Eco Changes is the Mitsubishi Electric Group’s environmental statement, and expresses the Group’s stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.


ISO 9000 Series
ISO 9001 certifies quality management based on the "design, development, production, installation and auxiliary services" for products built at an authorized plant.

Warning
Do not use refrigerant other than the type indicated in the manuals provided with the unit and on the nameplate.
- Doing so may cause the unit or pipes to burst, or result in explosion or fire during use, during repair, or at the time of disposal of the unit.
- It may also be in violation of applicable laws.
- MITSUBISHI ELECTRIC CORPORATION cannot be held responsible for malfunctions or accidents resulting from the use of the wrong type of refrigerant.

Our air-conditioning equipments and heat pumps contain a fluorinated greenhouse gas, R410A.

MITSUBISHI ELECTRIC CORPORATION
www.MitsubishiElectric.com
**Product Line Up**

New models made a debut, employing HFC R410A.

### Cooling Only series

<table>
<thead>
<tr>
<th>Type</th>
<th>8HP</th>
<th>10HP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Floor standing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor unit</td>
<td>PFV-P200YM-A</td>
<td>PFV-P250YM-A</td>
</tr>
<tr>
<td>Outdoor unit</td>
<td>PUV-P200YM-A</td>
<td>PUV-P250YM-A</td>
</tr>
<tr>
<td><strong>Ceiling concealed</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor unit</td>
<td>PEV-P200YM-A</td>
<td>PEV-P250YM-A</td>
</tr>
<tr>
<td>Outdoor unit</td>
<td>PUV-P200YM-A</td>
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</table>

### Heat Pump

<table>
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<tr>
<td><strong>Floor standing</strong></td>
<td></td>
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</tr>
<tr>
<td>Indoor unit (Standard model)</td>
<td>PFAV-P250YM-E</td>
<td></td>
</tr>
<tr>
<td>Outdoor unit</td>
<td>PUV-Y250YHA</td>
<td></td>
</tr>
<tr>
<td>Indoor unit (Fresh air intake model)</td>
<td>PFAV-P350YM-E</td>
<td></td>
</tr>
<tr>
<td>Outdoor unit</td>
<td>PUV-Y250YHA</td>
<td></td>
</tr>
</tbody>
</table>

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**Air Curtain**

- **Standard Type**
  - Operating conditions: The temperatures of both ambient and transfer air are -10°C to +45°C, and a relative humidity of 90% or less at normal temperature. Use outside of this range may result in burning, deform, irregular rotation, and damage.

- **High-Power Type**
  - Operating conditions: The temperatures of both ambient and transfer air are -10°C to +45°C, and a relative humidity of 90% or less at normal temperature. Use outside of this range may result in burning, deform, irregular rotation, and damage.

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**Air Swing Fan**

- **Ceiling concealed type**
  - Provides a cool breeze in a wide area with swing operation
  - Connectable with an air conditioner duct

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS-908CSA-HK</td>
<td>* Operating conditions: Temperatures of both ambient air around the main unit and transfer air are 0°C to +45°C and 90% RH at the room temperature. Beyond this range, it could result in burning, deform, improper revolution or breakage. * Air temperature to handle ducts is +15°C to +55°C. * When ducts are used, if cool air is introduced through the ducts while operation is stopped, dew will be formed. It is recommended to install, for example, electric dampers on the air conditioning air intake ducts, which shut down cool air simultaneously with the stop of operation. * Make sure to provide heat-insulating measures on the connection flanges and ducts for prevention of dewing. * Control switch is not attached.</td>
</tr>
<tr>
<td>AS-606SA-HK</td>
<td>* Operating conditions: Temperatures of both ambient air around the main unit and transfer air are 0°C to +45°C and 90% RH at the room temperature. Beyond this range, it could result in burning, deform, improper revolution or breakage. * Control switch is not attached.</td>
</tr>
</tbody>
</table>
**Centrifugal Fan**

BF-12 to 23S-E-1  
(Single phase)  
- Compact size  
- Low noise operation

BF-25, 28T-E  
(Three phase)

**Axial Flow Fan**

JF-30 to 2505-E-1  
(Single phase)  
- High static pressure  
- Large air volume design  
- Low noise operation

JF-30 to 5507-E  
(Three phase)

**Air Conducting Fan**

AH-10066S-E  
AH-15095S-E  
AH-20095S-E  
AH-30095S-E

Car Parks: Removing exhaust gas

With the comprehensive lineup of products, including the floor standing type and ceiling concealed type, it has been made easier for you to use them for offices, stores, factories, hotels and a variety of other applications.

---

<table>
<thead>
<tr>
<th>16HP</th>
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<td>PUV-P400YM-A</td>
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<tr>
<td>PFAV-P500YM-A</td>
<td>PFAV-P700YM-A</td>
</tr>
<tr>
<td>PFAV-P900YM-A-F</td>
<td>PFAV-P900YM-A-F</td>
</tr>
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With the comprehensive lineup of products, including the floor standing type and ceiling concealed type, it has been made easier for you to use them for offices, stores, factories, hotels and a variety of other applications.
**APPLICATION**

**Example 1. Hotel**

**Requirements**
Different series adopted to each optimum zone are required to be managed with the same controller.

**Solution**
Since both these Commercial Packaged Air-conditioner series and CITY MULTI series use M-NET, they can be controlled with the same centralized controller.

**Example 2. Manufacturing plant**

**Requirements**
Ducts cannot be installed in the ceiling with crane rails. High ceiling and heat generation from equipment need to be considered. ON/OFF control by external input (level-signal) is required in the system.

**Solution**
Cooling only floor standing series with plenum chamber.*1 External signal based start/stop control can be performed.*2

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**Straight Centrifugal Fan**

**Features of the Mitsubishi Electric Straight Centrifugal Fan**

**Ceiling Recessed Type**
Low noise operation has been achieved using the new Split Silencer. Also, its compact and light weight design allows easy installation for applications with limited installation space.

**Floor Standing Type**
The Suction Absorption Silt and Sound Absorption Air Guide are keys to achieve low noise operation.

**Fireproofing Type**
- Fireproofing Performance: Coating and impregnation are manufactured in galvanized steel sheet. The terminal box is covered with metal cover for enhancing the safety and the noise absorption material is**_ compliant with JIS E 3402. Part 6_** and Part 7. Impregnated V-18MZWP-E are manufactured in aluminum. **_Sound absorption material is used in V-16MNPW-E._**
- Noise Reducing Design: The operation noise has been minimized by creating no unnecessary air flow with causing no fire to flow from two directions and adopting sound absorption material**_.
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 AE-200E, AE-50E, EW-50E, AG-150A, EB-50GU-J, 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 AE-200E, AE-50E, EW-50E, AG-150A, and EB-50GU-J, use separate watthour meters for A-control units, K-control units, and packaged air conditioner for City Multi air conditioners. It is recommended to use an individual watthour meter for the large-capacity indoor unit (with two or more addresses).
- When using the peak cut function on the AE-200E, AE-50E, EW-50E, AG-150A, and EB-50GU-J, 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 AE-200E, AE-50E, EW-50E, AG-150A, or EB-50GU-J 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 AE-200E, AE-50E, EW-50E, AG-150A, EB-50GU-J, 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 AE-200E, AE-50E, EW-50E, AG-150A, EB-50GU-J, or TG-2000A to the Internet.

Example 3. Printing factory

**Requirements**
- There is large heat generation from equipment and intake of outdoor air is favored.

**Solution**
- Heat pump series Fresh air intake models.*1
- Fresh air from outdoor supplied to the total air-conditioning load in the room.

Example 4. Airport

**Requirements**
- Air conditioning for spacious and high ceiling room. Easy maintenance even when people are in the room.

**Solution**
- Floor standing series with plenum chamber.*1

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*1 Fresh air intake type indoor units supply pretrained outside air into the room. This type of units are not designed to handle internal thermal load. Use other types of air conditioning units that are capable of handling internal thermal load in combination with the Fresh Air Intake type units.

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* Typical office type, with a high proportion of occupation in the day. It is effective in space with large windows with a high proportion of glass.

**For PFU-PD206-250YM-A model, plenum is embedded as standard accessories.**
The New Cooling-only Series

High Energy Efficiency <New Compressor>

• Use of inverter-based compressor that adopts DC brushless motor for increased energy saving and load-following capability.

• Capable of covering up to 20 HP with a single compressor.

• Improved partial-load characteristics achieved by the optimized scroll shape.

• Reduced standby power consumption by heating the compressor instead of a crankcase heater. (16/20 HP)

Comparison between inverter air conditioner and non-inverter air conditioner

- Improved CSPF, SCOP performance

Optimized scroll shape (improved volumetric capacity ratio)

Comparison of CSPF, SCOP performance

ET control (Evaporating Temperature control)

Reduced energy consumption in cooling by controlling the refrigerant temperature according to the operation load and raising evaporating temperature.

Current control method

Evaporating temperature was kept constant.

New control method

Evaporating temperature is raised according to the operation load, decreasing compressor input power and increasing operation efficiency.

User Friendly Interface <controller>

With the usage of MA controller (PAR-31MAAE), which is embedded at the Cooling only series. Use of LCD and back light for improved visibility. The display of error history and the setting of night setback and demand control are made possible through the remote controller in pursuit of increased user convenience.

Installation information

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.

• 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.

• Salt-resistant unit is resistant to salt corrosion, but not salt-proof. Please note the following when installing and maintaining outdoor units in marine atmosphere.

1. Install the salt-resistant unit out of direct exposure to sea breeze, and minimize the exposure to salt water mist.

2. Avoid installing a sun shade over the outdoor unit, so that rain will wash away salt deposits off the unit.

3. Install the unit horizontally to ensure proper water drainage from the base of the unit. Accumulation of water in the base of the outdoor unit will significantly accelerate corrosion.

4. Periodically wash salt deposits off the unit, especially when the unit is installed in a coastal area.

5. Repair all noticeable scratches after installation and during maintenance.

6. Periodically check the unit, and apply anti-rust agent and replace corroded parts as necessary.

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.
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

- Capable of covering up to 20 HP with a single module and a single compressor.
- Use of inverter-based compressor that adopts DC brushless motor for increased improved partial-load characteristics achieved by inverter air conditioner and SCOP performance.
- Reduced standby power consumption by heating the temperature according to the optimized scroll shape.
- Reduced energy consumption by improved CSPF, decreasing compressor input power.
- Outdoor unit with salt-resistant specification is recommended to use in a place where it is subject to salt air.
- Provide proper protection around the outdoor units in places such as schools to avoid the risk of injury.
- Install the snow guard so that the outlet/inlet faces away from the direction of the wind.
- When the unit is expected to operate continuously for a long period of time at outside air temperatures of below 0ºC, 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.

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 JRA/902).
- 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 0ºC, 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.

Increase in the limit of piping length

Maximum piping length: 150 m (70 m for 8/10 HP)
Height difference between indoor and outdoor units is up to 50 m.
(16/20 HP; case with the outdoor unit installed higher)
(30 m for 8/10 HP)

Compatibility to outdoor temperature of up to 52ºC

Capable of running cooling operations in the outdoor temperature of up to 52ºC.

Centralized control enabled by M-NET control

Since the new Cooling only series uses M-NET, the design of control is simple and easy.
Through the centralized controller, the centralized control is made possible under the mixed use with VRF CITY MULTI series.

Meeting the demand control needs

100/75/50/0% fixed capacity operation possible by external signals.
Meets a variety of user needs, such as the demand control for restricting the power demand.

Other new functions

- External signal-based start/stop control function (by the use of optional parts)
- Fan ON/OFF control signals can be taken to the outside.

*1: Any continuous operation over 45ºC may require an increased frequency of maintenance.
COP (Energy consumption efficiency)

COP is defined as the ratio of cooling/heating capacity to 1 kW of electrical power consumption at the rated cooling/heating operation. The COP in cooling and heating is calculated based on the measurements taken at the outside temperature of 35ºC and 7ºC respectively.

COP is an energy-conservation index that is calculated under very limited conditions in the year.

CSPF (Cooling Seasonal Performance Factor)

CSPF is calculated based not only on the measurements taken during rated cooling operation, but also on those taken during intermediate cooling operation. The type of building usage and variables that change during different operating seasons are also considered in the calculation of CSPF to reflect actual usage conditions.

Characteristics of COP

- **COP calculation method**
  \[ \text{COP} = \frac{\text{Rated capacity (kW)}}{\text{Rated power consumption (kW)}} \]

- **Annual outside temperature occurrence frequency (in Tokyo)**

Characteristics of CSPF

- **CSPF calculation method**
  \[ \text{CSPF} = \frac{\text{Capacity output during cooling season (kWh)}}{\text{Power consumption during cooling season (kWh)}} \]

- **Outside temperature occurrence frequency used to calculate CSPF (in Kagoshima)**

Calculation conditions for CSPF

<table>
<thead>
<tr>
<th>Air conditioners for stores and office buildings</th>
<th>CITY MULTI and PAC air conditioners</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard</strong></td>
<td>JRA4048:2006</td>
</tr>
<tr>
<td><strong>Area</strong></td>
<td>Kagoshima (Japan)</td>
</tr>
<tr>
<td><strong>Building usage</strong></td>
<td>Detached store</td>
</tr>
<tr>
<td><strong>Operating season</strong></td>
<td>Cooling: May 23-Oct. 10</td>
</tr>
<tr>
<td><strong>Usage period</strong></td>
<td>8:00-21:00</td>
</tr>
</tbody>
</table>

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

- 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 prevent the air from being contaminated.
- 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.
Installation information

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 in 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.

Floor standing type
Features
• Easy installation and maintenance
• Suitable for use in areas where duct installation is not possible (i.e., high ceiling or ceiling with crane rails)
• Satisfies large capacity air conditioning needs
• Adjustable air flow and static pressure

Ceiling concealed type
Features
• Flexibly accommodates various types of duct designs
• Installable when no floor space is available
• Suitable for use in areas where air flow from floor-standing models would be interrupted by the equipment in the space
• Suitable for use in facilities such as food manufacturing plants where floor-standing models are not suitable because of cleaning requirements

Wide temperature range

Line up
### Cooling only series [SPECIFICATIONS]

<table>
<thead>
<tr>
<th>Model name</th>
<th>Indoor</th>
<th>Outdoor</th>
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<tbody>
<tr>
<td></td>
<td>CY-25</td>
<td>CY-35</td>
<td>CY-50</td>
<td>CY-75</td>
</tr>
<tr>
<td>System capacity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling 1</td>
<td>14.5-13.9-13.3 / 13.4-12.8-12.3</td>
<td>15.8-15.0-14.4 / 14.7-14.0-13.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling 2</td>
<td>59.5</td>
<td>59.5</td>
<td>59.5</td>
<td>59.5</td>
</tr>
<tr>
<td>Power source</td>
<td>3-phase 4-wire 380-400-415V 50/60Hz</td>
<td>3-phase 4-wire 380-400-415V 50/60Hz</td>
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<td></td>
</tr>
<tr>
<td>Current</td>
<td>145</td>
<td>145</td>
<td>145</td>
<td>145</td>
</tr>
<tr>
<td>System Power input</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
</tr>
<tr>
<td>System capacity</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
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<td>Plenum chamber</td>
<td>80 × 150 × 40</td>
<td>143 × 200 × 50</td>
<td>268 × 270 × 60</td>
<td>430 × 280 × 70</td>
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<tr>
<td>Weight</td>
<td>164</td>
<td>164</td>
<td>164</td>
<td>164</td>
</tr>
<tr>
<td>Outdoor Only</td>
<td>980</td>
<td>980</td>
<td>980</td>
<td>980</td>
</tr>
</tbody>
</table>

### 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 an acidic or alkaline environment.
- Installation should not be performed in 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, toppled 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 condition 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.
- 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.
**Heat pump series [SPECIFICATIONS]**

<table>
<thead>
<tr>
<th>Model</th>
<th>PFAV-P200VM-E</th>
<th>PFAV-P600VM-E</th>
<th>PFAV-P750VM-E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outdoor unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**STANDARD model**

- **Operation**: Cooling only series
- **Compressor**: Inverter scroll hermetic compressor

**SPECIFICATIONS**

- **System capacity**: Cooling 1.0
- **System current**: 16.0 / 12.5 / 11.4
- **Energy efficiency ratio (EER)**: 2.4 / 2.3
- **Fan**: 2,834 / 2,834

**NOTE**

1. Cooling capacity indicates the value at operation under the following conditions.
2. Inference cooling capacity indicates the value at operation under the following conditions.
3. Indoor intake air temperature should be kept more than 0°C.
4. Long period operation in a high temperature and humidity atmosphere (dew point of 23°C or more) may cause condensation to form in the indoor unit.
5. Cooling characteristics for hermetic compressor.

---

**FRESH AIR INTAKE (model)**

<table>
<thead>
<tr>
<th>Model</th>
<th>PFAV-P300VM-E</th>
<th>PFAV-P600VM-E</th>
<th>PFAV-P900VM-E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Outdoor unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**STANDARD model**

- **Operation**: Cooling only series
- **Compressor**: Inverter scroll hermetic compressor

---

**Optional parts**

<table>
<thead>
<tr>
<th>Description</th>
<th>Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor unit</td>
<td></td>
</tr>
<tr>
<td>Outdoor unit</td>
<td></td>
</tr>
</tbody>
</table>

---

**Page 10**
## Heat pump series [ Line Up ]

### STANDARD model

**Features**
- Highly energy efficient with easy installation and maintenance

**Wide temperature range**
- By controlling the air volume of the outdoor unit fan, operation is available even when the outdoor temperature is -5°C for cooling and -20°C for heating.

*In heating operation, operation capacity may fall below the rated capacity in low outdoor temp. / indoor inlet temp. conditions.

### FRESH AIR INTAKE model

**Features**
- Fresh air intake model takes in fresh air from the outdoor suitable for application such as factories and laboratories where intake of indoor air is not favored.

**Wide temperature range**
- Heating operation is available at -4°C Outdoor temperature making it adaptable for places with frequent heating requirements.

---

### Cooling only series [ SPECIFICATIONS ]

<table>
<thead>
<tr>
<th>Model name</th>
<th>Type</th>
<th>PUV-F300VM-YA</th>
<th>PUCF-P400YM-A</th>
<th>PUCF-P400YM-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>System capacity</td>
<td>Cooling 1</td>
<td>3.13 kW</td>
<td>3.13 kW</td>
<td>3.13 kW</td>
</tr>
<tr>
<td></td>
<td>Cooling 2</td>
<td>3.13 kW</td>
<td>3.13 kW</td>
<td>3.13 kW</td>
</tr>
<tr>
<td>System power</td>
<td>Cooling 1</td>
<td>31.33</td>
<td>31.33</td>
<td>31.33</td>
</tr>
<tr>
<td></td>
<td>Cooling 2</td>
<td>31.33</td>
<td>31.33</td>
<td>31.33</td>
</tr>
<tr>
<td>Energy efficiency ratio (EER)</td>
<td>Cooling 1</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
</tr>
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<td></td>
<td>Cooling 2</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
</tr>
<tr>
<td>Operating temperature range *1</td>
<td>Indoor : 15°C to 25°C/WB</td>
<td>Indoor : 15°C to 25°C/WB</td>
<td>Indoor : 15°C to 25°C/WB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Outdoor : 40°C/WB</td>
<td>Outdoor : 40°C/WB</td>
<td>Outdoor : 40°C/WB</td>
<td></td>
</tr>
</tbody>
</table>

#### Outdoor heat exchangers
- Salt-resistant cross fin & copper tube.
- Pre-coated galvanized steel sheets (+powder coating for -BS type)
- Pre-coated galvanized steel sheets

#### Refrigerant piping
- Diameter
- Liquid pipe
- Gas pipe

#### External dimensional H × W × D
- 64-31/32 × 48-1/16 × 29-5/32
- 1650 × 920 × 740
- 1650 × 1220 × 740

#### Protection devices
- High pressure protection
- Over-heat protection
- Over-current protection
- Over-load protection
- Over-heat protection, Over-current protection
- Over-load protection

#### Refrigerant
- R410A

---

Note 1: Cooling capacity indicates the value under the following conditions:
- Indoor: 27°CDB / 19°CWB, Outdoor: 35°CDB
- Room temperature: 25°CDB / 19°CWB
- Fan speed: 1
- Air flow rate: 760 m³/h
- Operating condition: Cooling

Note 2: Reference cooling capacity indicates the value under the following conditions:
- Indoor: 27°CDB / 19°CWB, Outdoor: 35°CDB
- Room temperature: 25°CDB / 19°CWB
- Fan speed: 1
- Air flow rate: 760 m³/h
- Operating condition: Cooling

Note 3: Limiting set temperature range
- Indoor : 15°C to 25°C/WB, Outdoor : 40°C/WB

Note 4: Long period operation in a high temperature and humidity atmosphere (time point of 25°C or more) may cause condensation to form in the indoor unit.

5. Cooling Scroll Performance Freeze
Heat pump series

Heat pump series is a large capacity floor standing indoor unit with high air flow operation especially designed for various types of large spaced application. The unit is a one-to-one connection unit meaning one indoor is connected to one outdoor unit. The lineup consists of two models; standard model and fresh air intake model, selectable depending on usage.

Adaptable to various applications
With wide range of airflow and static pressure, and piping length up to 165m, Heat pump series can provide flexibility in design by adapting to various applications from shops, schools, and to factories.

Large capacity indoor unit
Heat pump series is a floor standing large capacity indoor unit, which reduces the piping and installation burdens, moreover makes maintenance easy.

OUTDOOR UNIT

Compact outdoor unit
Heat pump series can only be connected to PUHY/YHA outdoor units. YHA series offers small footprint and lightweight inversely to high heating capacity, which allows easy transportation and saves installation space.

High Reliability
Outdoor heat exchangers have been treated with an anti-corrosion coating ensuring higher resistance against salt damage or air pollution.

CONTROL

With the usage of MA controller (PAR-21MAA), which is embedded at the Heat pump series, following energy saving functions can be provided.

Auto-OFF timer
Automatically switches off based on presetting time. (Preset time can be 30min-4hours, per 30min)

Locking function
To sustain optimal temperature, and prevent operational errors, buttons can be locked to only ON/OFF control.

Limiting set temperature range
By limiting lowest / highest temperature. It is possible to save energy when air conditioners are frequently used.

Inverter circuit(COMP. / FAN)
High pressure protection
Over-heat protection, Over-current protection

Compressor
Inverter-control, Direct-driven by motor

Drainage
Low temperature limit

Inverter
MEL32

Indoor : 27°CDB / 19°CWB, Outdoor : 35°CDB

Cooling Seasonal Performance Factor
Indoor : 27°CDB / 19°CWB, Outdoor : 35°CDB

BYUHY-YHA

Wall standing type

Fan coil unit

Floor standing type

FAN-21MAA

PEV-P250YKA (-BS)

PFAV-P500YM-A

PFV-P200, 250YM-A

Floor standing type
Cooling only series [OUTLINE DIMENSIONS]

PFV-P500YM-A
Floor standing type

Wired MA remote controller PAR-31MAAE

- Dimensions: 120(W) x 120(H) x 19(D) mm
  - 4-3/4(W) x 4-3/4(H) x 3/4(D) in.

Functions

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Group</th>
<th>Each group</th>
<th>Not available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation mode setting</td>
<td>Switches among Cooling, Fan, and Auto.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room temp. setting</td>
<td>Controls the indoor unit temperature.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ventilation equipment control</td>
<td>The display/setting of the ventilation equipment can be controlled.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error information</td>
<td>Displays error code, unit address, and date and time. Can be set to appear when an error occurs. The information above needs to be entered in advance.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timer</td>
<td>Set to a value from 30 to 240 minutes in 10-minute increments.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation lock</td>
<td>The units automatically stop the operation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature range restriction</td>
<td>The indoor unit operates in the set temperature range for each operation mode.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auto return</td>
<td>The units automatically return to the thermostat.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smooth Maintenance</td>
<td>The units automatically turn ON and OFF when the set temperature range is exceeded.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Features

- Temperature will be displayed either in Centigrade in 0.5- or 1-degree increments, or in Fahrenheit, depending on the indoor unit model and the display mode setting on the remote controller.
- Backlight LCD (Liquid Crystal Display)
- Large, easy-to-see display
  - Full-dot LCD display with large characters for easy viewing
  - Contrast also adjustable
- Night Setback
  - To prevent indoor dew or excessive temperature rise, this control starts cooling operation when the control object group is stopped and the room temperature rises above the preset upper limit temperature.
- Simple button arrangement
  - Large, easy-to-press buttons
- Buttons are arranged according to usage to allow for intuitive navigation.
- Frequently used buttons are larger than other buttons to prevent unintended pressing of other buttons.

Example of system configuration

M-NET MA remote controller

- M-NET MA remote controller

Unit: mm

Front air inlet

Indoor unit

Applicable capacity

PEV-P200,M250,M400,M500YM-A
PEV-P200,M250,M400,M500YM-A
PFV-P400YM-A
PEV-P200,M250YM-A
PFV-P400,YM-A

Required space for service and air flow

Indoor unit

Unit: mm

Front air inlet

Indoor unit

Applicable capacity

PEV-P200,P250,P400,P500YM-A
PEV-P200,P250,P400,P500YM-A
PFV-P400YM-A
PEV-P200,P250YM-A
PFV-P400,YM-A

Press the remote controller to start cooling operation when the control object group is stopped and the room temperature rises above the preset upper limit temperature.

To prevent indoor dew or excessive temperature rise, this control starts cooling operation when the control object group is stopped and the room temperature rises above the preset upper limit temperature.

When an error occurs, an error code and the unit address appear.

* Not valid when the temperature setting range is restricted.
* (Time can be set to a value from 30 to 120 in 10-minute increments.)
* The units operate at the preset temperature after a designated period.
* While an operation is prohibited, the operation icon lights up (only on the Main display in the “Full” mode).
* An error code may not appear depending on the error.

- (The information above needs to be entered in advance.)
- The indoor unit address can be checked easily via the screen on the remote controller.
- The inverter can be checked easily via the screen on the remote controller.
- The temperature will be displayed either in Centigrade in 0.5- or 1-degree increments, or in Fahrenheit, depending on the indoor unit model and the display mode setting on the remote controller.
- Backlight LCD (Liquid Crystal Display)
- Large, easy-to-see display
  - Full-dot LCD display with large characters for easy viewing
  - Contrast also adjustable
- Night Setback
  - To prevent indoor dew or excessive temperature rise, this control starts cooling operation when the control object group is stopped and the room temperature rises above the preset upper limit temperature.
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<tr>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* (The information above needs to be entered in advance.)
* The indoor unit address can be checked easily via the screen on the remote controller.
* The inverter can be checked easily via the screen on the remote controller.
* The temperature will be displayed either in Centigrade in 0.5- or 1-degree increments, or in Fahrenheit, depending on the indoor unit model and the display mode setting on the remote controller.
* Backlight LCD (Liquid Crystal Display)
* Large, easy-to-see display
  - Full-dot LCD display with large characters for easy viewing
  - Contrast also adjustable
* Night Setback
  - To prevent indoor dew or excessive temperature rise, this control starts cooling operation when the control object group is stopped and the room temperature rises above the preset upper limit temperature.
* Simple button arrangement
  - Large, easy-to-press buttons
- Buttons are arranged according to usage to allow for intuitive navigation.
- Frequently used buttons are larger than other buttons to prevent unintended pressing of other buttons.
Optional Parts for indoor units

<table>
<thead>
<tr>
<th>Description</th>
<th>Model</th>
<th>Applicable Capacity</th>
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</thead>
<tbody>
<tr>
<td>Plenum</td>
<td>PAC-PLE20PL-E</td>
<td>PEV-P200,P500YM-A</td>
</tr>
<tr>
<td>OA Duct Range</td>
<td>PAC-COF20DF-E</td>
<td>PEV-P400,P500YM-A</td>
</tr>
<tr>
<td>Air filter (5/10HP)</td>
<td>PAC-KE210AF</td>
<td>PEV-F200,P250YM-A</td>
</tr>
<tr>
<td>Air filter (15/20HP)</td>
<td>PAC-KE220AF</td>
<td>PEV-F400,P500YM-A</td>
</tr>
<tr>
<td>High Static Pressure Motor (3.7kW)</td>
<td>PAC-HPM103P-E</td>
<td>PEV-P400YM-A</td>
</tr>
<tr>
<td>High Static Pressure Motor (5.5kW)</td>
<td>PAC-HPM203P-E</td>
<td>PEV-P500YM-A</td>
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<tr>
<td>Wireless Remote Controller</td>
<td>PAR-FL32MA-E</td>
<td>PEV-P200,P250,P400,P500YM-A</td>
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<tr>
<td>Signal Receiver Unit</td>
<td>PAR-SA0CA-E</td>
<td>PEV-F200,P250,P400,P500YM-A</td>
</tr>
</tbody>
</table>

Optional Parts for control

<table>
<thead>
<tr>
<th>Description</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Remote Controller Adapter</td>
<td>PAC-SA08HA-E</td>
</tr>
<tr>
<td>Remote sensor</td>
<td>PAC-SE41TS-E</td>
</tr>
</tbody>
</table>

*1: Only for PEV series
### Cooling only series [OUTLINE DIMENSIONS]

#### PUV-P200, 250YM-A

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refrigerant service valve</td>
<td>ø9.52 Brazed</td>
</tr>
<tr>
<td>Refrigerant service valve</td>
<td>ø12.7 Brazed</td>
</tr>
<tr>
<td>Refrigerant service valve</td>
<td>ø15.88 Brazed</td>
</tr>
<tr>
<td>Refrigerant service valve</td>
<td>ø22.2 Brazed</td>
</tr>
<tr>
<td>Refrigerant service valve</td>
<td>ø28.58 Brazed</td>
</tr>
<tr>
<td>Refrigerant service valve</td>
<td>ø25.4 ø9.52</td>
</tr>
<tr>
<td>Refrigerant service valve</td>
<td>ø28.58 ø15.88</td>
</tr>
</tbody>
</table>

#### PUV-P500YM-A

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimensions</th>
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</thead>
<tbody>
<tr>
<td>Refrigerant service valve</td>
<td>ø9.52 Brazed</td>
</tr>
<tr>
<td>Refrigerant service valve</td>
<td>ø12.7 Brazed</td>
</tr>
<tr>
<td>Refrigerant service valve</td>
<td>ø15.88 Brazed</td>
</tr>
<tr>
<td>Refrigerant service valve</td>
<td>ø22.2 Brazed</td>
</tr>
<tr>
<td>Refrigerant service valve</td>
<td>ø28.58 Brazed</td>
</tr>
<tr>
<td>Refrigerant service valve</td>
<td>ø25.4 ø9.52</td>
</tr>
<tr>
<td>Refrigerant service valve</td>
<td>ø28.58 ø15.88</td>
</tr>
</tbody>
</table>

#### PUV-P400YM-A

<table>
<thead>
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<th>Component</th>
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<tbody>
<tr>
<td>Refrigerant service valve</td>
<td>ø9.52 Brazed</td>
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<td>Refrigerant service valve</td>
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</tr>
<tr>
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</tr>
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#### PUCY-P250YKA

<table>
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<th>Dimensions</th>
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*Note: Please refer to the Installation Manual for information regarding necessary spacing around the unit and foundation work.*