

4. Precautions for Outdoor unit/Heat source unit

4-1. Installation environment

- ◆Outdoor unit with salt-resistant specification is recommended to use in a place where it is subject to salt air.
- ◆Even when the unit with salt-resistant specification is used, it is not completely protected against corrosion. Be sure to follow the directions or precautions described in Instructions Book and Installation Manual for installation and maintenance. The salt-resistant specification is referred to the guidelines published by JRAIA (R A9002).
- ◆Install the unit in a place where the flow of discharge air is not obstructed. If not, the short-cycling of discharge air may occur.
- ◆Provide proper drainage around the unit base, because the condensation may collect and drip from the outdoor units.
Provide water-proof protection to the floor when installing the units on the rooftop.
- ◆In a region where snowfall is expected, install the unit so that the outlet faces away from the direction of the wind, and install a snow guard to protect the unit from snow. Install the unit on a base approximately 50 cm higher than the expected snowfall. Close the openings for pipes and wiring, because the ingress of water and small animals may cause equipment damage. If SUS snow guard is used, refer to the Installation Manual that comes with the snow guard and take caution for the installation to avoid the risk of corrosion.
- ◆When the unit is expected to operate continuously for a long period of time at outside air temperatures of below 0°C, take appropriate measures, such as the use of a unit base heater, to prevent icing on the unit base. (Not applicable to the PUMY series)
- ◆Install the snow guard so that the outlet/inlet faces away from the direction of the wind.
- ◆When the snow accumulates approximately 50 cm or more on the snow guard, remove the snow from the guard. Install a roof that is strong enough to withstand snow loads in a place where snow accumulates.
- ◆Provide proper protection around the outdoor units in places such as schools to avoid the risk of injury.
- ◆A cooling tower and heat source water circuit should be a closed circuit that water is not exposed to the atmosphere.
When a tank is installed to ensure that the circuit has enough water, minimize the contact with outside air so that the oxygen from being dissolved in the water should be 1 mg/L or less.
- ◆Install a strainer (50 mesh or more recommended) on the water pipe inlet on the heat source unit.
- ◆Interlock the heat source unit and water circuit pump.
- ◆Note the followings to prevent the freeze bursting of pipe when the heat source unit is installed in a place where the ambient temperature can be 0°C or below.
 - ◆Keep the water circulating to prevent it from freezing when the ambient temperature is 0°C or below.
 - ◆Before a long period of non use, be sure to purge the water out of the unit.

4-2. Circulating water

- ◆Follow the guidelines published by JRAIA (JRA-GL02-1994) to check the water quality of the water in the heat source unit regularly.
- ◆A cooling tower and heat source water circuit should be a closed circuit that water is not exposed to the atmosphere.
When a tank is installed to ensure that the circuit has enough water, minimize the contact with outside air so that the oxygen from being dissolved in the water should be 1 mg/L or less.

4-3. Unit characteristics

- ◆When the Thermo ON and OFF is frequently repeated on the indoor unit, the operation status of outdoor units may become unstable.

4-4. Relevant equipment

- ◆Provide grounding in accordance with the local regulations.

5. Precautions for Control-related items

5-1. Product specification

- ◆To introduce the MELANS system, a consultation with us is required in advance. Especially to introduce the electricity charge apportioning function or energy-save function, further detailed consultation is required. Consult your local distributor for details.
- ◆Billing calculation for AG-150A, GB-50ADA, TG-2000A, or the billing calculation unit is unique and based on our original method. (Backup operation is included.) It is not based on the metering method, and do not use it for official business purposes. It is not the method that the amount of electric power consumption (input) by air conditioner is calculated. Note that the electric power consumption by air conditioner is apportioned by using the ratio corresponding to the operation status (output) for each air conditioner (indoor unit) in this method.
- ◆In the apportioned billing function for AG-150A and GB-50ADA, use separate watt-hour meters for A-control units, K-control units, and packaged air conditioner for City Multi air conditioners. It is recommended to use an individual watt-hour meter for the large-capacity indoor unit (with two or more addresses).
- ◆When using the peak cut function on the AG-150A or GB-50ADA, note that the control is performed once every minute and it takes time to obtain the effect of the control. Take appropriate measures such as lowering the criterion value. Power consumption may exceed the limits if AG-150A or GB-50ADA malfunctions or stops. Provide a back-up remedy as necessary.
- ◆The controllers cannot operate while the indoor unit is OFF. (No error)
Turn ON the power to the indoor unit when operating the controllers.
- ◆When using the interlocked control function on the AG-150A, GB-50ADA, PAC-YG66DCA, or PAC-YG63MCA, do not use it for the control for the fire prevention or security. (This function should never be used in the way that would put people's lives at risk.) Provide any methods or circuit that allow ON/OFF operation using an external switch in case of failure.

5-2. Installation environment

- ◆The surge protection for the transmission line may be required in areas where lightning strikes frequently occur.
- ◆A receiver for a wireless remote controller may not work properly due to the effect of general lighting. Leave a space of at least 1 m between the general lighting and receiver.
- ◆When the Auto-elevating panel is used and the operation is made by using a wired remote controller, install the wired remote controller to the place where all air conditioners controlled (at least the bottom part of them) can be seen from the wired remote controller. If not, the descending panel may cause damage or injury, and be sure to use a wireless remote controller designed for use with elevating panel (sold separately).
- ◆Install the wired remote controller (switch box) to the place where the following conditions are met.
 - ◆Where installation surface is flat
 - ◆Where the remote controller can detect an accurate room temperature
The temperature sensors that detect a room temperature are installed both on the remote controller and indoor unit. When a room temperature is detected using the sensor on the remote controller, the main remote controller is used to detect a room temperature. In this case, follow the instructions below.
 - ◆Install the controller in a place where it is not subject to the heat source.
(If the remote controller faces direct sunlight or supply air flow direction, the remote controller cannot detect an accurate room temperature.)
 - ◆Install the controller in a place where an average room temperature can be detected.
 - ◆Install the controller in a place where no other wires are present around the temperature sensor.
(If other wires are present, the remote controller cannot detect an accurate room temperature.)
- ◆To prevent unauthorized access, always use a security device such as a VPN router when connecting AG-150A, GB-50ADA, or TG-2000A to the Internet.

Installation information

1. General precautions

1-1. Usage

- ◆The air-conditioning system described in this catalogue is designed for human comfort.
- ◆This product is not designed for preservation of food, animals, plants, precision equipment, or art objects. To prevent quality loss, do not use the product for purposes other than what it is designed for.
- ◆To reduce the risk of water leakage and electric shock, do not use the product for air-conditioning vehicles or vessels.

1-2. Installation environment

- ◆Do not install any unit other than the dedicated unit in a place where the voltage changes a lot, large amounts of mineral oil (e.g., cutting oil) are present, cooking oil may splash, or a large quantity of steam can be generated such as a kitchen.
- ◆Do not install the unit in acidic or alkaline environment.
- ◆Installation should not be performed in the locations exposed to chlorine or other corrosive gases. Avoid near a sewer.
- ◆To reduce the risk of fire, do not install the unit in a place where flammable gas may be leaked or inflammable material is present.
- ◆This air conditioning unit has a built-in microcomputer. Take the noise effects into consideration when deciding the installation position. Especially in a place where antenna or electronic device are installed, it is recommended that the air conditioning unit be installed away from them.
- ◆Install the unit on a solid foundation according to the local safety measures against typhoons, wind gusts, and earthquakes to prevent the unit from being damaged, toppling over, and falling.

1-3. Backup system

- ◆In a place where air conditioner's malfunctions may exert crucial influence, it is recommended to have two or more systems of single outdoor units with multiple indoor units.

1-4. Unit characteristics

- ◆Heat pump efficiency depends on outdoor temperature. In the heating mode, performance drops as the outside air temperature drops. In cold climates, performance can be poor. Warm air would continue to be trapped near the ceiling and the floor level would continue to stay cold. In this case, heat pumps require a supplemental heating system or air circulator. Before purchasing them, consult your local distributor for selecting the unit and system.
- ◆When the outdoor temperature is low and the humidity is high, the heat exchanger on the outdoor unit side tends to collect frost, which reduces its heating performance. To remove the frost, Auto-defrost function will be activated and the heating mode will temporarily stop for 3-10 minutes. Heating mode will automatically resume upon completion of defrost process.
- ◆Air conditioner with a heat pump requires time to warm up the whole room after the heating operation begins, because the system circulates warm air in order to warm up the whole room.
- ◆The sound levels were obtained in an anechoic room. The sound levels during actual operation are usually higher than the simulated values due to ambient noise and echoes. Refer to the section on "SOUND LEVELS" for the measurement location.
- ◆Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes even when operating normally. Please consider to avoid location where quietness is required.
For BC controller, it is recommended to unit to be installed in places such as ceilings of corridor, restrooms and plant rooms.
- ◆The total capacity of the connected indoor units can be greater than the capacity of the outdoor unit. However,

when the connected indoor units operate simultaneously, each unit's capacity may become smaller than the rated capacity.

◆When the unit is started up for the first time within 12 hours after power on or after power failure, it performs initial startup operation (capacity control operation) to prevent damage to the compressor. The initial startup operation requires 90 minutes maximum to complete, depending on the operation load.

1-5. Relevant equipment

- ◆Use an earth leakage breaker (ELB) with medium sensitivity, and an activation speed of 0.1 second or less.
- ◆Consult your local distributor or a qualified technician when installing an earth leakage breaker.
- ◆If the unit is inverter type, select an earth leakage breaker for handling high harmonic waves and surges.
- ◆Leakage current is generated not only through the air conditioning unit but also through the power wires. Therefore, the leakage current of the main power supply is greater than the total leakage current of each unit. Take into consideration the capacity of the earth leakage breaker or leakage alarm when installing one at the main power supply. To measure the leakage current simply on site, use a measurement tool equipped with a filter, and clamp all the four power wires together. The leakage current measured on the ground wire may not be accurate because the leakage current from other systems may be included to the measurement value.
- ◆Do not install a phase advancing capacitor on the unit connected to the same power system with an inverter type unit and its equipment.
- ◆If a large current flows due to the product malfunctions or faulty wiring, both the earth leakage breaker on the product side and the upstream overcurrent breaker may trip almost at the same time. Separate the power system or coordinate all the breakers depending on the system's priority level.

1-6. Unit installation

- ◆Your local distributor or a qualified technician must read the Installation Manual that is provided with each unit carefully before performing installation work.
- ◆Consult your local distributor or a qualified technician when installing the unit. Improper installation by an unqualified person may result in water leakage, electric shock, or fire.
- ◆Ensure there is enough space around each unit.

1-7. Optional accessories

- ◆Only use accessories recommended by Mitsubishi Electric. Consult your local distributor or a qualified technician when installing them. Improper installation by an unqualified person may result in water leakage, electric leakage, system breakdown, or fire.
- ◆Some optional accessories may not be compatible with the air conditioning unit to be used or may not be suitable for the installation conditions. Check the compatibility when considering any accessories.
- ◆Note that some optional accessories may affect the air conditioner's external form, appearance, weight, operating sound, and other characteristics.

1-8. Operation/Maintenance

- ◆Read the Instruction Book that is provided with each unit carefully prior to use.
 - ◆Maintenance or cleaning of each unit may be risky and require expertise. Read the Instruction Book to ensure safety.
- Consult your local distributor or a qualified technician when special expertise is required such as when the indoor unit needs to be cleaned.

when the connected indoor units operate simultaneously, each unit's capacity may become smaller than the rated capacity.

◆When the unit is started up for the first time within 12 hours after power on or after power failure, it performs initial startup operation (capacity control operation) to prevent damage to the compressor. The initial startup operation requires 90 minutes maximum to complete, depending on the operation load.

1-5. Relevant equipment

- ◆Use an earth leakage breaker (ELB) with medium sensitivity, and an activation speed of 0.1 second or less.
- ◆Consult your local distributor or a qualified technician when installing an earth leakage breaker.
- ◆If the unit is inverter type, select an earth leakage breaker for handling high harmonic waves and surges.
- ◆Leakage current is generated not only through the air conditioning unit but also through the power wires. Therefore, the leakage current of the main power supply is greater than the total leakage current of each unit. Take into consideration the capacity of the earth leakage breaker or leakage alarm when installing one at the main power supply. To measure the leakage current simply on site, use a measurement tool equipped with a filter, and clamp all the four power wires together. The leakage current measured on the ground wire may not be accurate because the leakage current from other systems may be included to the measurement value.
- ◆Do not install a phase advancing capacitor on the unit connected to the same power system with an inverter type unit and its equipment.
- ◆If a large current flows due to the product malfunctions or faulty wiring, both the earth leakage breaker on the product side and the upstream overcurrent breaker may trip almost at the same time. Separate the power system or coordinate all the breakers depending on the system's priority level.

1-6. Unit installation

- ◆Your local distributor or a qualified technician must read the Installation Manual that is provided with each unit carefully before performing installation work.
- ◆Consult your local distributor or a qualified technician when installing the unit. Improper installation by an unqualified person may result in water leakage, electric shock, or fire.
- ◆Ensure there is enough space around each unit.

1-7. Optional accessories

- ◆Only use accessories recommended by Mitsubishi Electric. Consult your local distributor or a qualified technician when installing them. Improper installation by an unqualified person may result in water leakage, electric leakage, system breakdown, or fire.
- ◆Some optional accessories may not be compatible with the air conditioning unit to be used or may not be suitable for the installation conditions. Check the compatibility when considering any accessories.
- ◆Note that some optional accessories may affect the air conditioner's external form, appearance, weight, operating sound, and other characteristics.

1-8. Operation/Maintenance

- ◆Read the Instruction Book that is provided with each unit carefully prior to use.
 - ◆Maintenance or cleaning of each unit may be risky and require expertise. Read the Instruction Book to ensure safety.
- Consult your local distributor or a qualified technician when special expertise is required such as when the

indoor unit needs to be cleaned.

2. Precautions for Indoor unit

2-1. Operating environment

- ◆The refrigerant (R410A) used for air conditioner is non-toxic and nonflammable. However, if the refrigerant leaks, the oxygen level may drop to harmful levels. If the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration from exceeding the safety limit even if the refrigerant should leak.
- ◆If the units operate in the cooling mode at the humidity above 80%, condensation may collect and drip from the indoor units.

2-2. Unit characteristics

- ◆The return air temperature display on the remote controller may differ from the ones on the other thermometers.
- ◆The clock on the remote controller may be displayed with a time lag of approximately one minute every month.
- ◆The temperature using a built-in temperature sensor on the remote controller may differ from the actual room temperature due to the effect of the wall temperature.
- ◆Use a built-in thermostat on the remote controller or a separately-sold thermostat when indoor units installed on or in the ceiling operate the automatic cooling/heating switchover.
- ◆The room temperature may rise drastically due to Thermo OFF in the places where the air conditioning load is large such as computer rooms.
- ◆Be sure to use a regular filter. If an irregular filter is installed, the unit may not operate properly, and the operation noise may increase.
- ◆The room temperature may rise over the preset temperature in the environment where the heating air conditioning load is small.

2-3. Unit installation

- ◆For simultaneous cooling/heating operation type air conditioners (R2, WR2 series), the G-type BC controller cannot be connected to the 16HP outdoor unit model or above, and the G- and GA-type BC controllers cannot be connected to the 28HP model or above. The GB- and HB-type BC controllers (sub) cannot be connected to the outdoor unit directly, and be sure to use them with GA- and HA-type BC controllers (main).
- ◆The insulation for low pressure pipe between the BC controller and outdoor unit shall be at least 20 mm thick. If the unit is installed on the top floor or in a high-temperature, high-humidity environment, thicker insulation may be necessary.
- ◆Do not have any branching points on the downstream of the refrigerant pipe header.
- ◆When a field-supplied external thermistor is installed or when a device for the demand control is used, abnormal stop of the unit or damage of the electromagnetic contactor may occur. Consult your local distributor for details.
- ◆When indoor units operate a fresh air intake, install a filter in the duct (field-supplied) to remove the dust from the air.
- ◆The 4-way or 2-way Airflow Ceiling Cassette Type units that have an outside air inlet can be connected to the duct, but need a booster fan to be installed at site. Refer to the chapter "Indoor Unit" for the available range for fresh air intake volume.
- ◆Operating fresh air intake on the indoor unit may increase the sound pressure level.

3. Precautions for Fresh air intake type indoor unit

3-1. Usage

- ◆This unit mainly handles the outside air load, and is not designed to maintain the room temperature. Install other air conditioners for handling the air conditioning load in the room.

3-2. Unit characteristics

- ◆This unit cannot perform the drying operation. The unit will continue the fan operation and blow fresh air (air that is not air-conditioned) when the Heating Thermo-OFF or Cooling Thermo-OFF mode is selected.
- ◆The fan may stop tentatively when the unit is connected to the simultaneous cooling/heating operation type outdoor unit (R2, WR2 series) or during the defrost cycle.
- ◆This unit switches the Thermo ON or OFF depending on the room temperature. The outside air is directly supplied into the room during Thermo OFF. Take caution of the cold supply air due to low outside air temperature and of condensation in the room due to high humidity of the outside air.
- ◆Outside air temperature ranges for the operation must be as follows:
Cooling: 21°C D.B./15.5°C W.B. ~ 43°C D.B./35°C W.B.
Heating: -10°C D.B. ~ 20°C D.B.
The unit is forced to operate Thermo OFF (fan operation) when the outside air temperature is as follows.
Cooling: 21°C D.B. or below; Heating: 20°C D.B. or above
- ◆Either a remote controller (sold separately) or a remote sensor (sold separately) must be installed to monitor the room temperature.
- ◆If only this unit is used as an indoor unit, condensation may form at the supply air grill while the unit is operated in the cooling mode. This unit cannot operate dehumidifying.
- ◆Use the unit in the way that the airflow rate will not exceed the 110% of the rated airflow.