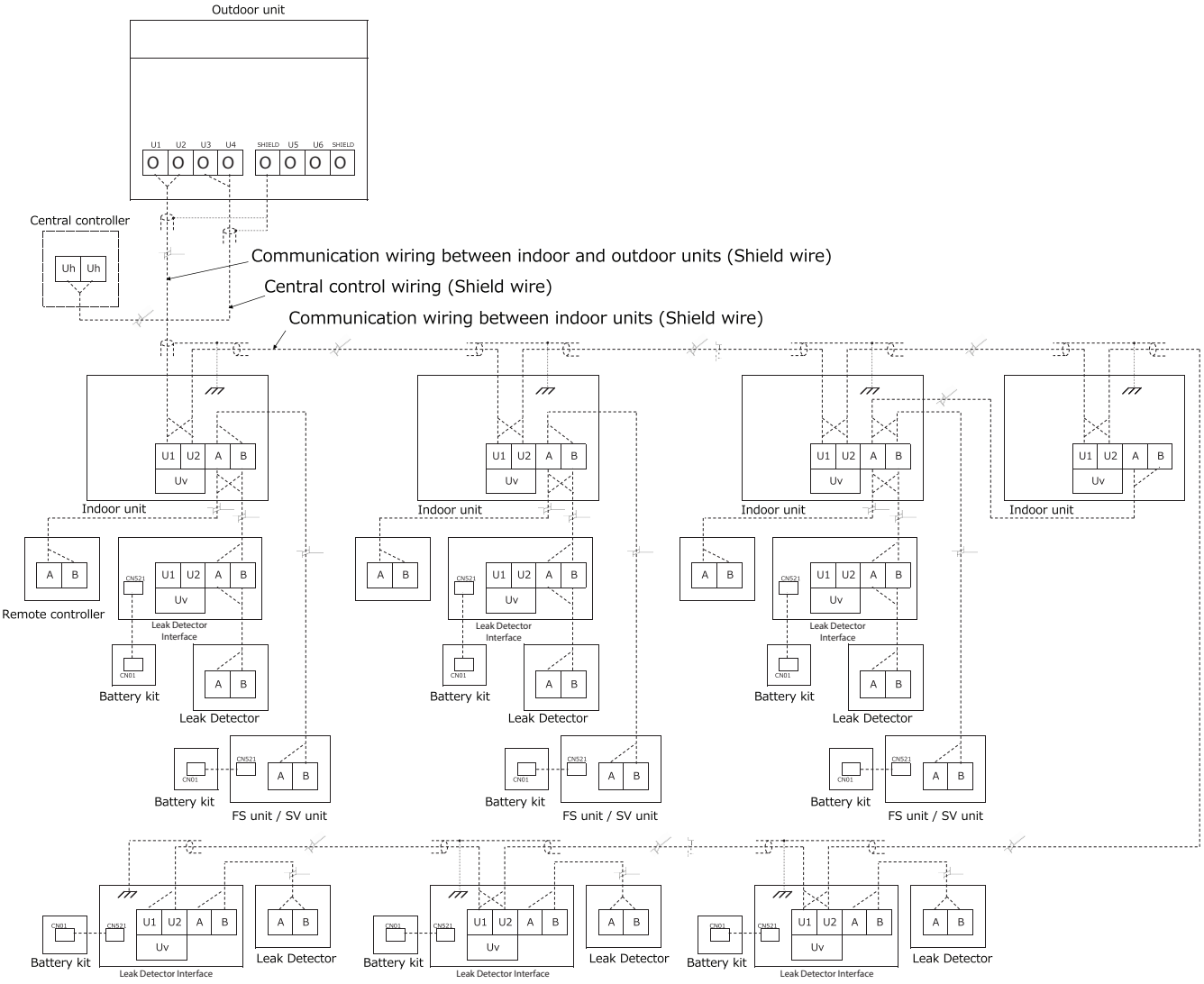
| Model name | Nominal Voltage | Voltage Range(V) | | Power Supply(A) | | Power Supply wiring |
|---|---|---|---|---|---|---|
| | (V-Ph-Hz) | Min | Max | MCA | MOCP | Wire size |
| TCB-LDA1UPE | 230-1-50 | 198 | 264 | 0.3 | 15 | 2.5mm² (AWG#13) Max. 50m |

**Must be independent from the outdoor unit power supply**

**NOTE:**

This circuit must be protected with the required safety devices like a main switch, a slow blow fuse on each phase and an earth leakage circuit breaker. When using residual current operated circuit breakers, be sure to use a high-speed type (0.1 second or less) 30mA rated residual operating current.

## 4-7. Design of control wiring




- Communication wiring and central control wiring use 2-core non-polarity wires.
  Use 2-core shield wires to prevent noise trouble.
- Connecting the closed end terminal of shield wire.(Connected to all connecting sections in each unit)
- Use 2-core non-polarity wire for remote controller. (A, B terminals)
  Use 2-core non-polarity wire for Multi port type FS unit, Single port type FS unit and Shut-off valve .(A, B terminals)
  Use 2-core non-polarity wire for wiring of group control. (A, B terminals)
  Use 2-core non-polarity wire for leak detector. (A, B terminals)

Table-1 Uv line

| | |
|---|---|
| Wiring | 2-core, non-polarity |
| Type | Shield wire |
| Size/Length | 1.0 to 1.5 mm2 : Up to 1000 m |

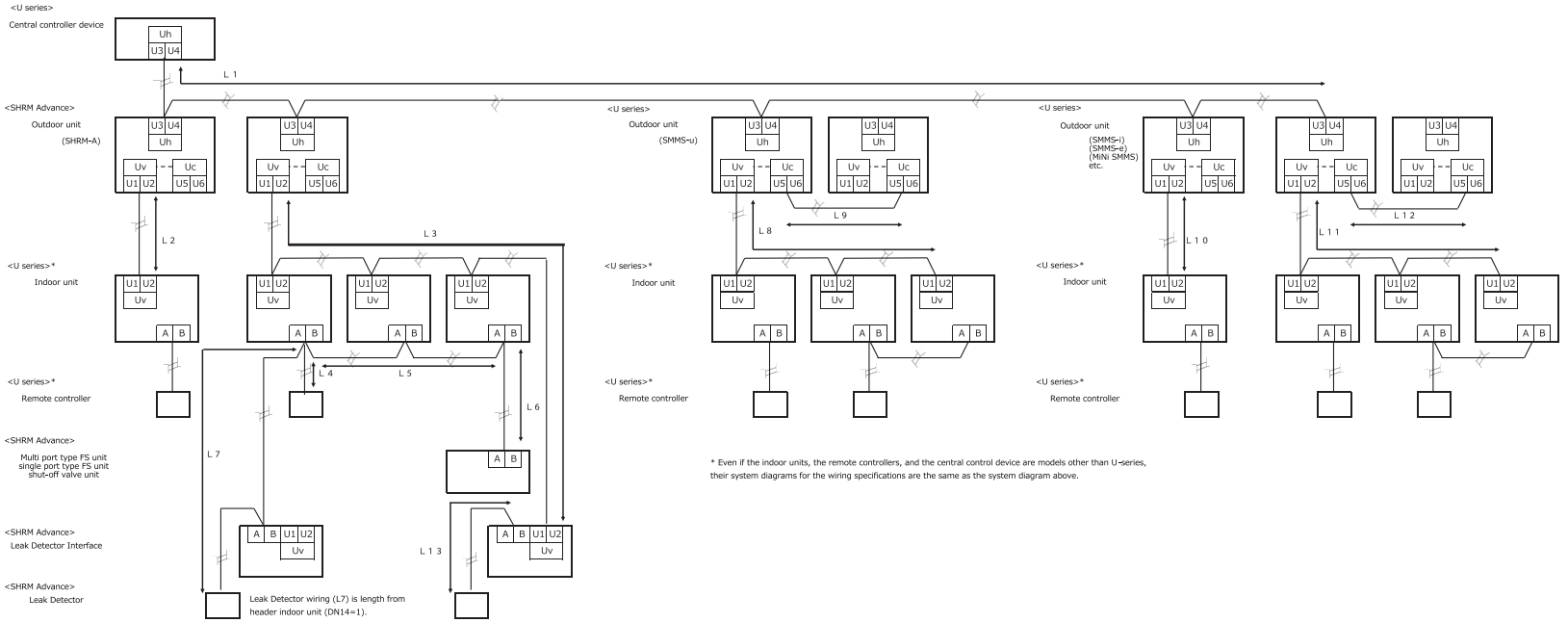
Table-2 Uh line

| | |
|---|---|
| Wiring | 2-core, non-polarity |
| Type | Shield wire |
| Size/Length | 1.0 to 1.5 mm2 : Up to 1000 m<br>2.0 mm2 : Up to 2000 m |

Table-3 Remote controller wiring, Flow Selector unit Multi-port type and Single-port type, Shut-off Valve unit wiring, Leak Detector wiring

| | |
|---|---|
| Wiring | 2-core, non-polarity |
| Type | 0.5 mm2 to 2.0 mm2 |
| Length | ・ Up to 300 m (L4+L5+L6+L7)<br>・ Up to 400 m in case of wireless remote controller in group control.<br>・ Up to 200 m total length of communication wiring between indoor units and FS unit (Multi-port type and Single-port type) or SV unit. (L5+L6)<br>・ Up to 300 m. (L4,L13)<br>・ Up to 100 m. (L7) |

U (v, h) line means of control wiring
Uv line : Between indoor units, Leak Detector Interfaces and outdoor units
Uh line : Central control line.




REQUIREMENT
- For the central control line (L1) when SHRM Advance outdoor units and outdoor units other than SHRM Advance and U-series are connected to the central control device,follow the communication wiring specifications for outdoor unit other than SHRM Advance and U-series.
- Using the same wire type and size, wire each line below.
  If the different wire types and sizes are mixed in each line, communication trouble is caused.
  - Central control line and wiring between indoors and outdoor units other than SHRM Advance and U-series
  - Uv line (wiring between indoor and outdoor units) and Uc line (wiring between outdoor and outdoor units) in SHRM Advance and U-series
  - Wiring between outdoor and outdoor units other than SHRM Advance and U-series
- For communication wiring specifications for outdoor unit other than SHRM Advance, refer to the Installation Manual attached to the outdoor unit to be connected.

[Uh-line and line / wiring between outdoor and indoor units other than SHRM Advance and U series]
Up to 2000m (L1 + L10 + L11)
[Uv line and Uc line in U series]
Up to 1000m (L2, L3)
Up to 1000m (L8 + L9)
[Between outdoor and outdoor units other than SHRM Advance and U series
Up to 100m (L12)

## 5-1. Specifications

| Moel name | | | MMY- | SUG0801MT8P-E | SUG1001MT8P-E | SUG1201MT8P-E | SUG1401MT8P-E |
|---|---|---|---|---|---|---|---|
| Outdoor unit type | | | | Inverter unit | Inverter unit | Inverter unit | Inverter unit |
| Cooling capacity (*1) | | | kW | 22.4 | 28.0 | 33.5 | 40.0 |
| Heating capacity (Rated. *1) | | | kW | 22.4 | 28.0 | 33.5 | 40.0 |
| Heating capacity (Max. *1) | | | kW | 25.0 | 31.5 | 37.5 | 45.0 |
| Capacity range | | | HP | 8 | 10 | 12 | 14 |
| Power supply | | | | 3N~ 50Hz 400V(380-415V) | 3N~ 50Hz 400V(380-415V) | 3N~ 50Hz 400V(380-415V) | 3N~ 50Hz 400V(380-415V) |
| Voltage range (*2) | | Minimum | V | 342 | 342 | 342 | 342 |
| | | Maximum | V | 456 | 456 | 456 | 456 |
| Electrical characteristic (*1) | Cooling | Running current | A | 9.14 | 11.5 | 14.2 | 18.9 |
| | | Power input | kW | 5.13 | 6.83 | 8.88 | 12.04 |
| | | EER | kW/kW | 4.37 | 4.10 | 3.77 | 3.32 |
| | Heating (Rated.) | Running current | A | 8.95 | 10.6 | 12.5 | 16.3 |
| | | Power input | kW | 4.96 | 6.22 | 7.64 | 10.28 |
| | | COP | kW/kW | 4.52 | 4.50 | 4.38 | 3.89 |
| | Heating (Max.) | Running current | A | 9.79 | 12.1 | 14.8 | 19.8 |
| | | Power input | kW | 5.56 | 7.32 | 9.21 | 12.59 |
| | | COP | kW/kW | 4.50 | 4.30 | 4.07 | 3.57 |
| | Starting current | | | Soft Start | Soft Start | Soft Start | Soft Start |
| Dimension | | Height | mm | 1690 | 1690 | 1690 | 1690 |
| | | Witdth | mm | 990 | 990 | 990 | 990 |
| | | Depth | mm | 780 | 780 | 780 | 780 |
| Weight | | | kg | 232 | 232 | 232 | 232 |
| Colour | | | | Silky shade (Munsell 1Y8.5/0.5) | Silky shade (Munsell 1Y8.5/0.5) | Silky shade (Munsell 1Y8.5/0.5) | Silky shade (Munsell 1Y8.5/0.5) |
| Compressor | | Type | | Hermetic twin rotary compressor | Hermetic twin rotary compressor | Hermetic twin rotary compressor | Hermetic twin rotary compressor |
| | | Motor output | kW | 4.74 | 6.40 | 8.29 | 11.40 |
| Fan unit | | Type | | Propeller fan | Propeller fan | Propeller fan | Propeller fan |
| | | Motor output | kW | 1.0 | 1.0 | 1.0 | 1.0 |
| | | Air volume | m3/h | 9900 | 10500 | 11700 | 11880 |
| Max. external static pressure | | | Pa | 80 | 80 | 80 | 80 |
| Heat exchanger | | | | Finned tube | Finned tube | Finned tube | Finned tube |
| Refrigerant | | Name | | R32 | R32 | R32 | R32 |
| | | Charge | kg | 6.0 | 6.0 | 6.0 | 6.0 |
| High-pressure switch | | | MPa | ON:3.20 OFF:4.15 | ON:3.20 OFF:4.15 | ON:3.20 OFF:4.15 | ON:3.20 OFF:4.15 |
| Protective devices | | | | (*3) | (*3) | (*3) | (*3) |
| Power supply wiring | | MCA (*4) | A | 17.0 | 23.0 | 27.0 | 31.0 |
| | | MOCP (*5) | A | 20.0 | 32.0 | 32.0 | 40.0 |
| | | Max Power input | kW | 9.81 | 13.1 | 15.7 | 17.6 |
| Piping connections | Suction gas | Type | | Brazing | Brazing | Brazing | Brazing |
| | | Diameter | mm | Ø19.1 | Ø22.2 | Ø22.2 | Ø28.6 |
| | HP/LP gas | Type | | Brazing | Brazing | Brazing | Brazing |
| | | Diameter | mm | Ø15.9 | Ø19.1 | Ø19.1 | Ø19.1 |
| | Liquid | Type | | Brazing | Brazing | Brazing | Brazing |
| | | Diameter | mm | Ø12.7 | Ø12.7 | Ø12.7 | Ø12.7 |
| Furthest piping Length | 2pipe | Equivalent length | m | 215 | 215 | 215 | - |
| | | Real length | m | 190 | 190 | 190 | - |
| | 3pipe | Equivalent length | m | 190 | 190 | 190 | 190 |
| | | Real length | m | 165 | 165 | 165 | 165 |
| Max. number of connected indoor units | | | | 18 | 22 | 27 | 31 |
| Sound pressure level | | Cooling | dB(A) | 53 | 55 | 58 | 58 |
| | | Heating | dB(A) | 56 | 58 | 62 | 63 |
| Sound power level | | Cooling | dB(A) | 74 | 75 | 79 | 79 |
| | | Heating | dB(A) | 77 | 78 | 82 | 84 |
| Operation temperature range | | Cooling (*6) | °CDB | -15.0 to 50.0 | -15.0 to 50.0 | -15.0 to 50.0 | -15.0 to 50.0 |
| | | Heating (*7) | °CWB | -25.0 to 15.5 | -25.0 to 15.5 | -25.0 to 15.5 | -25.0 to 15.5 |

Note

(*1) Rated conditions Cooling : Indoor 27 degC Dry Bulb / 19 degC Wet Bulb , Outdoor 35 degC Dry Bulb.
Heating : Indoor 20 degC Dry Bulb , Outdoor 7 degC Dry Bulb / 6 degC Wet Bulb.
Based on equivalent piping length of 7.5m and piping height difference of 0 m.

(*2) Voltage range : Unit is suitable for use on electrical system where voltage supplied to unit terminal is not below or above listed range limits.

(*3) Discharge temp. sensor / Suction temp. sensor / High-pressure sensor / Low-pressure sensor / Compressor case thermostat / PC board fuse

(*4) Select wire size base on the larger value of MCA.
MCA : Minimum Circuit Amps

(*5) MOCP : Maximum Overcurent Protection(Amps)

(*6) Low ambient cooling (-5 degC or less) is limited to application.
1.Not suitable for applications, which require precise room temperature control, due to increased risk of indoor ON/OFF control and potential low air off temperatures.
2.For areas that do demand a precise room temperature control, we would recommend the installation of a secondary system, which has been designed solely forthe purpose of low ambient cooling.
3.When used in low outdoor air cooling(-10℃ or lower), only the method in which all connected indoor units operate simultaneously for cooling can be used.

(*7) Low ambient heating (-20 degC or less) for extended periods of time is not allowed.

| Moel name | | | MMY- | SUG1601MT8P-E | SUG1801MT8P-E | SUG2001MT8P-E | SUG2201MT8P-E | SUG2401MT8P-E |
|---|---|---|---|---|---|---|---|---|
| Outdoor unit type | | | | Inverter unit | Inverter unit | Inverter unit | Inverter unit | Inverter unit |
| Cooling capacity (*1) | | | kW | 45.0 | 50.4 | 56.0 | 61.5 | 67.0 |
| Heating capacity (Rated. *1) | | | kW | 45.0 | 50.4 | 56.0 | 61.5 | 67.0 |
| Heating capacity (Max. *1) | | | kW | 50.0 | 56.0 | 63.0 | 69.0 | 70.0 |
| Capacity range | | | HP | 16 | 18 | 20 | 22 | 24 |
| Power supply | | | | 3N~ 50Hz 400V(380-415V) | 3N~ 50Hz 400V(380-415V) | 3N~ 50Hz 400V(380-415V) | 3N~ 50Hz 400V(380-415V) | 3N~ 50Hz 400V(380-415V) |
| Voltage range (*2) | | Minimum | V | 342 | 342 | 342 | 342 | 342 |
| | | Maximum | V | 456 | 456 | 456 | 456 | 456 |
| Electrical characteristic (*1) | Cooling | Running current | A | 21.1 | 24.8 | 25.4 | 29.2 | 38.1 |
| | | Power input | kW | 12.16 | 14.78 | 15.47 | 18.19 | 24.27 |
| | | EER | kW/kW | 3.70 | 3.41 | 3.62 | 3.38 | 2.76 |
| | Heating (Rated.) | Running current | A | 19.9 | 23.8 | 23.6 | 26.1 | 30.9 |
| | | Power input | kW | 11.06 | 14.00 | 14.25 | 16.10 | 19.48 |
| | | COP | kW/kW | 4.07 | 3.60 | 3.93 | 3.82 | 3.44 |
| | Heating (Max.) | Running current | A | 21.9 | 27.4 | 27.3 | 30.9 | 37.9 |
| | | Power input | kW | 12.43 | 16.52 | 17.01 | 19.48 | 24.15 |
| | | COP | kW/kW | 4.02 | 3.39 | 3.70 | 3.54 | 2.90 |
| | Starting current | | | Soft Start | Soft Start | Soft Start | Soft Start | Soft Start |
| Dimension | | Height | mm | 1690 | 1690 | 1690 | 1690 | 1690 |
| | | Witdth | mm | 1290 | 1290 | 1290 | 1290 | 1290 |
| | | Depth | mm | 780 | 780 | 780 | 780 | 780 |
| Weight | | | kg | 329 | 329 | 361 | 361 | 361 |
| Colour | | | | Silky shade (Munsell 1Y8.5/0.5) | Silky shade (Munsell 1Y8.5/0.5) | Silky shade (Munsell 1Y8.5/0.5) | Silky shade (Munsell 1Y8.5/0.5) | Silky shade (Munsell 1Y8.5/0.5) |
| Compressor | | Type | | Hermetic twin rotary compressor | Hermetic twin rotary compressor | Hermetic twin rotary compressor | Hermetic twin rotary compressor | Hermetic twin rotary compressor |
| | | Motor output | kW | 5.63×2 | 6.84×2 | 7.16×2 | 8.48×2 | 11.5×2 |
| Fan unit | | Type | | Propeller fan | Propeller fan | Propeller fan | Propeller fan | Propeller fan |
| | | Motor output | kW | 1.0×2 | 1.0×2 | 1.0×2 | 1.0×2 | 1.0×2 |
| | | Air volume | m3/h | 15300 | 16800 | 15900 | 16500 | 16800 |
| Max. external static pressure | | | Pa | 80 | 80 | 80 | 80 | 80 |
| Heat exchanger | | | | Finned tube | Finned tube | Finned tube | Finned tube | Finned tube |
| Refrigerant | | Name | | R32 | R32 | R32 | R32 | R32 |
| | | Charge | kg | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| High-pressure switch | | | MPa | ON:3.20 OFF:4.15 | ON:3.20 OFF:4.15 | ON:3.20 OFF:4.15 | ON:3.20 OFF:4.15 | ON:3.20 OFF:4.15 |
| Protective devices | | | | (*3) | (*3) | (*3) | (*3) | (*3) |
| Power supply wiring | | MCA (*4) | A | 34.0 | 38.0 | 40.0 | 57.0 | 60.0 |
| | | MOCP (*5) | A | 40.0 | 50.0 | 50.0 | 63.0 | 80.0 |
| | | Max Power input | kW | 19.5 | 21.7 | 23.0 | 32.5 | 34.5 |
| Piping connections | Suction gas | Type | | Brazing | Brazing | Brazing | Brazing | Brazing |
| | | Diameter | mm | ø28.6 | ø28.6 | ø28.6 | ø28.6 | ø28.6 |
| | HP/LP gas | Type | | Brazing | Brazing | Brazing | Brazing | Brazing |
| | | Diameter | mm | ø22.2 | ø22.2 | ø22.2 | ø22.2 | ø22.2 |
| | Liquid | Type | | Brazing | Brazing | Brazing | Brazing | Brazing |
| | | Diameter | mm | ø15.9 | ø15.9 | ø15.9 | ø15.9 | ø15.9 |
| Furthest piping Length | 2pipe | Equivalent length | m | - | - | - | - | - |
| | | Real length | m | - | - | - | - | - |
| | 3pipe | Equivalent length | m | 190 | 190 | 190 | 190 | 190 |
| | | Real length | m | 165 | 165 | 165 | 165 | 165 |
| Max. number of connected indoor units | | | | 36 | 40 | 45 | 49 | 54 |
| Sound pressure level | | Cooling | dB(A) | 60 | 61 | 63 | 64 | 64 |
| | | Heating | dB(A) | 64 | 67 | 67 | 67 | 69 |
| Sound power level | | Cooling | dB(A) | 83 | 84 | 85 | 86 | 86 |
| | | Heating | dB(A) | 87 | 89 | 89 | 90 | 91 |
| Operation temperature range | | Cooling (*6) | °CDB | -15.0 to 50.0 | -15.0 to 50.0 | -15.0 to 50.0 | -15.0 to 50.0 | -15.0 to 50.0 |
| | | Heating (*7) | °CWB | -25.0 to 15.5 | -25.0 to 15.5 | -25.0 to 15.5 | -25.0 to 15.5 | -25.0 to 15.5 |

Note

(*1) Rated conditions Cooling : Indoor 27 degC Dry Bulb / 19 degC Wet Bulb , Outdoor 35 degC Dry Bulb.
Heating : Indoor 20 degC Dry Bulb , Outdoor 7 degC Dry Bulb / 6 degC Wet Bulb.
Based on equivalent piping length of 7.5m and piping height difference of 0 m.

(*2) Voltage range : Unit is suitable for use on electrical system where voltage supplied to unit terminal is not below or above listed range limits.

(*3) Discharge temp. sensor / Suction temp. sensor / High-pressure sensor / Low-pressure sensor / Compressor case thermostat / PC board fuse

(*4) Select wire size base on the larger value of MCA.
MCA : Minimum Circuit Amps

(*5) MOCP : Maximum Overcurent Protection(Amps)

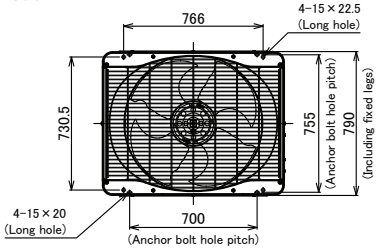
(*6) Low ambient cooling (-5 degC or less) is limited to application.
1.Not suitable for applications, which require precise room temperature control, due to increased risk of indoor ON/OFF control and potential low air off temperatures.
2.For areas that do demand a precise room temperature control, we would recommend the installation of a secondary system, which has been designed solely forthe purpose of low ambient cooling.
3.When used in low outdoor air cooling(-10℃ or lower), only the method in which all connected indoor units operate simultaneously for cooling can be used.

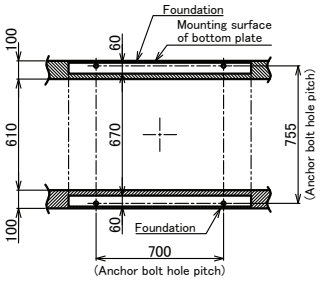
(*7) Low ambient heating (-20degC or less) for extended periods of time is not allowed.

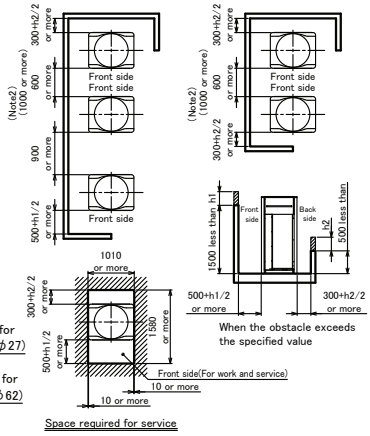
# 5-2. Dimensional drawing

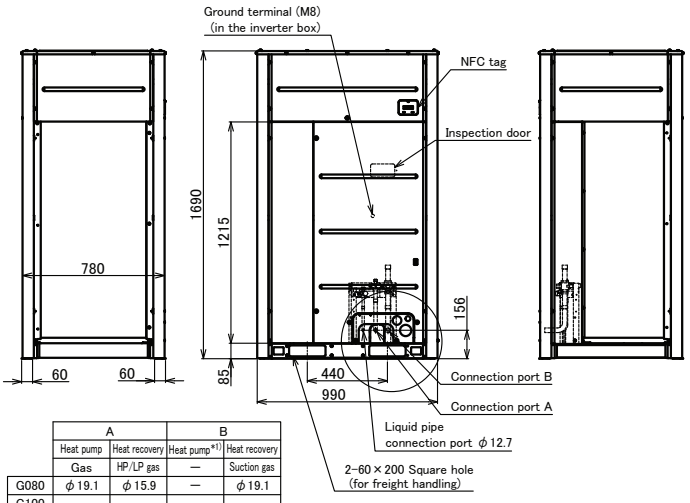
## Model : MMY-SUG0801MT8P-E, MMY-SUG1001MT8P-E, MMY-SUG1201MT8P-E, MMY-SUG1401MT8P-E

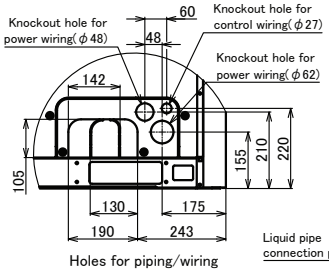
Note)
1. If there is an obstacle at the upper side of the outdoor unit, set the top end of the outdoor unit 2000mm apart from the obstacle.
2. Draw out the pipe procured locally to the front of the outdoor unit horizontally, and keep 500mm or more between the outdoor unit and traversing pipe if placing pipe transversely.

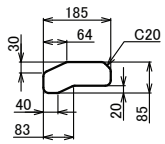


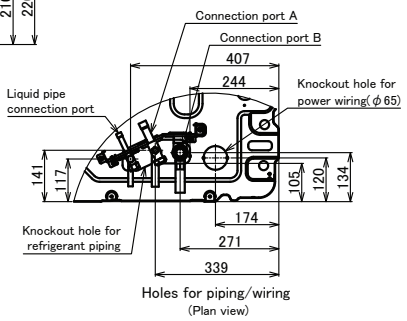



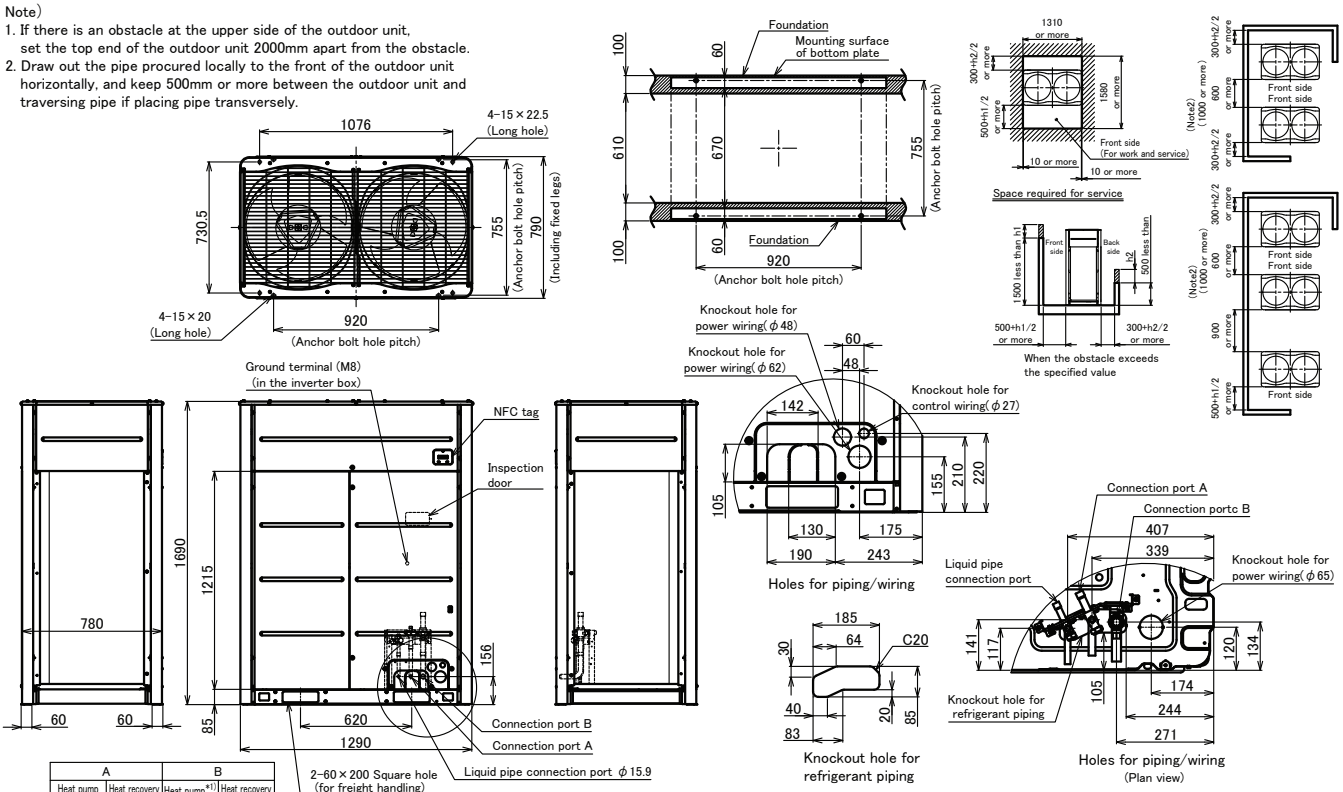

| | A | | B | |
|---|---|---|---|---|
| | Heat pump | Heat recovery | Heat pump*1) | Heat recovery |
| | Gas | HP/LP gas | — | Suction gas |
| G080 | φ19.1 | φ15.9 | — | φ19.1 |
| G100 | φ22.2 | φ19.1 | — | φ22.2 |
| G120 | | | | |
| G140 | φ28.6 | φ19.1 | — | φ28.6 |

*1) In case of using as Heat pump model, connection port B is not connected.

(Unit:mm)

## Model : MMY-SUG1601MT8P-E, MMY-SUG1801MT8P-E, MMY-SUG2001MT8P-E, MMY-SUG2201MT8P-E
## MMY-SUG2401MT8P-E

Note)
1. If there is an obstacle at the upper side of the outdoor unit, set the top end of the outdoor unit 2000mm apart from the obstacle.
2. Draw out the pipe procured locally to the front of the outdoor unit horizontally, and keep 500mm or more between the outdoor unit and traversing pipe if placing pipe transversely.

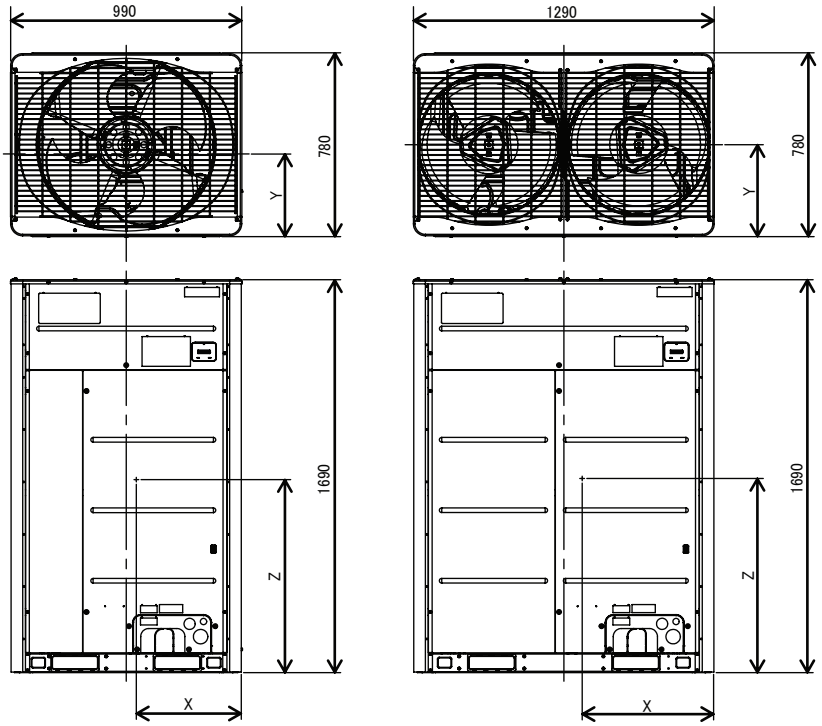



| | A | | B | |
|---|---|---|---|---|
| | Heat pump | Heat recovery | Heat pump*1) | Heat recovery |
| | Gas | HP/LP gas | — | Suction gas |
| G160 | ϕ28.6 | ϕ22.2 | — | ϕ28.6 |
| G180 | | | | |
| G200 | | | | |
| G220 | | | | |
| G240 | | | | |

*1) In case of using as Heat pump model, connection port B is not connected.

(Unit:mm)

## 5-3. Center of gravity

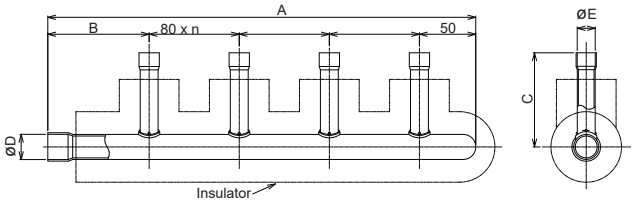



| No. | Model | X (mm) | Y (mm) | Z (mm) | Mass (kg) |
|---|---|---|---|---|---|
| A | MMY-SUG0801* | 450 | 355 | 830 | 232 |
| | MMY-SUG1001* | | | | |
| | MMY-SUG1201* | | | | |
| | MMY-SUG1401* | | | | |
| B | MMY-SUG1601* | 565 | 390 | 835 | 329 |
| | MMY-SUG1801* | | | | |
| | MMY-SUG2001* | 490 | 390 | 725 | 361 |
| | MMY-SUG2201* | | | | |
| | MMY-SUG2401* | | | | |

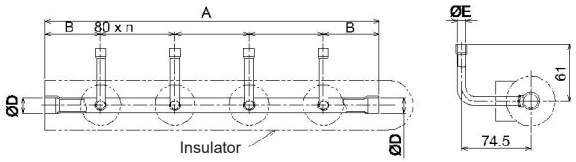
## 5-4. Branching header / branching joint

**RBM-HY1043FE, HY1083FE, HY2043FE, HY2083FE** (For 3 piping)

**Suction gas side, HP/LP gas side**



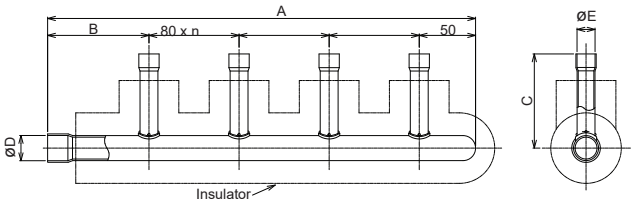

**Liquid side**



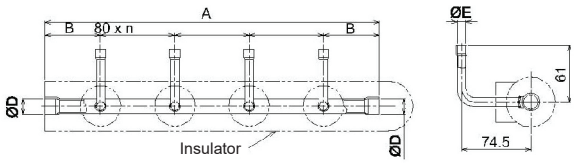

| Model | | A | B | C | øD | øE | n | Accessory socket Q'ty | Sealed pipe |
|---|---|---|---|---|---|---|---|---|---|
| RBM-HY1043FE | Suction gas side | 380 | 90 | 83.6 | 22.2 | 15.9 | 3 | ⑥x 3, ⑨x 4, ⑭x 1, ⑱x 1, ⑦⓪x 1 | ø 15.9 x 1 |
| | HP/LP gas side | 380 | 90 | 83.6 | 22.2 | 15.9 | 3 | ⑥x 4, ⑨x 4, ⑱x 1, ⑭x 1, ⑧⑤x 1 | ø 15.9 x 3 |
| | Liquid side | 330 | 45 | - | 15.9 | 9.5 | 3 | ①x 4, ⑥x 1, ⑨x 1 | ø 15.9 x 1, ø 9.5 x 1 |
| RBM-HY1083FE | Suction gas side | 700 | 90 | 83.6 | 22.2 | 15.9 | 7 | ⑥x 7, ⑨x 8, ⑭x 1, ⑱x 1, ⑦⓪x 1 | ø 15.9 x 3 |
| | HP/LP gas side | 700 | 90 | 83.6 | 22.2 | 15.9 | 7 | ⑥x 8, ⑨x 8, ⑱x 1, ⑭x 1, ⑧⑤x 1 | ø 15.9 x 7 |
| | Liquid side | 650 | 45 | - | 15.9 | 9.5 | 7 | ①x 8, ⑥x 1, ⑨x 1 | ø 15.9 x 1, ø 9.5 x 3 |
| RBM-HY2043FE | Suction gas side | 385.5 | 95.5 | 89.3 | 31.8 | 15.9 | 3 | ⑥x 2, ⑨x 2, ㉗x 1, ⑤⑨x 1 | ø 15.9 x 1 |
| | HP/LP gas side | 380 | 90 | 83.6 | 22.2 | 15.9 | 3 | ⑨x 4, ⑱x 1, ⑦⓪x 1 | ø 15.9 x 3 |
| | Liquid side | 330 | 45 | - | 15.9 | 9.5 | 3 | ①x 2, ⑤①x 1, ⑨①x 1 | ø 15.9 x 1, ø 9.5 x 1 |
| RBM-HY2083FE | Suction gas side | 705.5 | 95.5 | 89.3 | 31.8 | 15.9 | 7 | ⑥x 7, ⑨x 7, ㉗x 1, ⑤⑨x 1 | ø 15.9 x 3 |
| | HP/LP gas side | 700 | 90 | 83.6 | 22.2 | 15.9 | 7 | ⑨x 8, ⑱x 1, ⑦⓪x 1 | ø 15.9 x 7 |
| | Liquid side | 650 | 45 | - | 15.9 | 9.5 | 7 | ①x 7, ⑤①x 1, ⑨①x 1 | ø 15.9 x 1, ø 9.5 x 3 |

**RBM-HY1043E, HY1083E** (For 2 piping)

**Gas side**




**Liquid side**

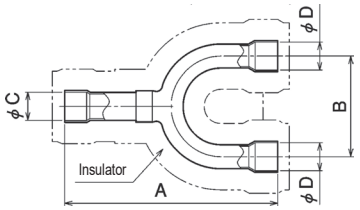



| Model | | A | B | C | øD | øE | n | Accessory socket Q'ty | Sealed pipe |
|---|---|---|---|---|---|---|---|---|---|
| RBM-HY1043E | Gas side | 380 | 90 | 83.6 | 22.2 | 15.9 | 3 | ⑥x 4, ⑨x 4, ⑭x 1, ⑱x 1, ⑦⓪x 1, ⑧⑤x 1 | ø 15.9 x 1 |
| | Liquid side | 360 | 60 | - | 15.9 | 9.5 | 3 | ①x 4, ⑥x 1, ⑨x 1 | ø 15.9 x 1, ø 9.5 x 1 |
| RBM-HY1083E | Gas side | 700 | 90 | 83.6 | 22.2 | 15.9 | 7 | ⑥x 8, ⑨x 8, ⑭x 1, ⑱x 1, ⑦⓪x 1, ⑧⑤x 1 | ø 15.9 x 3 |
| | Liquid side | 680 | 60 | - | 15.9 | 9.5 | 7 | ①x 8, ⑥x 1, ⑨x 1 | ø 15.9 x 1, ø 9.5 x 3 |

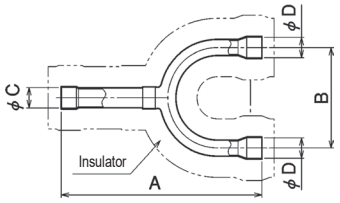
• **Y-shape branching joint**

**RBM-BY55FE, BY105FE, BY205FE** (For 3 piping)

**Suction gas side, HP/LP gas side**



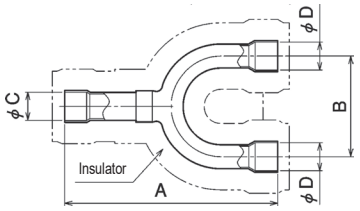

**Liquid side**



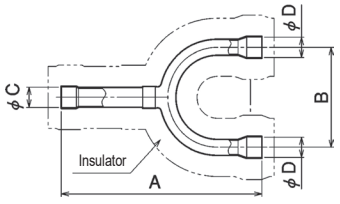

| Model | | A | B | øC | øD | Accessory socket Q'ty | Sealed pipe |
|---|---|---|---|---|---|---|---|
| RBM-BY55FE | Suction gas side | 160 | 80 | 15.9 | 15.9 | ⑨① x 2 | |
| | HP/LP gas side | 160 | 80 | 15.9 | 15.9 | ⑨ x 3 | ø 12.7 x 1 |
| | Liquid side | 130 | 70 | 9.5 | 9.5 | ① x 2 | |
| RBM-BY105FE | Suction gas side | 170 | 80 | 22.2 | 22.2 | ⑭ x 2, ⑱ x 1, ⑦⓪ x 2, ⑨① x 1 | |
| | HP/LP gas side | 170 | 80 | 22.2 | 22.2 | ⑭ x 1, ⑱ x 1, ⑨③ x 2 | ø 12.7 x 1 |
| | Liquid side | 160 | 80 | 15.9 | 15.9 | ⑨① x 2, ⑨② x 1 | |
| RBM-BY205FE | Suction gas side | 200 | 80 | 31.8 | 28.6 | ⑯ x 1, ㉓ x 1, ㉗ x 1, ㊸ x 2, ⑤⑧ x 1, ⑤⑨ x 1, ⑨① x 1 | |
| | HP/LP gas side | 170 | 80 | 22.2 | 22.2 | ⑱ x 2, ⑦⓪ x 2, ⑨③ x 1 | ø 12.7 x 1 |
| | Liquid side | 160 | 80 | 15.9 | 15.9 | ⑨ x 2, ⑤① x 2, ⑨② x 1 | |

**RBM-BY55E, BY105E** (For 2 piping)

**Gas side**



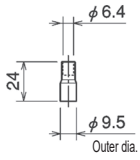

**Liquid side**



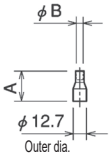

| Model | | A | B | øC | øD | Accessory socket Q'ty |
|---|---|---|---|---|---|---|
| RBM-BY55E | Gas side | 160 | 80 | 15.9 | 15.9 | ⑨ x 1, ⑤① x 2, ⑨① x 2 |
| | Liquid side | 130 | 70 | 9.5 | 9.5 | ① x 2 |
| RBM-BY105E | Gas side | 170 | 80 | 22.2 | 22.2 | ⑭ x 2, ⑱ x 1, ⑦⓪ x 2, ⑨① x 1 |
| | Liquid side | 160 | 80 | 15.9 | 15.9 | ⑥ x 1, ⑨ x 1, ⑨① x 1, ⑨② x 1 |

## • Accessory socket

①

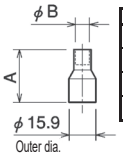



②⑤⑭⑧④



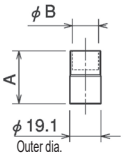

| | A | øB |
|---|---|---|
| ② | 29 | 6.4 |
| ⑤ | 26 | 9.5 |
| ⑭ | 31 | 15.9 |
| ⑧④ | 40 | 19.1 |

③⑥⑨⑤①



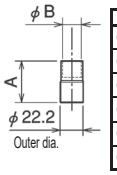

| | A | øB |
|---|---|---|
| ③ | 35 | 6.4 |
| ⑥ | 32 | 9.5 |
| ⑨ | 28 | 12.7 |
| ⑤① | 37.5 | 19.1 |

④⑦⑩⑬⑤②⑥⑦



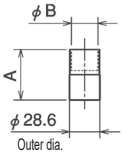

| | A | øB |
|---|---|---|
| ④ | 39 | 6.4 |
| ⑦ | 39 | 9.5 |
| ⑩ | 36 | 12.7 |
| ⑬ | 33 | 15.9 |
| ⑤② | 42.5 | 22.2 |
| ⑥⑦ | 49 | 25.4 |

⑭⑱⑥⑨⑦⓪⑧⑤⑧⑥



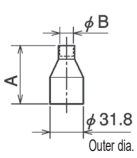

| | A | øB |
|---|---|---|
| ⑭ | 40 | 15.9 |
| ⑱ | 40 | 19.1 |
| ⑥⑨ | 48 | 25.4 |
| ⑦⓪ | 54 | 28.6 |
| ⑧⑤ | 41 | 12.7 |
| ⑧⑥ | 44 | 9.5 |

⑯⑳㉔㊸㊽㊾㊸㊽



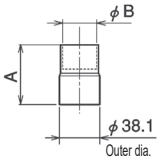

| | A | øB |
|---|---|---|
| ⑯ | 50 | 15.9 |
| ⑳ | 52 | 19.1 |
| ㉔ | 48 | 25.4 |
| ㊸ | 50 | 22.2 |
| ㊽ | 54 | 9.5 |
| ㊾ | 52 | 12.7 |
| ㊸ | 55 | 31.8 |
| ㊽ | 62 | 34.9 |

㉕㉗㊺㊾



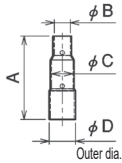

| | A | øB |
|---|---|---|
| ㉓ | 55 | 22.2 |
| ㉕ | 53 | 25.4 |
| ㉗ | 49 | 28.6 |
| ㊺ | 64 | 38.1 |
| ㊾ | 59 | 34.9 |

㉘㊶㊷㊶㊷㊸㊹㊺㊻㊼㊿



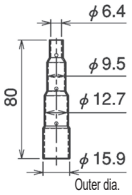

| | A | øB |
|---|---|---|
| ㉘ | 58 | 31.8 |
| ㊶ | 55 | 34.9 |
| ㊷ | 66 | 41.3 |
| ㊶ | 66 | 28.6 |
| ㊷ | 66 | 25.4 |
| ㊸ | 66 | 22.2 |
| ㊹ | 66 | 19.1 |
| ㊺ | 64 | 15.9 |
| ㊻ | 62 | 12.7 |
| ㊼ | 62 | 9.5 |
| ㊿ | 77 | 44.6 |

㊶①㊸④㊺⑤㊻⑥㊼⑦

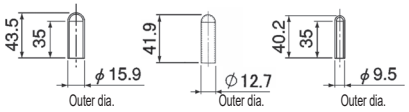



| | A | øB | øC | øD |
|---|---|---|---|---|
| ㊶① | 58 | 9.5 | 12.7 | 15.9 |
| ㊸③ | 69 | 12.7 | 19.1 | 22.2 |
| ㊹④ | 71 | 15.9 | 19.1 | 22.2 |
| ㊺⑤ | 80 | 22.2 | 25.4 | 28.6 |
| ㊻⑥ | 87 | 25.4 | 28.6 | 31.8 |
| ㊼⑦ | 95 | 28.6 | 31.8 | 38.1 |

㊷②



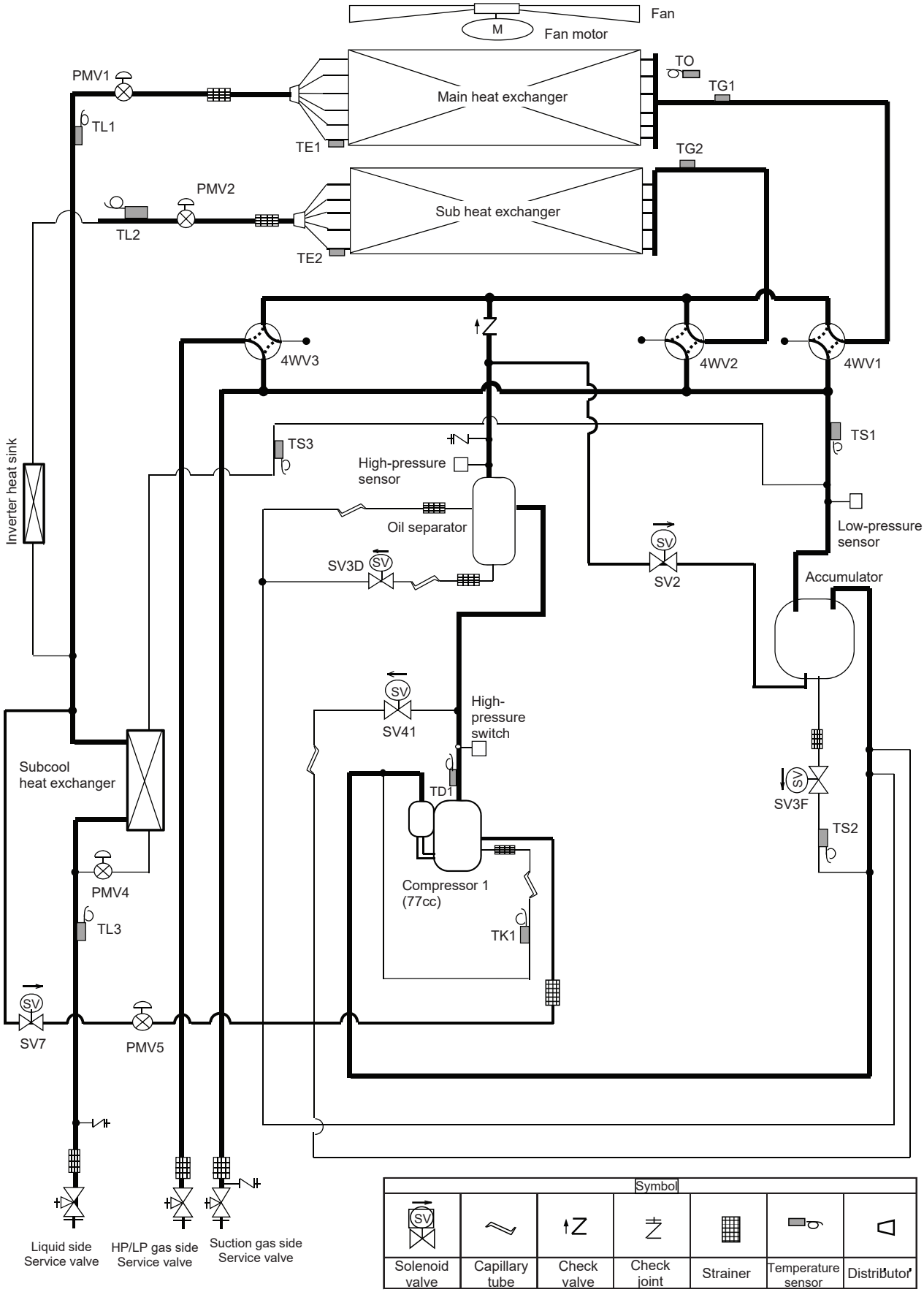

**Sealed pipe**



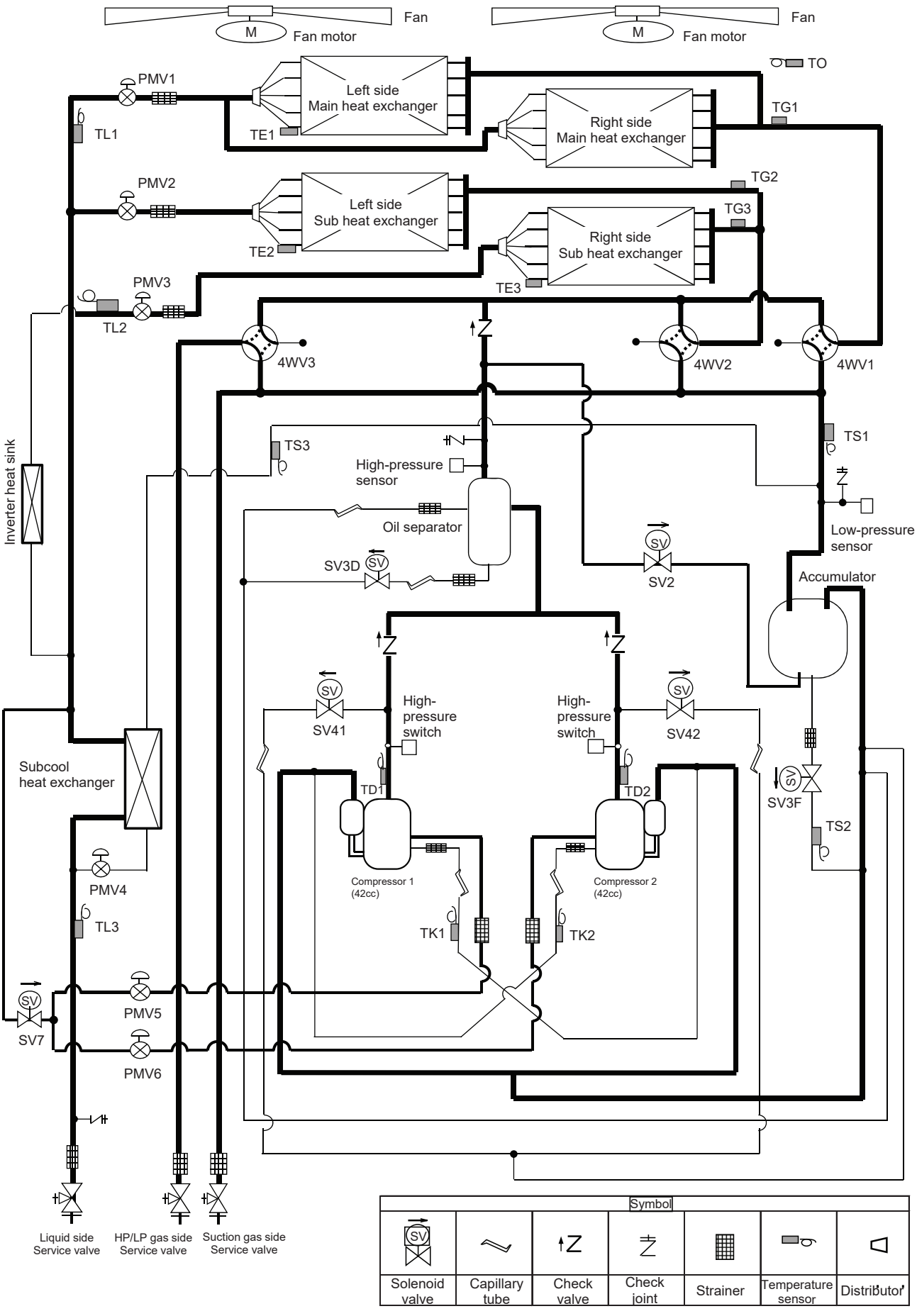

**(Unit : mm)**

## 5-5. Refrigerant cycle diagram

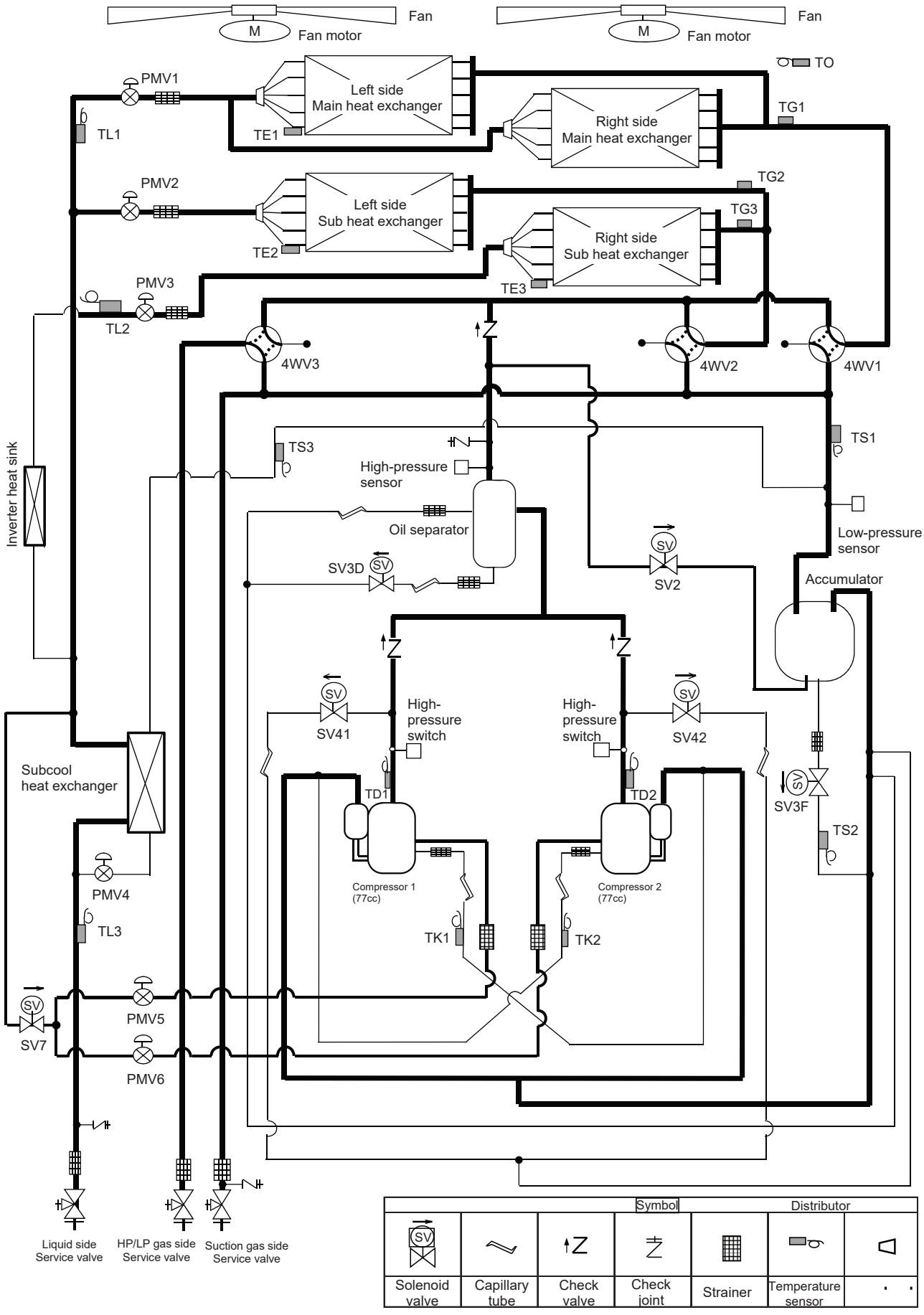
**Model : MMY-SUG0801MT8(J)P-E, MMY-SUG1001MT8(J)P-E, MMY-SUG1201MT8(J)P-E, MMY-SUG1401MT8(J)P-E**



**Model : MMY-SUG1601MT8(J)P-E, MMY-SUG1801MT8(J)P-E**

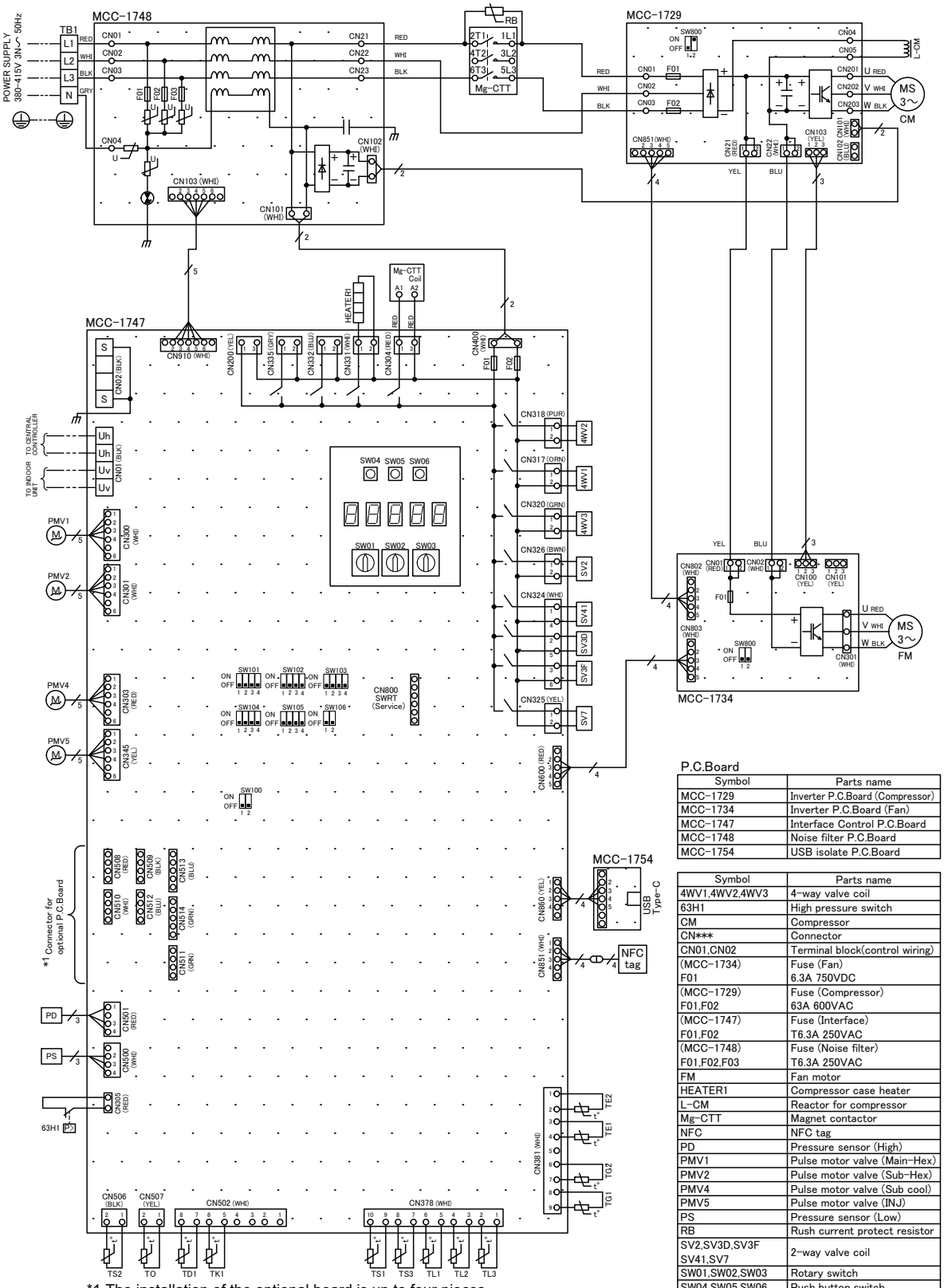


**Model : MMY-SUG2001MT8(J)P-E, MMY-SUG2201MT8(J)P-E, MMY-SUG2401MT8(J)P-E**



## 5-6. Wiring diagram

**Model : MMY-SUG0801MT8(J)P-E, MMY-SUG1001MT8(J)P-E, MMY-SUG1201MT8(J)P-E, MMY-SUG1401MT8(J)P-E**




*1 The installation of the optional board is up to four pieces.

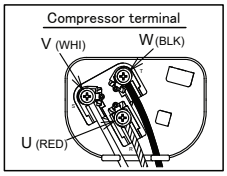
P.C.Board

| Symbol | Parts name |
|---|---|
| MCC-1729 | Inverter P.C.Board (Compressor) |
| MCC-1734 | Inverter P.C.Board (Fan) |
| MCC-1747 | Interface Control P.C.Board |
| MCC-1748 | Noise filter P.C.Board |
| MCC-1754 | USB isolate P.C.Board |

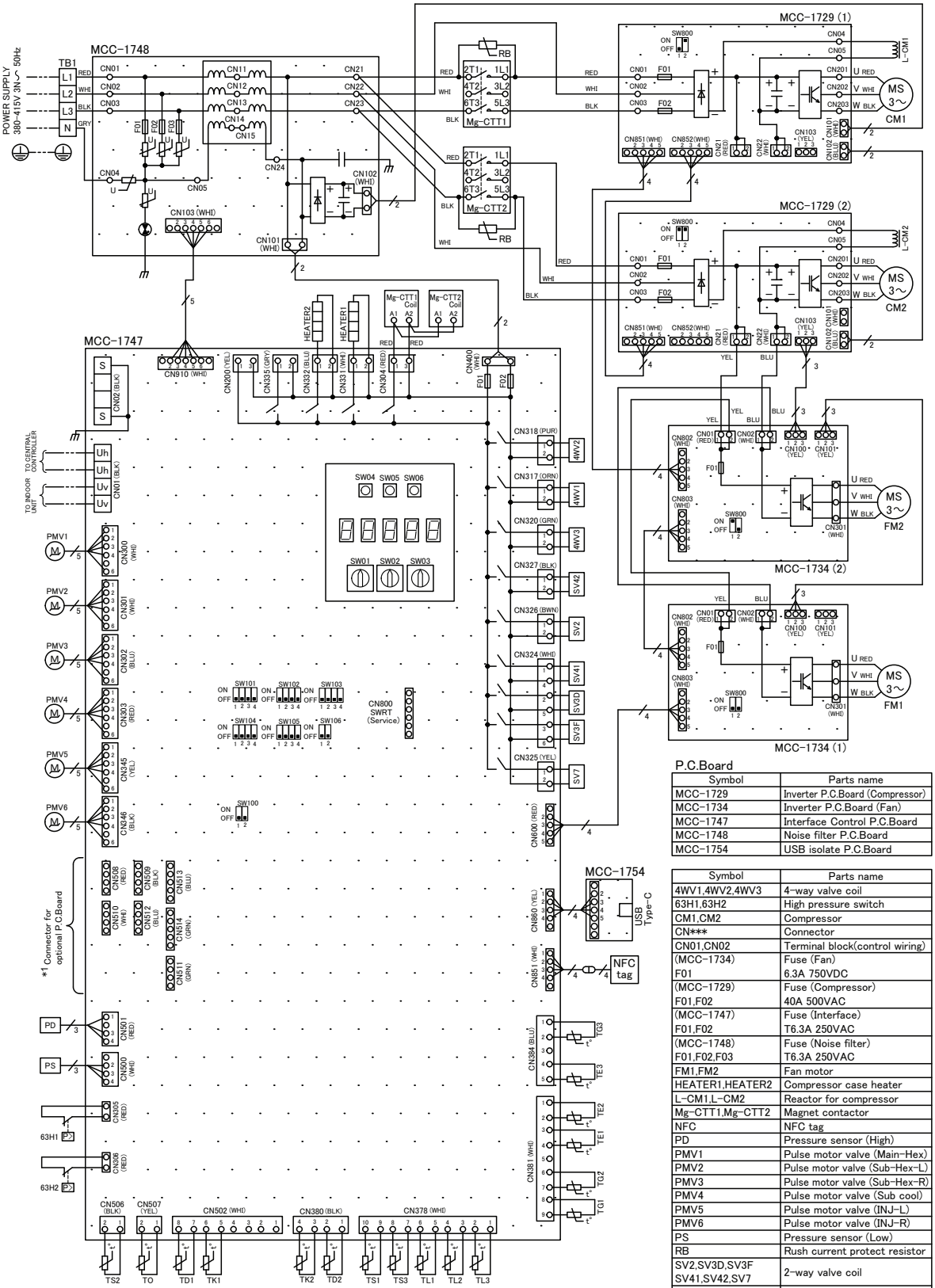
| Symbol | Parts name |
|---|---|
| 4WV1,4WV2,4WV3 | 4-way valve coil |
| 63H1 | High pressure switch |
| CM | Compressor |
| CN*** | Connector |
| CN01,CN02 | Terminal block(control wiring) |
| (MCC-1734)<br>F01 | Fuse (Fan)<br>6.3A 750VDC |
| (MCC-1729)<br>F01,F02 | Fuse (Compressor)<br>63A 600VAC |
| (MCC-1747)<br>F01,F02 | Fuse (Interface)<br>T6.3A 250VAC |
| (MCC-1748)<br>F01,F02,F03 | Fuse (Noise filter)<br>T6.3A 250VAC |
| FM | Fan motor |
| HEATER1 | Compressor case heater |
| L-CM | Reactor for compressor |
| Mg-CTT | Magnet contactor |
| NFC | NFC tag |
| PD | Pressure sensor (High) |
| PMV1 | Pulse motor valve (Main-Hex) |
| PMV2 | Pulse motor valve (Sub-Hex) |
| PMV4 | Pulse motor valve (Sub cool) |
| PMV5 | Pulse motor valve (INJ) |
| PS | Pressure sensor (Low) |
| RB | Rush current protect resistor |
| SV2,SV3D,SV3F<br>SV41,SV7 | 2-way valve coil |
| SW01,SW02,SW03 | Rotary switch |
| SW04,SW05,SW06 | Push button switch |
| SW100,SW101,SW102<br>SW103,SW104,SW105<br>SW106 | Dip switch |
| TB1 | Terminal block(Power supply) |
| TD1 | Discharge temp. sensor |
| TE1,TE2 | Heat exchange temp. sensor |
| TG1,TG2 | Gas temp. sensor |
| TK1 | Oil temp. sensor |
| TL1,TL2,TL3 | Liquid temp. sensor |
| TO | Air temp. sensor |
| TS1,TS2,TS3 | Suction temp. sensor |

| | |
|---|---|
| ----- | Field wiring |
| ⏚ | Protective earth |
| □□ | Terminal block |
| —○— | Terminal |
| ▭ | Connector |
| ····· | P.C.Board |

Color indication
RED:RED
WHI:WHITE
YEL:YELLOW
BLU:BLUE
BLK:BLACK
GRY:GRAY
ORN:ORANGE
GRN:GREEN
PUR:PURPLE
BRW:BROWN



## Model : MMY-SUG1601MT8(J)P-E, MMY-SUG1801MT8(J)P-E




*1 The installation of the optional board is up to four pieces.

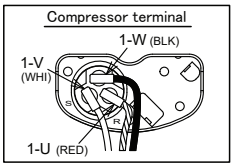
P.C.Board

| Symbol | Parts name |
|---|---|
| MCC-1729 | Inverter P.C.Board (Compressor) |
| MCC-1734 | Inverter P.C.Board (Fan) |
| MCC-1747 | Interface Control P.C.Board |
| MCC-1748 | Noise filter P.C.Board |
| MCC-1754 | USB isolate P.C.Board |

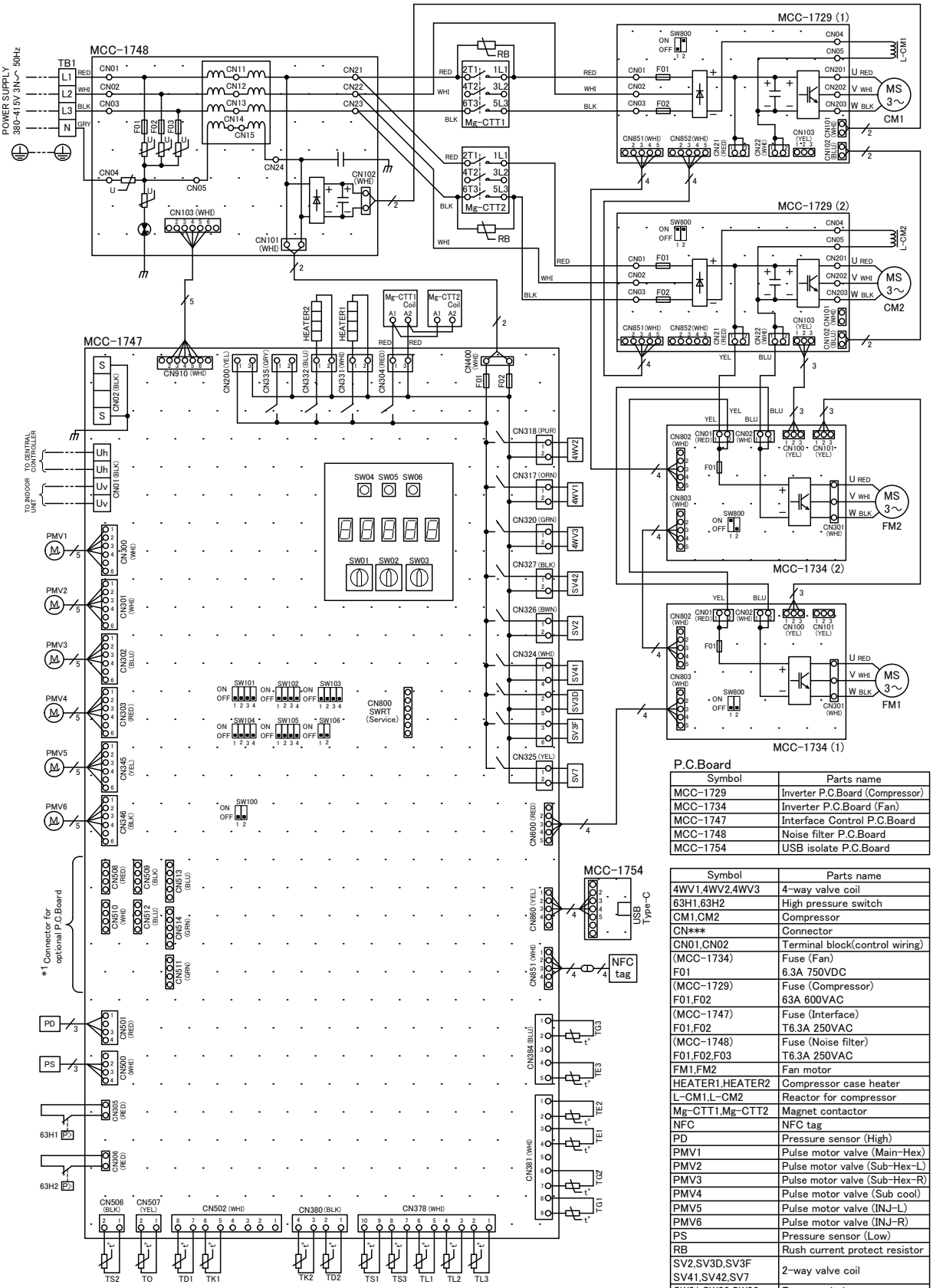
| Symbol | Parts name |
|---|---|
| 4WV1,4WV2,4WV3 | 4-way valve coil |
| 63H1,63H2 | High pressure switch |
| CM1,CM2 | Compressor |
| CN*** | Connector |
| CN01,CN02 | Terminal block(control wiring) |
| (MCC-1734) F01 | Fuse (Fan) 6.3A 750VDC |
| (MCC-1729) F01,F02 | Fuse (Compressor) 40A 500VAC |
| (MCC-1747) F01,F02 | Fuse (Interface) T6.3A 250VAC |
| (MCC-1748) F01,F02,F03 | Fuse (Noise filter) T6.3A 250VAC |
| FM1,FM2 | Fan motor |
| HEATER1,HEATER2 | Compressor case heater |
| L-CM1,L-CM2 | Reactor for compressor |
| Mg-CTT1,Mg-CTT2 | Magnet contactor |
| NFC | NFC tag |
| PD | Pressure sensor (High) |
| PMV1 | Pulse motor valve (Main-Hex) |
| PMV2 | Pulse motor valve (Sub-Hex-L) |
| PMV3 | Pulse motor valve (Sub-Hex-R) |
| PMV4 | Pulse motor valve (Sub cool) |
| PMV5 | Pulse motor valve (INJ-L) |
| PMV6 | Pulse motor valve (INJ-R) |
| PS | Pressure sensor (Low) |
| RB | Rush current protect resistor |
| SV2,SV3D,SV3F SV41,SV42,SV7 | 2-way valve coil |
| SW01,SW02,SW03 | Rotary switch |
| SW04,SW05,SW06 | Push button switch |
| SW100,SW101,SW102 SW103,SW104,SW105 SW106 | Dip switch |
| TB1 | Terminal block(Power supply) |
| TD1,TD2 | Discharge temp. sensor |
| TE1,TE2,TE3 | Heat exchange temp. sensor |
| TG1,TG2,TG3 | Gas temp. sensor |
| TK1,TK2 | Oil temp. sensor |
| TL1,TL2,TL3 | Liquid temp. sensor |
| TO | Air temp. sensor |
| TS1,TS2,TS3 | Suction temp. sensor |

| | |
|---|---|
| ——— | Field wiring |
| ⏚ | Protective earth |
| □ | Terminal block |
| —o— | Terminal |
| ⊡ | Connector |
| ····· | P.C.Board |

Color indication
RED:RED
WHI:WHITE
YEL:YELLOW
BLU:BLUE
BLK:BLACK
GRY:GRAY
ORN:ORANGE
GRN:GREEN
PUR:PURPLE
BRW:BROWN



## Model : MMY-SUG2001MT8(J)P-E, MMY-SUG2201MT8(J)P-E, MMY-SUG2401MT8(J)P-E




*1 The installation of the optional board is up to four pieces.

P.C.Board

| Symbol | Parts name |
|---|---|
| MCC-1729 | Inverter P.C.Board (Compressor) |
| MCC-1734 | Inverter P.C.Board (Fan) |
| MCC-1747 | Interface Control P.C.Board |
| MCC-1748 | Noise filter P.C.Board |
| MCC-1754 | USB isolate P.C.Board |

| Symbol | Parts name |
|---|---|
| 4WV1,4WV2,4WV3 | 4-way valve coil |
| 63H1,63H2 | High pressure switch |
| CM1,CM2 | Compressor |
| CN*** | Connector |
| CN01,CN02 | Terminal block(control wiring) |
| (MCC-1734) F01 | Fuse (Fan) 6.3A 750VDC |
| (MCC-1729) F01,F02 | Fuse (Compressor) 63A 600VAC |
| (MCC-1747) F01,F02 | Fuse (Interface) T6.3A 250VAC |
| (MCC-1748) F01,F02,F03 | Fuse (Noise filter) T6.3A 250VAC |
| FM1,FM2 | Fan motor |
| HEATER1,HEATER2 | Compressor case heater |
| L-CM1,L-CM2 | Reactor for compressor |
| Mg-CTT1,Mg-CTT2 | Magnet contactor |
| NFC | NFC tag |
| PD | Pressure sensor (High) |
| PMV1 | Pulse motor valve (Main-Hex) |
| PMV2 | Pulse motor valve (Sub-Hex-L) |
| PMV3 | Pulse motor valve (Sub-Hex-R) |
| PMV4 | Pulse motor valve (Sub cool) |
| PMV5 | Pulse motor valve (INJ-L) |
| PMV6 | Pulse motor valve (INJ-R) |
| PS | Pressure sensor (Low) |
| RB | Rush current protect resistor |
| SV2,SV3D,SV3F SV41,SV42,SV7 | 2-way valve coil |
| SW01,SW02,SW03 | Rotary switch |
| SW04,SW05,SW06 | Push button switch |
| SW100,SW101,SW102 SW103,SW104,SW105 SW106 | Dip switch |
| TB1 | Terminal block(Power supply) |
| TD1,TD2 | Discharge temp. sensor |
| TE1,TE2,TE3 | Heat exchange temp. sensor |
| TG1,TG2,TG3 | Gas temp. sensor |
| TK1,TK2 | Oil temp. sensor |
| TL1,TL2,TL3 | Liquid temp. sensor |
| TO | Air temp. sensor |
| TS1,TS2,TS3 | Suction temp. sensor |

| | |
|---|---|
| ——— | Field wiring |
| ⏚ | Protective earth |
| □ | Terminal block |
| —○— | Terminal |
| ⊂⊃ | Connector |
| ····· | P.C.Board |

Color indication
RED:RED
WHI:WHITE
YEL:YELLOW
BLU:BLUE
BLK:BLACK
GRY:GRAY
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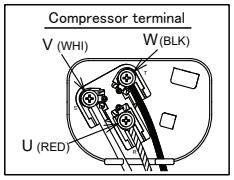
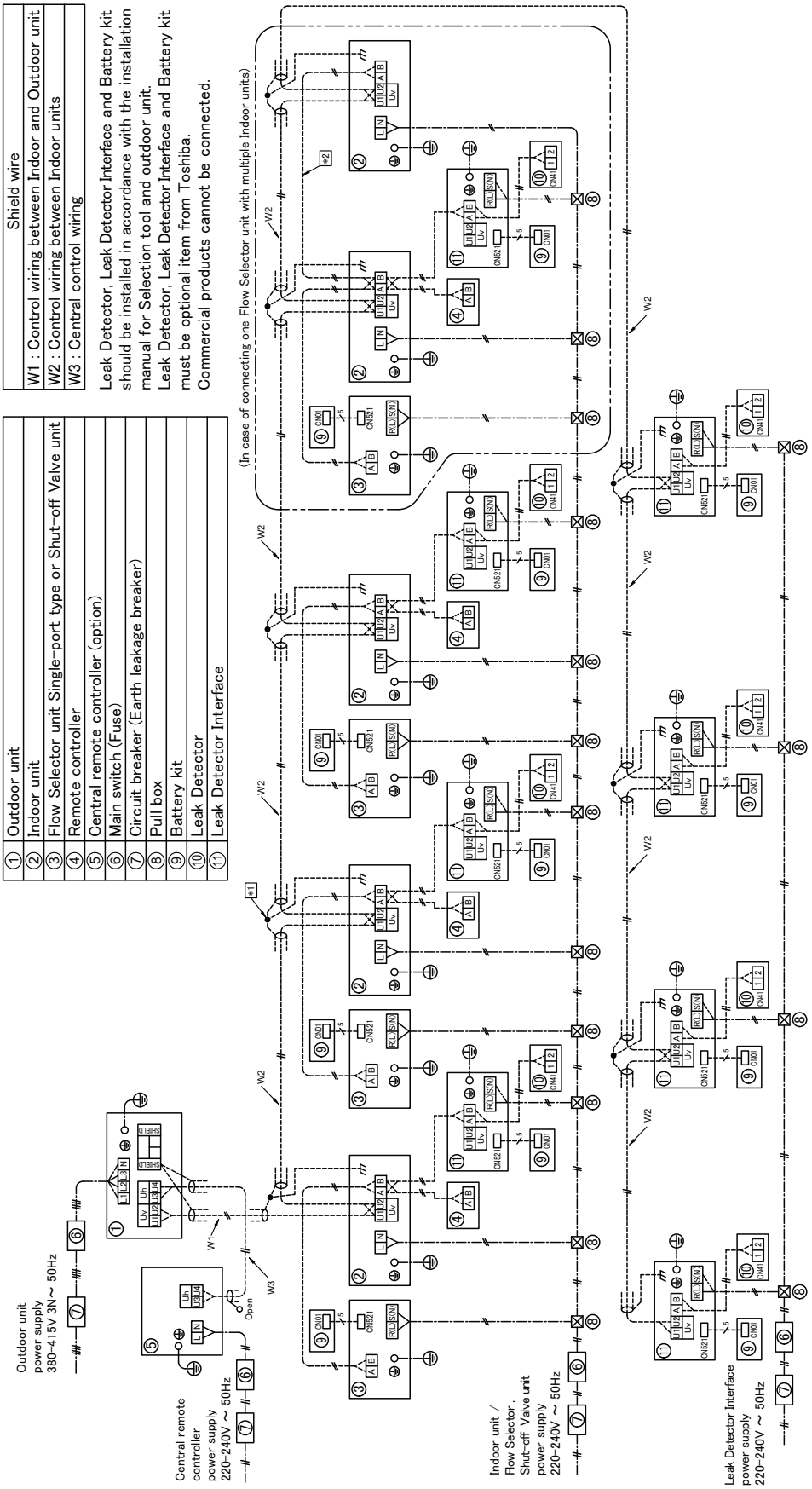
PUR:PURPLE
BRW:BROWN



# 5-7. Connecting diagram

**Single-port Type**




- Select the power supply wiring and fuse of Outdoor/Indoor units according to each model's specification.
- Perform wiring of power supply complying with the rules and regulations of the local electric company.
- For the control wires connecting Indoor units and between Indoor and Outdoor units, use 2-core and non-polarity shield wires.
- As for details, see the wiring diagram of Indoor, Outdoor, Flow Selector unit Single-port type, Shut-off Valve unit and Leak Detector Interface.
- Diagram of corrosion heavy protection model is the same as that of standard model.

*1. Connect the closed end terminal of shield wire.
(Connected to all connecting sections in each unit.)
*2. Group control.

## Multi-port Type

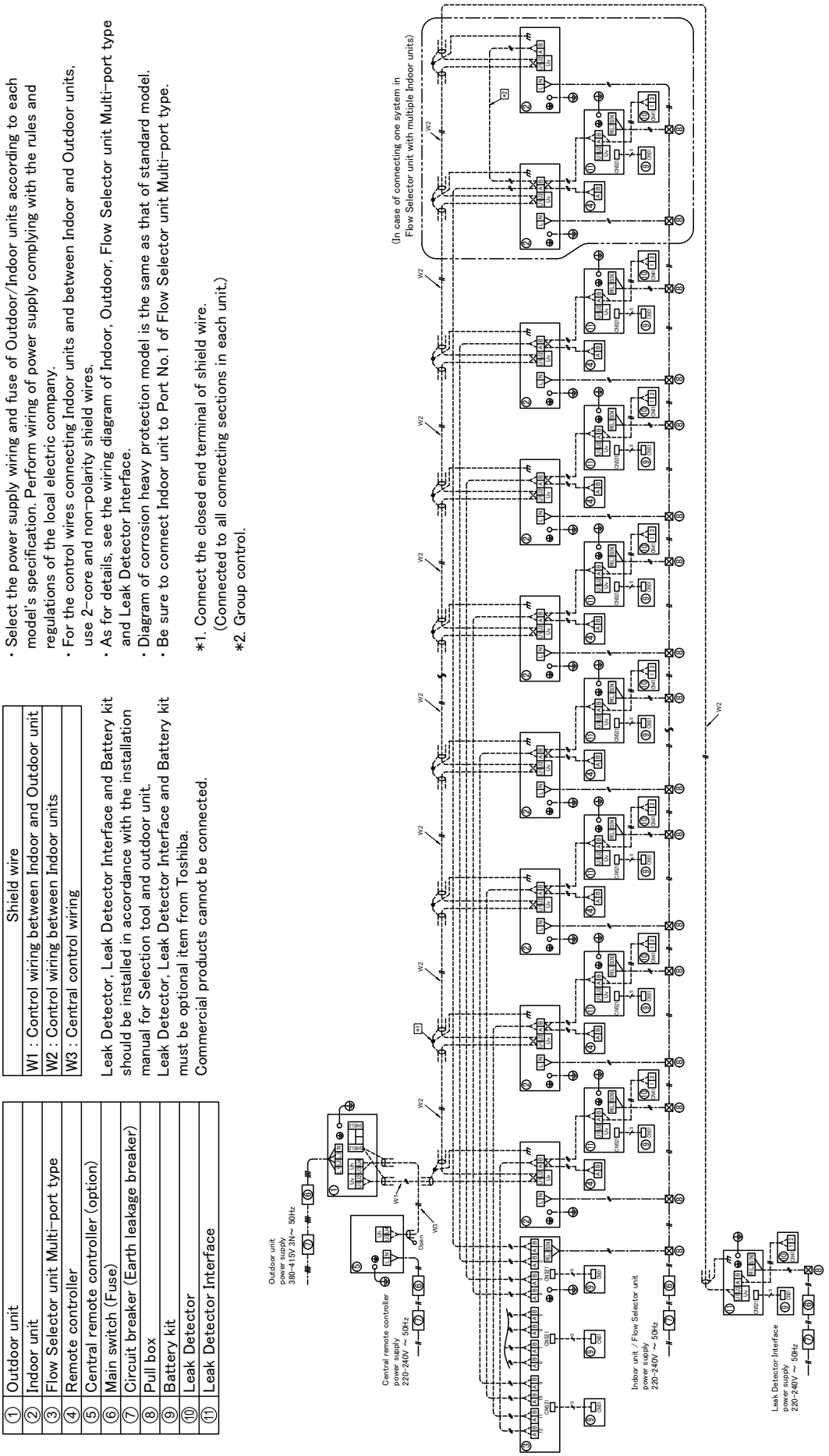
| | |
|---|---|
| ① | Outdoor unit |
| ② | Indoor unit |
| ③ | Flow Selector unit Multi-port type |
| ④ | Remote controller |
| ⑤ | Central remote controller (option) |
| ⑥ | Main switch (Fuse) |
| ⑦ | Circuit breaker (Earth leakage breaker) |
| ⑧ | Pull box |
| ⑨ | Battery kit |
| ⑩ | Leak Detector |
| ⑪ | Leak Detector Interface |

| Shield wire |
|---|
| W1 : Control wiring between Indoor and Outdoor unit |
| W2 : Control wiring between Indoor units |
| W3 : Central control wiring |

Leak Detector, Leak Detector Interface and Battery kit should be installed in accordance with the installation manual for Selection tool and outdoor unit.
Leak Detector, Leak Detector Interface and Battery kit must be optional item from Toshiba.
Commercial products cannot be connected.

- Select the power supply wiring and fuse of Outdoor/Indoor units according to each model's specification. Perform wiring of power supply complying with the rules and regulations of the local electric company.
- For the control wires connecting Indoor units and between Indoor and Outdoor units, use 2-core and non-polarity shield wires.
- As for details, see the wiring diagram of Indoor, Outdoor, Flow Selector unit Multi-port type and Leak Detector Interface.
- Diagram of corrosion heavy protection model is the same as that of standard model.
- Be sure to connect Indoor unit to Port No.1 of Flow Selector unit Multi-port type.

*1. Connect the closed end terminal of shield wire.
(Connected to all connecting sections in each unit.)
*2. Group control.



## 5-8. Applied control for Outdoor Unit

The outdoor fan high static pressure support and priority operation mode setting (cooling / heating / number of units/ or priority indoor unit) functions are made available by setting relevant switches provided on the interface P.C. board of the outdoor unit.

### 5-8-1. Outdoor Fan High Static Pressure Shift

**Purpose/charac eristics**

This function is used when connecting a duct to the discharge port of an outdoor unit (as part of, for example, unit installation on the floor by floor installation).

**Setup**

Change the outdoor DN code [019] setting to 0001.
0000 : Usual 0001 : High Static Pressure Operation
This function must be enabled with every discharge duct connected outdoor unit both of the header and follower units.

### Specification

Increase the speed of the propeller fan units on the outdoor fan to allow the installation of a duct with a maximum external static pressure not greater than specified in the table below. If a discharge duct with a resistance greater than 15 Pa (1.5 mmAq) is to be used, enable this function. The maximum external static pressures of base units are shown below (Table 1).
In the case of combined use of multiple outdoor units, set all the units to the same maximum external static pressure as the one with the lowest pressure (see Table 2).

**Table 1: Maximum External Static Pressure of Base Outdoor Units**

| MMY-SUG | 0801MT8P-E | 1001MT8P-E | 1201MT8P-E | 1401MT8P-E | 1601MT8P-E | 1801MT8P-E | 2001MT8P-E | 2201MT8P-E | 2401MT8P-E |
|---|---|---|---|---|---|---|---|---|---|
| Pa | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| m3/h | 9900 | 10500 | 11700 | 11880 | 15300 | 16800 | 15900 | 16500 | 16800 |

## 5-8-2. Priority Operation Mode Setting

### Purpose/characteristics

This function allows switching between priority cooling and priority heating.
Four patterns of priority operation mode setting are available as shown in the table below. Select a suitable priority mode according to the needs of the customer.

### Setup

**⚠ CAUTION**

In the case of the priority indoor unit mode, it is necessary to set up the specific indoor unit chosen for priority operation (a single unit only).

(1)Outdoor unit setup method (header unit)

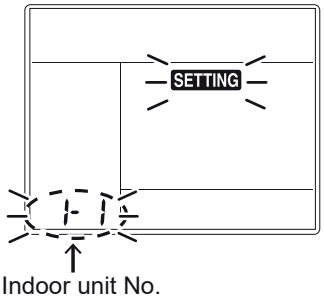
| Outdoor DN Code (O.DN) Setting | Operation |
|---|---|
| O.DN [18] = 0 | Priority heating (factory default) |
| O.DN [18] = 1 | Priority cooling |
| O.DN [18] = 2 | Priority operation based on No. of units in operation (priority given to the operation mode with the largest share of units in operation) |
| O.DN [18] = 3 | Priority indoor unit (priority given to the operation mode of the specific indoor unit set up for priority operation) |

(2) Indoor unit setup method for priority indoor unit mode
The setting can be changed only when the system is at rest. (Be sure to turn off the system prior to this operation.)

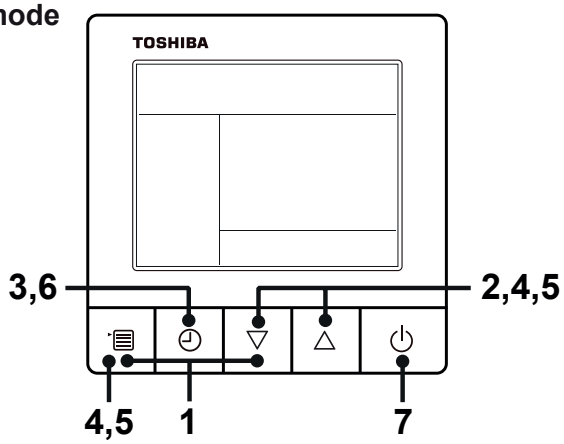
**Indoor unit setup method for priority indoor unit mode**

The setting can be changed only when the system is at rest.
(Be sure to turn off the system prior to this operation.)

1 **Push and hold menu button and [ ▽ ] setting button simultaneously for 10 seconds or more.**
(If 2 or more indoor units are controlled in a group, the first indicated UNIT No. is that of the head unit.)



Indoor unit No.



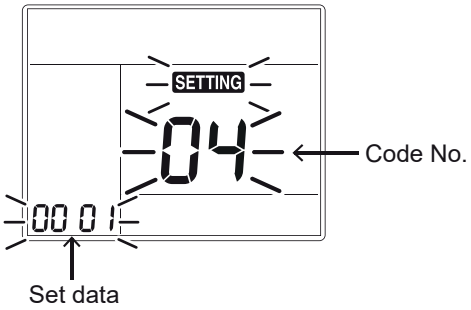
**2 Each time [▽] [△] setting button is pushed, indoor unit numbers in the group control change cyclically. Select the indoor unit to change settings for. (The fan and louvers of the selected indoor unit are activated.)**

**3 Push the Timer off button.**

**4 Push the menu button to make Code No. flash. Change Code No. To 04 with [▽][△] setting button.**

**5 Push the menu button to make Set data [****] flash. Use the [▽] [△] buttons to select the SET DATA 0001.**

Priority set 0001 No priority set 0000




**6 Push the Timer off button.**
(When the display changes from [－－] to Set data [****] flashing, the setup is completed.)

**7 When all the settings have been completed, push ON/OFF button to determine the settings.**
" SETTING " flashes and then the display content disappears and the air conditioner enters the normal stop mode. (The remote controller is unavailable while " SETTING " is flashing.)

**NOTE**

Priority can be given to only one indoor unit. If more than one indoor unit is accidentally set to priority, an error code (L05 or L06: Duplicated in door unit priority setting) will be displayed.
All units displaying L05 have been set to 0001 (priority). Keep the unit to which priority should be given as it is, and change the value back to 0000 (no priority) for all the rest.

| Error code | Description |
|---|---|
| L05 | Duplicated indoor unit priority setting (The unit is set to 0001.) |
| L06 | Duplicated indoor unit priority setting (The unit is set to 0000.) |

# 5-9. Optional printed circuit board (PCB) of outdoor unit

Optional control P.C. boards provide access to a range of functions as listed below.

| No. | Function | | Outdoor unit for control P.C. board Connection | Control P.C. board be used | | | Outdoor unit interface P.C. board setting* | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | TCB-PCDM4E | TCB-PCMO4E | TCB-PCIN4E | Connector No. | DIP SW No. | Bit ON | Outdoor DN Code (O.DN) |
| 1 | Power peak-cut Control (Standard) | Threshold capacity setting | Header unit | ✓ | - | - | CN513 (blue) | - | - | [009] = 0 (factory default) |
| | Power peak-cut Control (Standard) | Threshold power consumption setting | Header unit | ✓ | - | - | CN513 (blue) | - | - | [009] = 1 |
| | Power peak-cut Control (For one input function) | Threshold capacity setting | Header unit | ✓ | - | - | CN513 (blue) | SW105 | 1 | [009] = 0 (factory default) |
| | Power peak-cut Control (For one input function) | Threshold power consumption setting | Header unit | ✓ | - | - | CN513 (blue) | SW105 | 1 | [009] =1 |
| 2 | Power peak-cut Control (Enhanced Function) | Threshold capacity setting | Header unit | ✓ | - | - | CN513 (blue) | SW105 | 2 | [009] = 0 (factory default) |
| | Power peak-cut Control (Enhanced Function) | Threshold power consumption setting | Header unit | ✓ | - | - | CN513 (blue) | SW105 | 2 | [009] = 1 |
| 3 | Snowfall fan Control | | Header unit | - | ✓ | - | CN509 (black) | - | - | - |
| 4 | External master ON/OFF Control | | Header unit | - | ✓ | - | CN512 (blue) | - | - | - |
| 5 | Night operation (Sound reduction) Control | | Header unit | - | ✓ | - | CN508 (red) | - | - | - |
| 6 | Operation Mode Selection Control | | Header unit | - | ✓ | - | CN510 (white) | - | - | [008] = 0 (factory default) |
| | Operation Mode Selection Control (forced choice) | | Header unit | - | ✓ | - | CN510 (white) | - | - | [008] = 1 |
| 7 | Error/Operation output | | Header unit | - | - | ✓ | CN511 (green) | - | - | - |
| 8 | Compressor Operation Output | | Individual outdoor unit | - | - | ✓ | CN514 (green) | - | - | [012] = 0 (factory default) |
| 9 | Operating Rate Output | | Header unit | - | - | ✓ | CN514 (green) | - | - | [012] = 1 |

To limit a maximum power, set the outdoor unit O.DN code to [009]=1, and set the criteria value of a maximum power consumption with O.DN code [00A], [00B], [00C] and [00D]. Input the values for both cooling and heating.
Outdoor unit DN Code (O.DN) [00C], [00D]
Criteria value setting for a maximum cooling power
(e.g.) When the maximum standard value of cooling power consumption is set as 19.35 kW = 19.35kW

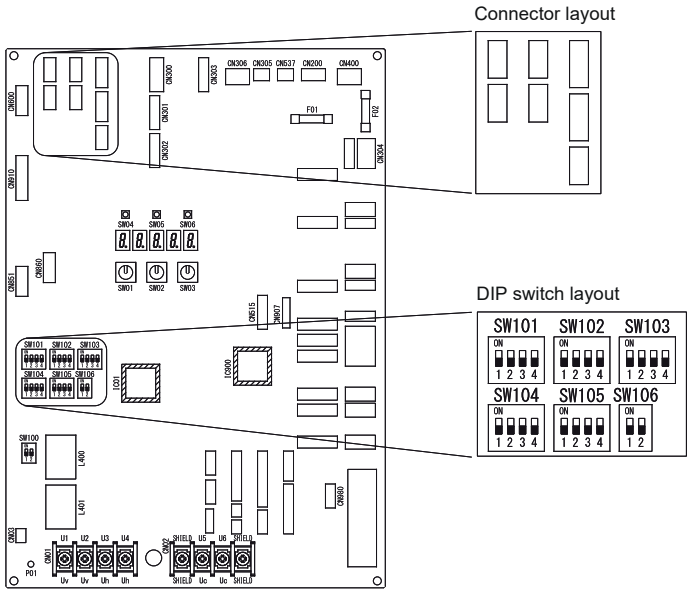
| Outdoor unit DN Code (O.DN) | [00C] | [00D] |
|---|---|---|
| Value | 19 | 35 |

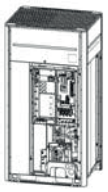
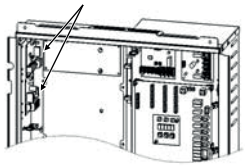
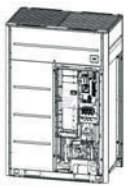
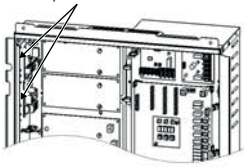
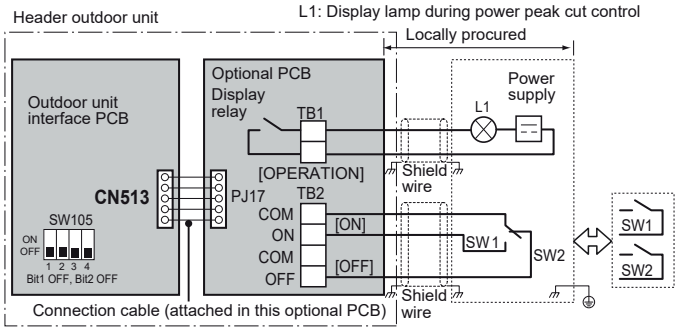
Outdoor unit DN Code (O.DN) [00A], [00B]
Criteria value setting for a maximum heating power
(e.g.) When the maximum standard value of heating power consumption is set as 14.00 kW = 14.00kW

| Outdoor unit DN Code (O.DN) | [00A] | [00B] |
|---|---|---|
| Value | 14 | 00 |

### Layout of Outdoor Unit Interface P.C. Board

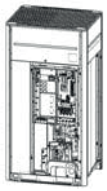
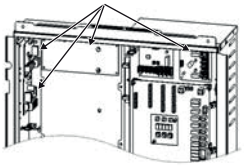
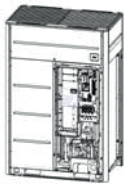
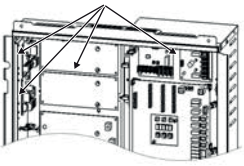
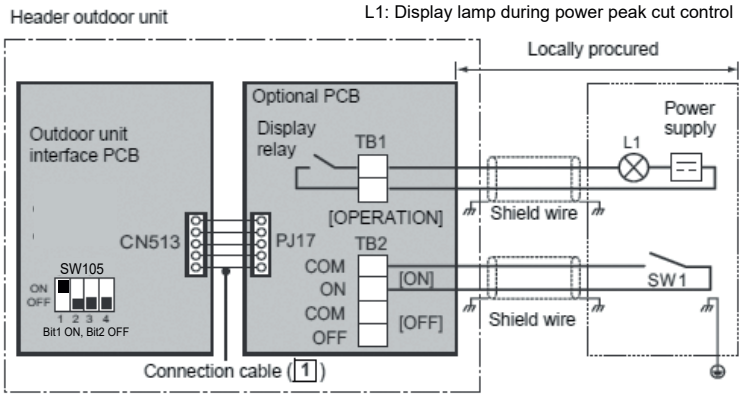
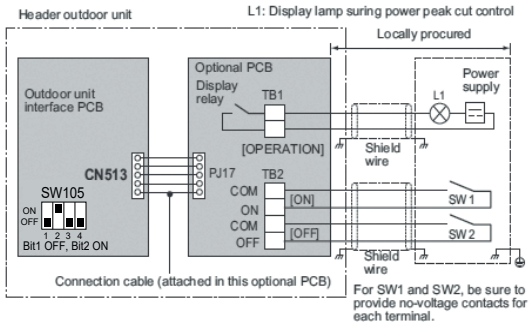
* DIP switch settings vary from function to function.



| Model name | Appearance | Function |
|---|---|---|
| TCB-PCDM4E |  <br>Size: 71 x 85 (mm)<br>**Application**<br>  <br>MMY-MUP080 to 140<br>Optional PCB<br>  <br>  <br>MMY-MUP160 to 200,<br>MMY-MUP220 to 240<br>Optional PCB<br>  <br>(max. number installed: 1pc)<br>* Install the optional PCB in the outdoor header unit. | **[1] Power peak-cut Control**<br>• **Purpose: Limiting air conditioning performance with external signals and decreasing the peak power consumption.**<br>• **Feature**<br>The upper limit capacity of the outdoor unit is restricted based on the outdoor power peak selected setting.<br>**Standard Specifications**<br>(Wiring example)<br>  <br><br>For SW1 and SW2, be sure to provide no-voltage contacts for each terminal.<br>The input signals of SW1 and SW2 may be pulse input (100 msec or more) or continuous make.<br>Do not turn on [SW1] and [SW2] simultaneously.<br>**[2-stage switching] < SW105 bit1 OFF, bit2 OFF >**<br>See table 1<br>* The upper limit Z% can be regulated with the outdoor DN Code (O.DN) [00E]<br>See table 2<br>Note1: Specifications of display relay contact<br>• The terminal for display output ([Operation] terminal) must satisfy the following electrical rating.<br><Electrical Rating><br>220 to 240 VAC, 10 mA or more, 1 A or less<br>24 VAC, 10 mA or more, 1 A or less (non-conductive load)<br>When connecting a conductive load (e.g. relay coil) to the display relay load, insert a surge killer CR (for an AC power supply) or a diode for preventing back electromotive force (for a DC power supply) on the bypass circuit. The optional P.C. board should be connected to the header outdoor unit (U1).<br>Note2: Specifications of COM terminal<br>(1) For SW*, be sure to use non-voltage contacts for each terminal.<br>(2) COM terminals are DC12 V output with a basic insulation.<br>Use a switch (relay or photocoupler) isolated from a controller (locally procured) for CO (Change-Over) contact or NO (normally-open) contact.<br>DC12 V has a current-limiting resistor of 3.3 Ω.<br>To use the relay, confirm a minimum applicable load for each relay and select the suitable relay to avoid a poor contact. |

| | Optional PCB | | | Outdoor unit interface PCB | | | |
|---|---|---|---|---|---|---|---|
| | Input | | Display relay | SW105 | | Outdoor DN Code [00E] | |
| | SW1 | SW2 | (L1) | Bit1 | Bit2 | factory default [00E]=15 | [00E]=0~10 |
| Input demand OFF signal to release the demand | OFF | ON | OFF | OFF | OFF | 100% (normal operation) | 100% (normal operation) |
| Input demand ON signal to control the demand | ON | OFF | ON | | | 0% (forced stop) | Approx. X% (50%~100%) (upper limit regulated) |

| Outdoor unit DN Code (O.DN) [00E] | X |
|---|---|
| 0 | 100% |
| 1 | 95% |
| 2 | 90% |
| 3 | 85% |
| 4 | 80% |
| 5 | 75% |
| 6 | 70% |
| 7 | 65% |
| 8 | 60% |
| 9 | 55% |
| 10 | 50% |
| 15 (factory default) | 0% (forced stop) |

| Model name | Appearance | Function |
|---|---|---|
| TCB-PCDM4E |  <br>Size: 71 x 85 (mm)<br>**Application**<br>  <br>MMY-MUP080 to 140<br>Optional PCB<br>  <br>  <br>MMY-MUP160 to 200,<br>MMY-MUP220 to 240<br>Optional PCB<br>  <br>(max. number installed: 1pc)<br>* Install the optional PCB in the outdoor header unit. | **For one input function (This function is possible only on the SMMS-u)**<br>Setting SW105 bit1 on I/F P.C.board of the header outdoor unit to ON allows ON/OFF power peak-cut control to be switched using [ON] terminal input (SW1) alone.<br>(Wiring example)<br>  <br><br>**[2-stage switching] <SW105 bit1 ON, bit2 OFF>**<br>Power peak-cut control turns ON when SW 1 in the wiring example is ON (continuous make).<br>* The upper limit Z% can be regulated with the outdoor DN Code (O.DN) [00E].<br>**Enhanced Specifications**<br>(Wiring example)<br>  <br><br>Note1: Specifications of display relay contact<br>• The terminal for display output ([Operation] terminal) must satisfy the following electrical rating.<br><Electrical Rating><br>220 to 240 VAC, 10 mA or more, 1 A or less<br>24 VAC, 10 mA or more, 1 A or less (non-conductive load)<br>When connecting a conductive load (e.g. relay coil) to the display relay load, insert a surge killer CR (for an AC power supply) or a diode for preventing back electromotive force (for a DC power supply) on the bypass circuit. The optional P.C. board should be connected to the header outdoor unit (U1).<br>Note2: Specifications of COM terminal<br>(1) For SW*, be sure to use non-voltage contacts for each terminal.<br>(2) COM terminals are DC12 V output with a basic insulation.<br>Use a switch (relay or photocoupler) isolated from a controller (locally procured) for CO (Change-Over) contact or NO (normally-open) contact.<br>DC12 V has a current-limiting resistor of 3.3 Ω.<br>To use the relay, confirm a minimum applicable load for each relay and select the suitable relay to avoid a poor contact. |

| | Optional PCB | | Outdoor unit interface PCB | | | |
|---|---|---|---|---|---|---|
| | Input | Display relay | SW105 | | Outdoor DN Code [00E] | |
| | SW1 | (L1) | Bit1 | Bit2 | factory default [00E]=15 | [00E]=0~10 |
| Input demand OFF signal to release the demand | OFF | OFF | ON | OFF | 100% (normal operation) | 100 % (normal operation) |
| Input demand ON signal to control the demand | ON | ON | | | 0% (forced stop) | Approx. X% (50%~100%) (upper limit regulated) |

| Model name | Appearance | Function |
|---|---|---|
| TCB-PCDM4E | | |

**[4-stage switching] <SW105 Bit1 ON, Bit2 ON>**

| | Optional PCB | | | Outdoor unit interface PCB | | | |
|---|---|---|---|---|---|---|---|
| | Input | | Display relay | SW105 | | Outdoor DN Code [**] | |
| | SW1 | SW2 | (L1) | Bit1 | Bit2 | factory default [00E]=15、[00F]=8、[010]=4 | [00E]=X、[00F]=Y、[010]=Z |
| Input demand OFF signal to release the demand | OFF | OFF | OFF | OFF | ON | 100% (normal operation) | 100% (normal operation) |
| Input demand ON signal to control the demand | ON | OFF | ON | | | Approx. 80% (upper limit regulated) | Approx. Z% (50%～100%) (upper limit regulated) |
| Input demand ON signal to control the demand | OFF | ON | ON | | | Approx. 60% (upper limit regulated) | Approx. Y% (50%～100%) (upper limit regulated) |
| Input demand ON signal to control the demand | ON | ON | ON | | | 0%（forced stop） | Approx. X% (50%～100%) (upper limit regulated) |

* The upper limit X%, Y%, Z% can be regulated with the outdoor DN Code (O.DN) [00E] [00F] [010].

| Outdoor DN Code (O.DN) [00E] | X |
|---|---|
| 0 | 100% |
| 1 | 95% |
| 2 | 90% |
| 3 | 85% |
| 4 | 80% |
| 5 | 75% |
| 6 | 70% |
| 7 | 65% |
| 8 | 60% |
| 9 | 55% |
| 10 | 50% |
| 15（factory default） | 0% (forced stop) |

| Outdoor DN Code (O.DN) [00F] | Y |
|---|---|
| 0 | 100% |
| 1 | 95% |
| 2 | 90% |
| 3 | 85% |
| 4 | 80% |
| 5 | 75% |
| 6 | 70% |
| 7 | 65% |
| 8（factory default） | 60% |
| 9 | 55% |
| 10 | 50% |
| 15 | 0% (forced stop) |

| Outdoor DN Code (O.DN) [010] | Z |
|---|---|
| 0 | 100% |
| 1 | 95% |
| 2 | 90% |
| 3 | 85% |
| 4（factory default） | 80% |
| 5 | 75% |
| 6 | 70% |
| 7 | 65% |
| 8 | 60% |
| 9 | 55% |
| 10 | 50% |
| 15 | 0% (forced stop) |

Power peak-cut control by power consumption

Peak cut control by power consumption can be set with Outdoor DN CODE (O.DN) [009].
Peak cut control by power consumption adjusts the outdoor unit output so that the power consumption does not exceed the upper limit control value.

[1] Setting “Outdoor DN [009] = 1” changes the control method to peak cut control by power consumption.
(Setting “Outdoor DN [009] = 0” returns the control method to normal peak cut control.)

[2] Check Outdoor DN [00A] to [00D] to make sure that upper power limit reference values for cooling and heating are registered.

Outdoor unit DN Code (O.DN) [00C], [00D] Cooling upper limit power standard setting
Ex. The upper limit of cooling power consumption setting = 19.35kw

| Outdoor DN Code (O.DN) | [00C] | [00D] |
|---|---|---|
| Value | 19 | 35 |

Outdoor unit DN Code (O.DN) [00A], [00B] Heating upper limit power standard setting
Ex. The upper limit of heating power consumption setting = 14.00kw

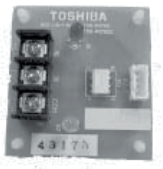
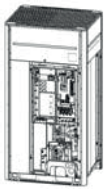
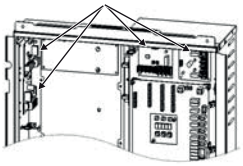
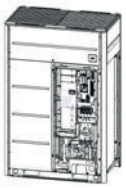
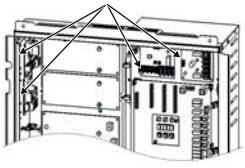
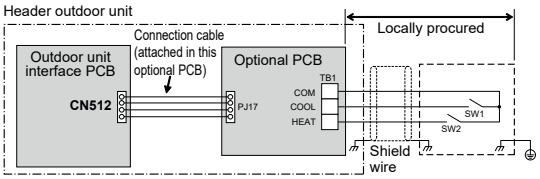
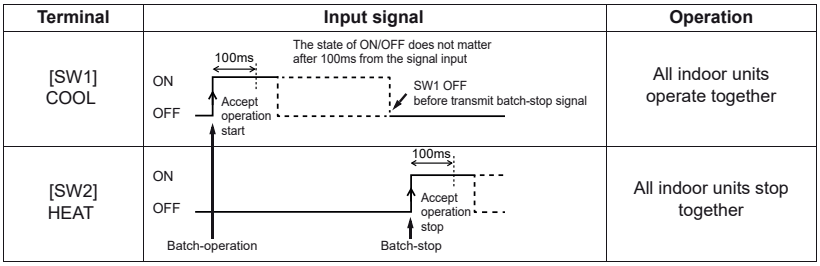
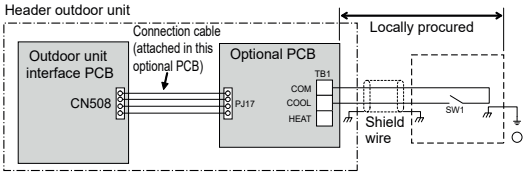
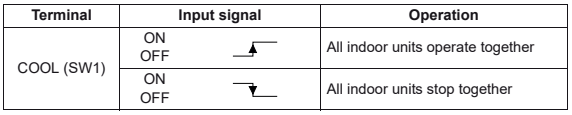
| Outdoor DN Code (O.DN) | [00A] | [00B] |
|---|---|---|
| Value | 14 | 00 |

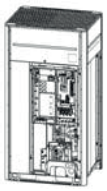
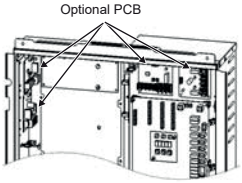
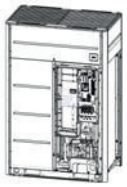
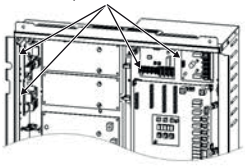
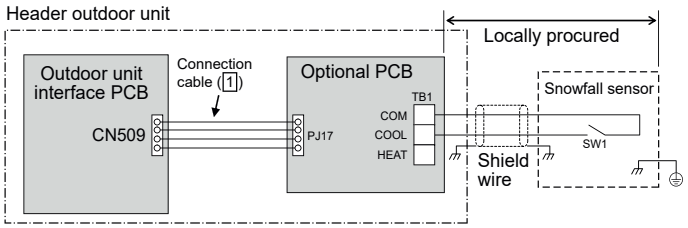
[3] When an ON signal is input from the optional PCB, peak cut control by power consumption is enabled.
The way to input the ON signal is the same as with normal peak cut control. Refer to the sections on “Standard Specifications”, “For one input function” and “Enhanced Specifications”.

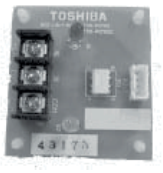
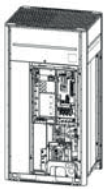
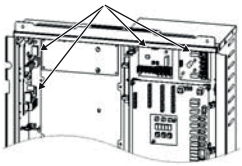
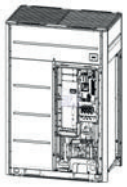
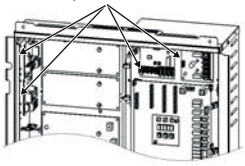
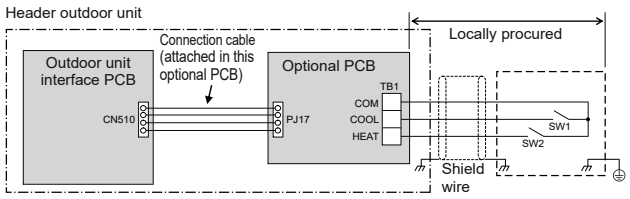
Based on the upper power limit reference values registered in [2], the outdoor unit capacity is adjusted so that the upper limit control value set with Outdoor DN Code (O.DN) [00E], [00F], and [010] is not exceeded.

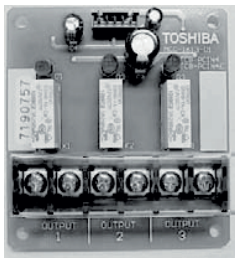
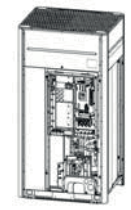
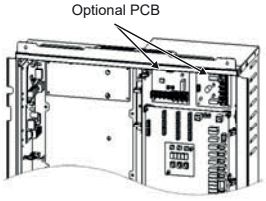
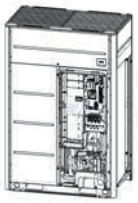
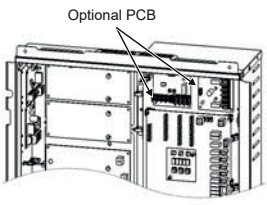
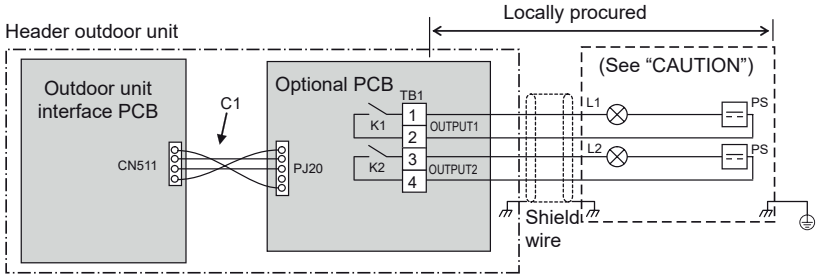
**NOTE:**

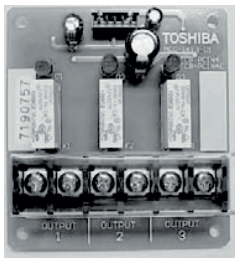
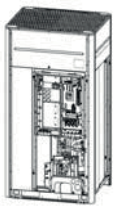
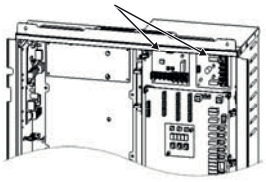
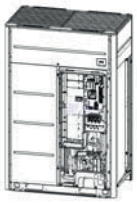
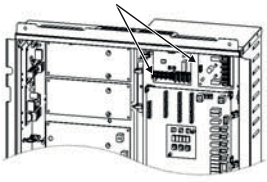
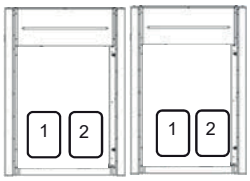
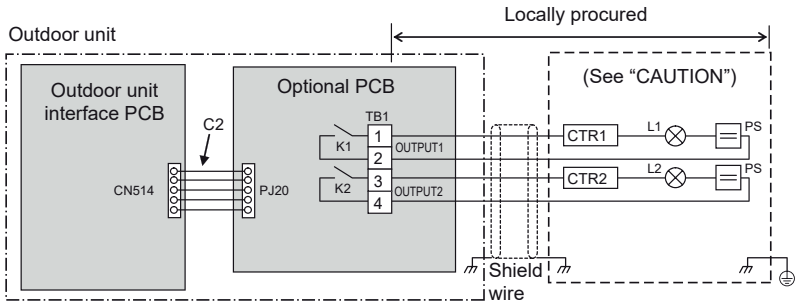
* To protect the cycle, peak cut control by power consumption may not be carried out. (During defrosting operation, oil recovery operation, coolant recovery operation, etc.)
* The value of power consumption is computed by estimation, so an error of about ±5% from the actual value occurs.
  If you want to perform accurate peak cut control by power consumption and demand control, use a power meter and demand controller.
* If the desired effect cannot be obtained, e.g. if the power consumption does not go down as much as expected, make adjustment by changing the set values of power upper limit reference and coefficient α (upper limit control (%)).

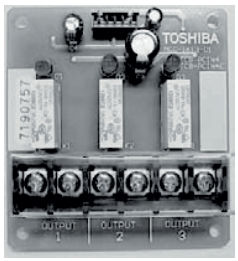
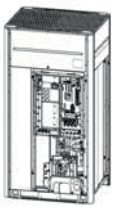
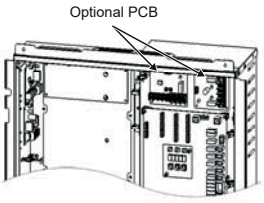
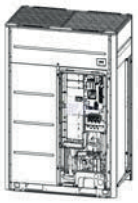
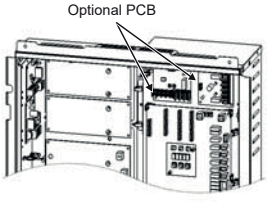
| Model name | Appearance | Function |
|---|---|---|
| TCB-PCMO4E |  <br>Size: 55.5 x 60 (mm)<br>**Application**<br>  <br>MMY-MUP080 to 140<br>Optional PCB<br>  <br>  <br>MMY-MUP160 to 200,<br>MMY-MUP220 to 240<br>Optional PCB<br>  <br>(max. number installed: 1pc)<br>* Install the optional PCB in the outdoor header unit. | **[2] External master ON/OFF control**<br>• Feature<br>The outdoor unit starts or stop the system.<br>• Function<br>By connecting the cable (attached in this optional PCB) to the interface PC board on an outdoor unit, all indoor units connected to the outdoor unit enable to operate simultaneously.<br>• Operation<br>The outdoor unit connection is for the header unit (U1).<br>  <br><br>SW1: Operation input switch<br>SW2: Stop input switch<br>  <br><br>The input signal is recognized during its falling phase. (After reaching the bottom of the falling edge, the signal must remain there for at least 100 ms.)<br>The control turned ON first is valid, and the control turned ON later is not accepted when cooling (SW1) and Heating (SW2) input ON at one time.<br>Note<br>(1) For SW*, be sure to use non-voltage contacts for each terminal.<br>(2) COM terminals are DC12 V output with a basic insulation.<br>Use a switch (relay or photocoupler) isolated from a controller (locally procured) for CO (Change-Over) contact or NO (normally-open) contact.<br>DC12 V has a current-limiting resistor of 3.3 Ω.<br>To use the relay, confirm a minimum applicable load for each relay and select the suitable relay to avoid a poor contact.<br>**[3] Night time operation (sound reduction) control**<br>• Purpose: Reducing noise from an outdoor unit<br>• Feature<br>Sound level can be reduced by restri cting the compressor and fan speed<br>• Function<br>As the cable (attached in this optional PCB) is connected to the “Interface PCB” on an outdoor unit, both compressor speed and fan speed are restricted while the signal of the night operation control is input. It makes the noise reduction during the night time operation.<br>• Operation<br>The outdoor unit connection is for the header unit (U1).<br>  <br><br>SW1: Night time signal switch<br>  <br><br>Each terminal should be connected to dry contact.<br>The input signal is recognized during its rising/falling phase.<br>(After reaching the top/bottom of the rising/falling edge, the signal must remain there for at least 100 ms.)<br>Note<br>(1) For SW*, be sure to use non-voltage contacts for each terminal.<br>(2) COM terminals are DC12 V output with a basic insulation.<br>Use a switch (relay or photocoupler) isolated from a controller (locally procured) for CO (Change-Over) contact or NO (normally-open) contact.<br>DC12 V has a current-limiting resistor of 3.3 Ω.<br>To use the relay, confirm a minimum applicable load for each relay and select the suitable relay to avoid a poor contact. |

| Model name | Appearance | Function |
|---|---|---|
| TCB-PCMO4E |  <br>Size: 55.5 x 60 (mm)<br>**Application**<br>  <br>MMY-MUP080 to 140<br>Optional PCB<br>  <br>  <br>MMY-MUP160 to 200,<br>MMY-MUP220 to 240<br>Optional PCB<br>  <br>(max. number installed: 1pc)<br>* Install the optional PCB in the outdoor header unit. | **Sound reduction and approximation capacity (reference)**<br>Outdoor unit / Night operation sound reduction dB(A) (COOL/HEAT) / Capacity: COOL / HEAT<br>0801 type: 50 / 50 — Approx. 85% — Approx. 80%<br>1001 type: 50 / 50 — Approx. 70% — Approx. 65%<br>1201 type: 50 / 50 — Approx. 60% — Approx. 55%<br>1401 type: 50 / 50 — Approx. 70% — Approx. 65%<br>1601 type: 53 / 53 — Approx. 70% — Approx. 70%<br>1801 type: 54 / 54 — Approx. 65% — Approx. 65%<br>2001 type: 53 / 54 — Approx. 60% — Approx. 60%<br>2201 type: 53 / 55 — Approx. 55% — Approx. 55%<br>2401 type: 53 / 55 — Approx. 55% — Approx. 55%<br>Condition<br>Cooling: (Indoor 27 deg DB, 19 deg WB)<br>(Outdoor temperature 25 deg DB)<br>Heating: (Indoor 20 deg DB)<br>(Outdoor temperature 7 deg DB, 6 deg WB)<br>**[4] Snowfall fan control**<br>• Purpose: Rotating the fan to prevent snow accumulation<br>• Feature<br>Outdoor fan is operated from the snowfall signal received from the outside.<br>**▼ Functions**<br>The outdoor unit fan operates at snowfall by connecting to the outdoor unit interface PCB.<br>**▼ Operation**<br>  <br><br>SW1: Snowfall selection switch (snowfall sensor)<br>Terminal / Input signal / Operation<br>Cooling (SW1): ON → OFF — Snowfall fan control (Fan in outdoor unit operates.)<br>ON ← OFF — Normal operation<br>Be sure to provide no-voltage continuous contacts for each terminal.<br>Note<br>(1) For SW*, be sure to use non-voltage contacts for each terminal.<br>(2) COM terminals are DC12 V output with a basic insulation.<br>Use a switch (relay or photocoupler) isolated from a controller (locally procured) for CO (Change-Over) contact or NO (normally-open) contact.<br>DC12 V has a current-limiting resistor of 3.3 Ω.<br>To use the relay, confirm a minimum applicable load for each relay and select the suitable relay to avoid a poor contact. |

| Model name | Appearance | Function |
|---|---|---|
| TCB-PCMO4E |  <br>Size: 55.5 x 60 (mm)<br>**Application**<br>  <br>MMY-MUP080 to 140<br>Optional PCB<br>  <br>  <br>MMY-MUP160 to 200,<br>MMY-MUP220 to 240<br>Optional PCB<br>  <br>(max. number installed: 1pc)<br>* Install the optional PCB in the outdoor header unit. | **[5] Operation mode selection control**<br>• **Purpose: Limiting operation modes to cooling and heating only**<br>• **Feature**<br>This control can restrict the selectable operation mode.<br>**▼Functions**<br>The heating/cooling mode of the system can be selected by connecting to the interface PCB of outdoor units.<br>**▼Operation**<br>The outdoor unit connection is for the header unit (U1).<br>  <br><br>SW1: Cooling mode specified input switch<br>SW2: Heating mode specified input switch<br>**Input Signal** / **Operation: Selected operation mode**<br>**Cool (SW1)** / **Heat(SW2)**<br>**OFF** / **OFF** / **Normal operation**<br>**ON** / **OFF** / **Cooling operation only**<br>**OFF** / **ON** / **Heating operation only**<br>Each terminal should be connected to dry contact.<br>**About Switching of Processing of Indoor Unit Operation State**<br>Processing of the operation state can be switched for indoor units in a mode other than the selected operation mode by setting the Outdoor DN code [008] of the header outdoor unit interface PCB.<br>Outdoor DN Code (O.DN) [008] / Details of Processing<br>O.DN [008] = 0 (factory default): Unallowed indoor units in a mode other than the P.C.board selection modes are not treated as priority (thermostat OFF state).<br>P.C. board selection mode / Input Signal COOL (SW1) / HEAT (SW2) / Remote control / Operation State<br>Normal / OFF / OFF / ✱ or 💧 / ✺ / 🌀 / Follow the remote controller.<br>Cooling operation only allowed / ON / OFF / ✱ or 💧 / Follow the remote controller (Normal cooling operation).<br>✺ / Thermostat OFF (Air blow operation at super-slow blow rate)<br>🌀 / Follow the remote controller (Normal air blow operation).<br>Heating operation only allowed / OFF / ON / ✱ or 💧 / Thermostat OFF (Air blow operation at blow rate set on remote control)<br>✺ / Follow the remote controller (Normal heating operation).<br>🌀 / Follow the remote controller (Normal air blow operation).<br>O.DN [008]= 1: Only operation modes and air blow operation selected on the P.C.board can be selected on the remote controller. When the input signal is turned ON, indoor units operated in a mode other than the P.C.board selection mode are forcibly switched to the P.C.board selection modes.<br>P.C. board selection mode / Input Signal COOL (SW1) / HEAT (SW2) / Remote control<br>Normal / OFF / OFF / ✱, 💧, ✺ or 🌀 can be selected.<br>COOL / ON / OFF / • Only ✱, 💧 or 🌀 can be selected. • Indoor units in Heat mode are forcibly switched to the Cool mode. / When using the remote control, (mode select control) indicator is displayed.<br>HEAT / OFF / ON / • Only ✺ or 🌀 can be selected. • Indoor units in Cool or Dry mode are forcibly switched to the Heat mode.<br>The jumper lead is not switched.<br>Indoor units in a mode other than the selected operation mode are forcibly switched to the selected operation mode.<br>Note<br>(1) For SW*, be sure to use non-voltage contacts for each terminal.<br>(2) COM terminals are DC12 V output with a basic insulation.<br>Use a switch (relay or photocoupler) isolated from a controller (locally procured) for CO (Change-Over) contact or NO (normally-open) contact.<br>DC12 V has a current-limiting resistor of 3.3 Ω.<br>To use the relay, confirm a minimum applicable load for each relay and select the suitable relay to avoid a poor contact. |

| Model name | Appearance | Function |
|---|---|---|
| TCB-PCIN4E |  <br>Size: 73 x 79 (mm)<br>**Application**<br>  <br>MMY-MUP080 to 140<br>Optional PCB<br>  <br>  <br>MMY-MUP160 to 200,<br>MMY-MUP220 to 240<br>Optional PCB<br>  <br>(max. number installed: 1pc)<br>* Install the optional PCB in the outdoor header unit. | **[6] Error / Operation Output**<br>• Feature<br>Operation and error monitoring is possible.<br>**▼ Function**<br>The operation error output PCB can indicate operation and error states by connecting to the interface PCB of outdoor units.<br>**▼ Operation**<br>Operation output: The operation indicator is on while any indoor unit in the system is operating.<br>Error output: The error indicator is on when an error is occurred on even one of the indoor or outdoor units in the system.<br>**Wiring example**<br>  <br>\| C1 \| Attached connection cable 1 (4 wires) \|<br>\| CN511 \| Connector on interface side (green) \|<br>\| K1, K2 \| Relays \|<br>\| L1 \| Error indication Lamp \|<br>\| L2 \| Operation indication Lamp \|<br>\| OUTPUT1 \| Error output \|<br>\| OUTPUT2 \| Operation output \|<br>\| PJ20 \| Connector on optional PCB side \|<br>\| PS \| Power supply unit \|<br>\| TB1 \| Terminal block \|<br>* [OUTPUT3] is normally output when power is turned out.<br>Note1: Output Relay (K1, K2) Contact Specifications<br>• Output terminals (OUTPUT1, 2) must satisfy the following electrical rating.<br>• When connecting a conductive load (e.g. relay coil) to loads K1 and K2, insert a surge killer CR (for an AC power supply) or a diode for preventing back electromotive force (for a DC power supply) on the bypass circuit.<br><Electrical Rating><br>220-240 VAC, 10 mA or more, 1A or less<br>24 VAC, 10 mA or more, 1 A or less (non-conductive load) |

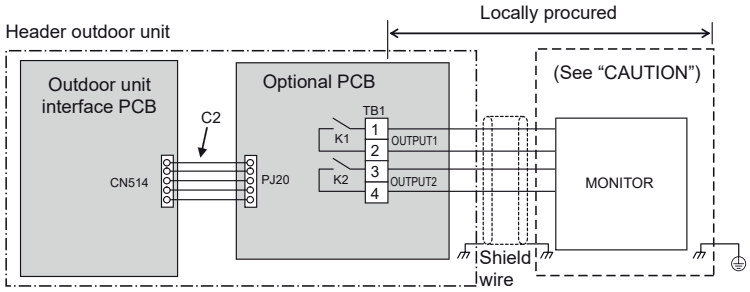
| Model name | Appearance | Function |
|---|---|---|
| TCB-PCIN4E |  <br>Size: 73 x 79 (mm)<br>**Application**<br>  <br>MMY-MUP080 to 140<br>Optional PCB<br>  <br>  <br>MMY-MUP160 to 200,<br>MMY-MUP220 to 240<br>Optional PCB<br>  <br>(max. number installed: 1pc)<br>* Install the optional PCB in the outdoor header unit. | **[7] Compressor Operation Output**<br>• Feature<br>Outputs the operation status of the compressors in each outdoor unit.<br>**▼ Function**<br>This function can be applied, for example, to the elapsed operation time count of each compressor mounted on an outdoor unit since the compressor in operation signal can be output externally.<br>**▼ Operation**<br>During compressor operation, the relay of the output terminal corresponding to that compressor turns ON (closes) and turns OFF (opens) when compressor operation stops.<br>As shown in the figure, the output terminals are "OUTPUT1" and "OUTPUT2" from the left compressor facing the front of the outdoor unit.<br>  <br>**Wiring example**<br>  <br>**C2** — **Connector cable 2 (2)**<br>**CN514** — **Connector on interface side (green)**<br>**CTR1** — **Elapsed operation counter 1**<br>**CTR2** — **Elapsed operation counter 2**<br>**K1, K2** — **Relays**<br>**L1, L2** — **Operation indication LEDs**<br>**OUTPUT1** — **Compressor 1 operation output terminal**<br>**OUTPUT2** — **Compressor 2 operation output terminal**<br>**PJ20** — **Connector on optional PCB side**<br>**PS** — **Power supply unit**<br>**TB1** — **Terminal block**<br>Note1: Output Relay (K1, K2) Contact Specifications<br>• Output terminals (OUTPUT1, 2) must satisfy the following electrical rating.<br>• When connecting a conductive load (e.g. relay coil) to loads K1 and K2, insert a surge killer CR (for an AC power supply) or a diode for preventing back electromotive force (for a DC power supply) on the bypass circuit.<br><Electrical Rating><br>220-240 VAC, 10 mA or more, 1A or less<br>24 VAC, 10 mA or more, 1 A or less (non-conductive load) |

| Model name | Appearance | Function |
|---|---|---|
| TCB-PCIN4E |  Size: 73 x 79 (mm)<br>**Application**<br>  MMY-MUP080 to 140<br>  <br>  MMY-MUP160 to 200, MMY-MUP220 to 240<br>  <br>(max. number installed: 1pc)<br>* Install the optional PCB in the outdoor header unit. | **[8] Operating Rate Output**<br>• Feature<br>Relay turn ON/OFF depending on the running rate of the system.<br>**▼ Functions**<br>The operation state can be remotely checked since the system operating rate signal can be output externally.<br>**▼ Operation**<br>As shown in the table, each of the output terminals turns ON (relay closes) and OFF (relay opens) according to the system operating rate. |

| Functions | Outdoor DN Code (O.DN) [012] | OUTPUT1 | OUTPUT2 | OUTPUT3 | Operating rate FA |
|---|---|---|---|---|---|
| System operating rate output | O.DN [012] = 1 | OFF | OFF | OFF | FA=0% |
| | | ON | OFF | OFF | 0%<FA<20% |
| | | OFF | ON | OFF | 20%≤FA<35% |
| | | ON | ON | OFF | 35%≤FA<50% |
| | | OFF | OFF | ON | 50%≤FA<65% |
| | | ON | OFF | ON | 65%≤FA<80% |
| | | OFF | ON | ON | 80%≤FA<95% |
| | | ON | ON | ON | 95%≤FA |

OFF=relay open ON=relay closed

**Wiring example**




| | |
|---|---|
| C2 | Connector cable 2 (2) |
| CN514 | Connector on interface side (green) |
| K1, K2, K3 | Relays |
| MONITOR | Monitoring device |
| OUTPUT1 | Output terminal for each function |
| OUTPUT2 | Output terminal for each function |
| OUTPUT3 | Output terminal for each function |
| PJ20 | Connector on optional PCB side |
| TB1 | Terminal block |

* Connect optional boards to the center outdoor unit.

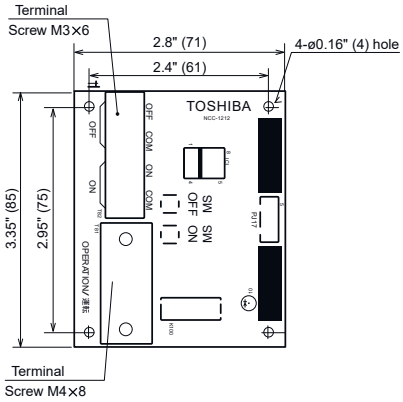
Note1: Output Relay (K1, K2) Contact Specifications
- Output terminals (OUTPUT1, 2) must satisfy the following electrical rating.
- When connecting a conductive load (e.g. relay coil) to loads K1 and K2, insert a surge killer CR (for an AC power supply) or a diode for preventing back electromotive force (for a DC power supply) on the bypass circuit.

<Electrical Rating>
220-240 VAC, 10 mA or more, 1A or less
24 VAC, 10 mA or more, 1 A or less (non-conductive load)

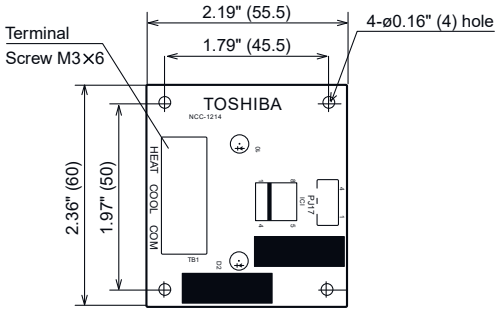
## Dimensions of P.C. board

Unit: in (mm)

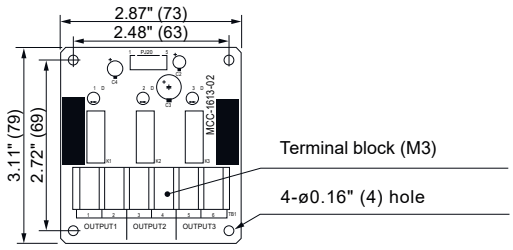
TCB-PCDM4E




TCB-PCMO4E




TCB-PCIN4E



## 5-10. Part Load performance

**MMY-SUG0801MT8P-E (8HP, 22.4kW system)**

**Cooling**

| Outdoor Unit Dry-Bulb (℃) | Outdoor Unit 100% Cooling Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 52 ℃ | 12.3 | 12.3 | 4.27 | 11.1 | 3.54 | 9.9 | 2.88 | 8.6 | 2.30 | 7.4 | 1.78 | 6.17 | 1.34 | 4.93 | 0.96 | 3.70 | 0.66 |
| 50 ℃ | 14.4 | 14.4 | 4.92 | 12.9 | 4.07 | 11.5 | 3.31 | 10.1 | 2.62 | 8.6 | 2.02 | 7.19 | 1.51 | 5.75 | 1.07 | 4.32 | 0.72 |
| 48 ℃ | 16.2 | 16.2 | 5.39 | 14.6 | 4.45 | 12.9 | 3.61 | 11.3 | 2.30 | 9.7 | 2.19 | 8.09 | 1.62 | 6.47 | 1.15 | 4.85 | 0.76 |
| 46 ℃ | 17.5 | 17.5 | 5.57 | 15.8 | 4.60 | 14.0 | 3.73 | 12.3 | 2.94 | 10.5 | 2.26 | 8.77 | 1.67 | 7.02 | 1.18 | 5.26 | 0.78 |
| 43 ℃ | 19.2 | 19.2 | 5.65 | 17.3 | 4.66 | 15.4 | 3.77 | 13.5 | 2.98 | 11.5 | 2.28 | 9.6 | 1.68 | 7.70 | 1.18 | 5.77 | 0.78 |
| 41 ℃ | 20.5 | 20.5 | 5.77 | 18.4 | 4.76 | 16.4 | 3.84 | 14.3 | 3.03 | 12.3 | 2.32 | 10.2 | 1.71 | 8.20 | 1.20 | 6.15 | 0.78 |
| 39 ℃ | 21.2 | 21.2 | 5.60 | 19.1 | 4.62 | 16.9 | 3.73 | 14.8 | 2.94 | 12.7 | 2.25 | 10.6 | 1.66 | 8.47 | 1.16 | 6.35 | 0.76 |
| 37 ℃ | 21.8 | 21.8 | 5.43 | 19.6 | 4.48 | 17.4 | 3.62 | 15.3 | 2.86 | 13.1 | 2.19 | 10.9 | 1.61 | 8.72 | 1.13 | 6.54 | 0.74 |
| 35 ℃ | 22.4 | 22.4 | 5.13 | 20.2 | 4.34 | 17.9 | 3.51 | 15.7 | 2.77 | 13.4 | 2.12 | 11.2 | 1.56 | 9.0 | 1.09 | 6.72 | 0.71 |
| 32 ℃ | 22.4 | 22.4 | 4.87 | 20.2 | 4.02 | 17.9 | 3.25 | 15.7 | 2.57 | 13.4 | 1.97 | 11.2 | 1.45 | 9.0 | 1.02 | 6.72 | 0.67 |
| 31 ℃ | 22.4 | 22.4 | 4.52 | 20.2 | 3.73 | 17.9 | 3.02 | 15.7 | 2.39 | 13.4 | 1.83 | 11.2 | 1.35 | 9.0 | 0.95 | 6.72 | 0.63 |
| 30 ℃ | 22.4 | 22.4 | 4.36 | 20.2 | 3.60 | 17.9 | 2.91 | 15.7 | 2.30 | 13.4 | 1.77 | 11.2 | 1.31 | 9.0 | 0.92 | 6.72 | 0.61 |
| 29 ℃ | 22.4 | 22.4 | 4.21 | 20.2 | 3.48 | 17.9 | 2.81 | 15.7 | 2.23 | 13.4 | 1.71 | 11.2 | 1.26 | 9.0 | 0.89 | 6.72 | 0.59 |
| 27 ℃ | 22.4 | 22.4 | 3.92 | 20.2 | 3.24 | 17.9 | 2.63 | 15.7 | 2.08 | 13.4 | 1.60 | 11.2 | 1.18 | 9.0 | 0.83 | 6.72 | 0.55 |
| 25 ℃ | 22.4 | 22.4 | 3.67 | 20.2 | 3.03 | 17.9 | 2.46 | 15.7 | 1.94 | 13.4 | 1.49 | 11.2 | 1.11 | 9.0 | 0.78 | 6.72 | 0.52 |
| 23 ℃ | 22.4 | 22.4 | 3.50 | 20.2 | 2.89 | 17.9 | 2.35 | 15.7 | 1.86 | 13.4 | 1.43 | 11.2 | 1.06 | 9.0 | 0.75 | 6.72 | 0.50 |
| 21 ℃ | 22.4 | 22.4 | 3.43 | 20.2 | 2.83 | 17.9 | 2.30 | 15.7 | 1.82 | 13.4 | 1.40 | 11.2 | 1.04 | 9.0 | 0.74 | 6.72 | 0.49 |
| 20 ℃ | 22.4 | 22.4 | 3.39 | 20.2 | 2.81 | 17.9 | 2.28 | 15.7 | 1.80 | 13.4 | 1.39 | 11.2 | 1.03 | 9.0 | 0.73 | 6.72 | 0.49 |
| 19 ℃ | 22.4 | 22.4 | 3.36 | 20.2 | 2.78 | 17.9 | 2.26 | 15.7 | 1.79 | 13.4 | 1.38 | 11.2 | 1.02 | 9.0 | 0.73 | 6.72 | 0.49 |
| 17 ℃ | 22.4 | 22.4 | 3.31 | 20.2 | 2.74 | 17.9 | 2.22 | 15.7 | 1.76 | 13.4 | 1.36 | 11.2 | 1.01 | 9.0 | 0.72 | 6.72 | 0.48 |
| 15 ℃ | 22.4 | 22.4 | 3.26 | 20.2 | 2.70 | 17.9 | 2.19 | 15.7 | 1.74 | 13.4 | 1.34 | 11.2 | 1.00 | 9.0 | 0.71 | 6.72 | 0.48 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 27.0℃ dry-bulb / 19.0℃ wet bulb

**Heating**

| Outdoor Unit | | Outdoor Unit 100% Heating Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dry-Bulb (℃) | Wet-Bulb (℃) | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 15.0 | 13.7 | 25.0 | 25.0 | 5.03 | 22.5 | 4.53 | 20.0 | 4.03 | 17.5 | 3.52 | 15.0 | 3.02 | 12.5 | 2.52 | 10.0 | 2.01 | 7.50 | 1.51 |
| 13.0 | 11.8 | 25.0 | 25.0 | 5.15 | 22.5 | 4.64 | 20.0 | 4.12 | 17.5 | 3.61 | 15.0 | 3.09 | 12.5 | 2.58 | 10.0 | 2.06 | 7.50 | 1.55 |
| 11.0 | 9.8 | 25.0 | 25.0 | 5.29 | 22.5 | 4.76 | 20.0 | 4.23 | 17.5 | 3.70 | 15.0 | 3.17 | 12.5 | 2.64 | 10.0 | 2.12 | 7.50 | 1.59 |
| 9.0 | 7.9 | 25.0 | 25.0 | 5.42 | 22.5 | 4.88 | 20.0 | 4.34 | 17.5 | 3.79 | 15.0 | 3.25 | 12.5 | 2.71 | 10.0 | 2.17 | 7.50 | 1.63 |
| 7.0 | 6.0 | 25.0 | 25.0 | 5.56 | 22.5 | 5.00 | 20.0 | 4.45 | 17.5 | 3.89 | 15.0 | 3.34 | 12.5 | 2.78 | 10.0 | 2.23 | 7.50 | 1.67 |
| 5.0 | 4.1 | 24.3 | 24.3 | 5.54 | 21.8 | 4.99 | 19.4 | 4.44 | 17.0 | 3.88 | 14.6 | 3.33 | 12.1 | 2.77 | 9.71 | 2.22 | 7.28 | 1.67 |
| 3.0 | 2.2 | 23.5 | 23.5 | 5.53 | 21.2 | 4.97 | 18.8 | 4.42 | 16.5 | 3.87 | 14.1 | 3.32 | 11.8 | 2.76 | 9.42 | 2.21 | 7.06 | 1.66 |
| 0.0 | -0.7 | 22.4 | 22.4 | 5.50 | 20.2 | 4.95 | 17.9 | 4.40 | 15.7 | 3.85 | 13.5 | 3.30 | 11.2 | 2.75 | 8.97 | 2.20 | 6.73 | 1.65 |
| -3.0 | -3.7 | 21.3 | 21.3 | 5.47 | 19.1 | 4.93 | 17.0 | 4.38 | 14.9 | 3.83 | 12.8 | 3.29 | 10.6 | 2.74 | 8.51 | 2.19 | 6.38 | 1.64 |
| -5.0 | -5.6 | 20.5 | 20.5 | 5.46 | 18.5 | 4.91 | 16.4 | 4.37 | 14.4 | 3.82 | 12.3 | 3.28 | 10.3 | 2.73 | 8.22 | 2.18 | 6.16 | 1.64 |
| -7.0 | -7.6 | 19.8 | 19.8 | 5.44 | 17.8 | 4.90 | 15.8 | 4.35 | 13.8 | 3.81 | 11.9 | 3.26 | 9.88 | 2.72 | 7.91 | 2.18 | 5.93 | 1.63 |
| -10 | -10.5 | 18.7 | 18.7 | 5.41 | 16.8 | 4.87 | 14.9 | 4.33 | 13.1 | 3.79 | 11.2 | 3.25 | 9.33 | 2.71 | 7.46 | 2.17 | 5.60 | 1.63 |
| -14.5 | -15.0 | 16.9 | 16.9 | 5.37 | 15.2 | 4.84 | 13.5 | 4.30 | 11.8 | 3.76 | 10.2 | 3.23 | 8.46 | 2.69 | 6.77 | 2.15 | 5.08 | 1.61 |
| -19.5 | -20.0 | 15.0 | 15.0 | 5.33 | 13.5 | 4.80 | 12.0 | 4.26 | 10.5 | 3.73 | 9.00 | 3.20 | 7.50 | 2.67 | 6.00 | 2.13 | 4.50 | 1.60 |
| -24.5 | -25.0 | 13.1 | 13.1 | 5.28 | 11.8 | 4.76 | 10.5 | 4.23 | 9.2 | 3.70 | 7.85 | 3.17 | 6.54 | 2.64 | 5.23 | 2.12 | 3.92 | 1.59 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 20.0℃ dry-bulb

## MMY-SUG1001MT8P-E (10HP, 28.0kW system)

### Cooling

| Outdoor Unit Dry-Bulb (℃) | Outdoor Unit 100% Cooling Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 52 ℃ | 15.4 | 15.4 | 5.57 | 13.9 | 4.57 | 12.3 | 3.68 | 10.8 | 2.90 | 9.3 | 2.22 | 7.71 | 1.64 | 6.17 | 1.17 | 4.63 | 0.80 |
| 50 ℃ | 18.0 | 18.0 | 6.47 | 16.2 | 5.31 | 14.4 | 4.26 | 12.6 | 3.34 | 10.8 | 2.54 | 8.99 | 1.86 | 7.19 | 1.31 | 5.39 | 0.88 |
| 48 ℃ | 20.2 | 20.2 | 7.12 | 18.2 | 5.83 | 16.2 | 4.67 | 14.2 | 3.65 | 12.1 | 2.77 | 10.11 | 2.02 | 8.09 | 1.41 | 6.07 | 0.93 |
| 46 ℃ | 21.9 | 21.9 | 7.39 | 19.7 | 6.05 | 17.5 | 4.84 | 15.4 | 3.78 | 13.2 | 2.86 | 10.97 | 2.08 | 8.77 | 1.44 | 6.58 | 0.95 |
| 43 ℃ | 24.1 | 24.1 | 7.51 | 21.6 | 6.14 | 19.2 | 4.92 | 16.8 | 3.83 | 14.4 | 2.89 | 12.0 | 2.10 | 9.62 | 1.45 | 7.22 | 0.95 |
| 41 ℃ | 25.6 | 25.6 | 7.69 | 23.1 | 6.28 | 20.5 | 5.02 | 17.9 | 3.91 | 15.4 | 2.95 | 12.8 | 2.14 | 10.25 | 1.47 | 7.69 | 0.95 |
| 39 ℃ | 26.5 | 26.5 | 7.46 | 23.8 | 6.10 | 21.2 | 4.88 | 18.5 | 3.80 | 15.9 | 2.87 | 13.2 | 2.08 | 10.59 | 1.43 | 7.94 | 0.93 |
| 37 ℃ | 27.3 | 27.3 | 7.24 | 24.5 | 5.91 | 21.8 | 4.73 | 19.1 | 3.69 | 16.4 | 2.78 | 13.6 | 2.01 | 10.91 | 1.39 | 8.18 | 0.90 |
| 35 ℃ | 28.0 | 28.0 | 6.83 | 25.2 | 5.73 | 22.4 | 4.58 | 19.6 | 3.57 | 16.8 | 2.69 | 14.0 | 1.95 | 11.2 | 1.34 | 8.40 | 0.87 |
| 32 ℃ | 28.0 | 28.0 | 6.48 | 25.2 | 5.30 | 22.4 | 4.24 | 19.6 | 3.30 | 16.8 | 2.49 | 14.0 | 1.81 | 11.2 | 1.25 | 8.40 | 0.81 |
| 31 ℃ | 28.0 | 28.0 | 6.00 | 25.2 | 4.91 | 22.4 | 3.93 | 19.6 | 3.07 | 16.8 | 2.32 | 14.0 | 1.68 | 11.2 | 1.17 | 8.40 | 0.76 |
| 30 ℃ | 28.0 | 28.0 | 5.79 | 25.2 | 4.73 | 22.4 | 3.79 | 19.6 | 2.96 | 16.8 | 2.24 | 14.0 | 1.63 | 11.2 | 1.13 | 8.40 | 0.74 |
| 29 ℃ | 28.0 | 28.0 | 5.58 | 25.2 | 4.56 | 22.4 | 3.66 | 19.6 | 2.85 | 16.8 | 2.16 | 14.0 | 1.57 | 11.2 | 1.09 | 8.40 | 0.72 |
| 27 ℃ | 28.0 | 28.0 | 5.20 | 25.2 | 4.25 | 22.4 | 3.41 | 19.6 | 2.66 | 16.8 | 2.02 | 14.0 | 1.47 | 11.2 | 1.02 | 8.40 | 0.67 |
| 25 ℃ | 28.0 | 28.0 | 4.85 | 25.2 | 3.97 | 22.4 | 3.18 | 19.6 | 2.49 | 16.8 | 1.88 | 14.0 | 1.38 | 11.2 | 0.96 | 8.40 | 0.63 |
| 23 ℃ | 28.0 | 28.0 | 4.62 | 25.2 | 3.79 | 22.4 | 3.04 | 19.6 | 2.37 | 16.8 | 1.80 | 14.0 | 1.32 | 11.2 | 0.92 | 8.40 | 0.61 |
| 21 ℃ | 28.0 | 28.0 | 4.52 | 25.2 | 3.70 | 22.4 | 2.97 | 19.6 | 2.32 | 16.8 | 1.76 | 14.0 | 1.29 | 11.2 | 0.90 | 8.40 | 0.60 |
| 20 ℃ | 28.0 | 28.0 | 4.47 | 25.2 | 3.66 | 22.4 | 2.94 | 19.6 | 2.30 | 16.8 | 1.75 | 14.0 | 1.28 | 11.2 | 0.90 | 8.40 | 0.60 |
| 19 ℃ | 28.0 | 28.0 | 4.43 | 25.2 | 3.63 | 22.4 | 2.91 | 19.6 | 2.28 | 16.8 | 1.73 | 14.0 | 1.27 | 11.2 | 0.89 | 8.40 | 0.59 |
| 17 ℃ | 28.0 | 28.0 | 4.35 | 25.2 | 3.57 | 22.4 | 2.86 | 19.6 | 2.24 | 16.8 | 1.70 | 14.0 | 1.25 | 11.2 | 0.88 | 8.40 | 0.59 |
| 15 ℃ | 28.0 | 28.0 | 4.29 | 25.2 | 3.51 | 22.4 | 2.82 | 19.6 | 2.21 | 16.8 | 1.68 | 14.0 | 1.23 | 11.2 | 0.87 | 8.40 | 0.58 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 27.0℃ dry-bulb / 19.0℃ wet bulb

### Heating

| Outdoor Unit | | Outdoor Unit 100% Heating Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dry-Bulb (℃) | Wet-Bulb (℃) | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 15.0 | 13.7 | 31.5 | 31.5 | 6.49 | 28.4 | 5.73 | 25.2 | 5.00 | 22.1 | 4.29 | 18.9 | 3.61 | 15.8 | 2.95 | 12.6 | 2.31 | 9.45 | 1.70 |
| 13.0 | 11.8 | 31.5 | 31.5 | 6.67 | 28.4 | 5.89 | 25.2 | 5.14 | 22.1 | 4.41 | 18.9 | 3.71 | 15.8 | 3.03 | 12.6 | 2.37 | 9.45 | 1.74 |
| 11.0 | 9.8 | 31.5 | 31.5 | 6.88 | 28.4 | 6.08 | 25.2 | 5.30 | 22.1 | 4.54 | 18.9 | 3.82 | 15.8 | 3.12 | 12.6 | 2.44 | 9.45 | 1.79 |
| 9.0 | 7.9 | 31.5 | 31.5 | 7.09 | 28.4 | 6.26 | 25.2 | 5.46 | 22.1 | 4.68 | 18.9 | 3.93 | 15.8 | 3.20 | 12.6 | 2.51 | 9.45 | 1.84 |
| 7.0 | 6.0 | 31.5 | 31.5 | 7.32 | 28.4 | 6.46 | 25.2 | 5.62 | 22.1 | 4.82 | 18.9 | 4.04 | 15.8 | 3.30 | 12.6 | 2.58 | 9.45 | 1.89 |
| 5.0 | 4.1 | 30.6 | 30.6 | 7.30 | 27.5 | 6.44 | 24.5 | 5.61 | 21.4 | 4.80 | 18.3 | 4.03 | 15.3 | 3.29 | 12.23 | 2.57 | 9.17 | 1.89 |
| 3.0 | 2.2 | 29.7 | 29.7 | 7.28 | 26.7 | 6.42 | 23.7 | 5.59 | 20.8 | 4.79 | 17.8 | 4.02 | 14.8 | 3.28 | 11.86 | 2.56 | 8.90 | 1.88 |
| 0.0 | -0.7 | 28.3 | 28.3 | 7.24 | 25.4 | 6.39 | 22.6 | 5.56 | 19.8 | 4.77 | 17.0 | 4.00 | 14.1 | 3.26 | 11.30 | 2.55 | 8.48 | 1.87 |
| -3.0 | -3.7 | 26.8 | 26.8 | 7.21 | 24.1 | 6.36 | 21.4 | 5.54 | 18.8 | 4.74 | 16.1 | 3.98 | 13.4 | 3.25 | 10.72 | 2.54 | 8.04 | 1.86 |
| -5.0 | -5.6 | 25.9 | 25.9 | 7.18 | 23.3 | 6.34 | 20.7 | 5.52 | 18.1 | 4.73 | 15.5 | 3.97 | 12.9 | 3.24 | 10.35 | 2.53 | 7.76 | 1.86 |
| -7.0 | -7.6 | 24.9 | 24.9 | 7.16 | 22.4 | 6.32 | 19.9 | 5.50 | 17.4 | 4.71 | 14.9 | 3.96 | 12.45 | 3.23 | 9.96 | 2.52 | 7.47 | 1.85 |
| -10 | -10.5 | 23.5 | 23.5 | 7.13 | 21.2 | 6.29 | 18.8 | 5.48 | 16.5 | 4.69 | 14.1 | 3.94 | 11.75 | 3.21 | 9.40 | 2.51 | 7.05 | 1.84 |
| -14.5 | -15.0 | 21.3 | 21.3 | 7.07 | 19.2 | 6.24 | 17.1 | 5.44 | 14.9 | 4.66 | 12.8 | 3.91 | 10.66 | 3.19 | 8.53 | 2.49 | 6.40 | 1.83 |
| -19.5 | -20.0 | 18.9 | 18.9 | 7.02 | 17.0 | 6.19 | 15.1 | 5.39 | 13.2 | 4.62 | 11.34 | 3.88 | 9.45 | 3.16 | 7.56 | 2.47 | 5.67 | 1.81 |
| -24.5 | -25.0 | 16.5 | 16.5 | 6.96 | 14.8 | 6.14 | 13.2 | 5.35 | 11.5 | 4.58 | 9.89 | 3.84 | 8.24 | 3.13 | 6.59 | 2.45 | 4.94 | 1.80 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 20.0℃ dry-bulb

**MMY-SUG1201MT8P-E (12HP, 33.5kW system)**

**Cooling**

| Outdoor Unit Dry-Bulb (℃) | Outdoor Unit 100% Cooling Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 52 ℃ | 18.4 | 18.4 | 7.24 | 16.6 | 5.92 | 14.8 | 4.73 | 12.9 | 3.68 | 11.1 | 2.76 | 9.22 | 1.97 | 7.38 | 1.31 | 5.53 | 0.78 |
| 50 ℃ | 21.5 | 21.5 | 8.44 | 19.4 | 6.89 | 17.2 | 5.51 | 15.1 | 4.28 | 12.9 | 3.20 | 10.76 | 2.28 | 8.61 | 1.51 | 6.45 | 0.90 |
| 48 ℃ | 24.2 | 24.2 | 9.29 | 21.8 | 7.59 | 19.4 | 6.06 | 16.9 | 4.70 | 14.5 | 3.51 | 12.10 | 2.50 | 9.68 | 1.66 | 7.26 | 0.98 |
| 46 ℃ | 26.2 | 26.2 | 9.65 | 23.6 | 7.88 | 21.0 | 6.29 | 18.4 | 4.88 | 15.7 | 3.64 | 13.12 | 2.59 | 10.50 | 1.71 | 7.87 | 1.02 |
| 43 ℃ | 28.8 | 28.8 | 9.81 | 25.9 | 8.01 | 23.0 | 6.39 | 20.1 | 4.95 | 17.3 | 3.70 | 14.4 | 2.63 | 11.51 | 1.74 | 8.63 | 1.03 |
| 41 ℃ | 30.7 | 30.7 | 10.03 | 27.6 | 8.19 | 24.5 | 6.53 | 21.5 | 5.06 | 18.4 | 3.78 | 15.3 | 2.68 | 12.26 | 1.77 | 9.20 | 1.05 |
| 39 ℃ | 31.7 | 31.7 | 9.74 | 28.5 | 7.95 | 25.3 | 6.34 | 22.2 | 4.92 | 19.0 | 3.67 | 15.8 | 2.61 | 12.67 | 1.72 | 9.50 | 1.02 |
| 37 ℃ | 32.6 | 32.6 | 9.45 | 29.4 | 7.71 | 26.1 | 6.15 | 22.8 | 4.77 | 19.6 | 3.56 | 16.3 | 2.53 | 13.05 | 1.67 | 9.79 | 0.99 |
| 35 ℃ | 33.5 | 33.5 | 8.89 | 30.2 | 7.47 | 26.8 | 5.96 | 23.5 | 4.62 | 20.1 | 3.45 | 16.8 | 2.45 | 13.4 | 1.62 | 10.05 | 0.96 |
| 32 ℃ | 33.5 | 33.5 | 8.45 | 30.2 | 6.90 | 26.8 | 5.51 | 23.5 | 4.27 | 20.1 | 3.19 | 16.8 | 2.26 | 13.4 | 1.50 | 10.05 | 0.89 |
| 31 ℃ | 33.5 | 33.5 | 7.83 | 30.2 | 6.40 | 26.8 | 5.10 | 23.5 | 3.96 | 20.1 | 2.96 | 16.8 | 2.10 | 13.4 | 1.39 | 10.05 | 0.82 |
| 30 ℃ | 33.5 | 33.5 | 7.55 | 30.2 | 6.16 | 26.8 | 4.92 | 23.5 | 3.82 | 20.1 | 2.85 | 16.8 | 2.03 | 13.4 | 1.34 | 10.05 | 0.80 |
| 29 ℃ | 33.5 | 33.5 | 7.28 | 30.2 | 5.94 | 26.8 | 4.74 | 23.5 | 3.68 | 20.1 | 2.75 | 16.8 | 1.95 | 13.4 | 1.29 | 10.05 | 0.77 |
| 27 ℃ | 33.5 | 33.5 | 6.78 | 30.2 | 5.53 | 26.8 | 4.42 | 23.5 | 3.43 | 20.1 | 2.56 | 16.8 | 1.82 | 13.4 | 1.21 | 10.05 | 0.72 |
| 25 ℃ | 33.5 | 33.5 | 6.32 | 30.2 | 5.16 | 26.8 | 4.12 | 23.5 | 3.20 | 20.1 | 2.39 | 16.8 | 1.70 | 13.4 | 1.13 | 10.05 | 0.67 |
| 23 ℃ | 33.5 | 33.5 | 6.03 | 30.2 | 4.92 | 26.8 | 3.93 | 23.5 | 3.05 | 20.1 | 2.28 | 16.8 | 1.62 | 13.4 | 1.08 | 10.05 | 0.64 |
| 21 ℃ | 33.5 | 33.5 | 5.89 | 30.2 | 4.81 | 26.8 | 3.84 | 23.5 | 2.98 | 20.1 | 2.23 | 16.8 | 1.59 | 13.4 | 1.05 | 10.05 | 0.63 |
| 20 ℃ | 33.5 | 33.5 | 5.83 | 30.2 | 4.76 | 26.8 | 3.81 | 23.5 | 2.95 | 20.1 | 2.21 | 16.8 | 1.57 | 13.4 | 1.04 | 10.05 | 0.62 |
| 19 ℃ | 33.5 | 33.5 | 5.77 | 30.2 | 4.72 | 26.8 | 3.77 | 23.5 | 2.93 | 20.1 | 2.19 | 16.8 | 1.56 | 13.4 | 1.03 | 10.05 | 0.62 |
| 17 ℃ | 33.5 | 33.5 | 5.67 | 30.2 | 4.64 | 26.8 | 3.70 | 23.5 | 2.88 | 20.1 | 2.15 | 16.8 | 1.53 | 13.4 | 1.02 | 10.05 | 0.61 |
| 15 ℃ | 33.5 | 33.5 | 5.59 | 30.2 | 4.57 | 26.8 | 3.65 | 23.5 | 2.83 | 20.1 | 2.12 | 16.8 | 1.51 | 13.4 | 1.00 | 10.05 | 0.60 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 27.0℃ dry-bulb / 19.0℃ wet bulb

**Heating**

| Outdoor Unit | | Outdoor Unit 100% Heating Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dry-Bulb (℃) | Wet-Bulb (℃) | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 15.0 | 13.7 | 37.5 | 37.5 | 8.13 | 33.8 | 7.16 | 30.0 | 6.23 | 26.3 | 5.33 | 22.5 | 4.46 | 18.8 | 3.63 | 15.0 | 2.84 | 11.25 | 2.08 |
| 13.0 | 11.8 | 37.5 | 37.5 | 8.37 | 33.8 | 7.37 | 30.0 | 6.41 | 26.3 | 5.48 | 22.5 | 4.59 | 18.8 | 3.73 | 15.0 | 2.91 | 11.25 | 2.13 |
| 11.0 | 9.8 | 37.5 | 37.5 | 8.64 | 33.8 | 7.60 | 30.0 | 6.61 | 26.3 | 5.65 | 22.5 | 4.72 | 18.8 | 3.84 | 15.0 | 3.00 | 11.25 | 2.19 |
| 9.0 | 7.9 | 37.5 | 37.5 | 8.92 | 33.8 | 7.84 | 30.0 | 6.81 | 26.3 | 5.82 | 22.5 | 4.86 | 18.8 | 3.95 | 15.0 | 3.08 | 11.25 | 2.25 |
| 7.0 | 6.0 | 37.5 | 37.5 | 9.21 | 33.8 | 8.10 | 30.0 | 7.03 | 26.3 | 6.00 | 22.5 | 5.01 | 18.8 | 4.07 | 15.0 | 3.17 | 11.25 | 2.31 |
| 5.0 | 4.1 | 36.4 | 36.4 | 9.18 | 32.8 | 8.07 | 29.1 | 7.00 | 25.5 | 5.98 | 21.8 | 5.00 | 18.2 | 4.06 | 14.56 | 3.16 | 10.92 | 2.31 |
| 3.0 | 2.2 | 35.3 | 35.3 | 9.15 | 31.8 | 8.05 | 28.2 | 6.98 | 24.7 | 5.96 | 21.2 | 4.98 | 17.7 | 4.05 | 14.12 | 3.15 | 10.59 | 2.30 |
| 0.0 | -0.7 | 33.6 | 33.6 | 9.11 | 30.3 | 8.01 | 26.9 | 6.95 | 23.5 | 5.93 | 20.2 | 4.96 | 16.8 | 4.03 | 13.45 | 3.14 | 10.09 | 2.29 |
| -3.0 | -3.7 | 31.9 | 31.9 | 9.07 | 28.7 | 7.97 | 25.5 | 6.92 | 22.3 | 5.91 | 19.1 | 4.94 | 16.0 | 4.01 | 12.76 | 3.12 | 9.57 | 2.28 |
| -5.0 | -5.6 | 30.8 | 30.8 | 9.04 | 27.7 | 7.95 | 24.6 | 6.90 | 21.6 | 5.89 | 18.5 | 4.92 | 15.4 | 4.00 | 12.32 | 3.11 | 9.24 | 2.27 |
| -7.0 | -7.6 | 29.7 | 29.7 | 9.01 | 26.7 | 7.92 | 23.7 | 6.87 | 20.8 | 5.87 | 17.8 | 4.90 | 14.83 | 3.98 | 11.86 | 3.10 | 8.90 | 2.26 |
| -10 | -10.5 | 28.0 | 28.0 | 8.97 | 25.2 | 7.88 | 22.4 | 6.84 | 19.6 | 5.84 | 16.8 | 4.88 | 13.99 | 3.96 | 11.19 | 3.09 | 8.39 | 2.25 |
| -14.5 | -15.0 | 25.4 | 25.4 | 8.90 | 22.8 | 7.82 | 20.3 | 6.79 | 17.8 | 5.80 | 15.2 | 4.84 | 12.69 | 3.93 | 10.15 | 3.06 | 7.62 | 2.24 |
| -19.5 | -20.0 | 22.5 | 22.5 | 8.83 | 20.3 | 7.76 | 18.0 | 6.73 | 15.8 | 5.75 | 13.50 | 4.80 | 11.25 | 3.90 | 9.00 | 3.04 | 6.75 | 2.22 |
| -24.5 | -25.0 | 19.6 | 19.6 | 8.75 | 17.7 | 7.69 | 15.7 | 6.68 | 13.7 | 5.70 | 11.77 | 4.76 | 9.81 | 3.87 | 7.85 | 3.01 | 5.88 | 2.20 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 20.0℃ dry-bulb

## MMY-SUG1401MT8P-E (14HP, 40kW system)

### Cooling

| Outdoor Unit Dry-Bulb (℃) | Outdoor Unit 100% Cooling Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 52 ℃ | 22.0 | 22.0 | 9.46 | 19.8 | 7.68 | 17.6 | 6.09 | 15.4 | 4.69 | 13.2 | 3.46 | 11.01 | 2.43 | 8.81 | 1.58 | 6.61 | 0.91 |
| 50 ℃ | 25.7 | 25.7 | 11.09 | 23.1 | 9.00 | 20.6 | 7.14 | 18.0 | 5.49 | 15.4 | 4.05 | 12.84 | 2.84 | 10.28 | 1.84 | 7.71 | 1.06 |
| 48 ℃ | 28.9 | 28.9 | 12.26 | 26.0 | 9.95 | 23.1 | 7.89 | 20.2 | 6.06 | 17.3 | 4.48 | 14.44 | 3.13 | 11.56 | 2.03 | 8.67 | 1.17 |
| 46 ℃ | 31.3 | 31.3 | 12.75 | 28.2 | 10.35 | 25.1 | 8.20 | 21.9 | 6.30 | 18.8 | 4.65 | 15.67 | 3.26 | 12.53 | 2.11 | 9.40 | 1.21 |
| 43 ℃ | 34.4 | 34.4 | 12.98 | 30.9 | 10.54 | 27.5 | 8.35 | 24.1 | 6.41 | 20.6 | 4.73 | 17.2 | 3.31 | 13.75 | 2.14 | 10.31 | 1.23 |
| 41 ℃ | 36.6 | 36.6 | 13.30 | 32.9 | 10.80 | 29.3 | 8.55 | 25.6 | 6.57 | 22.0 | 4.85 | 18.3 | 3.39 | 14.64 | 2.19 | 10.98 | 1.26 |
| 39 ℃ | 37.8 | 37.8 | 12.92 | 34.0 | 10.48 | 30.3 | 8.30 | 26.5 | 6.38 | 22.7 | 4.71 | 18.9 | 3.29 | 15.13 | 2.13 | 11.35 | 1.22 |
| 37 ℃ | 39.0 | 39.0 | 12.52 | 35.1 | 10.17 | 31.2 | 8.05 | 27.3 | 6.19 | 23.4 | 4.57 | 19.5 | 3.19 | 15.58 | 2.07 | 11.69 | 1.19 |
| 35 ℃ | 40.0 | 40.0 | 12.05 | 36.0 | 9.85 | 32.0 | 7.80 | 28.0 | 5.99 | 24.0 | 4.42 | 20.0 | 3.09 | 16.0 | 2.00 | 12.00 | 1.15 |
| 32 ℃ | 40.0 | 40.0 | 11.19 | 36.0 | 9.09 | 32.0 | 7.20 | 28.0 | 5.53 | 24.0 | 4.08 | 20.0 | 2.86 | 16.0 | 1.85 | 12.00 | 1.06 |
| 31 ℃ | 40.0 | 40.0 | 10.36 | 36.0 | 8.41 | 32.0 | 6.66 | 28.0 | 5.12 | 24.0 | 3.78 | 20.0 | 2.64 | 16.0 | 1.71 | 12.00 | 0.98 |
| 30 ℃ | 40.0 | 40.0 | 9.98 | 36.0 | 8.10 | 32.0 | 6.42 | 28.0 | 4.93 | 24.0 | 3.64 | 20.0 | 2.55 | 16.0 | 1.65 | 12.00 | 0.95 |
| 29 ℃ | 40.0 | 40.0 | 9.62 | 36.0 | 7.81 | 32.0 | 6.18 | 28.0 | 4.75 | 24.0 | 3.51 | 20.0 | 2.46 | 16.0 | 1.59 | 12.00 | 0.91 |
| 27 ℃ | 40.0 | 40.0 | 8.94 | 36.0 | 7.26 | 32.0 | 5.75 | 28.0 | 4.42 | 24.0 | 3.27 | 20.0 | 2.28 | 16.0 | 1.48 | 12.00 | 0.85 |
| 25 ℃ | 40.0 | 40.0 | 8.33 | 36.0 | 6.77 | 32.0 | 5.36 | 28.0 | 4.12 | 24.0 | 3.04 | 20.0 | 2.13 | 16.0 | 1.38 | 12.00 | 0.79 |
| 23 ℃ | 40.0 | 40.0 | 7.94 | 36.0 | 6.45 | 32.0 | 5.11 | 28.0 | 3.93 | 24.0 | 2.90 | 20.0 | 2.03 | 16.0 | 1.32 | 12.00 | 0.76 |
| 21 ℃ | 40.0 | 40.0 | 7.76 | 36.0 | 6.30 | 32.0 | 4.99 | 28.0 | 3.84 | 24.0 | 2.83 | 20.0 | 1.98 | 16.0 | 1.29 | 12.00 | 0.74 |
| 20 ℃ | 40.0 | 40.0 | 7.68 | 36.0 | 6.23 | 32.0 | 4.94 | 28.0 | 3.80 | 24.0 | 2.80 | 20.0 | 1.96 | 16.0 | 1.27 | 12.00 | 0.73 |
| 19 ℃ | 40.0 | 40.0 | 7.60 | 36.0 | 6.17 | 32.0 | 4.89 | 28.0 | 3.76 | 24.0 | 2.78 | 20.0 | 1.94 | 16.0 | 1.26 | 12.00 | 0.73 |
| 17 ℃ | 40.0 | 40.0 | 7.46 | 36.0 | 6.06 | 32.0 | 4.80 | 28.0 | 3.69 | 24.0 | 2.73 | 20.0 | 1.91 | 16.0 | 1.24 | 12.00 | 0.71 |
| 15 ℃ | 40.0 | 40.0 | 7.35 | 36.0 | 5.97 | 32.0 | 4.73 | 28.0 | 3.64 | 24.0 | 2.69 | 20.0 | 1.88 | 16.0 | 1.22 | 12.00 | 0.70 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 27.0℃ dry-bulb / 19.0℃ wet bulb

### Heating

| Outdoor Unit | | Outdoor Unit 100% Heating Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dry-Bulb (℃) | Wet-Bulb (℃) | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 15.0 | 13.7 | 45.0 | 45.0 | 11.12 | 40.5 | 9.80 | 36.0 | 8.52 | 31.5 | 7.29 | 27.0 | 6.11 | 22.5 | 4.97 | 18.0 | 3.89 | 13.50 | 2.84 |
| 13.0 | 11.8 | 45.0 | 45.0 | 11.45 | 40.5 | 10.08 | 36.0 | 8.76 | 31.5 | 7.50 | 27.0 | 6.28 | 22.5 | 5.11 | 18.0 | 3.99 | 13.50 | 2.92 |
| 11.0 | 9.8 | 45.0 | 45.0 | 11.81 | 40.5 | 10.40 | 36.0 | 9.04 | 31.5 | 7.72 | 27.0 | 6.47 | 22.5 | 5.26 | 18.0 | 4.10 | 13.50 | 3.00 |
| 9.0 | 7.9 | 45.0 | 45.0 | 12.19 | 40.5 | 10.72 | 36.0 | 9.31 | 31.5 | 7.96 | 27.0 | 6.66 | 22.5 | 5.41 | 18.0 | 4.22 | 13.50 | 3.08 |
| 7.0 | 6.0 | 45.0 | 45.0 | 12.59 | 40.5 | 11.07 | 36.0 | 9.61 | 31.5 | 8.21 | 27.0 | 6.86 | 22.5 | 5.57 | 18.0 | 4.34 | 13.50 | 3.17 |
| 5.0 | 4.1 | 43.7 | 43.7 | 12.55 | 39.3 | 11.04 | 34.9 | 9.58 | 30.6 | 8.18 | 26.2 | 6.84 | 21.8 | 5.55 | 17.47 | 4.33 | 13.11 | 3.16 |
| 3.0 | 2.2 | 42.4 | 42.4 | 12.51 | 38.1 | 11.00 | 33.9 | 9.55 | 29.7 | 8.16 | 25.4 | 6.82 | 21.2 | 5.54 | 16.95 | 4.32 | 12.71 | 3.15 |
| 0.0 | -0.7 | 40.4 | 40.4 | 12.46 | 36.3 | 10.95 | 32.3 | 9.51 | 28.3 | 8.12 | 24.2 | 6.79 | 20.2 | 5.51 | 16.14 | 4.29 | 12.11 | 3.14 |
| -3.0 | -3.7 | 38.3 | 38.3 | 12.39 | 34.5 | 10.90 | 30.6 | 9.46 | 26.8 | 8.08 | 23.0 | 6.75 | 19.1 | 5.49 | 15.31 | 4.27 | 11.49 | 3.12 |
| -5.0 | -5.6 | 37.0 | 37.0 | 12.36 | 33.3 | 10.87 | 29.6 | 9.43 | 25.9 | 8.05 | 22.2 | 6.73 | 18.5 | 5.47 | 14.79 | 4.26 | 11.09 | 3.11 |
| -7.0 | -7.6 | 35.6 | 35.6 | 12.32 | 32.0 | 10.83 | 28.5 | 9.40 | 24.9 | 8.03 | 21.4 | 6.71 | 17.79 | 5.45 | 14.23 | 4.25 | 10.68 | 3.10 |
| -10 | -10.5 | 33.6 | 33.6 | 12.26 | 30.2 | 10.78 | 26.9 | 9.36 | 23.5 | 7.99 | 20.1 | 6.68 | 16.79 | 5.42 | 13.43 | 4.23 | 10.07 | 3.09 |
| -14.5 | -15.0 | 30.5 | 30.5 | 12.17 | 27.4 | 10.70 | 24.4 | 9.29 | 21.3 | 7.93 | 18.3 | 6.63 | 15.23 | 5.38 | 12.18 | 4.20 | 9.14 | 3.06 |
| -19.5 | -20.0 | 27.0 | 27.0 | 12.07 | 24.3 | 10.61 | 21.6 | 9.21 | 18.9 | 7.86 | 16.20 | 6.57 | 13.50 | 5.34 | 10.80 | 4.16 | 8.10 | 3.04 |
| -24.5 | -25.0 | 23.5 | 23.5 | 11.97 | 21.2 | 10.52 | 18.8 | 9.13 | 16.5 | 7.80 | 14.12 | 6.52 | 11.77 | 5.30 | 9.42 | 4.13 | 7.06 | 3.01 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 20.0℃ dry-bulb

**MMY-SUG1601MT8P-E (16HP, 45.0kW system)**

**Cooling**

| Outdoor Unit Dry-Bulb (℃) | Outdoor Unit 100% Cooling Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 52 ℃ | 24.8 | 24.8 | 9.63 | 22.3 | 7.85 | 19.8 | 6.25 | 17.3 | 4.85 | 14.9 | 3.63 | 12.39 | 2.60 | 9.91 | 1.75 | 7.43 | 1.10 |
| 50 ℃ | 28.9 | 28.9 | 11.26 | 26.0 | 9.17 | 23.1 | 7.30 | 20.2 | 5.65 | 17.3 | 4.21 | 14.45 | 3.00 | 11.56 | 2.01 | 8.67 | 1.24 |
| 48 ℃ | 32.5 | 32.5 | 12.43 | 29.3 | 10.12 | 26.0 | 8.05 | 22.8 | 6.22 | 19.5 | 4.63 | 16.25 | 3.29 | 13.00 | 2.19 | 9.75 | 1.34 |
| 46 ℃ | 35.2 | 35.2 | 12.92 | 31.7 | 10.51 | 28.2 | 8.36 | 24.7 | 6.45 | 21.1 | 4.80 | 17.62 | 3.41 | 14.10 | 2.27 | 10.57 | 1.38 |
| 43 ℃ | 38.7 | 38.7 | 13.15 | 34.8 | 10.70 | 30.9 | 8.50 | 27.1 | 6.56 | 23.2 | 4.88 | 19.3 | 3.46 | 15.46 | 2.29 | 11.60 | 1.39 |
| 41 ℃ | 41.2 | 41.2 | 13.47 | 37.1 | 10.95 | 32.9 | 8.70 | 28.8 | 6.71 | 24.7 | 4.99 | 20.6 | 3.53 | 16.47 | 2.34 | 12.35 | 1.41 |
| 39 ℃ | 42.5 | 42.5 | 13.08 | 38.3 | 10.64 | 34.0 | 8.45 | 29.8 | 6.52 | 25.5 | 4.85 | 21.3 | 3.43 | 17.02 | 2.27 | 12.76 | 1.37 |
| 37 ℃ | 43.8 | 43.8 | 12.68 | 39.4 | 10.31 | 35.1 | 8.19 | 30.7 | 6.32 | 26.3 | 4.70 | 21.9 | 3.33 | 17.53 | 2.20 | 13.15 | 1.33 |
| 35 ℃ | 45.0 | 45.0 | 12.16 | 40.5 | 9.99 | 36.0 | 7.94 | 31.5 | 6.12 | 27.0 | 4.55 | 22.5 | 3.22 | 18.0 | 2.13 | 13.50 | 1.29 |
| 32 ℃ | 45.0 | 45.0 | 11.34 | 40.5 | 9.22 | 36.0 | 7.33 | 31.5 | 5.66 | 27.0 | 4.21 | 22.5 | 2.98 | 18.0 | 1.98 | 13.50 | 1.20 |
| 31 ℃ | 45.0 | 45.0 | 10.50 | 40.5 | 8.54 | 36.0 | 6.79 | 31.5 | 5.24 | 27.0 | 3.90 | 22.5 | 2.77 | 18.0 | 1.84 | 13.50 | 1.12 |
| 30 ℃ | 45.0 | 45.0 | 10.11 | 40.5 | 8.23 | 36.0 | 6.54 | 31.5 | 5.05 | 27.0 | 3.76 | 22.5 | 2.67 | 18.0 | 1.77 | 13.50 | 1.08 |
| 29 ℃ | 45.0 | 45.0 | 9.75 | 40.5 | 7.93 | 36.0 | 6.30 | 31.5 | 4.87 | 27.0 | 3.63 | 22.5 | 2.57 | 18.0 | 1.71 | 13.50 | 1.04 |
| 27 ℃ | 45.0 | 45.0 | 9.07 | 40.5 | 7.38 | 36.0 | 5.87 | 31.5 | 4.53 | 27.0 | 3.38 | 22.5 | 2.40 | 18.0 | 1.60 | 13.50 | 0.97 |
| 25 ℃ | 45.0 | 45.0 | 8.45 | 40.5 | 6.88 | 36.0 | 5.47 | 31.5 | 4.23 | 27.0 | 3.15 | 22.5 | 2.24 | 18.0 | 1.49 | 13.50 | 0.91 |
| 23 ℃ | 45.0 | 45.0 | 8.06 | 40.5 | 6.56 | 36.0 | 5.22 | 31.5 | 4.03 | 27.0 | 3.01 | 22.5 | 2.14 | 18.0 | 1.43 | 13.50 | 0.87 |
| 21 ℃ | 45.0 | 45.0 | 7.88 | 40.5 | 6.41 | 36.0 | 5.10 | 31.5 | 3.94 | 27.0 | 2.94 | 22.5 | 2.09 | 18.0 | 1.40 | 13.50 | 0.86 |
| 20 ℃ | 45.0 | 45.0 | 7.79 | 40.5 | 6.34 | 36.0 | 5.05 | 31.5 | 3.90 | 27.0 | 2.91 | 22.5 | 2.07 | 18.0 | 1.38 | 13.50 | 0.85 |
| 19 ℃ | 45.0 | 45.0 | 7.72 | 40.5 | 6.28 | 36.0 | 5.00 | 31.5 | 3.86 | 27.0 | 2.88 | 22.5 | 2.05 | 18.0 | 1.37 | 13.50 | 0.84 |
| 17 ℃ | 45.0 | 45.0 | 7.58 | 40.5 | 6.17 | 36.0 | 4.91 | 31.5 | 3.80 | 27.0 | 2.83 | 22.5 | 2.02 | 18.0 | 1.35 | 13.50 | 0.83 |
| 15 ℃ | 45.0 | 45.0 | 7.46 | 40.5 | 6.08 | 36.0 | 4.83 | 31.5 | 3.74 | 27.0 | 2.79 | 22.5 | 1.99 | 18.0 | 1.33 | 13.50 | 0.82 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 27.0℃ dry-bulb / 19.0℃ wet bulb

**Heating**

| Outdoor Unit | | Outdoor Unit 100% Heating Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dry-Bulb (℃) | Wet-Bulb (℃) | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 15.0 | 13.7 | 50.0 | 50.0 | 10.96 | 45.0 | 9.64 | 40.0 | 8.37 | 35.0 | 7.15 | 30.0 | 5.98 | 25.0 | 4.86 | 20.0 | 3.79 | 15.00 | 2.77 |
| 13.0 | 11.8 | 50.0 | 50.0 | 11.29 | 45.0 | 9.92 | 40.0 | 8.61 | 35.0 | 7.36 | 30.0 | 6.15 | 25.0 | 4.99 | 20.0 | 3.89 | 15.00 | 2.84 |
| 11.0 | 9.8 | 50.0 | 50.0 | 11.65 | 45.0 | 10.24 | 40.0 | 8.89 | 35.0 | 7.58 | 30.0 | 6.34 | 25.0 | 5.14 | 20.0 | 4.00 | 15.00 | 2.92 |
| 9.0 | 7.9 | 50.0 | 50.0 | 12.03 | 45.0 | 10.57 | 40.0 | 9.16 | 35.0 | 7.81 | 30.0 | 6.52 | 25.0 | 5.29 | 20.0 | 4.12 | 15.00 | 3.00 |
| 7.0 | 6.0 | 50.0 | 50.0 | 12.43 | 45.0 | 10.91 | 40.0 | 9.46 | 35.0 | 8.06 | 30.0 | 6.73 | 25.0 | 5.45 | 20.0 | 4.24 | 15.00 | 3.09 |
| 5.0 | 4.1 | 48.5 | 48.5 | 12.39 | 43.7 | 10.88 | 38.8 | 9.43 | 34.0 | 8.04 | 29.1 | 6.71 | 24.3 | 5.44 | 19.42 | 4.23 | 14.56 | 3.08 |
| 3.0 | 2.2 | 47.1 | 47.1 | 12.35 | 42.4 | 10.85 | 37.7 | 9.40 | 33.0 | 8.01 | 28.2 | 6.69 | 23.5 | 5.42 | 18.83 | 4.21 | 14.12 | 3.07 |
| 0.0 | -0.7 | 44.8 | 44.8 | 12.30 | 40.4 | 10.80 | 35.9 | 9.35 | 31.4 | 7.97 | 26.9 | 6.65 | 22.4 | 5.39 | 17.94 | 4.19 | 13.45 | 3.06 |
| -3.0 | -3.7 | 42.5 | 42.5 | 12.24 | 38.3 | 10.74 | 34.0 | 9.31 | 29.8 | 7.94 | 25.5 | 6.62 | 21.3 | 5.37 | 17.02 | 4.17 | 12.76 | 3.04 |
| -5.0 | -5.6 | 41.1 | 41.1 | 12.20 | 37.0 | 10.71 | 32.9 | 9.28 | 28.8 | 7.91 | 24.6 | 6.60 | 20.5 | 5.35 | 16.43 | 4.16 | 12.32 | 3.03 |
| -7.0 | -7.6 | 39.5 | 39.5 | 12.16 | 35.6 | 10.68 | 31.6 | 9.25 | 27.7 | 7.89 | 23.7 | 6.58 | 19.77 | 5.33 | 15.82 | 4.15 | 11.86 | 3.02 |
| -10 | -10.5 | 37.3 | 37.3 | 12.10 | 33.6 | 10.62 | 29.8 | 9.21 | 26.1 | 7.85 | 22.4 | 6.55 | 18.65 | 5.31 | 14.92 | 4.13 | 11.19 | 3.01 |
| -14.5 | -15.0 | 33.8 | 33.8 | 12.01 | 30.5 | 10.55 | 27.1 | 9.14 | 23.7 | 7.79 | 20.3 | 6.50 | 16.92 | 5.27 | 13.54 | 4.10 | 10.15 | 2.98 |
| -19.5 | -20.0 | 30.0 | 30.0 | 11.91 | 27.0 | 10.46 | 24.0 | 9.06 | 21.0 | 7.73 | 18.00 | 6.45 | 15.00 | 5.23 | 12.00 | 4.06 | 9.00 | 2.96 |
| -24.5 | -25.0 | 26.2 | 26.2 | 11.81 | 23.5 | 10.37 | 20.9 | 8.99 | 18.3 | 7.66 | 15.69 | 6.39 | 13.08 | 5.18 | 10.46 | 4.03 | 7.85 | 2.94 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 20.0℃ dry-bulb

## MMY-SUG1801MT8P-E (18HP, 50.4kW system)

### Cooling

| Outdoor Unit Dry-Bulb (℃) | Outdoor Unit 100% Cooling Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 52 ℃ | 27.8 | 27.8 | 11.40 | 25.0 | 9.29 | 22.2 | 7.40 | 19.4 | 5.73 | 16.7 | 4.29 | 13.88 | 3.07 | 11.10 | 2.07 | 8.33 | 1.29 |
| 50 ℃ | 32.4 | 32.4 | 13.34 | 29.1 | 10.86 | 25.9 | 8.64 | 22.7 | 6.68 | 19.4 | 4.98 | 16.18 | 3.54 | 12.95 | 2.37 | 9.71 | 1.46 |
| 48 ℃ | 36.4 | 36.4 | 14.73 | 32.8 | 11.98 | 29.1 | 9.52 | 25.5 | 7.36 | 21.8 | 5.48 | 18.20 | 3.89 | 14.56 | 2.59 | 10.92 | 1.57 |
| 46 ℃ | 39.5 | 39.5 | 15.31 | 35.5 | 12.45 | 31.6 | 9.89 | 27.6 | 7.64 | 23.7 | 5.68 | 19.74 | 4.03 | 15.79 | 2.67 | 11.84 | 1.62 |
| 43 ℃ | 43.3 | 43.3 | 15.58 | 39.0 | 12.67 | 34.6 | 10.06 | 30.3 | 7.76 | 26.0 | 5.77 | 21.6 | 4.09 | 17.32 | 2.71 | 12.99 | 1.64 |
| 41 ℃ | 46.1 | 46.1 | 15.96 | 41.5 | 12.97 | 36.9 | 10.30 | 32.3 | 7.95 | 27.7 | 5.90 | 23.1 | 4.18 | 18.45 | 2.76 | 13.84 | 1.66 |
| 39 ℃ | 47.7 | 47.7 | 15.49 | 42.9 | 12.60 | 38.1 | 10.00 | 33.4 | 7.72 | 28.6 | 5.73 | 23.8 | 4.05 | 19.06 | 2.68 | 14.30 | 1.61 |
| 37 ℃ | 49.1 | 49.1 | 15.02 | 44.2 | 12.21 | 39.3 | 9.70 | 34.4 | 7.48 | 29.4 | 5.56 | 24.5 | 3.93 | 19.63 | 2.60 | 14.72 | 1.57 |
| 35 ℃ | 50.4 | 50.4 | 14.78 | 45.4 | 11.83 | 40.3 | 9.40 | 35.3 | 7.25 | 30.2 | 5.39 | 25.2 | 3.81 | 20.2 | 2.52 | 15.12 | 1.52 |
| 32 ℃ | 50.4 | 50.4 | 13.43 | 45.4 | 10.92 | 40.3 | 8.68 | 35.3 | 6.69 | 30.2 | 4.98 | 25.2 | 3.52 | 20.2 | 2.33 | 15.12 | 1.41 |
| 31 ℃ | 50.4 | 50.4 | 12.44 | 45.4 | 10.11 | 40.3 | 8.04 | 35.3 | 6.20 | 30.2 | 4.61 | 25.2 | 3.27 | 20.2 | 2.17 | 15.12 | 1.31 |
| 30 ℃ | 50.4 | 50.4 | 11.98 | 45.4 | 9.74 | 40.3 | 7.74 | 35.3 | 5.98 | 30.2 | 4.45 | 25.2 | 3.15 | 20.2 | 2.09 | 15.12 | 1.27 |
| 29 ℃ | 50.4 | 50.4 | 11.55 | 45.4 | 9.39 | 40.3 | 7.46 | 35.3 | 5.76 | 30.2 | 4.29 | 25.2 | 3.04 | 20.2 | 2.02 | 15.12 | 1.23 |
| 27 ℃ | 50.4 | 50.4 | 10.74 | 45.4 | 8.74 | 40.3 | 6.95 | 35.3 | 5.36 | 30.2 | 3.99 | 25.2 | 2.83 | 20.2 | 1.88 | 15.12 | 1.15 |
| 25 ℃ | 50.4 | 50.4 | 10.01 | 45.4 | 8.15 | 40.3 | 6.48 | 35.3 | 5.00 | 30.2 | 3.72 | 25.2 | 2.64 | 20.2 | 1.76 | 15.12 | 1.07 |
| 23 ℃ | 50.4 | 50.4 | 9.55 | 45.4 | 7.77 | 40.3 | 6.18 | 35.3 | 4.77 | 30.2 | 3.55 | 25.2 | 2.53 | 20.2 | 1.68 | 15.12 | 1.03 |
| 21 ℃ | 50.4 | 50.4 | 9.33 | 45.4 | 7.59 | 40.3 | 6.04 | 35.3 | 4.66 | 30.2 | 3.48 | 25.2 | 2.47 | 20.2 | 1.65 | 15.12 | 1.01 |
| 20 ℃ | 50.4 | 50.4 | 9.23 | 45.4 | 7.51 | 40.3 | 5.97 | 35.3 | 4.62 | 30.2 | 3.44 | 25.2 | 2.45 | 20.2 | 1.63 | 15.12 | 1.00 |
| 19 ℃ | 50.4 | 50.4 | 9.14 | 45.4 | 7.44 | 40.3 | 5.91 | 35.3 | 4.57 | 30.2 | 3.41 | 25.2 | 2.42 | 20.2 | 1.62 | 15.12 | 0.99 |
| 17 ℃ | 50.4 | 50.4 | 8.98 | 45.4 | 7.31 | 40.3 | 5.81 | 35.3 | 4.49 | 30.2 | 3.35 | 25.2 | 2.38 | 20.2 | 1.59 | 15.12 | 0.98 |
| 15 ℃ | 50.4 | 50.4 | 8.84 | 45.4 | 7.19 | 40.3 | 5.72 | 35.3 | 4.42 | 30.2 | 3.30 | 25.2 | 2.35 | 20.2 | 1.57 | 15.12 | 0.96 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 27.0℃ dry-bulb / 19.0℃ wet bulb

### Heating

| Outdoor Unit | | Outdoor Unit 100% Heating Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dry-Bulb (℃) | Wet-Bulb (℃) | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 15.0 | 13.7 | 56.0 | 56.0 | 14.34 | 50.4 | 12.44 | 44.8 | 10.65 | 39.2 | 8.96 | 33.6 | 7.37 | 28.0 | 5.88 | 22.4 | 4.50 | 16.80 | 3.22 |
| 13.0 | 11.8 | 56.0 | 56.0 | 14.82 | 50.4 | 12.85 | 44.8 | 10.99 | 39.2 | 9.24 | 33.6 | 7.59 | 28.0 | 6.06 | 22.4 | 4.63 | 16.80 | 3.31 |
| 11.0 | 9.8 | 56.0 | 56.0 | 15.37 | 50.4 | 13.32 | 44.8 | 11.38 | 39.2 | 9.56 | 33.6 | 7.85 | 28.0 | 6.25 | 22.4 | 4.78 | 16.80 | 3.41 |
| 9.0 | 7.9 | 56.0 | 56.0 | 15.92 | 50.4 | 13.79 | 44.8 | 11.77 | 39.2 | 9.88 | 33.6 | 8.11 | 28.0 | 6.45 | 22.4 | 4.92 | 16.80 | 3.51 |
| 7.0 | 6.0 | 56.0 | 56.0 | 16.52 | 50.4 | 14.29 | 44.8 | 12.20 | 39.2 | 10.22 | 33.6 | 8.38 | 28.0 | 6.67 | 22.4 | 5.08 | 16.80 | 3.62 |
| 5.0 | 4.1 | 54.4 | 54.4 | 16.47 | 48.9 | 14.25 | 43.5 | 12.16 | 38.1 | 10.19 | 32.6 | 8.36 | 27.2 | 6.65 | 21.75 | 5.07 | 16.31 | 3.61 |
| 3.0 | 2.2 | 52.7 | 52.7 | 16.42 | 47.5 | 14.21 | 42.2 | 12.12 | 36.9 | 10.16 | 31.6 | 8.33 | 26.4 | 6.63 | 21.09 | 5.05 | 15.82 | 3.60 |
| 0.0 | -0.7 | 50.2 | 50.2 | 16.34 | 45.2 | 14.14 | 40.2 | 12.06 | 35.2 | 10.12 | 30.1 | 8.29 | 25.1 | 6.60 | 20.09 | 5.03 | 15.07 | 3.58 |
| -3.0 | -3.7 | 47.6 | 47.6 | 16.26 | 42.9 | 14.07 | 38.1 | 12.01 | 33.4 | 10.07 | 28.6 | 8.25 | 23.8 | 6.56 | 19.06 | 5.00 | 14.29 | 3.57 |
| -5.0 | -5.6 | 46.0 | 46.0 | 16.21 | 41.4 | 14.03 | 36.8 | 11.97 | 32.2 | 10.04 | 27.6 | 8.23 | 23.0 | 6.54 | 18.40 | 4.99 | 13.80 | 3.55 |
| -7.0 | -7.6 | 44.3 | 44.3 | 16.16 | 39.9 | 13.98 | 35.4 | 11.93 | 31.0 | 10.00 | 26.6 | 8.20 | 22.14 | 6.52 | 17.71 | 4.97 | 13.29 | 3.54 |
| -10 | -10.5 | 41.8 | 41.8 | 16.08 | 37.6 | 13.92 | 33.4 | 11.87 | 29.2 | 9.96 | 25.1 | 8.16 | 20.89 | 6.49 | 16.71 | 4.95 | 12.54 | 3.53 |
| -14.5 | -15.0 | 37.9 | 37.9 | 15.97 | 34.1 | 13.81 | 30.3 | 11.79 | 26.5 | 9.88 | 22.7 | 8.10 | 18.95 | 6.44 | 15.16 | 4.91 | 11.37 | 3.50 |
| -19.5 | -20.0 | 33.6 | 33.6 | 15.83 | 30.2 | 13.70 | 26.9 | 11.69 | 23.5 | 9.80 | 20.16 | 8.03 | 16.80 | 6.39 | 13.44 | 4.87 | 10.08 | 3.47 |
| -24.5 | -25.0 | 29.3 | 29.3 | 15.70 | 26.4 | 13.58 | 23.4 | 11.59 | 20.5 | 9.72 | 17.58 | 7.97 | 14.65 | 6.34 | 11.72 | 4.83 | 8.79 | 3.44 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 20.0℃ dry-bulb

## MMY-SUG2001MT8P-E (20HP, 56.0kW system)

### Cooling

| Outdoor Unit Dry-Bulb (℃) | Outdoor Unit 100% Cooling Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 52 ℃ | 30.8 | 30.8 | 12.34 | 27.8 | 10.10 | 24.7 | 8.09 | 21.6 | 6.32 | 18.5 | 4.78 | 15.42 | 3.48 | 12.34 | 2.42 | 9.25 | 1.59 |
| 50 ℃ | 36.0 | 36.0 | 14.39 | 32.4 | 11.76 | 28.8 | 9.40 | 25.2 | 7.31 | 21.6 | 5.51 | 17.98 | 3.98 | 14.39 | 2.74 | 10.79 | 1.76 |
| 48 ℃ | 40.4 | 40.4 | 15.86 | 36.4 | 12.95 | 32.4 | 10.33 | 28.3 | 8.03 | 24.3 | 6.03 | 20.22 | 4.34 | 16.18 | 2.96 | 12.13 | 1.89 |
| 46 ℃ | 43.9 | 43.9 | 16.48 | 39.5 | 13.44 | 35.1 | 10.72 | 30.7 | 8.32 | 26.3 | 6.25 | 21.93 | 4.49 | 17.54 | 3.05 | 13.16 | 1.93 |
| 43 ℃ | 48.1 | 48.1 | 16.76 | 43.3 | 13.66 | 38.5 | 10.89 | 33.7 | 8.45 | 28.9 | 6.33 | 24.1 | 4.54 | 19.24 | 3.08 | 14.43 | 1.94 |
| 41 ℃ | 51.2 | 51.2 | 17.15 | 46.1 | 13.98 | 41.0 | 11.14 | 35.9 | 8.64 | 30.7 | 6.47 | 25.6 | 4.63 | 20.50 | 3.13 | 15.37 | 1.96 |
| 39 ℃ | 52.9 | 52.9 | 16.65 | 47.7 | 13.57 | 42.4 | 10.82 | 37.1 | 8.39 | 31.8 | 6.28 | 26.5 | 4.50 | 21.18 | 3.04 | 15.88 | 1.90 |
| 37 ℃ | 54.5 | 54.5 | 16.15 | 49.1 | 13.16 | 43.6 | 10.49 | 38.2 | 8.13 | 32.7 | 6.09 | 27.3 | 4.36 | 21.81 | 2.95 | 16.36 | 1.85 |
| 35 ℃ | 56.0 | 56.0 | 15.47 | 50.4 | 12.75 | 44.8 | 10.16 | 39.2 | 7.88 | 33.6 | 5.90 | 28.0 | 4.22 | 22.4 | 2.85 | 16.80 | 1.79 |
| 32 ℃ | 56.0 | 56.0 | 14.45 | 50.4 | 11.78 | 44.8 | 9.39 | 39.2 | 7.28 | 33.6 | 5.46 | 28.0 | 3.91 | 22.4 | 2.65 | 16.80 | 1.67 |
| 31 ℃ | 56.0 | 56.0 | 13.38 | 50.4 | 10.91 | 44.8 | 8.70 | 39.2 | 6.76 | 33.6 | 5.07 | 28.0 | 3.64 | 22.4 | 2.47 | 16.80 | 1.56 |
| 30 ℃ | 56.0 | 56.0 | 12.89 | 50.4 | 10.52 | 44.8 | 8.39 | 39.2 | 6.51 | 33.6 | 4.89 | 28.0 | 3.51 | 22.4 | 2.38 | 16.80 | 1.51 |
| 29 ℃ | 56.0 | 56.0 | 12.43 | 50.4 | 10.14 | 44.8 | 8.09 | 39.2 | 6.28 | 33.6 | 4.72 | 28.0 | 3.39 | 22.4 | 2.30 | 16.80 | 1.46 |
| 27 ℃ | 56.0 | 56.0 | 11.57 | 50.4 | 9.44 | 44.8 | 7.53 | 39.2 | 5.85 | 33.6 | 4.40 | 28.0 | 3.16 | 22.4 | 2.15 | 16.80 | 1.37 |
| 25 ℃ | 56.0 | 56.0 | 10.79 | 50.4 | 8.80 | 44.8 | 7.03 | 39.2 | 5.46 | 33.6 | 4.10 | 28.0 | 2.96 | 22.4 | 2.02 | 16.80 | 1.29 |
| 23 ℃ | 56.0 | 56.0 | 10.29 | 50.4 | 8.40 | 44.8 | 6.71 | 39.2 | 5.21 | 33.6 | 3.92 | 28.0 | 2.83 | 22.4 | 1.93 | 16.80 | 1.23 |
| 21 ℃ | 56.0 | 56.0 | 10.06 | 50.4 | 8.21 | 44.8 | 6.56 | 39.2 | 5.10 | 33.6 | 3.84 | 28.0 | 2.77 | 22.4 | 1.89 | 16.80 | 1.21 |
| 20 ℃ | 56.0 | 56.0 | 9.95 | 50.4 | 8.12 | 44.8 | 6.49 | 39.2 | 5.05 | 33.6 | 3.80 | 28.0 | 2.74 | 22.4 | 1.88 | 16.80 | 1.20 |
| 19 ℃ | 56.0 | 56.0 | 9.85 | 50.4 | 8.05 | 44.8 | 6.43 | 39.2 | 5.00 | 33.6 | 3.76 | 28.0 | 2.72 | 22.4 | 1.86 | 16.80 | 1.20 |
| 17 ℃ | 56.0 | 56.0 | 9.68 | 50.4 | 7.91 | 44.8 | 6.32 | 39.2 | 4.92 | 33.6 | 3.70 | 28.0 | 2.67 | 22.4 | 1.83 | 16.80 | 1.18 |
| 15 ℃ | 56.0 | 56.0 | 9.54 | 50.4 | 7.79 | 44.8 | 6.22 | 39.2 | 4.85 | 33.6 | 3.65 | 28.0 | 2.64 | 22.4 | 1.81 | 16.80 | 1.17 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 27.0℃ dry-bulb / 19.0℃ wet bulb

### Heating

| Outdoor Unit | | Outdoor Unit 100% Heating Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dry-Bulb (℃) | Wet-Bulb (℃) | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 15.0 | 13.7 | 63.0 | 63.0 | 15.09 | 56.7 | 13.34 | 50.4 | 11.65 | 44.1 | 10.01 | 37.8 | 8.43 | 31.5 | 6.89 | 25.2 | 5.41 | 18.90 | 3.98 |
| 13.0 | 11.8 | 63.0 | 63.0 | 15.52 | 56.7 | 13.72 | 50.4 | 11.98 | 44.1 | 10.29 | 37.8 | 8.65 | 31.5 | 7.07 | 25.2 | 5.55 | 18.90 | 4.08 |
| 11.0 | 9.8 | 63.0 | 63.0 | 16.00 | 56.7 | 14.14 | 50.4 | 12.34 | 44.1 | 10.59 | 37.8 | 8.91 | 31.5 | 7.28 | 25.2 | 5.71 | 18.90 | 4.19 |
| 9.0 | 7.9 | 63.0 | 63.0 | 16.49 | 56.7 | 14.56 | 50.4 | 12.70 | 44.1 | 10.90 | 37.8 | 9.16 | 31.5 | 7.48 | 25.2 | 5.86 | 18.90 | 4.31 |
| 7.0 | 6.0 | 63.0 | 63.0 | 17.01 | 56.7 | 15.02 | 50.4 | 13.09 | 44.1 | 11.23 | 37.8 | 9.43 | 31.5 | 7.70 | 25.2 | 6.03 | 18.90 | 4.43 |
| 5.0 | 4.1 | 61.2 | 61.2 | 16.96 | 55.0 | 14.97 | 48.9 | 13.05 | 42.8 | 11.20 | 36.7 | 9.40 | 30.6 | 7.68 | 24.46 | 6.01 | 18.35 | 4.41 |
| 3.0 | 2.2 | 59.3 | 59.3 | 16.91 | 53.4 | 14.93 | 47.5 | 13.01 | 41.5 | 11.16 | 35.6 | 9.38 | 29.7 | 7.65 | 23.73 | 5.99 | 17.80 | 4.40 |
| 0.0 | -0.7 | 56.5 | 56.5 | 16.83 | 50.9 | 14.86 | 45.2 | 12.95 | 39.6 | 11.11 | 33.9 | 9.33 | 28.3 | 7.62 | 22.60 | 5.97 | 16.95 | 4.38 |
| -3.0 | -3.7 | 53.6 | 53.6 | 16.75 | 48.2 | 14.79 | 42.9 | 12.89 | 37.5 | 11.06 | 32.2 | 9.29 | 26.8 | 7.58 | 21.44 | 5.94 | 16.08 | 4.36 |
| -5.0 | -5.6 | 51.8 | 51.8 | 16.69 | 46.6 | 14.74 | 41.4 | 12.85 | 36.2 | 11.02 | 31.1 | 9.26 | 25.9 | 7.56 | 20.70 | 5.92 | 15.53 | 4.34 |
| -7.0 | -7.6 | 49.8 | 49.8 | 16.64 | 44.8 | 14.69 | 39.9 | 12.81 | 34.9 | 10.99 | 29.9 | 9.23 | 24.91 | 7.53 | 19.93 | 5.90 | 14.95 | 4.33 |
| -10 | -10.5 | 47.0 | 47.0 | 16.56 | 42.3 | 14.62 | 37.6 | 12.75 | 32.9 | 10.93 | 28.2 | 9.18 | 23.50 | 7.50 | 18.80 | 5.87 | 14.10 | 4.31 |
| -14.5 | -15.0 | 42.6 | 42.6 | 16.44 | 38.4 | 14.51 | 34.1 | 12.65 | 29.9 | 10.85 | 25.6 | 9.12 | 21.32 | 7.44 | 17.06 | 5.83 | 12.79 | 4.28 |
| -19.5 | -20.0 | 37.8 | 37.8 | 16.30 | 34.0 | 14.39 | 30.2 | 12.55 | 26.5 | 10.76 | 22.68 | 9.04 | 18.90 | 7.38 | 15.12 | 5.78 | 11.34 | 4.24 |
| -24.5 | -25.0 | 33.0 | 33.0 | 16.17 | 29.7 | 14.27 | 26.4 | 12.44 | 23.1 | 10.67 | 19.77 | 8.97 | 16.48 | 7.32 | 13.18 | 5.73 | 9.89 | 4.21 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 20.0℃ dry-bulb

**MMY-SUG2201MT8P-E (22HP, 61.5kW system)**

**Cooling**

| Outdoor Unit Dry-Bulb (℃) | Outdoor Unit 100% Cooling Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 52 ℃ | 33.9 | 33.9 | 14.54 | 30.5 | 11.89 | 27.1 | 9.51 | 23.7 | 7.41 | 20.3 | 5.59 | 16.93 | 4.03 | 13.55 | 2.76 | 10.16 | 1.76 |
| 50 ℃ | 39.5 | 39.5 | 16.97 | 35.5 | 13.85 | 31.6 | 11.06 | 27.6 | 8.60 | 23.7 | 6.46 | 19.75 | 4.64 | 15.80 | 3.14 | 11.85 | 1.97 |
| 48 ℃ | 44.4 | 44.4 | 18.70 | 40.0 | 15.26 | 35.5 | 12.17 | 31.1 | 9.45 | 26.7 | 7.08 | 22.21 | 5.07 | 17.77 | 3.42 | 13.33 | 2.12 |
| 46 ℃ | 48.2 | 48.2 | 19.43 | 43.4 | 15.84 | 38.5 | 12.63 | 33.7 | 9.80 | 28.9 | 7.33 | 24.09 | 5.24 | 19.27 | 3.53 | 14.45 | 2.18 |
| 43 ℃ | 52.8 | 52.8 | 19.75 | 47.5 | 16.11 | 42.3 | 12.84 | 37.0 | 9.95 | 31.7 | 7.44 | 26.4 | 5.31 | 21.13 | 3.56 | 15.85 | 2.20 |
| 41 ℃ | 56.3 | 56.3 | 20.22 | 50.6 | 16.48 | 45.0 | 13.13 | 39.4 | 10.17 | 33.8 | 7.60 | 28.1 | 5.42 | 22.51 | 3.63 | 16.88 | 2.23 |
| 39 ℃ | 58.2 | 58.2 | 19.63 | 52.3 | 16.00 | 46.5 | 12.75 | 40.7 | 9.88 | 34.9 | 7.38 | 29.1 | 5.26 | 23.26 | 3.52 | 17.45 | 2.16 |
| 37 ℃ | 59.9 | 59.9 | 19.04 | 53.9 | 15.52 | 47.9 | 12.37 | 41.9 | 9.58 | 35.9 | 7.16 | 29.9 | 5.10 | 23.95 | 3.42 | 17.97 | 2.10 |
| 35 ℃ | 61.5 | 61.5 | 18.20 | 55.4 | 15.03 | 49.2 | 11.98 | 43.1 | 9.28 | 36.9 | 6.93 | 30.8 | 4.95 | 24.6 | 3.31 | 18.45 | 2.03 |
| 32 ℃ | 61.5 | 61.5 | 17.03 | 55.4 | 13.89 | 49.2 | 11.07 | 43.1 | 8.58 | 36.9 | 6.41 | 30.8 | 4.58 | 24.6 | 3.07 | 18.45 | 1.89 |
| 31 ℃ | 61.5 | 61.5 | 15.78 | 55.4 | 12.87 | 49.2 | 10.26 | 43.1 | 7.95 | 36.9 | 5.95 | 30.8 | 4.25 | 24.6 | 2.86 | 18.45 | 1.76 |
| 30 ℃ | 61.5 | 61.5 | 15.20 | 55.4 | 12.40 | 49.2 | 9.89 | 43.1 | 7.67 | 36.9 | 5.74 | 30.8 | 4.10 | 24.6 | 2.76 | 18.45 | 1.71 |
| 29 ℃ | 61.5 | 61.5 | 14.66 | 55.4 | 11.95 | 49.2 | 9.53 | 43.1 | 7.39 | 36.9 | 5.54 | 30.8 | 3.96 | 24.6 | 2.66 | 18.45 | 1.65 |
| 27 ℃ | 61.5 | 61.5 | 13.64 | 55.4 | 11.13 | 49.2 | 8.88 | 43.1 | 6.89 | 36.9 | 5.16 | 30.8 | 3.69 | 24.6 | 2.49 | 18.45 | 1.54 |
| 25 ℃ | 61.5 | 61.5 | 12.72 | 55.4 | 10.38 | 49.2 | 8.28 | 43.1 | 6.43 | 36.9 | 4.82 | 30.8 | 3.45 | 24.6 | 2.33 | 18.45 | 1.45 |
| 23 ℃ | 61.5 | 61.5 | 12.13 | 55.4 | 9.90 | 49.2 | 7.90 | 43.1 | 6.13 | 36.9 | 4.60 | 30.8 | 3.30 | 24.6 | 2.23 | 18.45 | 1.39 |
| 21 ℃ | 61.5 | 61.5 | 11.86 | 55.4 | 9.68 | 49.2 | 7.72 | 43.1 | 6.00 | 36.9 | 4.50 | 30.8 | 3.23 | 24.6 | 2.18 | 18.45 | 1.36 |
| 20 ℃ | 61.5 | 61.5 | 11.73 | 55.4 | 9.58 | 49.2 | 7.65 | 43.1 | 5.94 | 36.9 | 4.45 | 30.8 | 3.20 | 24.6 | 2.16 | 18.45 | 1.35 |
| 19 ℃ | 61.5 | 61.5 | 11.62 | 55.4 | 9.48 | 49.2 | 7.57 | 43.1 | 5.88 | 36.9 | 4.41 | 30.8 | 3.17 | 24.6 | 2.14 | 18.45 | 1.34 |
| 17 ℃ | 61.5 | 61.5 | 11.41 | 55.4 | 9.32 | 49.2 | 7.44 | 43.1 | 5.78 | 36.9 | 4.34 | 30.8 | 3.12 | 24.6 | 2.11 | 18.45 | 1.32 |
| 15 ℃ | 61.5 | 61.5 | 11.24 | 55.4 | 9.18 | 49.2 | 7.33 | 43.1 | 5.70 | 36.9 | 4.28 | 30.8 | 3.07 | 24.6 | 2.08 | 18.45 | 1.31 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 27.0℃ dry-bulb / 19.0℃ wet bulb

**Heating**

| Outdoor Unit | | Outdoor Unit 100% Heating Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dry-Bulb (℃) | Wet-Bulb (℃) | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 15.0 | 13.7 | 69.0 | 69.0 | 17.21 | 62.1 | 15.18 | 55.2 | 13.21 | 48.3 | 11.31 | 41.4 | 9.48 | 34.5 | 7.73 | 27.6 | 6.04 | 20.70 | 4.42 |
| 13.0 | 11.8 | 69.0 | 69.0 | 17.72 | 62.1 | 15.61 | 55.2 | 13.58 | 48.3 | 11.63 | 41.4 | 9.74 | 34.5 | 7.93 | 27.6 | 6.20 | 20.70 | 4.54 |
| 11.0 | 9.8 | 69.0 | 69.0 | 18.29 | 62.1 | 16.11 | 55.2 | 14.00 | 48.3 | 11.98 | 41.4 | 10.03 | 34.5 | 8.17 | 27.6 | 6.38 | 20.70 | 4.67 |
| 9.0 | 7.9 | 69.0 | 69.0 | 18.86 | 62.1 | 16.61 | 55.2 | 14.43 | 48.3 | 12.34 | 41.4 | 10.33 | 34.5 | 8.40 | 27.6 | 6.56 | 20.70 | 4.79 |
| 7.0 | 6.0 | 69.0 | 69.0 | 19.48 | 62.1 | 17.14 | 55.2 | 14.89 | 48.3 | 12.72 | 41.4 | 10.64 | 34.5 | 8.65 | 27.6 | 6.75 | 20.70 | 4.93 |
| 5.0 | 4.1 | 67.0 | 67.0 | 19.42 | 60.3 | 17.09 | 53.6 | 14.84 | 46.9 | 12.68 | 40.2 | 10.61 | 33.5 | 8.63 | 26.79 | 6.73 | 20.10 | 4.91 |
| 3.0 | 2.2 | 65.0 | 65.0 | 19.36 | 58.5 | 17.04 | 52.0 | 14.80 | 45.5 | 12.64 | 39.0 | 10.58 | 32.5 | 8.60 | 25.99 | 6.71 | 19.49 | 4.90 |
| 0.0 | -0.7 | 61.9 | 61.9 | 19.27 | 55.7 | 16.96 | 49.5 | 14.73 | 43.3 | 12.59 | 37.1 | 10.53 | 30.9 | 8.56 | 24.76 | 6.68 | 18.57 | 4.88 |
| -3.0 | -3.7 | 58.7 | 58.7 | 19.18 | 52.8 | 16.87 | 47.0 | 14.66 | 41.1 | 12.52 | 35.2 | 10.48 | 29.4 | 8.52 | 23.48 | 6.64 | 17.61 | 4.85 |
| -5.0 | -5.6 | 56.7 | 56.7 | 19.12 | 51.0 | 16.82 | 45.3 | 14.61 | 39.7 | 12.49 | 34.0 | 10.45 | 28.3 | 8.49 | 22.67 | 6.62 | 17.01 | 4.84 |
| -7.0 | -7.6 | 54.6 | 54.6 | 19.06 | 49.1 | 16.77 | 43.7 | 14.56 | 38.2 | 12.45 | 32.7 | 10.41 | 27.28 | 8.46 | 21.83 | 6.60 | 16.37 | 4.82 |
| -10 | -10.5 | 51.5 | 51.5 | 18.97 | 46.3 | 16.69 | 41.2 | 14.49 | 36.0 | 12.39 | 30.9 | 10.36 | 25.74 | 8.42 | 20.59 | 6.57 | 15.45 | 4.80 |
| -14.5 | -15.0 | 46.7 | 46.7 | 18.83 | 42.0 | 16.56 | 37.4 | 14.39 | 32.7 | 12.29 | 28.0 | 10.29 | 23.35 | 8.36 | 18.68 | 6.52 | 14.01 | 4.76 |
| -19.5 | -20.0 | 41.4 | 41.4 | 18.67 | 37.3 | 16.43 | 33.1 | 14.27 | 29.0 | 12.19 | 24.84 | 10.20 | 20.70 | 8.29 | 16.56 | 6.47 | 12.42 | 4.72 |
| -24.5 | -25.0 | 36.1 | 36.1 | 18.51 | 32.5 | 16.29 | 28.9 | 14.15 | 25.3 | 12.09 | 21.66 | 10.12 | 18.05 | 8.22 | 14.44 | 6.41 | 10.83 | 4.69 |

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 20.0℃ dry-bulb

## MMY-SUG2401MT8P-E (24HP, 67.0kW system)

### Cooling

| Outdoor Unit Dry-Bulb (℃) | Outdoor Unit 100% Cooling Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 52 ℃ | 36.9 | 36.9 | 19.46 | 33.2 | 16.01 | 29.5 | 12.89 | 25.8 | 10.11 | 22.1 | 7.67 | 18.45 | 5.55 | 14.76 | 3.77 | 11.07 | 2.33 |
| 50 ℃ | 43.0 | 43.0 | 22.57 | 38.7 | 18.55 | 34.4 | 14.92 | 30.1 | 11.68 | 25.8 | 8.83 | 21.51 | 6.38 | 17.21 | 4.32 | 12.91 | 2.65 |
| 48 ℃ | 48.4 | 48.4 | 24.79 | 43.6 | 20.35 | 38.7 | 16.36 | 33.9 | 12.79 | 29.0 | 9.66 | 24.20 | 6.96 | 19.36 | 4.70 | 14.52 | 2.87 |
| 46 ℃ | 52.5 | 52.5 | 25.70 | 47.2 | 21.09 | 42.0 | 16.94 | 36.7 | 13.24 | 31.5 | 9.99 | 26.24 | 7.20 | 20.99 | 4.85 | 15.74 | 2.96 |
| 43 ℃ | 57.6 | 57.6 | 26.08 | 51.8 | 21.40 | 46.0 | 17.18 | 40.3 | 13.42 | 34.5 | 10.12 | 28.8 | 7.28 | 23.02 | 4.91 | 17.27 | 2.99 |
| 41 ℃ | 61.3 | 61.3 | 26.66 | 55.2 | 21.87 | 49.0 | 17.55 | 42.9 | 13.70 | 36.8 | 10.33 | 30.7 | 7.43 | 24.52 | 5.00 | 18.39 | 3.04 |
| 39 ℃ | 63.4 | 63.4 | 25.88 | 57.0 | 21.23 | 50.7 | 17.04 | 44.3 | 13.30 | 38.0 | 10.03 | 31.7 | 7.21 | 25.34 | 4.85 | 19.01 | 2.95 |
| 37 ℃ | 65.2 | 65.2 | 25.10 | 58.7 | 20.59 | 52.2 | 16.52 | 45.7 | 12.90 | 39.1 | 9.72 | 32.6 | 6.99 | 26.10 | 4.70 | 19.57 | 2.86 |
| 35 ℃ | 67.0 | 67.0 | 24.28 | 60.3 | 19.95 | 53.6 | 16.01 | 46.9 | 12.50 | 40.2 | 9.42 | 33.5 | 6.77 | 26.8 | 4.56 | 20.10 | 2.77 |
| 32 ℃ | 67.0 | 67.0 | 22.48 | 60.3 | 18.45 | 53.6 | 14.81 | 46.9 | 11.57 | 40.2 | 8.72 | 33.5 | 6.28 | 26.8 | 4.23 | 20.10 | 2.57 |
| 31 ℃ | 67.0 | 67.0 | 20.86 | 60.3 | 17.12 | 53.6 | 13.74 | 46.9 | 10.74 | 40.2 | 8.10 | 33.5 | 5.83 | 26.8 | 3.93 | 20.10 | 2.40 |
| 30 ℃ | 67.0 | 67.0 | 20.11 | 60.3 | 16.50 | 53.6 | 13.25 | 46.9 | 10.36 | 40.2 | 7.82 | 33.5 | 5.63 | 26.8 | 3.80 | 20.10 | 2.32 |
| 29 ℃ | 67.0 | 67.0 | 19.39 | 60.3 | 15.92 | 53.6 | 12.79 | 46.9 | 10.00 | 40.2 | 7.54 | 33.5 | 5.44 | 26.8 | 3.67 | 20.10 | 2.24 |
| 27 ℃ | 67.0 | 67.0 | 18.07 | 60.3 | 14.84 | 53.6 | 11.92 | 46.9 | 9.32 | 40.2 | 7.04 | 33.5 | 5.07 | 26.8 | 3.42 | 20.10 | 2.09 |
| 25 ℃ | 67.0 | 67.0 | 16.86 | 60.3 | 13.85 | 53.6 | 11.13 | 46.9 | 8.70 | 40.2 | 6.57 | 33.5 | 4.74 | 26.8 | 3.20 | 20.10 | 1.96 |
| 23 ℃ | 67.0 | 67.0 | 16.10 | 60.3 | 13.22 | 53.6 | 10.63 | 46.9 | 8.31 | 40.2 | 6.28 | 33.5 | 4.53 | 26.8 | 3.06 | 20.10 | 1.87 |
| 21 ℃ | 67.0 | 67.0 | 15.74 | 60.3 | 12.93 | 53.6 | 10.40 | 46.9 | 8.13 | 40.2 | 6.15 | 33.5 | 4.44 | 26.8 | 3.00 | 20.10 | 1.84 |
| 20 ℃ | 67.0 | 67.0 | 15.59 | 60.3 | 12.80 | 53.6 | 10.29 | 46.9 | 8.05 | 40.2 | 6.09 | 33.5 | 4.39 | 26.8 | 2.97 | 20.10 | 1.82 |
| 19 ℃ | 67.0 | 67.0 | 15.44 | 60.3 | 12.68 | 53.6 | 10.20 | 46.9 | 7.98 | 40.2 | 6.03 | 33.5 | 4.36 | 26.8 | 2.95 | 20.10 | 1.81 |
| 17 ℃ | 67.0 | 67.0 | 15.18 | 60.3 | 12.47 | 53.6 | 10.03 | 46.9 | 7.85 | 40.2 | 5.93 | 33.5 | 4.29 | 26.8 | 2.90 | 20.10 | 1.78 |
| 15 ℃ | 67.0 | 67.0 | 14.95 | 60.3 | 12.29 | 53.6 | 9.88 | 46.9 | 7.74 | 40.2 | 5.85 | 33.5 | 4.23 | 26.8 | 2.86 | 20.10 | 1.75 |

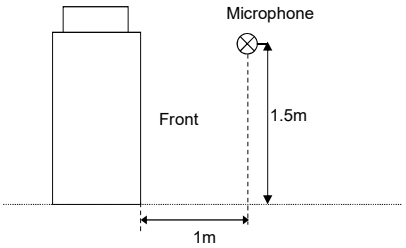
TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 27.0℃ dry-bulb / 19.0℃ wet bulb

### Heating

| Outdoor Unit | | Outdoor Unit 100% Heating Capacity (kW) | Compressor + Oudoor Fan Power consumption (kW) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dry-Bulb (℃) | Wet-Bulb (℃) | | 100% Capacity | | 90% Capacity | | 80% Capacity | | 70% Capacity | | 60% Capacity | | 50% Capacity | | 40% Capacity | | 30% Capacity | |
| | | | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) | TC (kW) | PI (kW) |
| 15.0 | 13.7 | 70.0 | 70.0 | 21.03 | 63.0 | 18.30 | 56.0 | 15.71 | 49.0 | 13.26 | 42.0 | 10.94 | 35.0 | 8.77 | 28.0 | 6.74 | 21.00 | 4.84 |
| 13.0 | 11.8 | 70.0 | 70.0 | 21.72 | 63.0 | 18.89 | 56.0 | 16.20 | 49.0 | 13.67 | 42.0 | 11.27 | 35.0 | 9.03 | 28.0 | 6.93 | 21.00 | 4.98 |
| 11.0 | 9.8 | 70.0 | 70.0 | 22.50 | 63.0 | 19.55 | 56.0 | 16.76 | 49.0 | 14.12 | 42.0 | 11.64 | 35.0 | 9.31 | 28.0 | 7.14 | 21.00 | 5.12 |
| 9.0 | 7.9 | 70.0 | 70.0 | 23.30 | 63.0 | 20.23 | 56.0 | 17.33 | 49.0 | 14.59 | 42.0 | 12.02 | 35.0 | 9.61 | 28.0 | 7.36 | 21.00 | 5.27 |
| 7.0 | 6.0 | 70.0 | 70.0 | 24.15 | 63.0 | 20.96 | 56.0 | 17.94 | 49.0 | 15.09 | 42.0 | 12.42 | 35.0 | 9.92 | 28.0 | 7.59 | 21.00 | 5.43 |
| 5.0 | 4.1 | 68.0 | 68.0 | 24.08 | 61.2 | 20.90 | 54.4 | 17.89 | 47.6 | 15.05 | 40.8 | 12.38 | 34.0 | 9.89 | 27.18 | 7.57 | 20.39 | 5.42 |
| 3.0 | 2.2 | 65.9 | 65.9 | 24.00 | 59.3 | 20.83 | 52.7 | 17.83 | 46.1 | 15.00 | 39.5 | 12.34 | 33.0 | 9.86 | 26.36 | 7.54 | 19.77 | 5.40 |
| 0.0 | -0.7 | 62.8 | 62.8 | 23.89 | 56.5 | 20.73 | 50.2 | 17.75 | 43.9 | 14.93 | 37.7 | 12.29 | 31.4 | 9.81 | 25.11 | 7.51 | 18.84 | 5.38 |
| -3.0 | -3.7 | 59.6 | 59.6 | 23.78 | 53.6 | 20.63 | 47.6 | 17.66 | 41.7 | 14.86 | 35.7 | 12.23 | 29.8 | 9.77 | 23.82 | 7.47 | 17.87 | 5.35 |
| -5.0 | -5.6 | 57.5 | 57.5 | 23.70 | 51.8 | 20.57 | 46.0 | 17.61 | 40.3 | 14.81 | 34.5 | 12.19 | 28.8 | 9.73 | 23.00 | 7.45 | 17.25 | 5.33 |
| -7.0 | -7.6 | 55.4 | 55.4 | 23.62 | 49.8 | 20.50 | 44.3 | 17.55 | 38.7 | 14.77 | 33.2 | 12.15 | 27.68 | 9.70 | 22.14 | 7.43 | 16.61 | 5.32 |
| -10 | -10.5 | 52.2 | 52.2 | 23.51 | 47.0 | 20.41 | 41.8 | 17.47 | 36.6 | 14.70 | 31.3 | 12.09 | 26.12 | 9.66 | 20.89 | 7.39 | 15.67 | 5.29 |
| -14.5 | -15.0 | 47.4 | 47.4 | 23.34 | 42.6 | 20.25 | 37.9 | 17.34 | 33.2 | 14.59 | 28.4 | 12.00 | 23.69 | 9.59 | 18.95 | 7.34 | 14.22 | 5.25 |
| -19.5 | -20.0 | 42.0 | 42.0 | 23.15 | 37.8 | 20.09 | 33.6 | 17.19 | 29.4 | 14.47 | 25.20 | 11.90 | 21.00 | 9.51 | 16.80 | 7.27 | 12.60 | 5.21 |
| -24.5 | -25.0 | 36.6 | 36.6 | 22.95 | 33.0 | 19.92 | 29.3 | 17.05 | 25.6 | 14.35 | 21.97 | 11.80 | 18.31 | 9.43 | 14.65 | 7.21 | 10.98 | 5.16 |

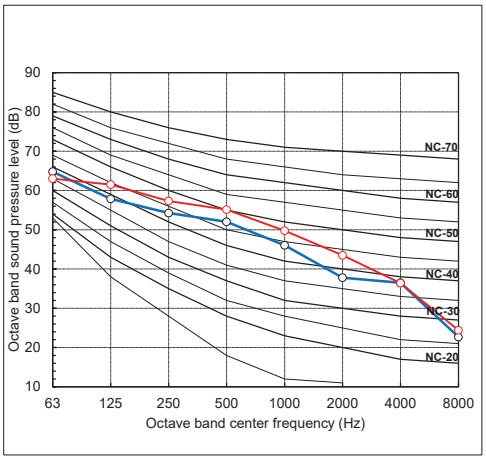
TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 20.0℃ dry-bulb

# 5-11. Sound data (NC curve)



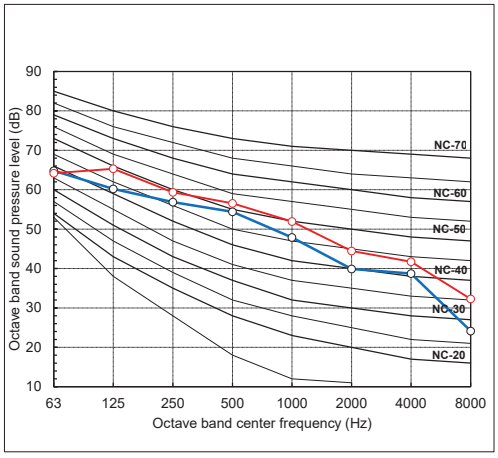

**MMY-SUG0801MT8P-E**

| Sound pressure level (dB(A)) | Cooling | Heating |
|---|---|---|
| | 53.0 | 56.0 |



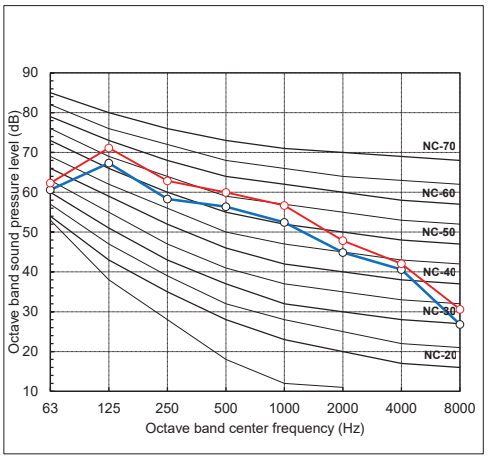

**MMY-SUG1001MT8P-E**

| Sound pressure level (dB(A)) | Cooling | Heating |
|---|---|---|
| | 55.0 | 58.0 |



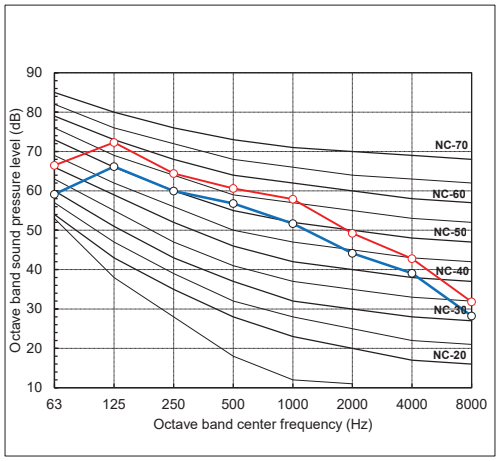

**MMY-SUG1201MT8P-E**

| Sound pressure level (dB(A)) | Cooling | Heating |
|---|---|---|
| | 58.0 | 62.0 |



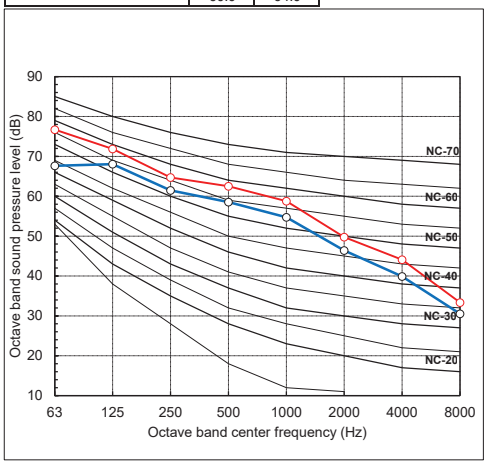

**MMY-SUG1401MT8P-E**

| Sound pressure level (dB(A)) | Cooling | Heating |
|---|---|---|
| | 58.0 | 63.0 |



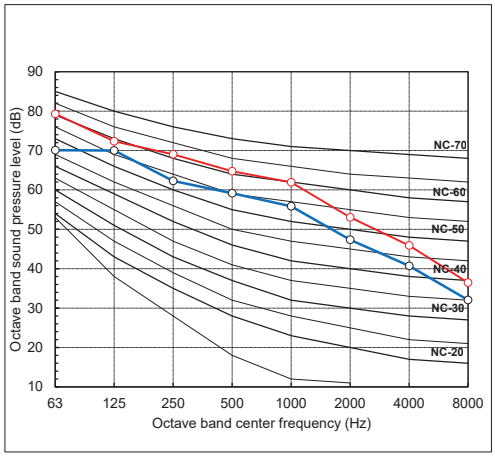
**MMY-SUG1601MT8P-E**

| Sound pressure level (dB(A)) | Cooling | Heating |
|---|---|---|
| | 60.0 | 64.0 |



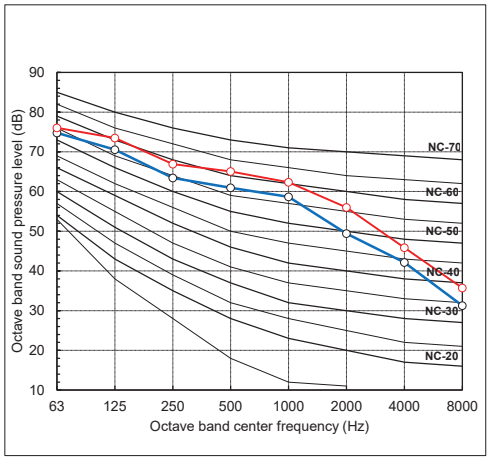

**MMY-SUG1801MT8P-E**

| Sound pressure level (dB(A)) | Cooling | Heating |
|---|---|---|
| | 61.0 | 67.0 |



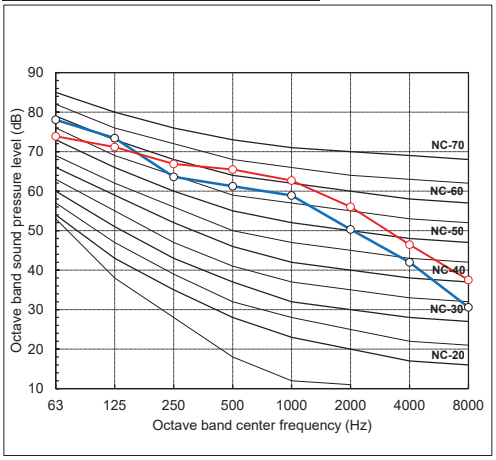

**MMY-SUG2001MT8P-E**

| Sound pressure level (dB(A)) | Cooling | Heating |
|---|---|---|
| | 63.0 | 67.0 |



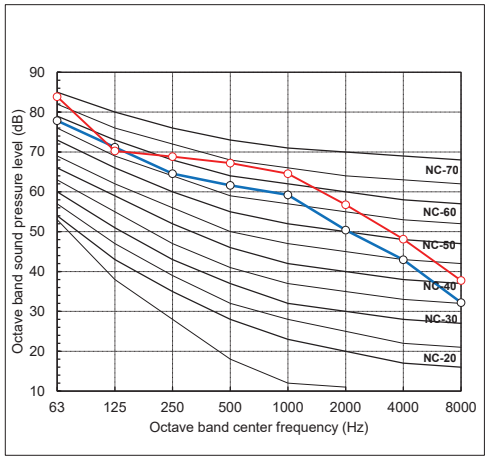

**MMY-SUG2201MT8P-E**

| Sound pressure level (dB(A)) | Cooling | Heating |
|---|---|---|
| | 64.0 | 67.0 |




**MMY-MUP2401MT8P-E**

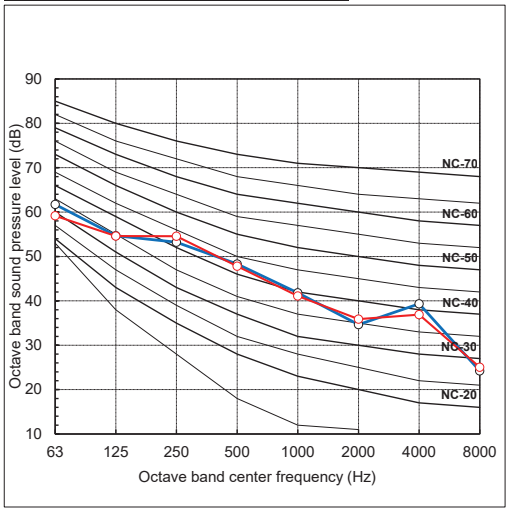
| Sound pressure level (dB(A)) | Cooling | Heating |
|---|---|---|
| | 64.0 | 69.0 |



## Night operation mode

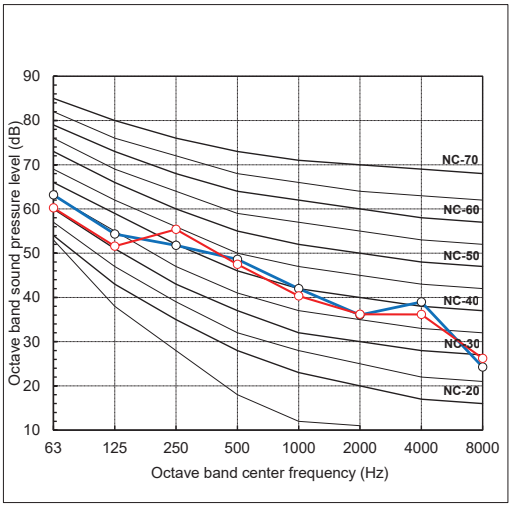
**MMY-MUP0801MT8P-E**
**MMY-MUP1001MT8P-E**

| Sound pressure level (dB(A)) | Cooling | Heating |
|---|---|---|
| | 50.0 | 50.0 |



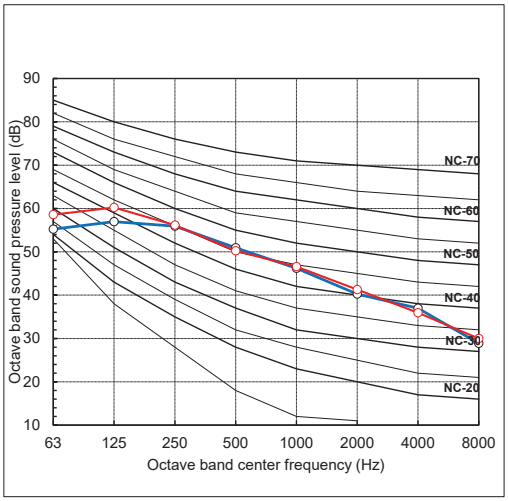

**MMY-MUP1201MT8P-E**
**MMY-MUP1401MT8P-E**

| Sound pressure level (dB(A)) | Cooling | Heating |
|---|---|---|
| | 50.0 | 50.0 |



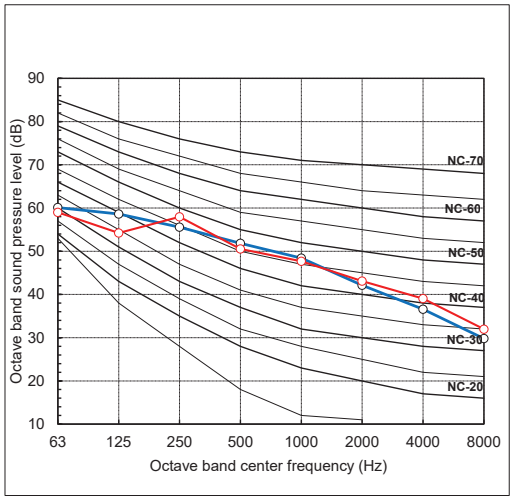

**MMY-MUP1601HT8P-E**

| Sound pressure level (dB(A)) | Cooling | Heating |
|---|---|---|
| | 53.0 | 53.0 |



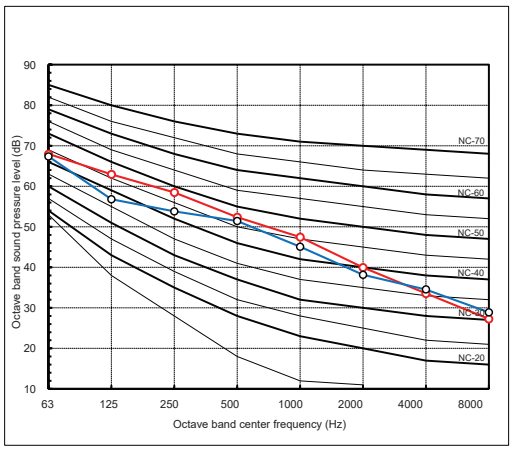

**MMY-MUP1801HT8P-E**

| Sound pressure level (dB(A)) | Cooling | Heating |
|---|---|---|
| | 54.0 | 54.0 |



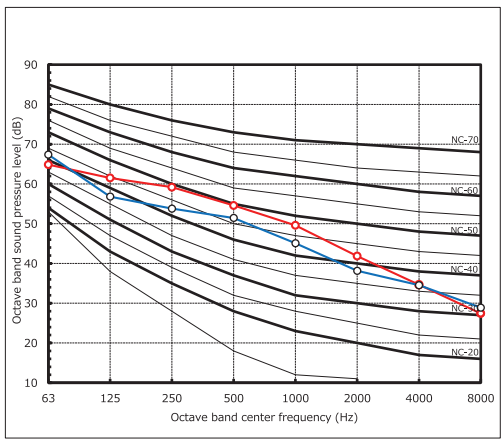

**MMY-SUG2001MT8P-E**

| Sound pressure level (dB(A)) | Cooling | Heating |
|---|---|---|
| | 53.0 | 54.0 |




**MMY-MUP2201MT8P-E**
**MMY-MUP2401MT8P-E**

| Sound pressure level (dB(A)) | Cooling | Heating |
|---|---|---|
| | 53.0 | 55.0 |



# 5-12. Dimensional drawing of optional units

## 5-12-1. FS unit (Single)

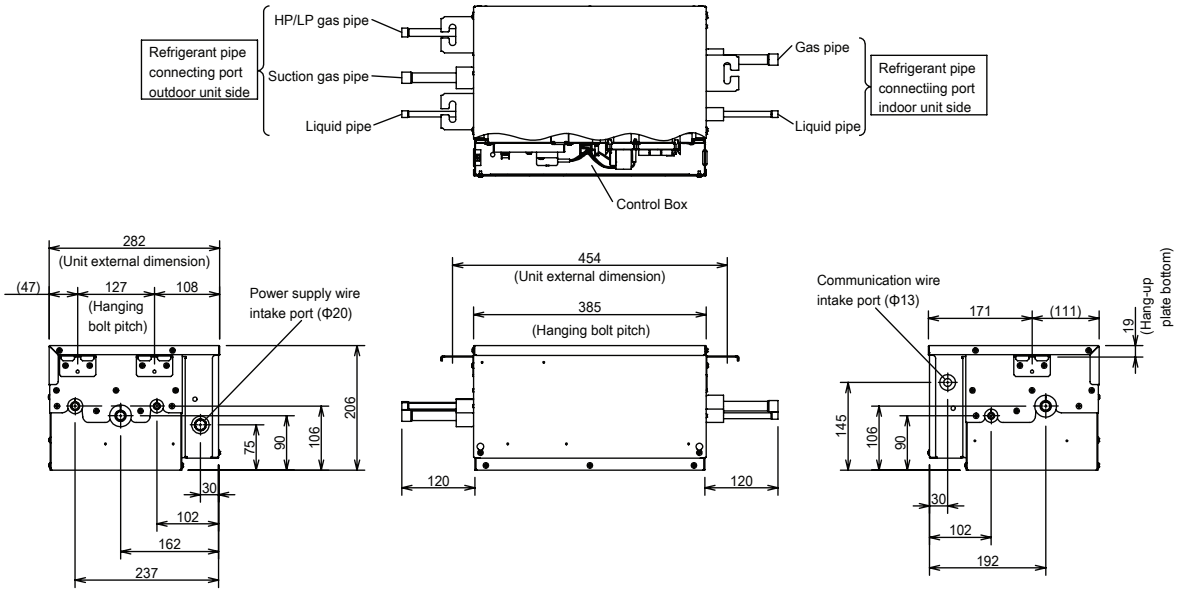
Specifications (Single-port type)

| Model Name | | RBM-Y1121FUPE | RBM-Y1801FUPE | RBM-Y2801FUPE |
|---|---|---|---|---|
| Power supply | | 220-240V 1phase 50Hz , 220V 1phase 60Hz | | |
| Connectable indoor unit capacity (HP) | | Below 4.0 | 4.0 to below 6.4 | 6.4 to 10.0 or less |
| Connectable indoor units | | 6 | 10 | 16 |
| Dimension | Height (mm) | 206 | 206 | 206 |
| | Width (mm) | 385 | 385 | 385 |
| | Depth (mm) | 282 | 282 | 282 |
| Total Weight (Kg) | | 11 | 11 | 11 |
| Connecting port dia. (Indoor unit side) | Liquid side (mm) | Ø9.5 | Ø9.5 | Ø12.7 |
| | Gas side (mm) | Ø15.9 | Ø15.9 | Ø22.2 |
| Connecting port dia. (Outdoor unit side) | Liquid side (mm) | Ø9.5 | Ø9.5 | Ø12.7 |
| | HP/LP gas side (mm) | Ø12.7 | Ø12.7 | Ø19.1 |
| | Suction gas side (mm) | Ø15.9 | Ø15.9 | Ø22.2 |
| Connection | | Blaze connection | | |

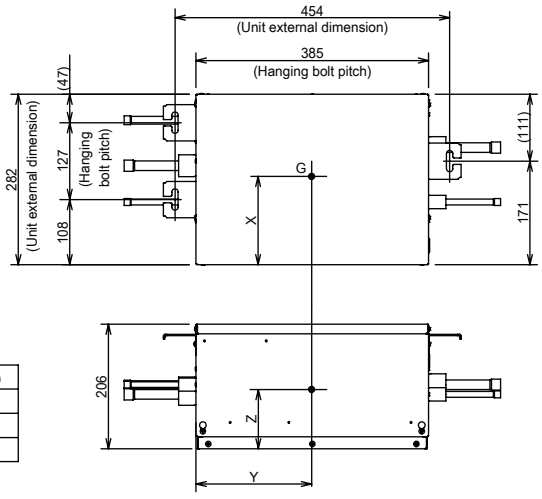
External view (Single-port type)

RBM-Y1121FUPE, RBM-Y1801FUPE, RBM-Y2801FUPE

(unit : mm)

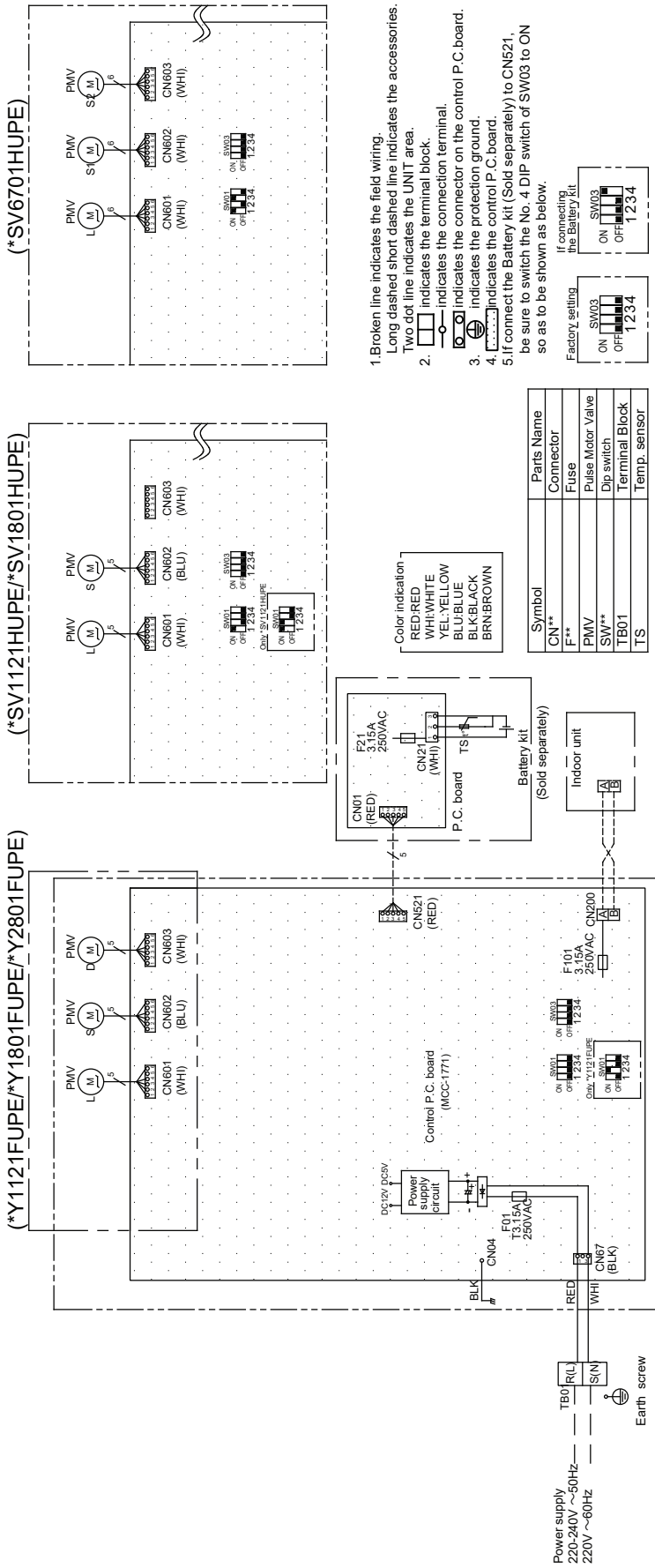



Center of gravity (Single-port type)



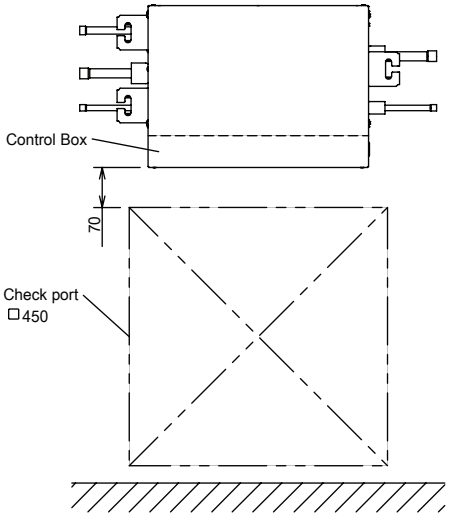

| RBM-*** | X (mm) | Y (mm) | Z (mm) | Weight (kg) |
|---|---|---|---|---|
| Y1121FUPE | 146 | 191 | 98 | 11 |
| Y1801FUPE | 146 | 191 | 98 | 11 |
| Y2801FUPE | 146 | 191 | 98 | 11 |

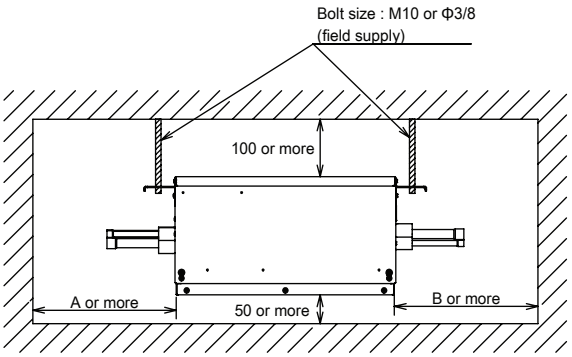
System wiring diagram (Single-port type, Shut-off Valve)



Installation space (Single-port type)

(unit : mm)




| RBM-*** | A | B |
|---|---|---|
| Y1121FUPE | 250 | 250 (*) |
| Y1801FUPE | 250 | 250 |
| Y2801FUPE | 400 | 400 |

(*) In cace of using the attached pipe (accessory) 350mm

## 5-12-2. FS unit (Multi)

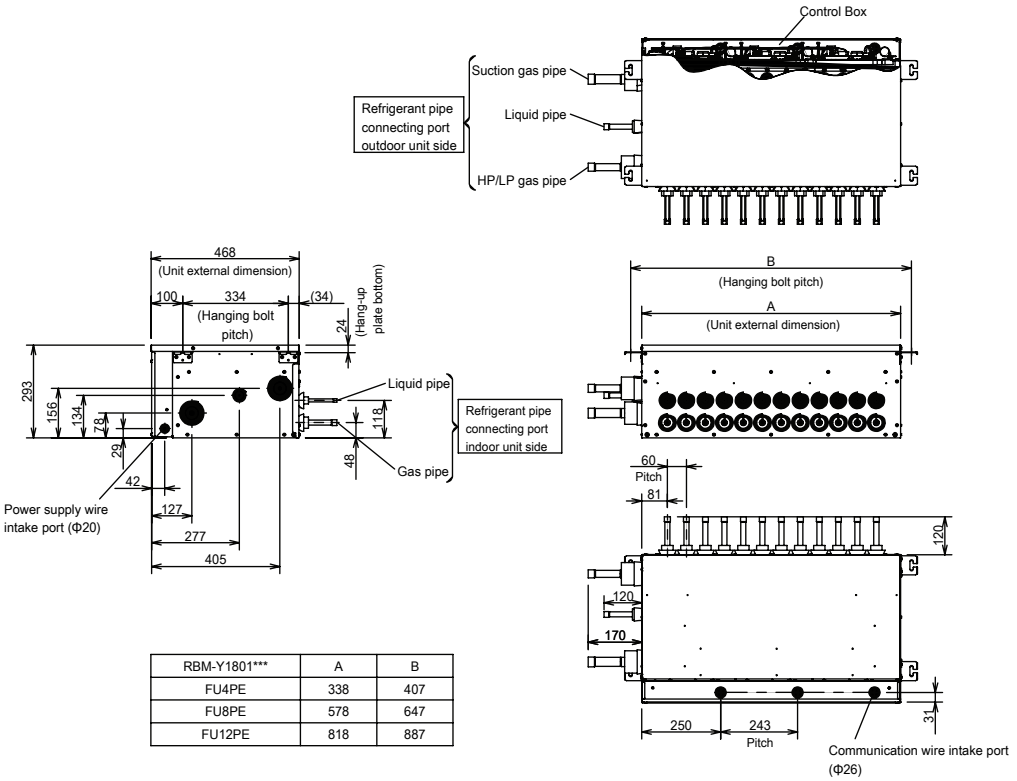
Specifications (Multi-port type)

| Model Name | | RBM-Y1801FU4PE | RBM-Y1801FU8PE | RBM-Y1801FU12PE |
|---|---|---|---|---|
| Power supply | | 220-240V 1phase 50Hz , 220V 1phase 60Hz | | |
| Connectable indoor unit capacity (HP) | | Below 25.6 | Below 38.4 | Below 38.4 |
| Dimension | Height (mm) | 293 | 293 | 293 |
| | Width (mm) | 338 | 578 | 818 |
| | Depth (mm) | 468 | 468 | 468 |
| Total Weight (Kg) | | 22 | 36 | 50 |
| Connecting port dia. (Indoor unit side) | Liquid side (mm) | Ø9.5 | Ø9.5 | Ø9.5 |
| | Gas side (mm) | Ø15.9 | Ø15.9 | Ø15.9 |
| Connecting port dia. (Outdoor unit side) | Liquid side (mm) | Ø15.9 | Ø15.9 | Ø15.9 |
| | HP/LP gas side (mm) | Ø22.2 | Ø22.2 | Ø22.2 |
| | Suction gas side (mm) | Ø28.6 | Ø28.6 | Ø28.6 |
| Connection | | Blaze connection | | |

External view (Multi-port type)

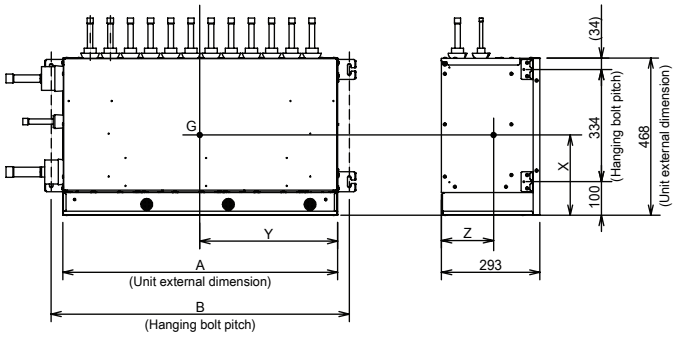
RBM-Y1801FU4PE, RBM-Y1801FU8PE, RBM-Y1801FU12PE

(unit : mm)



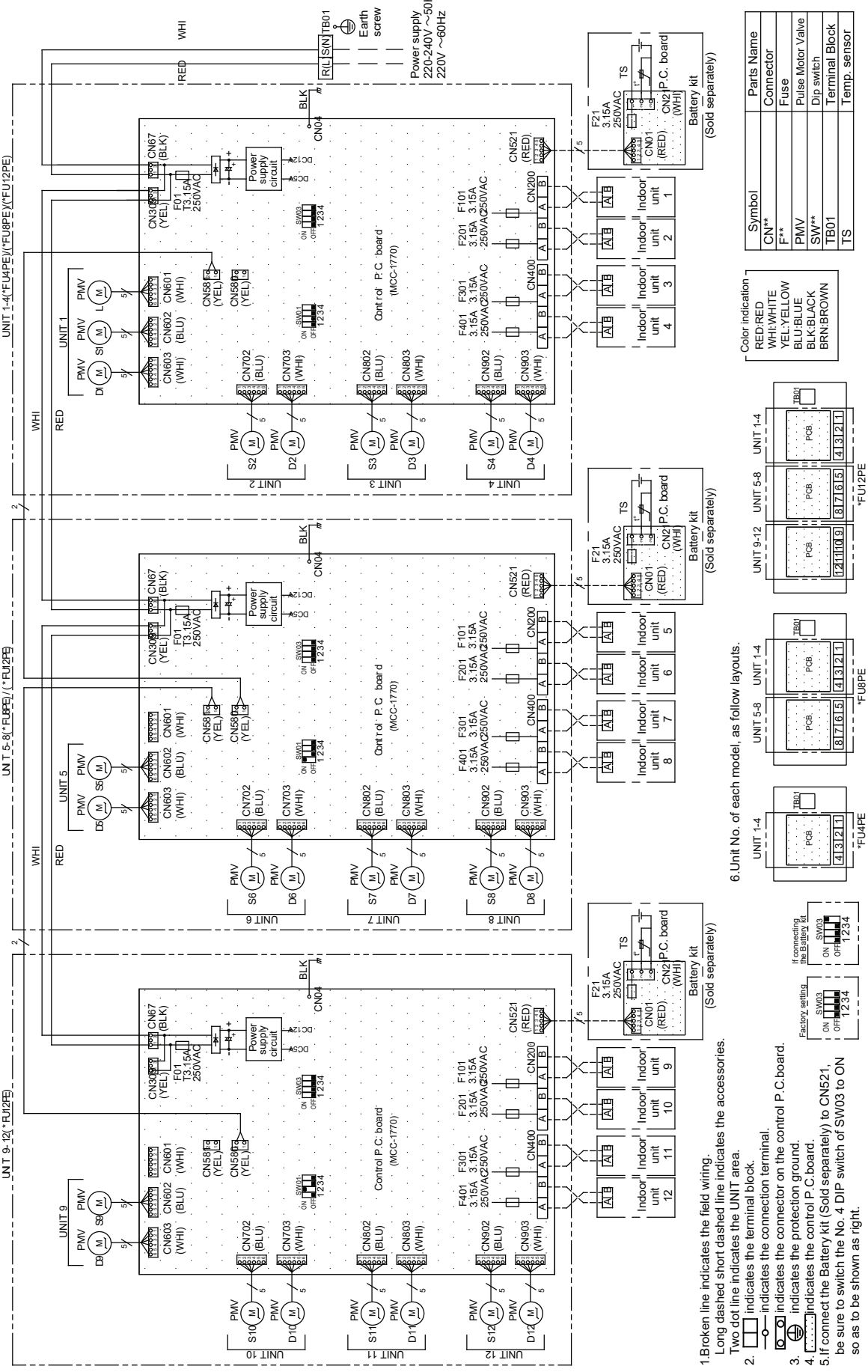

| RBM-Y1801*** | A | B |
|---|---|---|
| FU4PE | 338 | 407 |
| FU8PE | 578 | 647 |
| FU12PE | 818 | 887 |

Center of gravity (Multi-port type)




| RBM-Y1801*** | A (mm) | B (mm) | X (mm) | Y (mm) | Z (mm) | Weight (kg) |
|---|---|---|---|---|---|---|
| FU4PE | 338 | 407 | 239 | 178 | 155 | 22 |
| FU8PE | 578 | 647 | 239 | 302 | 155 | 36 |
| FU12PE | 818 | 887 | 239 | 410 | 155 | 50 |

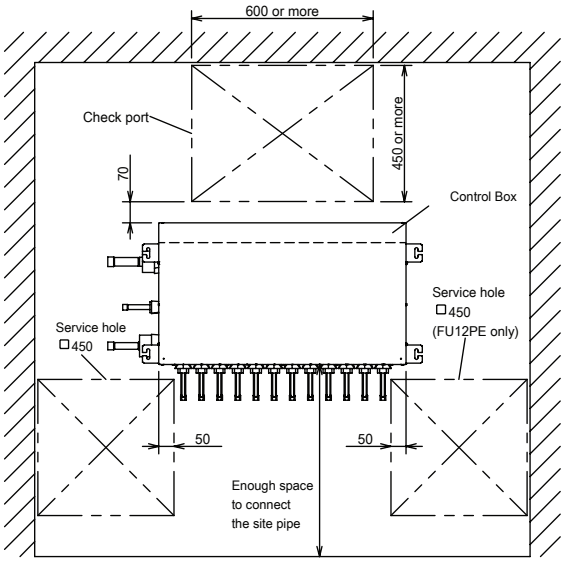
System wiring diagram (Multi-port type)

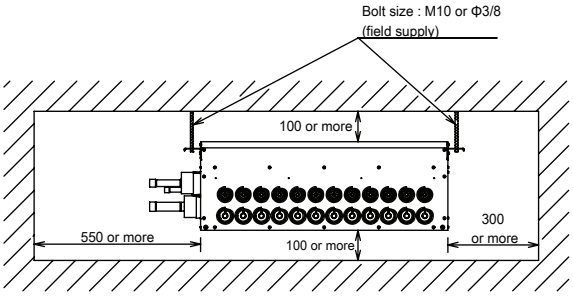



1.Broken line indicates the field wiring.
Long dashed short dashed line indicates the accessories.
Two dot line indicates the UNIT area.
2. ☐☐ indicates the terminal block.
—○— indicates the connection terminal.
3. ⊠ indicates the connector on the control P.C.board.
4. ⊕ indicates the protection ground.
5. ▭ indicates the control P.C.board.
If connect the Battery kit (Sold separately) to CN521, be sure to switch the No. 4 DIP switch of SW03 to ON so as to be shown as right.

Installation space (Multi-port type)

(unit : mm)



## 5-12-3. SV unit

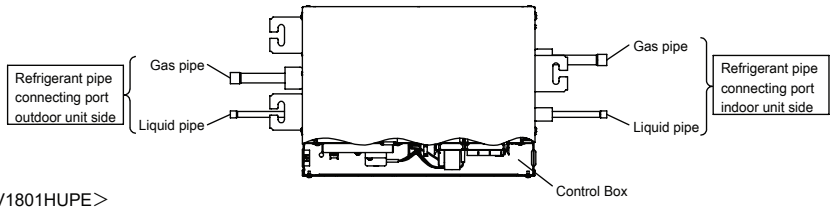
Specifications (Shut-off Valve)

| Model name | | RBM-SV1121HUPE | RBM-SV1801HUPE | RBM-SV6701HUPE |
|---|---|---|---|---|
| Power supply | | 220-240V 1phase 50Hz , 220V 1phase 60Hz | | |
| Connectable indoor unit capacity (HP) | | Below 4.0 | 4.0 to below 6.4 | 6.4 to 32.4 or less |
| Connectable indoor units | | 6 | 10 | 16 |
| Dimension | Height (mm) | 206 | 206 | 216 |
| | Width (mm) | 385 | 385 | 385 |
| | Depth (mm) | 282 | 282 | 282 |
| Total Weight (kg) | | 10 | 10 | 12 |
| Connecting port dia. (Indoor unit side) | Liquid side (mm) | Ø9.5 | Ø9.5 | Ø15.9 |
| | Gas side (mm) | Ø15.9 | Ø15.9 | Ø28.6 |
| Connecting port dia. (Outdoor unit side) | Liquid side (mm) | Ø9.5 | Ø9.5 | Ø15.9 |
| | Gas side (mm) | Ø15.9 | Ø15.9 | Ø28.6 |
| Connection | | Blaze connection | | |

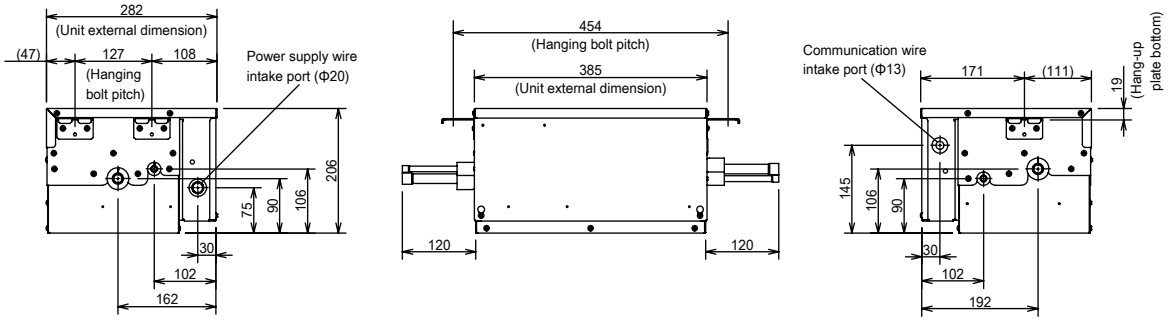
External view (Shut-off Valve)

RBM-SV1121HUPE, RBM-SV1801HUPE, RBM-SV6701HUPE

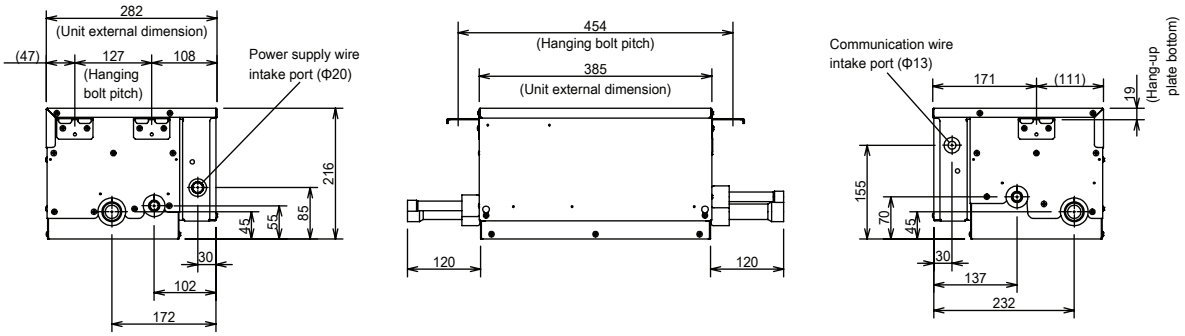
(unit : mm)



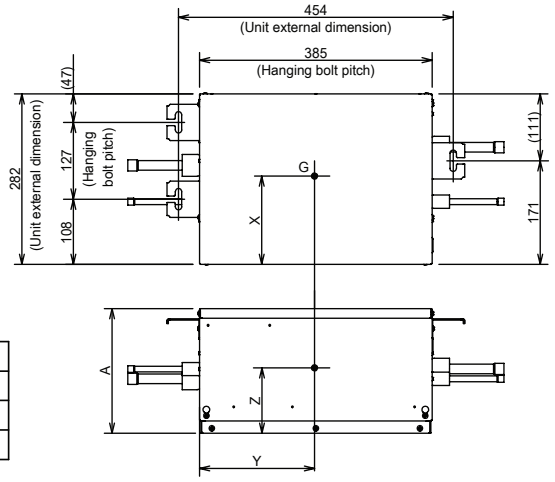

＜RBM-SV1121HUPE, RBM-SV1801HUPE＞




＜RBM-SV6701HUPE＞



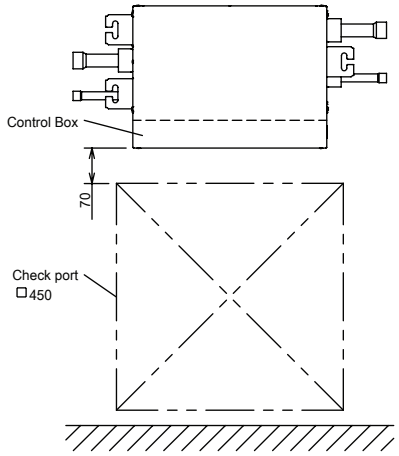
Center of gravity (Shut-off Valve)

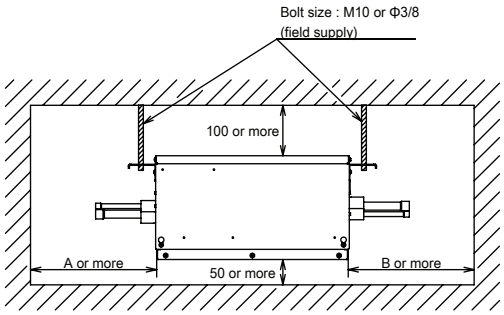



| RBM-*** | A (mm) | X (mm) | Y (mm) | Z (mm) | Weight (kg) |
|---|---|---|---|---|---|
| SV1121HUPE | 206 | 137 | 190 | 108 | 10 |
| SV1801HUPE | 206 | 137 | 190 | 108 | 10 |
| SV6701HUPE | 216 | 151 | 191 | 102 | 12 |

Installation space (Shut-off Valve)

(unit : mm)




| RBM-*** | A | B |
|---|---|---|
| SV1121HUPE | 250 | 250 (*1) |
| SV1801HUPE | 250 | 250 |
| SV6701HUPE | 550 (*2) | 550 (*2) |

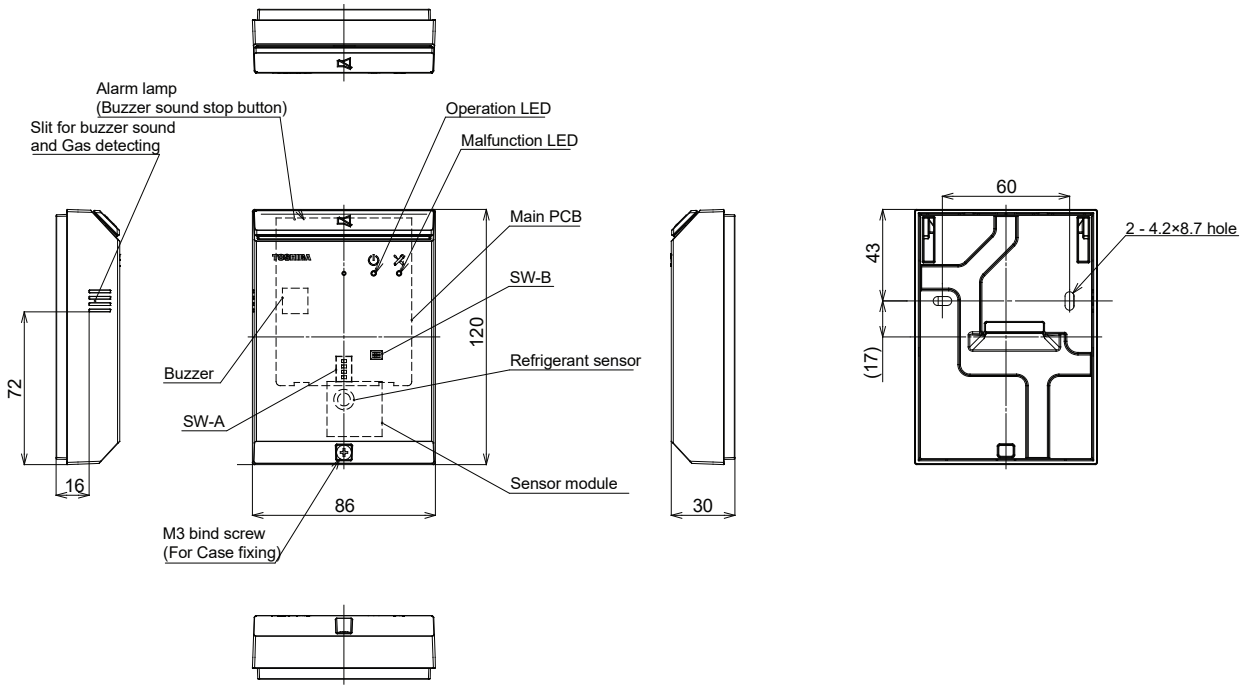
(*1) In case of using the attached pipe (accessory) 350mm
(*2) In case of using the attached pipe (accessory) 650mm

## 5-12-4. Leak detector

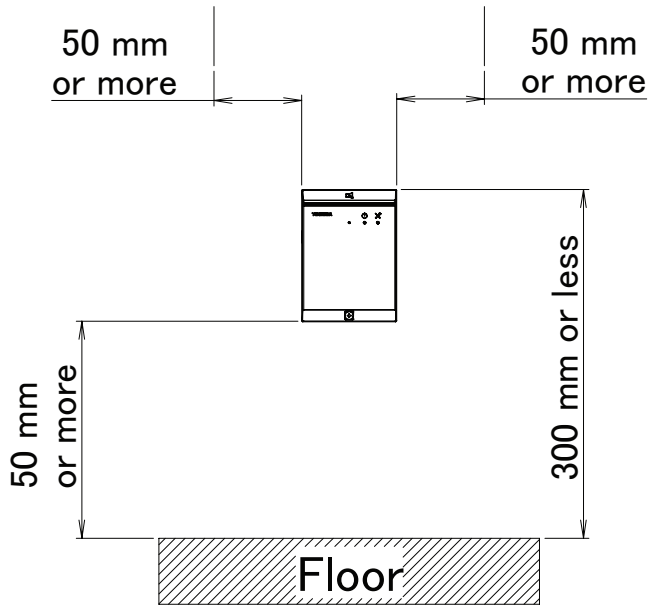
TCB-LD3UPE

External view

(Unit : mm)




Installation space (Leak detector)

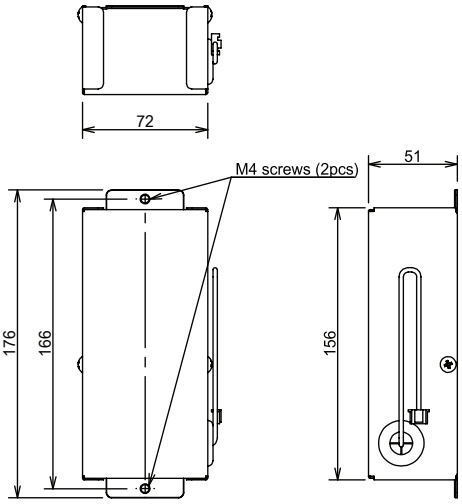


## 5-12-5. Battery kit

TCB-BT1UPE

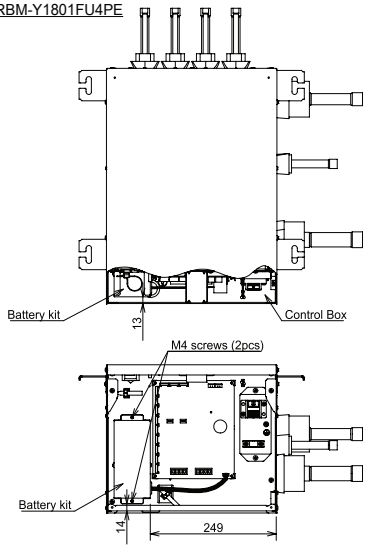
External view

(unit : mm)

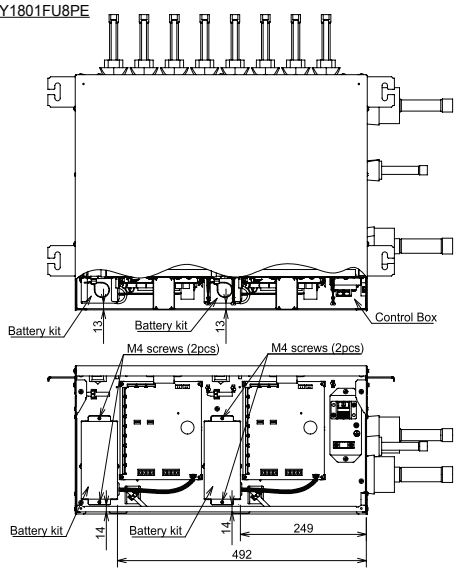



Installation space (Battery kit)

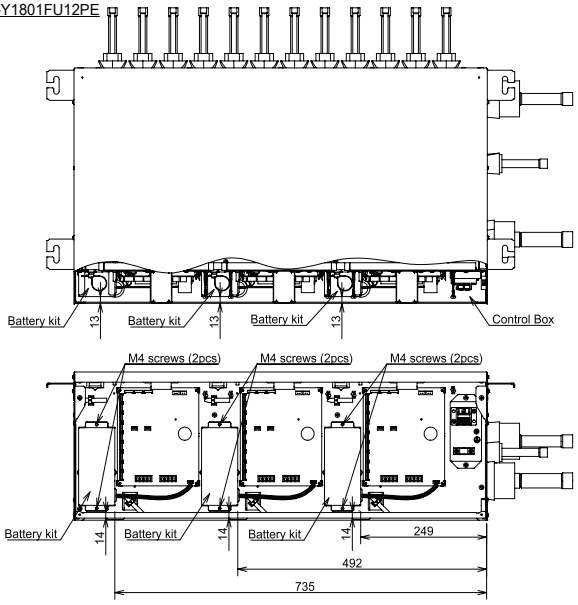
For RBM-Y1801FU4PE



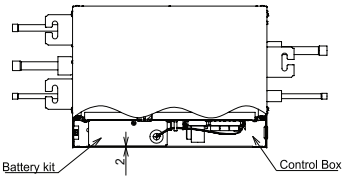

For RBM-Y1801FU8PE

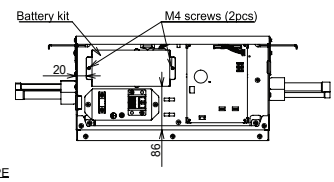



For RBM-Y1801FU12PE

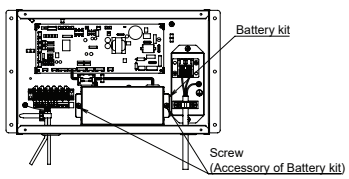



For RBM-Y1121FUPE, RBM-Y1801FUPE, RBM-Y2801FUPE, RBM-SV1121HUPE, RBM-SV1801HUPE, RBM-SV6701HUPE



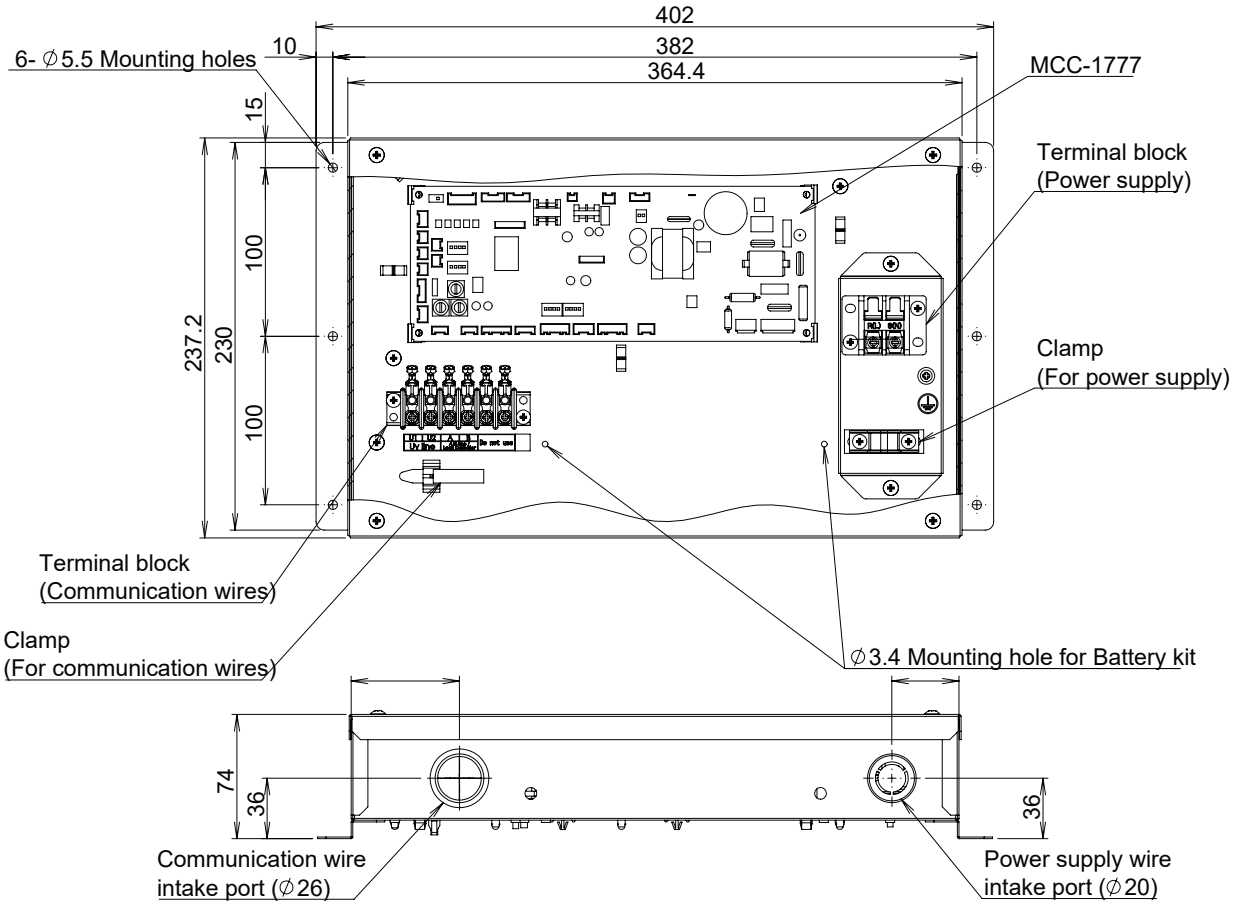

For TCB-LDA1UPE



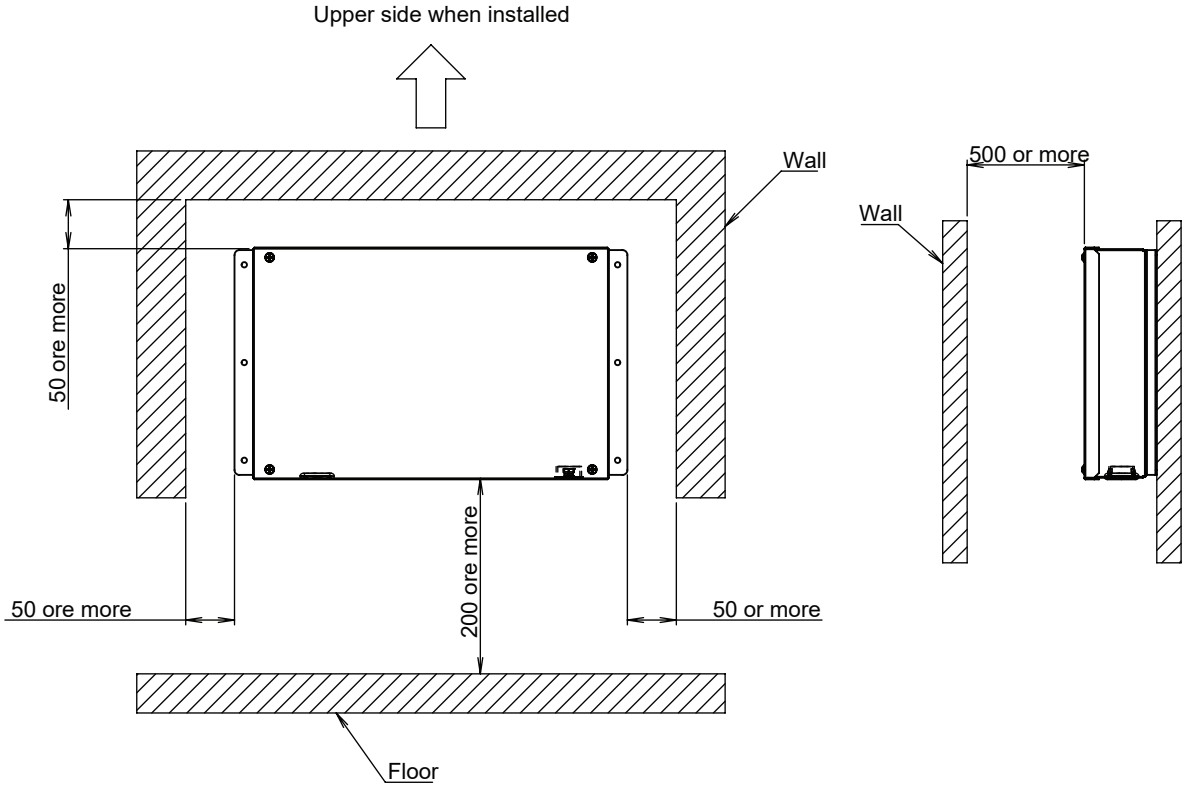
## 5-12-6. Leak Detector Interface

TCB-LDA1UPE

External view




Installation space



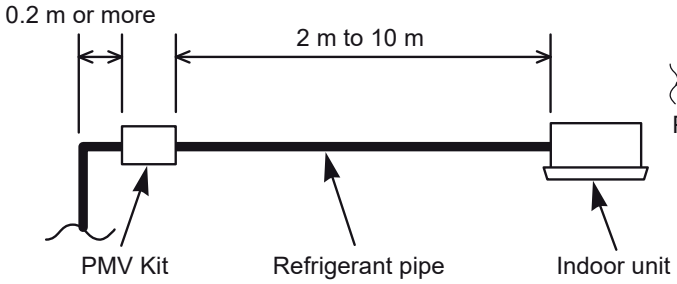
## PMV Kit

PMV-Kit (RBM-PMV0361U-E, RBM-PMV0901U-E) shall be required for quieter place application as an optional to reduce refrigerant sound especially in oil retrieval control or in transient operation as start up.

## 6.1 Selection

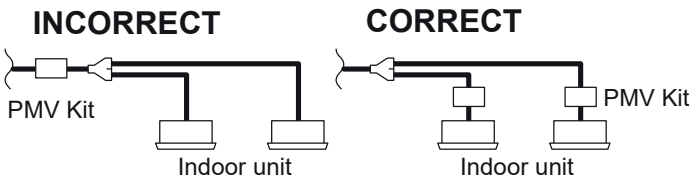
| Model name | Indoor unit capacity type | Diameter of refrigerant pipe |
|---|---|---|
| RBM-PMV0361U-E | 005 to 012 type | ø6.4 |
| RBM-PMV0901U-E | 014 to 018 type | ø6.4 |
| | 020 to 034 type | ø9.5 |

### Allowable length of refrigerant piping



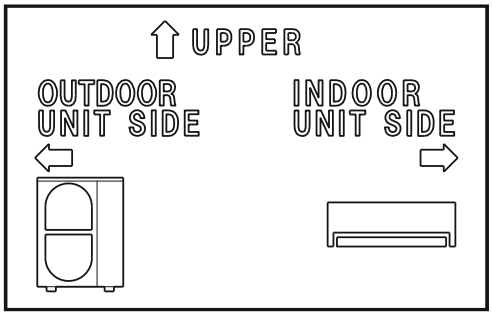

The straight pipe section should be at least 0.2 m as shown in the figure below.

* Short length of the straight pipe section may cause abnormal sounds.



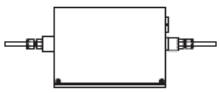
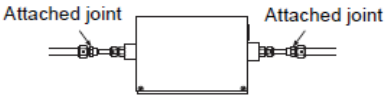

**Note)**
Do not connect two or more indoor units to one PMV Kit.
Arrange one indoor unit and one PMV Kit set to 1 by 1.

**Label**




- **Connecting direction of refrigerant pipe**
  When connecting pipes, be careful of direction of the main unit. Be sure to install the main unit so that [⇧ UPPER] mark on the label directs upward.
  For connection of the refrigerant pipes, follow the arrow mark on the label and connect pipes after confirming directions of the indoor unit and the outdoor unit.

### Piping material and dimensions

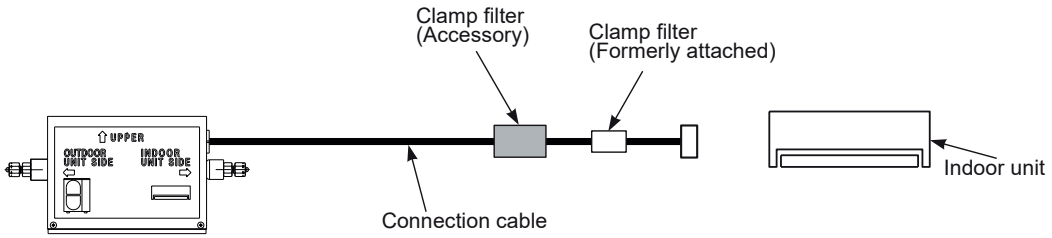
| Model name | Indoor unit capacity type | Diameter of refrigerant pipe | Notes |
|---|---|---|---|
| RBM-PMV0361U-E | 003, 005, 007, 009, 012 type | 6.4 |  |
| RBM-PMV0901U-E | 014, 015, 018 type | 6.4 | |
| | 020, 024, 027, 030, 034 type | 9.5 |   |

## 6-2. Wiring connections

**For this product, the connector conversion cable and additional clamp filter (Accessory) are used according to the indoor unit to be connected.**

For the corresponding unit and how to use the conversion cable and clamp filter, refer to the following description.

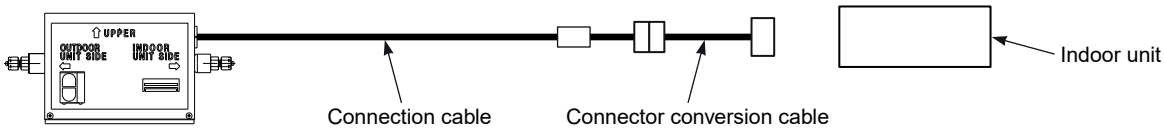
**The connector conversion cable is not used for the indoor unit, but the additional clamp filter is used.**




- Remove an existing PMV lead wire connecting to the connector (CN82) on the P.C.board in the indoor unit, and replace it with the PMV kit connection wire (approximately 11 m).

**The additional clamp filter is not used for the indoor unit, but the connector conversion cable is used.**

Indoor unit except above indoor units

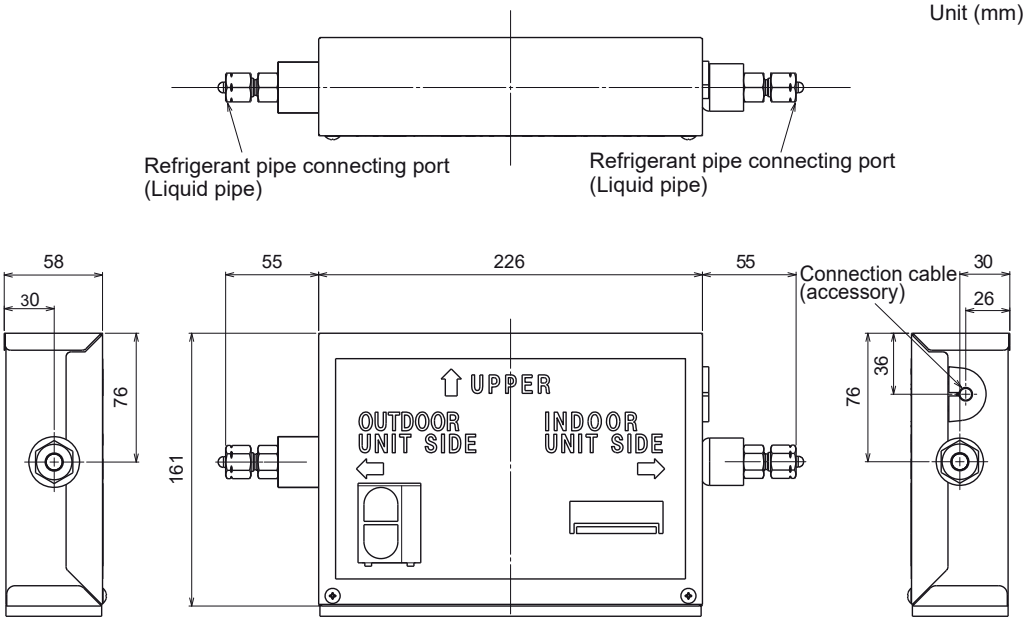


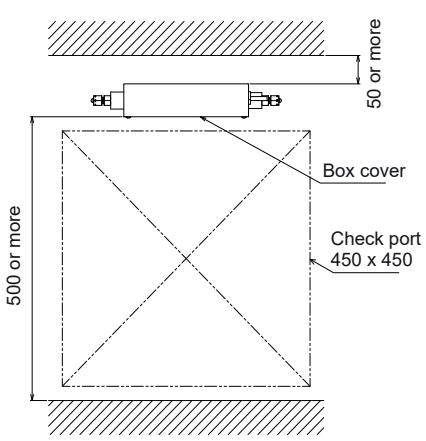
## 6-3. Dimensional drawing

- **PMV Kit**

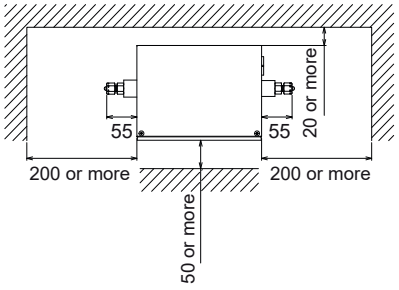
  **RBM-PMV0361U-E, RBM-PMV0901U-E**

Unit (mm)

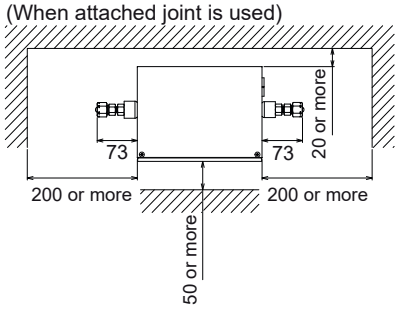


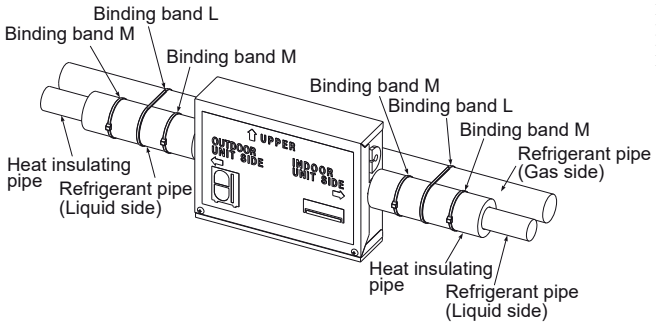



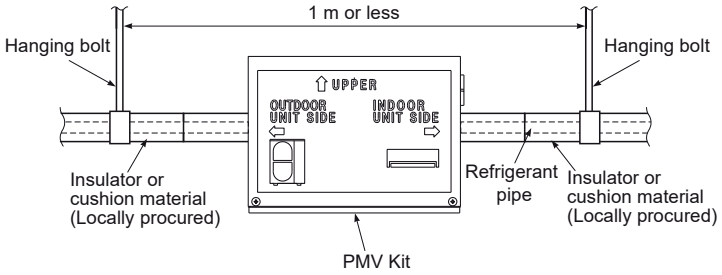

RBM-PMV0361U-E, PMV0901U-E




RBM-PMV0901U-E
(When attached joint is used)




Note: All dimensions are in mm.

# SHRM Advance Engineering Data Book

**Model name:**

## MMY-SUG__1MT8(J)P-E

Revision 04 : 240705