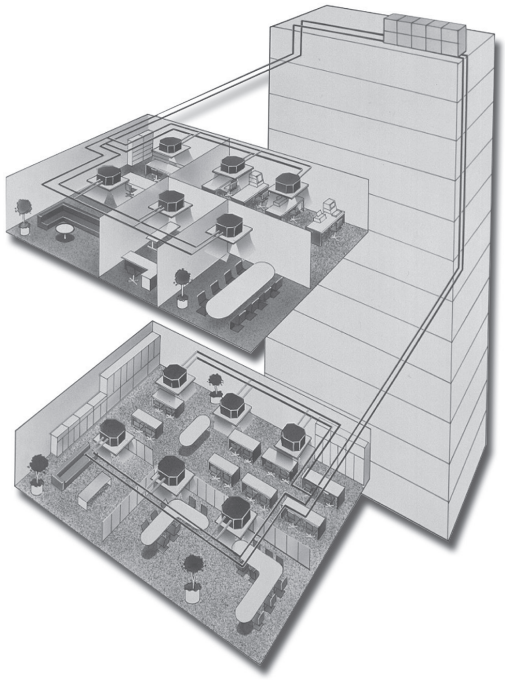
# ENGINEERING MANUAL

## INVERTER-DRIVEN MULTI-SPLIT SYSTEM
## HEAT PUMP AIR CONDITIONERS



### Engineering Manual

**< Indoor Units >**

- Mini Cassette Type
  (H,Y)ICM008B21S to (H,Y)ICM018B21S
- Ceiling Suspended Type
  (H,Y)ICS015B21S to (H,Y)ICS036B21S
- Floor Exposed Type
  (H,Y)IFE006B21S to (H,Y)IFE015B21S
- Floor Concealed Type
  (H,Y)IFC006B21S to (H,Y)IFC015B21S

TC-15002

# IMPORTANT NOTICE AND SAFETY SUMMARY

## 1. Introduction

This Engineering Manual concentrates on heat pump air conditioning units. Read this manual carefully before performing installations or operations.

This manual should be considered as a permanent part of the air conditioning equipment and should remain with the air conditioning equipment.

(Transportation/Installation Work) > (Refrigerant Piping Work) > (Electrical Wiring Work) > (Ref. Charge Work) > (Test Run) > (User)

## 2. Important Safety Instructions

| Signal Words | |
|---|---|
| ⚠ WARNING | Indicates a hazardous situation that, if not avoided, could result in death or serious injury. |
| ⚠ CAUTION | Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. |
| *NOTICE* | Indicates information considered important, but not hazard-related (for example, messages relating to property damage). |

### General Precautions

| | |
|---|---|
| ⚠ WARNING | To reduce the risk of serious injury or death, read these instructions thoroughly and follow all warnings or cautions included in all manuals that accompanied the product and are attached to the unit. Refer back to these instructions as needed. |

- This system should be installed by personnel certified by Johnson Controls, Inc. Personnel must be qualified according to local, state and national building and safety codes and regulations. Incorrect installation could cause leaks, electric shock, fire or explosion. In areas where Seismic ‘’Performance requirements are specified, the appropriate measures should be taken during installation to guard against possible damage or injury that might occur in an earthquake if the unit is not installed correctly, injuries may occur due to a falling unit.
- Use appropriate Personal Protective Equipment (PPE), such as gloves and protective goggles and, where appropriate, have a gas mask nearby. Also use electrical protection equipment and tools suited for electrical operation purposes. Keep a quenching cloth and a fire extinguisher nearby during brazing. Use care in handling, rigging, and setting of bulky equipment.
- When transporting, be careful when picking up, moving and mounting these units. Although the unit may be packed using plastic straps, do not use them for transporting the unit from one location to another. Do not stand on or put any material on the unit. Get a partner to help, and bend with your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut fingers, so wear protective gloves.
- Do not touch or adjust any safety devices inside the indoor or outdoor units. All safety features, disengagement, and interlocks must be in place and functioning correctly before the equipment is put into operation. If these devices are improperly adjusted or tampered with in any way, a serious accident can occur. Never bypass or jump-out any safety device or switch.
- Johnson Controls will not assume any liability for injuries or damage caused by not following steps outlined or described in this manual. Unauthorized modifications to Johnson Controls products are prohibited as they…
  - May create hazards which could result in death, serious injury or equipment damage.
  - Will void product warranties.
  - May invalidate product regulatory certifications.
  - May violate OSHA standards.

| NOTICE | Take the following precautions to reduce the risk of property damage. |
|---|---|

- Be careful that moisture, dust, or variant refrigerant compounds not enter the refrigerant cycle during installation work. Foreign matter could damage internal components or cause blockages.
- If air filters are required on this unit, do not operate the unit without the air filter set in place. If the air filter is not installed, dust may accumulate and breakdown may result.
- Do not install this unit in any place where silicon gases can coalesce. If the silicon gas molecules attach themselves to the surface of the heat exchanger, the finned surfaces will repel water. As a result, any amount of drainage moisture condensate can overflow from the drain condensate pan and could run inside of the electrical box, possibly causing electrical failures.
- When installing the unit in a hospital or other facility where electromagnetic waves are generated from nearby medical and/or electronic devices, be prepared for noise and electronic interference Electromagnetic Interference (EMI). Do not install where the waves can directly radiate into the electrical box, controller cable, or controller. Inverters, appliances, high-frequency medical equipment, and radio communications equipment may cause the unit to malfunction. The operation of the unit may also adversely affect these same devices. Install the unit at least 10 ft. (approximately 3m) away from such devices.
- When a wireless controller is used, locate at a distance of at least 3.3 ft. (approximately 1m) between the indoor unit and electric lighting. If not, the receiver part of the unit may have difficulty receiving operation commands.
- Do not install the unit in any location where animals and plants can come into direct contact with the outlet air stream. Exposure could adversely affect the animals and plants.
- Do not install the unit with any downward slope to the side of the drain boss. If you do, you may have drain water flowing back which may cause leaks.
- Be sure the drain hose discharges water properly. If connected incorrectly, it may cause leaks.
- Do not install the unit in any place where oil can seep onto the units, such as table or seating areas in restaurants, and so forth. For these locations or social venues, use specialized units with oil-resistant features built into them. In addition, use a specialized ceiling fan designed for restaurant use. These specialized oil-resistant units can be ordered for such applications. However, in places where large quantities of oil can splash onto the unit, such as a factory, even the specialized units cannot be used. These products should not be installed in such locations.
- If the wired controller is installed in a location where electromagnetic radiation is generated, make sure that the wired controller is shielded and cables are sleeved inside conduit tubing.
- If there is a source of electrical interference near the power source, install noise suppression equipment (filter).
- During the test run, check the unit's operation temperature. If the unit is used in an environment where the temperature exceeds the operation boundary, it may cause severe damage. Check the operational temperature boundary in the manual. If there is no specified temperature, use the unit within the operational temperature boundary of 35 to 104°F (0 to 40°C).
- Read installation and appropriate user manuals for connection with PC or peripheral devices. If a warning window appears on the PC, the product stops, does not work properly or works intermittently, immediately stop using the equipment.

## Installation Precautions

| ⚠ WARNING | To reduce the risk of serious injury or death, the following installation precautions must be followed. |
|---|---|

- When installing the unit into…
  - A wall: Make sure the wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support.
  - A room: Properly insulate any refrigerant tubing run inside a room to prevent "sweating" that can cause dripping and water damage to wall and floors.
  - Damp or uneven areas: Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the unit to prevent water damage and abnormal vibration.
  - An area with high winds: Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.
  - A snowy area (only for Heat Pump Model): Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.
- If the remote sensors are not used with this controller, then do not install this controller…
  - in a room where there is no thermostat.
  - where the unit is exposed to direct sunshine or direct light.
  - where the unit will be in close proximity to a heat source.
  - where hot/cold air from the outdoors, or a draft from elsewhere (such as air vents, diffusers or grilles) can affect air circulation.
  - in areas with poor air circulation and ventilation.
- Do not install the unit in the following places. Doing so can result in an explosion, fire, deformation, corrosion, or product failure.
  - Explosive or flammable atmosphere.
  - Where fire, oil, steam, or powder can directly enter the unit, such as in close proximity or directly above a kitchen stove.
  - Where oil (including machinery oil) may be present.
  - Where corrosive gases such as chlorine, bromine, or sulfide can accumulate, such as near a hot tub or hot spring.
  - Where dense, salt-laden airflow is heavy, such as in coastal regions.
  - Where the air quality is of high acidity.
  - Where harmful gases can be generated from decomposition.
- Do not position the drain pipe for the indoor unit near any sanitary sewers where corrosive gases may be present. If you do, toxic gases can seep into breathable air spaces and can cause respiratory injuries. If the drainpipe is installed incorrectly, water leakage and damage to the ceiling, floor, furniture, or other possessions may result. If condensate piping becomes clogged, moisture can back up and can drip from the indoor unit. Do not install the indoor unit where such dripping can cause moisture damage or uneven locations: Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the unit to prevent water damage and abnormal vibration.
- Before performing any brazing work, be sure that there are no flammable materials or open flames nearby.
- Perform a test run to ensure normal operation. Safety guards, shields, barriers, covers, and protective devices must be in place while the compressor/unit is operating. During the test run, keep fingers and clothing away from any moving parts.
- Clean up the site when finished, remembering to check that no metal scraps or bits of wiring have been left inside the unit being installed.
- During transportation, do not allow the backrest of the forklift make contact with the unit, otherwise, it may cause damage to the heat exchanger and also may cause injury when stopped or started suddenly.
- Remove gas inside the closing pipe when the brazing work is performed. If the brazing filler metal is melted with remaining gas inside, the pipes will be blown off and it may cause injury.
- Be sure to use nitrogen gas for an airtight test. If other gases such as oxygen gas, acetylene gas or fluorocarbon gas are accidentally used, it may cause explosion or gas intoxication.

After installation work for the system has been completed, explain the "Safety Precautions," the proper use and maintenance of the unit to the customer according to the information in all manuals that came with the system. All manuals and warranty information must be given to the user or left near the Indoor Unit.

## Refrigerant Precautions

| ⚠ WARNING | To reduce the risk of serious injury or death, the following refrigerant precautions must be followed. |
|---|---|

- As originally manufactured, this unit contains refrigerant installed by Johnson Controls. Johnson Controls uses only refrigerants that have been approved for use in the unit's intended home country or market. Johnson Controls distributors similarly are only authorized to provide refrigerants that have been approved for use in the countries or markets they serve. The refrigerant used in this unit is identified on the unit's faceplate and/or in the associated manuals. Any additions of refrigerant into this unit must comply with the country's requirements with regard to refrigerant use and should be obtained from Johnson Controls distributors. Use of any non-approved refrigerant substitutes will void the warranty and will increase the potential risk of injury or death.
- If installed in a small room, take measures to prevent the refrigerant from exceeding the maximum allowable concentration in the event that refrigerant gases should escape. Refrigerant gases can cause asphyxiation (0.026 lbs/ft$^3$ (0.42 kg/m$^3$) based on ISO 5149 for R410A). Consult with your distributor for countermeasures (ventilation system and so on). If refrigerant gas has leaked during the installation work, ventilate the room immediately.
- Check the design pressure for this product is 601 psi (4.15MPa). The pressure of the refrigerant R410A is 1.4 times higher than that of the refrigerant R22. Therefore, the refrigerant piping for R410A shall be thicker than that for R22. Make sure to use the specified refrigerant piping. If not, the refrigerant piping may rapture due to an excessive refrigerant pressure. Besides, pay attention to the piping thickness when using copper refrigerant piping. The thickness of copper refrigerant piping differs depending on its material.
- The refrigerant R410A is adopted. The refrigerant oil tends to be affected by foreign matters such as moisture, oxide film, (or fat). Perform the installation work with care to prevent moisture, dust, or different refrigerant from entering the refrigerant cycle. Foreign matter can be introduced into the cycle from such parts as expansion valve and the operation may be unavailable.
- To avoid the possibility of different refrigerant or refrigerant oil being introduced into the cycle, the sizes of the charging connections have been changed from R407C type and R22 type. It is necessary to prepare the appropriate tools before performing installation work.
- Use refrigerant pipes and joints which are approved for use with R410A.
- A compressor/unit comprises a pressurized system. Never loosen threaded joints while the system is under pressure and never open pressurized system parts.
- Before installation is complete, make sure that the refrigerant leak test has been performed. If refrigerant gases escape into the air, turn OFF the main switch, extinguish any open flames and contact your service contractor. Refrigerant (Fluorocarbon) for this unit is odorless. If the refrigerant should leak and come into contact with open flames, toxic gas could be generated. Also, because the fluorocarbons are heavier than air, they settle to the floor, which could cause asphyxiation.
- When installing the unit, and connecting refrigerant piping, keep all piping runs as short as possible, and make sure to securely connect the refrigerant piping before the compressor starts operating. If the refrigerant piping is not connected and the compressor activates with the stop valve opened, the refrigerant cycle will become subjected to extremely high pressure, which can cause an explosion or fire.
- Tighten the flare nut with a torque wrench in the specified manner. Do not apply excessive force to the flare nut when tightening. If you do, the flare nut can crack and refrigerant leakage may occur.
- When maintaining, relocating, and disposing of the unit, dismantle the refrigerant piping after the compressor stops.
- When pipes are removed out from under the piping cover, after the insulation work is completed, cover the gap between the piping cover and pipes by a packing (field-supplied). If the gap is not covered, the unit may be damaged if snow, rain water or small animals enter the unit.
- Do not apply an excessive force to the spindle valve at the end of opening. Otherwise, the spindle valve flies out due to refrigerant pressure. At the test run, fully open the gas and liquid valves, otherwise, these devices will be damaged. (It is closed before shipment.)
- If the arrangement for outdoor units is incorrect, it may cause flowback of the refrigerant and result in failure of the outdoor unit.
- The refrigerant system may be damaged if the slope of the piping connection kit exceeds $\pm 15^{o}$.

## Electrical Precautions

| ⚠ WARNING | Take the following precautions to reduce the risk of electric shock, fire or explosion resulting in serious injury or death. |
|---|---|

- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause serious injury or death.
- Perform all electrical work in strict accordance with this installation and maintenance manual and all the relevant regulatory standards.
- Before servicing, open and tag all disconnect switches. Never assume electrical power is disconnected. Check with meter and equipment.
- Only use electrical protection equipment and tools suited for this installation.
- Insulate a wired controller against moisture and temperature extremes.
- Use specified cables between units.
- The new air conditioner may not function normally in the following instances:
  - If electrical power for the new air conditioner is supplied from the same transformer as the device* referred to below.
  - If the power source cables for this device* and the new air conditioner unit are located in close proximity to each other.

    Device*: (Example): A lift, container crane, rectifier for electric railway, inverter power device, arc furnace, electric furnace, large-sized induction motor and large-sized switch.

    Regarding the cases mentioned above, surge voltage may be inducted into the power supply cables for the packaged air conditioner due to a rapid change in power consumption of the device and an activation of a switch.
    Check field regulations and standards before performing electrical work in order to protect the power supply for the new air conditioner unit.
- Communication cabling shall be a minimum of AWG18 (0.82mm$^2$), 2-Conductor, Stranded Copper. Shielded cable must be considered for applications and routing in areas of high EMI and other sources of potentially excessive electrical noise to reduce the potential for communication errors. When shielded cabling is applied, proper bonding and termination of the cable shield is required as per Johnson Controls guidelines. Plenum and riser ratings for communication cables must be considered per application and local code requirements.
- The polarity of the input terminals is important, so be sure to match the polarity when using contacts that have polarity.
- Use an exclusive power supply for the air conditioner at the unit's rated voltage.
- Highly dangerous electrical voltages may be used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause serious injury or death.
- Before installing the controller or remote devices, ensure that the indoor and outdoor unit operation has been stopped. Further, be sure to wait at least five minutes before turning off the main power switch to the indoor or outdoor units. Otherwise, water leakage or electrical breakdown may result.
- Do not open the service cover or access panel to the indoor or outdoor units without turning OFF the main power supply. Before connecting or servicing the controller or cables to indoor or outdoor units, open and tag all disconnect switches. Never assume electrical power is disconnected. Check with a meter and equipment.
- This equipment can be installed with a Ground Fault Circuit Breaker (GFCI), which is a recognized measure for added protection to a properly grounded unit. Install appropriate sized breakers / fuses / overcurrent protection switches, and wiring in accordance with local, state and NEC codes and requirements. The equipment installer is responsible for understanding and abiding by applicable codes and requirements.

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# 1. General Information (Features)

***VRF Air Conditioners***

Johnson Controls proudly introduces new Variable Refrigerant Flow (VRF) air conditioners, a highly-efficient and reliable air-conditioning system. Recently, increased numbers of buildings are requiring "Intelligent" facilities that include communication networks, office automation, and a comfortable environment. In particular, a comfortable environment is becoming more of a year-around requirement in office buildings. The VRF multi-split system air conditioner meets these requirements. The proven combination of the scroll compressor and inverter provides the best air conditioning for small and medium office buildings.

- VRF System
  Johnson Controls has developed the VRF system with its customers in mind.
  This system, which is unique in the world, allows the interconnection of indoor units for all our VRF air conditioners.

  This system provides the consumer with greater flexibility for installation, which means that the air-conditioning systems will integrate better within complex facility structures.

### *Diverse Indoor Units and Combinations*

The line-up of the new VRF Series indoor units has been extends to six types of indoor units to meet various building requirements.

Table 1.1 Indoor Unit Type List

| Indoor Unit Type | | Capacity (MBH) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 8 | 12 | 15 | 18 | 24 | 30 | 36 |
| Mini Cassette | | | ○ | ○ | ○ | ○ | | | |
| Ceiling Suspended | | | | | ○ | | ○ | ○ | ○ |
| Floor | Exposed | ○ | ○ | ○ | ○ | | | | |
| | Concealed | ○ | ○ | ○ | ○ | | | | |

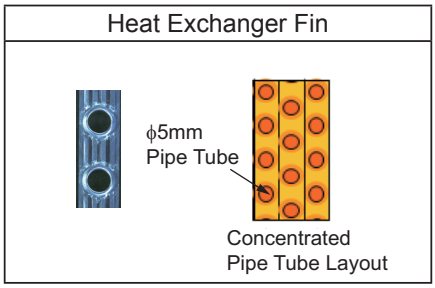
○ : Available

■ Mini Cassette Type Models
(H,Y)ICM008B21S
(H,Y)ICM012B21S
(H,Y)ICM015B21S
(H,Y)ICM018B21S

● Improvement of Energy-Saving

(1) Adopting High Performance Heat Exchanger, High Efficient Turbo Fan and New DC Drain Pump

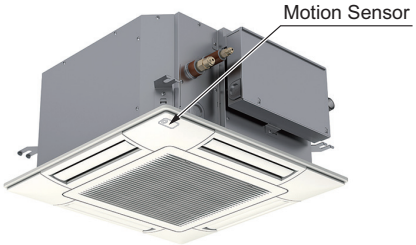
* High performance & high efficiency heat exchanger (ϕ5 pipe tubes + new fins)




* New developed high efficiency turbo-fan with 3D twisted blade
* New lower electrical power drain pump with DC motor

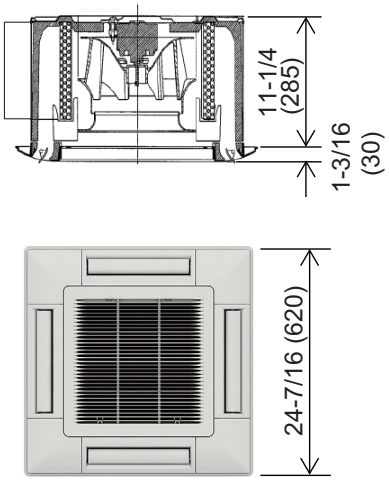
(2) Improvement of Energy-Saving Operation by Adopting Motion Sensor

* Adopting Motion Sensor Function
  - The motion sensor function can adjust the setting temperature according to the human activity and it controls the air flow volume and the air flow direction.
  - The energy-saving is improved by combining the motion sensor function and the individual operating function comparing with the standard operation.



- Highly Compact Size
  Compared with the current model, the size of the decorative panel for new model has been reduced by 80mm. Installation to a narrow space is possible.

inch (mm)

| Dimensions | | |
|---|---|---|
| Indoor Unit | Width & Depth | □ 22-7/16 (□ 570) |
| | Height | 10-9/16 (269) |
| | from Ceiling Side | 11-1/4 (285) |
| Decorative Panel | Width & Depth | □ 24-7/16 (□ 620) |
| | Height | 1-5/8 (41) |
| | from Ceiling Side | 1-3/16 (30) |
| Dimensional Drawing |   | |

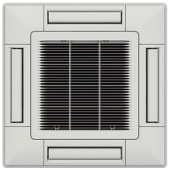
- Low Noise (Top-class Sound Pressure Level)
  New developed high efficiency turbo-fan is adopted. By improving 3D twisted blade of turbo-fan and air outlet, the fan efficiency is improved and the low noise performance is achieved.

| Indoor Unit Capacity | MBH | 8 | 12 | 15 | 18 |
|---|---|---|---|---|---|
| Sound Pressure Level (dBA) Air Flow Volume LOW | | 24.5 | 27.5 | 31 | 35 |

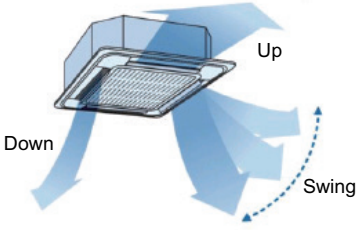
New Turbo-fan

- New Design & High Specification Decorative Panel

Simple & Stylish Design

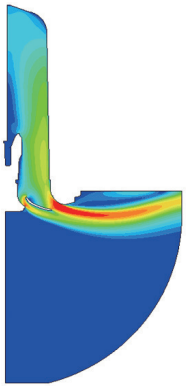


4-way Individual Louver




Fully Closed

- New Structured Louver and Air Outlet
  Direct air flow and perception of cold to person are reduced by improving the design of panel louver and shape of the air outlet which directs air flow to the ceiling (so called coanda effect).

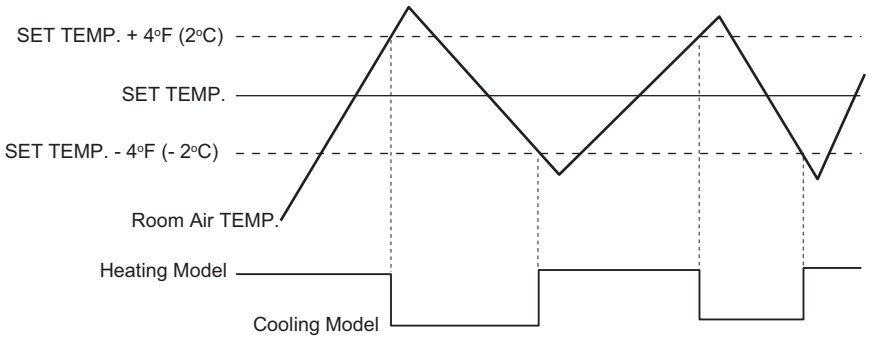


< Horizontal Air Flow (Image) >

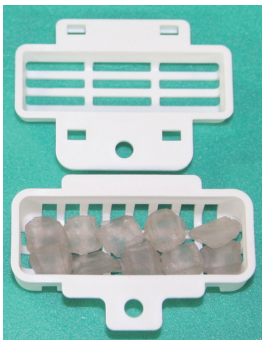
- Wide Range Air Flow Volume Setting
  The four range air flow volumes are available as “HIGH 2”, “HIGH”, “MED”and “LOW”.

- Automatic COOL/HEAT Operation
  By improving differential temperature for automatic COOL/HEAT operation, it is possible to perform polite and attentive operation and more comfortable air conditioned environment is realized.

< Control Flow of AUTO Mode >



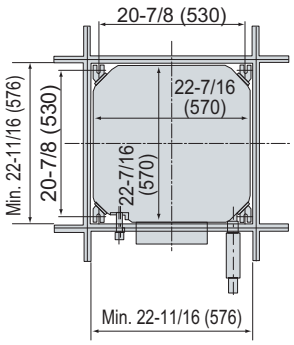
- Easy Maintenance (Adopting New Antibacterial Agent of Drain Pan)
  The silver ions antibacterial agent is newly adopted in the drain pan, and it inhibits generation of mold or bacterium which is the cause of slime.
  The antibacterial agent (cased) is fixed in the drain pan.
  (Exchangeable, term of validity is 10,000 hours of the cooling operation (Approx. 5 years).)



- Easy Installation

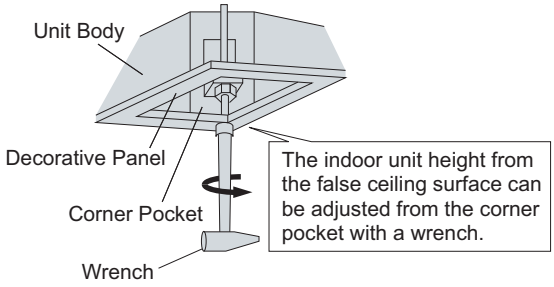
  (1) Installation to Grid Ceiling
  This product can be installed to a grid ceiling with a 23-5/8 x 23-5/8 inch (600 x 600mm) opening without cutting the grid.

inch (mm)




Grid Ceiling

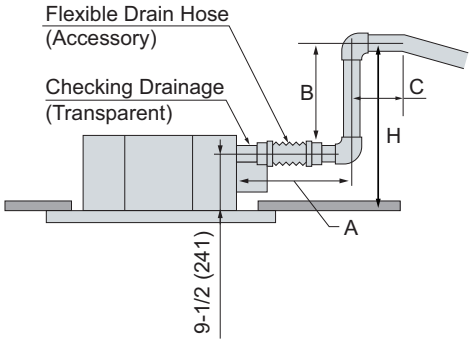
(2) Easier Height Adjustment
The unit height can be adjusted from 4 corner pockets, with the decorative panel attached to the unit.
Height adjustment from the corner pockets is suitable for fine adjustment.
To keep the unit level, avoid significant height adjustment.




- Improvement of High-Lift Drain Pump
  High-lift DC drain pump makes it possible to raise the drain pipe straight up, up to 33-7/16 inch (850mm) from the false ceiling surface.

| | |
|---|---|
| Max. Lift Height (H) | 33-7/16 (850) |
| Max. Length (A+B+C) | 43-5/16 (1100) |

inch (mm)

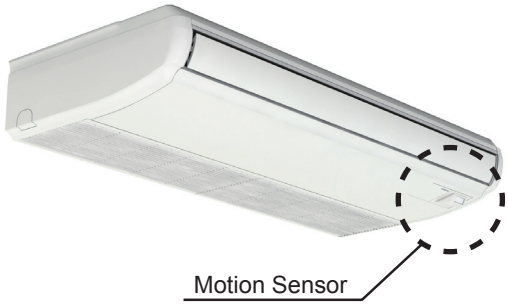


■ Ceiling Suspended Type Models
(H,Y)ICS015B21S
(H,Y)ICS024B21S
(H,Y)ICS030B21S
(H,Y)ICS036B21S

- Improvement of Energy-Saving

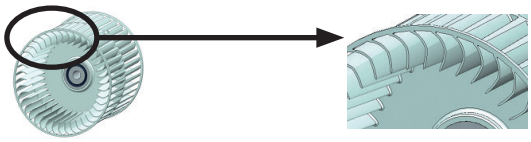
  Improvement of Energy-Saving Operation by Motion Sensor

  * Adopting Motion Sensor Function
  - The motion sensor function can adjust the temperature setpoint according to the human activity, and it controls the air flow volume and the air flow direction.
  - The energy-saving is improved by combining the motion sensor function and the individual operating function comparing with the standard operation.

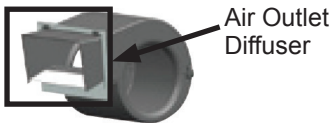



- High Efficiency and Low Noise by New Fan Runner
  New developed fan runner is adopted. By improving shapes of fin and air outlet, the fan efficiency is improved and the low noise performance is achieved.

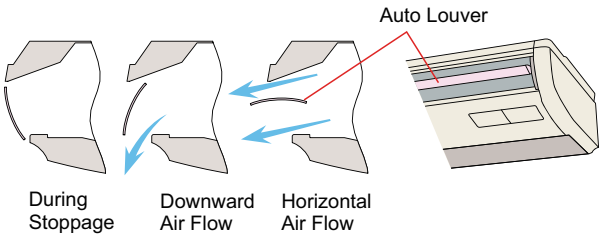
New Fan Runner



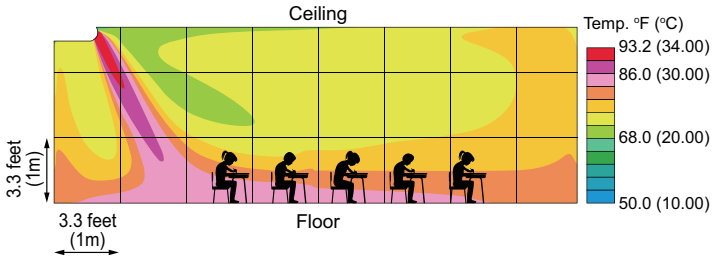

Fan Casing




- Adopting Amenity Auto Louver
  Large-sized amenity auto louver with the same color as indoor unit body is adopted. It softens the discomfort by temperature irregularity and cold draft.
  The auto louver as a shutter during the operation stoppage improves design.




< Temperature Distribution >




The comfortable heating air is widespread to whole room, mainly around floor, during the heating operation.

- Simulation Condition
  Room Dimension: 8.9 ft. (h) x 26.2 ft. (d) x 26.2 ft. (w) (2.7m (h) x 8m (d) x 8m (w))
  Model: (H,Y)ICS036B21S
  Air Flow Volume and Direction: HIGH 2 and Lower Air Flow
  Standard Condition for Heating: Air Inlet Temp. 68°F (20°C)

- Installation to High Ceiling
  The air flow volume setting functions are equipped as “HIGH2, HIGH, MED and LOW”.
  The high speed mode (High Speed 1 and 2) setting from wired controller adopted to high ceiling installation.

[ Air Flow Volume ]

| |
|---|
| HIGH 2 |
| HIGH |
| MED |
| LOW |

< Supported Ceiling Height >

| High Speed Mode (C5) | Air Flow Volume Mode | 15 and 24 MBH | 30 and 36 MBH |
|---|---|---|---|
| Standard (00) | HIGH 2 | 11.5 ft. (3.5m) | 14.1 ft. (4.3m) |

NOTES:

1. If the high speed 2 setting (02) is selected from the remote control switch, the air flow volume of “HIGH 2” and “HIGH” will be equaled as shown in the table.
   Because the air flow volume, “HIGH 2”, and “HIGH” are used as “HH2” in high speed 2 setting.

| High Speed Mode (C5) | Air Flow Volume Mode | | | |
|---|---|---|---|---|
| | HIGH 2 | HIGH | MED | LOW |
| Standard (00) | HH2 | Hi | Me | Lo |
| High Speed 1 *1 (01) | HH2 | HH1 | Hi | Me |
| High Speed 2 *2 (02) | HH2 | HH2 | HH1 | Hi |

*1) Setting For High Ceiling + Standard Air Filter

*2) Setting For Anti Bacterial Filter (Optional)

- Adding Optional Receiver Kit (CSIRK01)
  “HIGH 2” control is available from the wireless controller (CIR01).
  To use the wired controller together, it can be connected to the motion sensor kit.
  The motion sensor can be set and controlled only from the wired controller.

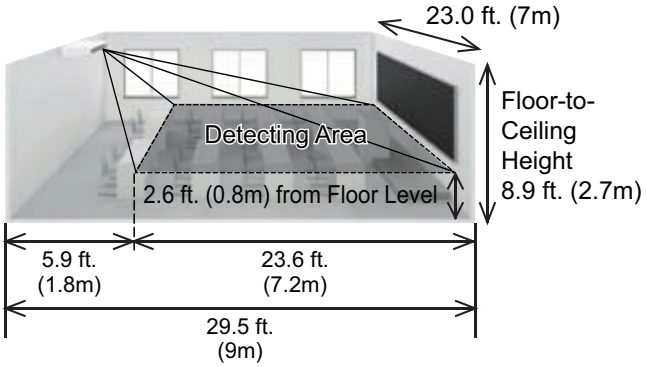
## Motion Sensor Control

The air conditioning capacity is saved automatically depending on a situation and detecting amount of human activity by adopting the motion sensor kit. In addition, the operation can be stopped automatically if the absent situation continues for more than 30 minutes[*1)]. The motion sensor allows maintaining the comfortable indoor environment and eliminating the unnecessary operation[*2)].

[*1)]: The default setting is “30 minutes”. However, the setting is changeable.
[*2)]: The default setting is “Running Operation”. However, “Automatic Stop” can be selected by setting from the remote control switch.

• Detecting Area for Human Activity
Detecting Diameter: Approx. 23 ft. x 23.6 ft. (7.0m x 7.2m)
(0.8m…height from floor surface)
The motion sensor may not detect the human activity at the space just under the indoor unit (5.9ft. x 23 ft. (1.8m x 7.0m).)

< Detecting Area >
Example for 15 to 36MBH indoor units




NOTES: About Motion Sensor (Optional, Model: SOR-NEP)
1. The motion sensor detects the human activity. However, if someone is in a room with a bit motion, the motion sensor may detect as absence.
2. The motion sensor may detect as human activity, if the indoor unit with the motion sensor is installed near a moving object which is different temperature against atmosphere.
3. The motion sensor may detect as absence in the case that the indoor unit with the motion sensor is installed to a high ceiling even if someone is in a room.

- Sequence of Detection by Motion Sensor

  Detect the infrared variation by the sensor element.

  ↓

  Generate the analog voltage to the appropriate infrared variation.

  ↓

  Convert the analog voltage to the digital signal by the threshold.

- Sequence of Controlling Motion Sensor at Indoor Unit

  Detect whether someone is available or not by the condition of the digital signal.

  ↓

  Measure the frequency of detecting human activity in the period of time.

  ↓

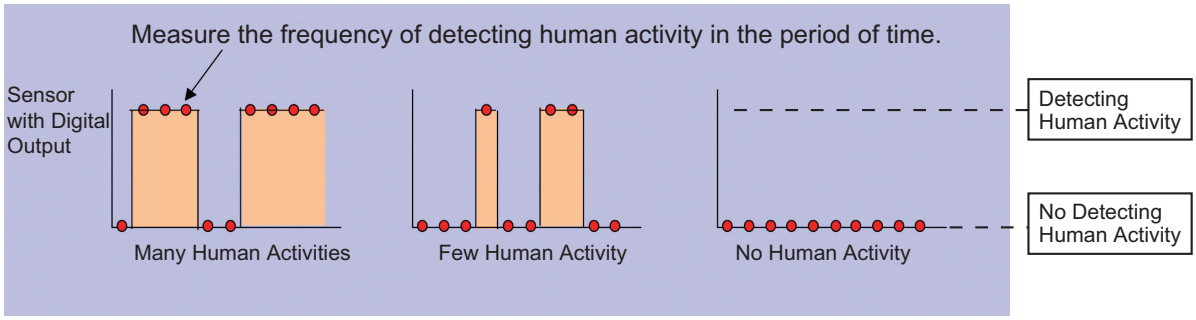
  Determine amount of the human activity depending on the calculated reaction rate (frequency).

  ↓ *Reaction Rate (Frequency) = Detected Counts of Human Activity / Measured Counts of Time

  Change to each operating mode depending on amount of the human activity and the elapsed time.

  ↓

  Control automatically by each operating mode.

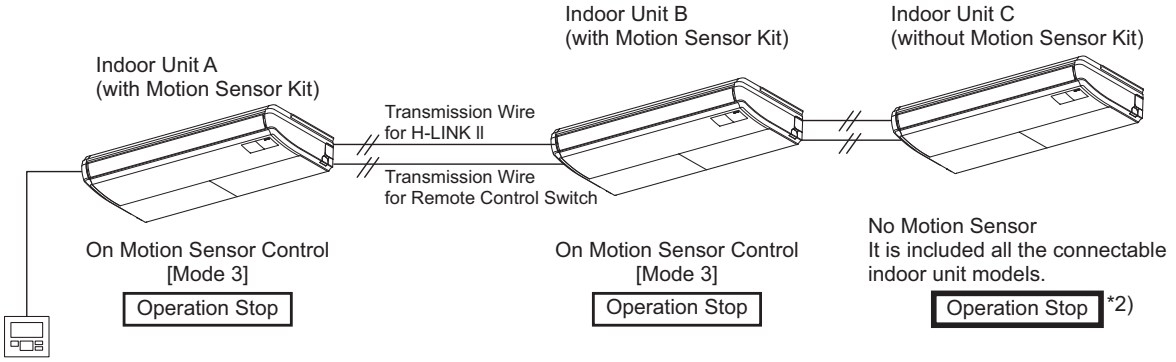


- Descriptions of Motion Sensor Control Condition

| Condition | | [Standard Operation] | [MODE 1] | [MODE 2] | [MODE 3] | | |
|---|---|---|---|---|---|---|---|
| MENU on Remote Control Switch | "If Absent" | - | - | - | Running Operation | Standby | Stop[*1)] |
| Indoor Unit | Adjusting Value of Temperature Setting | Adjusting 32°F (0°C) | Adjusting 34°F (1°C) | Adjusting 36°F (2°C) | | Forced Thermo-OFF | [Mode3] Same Condition as Standby |
| | Air Flow Volume | Setting Air Flow Volume | Setting Air Flow Volume-1 (Min: Low) | Setting Air Flow Volume-1 (Min: Low) | | Slo | |
| | Air Flow Direction | Set Air Flow Direction | Horizontal | Horizontal | | Horizontal | |

*1): The wired controller will make to stop the operation when all the indoor units with the motion sensors switch to "MODE 3". After the operation is stopped, the operation will not restart even if detecting the human activity due to stopped by the wired controller. The indoor unit without the motion sensor and the indoor unit with the motion sensor can be mixed. In this case, the indoor unit without the motion sensor will also stop as shown in the figure below[*2)].

In the case of the motion sensor setting "If Absent: OFF" is set by the wired controller.



■ Floor Type Models

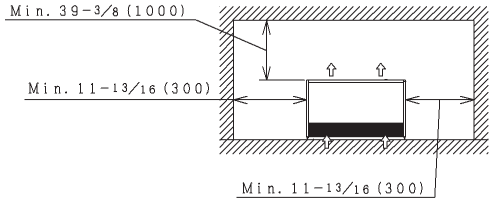
• Floor Exposed
(H,Y)IFE006B21S
(H,Y)IFE008B21S
(H,Y)IFE012B21S
(H,Y)IFE015B21S

• Floor Concealed
(H,Y)IFC006B21S
(H,Y)IFC008B21S
(H,Y)IFC012B21S
(H,Y)IFC015B21S

● Floor Exposed
• Slim line design, allowing it to be installed without spoiling the style or beauty of the room.

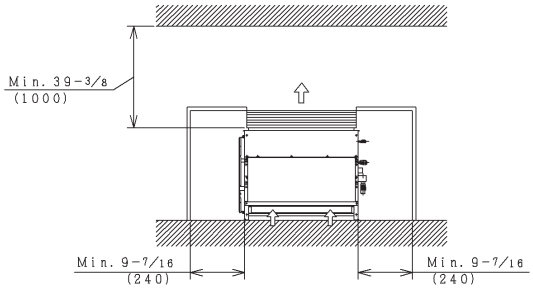
• Only 8-11/16 inch (220mm) is depth leaving plenty of space for effective utilization of the room.
• With a height of 24-13/16 inch (630mm), may be installed by a window leaving plenty of window space. Best installed in a perimeter zone capable of preventing deterioration of an indoor environment.

Service Space inch (mm)




● Floor Concealed
• Special emphasis placed on interior design compatibility as well as space saving compact design, allowing it to fit perfectly into the space below a bay window. Best installed in a perimeter zone capable of preventing deterioration of an indoor environment.

Service Space inch (mm)



## 2. Outdoor Units

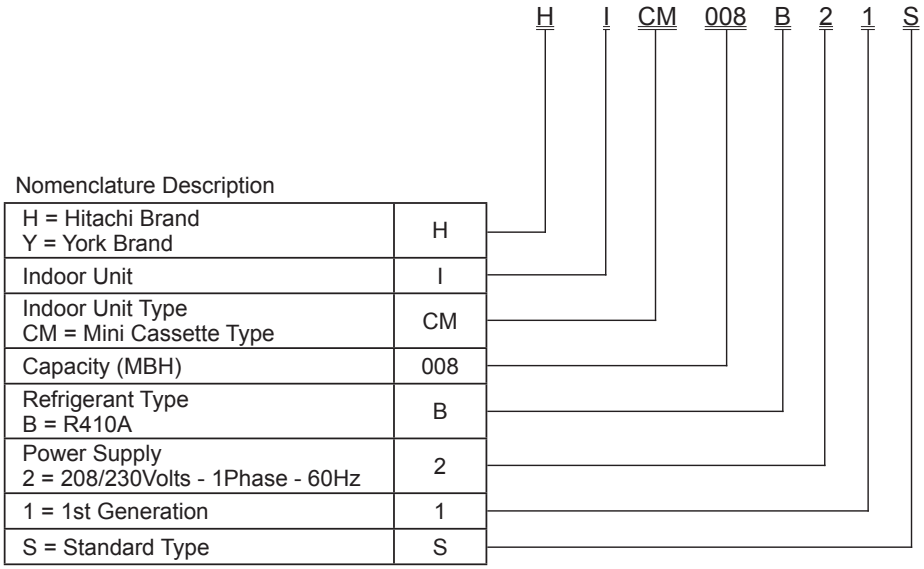
Refer to Engineering Manual No. TC-15001.

# 3 Indoor Units

## 3.1 Mini Cassette Type

### 3.1.1 Unit Nomenclature

Model Descriptions
Example




Nomenclature Description

| | |
|---|---|
| H = Hitachi Brand<br>Y = York Brand | H |
| Indoor Unit | I |
| Indoor Unit Type<br>CM = Mini Cassette Type | CM |
| Capacity (MBH) | 008 |
| Refrigerant Type<br>B = R410A | B |
| Power Supply<br>2 = 208/230Volts - 1Phase - 60Hz | 2 |
| 1 = 1st Generation | 1 |
| S = Standard Type | S |

### 3.1.2 Line-up

| Type | | Capacity | | Model |
|---|---|---|---|---|
| | | RT | MBH | |
| Indoor Unit | Mini Cassette | 0.7 | 8 | (H,Y)ICM008B21S |
| | | 1.0 | 12 | (H,Y)ICM012B21S |
| | | 1.3 | 15 | (H,Y)ICM015B21S |
| | | 1.5 | 18 | (H,Y)ICM018B21S |

## 3.1.3 General Data

| Indoor Unit Type | | Mini Cassette Type | | | |
|---|---|---|---|---|---|
| Model | | (H,Y)ICM008B21S | (H,Y)ICM012B21S | (H,Y)ICM015B21S | (H,Y)ICM018B21S |
| Indoor Unit Power Supply | | AC 1Phase, 208/230V, 60Hz | | | |
| Nominal Cooling Capacity *1 | Btu/h | 8,000 | 12,000 | 15,000 | 18,000 |
| | (kW) | (2.3) | (3.5) | (4.4) | (5.3) |
| Nominal Heating Capacity *1 | Btu/h | 9,000 | 13,500 | 17,000 | 20,000 |
| | (kW) | (2.6) | (4.0) | (5.0) | (5.9) |
| Sound Pressure Level *2 (Overall A Scale) | dB | 38-34-30-24.5 | 41-37-33-27.5 | 45-39-35-31 | 47-43-39-35 |
| Outer Dimensions | | | | | |
| Height | in. (mm) | 11-1/4 (285) | 11-1/4 (285) | 11-1/4 (285) | 11-1/4 (285) |
| Width | in. (mm) | 22-7/16 (570) | 22-7/16 (570) | 22-7/16 (570) | 22-7/16 (570) |
| Depth | in. (mm) | 22-7/16 (570) | 22-7/16 (570) | 22-7/16 (570) | 22-7/16 (570) |
| Net Weight | lbs (kg) | 35 (16) | 35 (16) | 37 (17) | 37 (17) |
| Refrigerant | | R410A | | | |
| Indoor Fan | | | | | |
| Air Flow Rate (Hi2-Hi-Me-Lo) | cfm | 424-353-300-212 | 459-388-335-247 | 530-424-353-282 | 565-494-424-353 |
| | ($m^3$/min) | (12-10-8.5-6) | (13-11-9.5-7) | (15-12-10-8) | (16-14-12-10) |
| External Pressure | | | | | |
| | in.W.G | 0.0 | 0.0 | 0.0 | 0.0 |
| | (Pa) | (0) | (0) | (0) | (0) |
| Motor Nominal Output | W | 57 | 57 | 57 | 57 |
| Connections | | | | | |
| Refrigerant Piping | | Flare-Nut Connection (with Flare Nuts) | | | |
| Liquid Line | in. (mm) | 1/4 (6.35) | 1/4 (6.35) | 1/4 (6.35) | 3/8 (9.52) |
| Gas Line | in. (mm) | 1/2 (12.70) | 1/2 (12.70) | 1/2 (12.70) | 5/8 (15.88) |
| Condensate Drain | | VP25 | VP25 | VP25 | VP25 |
| OD | in. (mm) | 1-1/4 (32) | 1-1/4 (32) | 1-1/4 (32) | 1-1/4 (32) |
| ID | in. (mm) | 31/32 (25) | 31/32 (25) | 31/32 (25) | 31/32 (25) |

| Adaptable Panel Model | | P-AP56NAM |
|---|---|---|
| Color | | Neutral White |
| Outer Dimensions | | |
| Height | in. (mm) | 1-3/16 (30) |
| Width | in. (mm) | 24-13/32 (620) |
| Depth | in. (mm) | 24-13/32 (620) |
| Net Weight | lbs (kg) | 6 (3) |

NOTES:

*1. Nominal capacity is based on combinations within the VRF system and the following conditions:

Cooling Operation Conditions

Indoor Air Inlet Temperature: 80°F DB (26.7°C DB)
67°F WB (19.4°C WB)

Outdoor Air Inlet Temperature: 95°F DB (35.0°C DB)

Heating Operation Conditions

Indoor Air Inlet Temperature: 70°F DB (21.1°C DB)

Outdoor Air Inlet Temperature: 47°F DB (8.3°C DB)
43°F WB (6.1°C WB)

Piping Length: 24 ft. 7-3/16 in. (7.5m)

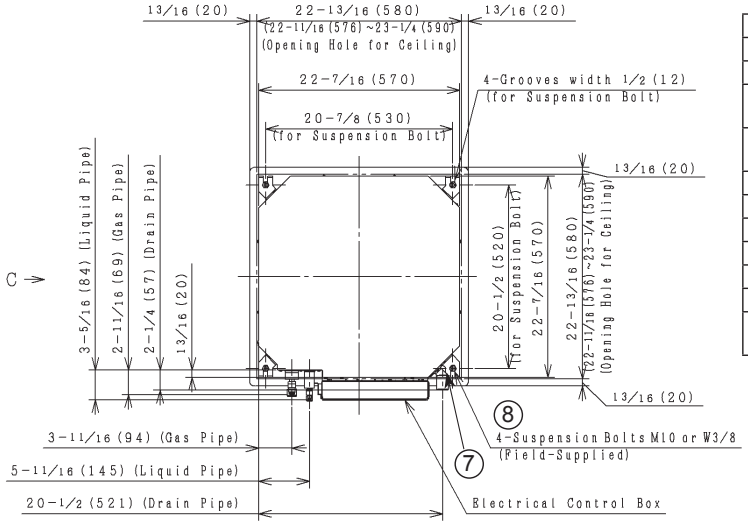
Piping Lift: 0 ft. (0m)

*2. Sound pressure level is based on following conditions.
4.9 ft. (1.5m) beneath the unit.
The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration in the field.

## 3.1.4 Dimensional Data

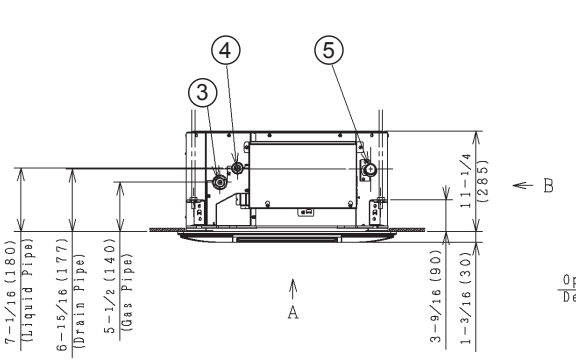
Models: (H,Y)ICM008B21S,(H,Y)ICM012B21S, (H,Y)ICM015B21S and (H,Y)ICM018B21S
with Decorative Panel P-AP56NAM

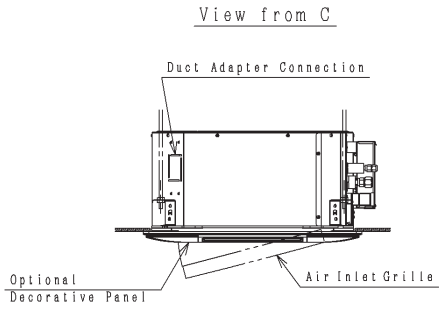
Unit: inch (mm)

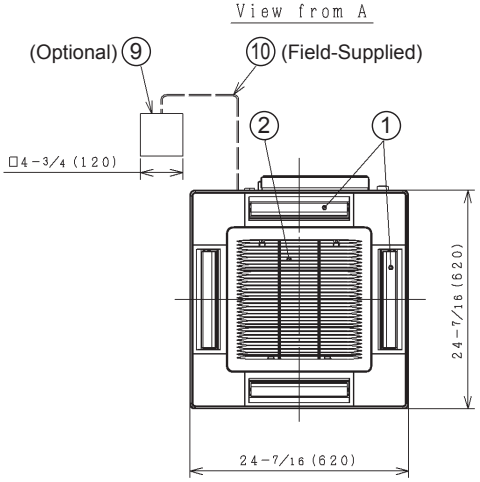


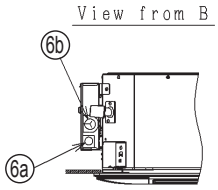

| Mark | Name | Remark |
|---|---|---|
| 1 | Air Outlet | 4-Way |
| 2 | Air Inlet | |
| 3 | Refrigerant Gas Pipe Connection | with ϕa Flare Nut |
| 4 | Refrigerant Liquid Pipe Connection | with ϕb Flare Nut |
| 5 | Drain Pipe Connection | VP1 (25) |
| 6a | Wiring Hole for Conduit Tube | ϕ7/8 (22.2) Hole |
| 6b | Wiring Hole | ϕ1-3/16 (30) Hole |
| 7 | Suspension Bracket | |
| 8 | Suspension Bolt | 4-M10 or W3/8 |
| 9 | Wired Controller | without Cable |
| 10 | Shielded Twisted Pair Cable | Min. AWG18 (0.82mm$^2$), Field-Supplied |

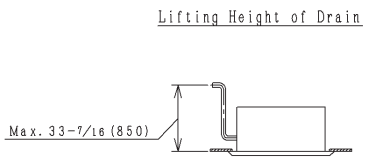
| Model \ Dimension | a | b |
|---|---|---|
| (H,Y)ICM008B21S | 1/2 (12.7) | 1/4 (6.35) |
| (H,Y)ICM012B21S | | |
| (H,Y)ICM015B21S | | |
| (H,Y)ICM018B21S | 5/8 (15.88) | 3/8 (9.52) |



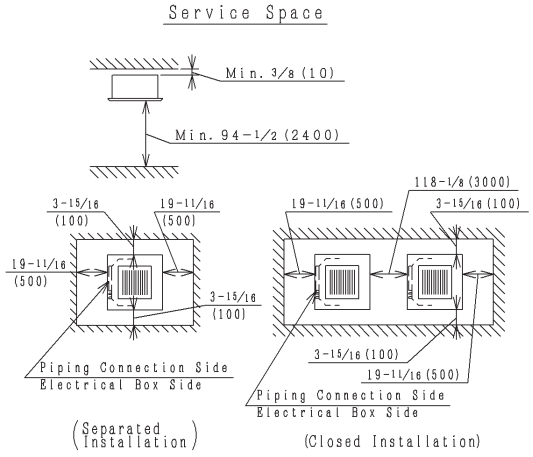



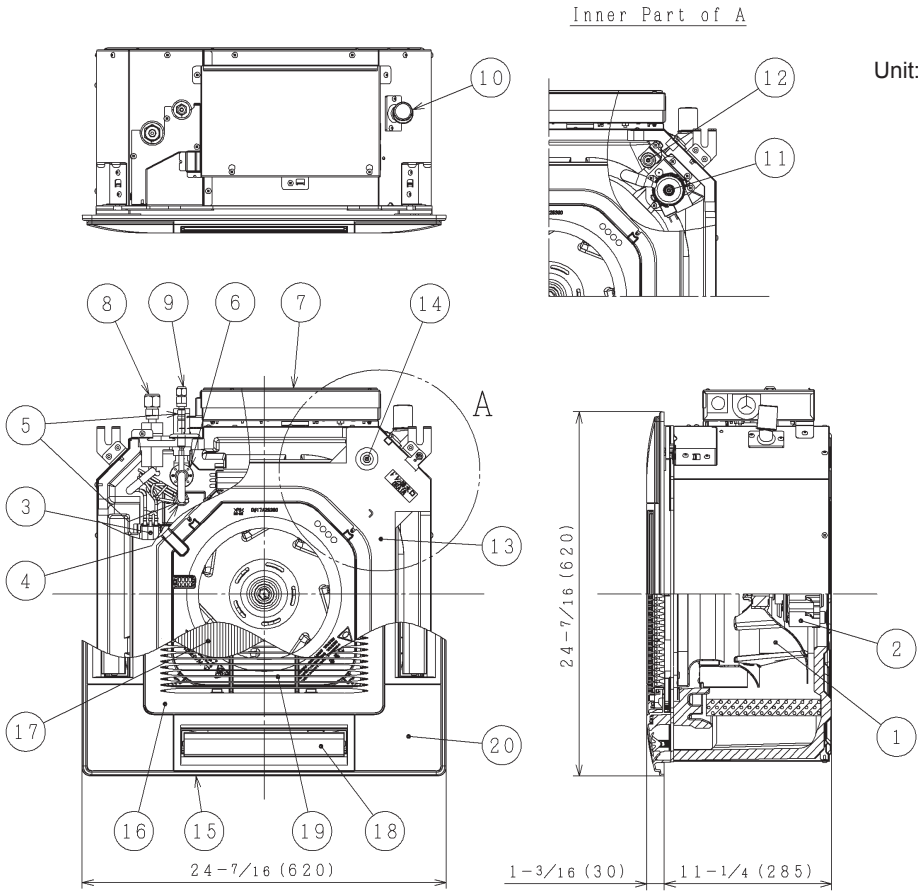




NOTES:
1. Distance between the wall and panel edge must be a min. 59-1/16inch (1500mm) to prevent short circuiting.



### 3.1.5 Structure




| No. | Part Name | Remarks |
|---|---|---|
| 1 | Fan | |
| 2 | Fan Motor | DC |
| 3 | Heat Exchanger | |
| 4 | Distributor | |
| 5 | Strainer | |
| 6 | Electronic Expansion Valve | |
| 7 | Electrical Control Box | |
| 8 | Refrigerant Gas Pipe Connection | with ϕa Flare Nut |
| 9 | Refrigerant Liquid Pipe Connection | with ϕb Flare Nut |
| 10 | Drain Pipe Connection | VP25 |
| 11 | Drain Discharge Mechanism | |
| 12 | Float Switch | |
| 13 | Drain Pan | |
| 14 | Rubber Plug for Drain | |
| 15 | Decorative Panel (P-AP56NAM) | Optional |
| 16 | Air Inlet Grille | |
| 17 | Air Filter | |
| 18 | Air Outlet | |
| 19 | Air Inlet | |
| 20 | Cover for Corner Pocket | (Use with P-AP56NAM) |

| Model | a | b |
|---|---|---|
| (H,Y)ICM008B21S | 1/2 (12.7) | 1/4 (6.35) |
| (H,Y)ICM012B21S | 1/2 (12.7) | 1/4 (6.35) |
| (H,Y)ICM015B21S | 1/2 (12.7) | 1/4 (6.35) |
| (H,Y)ICM018B21S | 5/8 (15.88) | 3/8 (9.52) |

## 3.1.6 Component Data

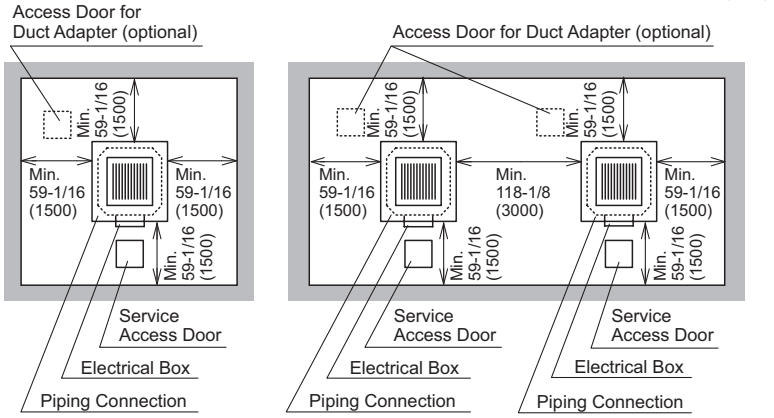
### Indoor Heat Exchanger and Fan

| Model | | (H,Y)ICM008B21S | (H,Y)ICM012B21S | (H,Y)ICM015B21S | (H,Y)ICM018B21S |
|---|---|---|---|---|---|
| Heat Exchanger Type | | Multi-Pass Cross Finned Tube | | | |
| Tube Material | | Copper Tube | | | |
| Outer Diameter | φin (mm) | 3/16 (5.0) | 3/16 (5.0) | 3/16 (5.0) | 3/16 (5.0) |
| Rows | | 2 | 2 | 3 | 3 |
| Number of Tube/Coil | | 28 | 28 | 42 | 42 |
| Fin Material | | Aluminum | | | |
| Pitch | in (mm) | 1/16 (1.3) | 1/16 (1.3) | 1/16 (1.3) | 1/16 (1.3) |
| Maximum Operating Pressure | psi (MPa) | 601 (4.15) | 601 (4.15) | 601 (4.15) | 601 (4.15) |
| Total Face Area | $ft^2$ ($m^2$) | 20.4 (6.23) | 20.4 (6.23) | 30.1 (9.18) | 30.1 (9.18) |
| Number of Coil/Unit | | 1 | 1 | 1 | 1 |
| Indoor Fan | | Multi-Blade Centrifugal Fan | | | |
| Number/Unit | | 1 | 1 | 1 | 1 |
| Outer Diameter | φin (mm) | 12-1/2 (318) | 12-1/2 (318) | 12-1/2 (318) | 12-1/2 (318) |
| Nominal Air Flow (Hi2-Hi-Me-Lo) | cfm ($m^3$/min) | 424-353-300-212 (12-10-8.5-6) | 459-388-335-247 (13-11-9.5-7) | 530-424-353-282 (15-12-10-8) | 565-494-424-353 (16-14-12-10) |
| Indoor Fan Motor | | Drip-Proof Type Enclosure | | | |
| Starting Method | | DC Motor | | | |
| Nominal Output | W | 57 | 57 | 57 | 57 |
| Quantity | | 1 | 1 | 1 | 1 |
| Insulation Class | | E | E | E | E |

### 3.1.7 Operation Space

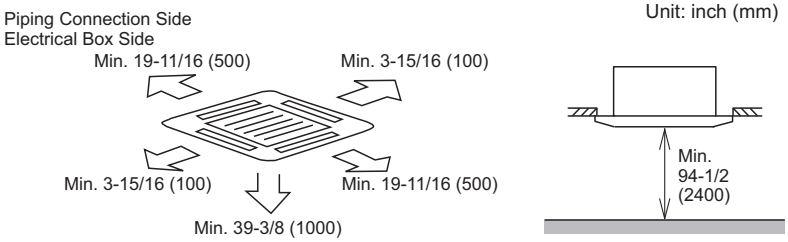
Models: (H,Y)ICM008B21S, (H,Y)ICM012B21S, (H,Y)ICM015B21S and (H,Y)ICM018B21S

Unit: inch (mm)




Distance from Wall Side

Unit: inch (mm)




Minimum Service Space

### 3.1.8 Sensible Heat Factor (SHF)

| Model | SHF *1 |
|---|---|
| (H,Y)ICM008B21S | 0.75 |
| (H,Y)ICM012B21S | 0.76 |
| (H,Y)ICM015B21S | 0.82 |
| (H,Y)ICM018B21S | 0.82 |

NOTE:

1. SHF is based on combinations within the VRF system and the following conditions:

Cooling Operation Conditions

Indoor Air Inlet Temperature: 80°F DB (26.7°C DB)
67°F WB (19.4°C WB)

Outdoor Air Inlet Temperature: 95°F DB (35.0°C DB)

Piping Length: 24 ft. 7-3/16 in. (7.5m)
Piping Lift: 0 ft. (0m)

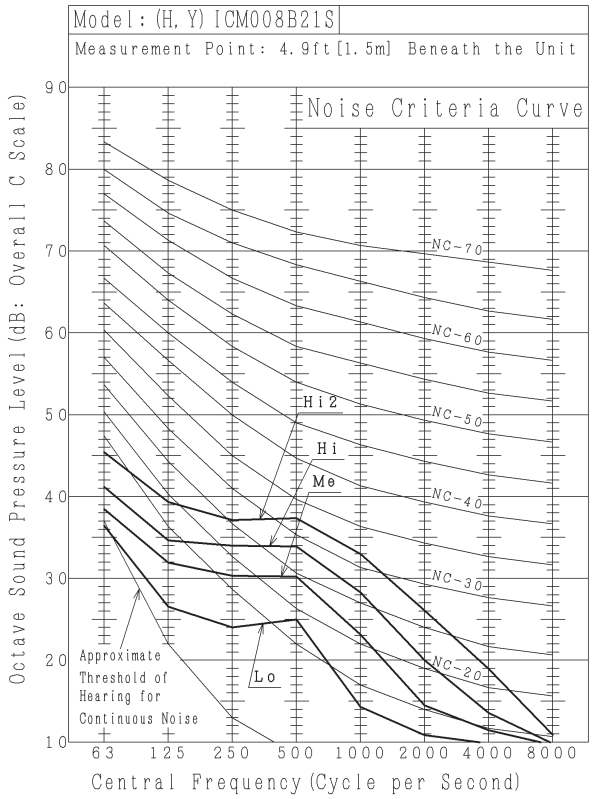
### 3.1.9 Electrical Data

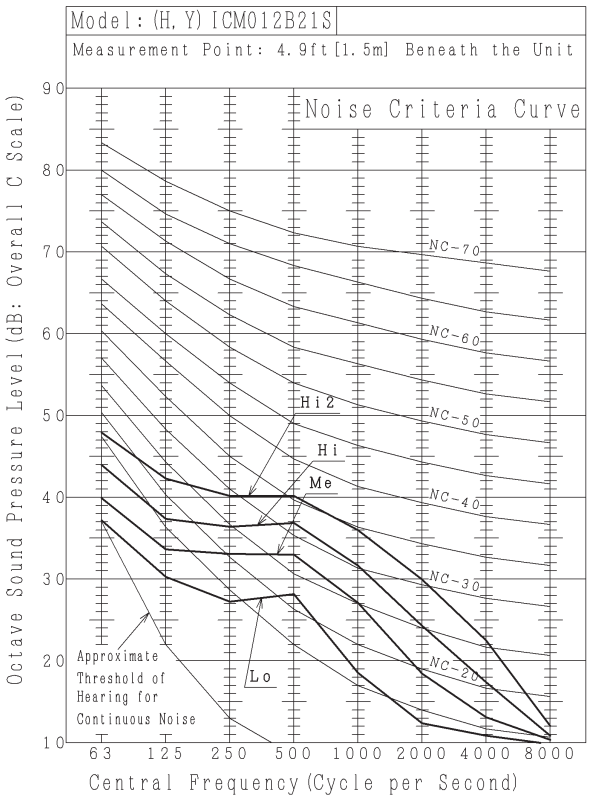
| Model | Unit Main Power | | | Applicable Voltage | | Power Supply | | Indoor Fan Motor | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | VOL | PH | HZ | Maximum | Minimum | MCA | MFA | OPT | FLA |
| (H,Y)ICM008B21S | 208/230 | 1 | 60 | 253 | 188 | 0.7 | 15 | 0.057 | 0.56 |
| (H,Y)ICM012B21S | | | | | | 0.8 | 15 | 0.057 | 0.61 |
| (H,Y)ICM015B21S | | | | | | 1.0 | 15 | 0.057 | 0.73 |
| (H,Y)ICM018B21S | | | | | | 1.0 | 15 | 0.057 | 0.78 |

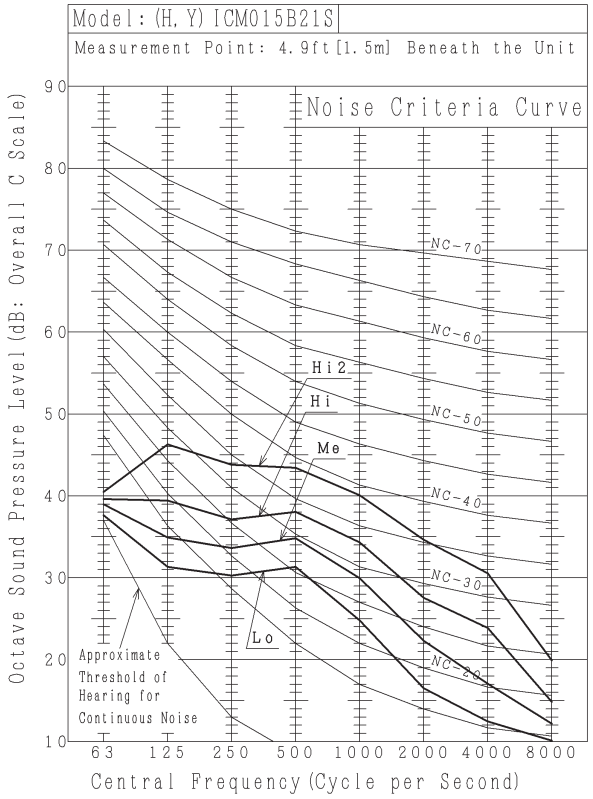
VOL: Rated Unit Power Supply Voltage (V)
PH: Phase
HZ: Frequency (Hz)
MCA: Minimum Circuit Ampacity (A)
MFA: Maximum Fuse Ampacity (A)
OPT: Rated Motor Output (kW)
FLA: Full Load Ampacity (A)

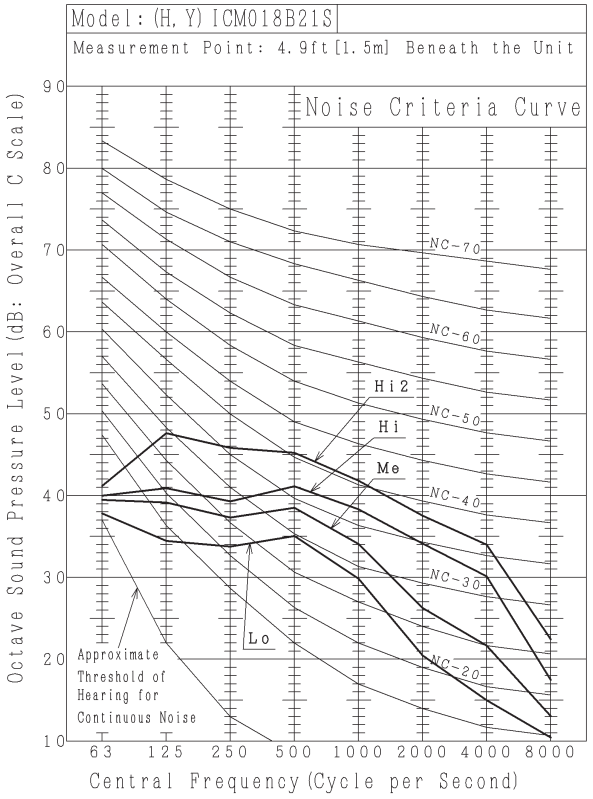
NOTE:
Power supply voltage should be satisfied with the following.
Supply Voltage: Rated Voltage within ±10%
Starting Voltage: Rated Voltage within -15%
Operating Voltage: Rated Voltage within ±10%

### 3.1.10 Sound Data



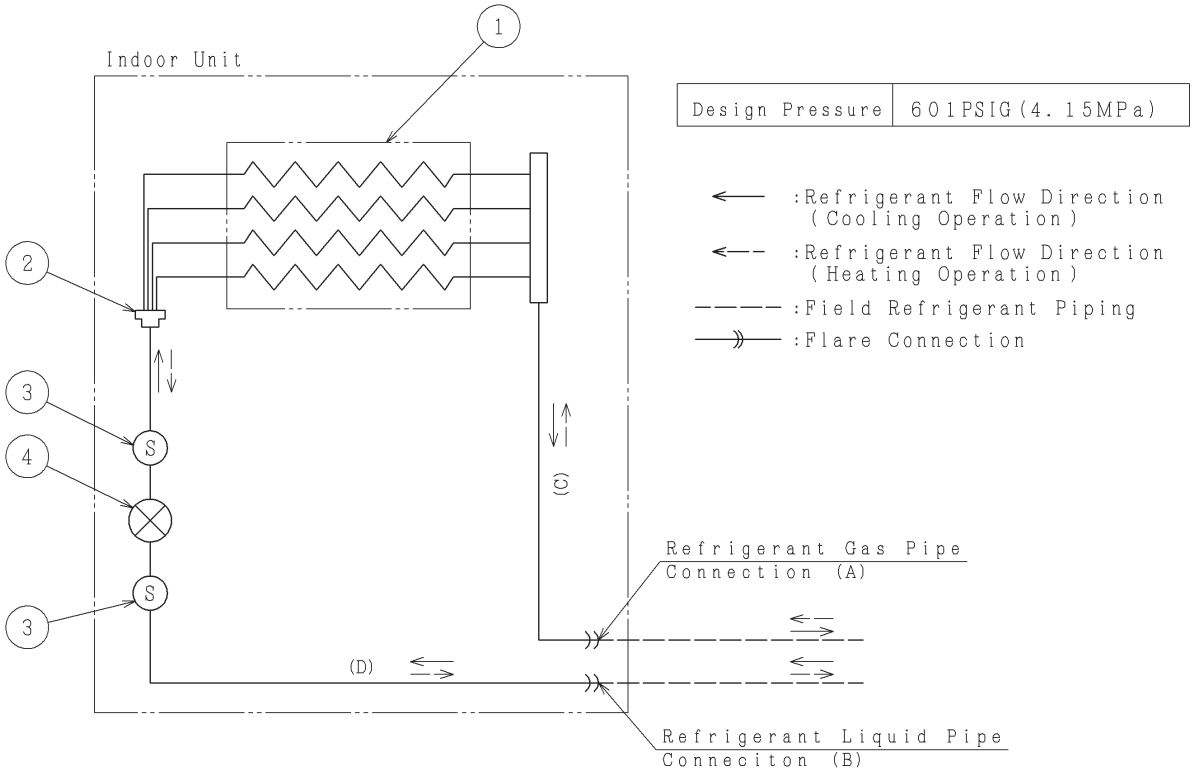




NOTE:
Operation sound is equivalent to an anechoic chamber (free space).
Noise level will be increased by the surrounding noise and echoes.

## 3.1.11 Control System

### 3.1.11.1 Refrigerant System

Models: (H,Y)ICM008B21S, (H,Y)ICM012B21S, (H,Y)ICM015B21S and (H,Y)ICM018B21S




| Mark | Part Name |
|---|---|
| 1 | Heat Exchanger |
| 2 | Distributor |
| 3 | Strainer |
| 4 | Electronic Expansion Valve |

Unit: inch (mm)

| Model | Distributor | (A) Gas Pipe Connection | (B) Liquid Pipe Connection | (C) (OD×T) | (D) (OD×T) |
|---|---|---|---|---|---|
| (H,Y)ICM008B21S | 7 Pass | ϕ1/2 (12.70) | ϕ1/4 (6.35) | ϕ1/2×t0.031 (12.7×0.8) | ϕ1/2×t0.031 (12.7×0.8) |
| (H,Y)ICM012B21S | 7 Pass | ϕ1/2 (12.70) | ϕ1/4 (6.35) | ϕ1/2×t0.031 (12.7×0.8) | ϕ1/2×t0.031 (12.7×0.8) |
| (H,Y)ICM015B21S | 7 Pass | ϕ1/2 (12.70) | ϕ1/4 (6.35) | ϕ1/2×t0.031 (12.7×0.8) | ϕ1/2×t0.031 (12.7×0.8) |
| (H,Y)ICM018B21S | 7 Pass | ϕ5/8 (15.88) | ϕ3/8 (9.52) | ϕ5/8×t0.039 (15.88×1.0) | ϕ1/2×t0.031 (12.7×0.8) |

3.1.11.2 Standard Operation Sequence

■ Cooling Operation

The sequence may be different depending on the outdoor unit model to be connected. Refer to the section on outdoor units for details.

■ Dry Operation

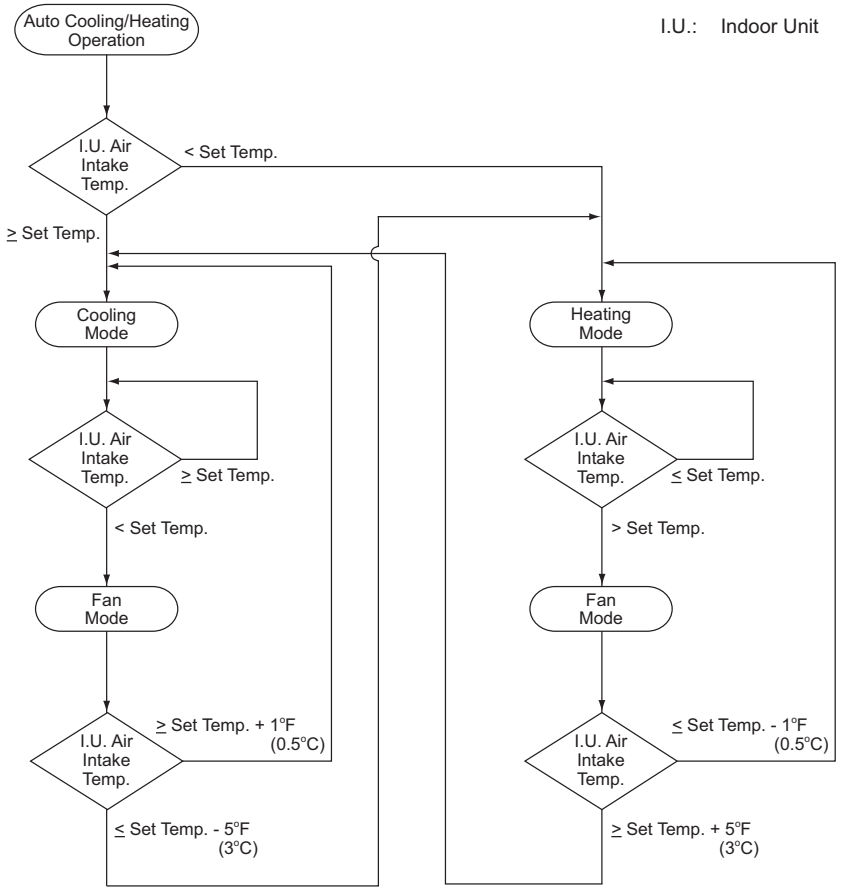
The sequence may be different depending on the outdoor unit model to be connected. Refer to the section on outdoor units for details.

■ Heating Operation

The sequence may be different depending on the outdoor unit model to be connected. Refer to the section on outdoor units for details.

■ Automatic Cooling and Heating Operation

It is applicable only for a heat recovery system.



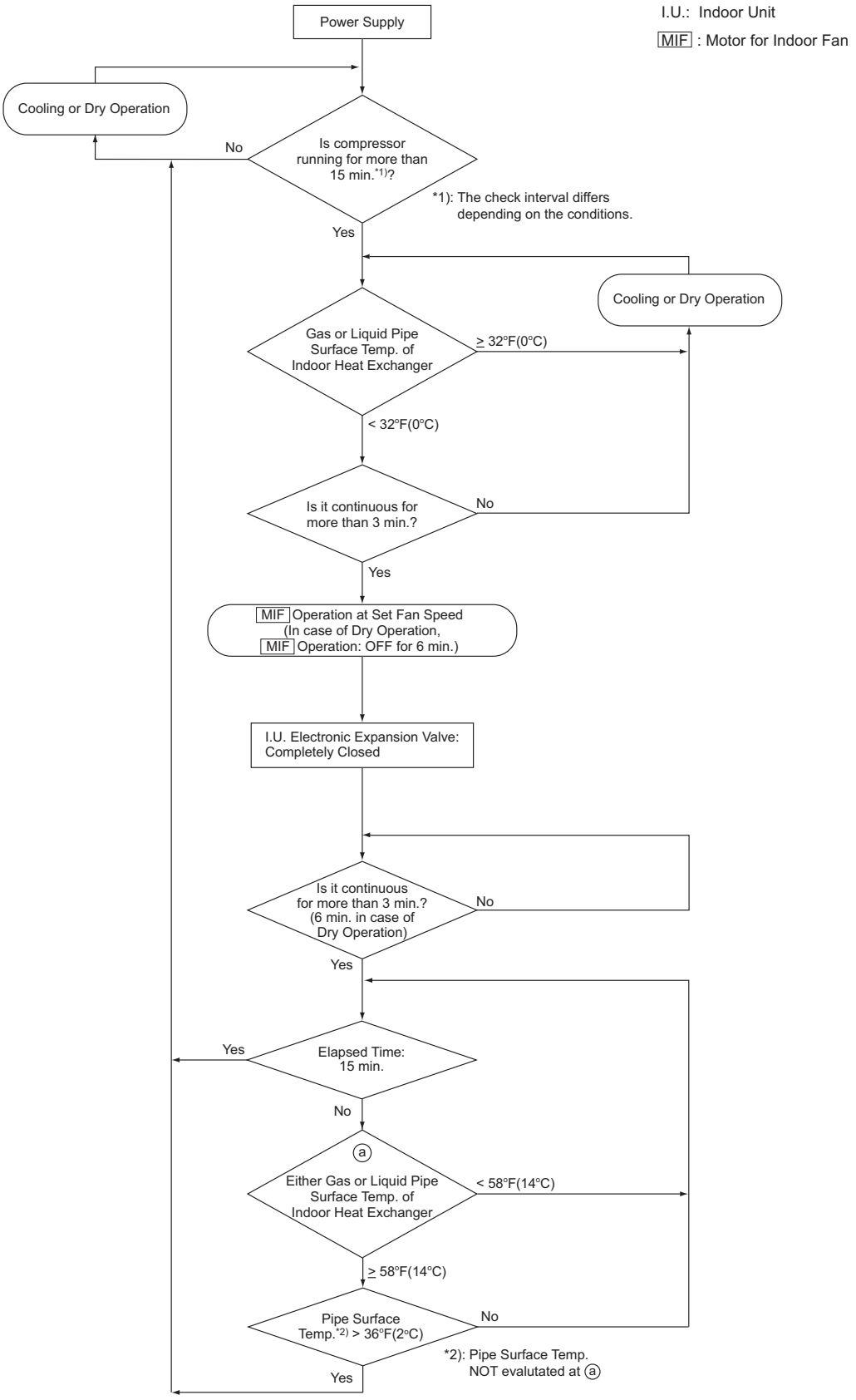

NOTE:

I.U fan operates continuously when in Cooling, Heating and Fan Mode.

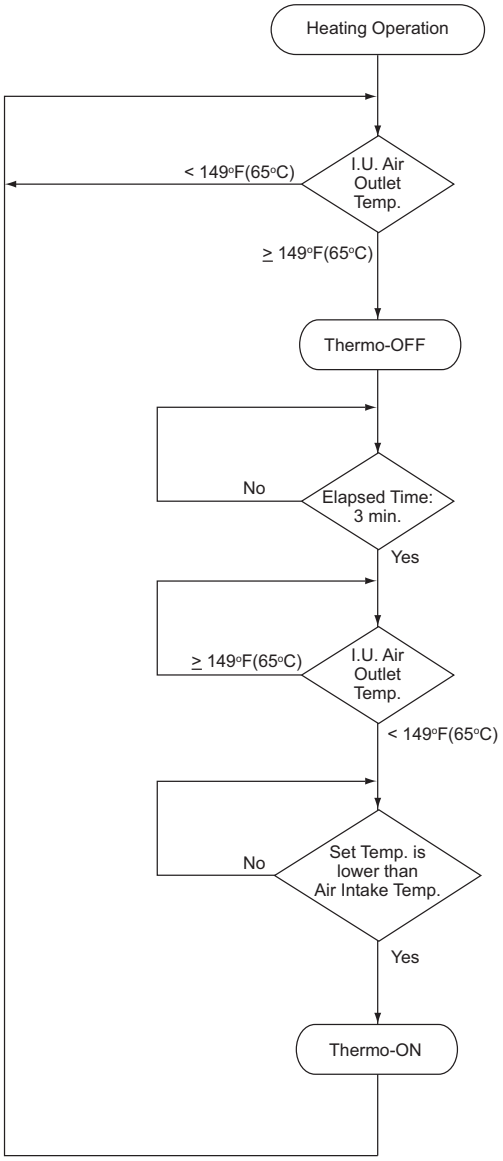
■ Defrosting Operation

The sequence may be different depending on the outdoor unit model to be connected. Refer to the section on outdoor units for details.

■ Freezing Protection Control during Cooling or Dry Operation



■ Prevention Control for Excessively High Outlet Air Temperature (High Outlet Air Temperature Heat Lockout)




Thermo-ON/OFF Control for Indoor Unit

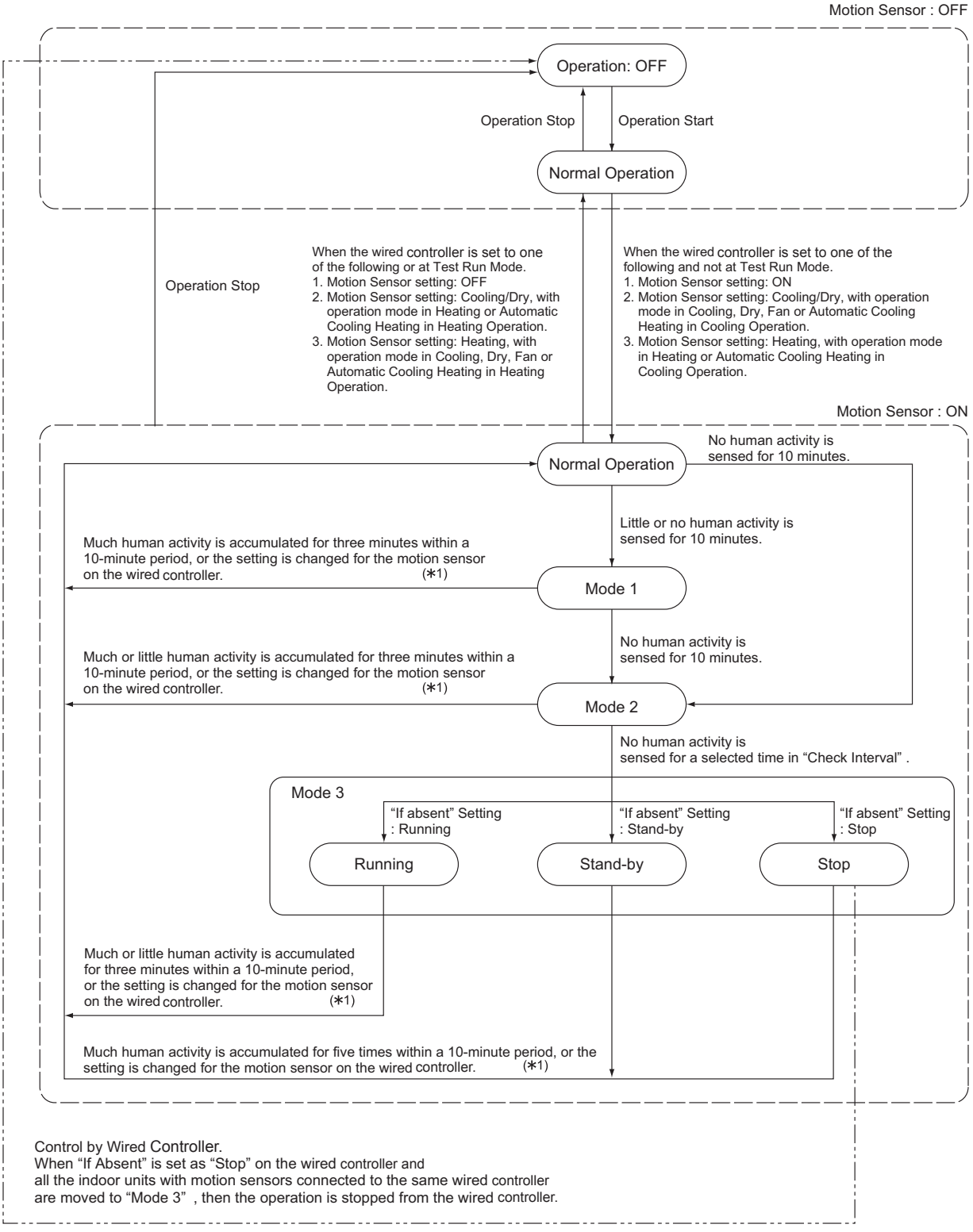
NOTE:

Thermo-ON: The outdoor unit and some indoor units are running.
Thermo-OFF: The outdoor unit and some indoor units stay on, but don't run.

■ Activating Protections

The sequence may be different depending on the outdoor unit model to be connected. Refer to the section on outdoor units for details.

■ Control for Motion Sensor (with Decorative Panel P-AP56NAM)




(*1) Motion sensor settings on the wired controller are “Sensor”, “If Absent”, “Check Interval” and “Simultaneous Operation / Individual Operation”.

The amount of human activity is according to the following information detected by the motion sensor.

None: No Human Activity (Absent)

Small: Little Human Activity

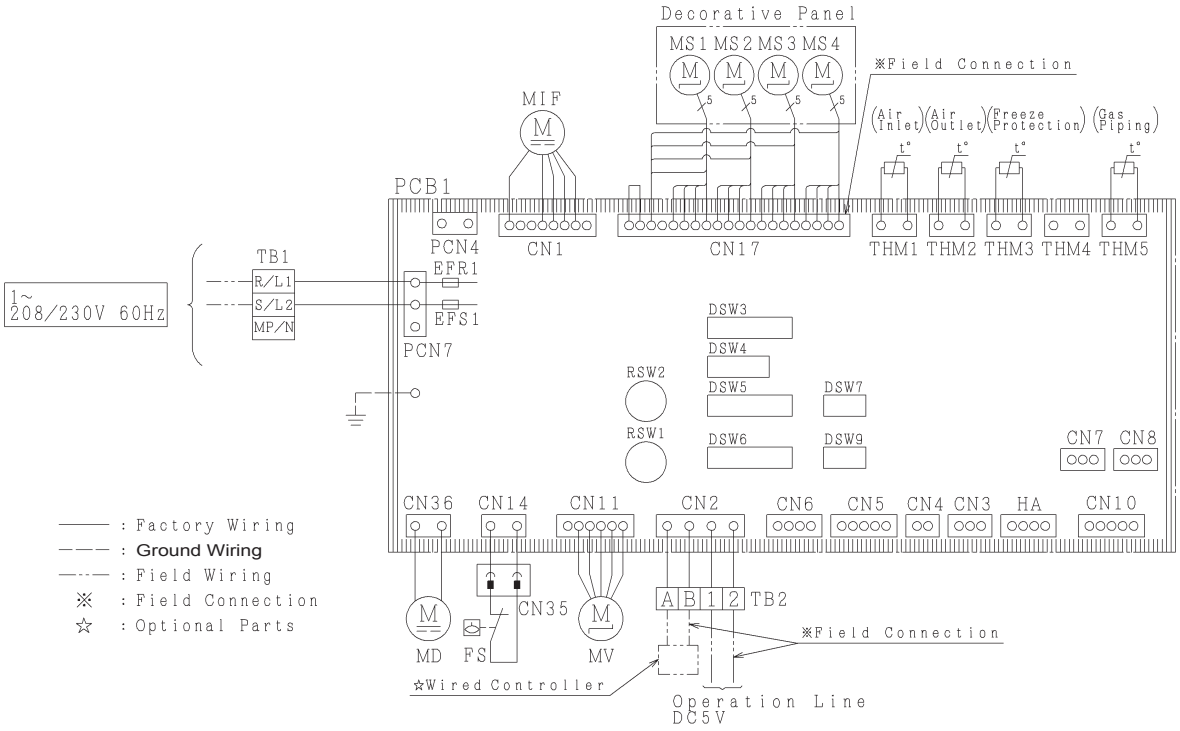
Large: Much Human Activity

3.1.11.3 Safety and Control Device Setting

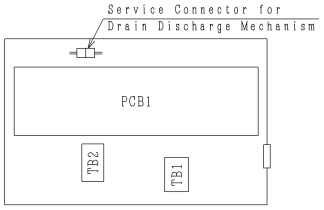
| Model | | | (H,Y)ICM008B21S<br>(H,Y)ICM012B21S<br>(H,Y)ICM015B21S<br>(H,Y)ICM018B21S |
|---|---|---|---|
| For Evaporator Fan Motor | | | |
| Thermostat | Cut-Out | °F<br>(°C) | –<br>– |
| | Cut-In | °F<br>(°C) | –<br>– |
| Chip Ceramic PTC Thermistor | | °F<br>(°C) | 212 $^{+7}_{-}$<br>(100 $^{+4}_{-}$) |
| For Control Circuit Fuse Capacity | | A | 5 |

### 3.1.11.4 Wiring Diagram

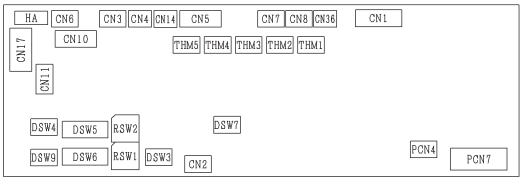
Models: (H,Y)ICM008B21S,(H,Y)ICM012B21S, (H,Y)ICM015B21S and (H,Y)ICM018B21S
with Decorative Panel P-AP56NAM




Electrical Control Box of Indoor Unit




Printed Circuit Board




Note:
1. All the field wiring and equipment must comply with local codes.

| Mark | Name |
|---|---|
| CN3 | Optional Connector (For Signal Input) |
| CN7, 8 | Optional Connector (For Signal Output) |
| CN10 | Optional Connector (For Motion Sensor) |
| DSW3, 4, 7, 9 | DIP Switch for Setting |
| EFR1, EFS1 | Fuse |
| MIF | Motor for Indoor Fan |
| MS | Motor for Automatic Swing Louver |
| MV | Electronic Expansion Valve |
| PCB1 | Printed Circuit Board |
| RSW1 | Rotary Switch for Unit No. Setting (Ones Digit) |
| DSW6 | DIP Switch for Unit No. Setting (Tens Digit) |
| RSW2 | Rotary Switch for Refrigerant Cycle No. Setting (Ones Digit) |
| DSW5 | DIP Switch for Refrigerant Cycle No. Setting (Tens Digit) |
| TB1, 2 | Terminal Block |
| THM1~3, 5 | Thermistor |
| THM4 | Optional Connector (For Remote Temperature Sensor) |
| CN4~6, HA, PCN4 | Reserved Connector on PCB |

## 3.2 Ceiling Suspended Type

### 3.2.1 Unit Nomenclature

Model Descriptions

Example

H I CS 015 B 2 1 S

Nomenclature Description

| | |
|---|---|
| H = Hitachi Brand<br>Y = York Brand | H |
| Indoor Unit | I |
| Indoor Unit Type<br>CS = Ceiling Suspended Type | CS |
| Capacity (MBH) | 015 |
| Refrigerant Type<br>B = R410A | B |
| Power Supply<br>2 = 208/230Volts - 1Phase - 60Hz | 2 |
| 1 = 1st Generation | 1 |
| S = Standard Type | S |

### 3.2.2 Line-up

| Type | | Capacity | | Model |
|---|---|---|---|---|
| | | RT | MBH | |
| Indoor Unit | Ceiling Suspended | 1.3 | 15 | (H,Y)ICS015B21S |
| | | 2.0 | 24 | (H,Y)ICS024B21S |
| | | 2.5 | 30 | (H,Y)ICS030B21S |
| | | 3.0 | 36 | (H,Y)ICS036B21S |

## 3.2.3 General Data

| Indoor Unit Type | | Ceiling Suspended Type | | | |
|---|---|---|---|---|---|
| Model | | (H,Y)ICS015B21S | (H,Y)ICS024B21S | (H,Y)ICS030B21S | (H,Y)ICS036B21S |
| Indoor Unit Power Supply | | AC 1Phase, 208/230V, 60Hz | | | |
| Nominal Cooling Capacity *1 | Btu/h | 15,000 | 24,000 | 30,000 | 36,000 |
| | (kW) | (4.4) | (7.0) | (8.8) | (10.5) |
| Nominal Heating Capacity *1 | Btu/h | 17,000 | 27,000 | 34,000 | 40,000 |
| | (kW) | (5.0) | (7.9) | (10.0) | (11.7) |
| Sound Pressure Level *2 (Overall A Scale) | dB | 38-35-31-28 | 43-40-36-31 | 44-42-37-32 | 48-45-41-35 |
| Outer Dimensions | | | | | |
| Height | in. (mm) | 9-1/4 (235) | 9-1/4 (235) | 9-1/4 (235) | 9-1/4 (235) |
| Width | in. (mm) | 37-13/16 (960) | 50 (1270) | 62-3/16 (1580) | 62-3/16 (1580) |
| Depth | in. (mm) | 27-3/16 (690) | 27-3/16 (690) | 27-3/16 (690) | 27-3/16 (690) |
| Net Weight | lbs (kg) | 59 (27) | 77 (35) | 90 (41) | 90 (41) |
| Refrigerant | | R410A | | | |
| Indoor Fan | | | | | |
| Air Flow Rate (Hi2-Hi-Me-Lo) | cfm | 530-459-388-318 | 847-741-635-512 | 1059-935-777-600 | 1236-1094-900-706 |
| | ($m^3$/min) | (15-13-11-9) | (24-21-18-14.5) | (30-26.5-22-17) | (35-31-25.5-20) |
| External Pressure Airflow | in.W.G | 0.0 | 0.0 | 0.0 | 0.0 |
| | (Pa) | (0) | (0) | (0) | (0) |
| Motor Nominal Output | W | 50 | 80 | 160 | 160 |
| Connections | | | | | |
| Refrigerant Piping | | Flare-Nut Connection (with Flare Nuts) | | | |
| Liquid Line | in. (mm) | 1/4 (6.35) | 3/8 (9.52) | 3/8 (9.52) | 3/8 (9.52) |
| Gas Line | in. (mm) | 1/2 (12.70) | 5/8 (15.88) | 5/8 (15.88) | 5/8 (15.88) |
| Condensate Drain | | VP25 | VP25 | VP25 | VP25 |
| OD | in. (mm) | 1-1/4 (32) | 1-1/4 (32) | 1-1/4 (32) | 1-1/4 (32) |
| ID | in. (mm) | 31/32 (25) | 31/32 (25) | 31/32 (25) | 31/32 (25) |

NOTES:

*1. Nominal capacity is based on combinations within the VRF system and the following conditions:

Cooling Operation Conditions

Indoor Air Inlet Temperature: 80°F DB (26.7°C DB)
67°F WB (19.4°C WB)

Outdoor Air Inlet Temperature: 95°F DB (35.0°C DB)

Heating Operation Conditions

Indoor Air Inlet Temperature: 70°F DB (21.1°C DB)

Outdoor Air Inlet Temperature: 47°F DB (8.3°C DB)
43°F WB (6.1°C WB)

Piping Length: 24 ft. 7-3/16 in. (7.5m)

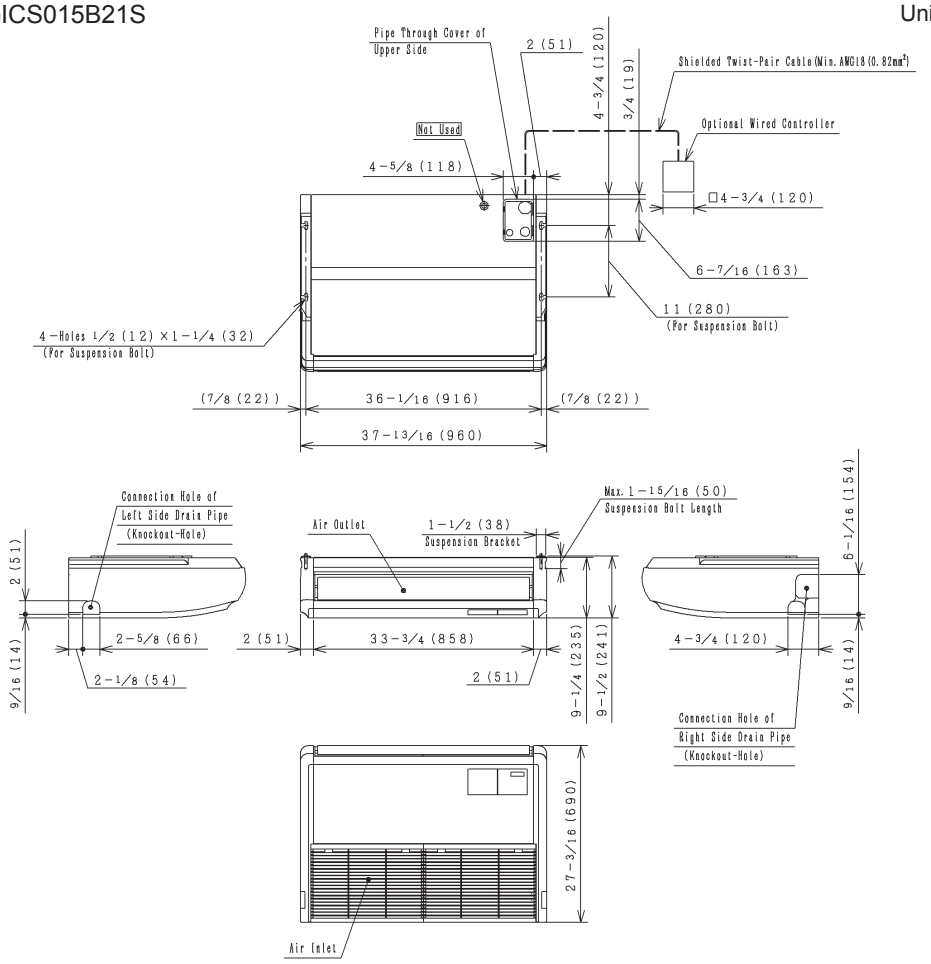
Piping Lift: 0 ft. (0m)

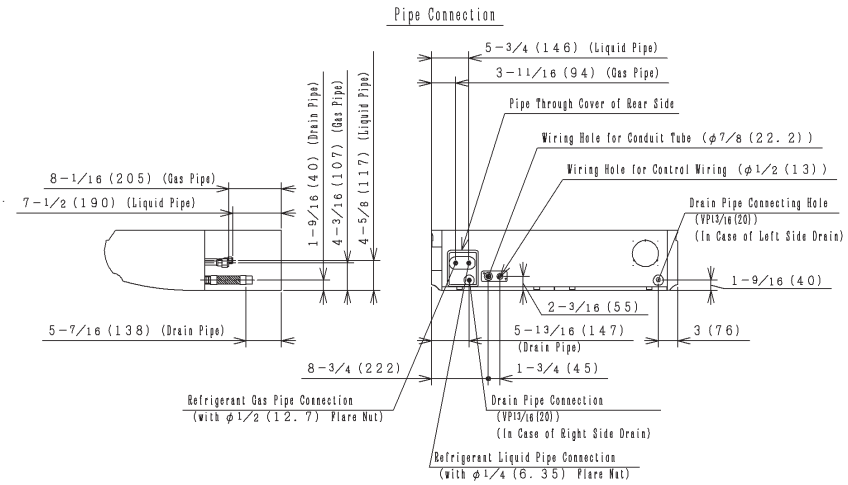
*2. Sound pressure level is based on following conditions.
4.9 ft. (1.5m) beneath the unit.
The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration in the field.

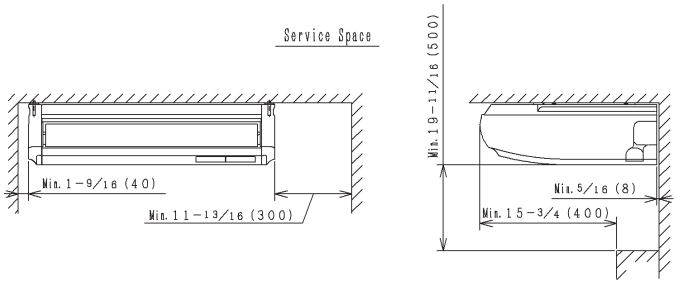
### 3.2.4 Dimensional Data

Model: (H,Y)ICS015B21S

Unit: inch (mm)

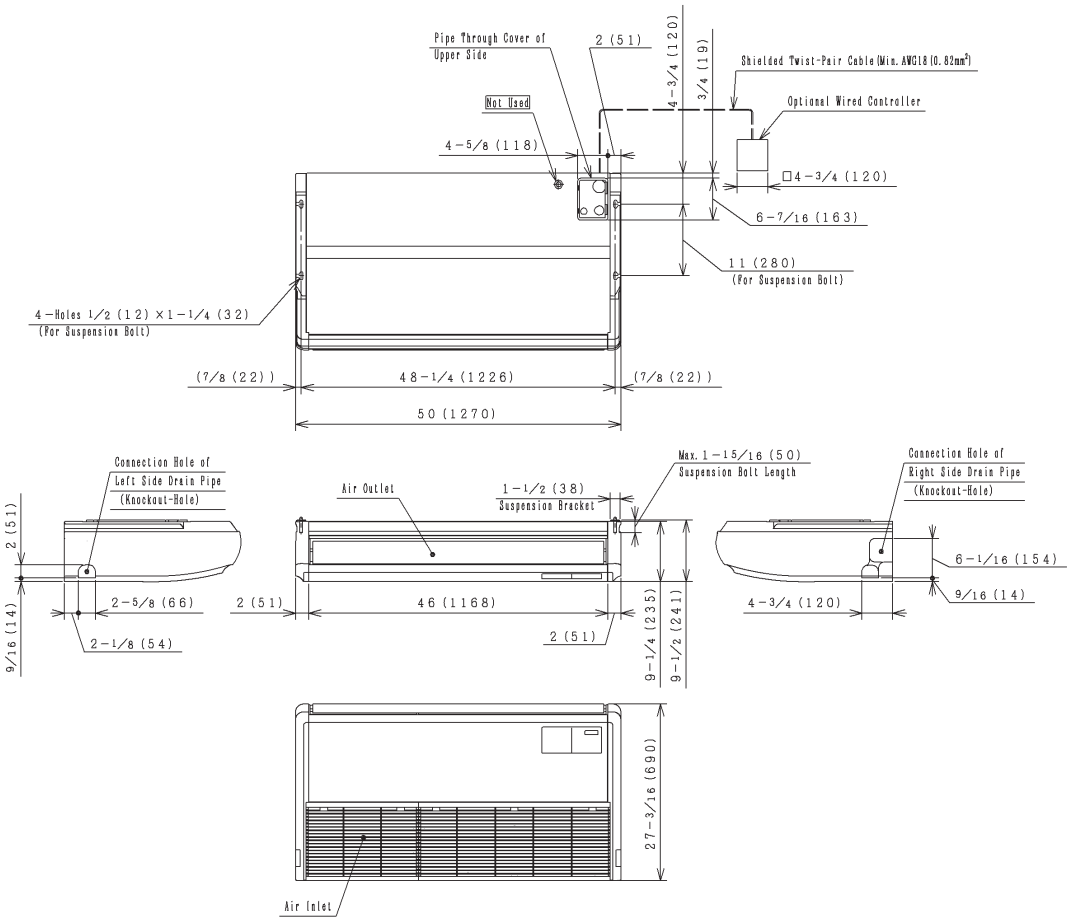


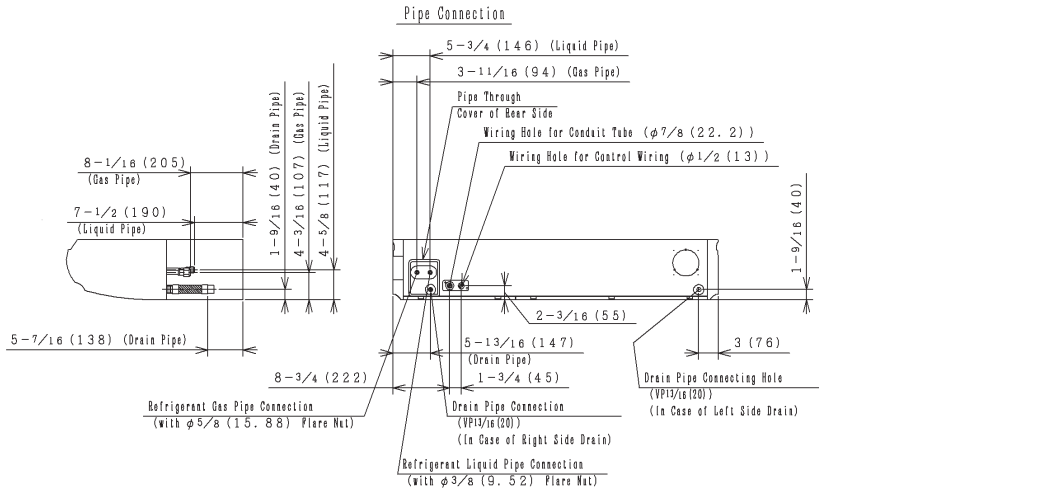



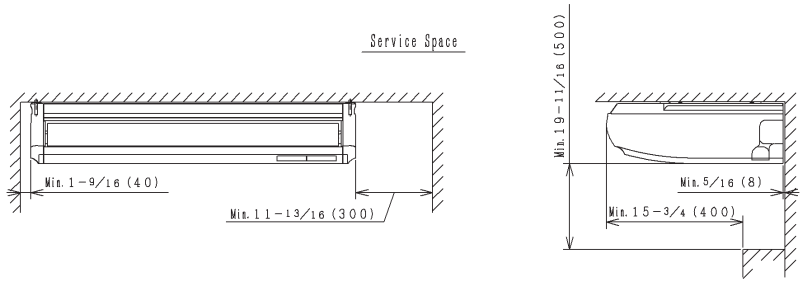



Model: (H,Y)ICS024B21S

Unit: inch (mm)

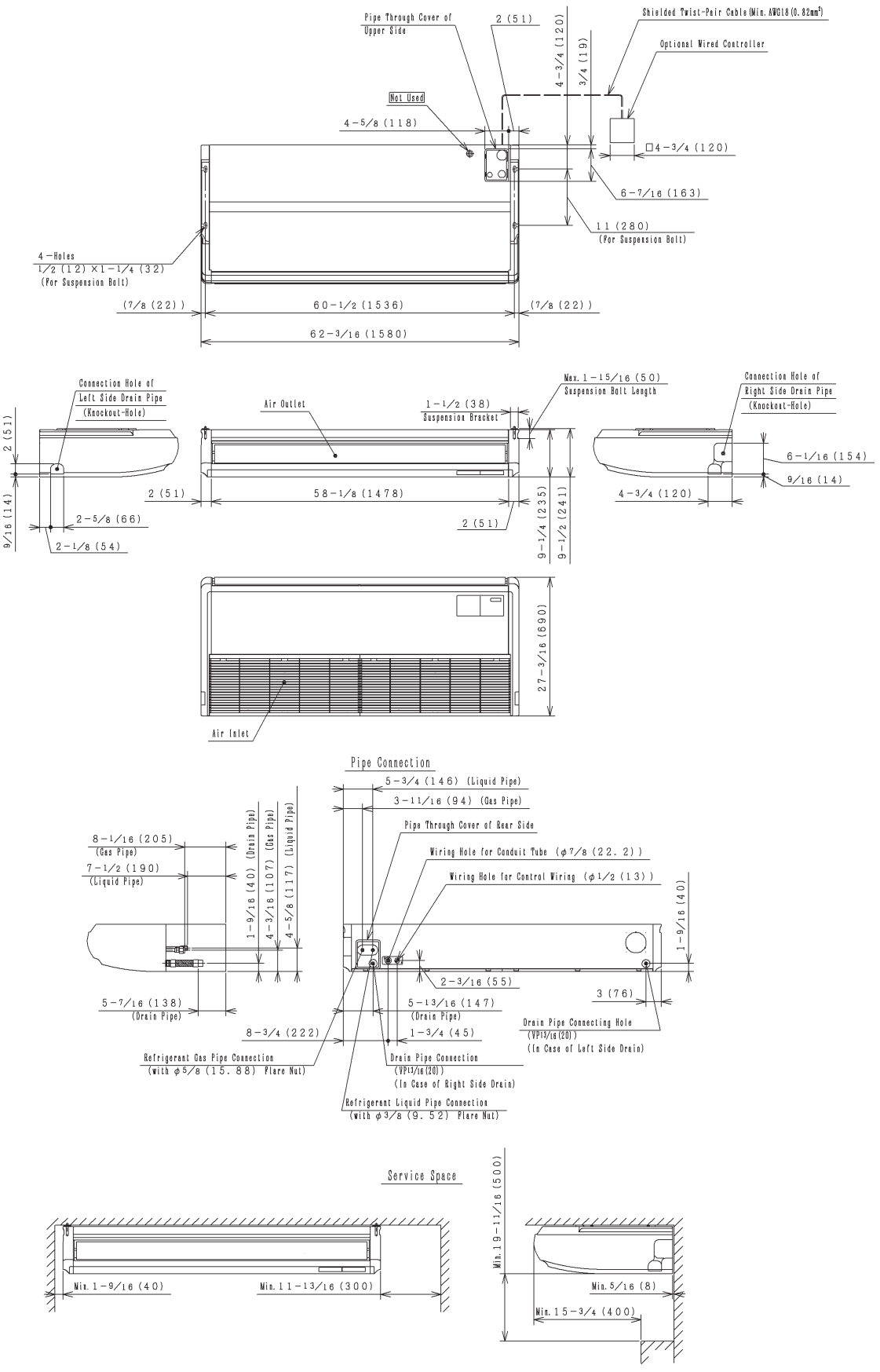


Models: (H,Y)ICS030B21S and (H,Y)ICS036B21S

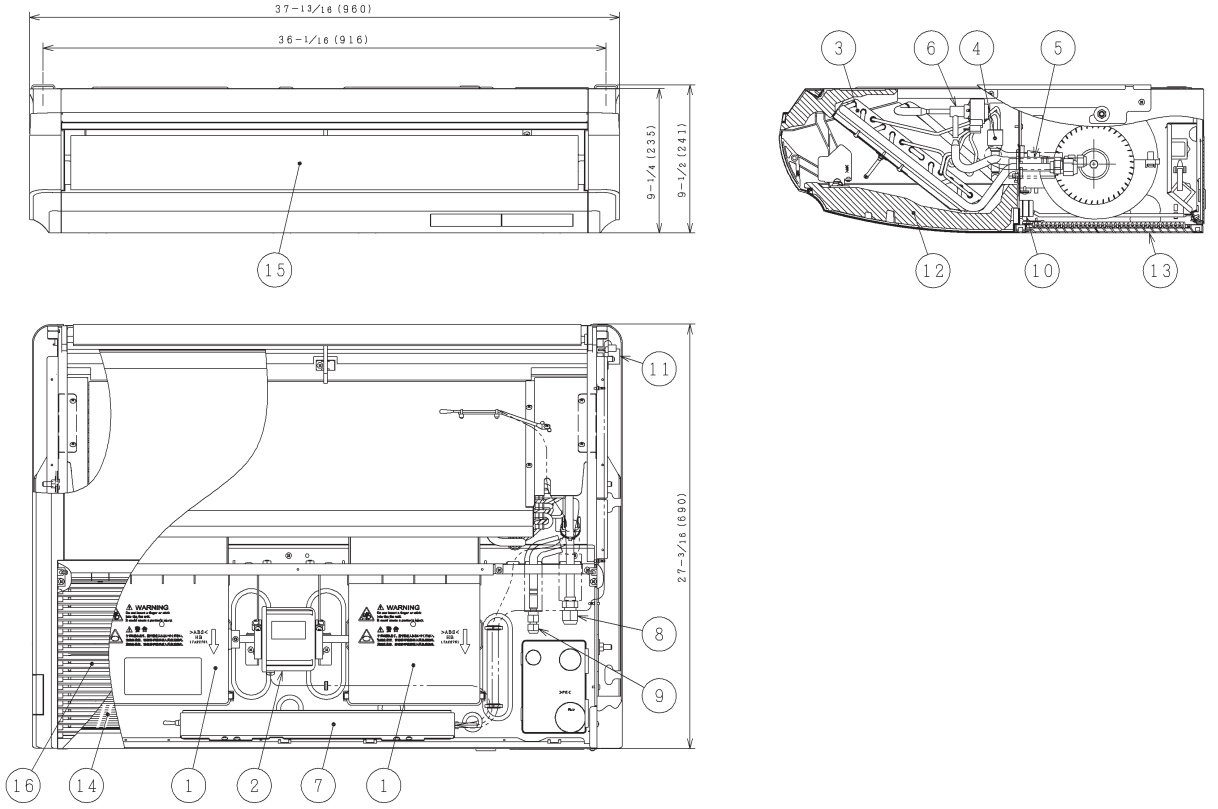
Unit: inch (mm)



### 3.2.5 Structure

Model: (H,Y)ICS015B21S

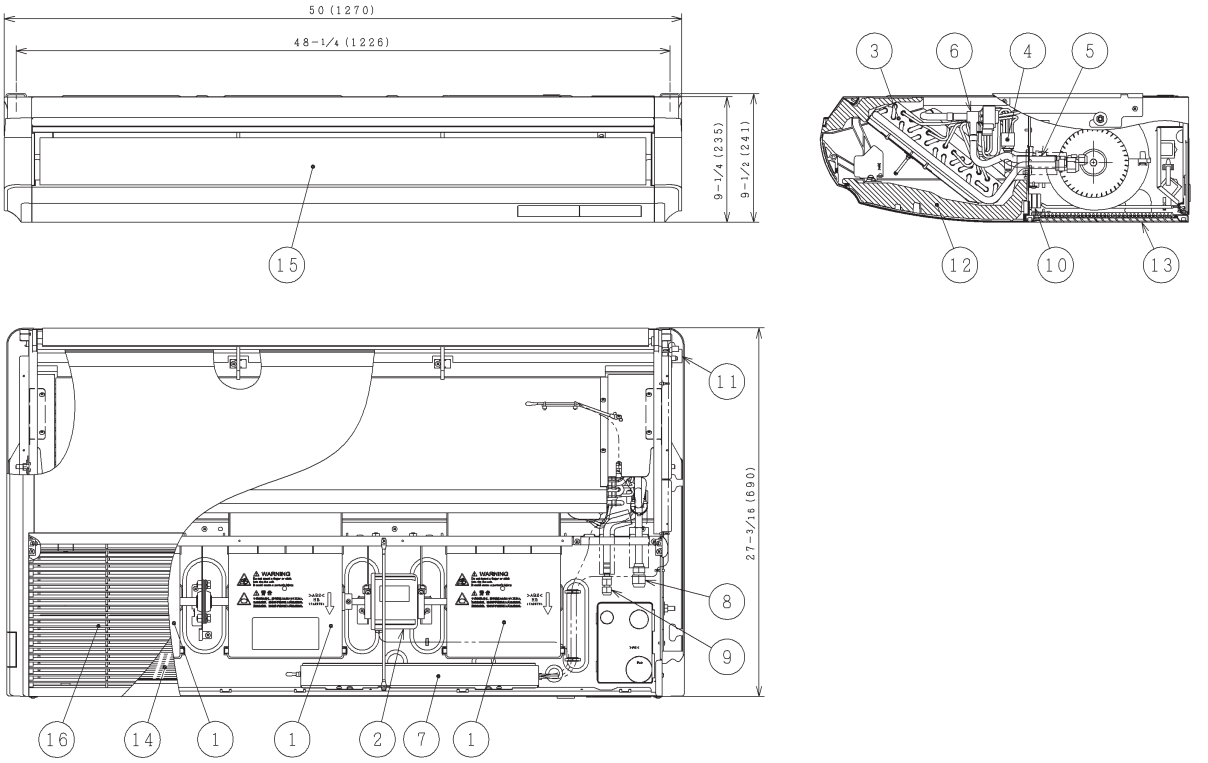
Unit: inch (mm)




| No. | Part Name | Remarks |
|---|---|---|
| 1 | Fan | |
| 2 | Fan Motor | |
| 3 | Heat Exchanger | |
| 4 | Distributor | |
| 5 | Strainer | |
| 6 | Electronic Expansion Valve | |
| 7 | Electrical Control Box | |
| 8 | Refrigerant Gas Pipe Connection | with ϕ1/2(12.7) Flare Nut |
| 9 | Refrigerant Liquid Pipe Connection | with ϕ1/4(6.35) Flare Nut |
| 10 | Drain Pipe | PVC, ID ϕ13/16(20) |
| 11 | Motor for Auto Swing | |
| 12 | Drain Pan | |
| 13 | Air Inlet Grille | |
| 14 | Air Filter | |
| 15 | Air Outlet | |
| 16 | Air Inlet | |

Model: (H,Y)ICS024B21S

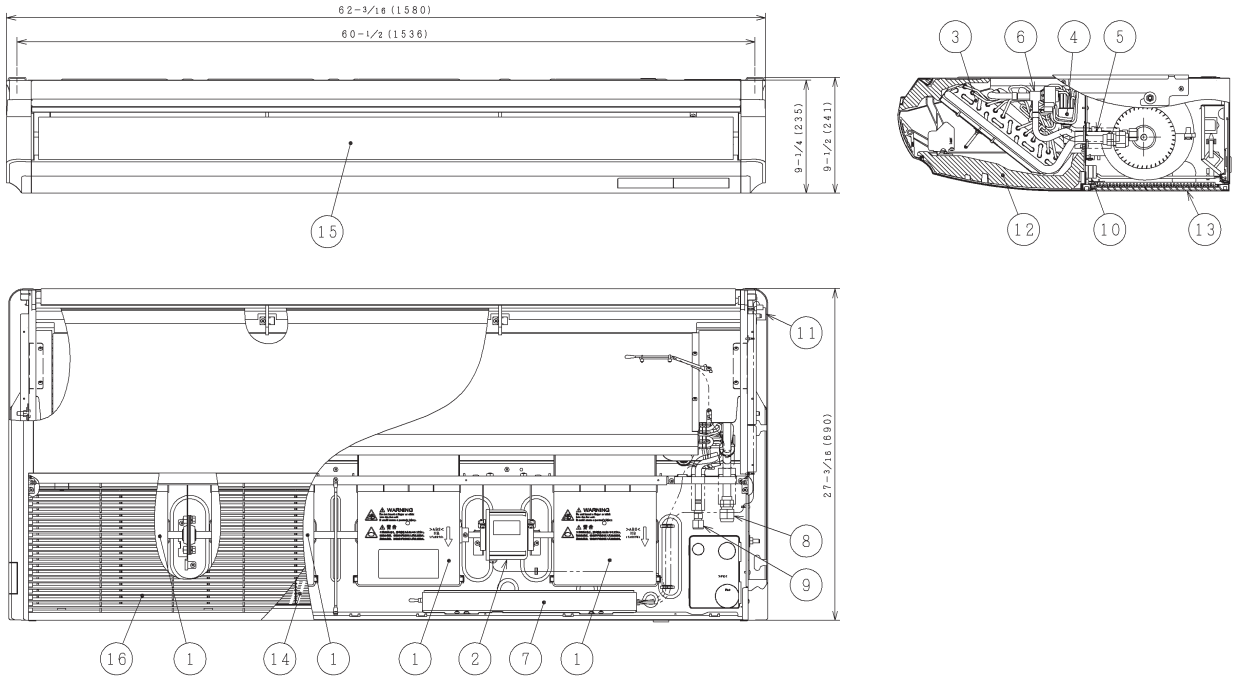
Unit: inch (mm)




| No. | Part Name | Remarks |
|---|---|---|
| 1 | Fan | |
| 2 | Fan Motor | |
| 3 | Heat Exchanger | |
| 4 | Distributor | |
| 5 | Strainer | |
| 6 | Electronic Expansion Valve | |
| 7 | Electrical Control Box | |
| 8 | Refrigerant Gas Pipe Connection | with ϕ5/8(15.88) Flare Nut |
| 9 | Refrigerant Liquid Pipe Connection | with ϕ3/8(9.52) Flare Nut |
| 10 | Drain Pipe | PVC, ID ϕ13/16(20) |
| 11 | Motor for Auto Swing | |
| 12 | Drain Pan | |
| 13 | Air Inlet Grille | |
| 14 | Air Filter | |
| 15 | Air Outlet | |
| 16 | Air Inlet | |

Models: (H,Y)ICS030B21S and (H,Y)ICS036B21S

Unit: inch (mm)




| No. | Part Name | Remarks |
|---|---|---|
| 1 | Fan | |
| 2 | Fan Motor | |
| 3 | Heat Exchanger | |
| 4 | Distributor | |
| 5 | Strainer | |
| 6 | Electronic Expansion Valve | |
| 7 | Electrical Control Box | |
| 8 | Refrigerant Gas Pipe Connection | with ϕ5/8(15.88) Flare Nut |
| 9 | Refrigerant Liquid Pipe Connection | with ϕ3/8(9.52) Flare Nut |
| 10 | Drain Pipe | PVC, ID ϕ13/16(20) |
| 11 | Motor for Auto Swing | |
| 12 | Drain Pan | |
| 13 | Air Inlet Grille | |
| 14 | Air Filter | |
| 15 | Air Outlet | |
| 16 | Air Inlet | |

## 3.2.6 Component Data

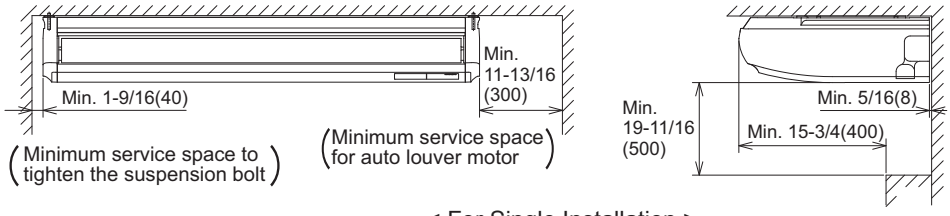
### Indoor Heat Exchanger and Fan

| Model | | (H,Y)ICS015B21S | (H,Y)ICS024B21S | (H,Y)ICS030B21S | (H,Y)ICS036B21S |
|---|---|---|---|---|---|
| Heat Exchanger Type | | Multi-Pass Cross Finned Tube | | | |
| Tube Material | | Copper Tube | | | |
| Outer Diameter | φin (mm) | 1/4 (7.0) | 1/4 (7.0) | 1/4 (7.0) | 1/4 (7.0) |
| Rows | | 3 | 3 | 3 | 3 |
| Number of Tube/Coil | | 20 | 20 | 20 | 20 |
| Fin Material | | Aluminum | | | |
| Pitch | in (mm) | 1/16 (1.8) | 1/16 (1.8) | 1/16 (1.6) | 1/16 (1.6) |
| Maximum Operating Pressure | psi (MPa) | 601 (4.15) | 601 (4.15) | 601 (4.15) | 601 (4.15) |
| Total Face Area | $ft^2$ ($m^2$) | 35.8 (10.9) | 50.6 (15.4) | 74.2 (22.6) | 74.2 (22.6) |
| Number of Coil/Unit | | 1 | 1 | 1 | 1 |
| Indoor Fan | | Sirrocco Fan | | | |
| Number/Unit | | 1 | 1 | 1 | 1 |
| Outer Diameter | φin (mm) | 6-1/8 (155) | 6-1/8 (155) | 6-1/8 (155) | 6-1/8 (155) |
| Nominal Air Flow (Hi2-Hi-Me-Lo) | cfm ($m^3$/min) | 530-459-388-318 (15-13-11-9) | 741-653-547-441 (21-18.5-15.5-12.5) | 1059-935-777-600 (30-26.5-22-17) | 1236-1094-900-706 (35-31-25.5-20) |
| Indoor Fan Motor | | Drip-Proof Type Enclosure | | | |
| Starting Method | | DC Motor | | | |
| Nominal Output | W | 50 | 80 | 160 | 160 |
| Quantity | | 1 | 1 | 1 | 1 |
| Insulation Class | | E | E | E | E |

### 3.2.7 Operation Space

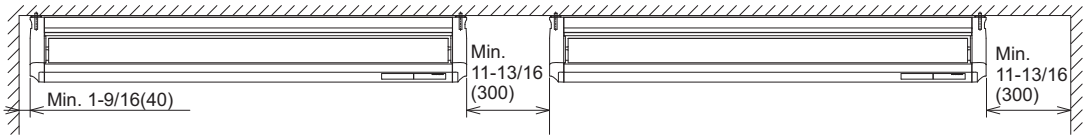
Models: (H,Y)ICS015B21S, (H,Y)ICS018B21S, (H,Y)ICS030B21S and (H,Y)ICS036B21S

Unit: inch (mm)




< For Single Installation >

Unit: inch (mm)




< For Parallel Installation >

NOTE:
If there is a cornice on the ceiling, measure the dimension from the front or undersurface.

### 3.2.8 Sensible Heat Factor (SHF)

| Model | SHF *1 |
|---|---|
| (H,Y)ICS015B21S | 0.82 |
| (H,Y)ICS024B21S | 0.82 |
| (H,Y)ICS030B21S | 0.84 |
| (H,Y)ICS036B21S | 0.85 |

NOTE:
1. SHF is based on combinations within the VRF system and the following conditions:

Cooling Operation Conditions
Indoor Air Inlet Temperature: 80°F DB (26.7°C DB)
67°F WB (19.4°C WB)
Outdoor Air Inlet Temperature: 95°F DB (35.0°C DB)

Piping Length: 24 ft. 7-3/16 in. (7.5m)
Piping Lift: 0 ft. (0m)

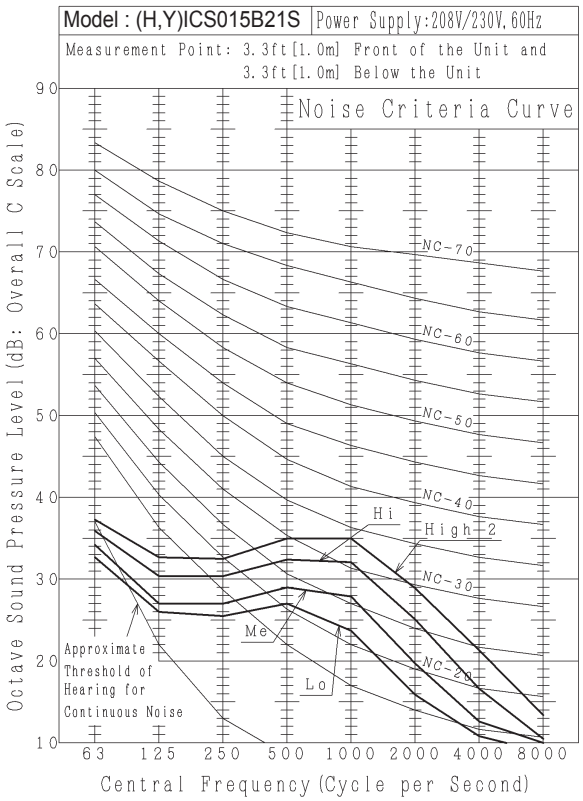
### 3.2.9 Electrical Data

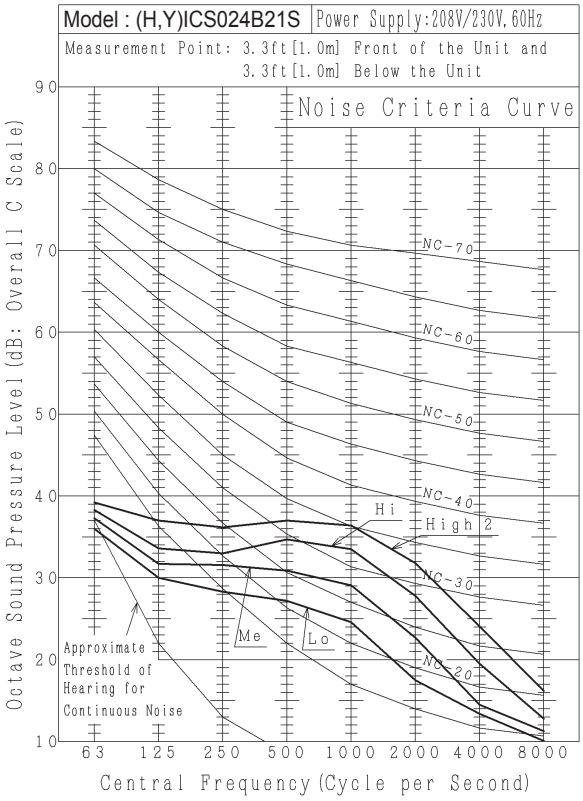
| Model | Unit Main Power | | | Applicable Voltage | | Power Supply | | Indoor Fan Motor | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | VOL | PH | HZ | Maximum | Minimum | MCA | MFA | OPT | FLA |
| (H,Y)ICS015B21S | 208/230 | 1 | 60 | 253 | 188 | 0.6 | 15 | 0.050 | 0.47 |
| (H,Y)ICS024B21S | | | | | | 0.9 | 15 | 0.080 | 0.72 |
| (H,Y)ICS030B21S | | | | | | 1.2 | 15 | 0.160 | 0.94 |
| (H,Y)ICS036B21S | | | | | | 2.0 | 15 | 0.160 | 1.60 |

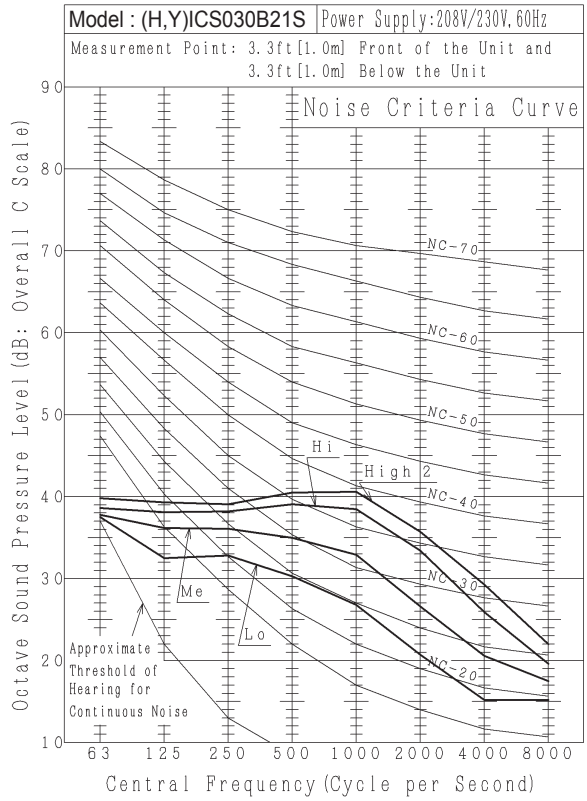
VOL: Rated Unit Power Supply Voltage (V)
PH: Phase
HZ: Frequency (Hz)
MCA: Minimum Circuit Ampacity (A)
MFA: Maximum Fuse Ampacity (A)
OPT: Rated Motor Output (kW)
FLA: Full Load Ampacity (A)

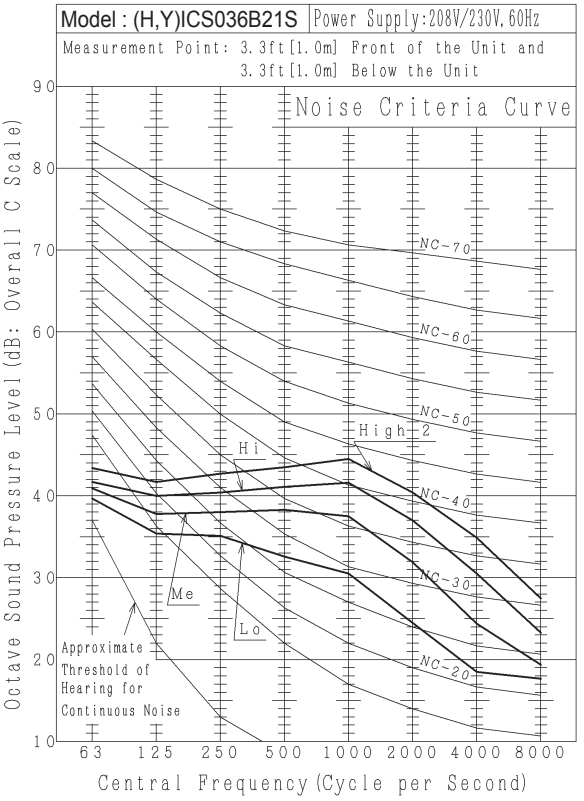
NOTE:
Power supply voltage should be satisfied with the following.
Supply Voltage: Rated Voltage within ±10%
Starting Voltage: Rated Voltage within -15%
Operating Voltage: Rated Voltage within ±10%

## 3.2.10 Sound Data



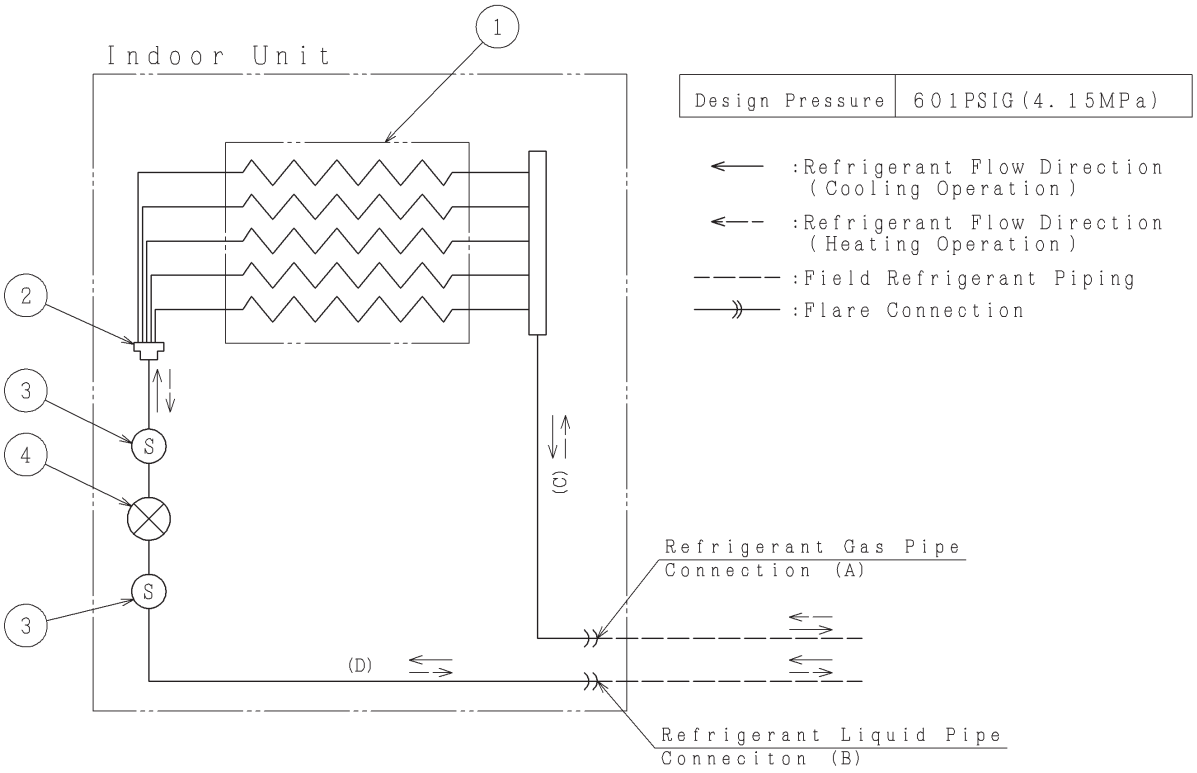




NOTE:
Operation sound is equivalent to an anechoic chamber (free space).
Noise level will be increased by the surrounding noise and echoes.

## 3.2.11 Control System

### 3.2.11.1 Refrigerant System

Models: (H,Y)ICS015B21S, (H,Y)ICS018B21S, (H,Y)ICS030B21S and (H,Y)ICS036B21S




| Mark | Part Name |
|---|---|
| 1 | Heat Exchanger |
| 2 | Distributor |
| 3 | Strainer |
| 4 | Electronic Expansion Valve |

Unit: inch (mm)

| Model | Distributor | (A) Gas Pipe Connection | (B) Liquid Pipe Connection | (C) (OD×T) | (D) (OD×T) |
|---|---|---|---|---|---|
| (H,Y)ICS015B21S | 7 Pass | ϕ1/2 (12.70) | ϕ1/4 (6.35) | ϕ1/2×t0.031 (12.7×0.8) | ϕ1/2×t0.031 (12.7×0.8) |
| (H,Y)ICS024B21S | 9 Pass | ϕ5/8 (15.88) | ϕ3/8 (9.52) | ϕ5/8×t0.039 (15.88×1.0) | ϕ1/2×t0.031 (12.7×0.8) |
| (H,Y)ICS030B21S | 9 Pass | ϕ5/8 (15.88) | ϕ3/8 (9.52) | ϕ5/8×t0.039 (15.88×1.0) | ϕ1/2×t0.031 (12.7×0.8) |
| (H,Y)ICS036B21S | 9 Pass | ϕ5/8 (15.88) | ϕ3/8 (9.52) | ϕ5/8×t0.039 (15.88×1.0) | ϕ1/2×t0.031 (12.7×0.8) |

3.2.11.2 Standard Operation Sequence

■ Cooling Operation

The sequence may be different depending on the outdoor unit model to be connected. Refer to the section on outdoor units for details.

■ Dry Operation

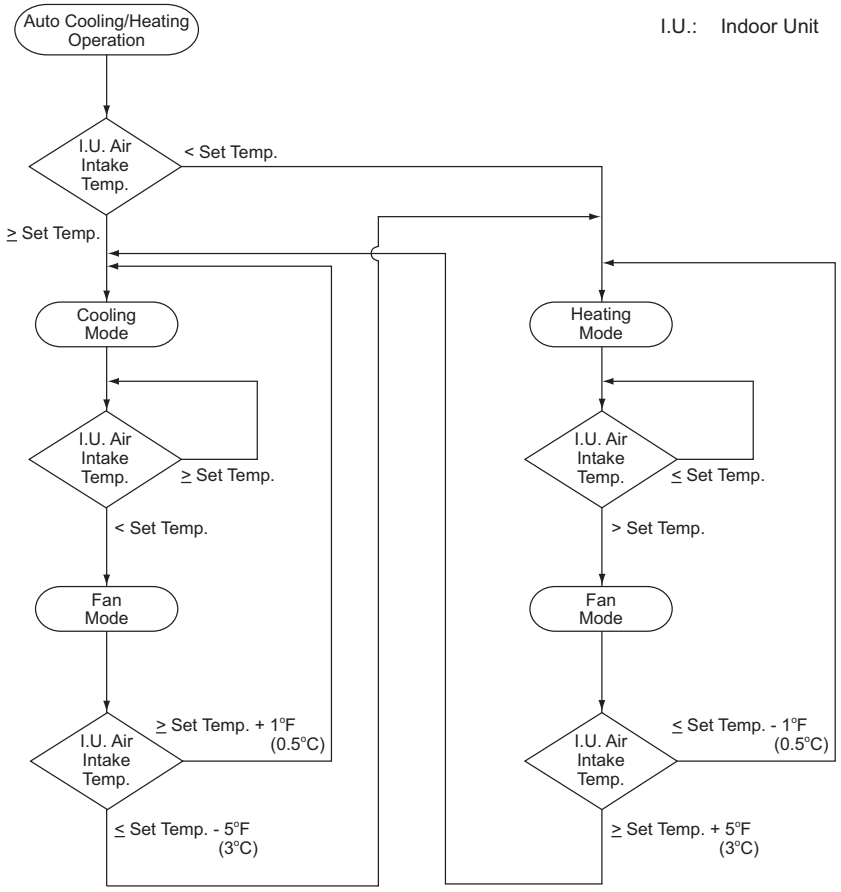
The sequence may be different depending on the outdoor unit model to be connected. Refer to the section on outdoor units for details.

■ Heating Operation

The sequence may be different depending on the outdoor unit model to be connected. Refer to the section on outdoor units for details.

■ Automatic Cooling and Heating Operation

It is applicable only for a heat recovery system.



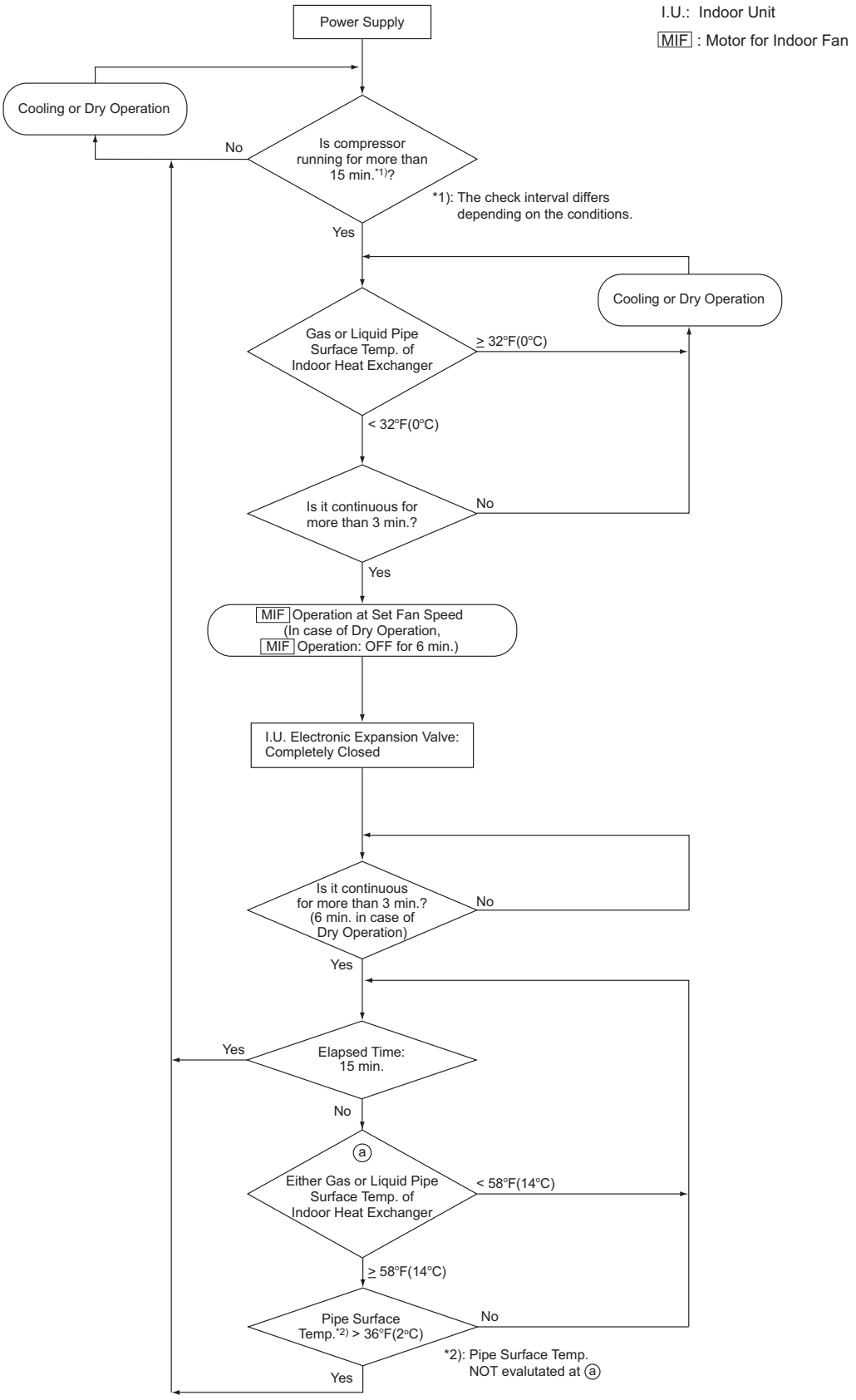

NOTE:

I.U fan operates continuously when in Cooling, Heating and Fan Mode.

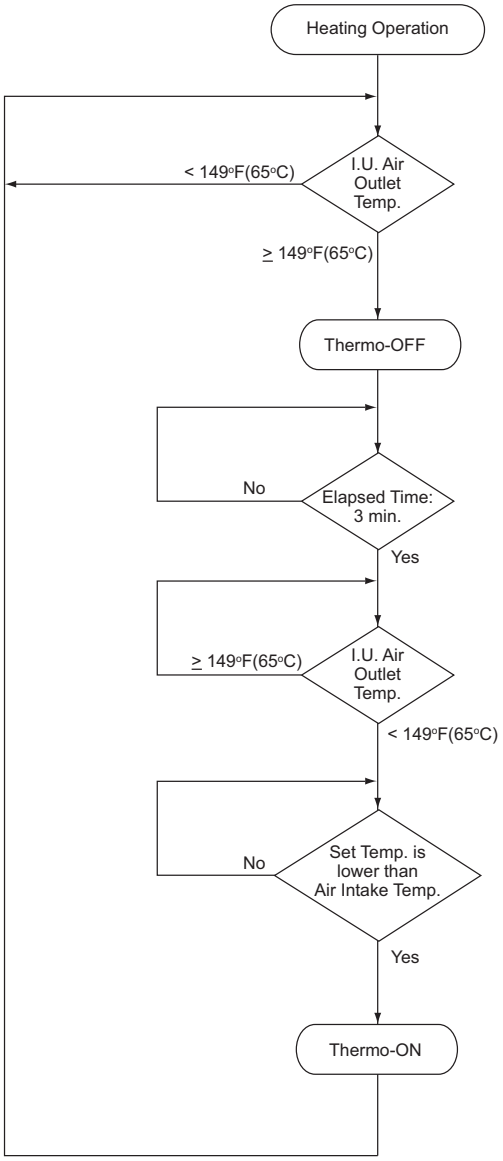
■ Defrosting Operation

The sequence may be different depending on the outdoor unit model to be connected. Refer to the section on outdoor units for details.

■ Freezing Protection Control during Cooling or Dry Operation



■ Prevention Control for Excessively High Outlet Air Temperature (High Outlet Air Temperature Heat Lockout)




Thermo-ON/OFF Control for Indoor Unit

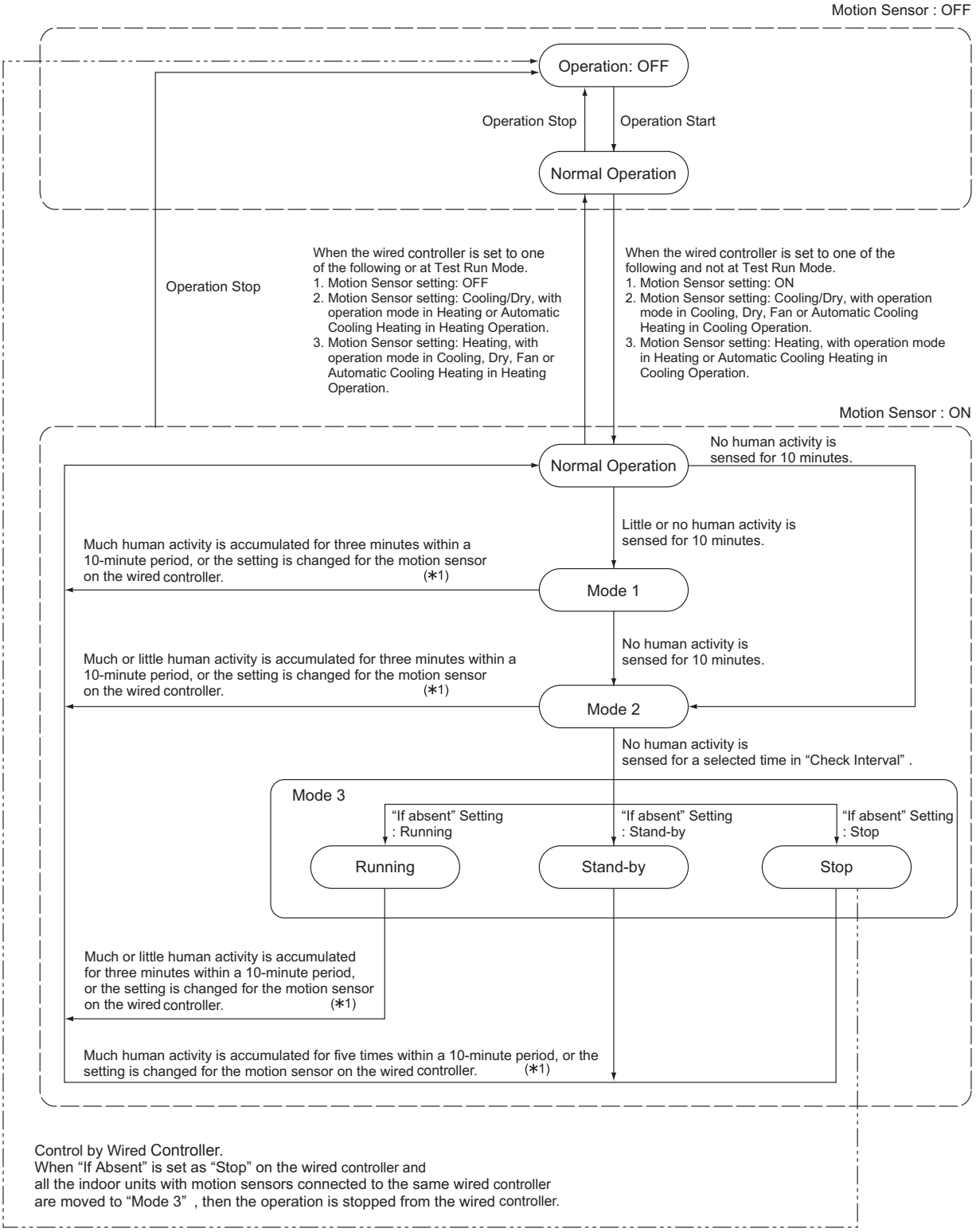
NOTE:

Thermo-ON: The outdoor unit and some indoor units are running.
Thermo-OFF: The outdoor unit and some indoor units stay on, but don't run.

■ Activating Protections

The sequence may be different depending on the outdoor unit model to be connected. Refer to the section on outdoor units for details.

■ Control for Motion Sensor




(*1) Motion sensor settings on the wired controller are “Sensor”, “If Absent”, “Check Interval” and “Simultaneous Operation / Individual Operation”.

The amount of human activity is according to the following information detected by the motion sensor.

None: No Human Activity (Absent)

Small: Little Human Activity

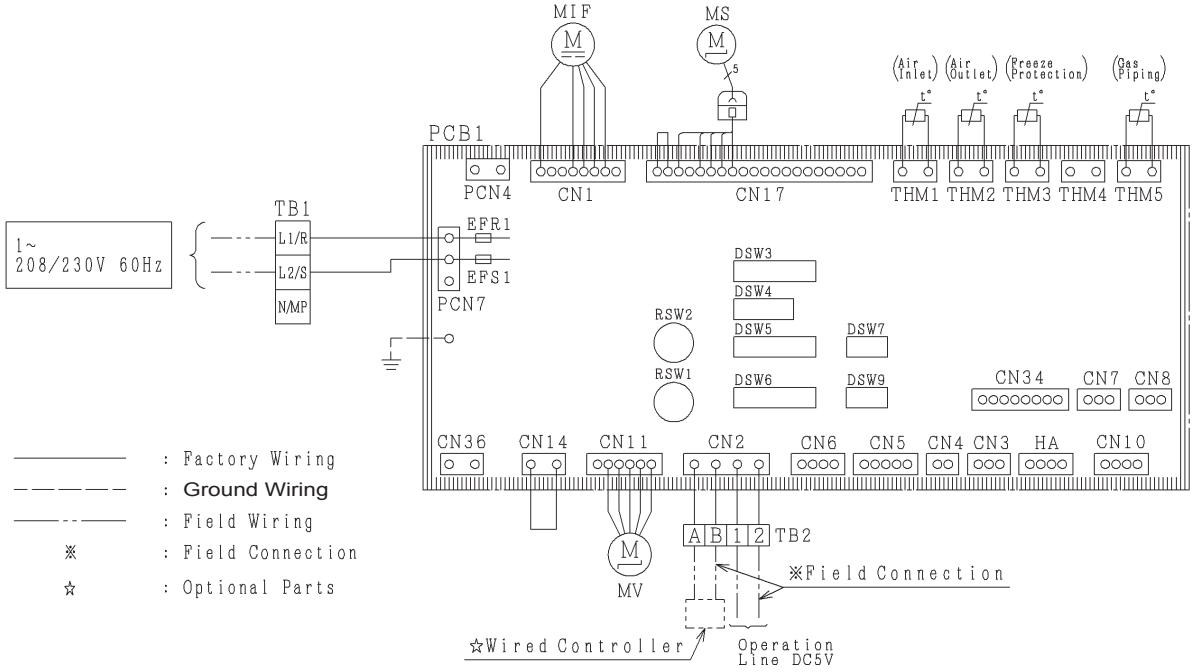
Large: Much Human Activity

3.2.11.3 Safety and Control Device Setting

| Models | | | (H,Y)ICS015B21S, (H,Y)ICS024B21S<br>(H,Y)ICS030B21S, (H,Y)ICS036B21S |
|---|---|---|---|
| For Evaporator Fan Motor | | | Automatic Reset, Non-Adjustable (each one for each motor) |
| Thermostat | Cut-Out | °F | – |
| | | (°C) | – |
| | Cut-In | °F | – |
| | | (°C) | – |
| Chip Ceramic PTC Thermistor | | °F | 212 |
| | | (°C) | (100) |
| For Control Circuit Fuse Capacity | | A | 5 |
| Freeze Protection Thermostat | Cut-Out | °F | 32 |
| | | (°C) | (0) |
| | Cut-In | °F | 51.8 |
| | | (°C) | (11) |
| Thermostat Differential | | °F | 35.6 |
| | | (°C) | (2) |

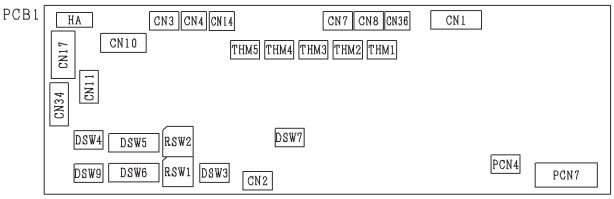
### 3.2.11.4 Wiring Diagram

Models: (H,Y)ICS015B21S, (H,Y)ICS024B21S, (H,Y)ICS030B21S and (H,Y)ICS036B21S




Electrical Control Box of Indoor Unit


Printed Circuit Board




Note:

1. All the field wiring and equipment must comply with local codes.

| Mark | Name |
|---|---|
| CN3 | Optional Connector (For Signal Input) |
| CN7, 8 | Optional Connector (For Signal Output) |
| DSW3, 4, 7, 9 | DIP Switch for Setting |
| EFR1, EFS1 | Fuse |
| MIF | Motor for Indoor Fan |
| MS | Motor for Automatic Swing Louver |
| MV | Electronic Expansion Valve |
| PCB1 | Printed Circuit Board |
| RSW1 | Rotary Switch for Unit No. Setting (Ones Digit) |
| DSW6 | DIP Switch for Unit No. Setting (Tens Digit) |
| RSW2 | Rotary Switch for Refrigerant Cycle No. Setting (Ones Digit) |
| DSW5 | Dip Switch for Refrigerant Cycle No. Setting (Tens Digit) |
| TB1, 2 | Terminal Block |
| THM1~3, 5 | Thermistor |
| THM4 | Optional Connector (For Remote Temperature Sensor) |
| CN4~6, 34, HA, PCN4 | Reserved Connector on PCB |

## 3.3 Floor Exposed and Floor Concealed Type

### 3.3.1 Unit Nomenclature

Model Descriptions

Example

H I FE 006 B 2 1 S

Nomenclature Description

| | |
|---|---|
| H = Hitachi Brand<br>Y = York Brand | H |
| Indoor Unit | I |
| Indoor Unit Type<br>FE = Floor Exposed Type<br>FC = Floor Concealed Type | FE |
| Capacity (MBH) | 006 |
| Refrigerant Type<br>B = R410A | B |
| Power Supply<br>2 = 208/230Volts - 1Phase - 60Hz | 2 |
| 1 = 1st Generation | 1 |
| S = Standard Type | S |

### 3.3.2 Line-up

| Type | | Capacity | | Model |
|---|---|---|---|---|
| | | RT | MBH | |
| Indoor Unit | Floor Exposed | 0.5 | 6 | (H,Y)IFE006B21S |
| | | 0.7 | 8 | (H,Y)IFE008B21S |
| | | 1.0 | 12 | (H,Y)IFE012B21S |
| | | 1.3 | 15 | (H,Y)IFE015B21S |
| | Floor Concealed | 0.5 | 6 | (H,Y)IFC006B21S |
| | | 0.7 | 8 | (H,Y)IFC008B21S |
| | | 1.0 | 12 | (H,Y)IFC012B21S |
| | | 1.3 | 15 | (H,Y)IFC015B21S |

### 3.3.3 General Data

| Indoor Unit Type | | Floor Exposed Type | | | |
|---|---|---|---|---|---|
| Model | | (H,Y)IFE006B21S | (H,Y)IFE008B21S | (H,Y)IFE012B21S | (H,Y)IFE015B21S |
| Indoor Unit Power Supply | | AC 1Phase, 208/230V, 60Hz | | | |
| Nominal Cooling Capacity *1 | Btu/h | 6,000 | 8,000 | 12,000 | 15,000 |
| | (kW) | (1.8) | (2.3) | (3.5) | (4.4) |
| Nominal Heating Capacity *1 | Btu/h | 6,700 | 9,000 | 13,500 | 17,000 |
| | (kW) | (2.0) | (2.6) | (4.0) | (5.0) |
| Sound Pressure Level *2 (Overall A Scale) | dB | 38-35-32 | 38-35-32 | 40-37-33 | 42-39-35 |
| Outer Dimensions | | | | | |
| Height | in. (mm) | 24-13/16 (630) | 24-13/16 (630) | 24-13/16 (630) | 24-13/16 (630) |
| Width | in. (mm) | 41-1/8 (1045) | 41-1/8 (1045) | 46-1/16 (1170) | 55-7/8 (1420) |
| Depth | in. (mm) | 8-11/16 (220) | 8-11/16 (220) | 8-11/16 (220) | 8-11/16 (220) |
| Net Weight | lbs (kg) | 61 (28) | 61 (28) | 68 (31) | 79 (36) |
| Refrigerant | | R410A | | | |
| Indoor Fan | | | | | |
| Air Flow Rate (Hi-Me-Lo) | cfm | 300-247-212 | 300-247-212 | 424-353-318 | 565-494-388 |
| | ($m^3$/min) | (8.5-7-6) | (8.5-7-6) | (12-10-9) | (16-14-11) |
| External Pressure | | | | | |
| | in.W.G | 0.0 | 0.0 | 0.0 | 0.0 |
| | (Pa) | (0) | (0) | (0) | (0) |
| Motor Nominal Output | W | 20 | 20 | 28 | 45 |
| Connections | | | | | |
| Refrigerant Piping | | Flare-Nut Connection (with Flare Nuts) | | | |
| Liquid Line | in. (mm) | 1/4 (6.35) | 1/4 (6.35) | 1/4 (6.35) | 1/4 (6.35) |
| Gas Line | in. (mm) | 1/2 (12.70) | 1/2 (12.70) | 1/2 (12.70) | 1/2 (12.70) |
| Condensate Drain | | VP25 | VP25 | VP25 | VP25 |
| OD | in. (mm) | 1-1/4 (32) | 1-1/4 (32) | 1-1/4 (32) | 1-1/4 (32) |
| ID | in. (mm) | 31/32 (25) | 31/32 (25) | 31/32 (25) | 31/32 (25) |

NOTES:

*1. Nominal capacity is based on combinations within the VRF system and the following conditions:

Cooling Operation Conditions
- Indoor Air Inlet Temperature: 80°F DB (26.7°C DB)
  67°F WB (19.4°C WB)
- Outdoor Air Inlet Temperature: 95°F DB (35.0°C DB)

Heating Operation Conditions
- Indoor Air Inlet Temperature: 70°F DB (21.1°C DB)
- Outdoor Air Inlet Temperature: 47°F DB (8.3°C DB)
  43°F WB (6.1°C WB)
- Piping Length: 24 ft. 7-3/16 in. (7.5m)
- Piping Lift: 0 ft. (0m)

*2. Sound pressure level is based on following conditions.
4.9 ft. (1.5m) beneath the unit.
The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration in the field.

| Indoor Unit Type | | Floor Concealed Type | | | |
|---|---|---|---|---|---|
| Model | | (H,Y)IFC006B21S | (H,Y)IFC008B21S | (H,Y)IFC012B21S | (H,Y)IFC015B21S |
| Indoor Unit Power Supply | | AC 1Phase, 208/230V, 60Hz | | | |
| Nominal Cooling Capacity *1 | Btu/h | 6,000 | 8,000 | 12,000 | 15,000 |
| | (kW) | (1.8) | (2.3) | (3.5) | (4.4) |
| Nominal Heating Capacity *1 | Btu/h | 6,700 | 9,000 | 13,500 | 17,000 |
| | (kW) | (2.0) | (2.6) | (4.0) | (5.0) |
| Sound Pressure Level *2 (Overall A Scale) | dB | 38-35-32 | 38-35-32 | 40-37-33 | 42-39-35 |
| Outer Dimensions | | | | | |
| Height | in. (mm) | 24-7/16 (620) | 24-7/16 (620) | 24-7/16 (620) | 24-7/16 (620) |
| Width | in. (mm) | 33-3/8 (848) | 33-3/8 (848) | 38-5/16 (973) | 48-1/8 (1223) |
| Depth | in. (mm) | 8-11/16 (220) | 8-11/16 (220) | 8-11/16 (220) | 8-11/16 (220) |
| Net Weight | lbs (kg) | 52 (24) | 52 (24) | 57 (26) | 68 (31) |
| Refrigerant | | R410A | | | |
| Indoor Fan | | | | | |
| Air Flow Rate | cfm | 300-247-212 | 300-247-212 | 424-353-318 | 565-494-388 |
| (Hi-Me-Lo) | ($m^3$/min) | (8.5-7-6) | (8.5-7-6) | (12-10-9) | (16-14-11) |
| External Pressure | | | | | |
| | in.W.G | 0.0 | 0.0 | 0.0 | 0.0 |
| | (Pa) | (0) | (0) | (0) | (0) |
| Motor Nominal Output | W | 20 | 20 | 28 | 45 |
| Connections | | | | | |
| Refrigerant Piping | | Flare-Nut Connection (with Flare Nuts) | | | |
| Liquid Line | in. (mm) | 1/4 (6.35) | 1/4 (6.35) | 1/4 (6.35) | 1/4 (6.35) |
| Gas Line | in. (mm) | 1/2 (12.70) | 1/2 (12.70) | 1/2 (12.70) | 1/2 (12.70) |
| Condensate Drain | | VP25 | VP25 | VP25 | VP25 |
| OD | in. (mm) | 1-1/4 (32) | 1-1/4 (32) | 1-1/4 (32) | 1-1/4 (32) |
| ID | in. (mm) | 31/32 (25) | 31/32 (25) | 31/32 (25) | 31/32 (25) |

NOTES:

*1. Nominal capacity is based on combinations within the VRF system and the following conditions:

Cooling Operation Conditions
- Indoor Air Inlet Temperature: 80°F DB (26.7°C DB)
  67°F WB (19.4°C WB)
- Outdoor Air Inlet Temperature: 95°F DB (35.0°C DB)

Heating Operation Conditions
- Indoor Air Inlet Temperature: 70°F DB (21.1°C DB)
- Outdoor Air Inlet Temperature: 47°F DB (8.3°C DB)
  43°F WB (6.1°C WB)

Piping Length: 24 ft. 7-3/16 in. (7.5m)

Piping Lift: 0 ft. (0m)

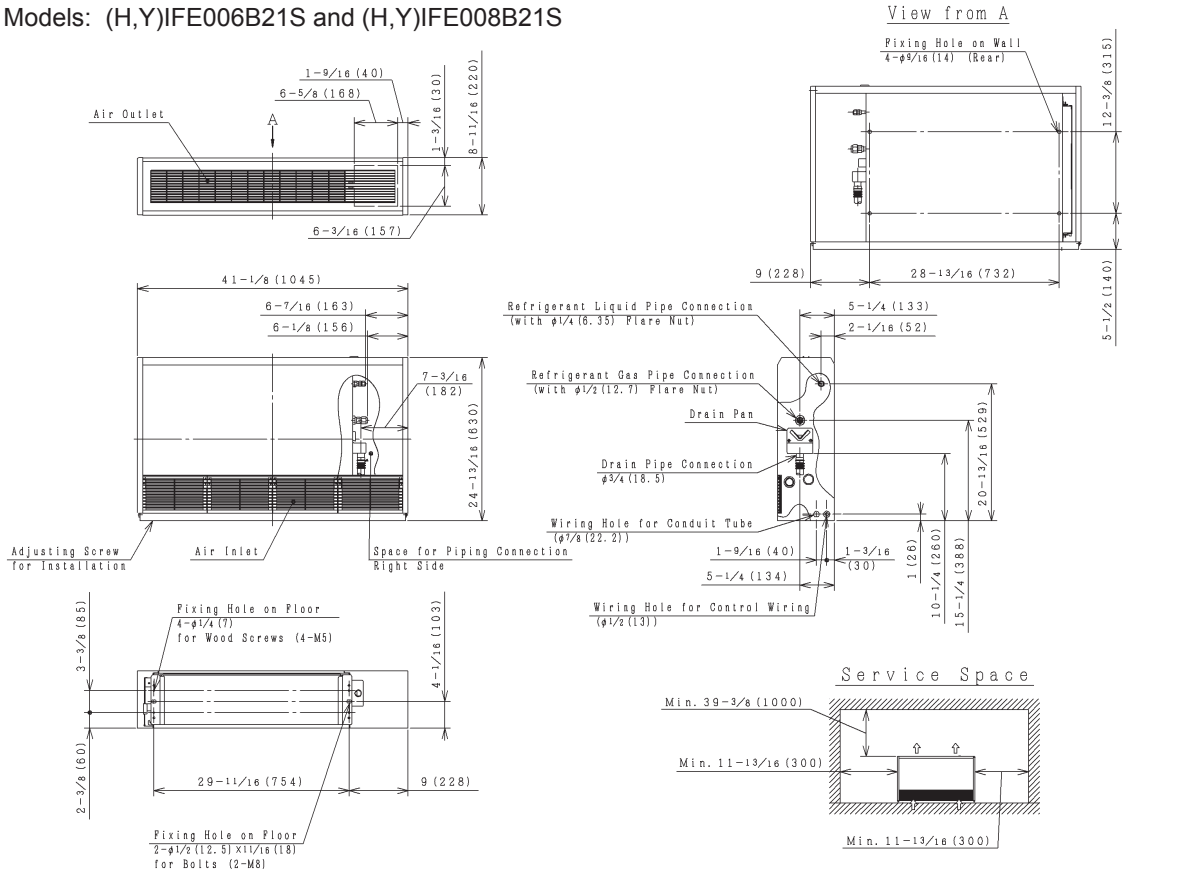
*2. Sound pressure level is based on following conditions.
4.9 ft. (1.5m) beneath the unit.
The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration in the field.

### 3.3.4 Dimensional Data

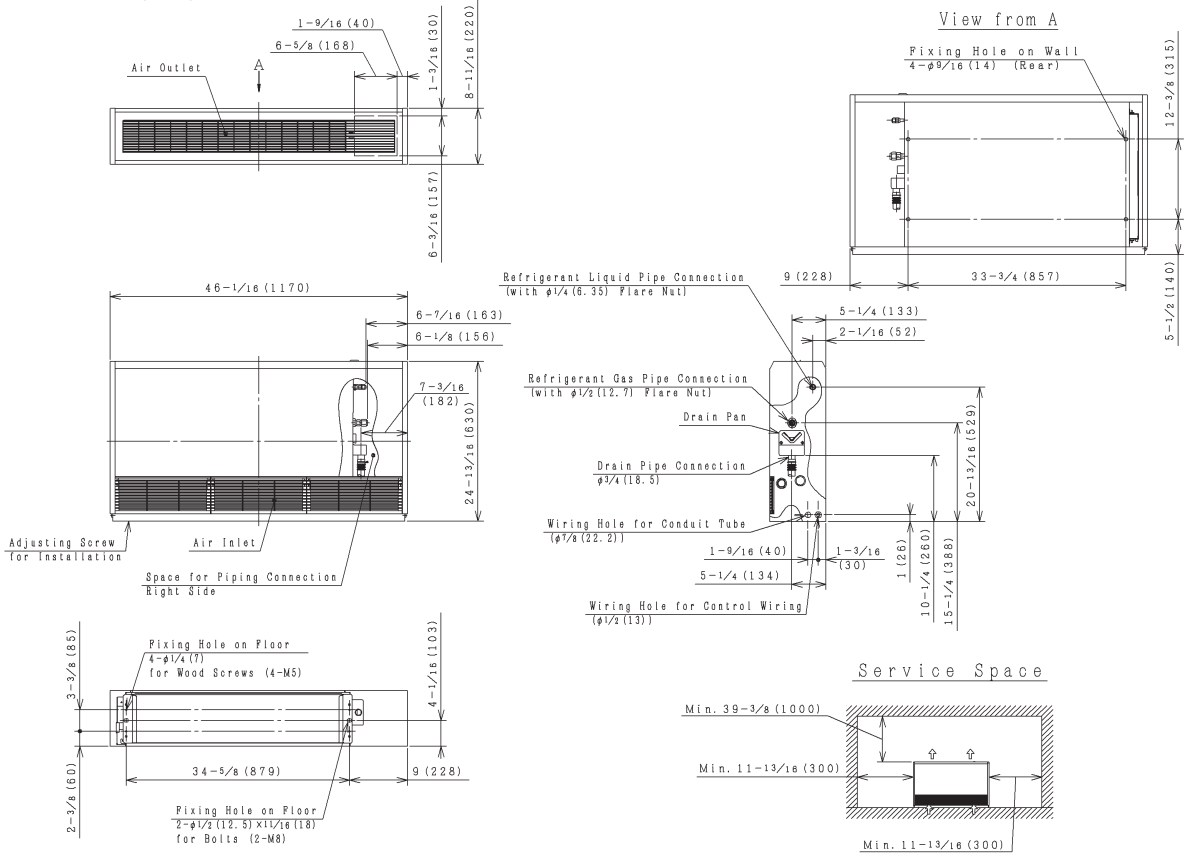
Unit: inch (mm)

- Floor Exposed Type

Models: (H,Y)IFE006B21S and (H,Y)IFE008B21S

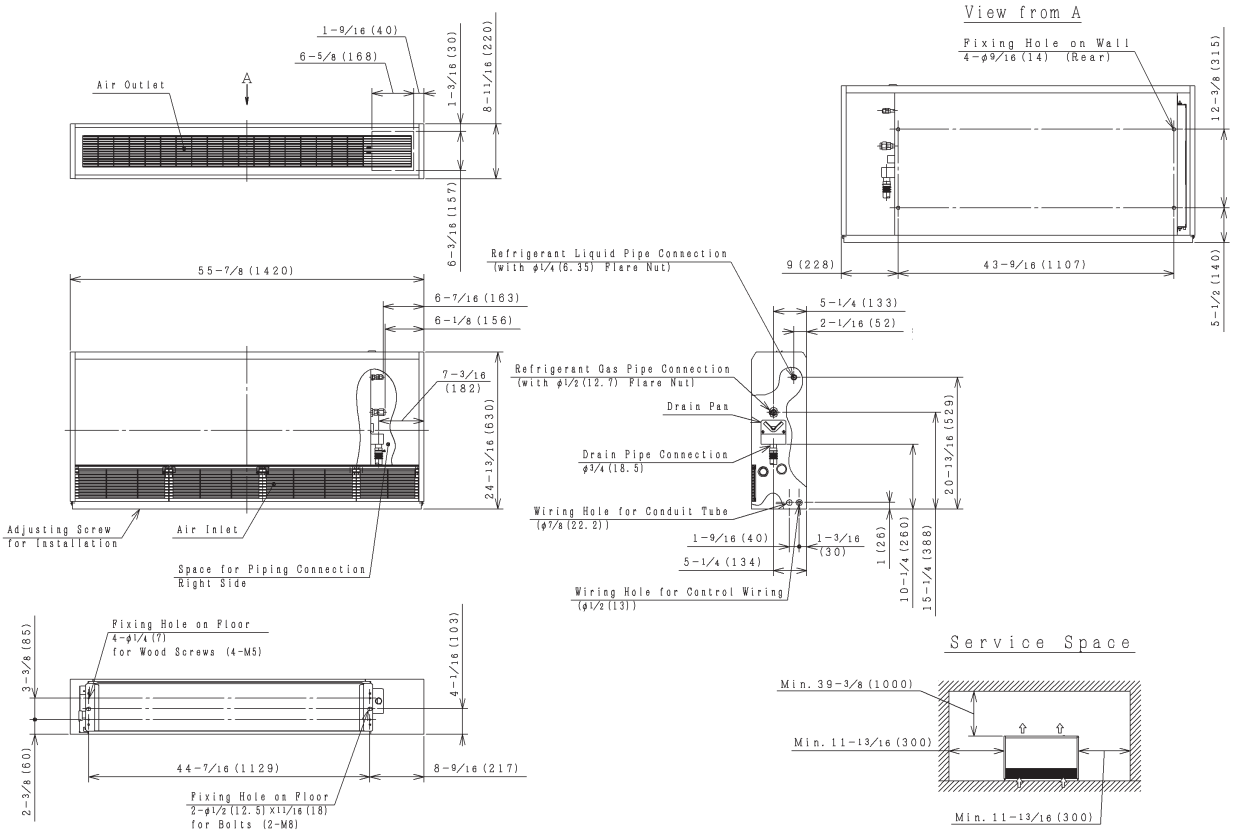



Models: (H,Y)IFE012B21S



Unit: inch (mm)

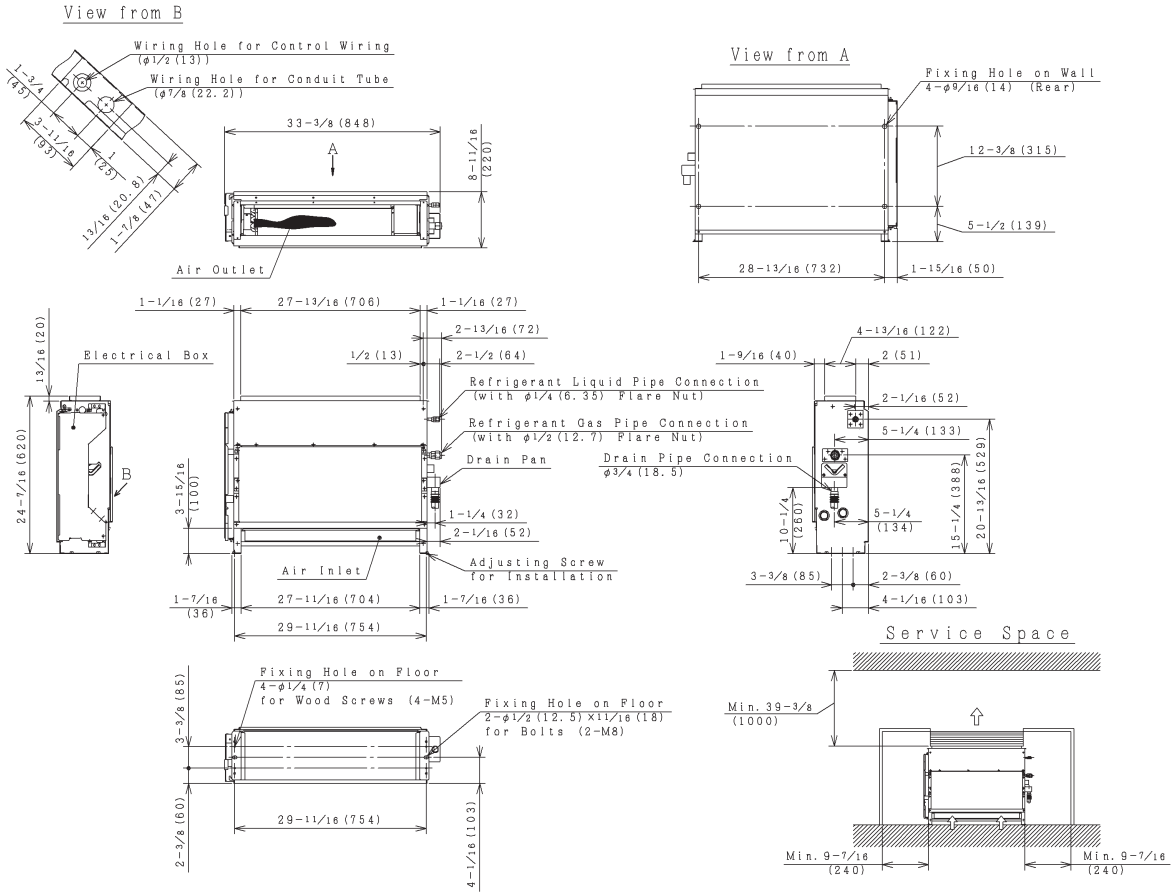
Models: (H,Y)IFE015B21S



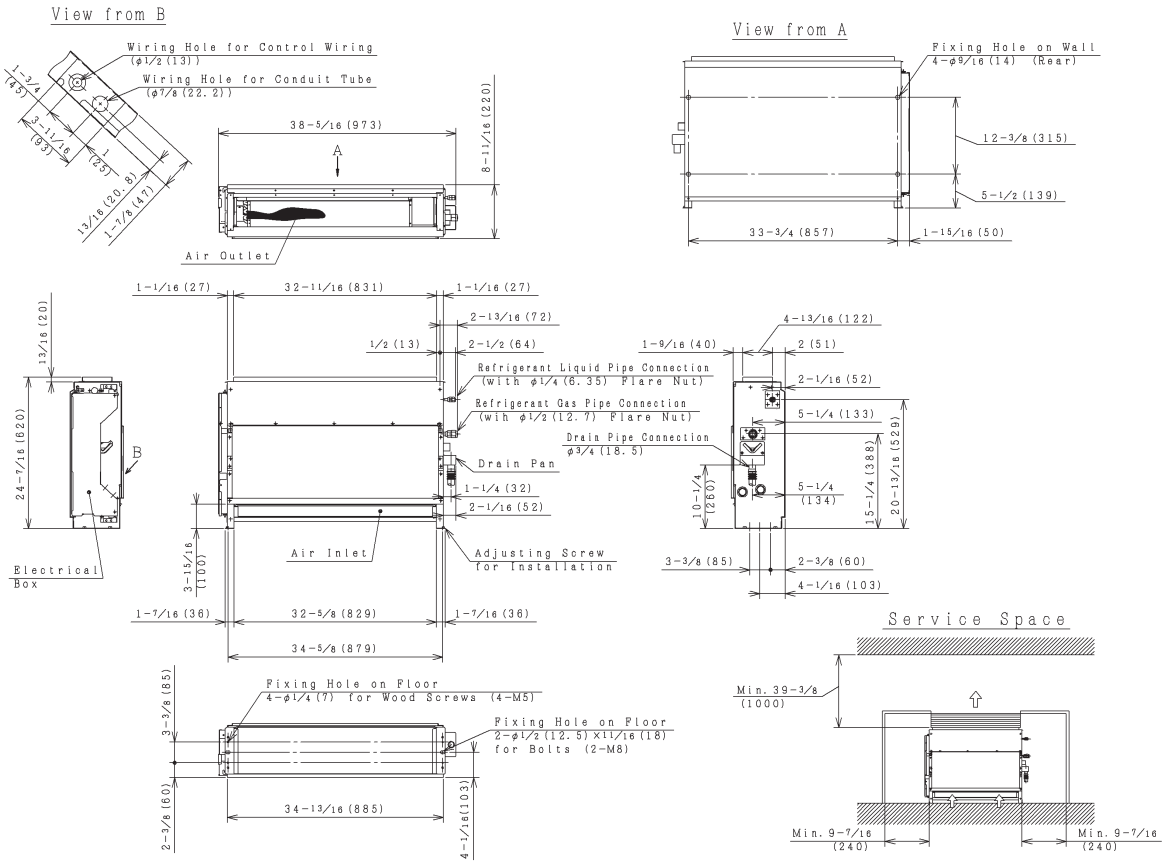
- Floor Concealed Type

Models: (H,Y)IFC006B21S and (H,Y)IFC008B21S

Unit: inch (mm)

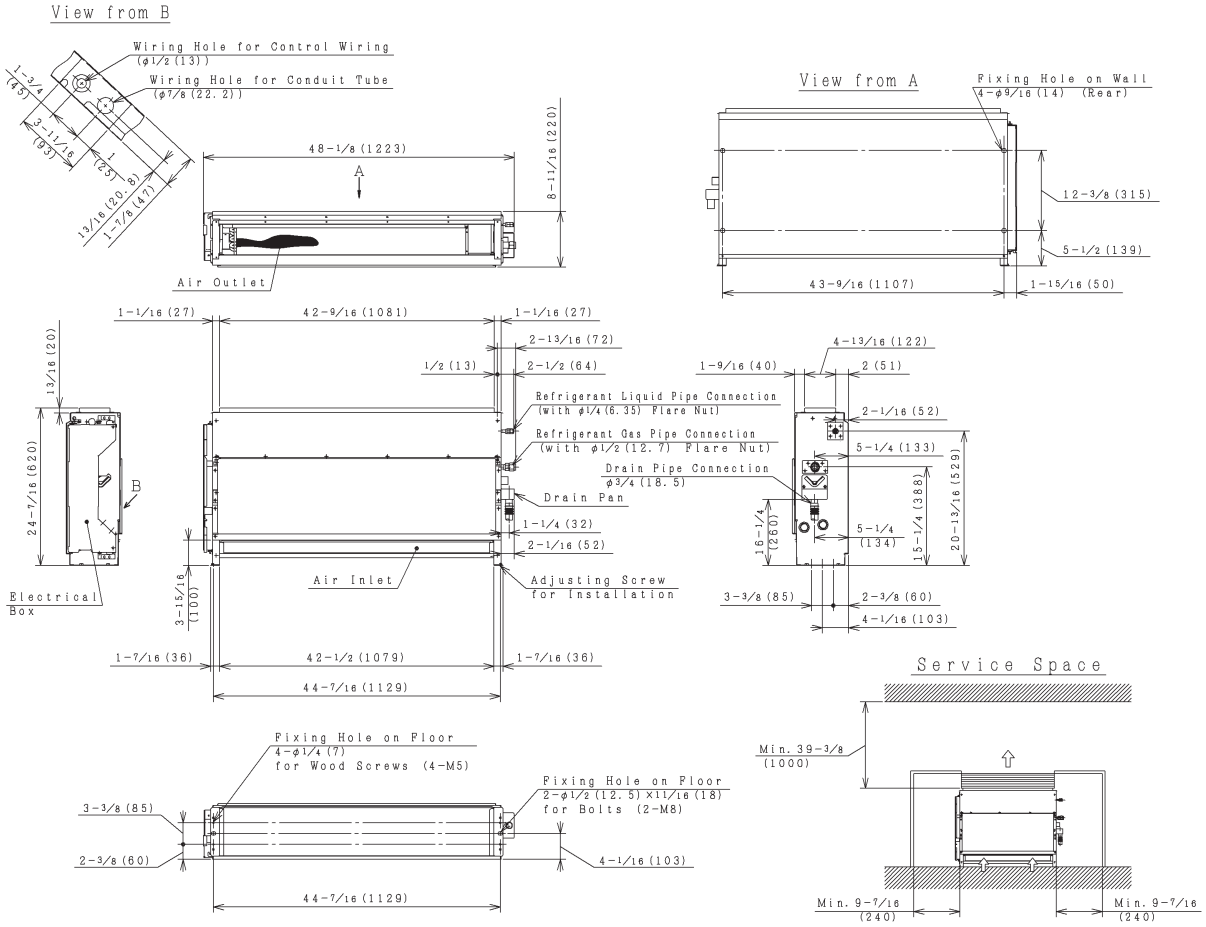



Models: (H,Y)IFC012B21S



Models: (H,Y)IFC015B21S

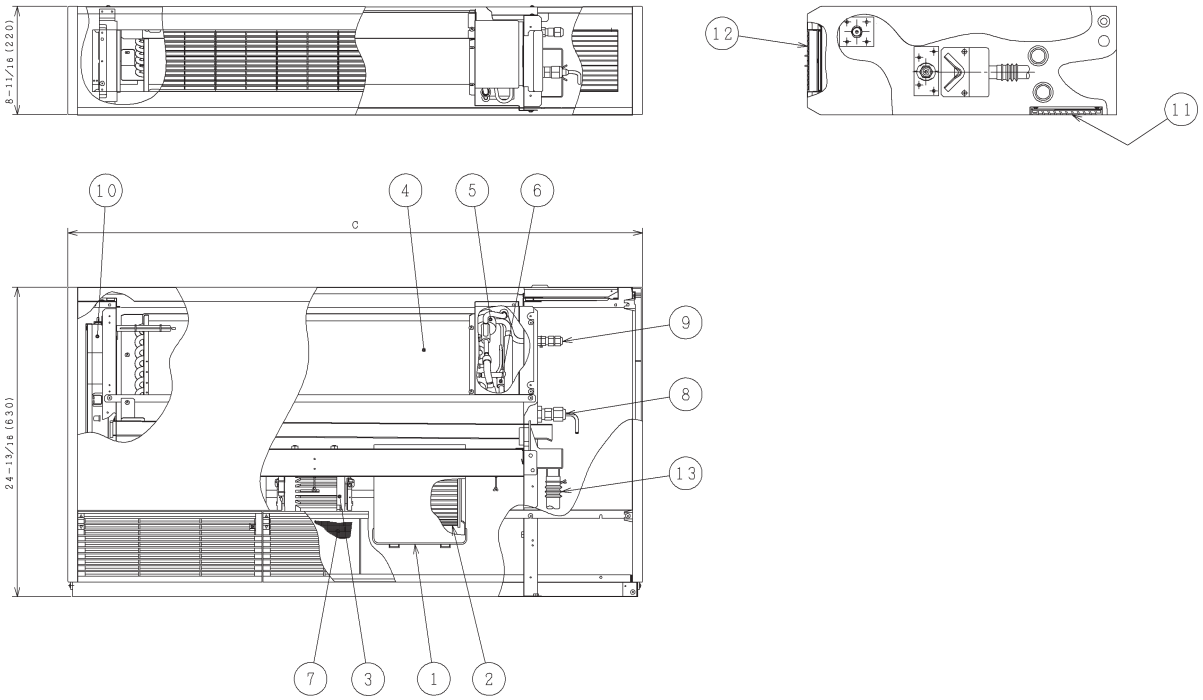
Unit: inch (mm)



### 3.3.5 Structure

- Floor Exposed Type
  Models: (H,Y)IFE006B21S, (H,Y)IFE008B21S, (H,Y)IFE012B21S and (H,Y)IFE015B21S

Unit: inch (mm)

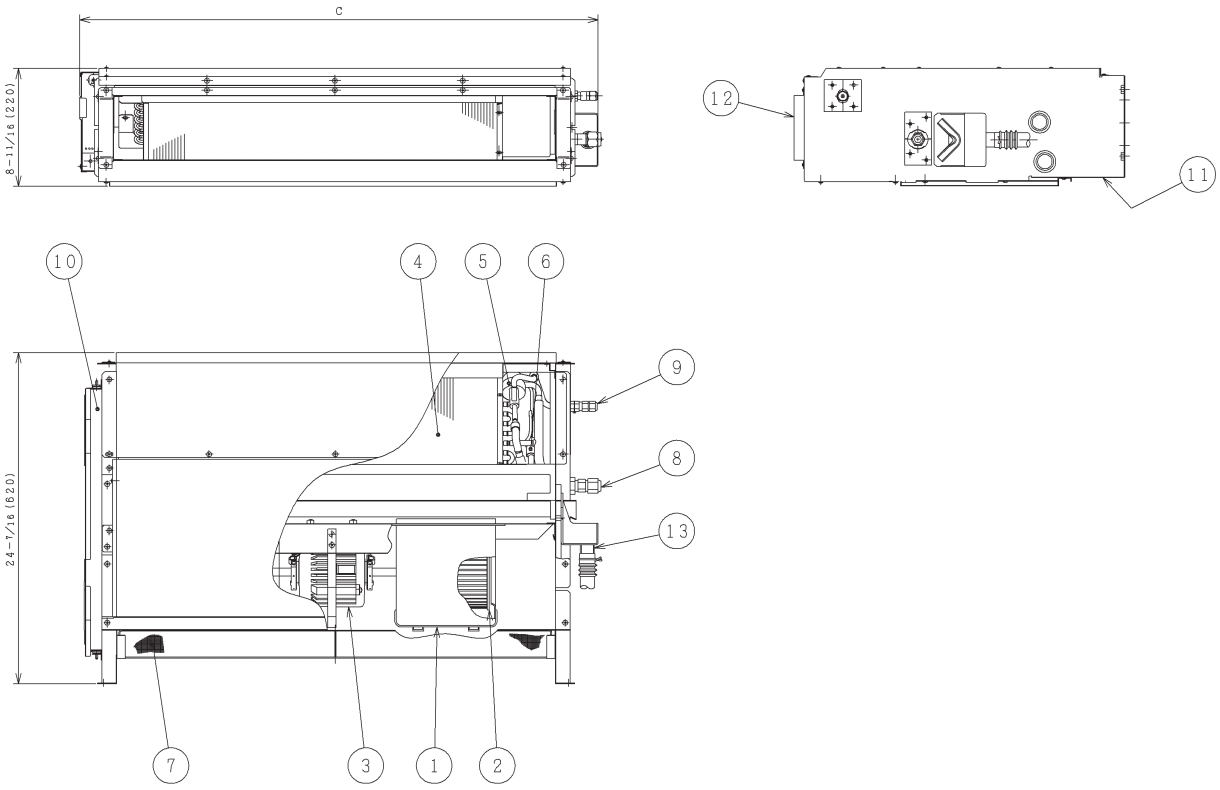



| No. | Part Name | Remarks |
|---|---|---|
| 1 | Fan Casing | |
| 2 | Fan | |
| 3 | Fan Motor | AC |
| 4 | Heat Exchanger | |
| 5 | Expansion Valve | |
| 6 | Distributor | |
| 7 | Air Filter | |
| 8 | Refrigerant Gas Pipe Connection | with ϕa Flare Nut |
| 9 | Refrigerant Liquid Pipe Connection | with ϕb Flare Nut |
| 10 | Electrical Control Box | PVC, ID ϕ1(25) |
| 11 | Air Inlet | |
| 12 | Air Outlet | |
| 13 | Drain Pipe Connection | ϕ3/4 (18.5) |

| Model | a | b | c |
|---|---|---|---|
| (H,Y)IFE006B21S | 1/2 (12.7) | 1/4 (6.35) | 41-1/8 (1045) |
| (H,Y)IFE008B21S | 1/2 (12.7) | 1/4 (6.35) | 41-1/8 (1045) |
| (H,Y)IFE012B21S | 1/2 (12.7) | 1/4 (6.35) | 46-1/16 (1170) |
| (H,Y)IFE015B21S | 1/2 (12.7) | 1/4 (6.35) | 55-7/8 (1420) |

- Floor Concealed Type
  Models: (H,Y)IFC006B21S, (H,Y)IFC008B21S, (H,Y)IFC012B21S and (H,Y)IFC015B21S

Unit: inch (mm)




| No. | Part Name | Remarks |
|---|---|---|
| 1 | Fan Casing | |
| 2 | Fan | |
| 3 | Fan Motor | AC |
| 4 | Heat Exchanger | |
| 5 | Expansion Valve | |
| 6 | Distributor | |
| 7 | Air Filter | |
| 8 | Refrigerant Gas Pipe Connection | with ϕa Flare Nut |
| 9 | Refrigerant Liquid Pipe Connection | with ϕb Flare Nut |
| 10 | Electrical Control Box | PVC, ID ϕ1(25) |
| 11 | Air Inlet | |
| 12 | Air Outlet | |
| 13 | Drain Pipe Connection | ϕ3/4 (18.5) |

| Model | a | b | c |
|---|---|---|---|
| (H,Y)IFC006B21S | 1/2 (12.7) | 1/4 (6.35) | 33-3/8 (848) |
| (H,Y)IFC008B21S | 1/2 (12.7) | 1/4 (6.35) | 33-3/8 (848) |
| (H,Y)IFC012B21S | 1/2 (12.7) | 1/4 (6.35) | 38-5/16 (973) |
| (H,Y)IFC015B21S | 1/2 (12.7) | 1/4 (6.35) | 48-1/8 (1223) |

## 3.3.6 Component Data

### Indoor Heat Exchanger and Fan

| Model | | (H,Y)IFE006B21S | (H,Y)IFE008B21S | (H,Y)IFE012B21S | (H,Y)IFE015B21S |
|---|---|---|---|---|---|
| Heat Exchanger Type | | Multi-Pass Cross Finned Tube | | | |
| Tube Material | | Copper Tube | | | |
| Outer Diameter | φin (mm) | 1/4 (7.0) | 1/4 (7.0) | 1/4 (7.0) | 1/4 (7.0) |
| Rows | | 2 | 2 | 2 | 2 |
| Number of Tube/Coil | | 24 | 24 | 24 | 24 |
| Fin Material | | Aluminum | | | |
| Pitch | in (mm) | 1/16 (1.8) | 1/16 (1.8) | 1/16 (1.8) | 1/16 (1.8) |
| Maximum Operating Pressure | psi (MPa) | 601 (4.15) | 601 (4.15) | 601 (4.15) | 601 (4.15) |
| Total Face Area | $ft^2$ | 0.43 | 0.43 | 0.53 | 0.72 |
| | ($m^2$) | (0.13) | (0.13) | (0.16) | (0.22) |
| Number of Coil/Unit | | 1 | 1 | 1 | 1 |
| Indoor Fan | | Multi-Blade Centrifugal Fan | | | |
| Number/Unit | | 1 | 1 | 2 | 2 |
| Outer Diameter | φin | 5-3/8 | 5-3/8 | 5-3/8 | 5-3/8 |
| | (mm) | (136) | (136) | (136) | (136) |
| Nominal Air Flow | cfm | 300-247-212 | 300-247-212 | 424-353-318 | 565-494-388 |
| (Hi-Me-Lo) | ($m^3$/min) | (8.5-7-6) | (8.5-7-6) | (12-10-9) | (16-14-11) |
| Indoor Fan Motor | | Drip-Proof Type Enclosure | | | |
| Starting Method | | AC Motor | | | |
| Nominal Output | W | 20 | 20 | 28 | 45 |
| Quantity | | 1 | 1 | 1 | 1 |
| Insulation Class | | B | B | B | B |

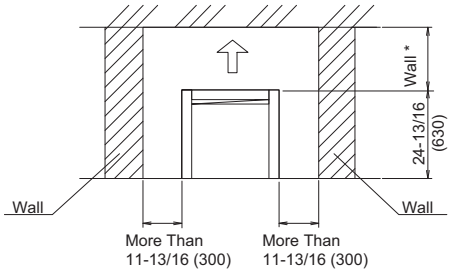
| Model | | (H,Y)IFC006B21S | (H,Y)IFC008B21S | (H,Y)IFC012B21S | (H,Y)IFC015B21S |
|---|---|---|---|---|---|
| Heat Exchanger Type | | Multi-Pass Cross Finned Tube | | | |
| Tube Material | | Copper Tube | | | |
| Outer Diameter | φin (mm) | 1/4 (7.0) | 1/4 (7.0) | 1/4 (7.0) | 1/4 (7.0) |
| Rows | | 2 | 2 | 2 | 2 |
| Number of Tube/Coil | | 24 | 24 | 24 | 24 |
| Fin Material | | Aluminum | | | |
| Pitch | in (mm) | 1/16 (1.8) | 1/16 (1.8) | 1/16 (1.8) | 1/16 (1.8) |
| Maximum Operating Pressure | psi (MPa) | 601 (4.15) | 601 (4.15) | 601 (4.15) | 601 (4.15) |
| Total Face Area | $ft^2$ | 0.43 | 0.43 | 0.53 | 0.72 |
| | ($m^2$) | (0.13) | (0.13) | (0.16) | (0.22) |
| Number of Coil/Unit | | 1 | 1 | 1 | 1 |
| Indoor Fan | | Multi-Blade Centrifugal Fan | | | |
| Number/Unit | | 1 | 1 | 1 | 1 |
| Outer Diameter | φin | 5-3/8 | 5-3/8 | 5-3/8 | 5-3/8 |
| | (mm) | (136) | (136) | (136) | (136) |
| Nominal Air Flow | cfm | 300-247-212 | 300-247-212 | 424-353-318 | 565-494-388 |
| (Hi-Me-Lo) | ($m^3$/min) | (8.5-7-6) | (8.5-7-6) | (12-10-9) | (16-14-11) |
| Indoor Fan Motor | | Drip-Proof Type Enclosure | | | |
| Starting Method | | AC Motor | | | |
| Nominal Output | W | 20 | 20 | 28 | 45 |
| Quantity | | 1 | 1 | 1 | 1 |
| Insulation Class | | B | B | B | B |

### 3.3.7 Operation Space

(1) Install the indoor unit, allowing for proper clearance for operation and maintenance access, as shown below.

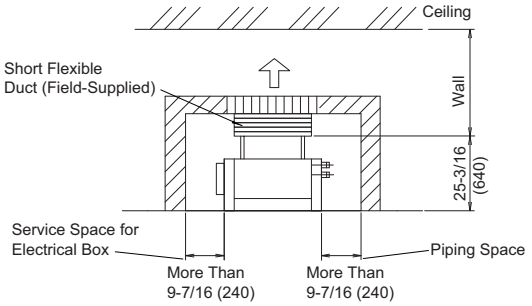
Unit: Inch (mm)

For Floor Exposed Type

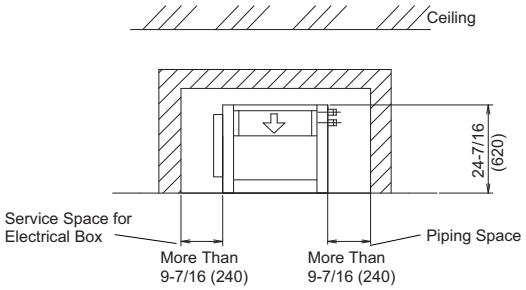



For Floor Concealed Type

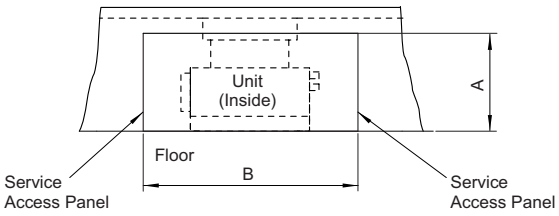
● Upward Air Outlet with Short Flexible Duct (Field-Supplied)




● Front Air Outlet




< Service Access Panel >
Provide a service access door or panel as shown below.




[ Space Around Indoor Unit ] inch (mm)

| Unit Type | Floor Exposed | | Floor Concealed | |
|---|---|---|---|---|
| | A | B | A | B |
| 006 | 24-13/16 (630) | 58-1/4 (1479) | 24-7/16 (620) | 53-1/2 (1359) |
| 008 | | | | |
| 012 | | 68-1/16 (1729) | | 63-3/8 (1609) |
| 015 | | | | |

(2) Consider the air distribution from the indoor unit to the space of the room, and select a suitable location so that uniform air temperature in the room can be obtained.

(3) Do not leave combustible materials inside the service space of the indoor unit.

(4) Avoid obstacles which may hamper the air intake or the air discharge flow.

(5) Do not install the indoor unit in a machine shop or kitchen where vapor from oil or its mist flows to the indoor unit.
The oil will deposit on the heat exchanger, thereby reducing the indoor unit performance, and may deform and in the worst case, break the plastic parts of the indoor unit.

(6) Pay attention to the following points when the indoor unit is installed in a hospital or other facilities where there are electronic waves from medical equipment.
   (a) Do not install the indoor unit where the electromagnetic wave is directly radiated to the electrical box, communication cable or wired controller.
   (b) Install the indoor unit and components as far away as practical or at least 9.8ft (3m) from any electromagnetic wave radiator.
   (c) Prepare a steel box and install the wired controller in it. Prepare a steel conduit tube and wire the controller cable in it. Then, connect the ground wiring with the box and the tube.
   (d) Install a noise filter when the power supply emits harmful noises.

(7) To avoid any corrosive action to the heat exchangers, do not install the indoor unit in an acid or alkaline environment.

### 3.3.8 Sensible Heat Factor (SHF)

| Model | SHF *1 |
|---|---|
| (H,Y)IFE(C)006B21S | 0.78 |
| (H,Y)IFE(C)008B21S | 0.80 |
| (H,Y)IFE(C)012B21S | 0.79 |
| (H,Y)IFE(C)015B21S | 0.83 |

NOTE:

1. SHF is based on combinations within the VRF system and the following conditions:

   Cooling Operation Conditions

   Indoor Air Inlet Temperature: 80°F DB (26.7°C DB)
   67°F WB (19.4°C WB)
   Outdoor Air Inlet Temperature: 95°F DB (35.0°C DB)

   Piping Length: 24 ft. 7-3/16 in. (7.5m)
   Piping Lift: 0 ft. (0m)

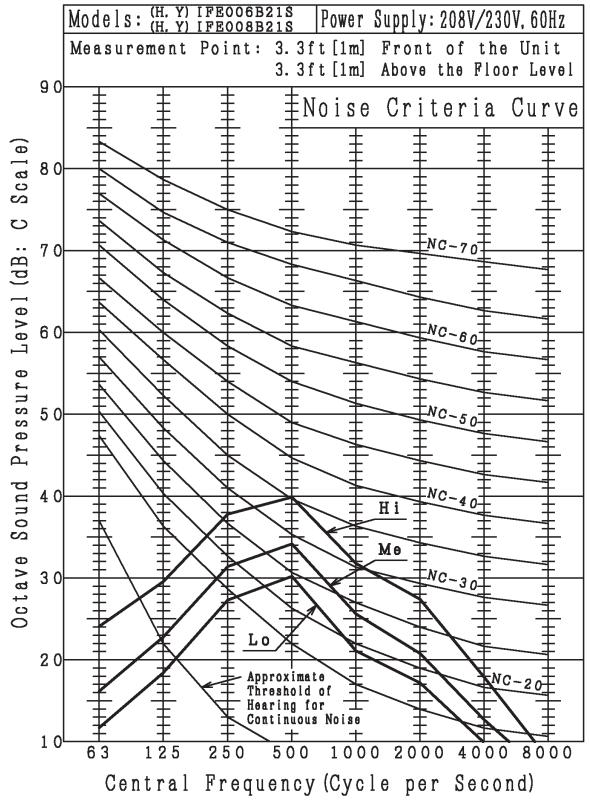
### 3.3.9 Electrical Data

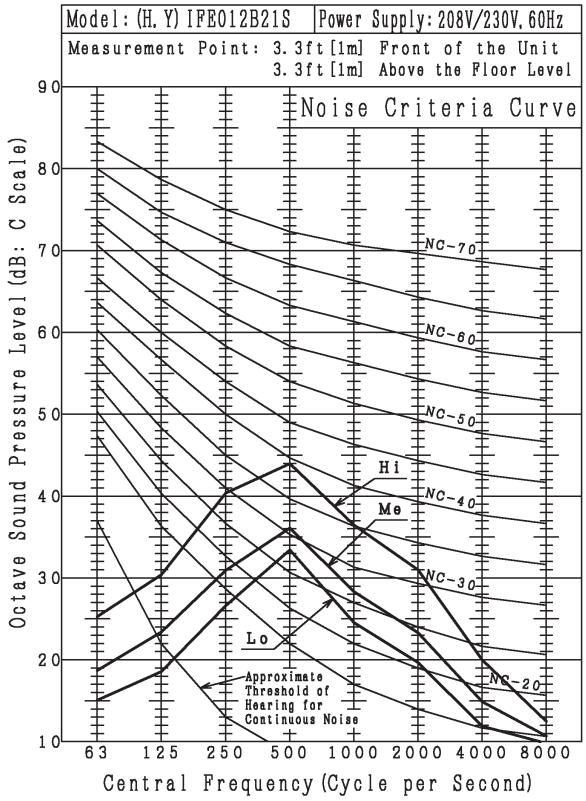
| Model | Unit Main Power | | | Applicable Voltage | | Power Supply | | Indoor Fan Motor | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | VOL | PH | HZ | Maximum | Minimum | MCA | MFA | OPT | FLA |
| (H,Y)IFE(C)006B21S | 208/230 | 1 | 60 | 253 | 188 | 0.4 | 15 | 0.020 | 0.30 |
| (H,Y)IFE(C)008B21S | | | | | | 0.4 | 15 | 0.020 | 0.32 |
| (H,Y)IFE(C)012B21S | | | | | | 0.6 | 15 | 0.028 | 0.48 |
| (H,Y)IFE(C)015B21S | | | | | | 0.9 | 15 | 0.045 | 0.68 |

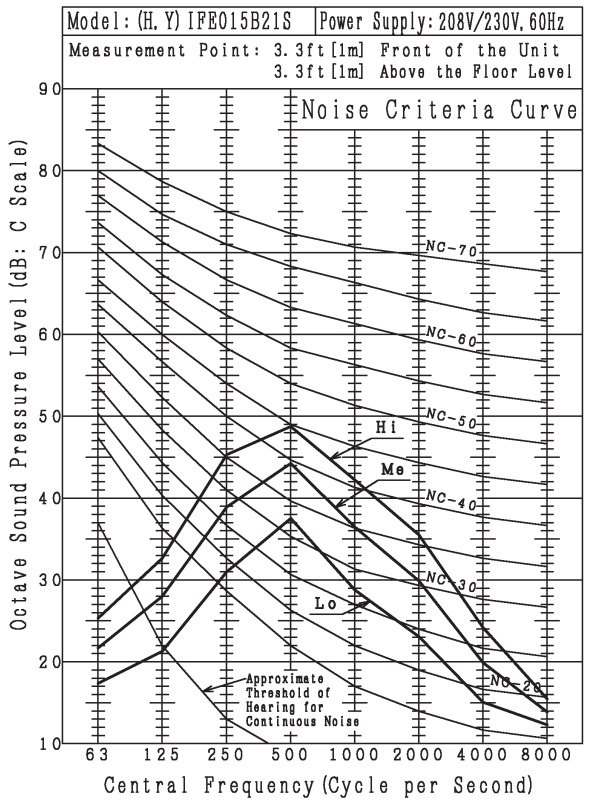
VOL: Rated Unit Power Supply Voltage (V)
PH: Phase
HZ: Frequency (Hz)
MCA: Minimum Circuit Ampacity (A)
MFA: Maximum Fuse Ampacity (A)
OPT: Rated Motor Output (kW)
FLA: Full Load Ampacity (A)

NOTE:
Power supply voltage should be satisfied with the following.
Supply Voltage: Rated Voltage within ±10%
Starting Voltage: Rated Voltage within -15%
Operating Voltage: Rated Voltage within ±10%

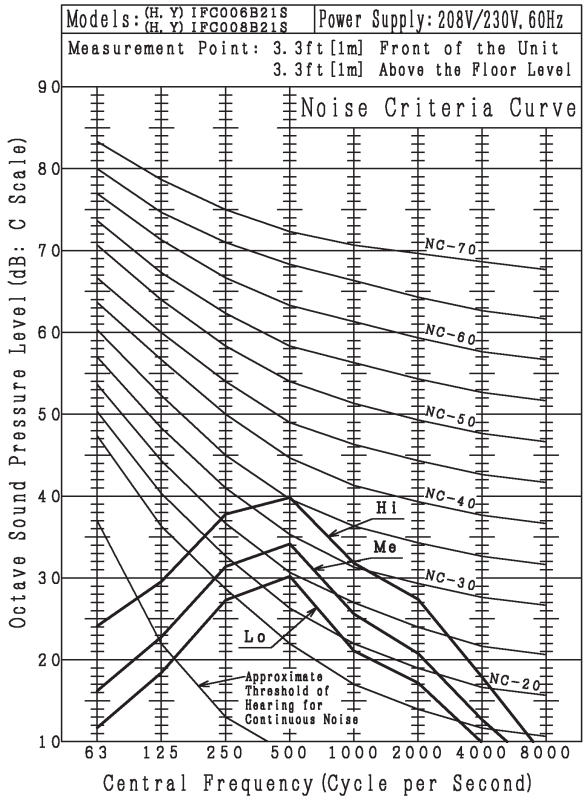
### 3.3.10 Sound Data

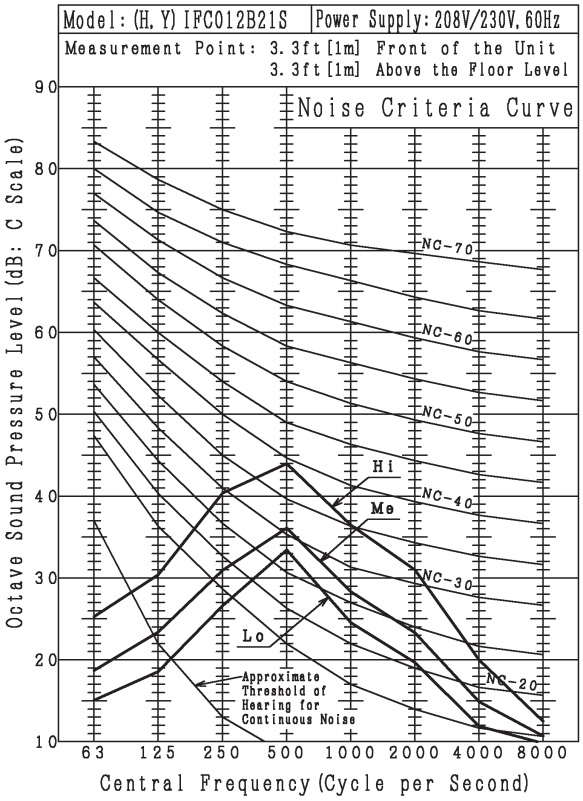


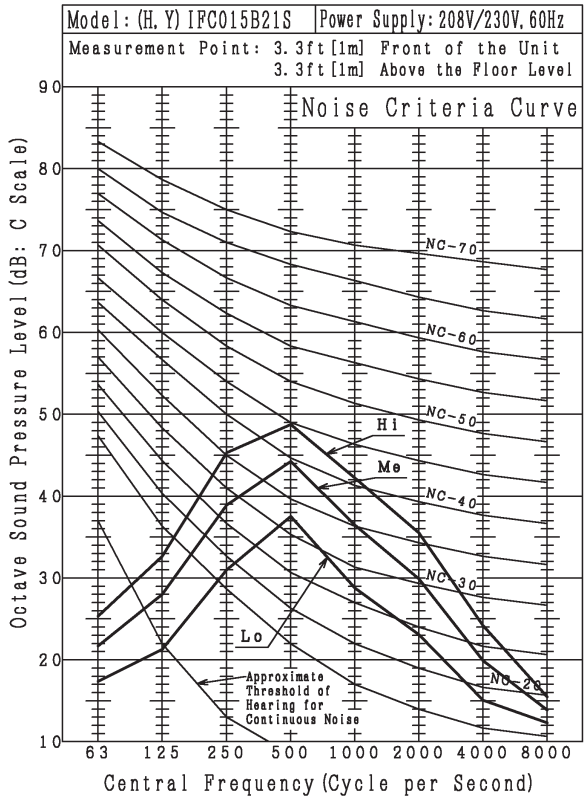




NOTE:
Operation sound is equivalent to an anechoic chamber (free space).
Noise level will be increased by the surrounding noise and echoes.


Models: (H, Y) IFC006B21S
(H, Y) IFC008B21S
Power Supply: 208V/230V, 60Hz
Measurement Point: 3.3ft [1m] Front of the Unit
3.3ft [1m] Above the Floor Level
Noise Criteria Curve
Octave Sound Pressure Level (dB: C Scale)
Central Frequency (Cycle per Second)
NC-70
NC-60
NC-50
NC-40
NC-30
NC-20
Hi
Me
Lo
Approximate Threshold of Hearing for Continuous Noise


Model: (H, Y) IFC012B21S
Power Supply: 208V/230V, 60Hz
Measurement Point: 3.3ft [1m] Front of the Unit
3.3ft [1m] Above the Floor Level
Noise Criteria Curve
Octave Sound Pressure Level (dB: C Scale)
Central Frequency (Cycle per Second)
NC-70
NC-60
NC-50
NC-40
NC-30
NC-20
Hi
Me
Lo
Approximate Threshold of Hearing for Continuous Noise

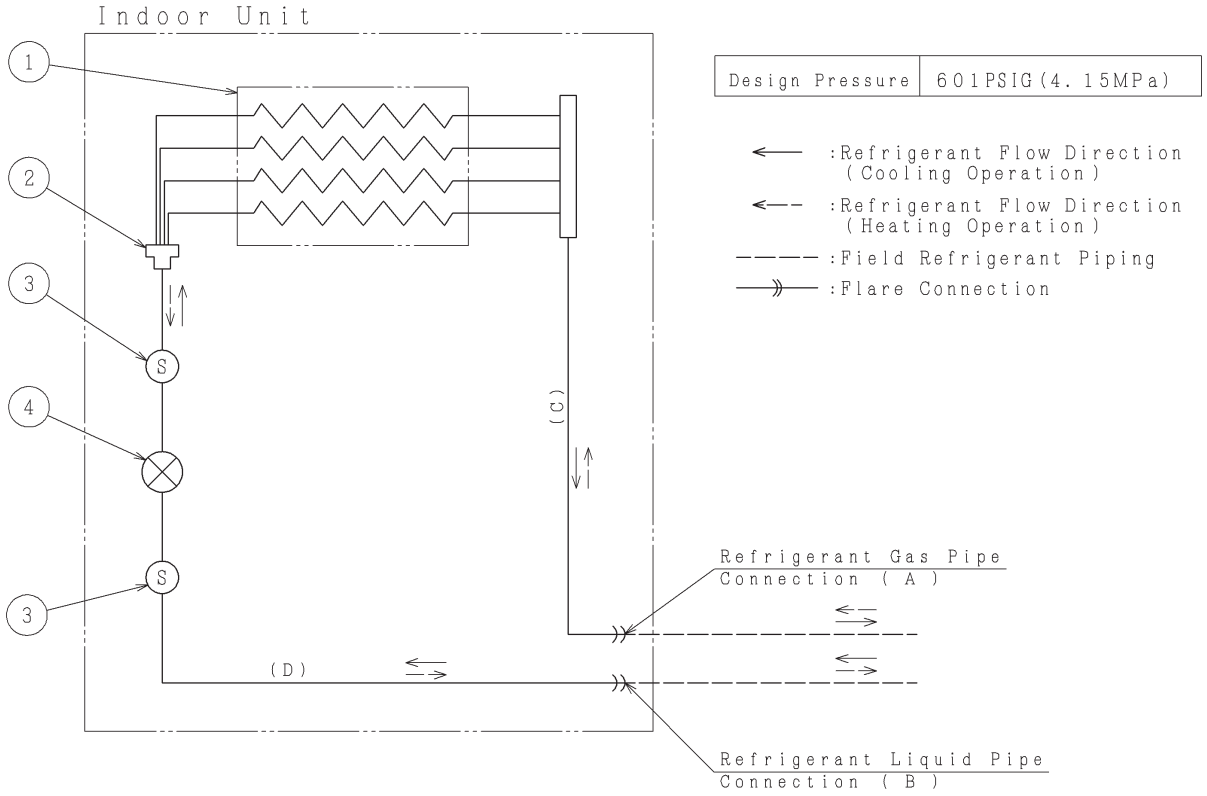

Model: (H, Y) IFC015B21S
Power Supply: 208V/230V, 60Hz
Measurement Point: 3.3ft [1m] Front of the Unit
3.3ft [1m] Above the Floor Level
Noise Criteria Curve
Octave Sound Pressure Level (dB: C Scale)
Central Frequency (Cycle per Second)
NC-70
NC-60
NC-50
NC-40
NC-30
NC-20
Hi
Me
Lo
Approximate Threshold of Hearing for Continuous Noise

## 3.3.11 Control System

### 3.3.11.1 Refrigerant System

- Floor Exposed Type and Floor Concealed Type

  Models: (H,Y)IFE006B21S, (H,Y)IFE008B21S, (H,Y)IFE012B21S and (H,Y)IFE015B21S
  (H,Y)IFC006B21S, (H,Y)IFC008B21S, (H,Y)IFC012B21S and (H,Y)IFC015B21S




| Mark | Part Name |
|---|---|
| 1 | Heat Exchanger |
| 2 | Distributor |
| 3 | Strainer |
| 4 | Electronic Expansion Valve |

Unit: inch (mm)

| Model | Distributor | (A) Gas Pipe Connection | (B) Liquid Pipe Connection | (C) (OD×T) | (D) (OD×T) |
|---|---|---|---|---|---|
| (H,Y)IFE(C)006B21S | 7 Pass | ϕ1/2 (12.70) | ϕ1/4 (6.35) | ϕ5/8×t0.059 (15.88×1.2) | ϕ3/8×t0.031 (9.53×0.8) |
| (H,Y)IFE(C)008B21S | 7 Pass | ϕ1/2 (12.70) | ϕ1/4 (6.35) | ϕ5/8×t0.059 (15.88×1.2) | ϕ3/8×t0.031 (9.53×0.8) |
| (H,Y)IFE(C)012B21S | 7 Pass | ϕ1/2 (12.70) | ϕ1/4 (6.35) | ϕ5/8×t0.059 (15.88×1.2) | ϕ3/8×t0.031 (9.53×0.8) |
| (H,Y)IFE(C)015B21S | 7 Pass | ϕ1/2 (12.70) | ϕ1/4 (6.35) | ϕ5/8×t0.059 (15.88×1.2) | ϕ3/8×t0.031 (9.53×0.8) |

3.3.11.2 Standard Operation Sequence

■ Cooling Operation

The sequence may be different depending on the outdoor unit model to be connected. Refer to the section on outdoor units for details.

■ Dry Operation

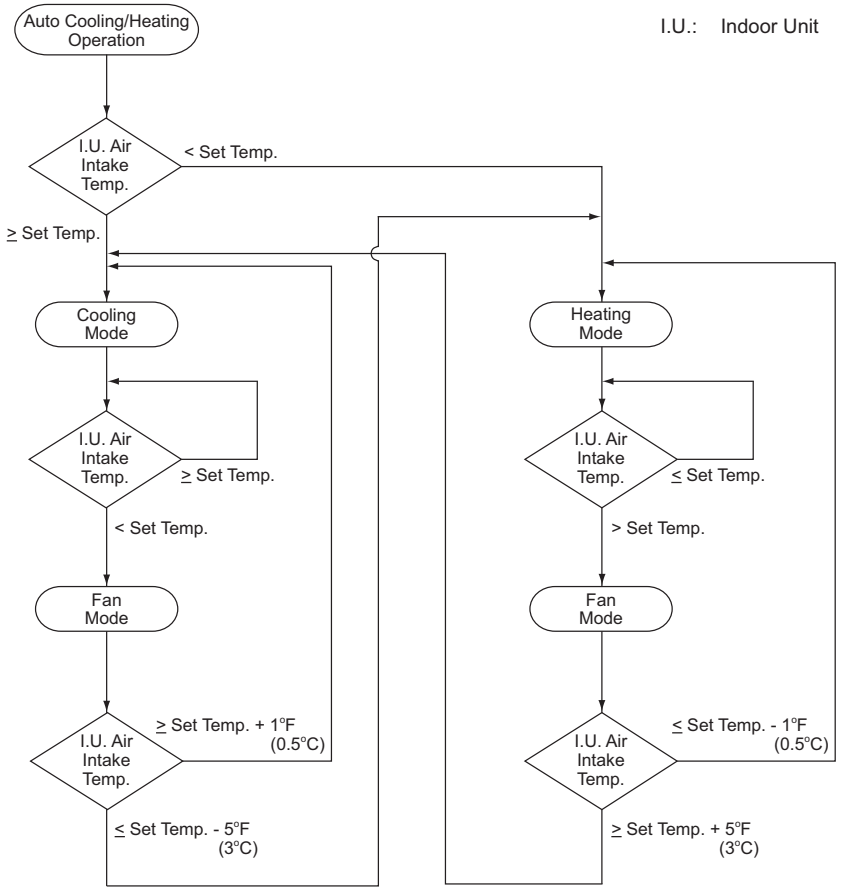
The sequence may be different depending on the outdoor unit model to be connected. Refer to the section on outdoor units for details.

■ Heating Operation

The sequence may be different depending on the outdoor unit model to be connected. Refer to the section on outdoor units for details.

■ Automatic Cooling and Heating Operation

It is applicable only for a heat recovery system.

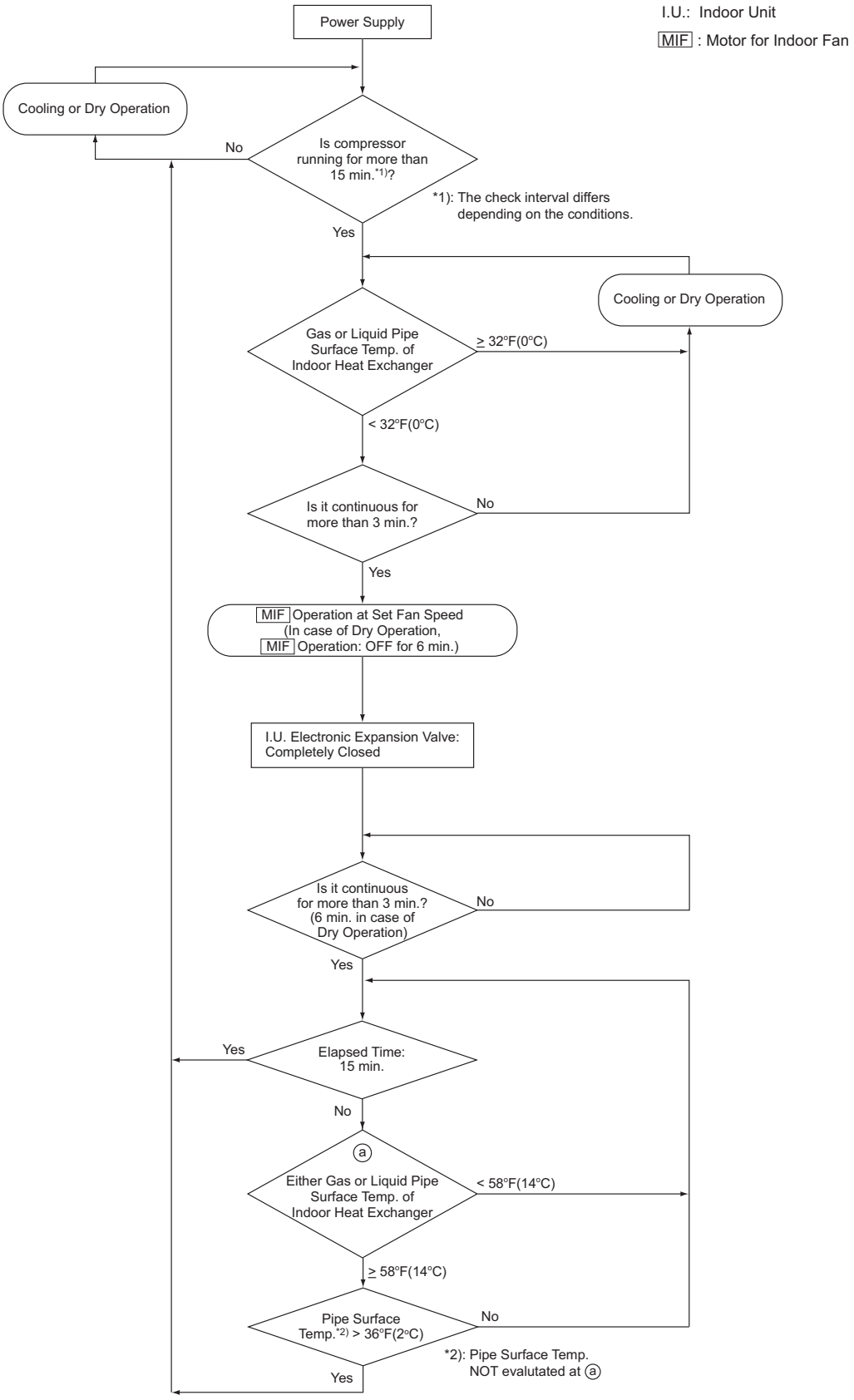



NOTE:
I.U fan operates continuously when in Cooling, Heating and Fan Mode.

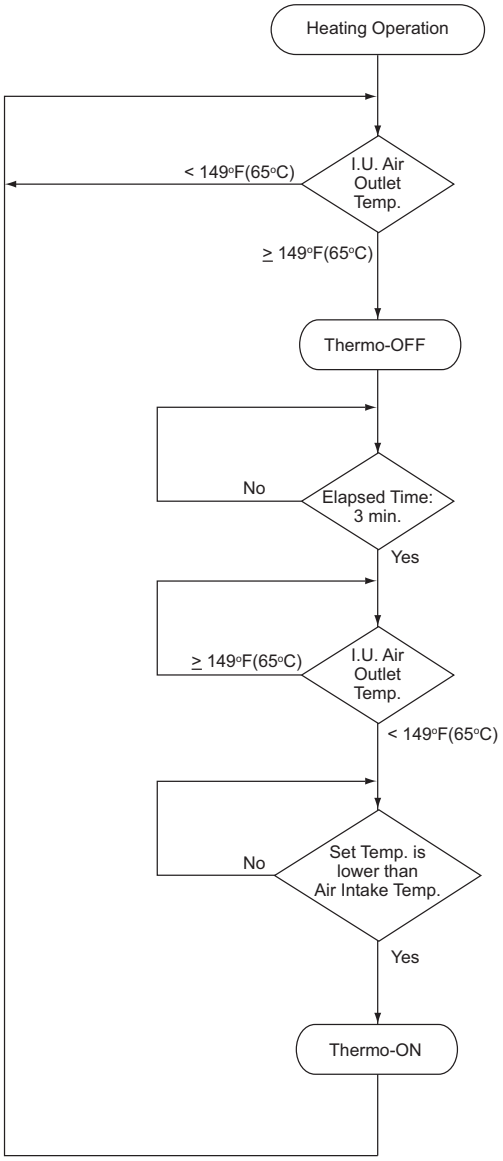
■ Defrosting Operation

The sequence may be different depending on the outdoor unit model to be connected. Refer to the section on outdoor units for details.

■ Freezing Protection Control during Cooling or Dry Operation



■ Prevention Control for Excessively High Outlet Air Temperature (High Outlet Air Temperature Heat Lockout)




Thermo-ON/OFF Control for Indoor Unit

NOTE:

Thermo-ON: The outdoor unit and some indoor units are running.
Thermo-OFF: The outdoor unit and some indoor units stay on, but don't run.

■ Activating Protections

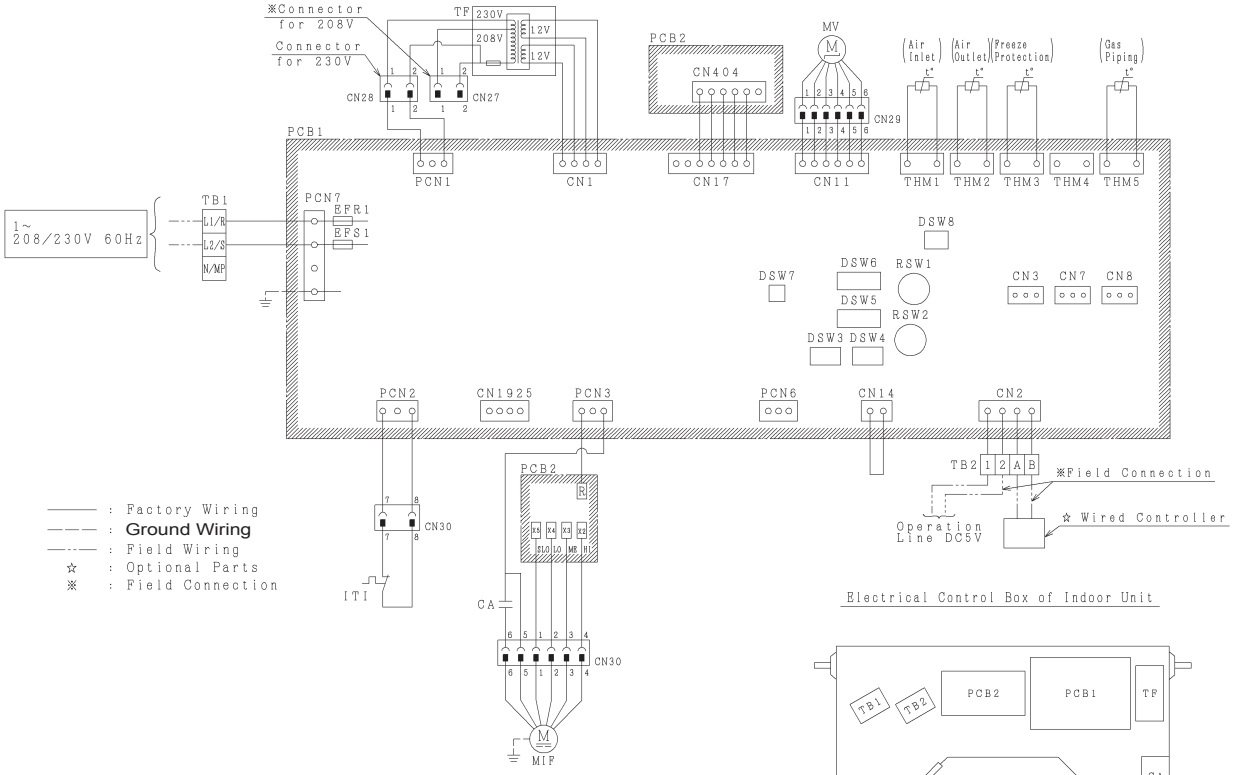
The sequence may be different depending on the outdoor unit model to be connected. Refer to the section on outdoor units for details.

3.3.11.3 Safety and Control Device Setting

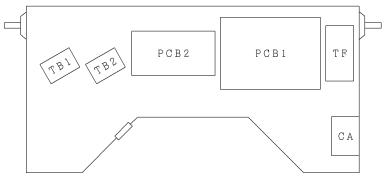
| Model | | | (H,Y)IFE006B21S, (H,Y)IFE008B21S,<br>(H,Y)IFE012B21S and (H,Y)IFE015B21S<br>(H,Y)IFC006B21S, (H,Y)IFC008B21S,<br>(H,Y)IFC012B21S and (H,Y)IFC015B21S |
|---|---|---|---|
| For Evaporator Fan Motor | | | |
| Thermostat | Cut-Out | °F<br>(°C) | 266 $\pm^{9}$<br>(130 $\pm^{5}$) |
| | Cut-In | °F<br>(°C) | 184.5 $\pm^{27}$<br>(83 $\pm^{15}$) |
| For Control Circuit | | | |
| Fuse | | | |
| Capacity | | A | 5 |

### 3.3.11.4 Wiring Diagram

- Floor Exposed Type
  Models: (H,Y)IFE006B21S, (H,Y)IFE008B21S, (H,Y)IFE012B21S and (H,Y)IFE015B21S



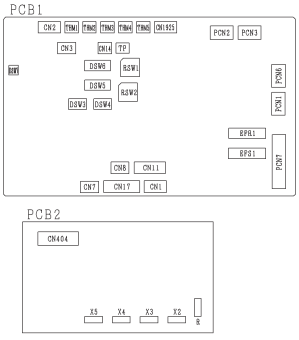

Electrical Control Box of Indoor Unit



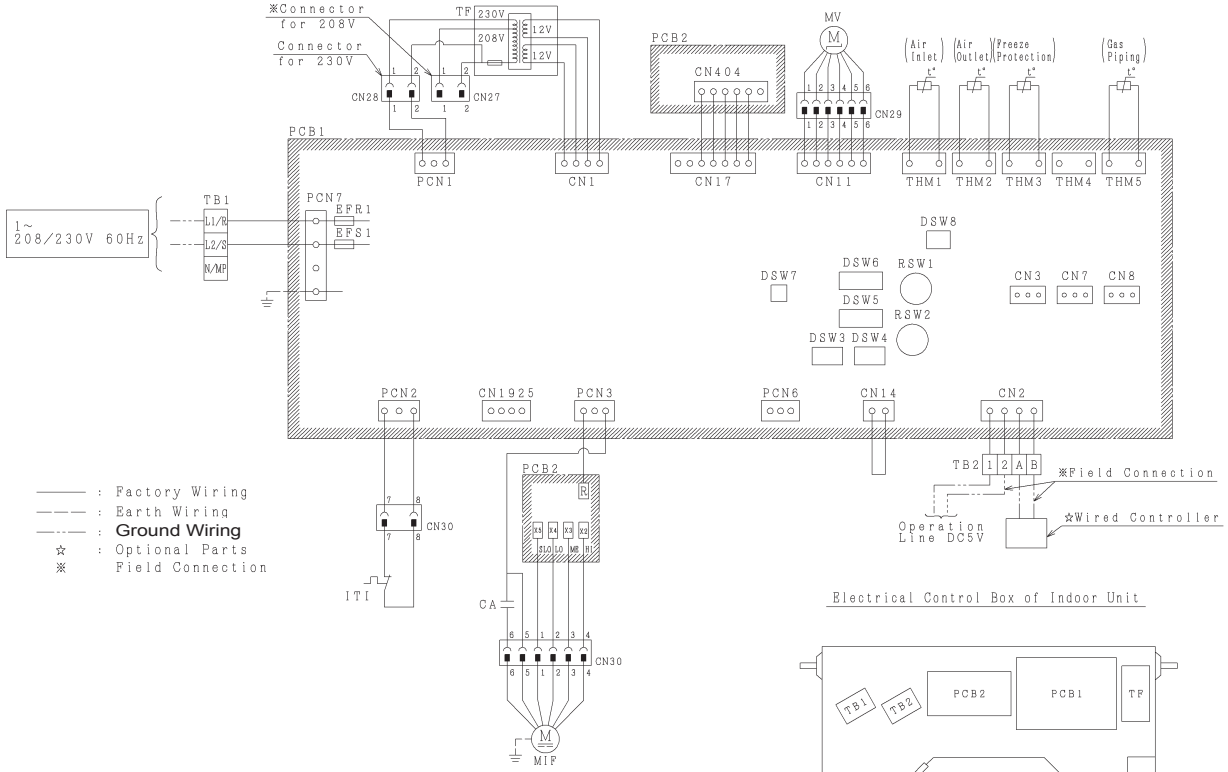

Note:
1. All the field wiring and equipment must comply with local codes.

| Mark | Name |
|---|---|
| MIF | Motor for Indoor Fan |
| MV | Electronic Expansion Valve |
| EFR1, EFS1 | Fuse |
| ITI | Internal Thermostat for Indoor Fan Motor |
| TB1, 2 | Terminal Block |
| PCB1, 2 | Printed Circuit Board |
| CA | Capacitor for Indoor Fan Motor |
| CN3 | Optional Connector(For Signal Input) |
| CN7, 8 | Optional Connector(For Signal Output) |
| CN27~30 | Connector |
| TF | Transformer |
| THM4 | Optional Connector(For Remote Temperature Sensor) |
| RSW1 | Rotary Switch(Unit No. Setting) |
| RSW2 | Rotary Switch(Refrigerant Cycle No. Setting) |
| DSW3 | DIP Switch(Capacity Code Setting) |
| DSW4 | DIP Switch(Unit Model Code Setting) |
| DSW5 | DIP Switch(Refrigerant Cycle No. Setting) |
| DSW6 | DIP Switch(Unit No. Setting) |
| DSW7 | DIP Switch(Fuse Recovery) |
| CN1925, PCN6 | Reserved Connector |

Printed Circuit Board



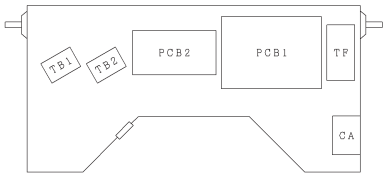
- Floor Concealed Type
  Models: (H,Y)IFC006B21S, (H,Y)IFC008B21S, (H,Y)IFC012B21S and (H,Y)IFC015B21S




Note:

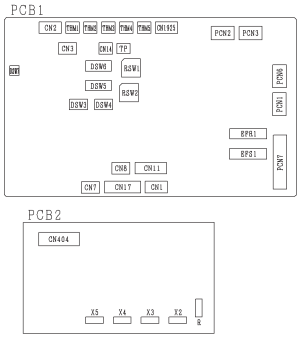
1. All the field wiring and equipment must comply with local codes.

Electrical Control Box of Indoor Unit




| Mark | Name |
|---|---|
| MIF | Motor for Indoor Fan |
| MV | Electronic Expansion Valve |
| EFR1, EFS1 | Fuse |
| ITI | Internal Thermostat for Indoor Fan Motor |
| TB1, 2 | Terminal Block |
| PCB1, 2 | Printed Circuit Board |
| CA | Capacitor for Indoor Fan Motor |
| CN3 | Optional Connector(For Signal Input) |
| CN7, 8 | Optional Connector(For Signal Output) |
| CN27~30 | Connector |
| TF | Transformer |
| THM4 | Optional Connector(For Remote Temperature Sensor) |
| RSW1 | Rotary Switch(Unit No. Setting) |
| RSW2 | Rotary Switch(Refrigerant Cycle No. Setting) |
| DSW3 | DIP Switch(Capacity Code Setting) |
| DSW4 | DIP Switch(Unit Model Code Setting) |
| DSW5 | DIP Switch(Refrigerant Cycle No. Setting) |
| DSW6 | DIP Switch(Unit No. Setting) |
| DSW7 | DIP Switch(Fuse Recovery) |
| CN1925, PCN6 | Reserved Connector |

Printed Circuit Board



## 4. Change-Over Box

Refer to Engineering Manual No. TC-15001.

# 5. Optional Parts

## 5.1 Line Up

| Item No. | Type | Adopting Model Name | Item No. | Optional Parts | Optional Parts Model Name |
|---|---|---|---|---|---|
| 5.2 | Mini Cassette | (H,Y)ICM008~018B21S | 5.2.1 | IR Receiver Kit (for Mini Cassette) | CMIRK01 |
| | | | 5.2.2 | Motion Sensor Kit | SOR-NEC |
| | | | 5.2.3 | Duct Adaptor | PD-75C |
| 5.3 | Ceiling Suspended | (H,Y)ICS015~036B21S | 5.3.1 | Anti-bacterial Air Filter | F-(56)(90)(160)MP-K1 |
| | | | 5.3.2 | Filter Box | B-(56)(90)(160)MP |
| | | | 5.3.3 | IR Receiver Kit (for Ceiling Suspended) | CSIRK01 |
| | | | 5.3.4 | Motion Sensor Kit | SOR-NEP |
| | | | 5.3.5 | Drain Pump Kit | DUPC-(63)(160)K1 |
| | | | 5.3.6 | Duct Adaptor | PD-100 |

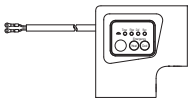
## 5.2 Mini Cassette Type

### 5.2.1 IR Receiver Kit: CMIRK01

CMIRK01 is only available to be used in combination with the wireless controller CIR01 and the indoor unit mini cassette type models.

< Factory-Supplied Accessories >

Check to ensure that the following accessories are packed with the IR receiver kit.

| No. | Accessory | Qty. | Remarks |
|---|---|---|---|
| ① | IR Receiver Kit CMIRK01  | 1 | with Connecting Cable |
| ② | Plastic Band  | 1 | for Clamping Wiring Cover and Connecting Cable |
| ③ | Installation Manual | 1 | - |
| ④ | Operation Manual | 1 | - |

< Installation >

**⚠WARNING**

- Turn OFF the power source completely before setting the DIP switches, installation work and electrical wiring work for IR receiver kit.
  If not, it may cause an electric shock.

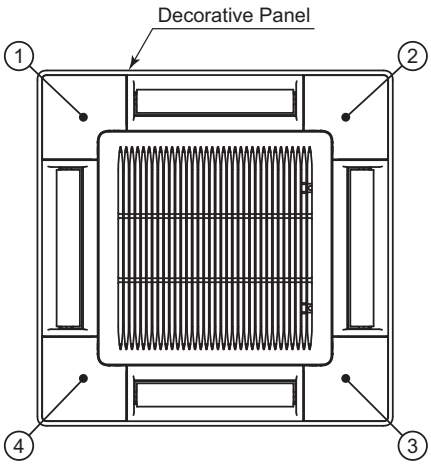
***NOTICE***

- When the IR receiver kit is installed near ambient lighting, it may not receive a signal from the wireless controller. Therefore, pay particular attention to the installation position of the IR receiver kit.
- Do not run the connecting cable for the IR receiver kit and the power source cable (208/230V) in parallel. It may cause a malfunction of the IR receiver kit.

1 Perform the installation work for the IR receiver kit while the optional decorative panel is being attached to the indoor unit.

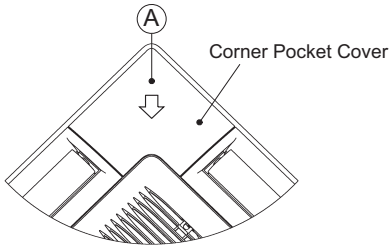
2 When the IR receiver kit is attached after the decorative panel is attached to the indoor unit, turn OFF the power source of the indoor unit, and remove the decorative panel. Removing the decorative panel should be performed according to the installation manual for the decorative panel or the service manual.

3 This IR receiver kit can be attached to any of four corners: ①, ②, ③ or ④).
Determine the attachment location according to the purchaser's request.



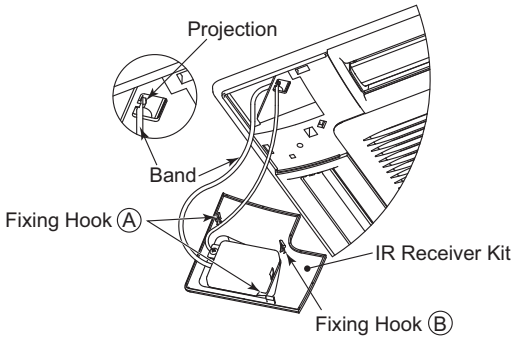

NOTE:
Setting the DIP switch for the IR receiver kit is possible at more than one function. If the optional function selection is required, perform work according to Section 4, "Optional Functions", before the IR receiver kit is attached to the decorative panel.

4 Remove the corner pocket covers.
The corner pocket covers can be removed pulling the Ⓐ part toward the arrow direction.



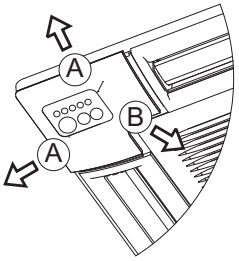

5 Affix the band at the rear side of the IR receiver kit onto the projection at the decorative panel as shown in the figure to the right.

NOTE:
Catch securely the band onto the projection to prevent falling down the IR receiver kit.

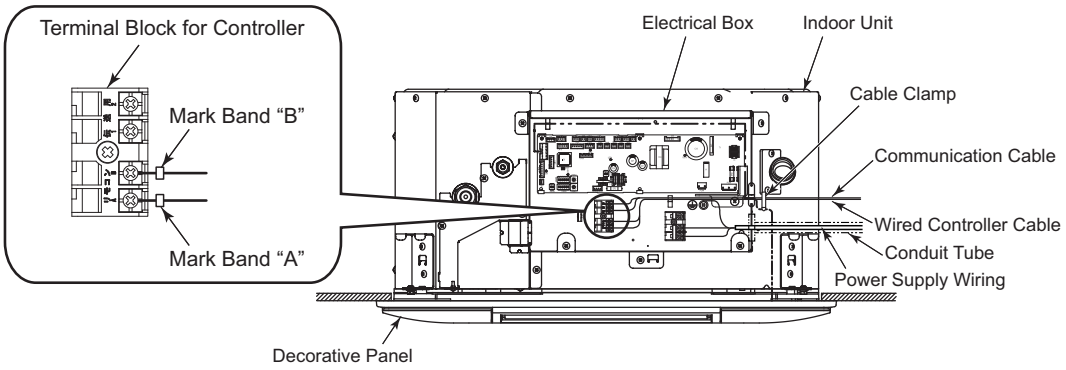



6 While pushing the wiring into the corner pocket, insert two coupling hooks at Ⓐ to the square hole of the decorative panel, and push the IR receiver kit in the direction of the arrow (Ⓐ). Then, insert the fixing hook at Ⓑ to the square hole of the decorative panel.

NOTE:
Securely affix the coupling hooks of the IR receiver kit to the decorative panel to avoid damage to the fixing hooks.

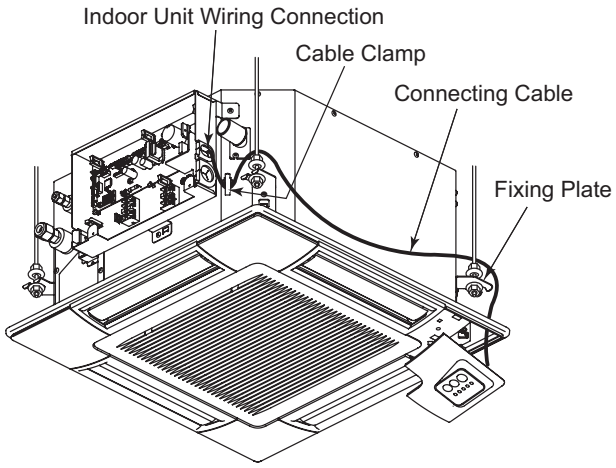



7 Connect the accessory connecting cable to the terminal block.
Open the electrical box cover of the indoor unit. Attach the connecting cable to terminals A and B in the electrical box. (There is no polarity with terminals A and B.)



This IR receiver kit can be attached to any of four corners of the decorative panel. In the case of attaching it to far corner from the electrical box, run through the wiring for the IR receiver kit on the fixing plate of the unit between the IR receiver kit and the electrical box of the unit as shown.
After running the connecting cable, clamp the extra length of the connecting cable by the plastic band and store it at inside the ceiling.

Example: Installing IR Receiver Kit to for Corner from Electrical Box




NOTE:
If installing the IR receiver kit near the electrical box, an extra cable shall bind up by the cable clamp.

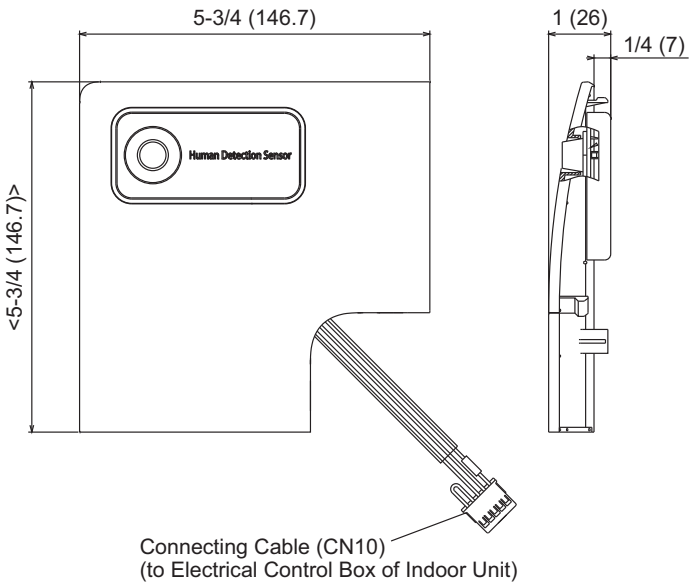
8 Attach the decorative panel.
Refer to the installation manual for the decorative panel.

9 After the installation work for the IR receiver kit is completed, attach the corner pocket covers (3 parts).
For details, refer to the installation manual for the decorative panel.

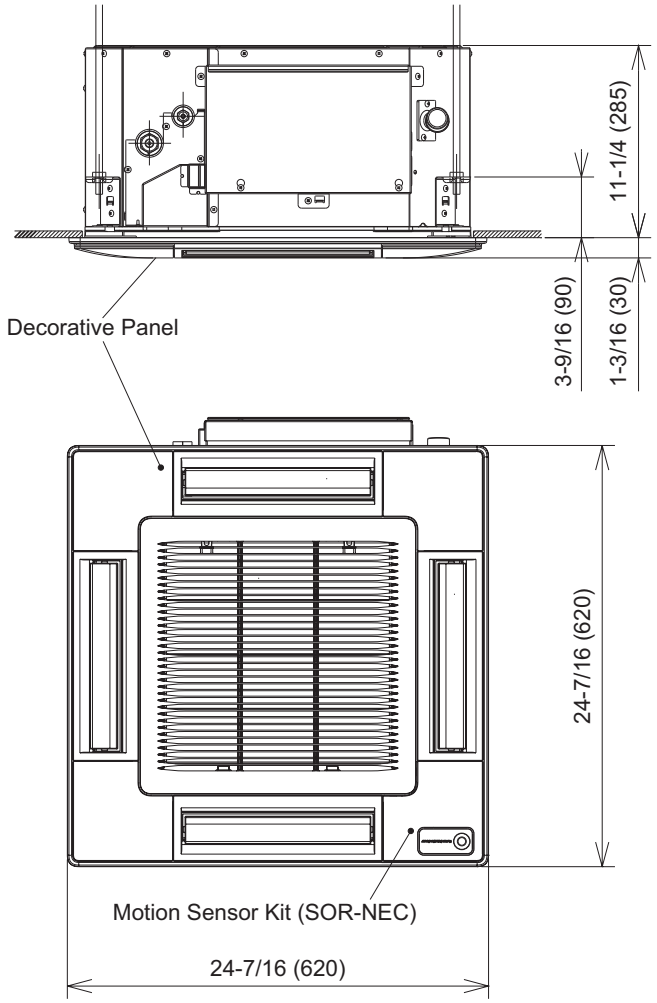
NOTE:
After the IR receiver kit is attached to the decorative panel, the one corner pocket cover (attached with the decorative panel) becomes unnecessary. It was attached with the decorative panel.

### 5.2.2 Motion Sensor Kit: SOR-NEC

< Dimensional Data > Unit: inch (mm)




< Installation State >



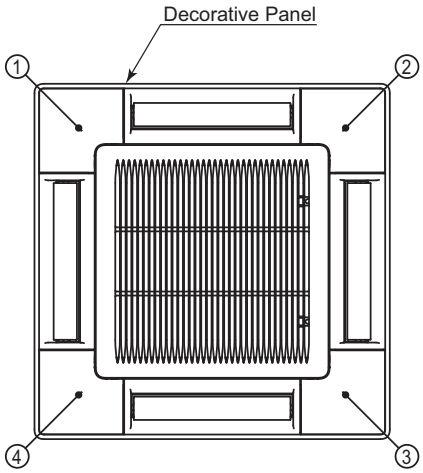
< Installation >

## NOTICE

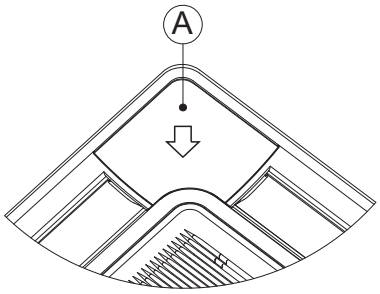
- Do not run the connecting cable for the motion sensor kit and the power supply wiring (208/230V) in parallel. It may cause a malfunction of the motion sensor kit from electromagnetic interference (EMI).
- When the motion sensor kit is installed along with the indoor unit, start from procedure 2.
- When the motion sensor kit is installed after the indoor unit's installation, be sure to turn off the power supply completely before starting installation.

1 Remove the Corner Pocket Covers

(1) The corner pocket cover with motion sensor can be attached to any of four corners (①, ②, ③ or ④). Determine the attachment location according to installation location of the indoor unit and required use of the sensor.

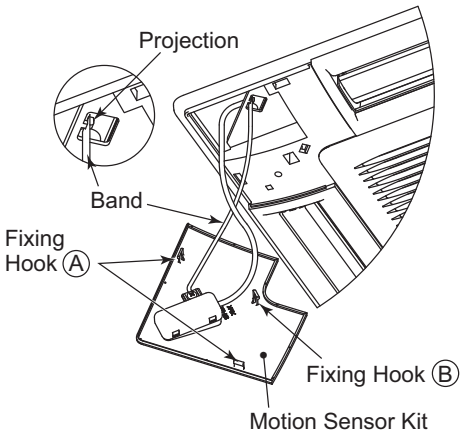



(2) Remove the corner pocket cover where the sensor will be installed. The corner pocket cover can be removed pulling the Ⓐ part toward the arrow direction in the figure below.



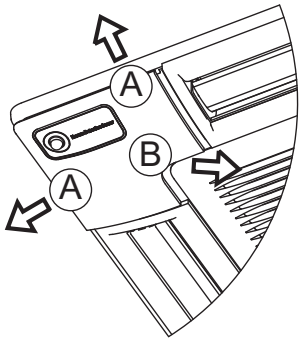
2 Attachment of Motion Sensor Kit

(1) Secure the band at the rear side of the motion sensor kit onto the projection at the decorative panel as shown in the figure below.




NOTE:
Ensure the band is secured to the projection on the decorative panel to prevent the motion sensor kit from falling.

(2) While pushing the wiring into the corner pocket, insert two coupling hooks at Ⓐ to the square hole of the decorative panel, and push the motion sensor kit in the direction of the arrow (Ⓐ).
Then, insert the fixing hook at Ⓑ to the square hole of the decorative panel.



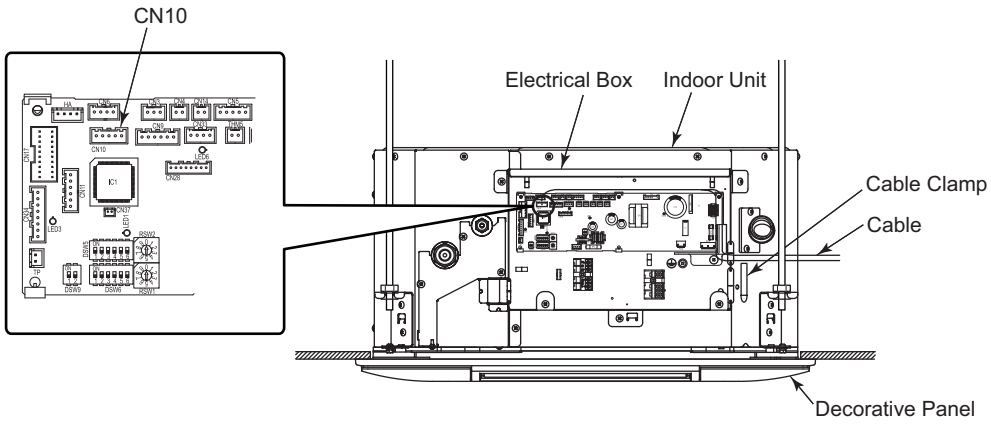

NOTE:
Ensure the cord band is secured to the projection on the decorative panel to prevent the sensor from falling during installation.

***NOTICE***

- Check to ensure that the motion sensor kit is attached securely.

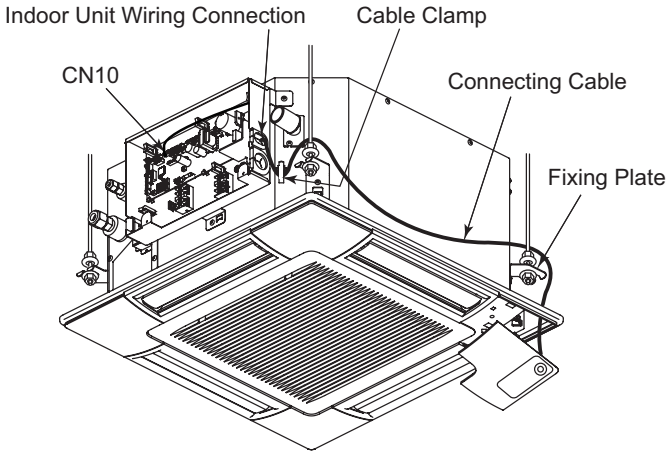
3 Connect the accessory connecting cable to CN10.

(1) Open the electrical box cover of the indoor unit. Attach the connecting cable to CN10 of the PCB in the electrical box.




(2) This motion sensor kit can be attached to any one of the four corners of the decorative panel. If the kit is attached to a corner opposite from the electrical box, run the wiring for the motion sensor kit along the fixing plate as shown below.
After running the connecting cable, clamp the extra length of the connecting cable to the unit using the plastic band.

Example: Installing Motion Sensor Kit to the furthest Corner from Electrical Box.



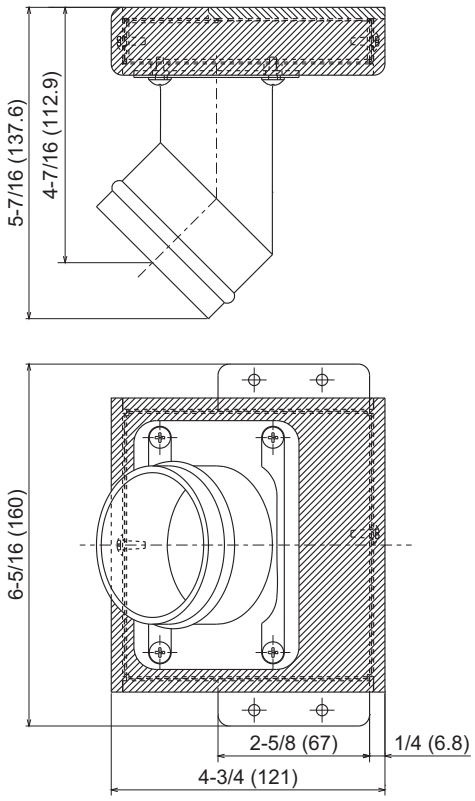

NOTE:
If installing the motion sensor kit near the electrical box, any excess cable should be secured using the cable clamp.

## *NOTICE*

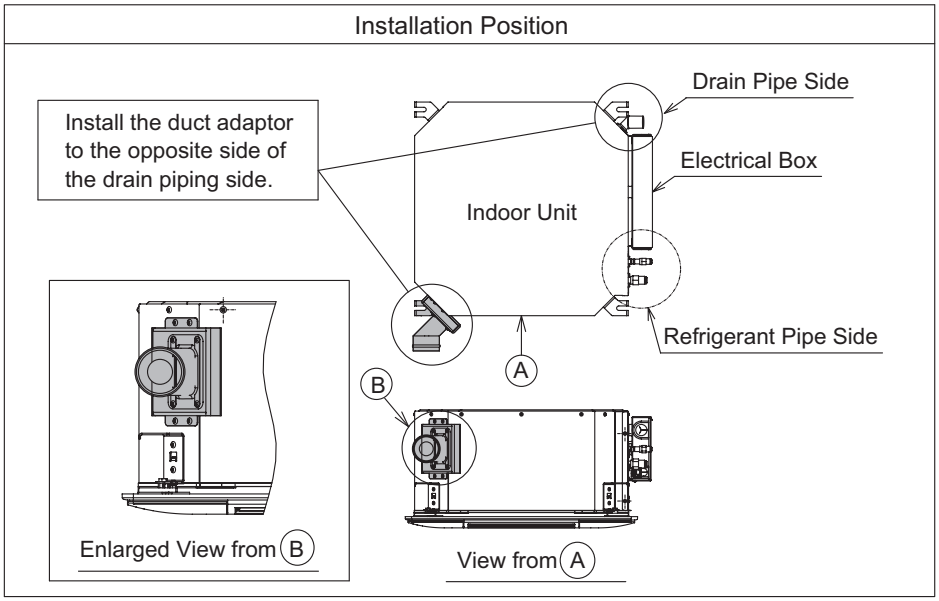
- Refer to the "Installation Manual for Motion Sensor Kit" for installation and setting details.

### 5.2.3 Duct Adaptor: PD-75C

< Dimensional Data > Unit: inch (mm)




< Installation State >



**Specifications**

| Item \ Model | | PD-75C |
|---|---|---|
| Applicable Indoor Unit Model ((H,Y)ICM**B21S) | MBH | 008 to 018 |
| Max. Capacity of Fresh Air Intake | cfm ($m^3$/min.) | 18 (0.5) |
| Purpose | | for Fresh Air Intake |
| Connecting Duct Diameter | inch (mm) | ϕ2-15/16 (ϕ75) |
| Material | | ABS Resin (UL94V-0) |

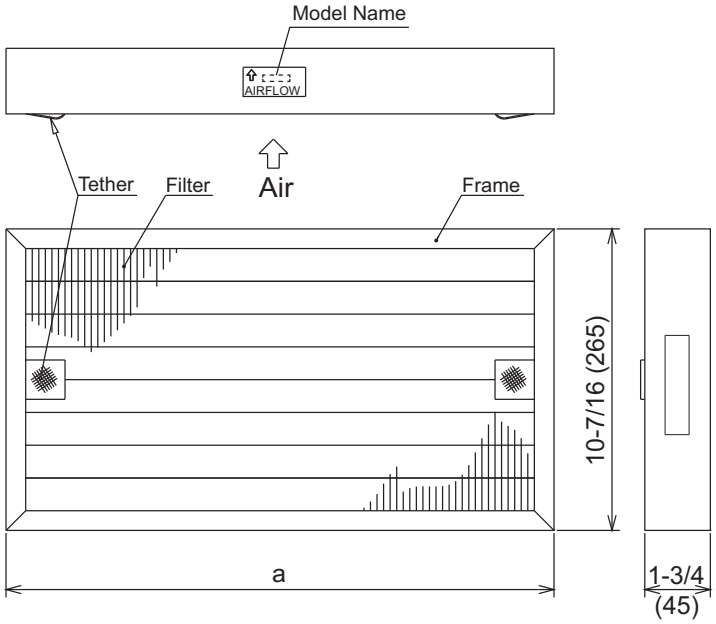
## *NOTICE*

- If the air conditioning system is installed in a location where the difference between the indoor temperature and outdoor ambient temperature is 27 degrees Fahrenheit or greater, the ERV (Energy Recovery Ventilation) is required. If not, the air conditioning operation is not possible. In addition, when the difference of the temperature is 18 degrees Fahrenheit or greater, air conditioning operation may be insufficient.
- The installation of a fresh air intake duct may be prohibited for safety reasons. Check the local state and national building and safety codes and regulations.
- Air filters must be installed in the duct. The fresh air does not go through the air filter of the decorative panel.
- A duct adaptor can take in fresh air approximately 18 cfm (0.5 $m^3$/min). A duct fan and ERV must be installed for further fresh air inlet. The amount of fresh air inlet must be controlled at less than 35 cfm (1.0 $m^3$/min). When ERV and a duct fan are used, operation noise may be increased. Interlock the duct fan, ERV and indoor unit with each other and make sure control is to run only at the time of air-conditioner operation.
- Apply heat insulating treatment for duct and duct connector and use nonflammable insulation. If not, air leakage and condensation might occur.
- Install the indoor unit and then attach the duct adaptor. Otherwise, the indoor unit can't be installed for a grid ceiling. For the normal ceiling, provide a service access door near the indoor unit.
- Refer to the "Installation Manual for Indoor Unit" for duct adaptor installation.

## 5.3 Ceiling Suspended Type

### 5.3.1 Anti-bacterial Air Filter: F-56MP-K1, F-90MP-K1 and F-160MP-K1

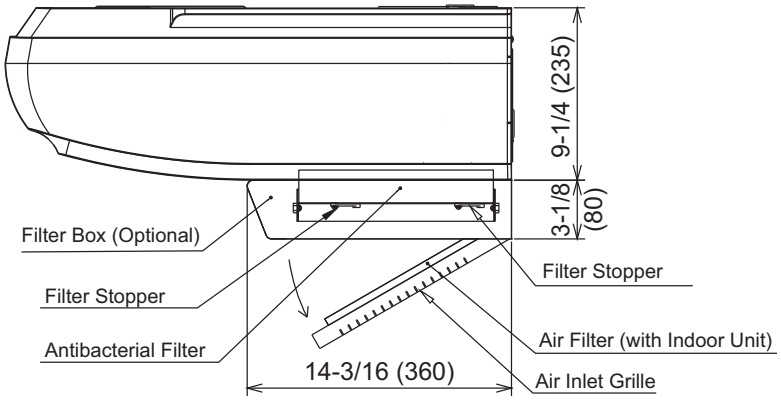
<Dimensional Data>



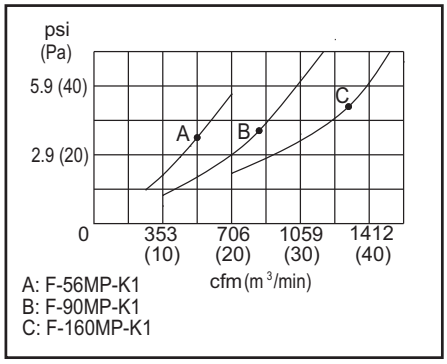

inch (mm)

| Mark \ Model | F-56MP-K1 | F-90MP-K1 | F-160MP-K1 |
|---|---|---|---|
| a | 16-3/8 (416) | 22-7/16 (570) | 28-9/16 (726) |

<Indoor Unit with Antibacterial Air Filter>




<Pressure Drop Characteristics (Initial Pressure Drop)>



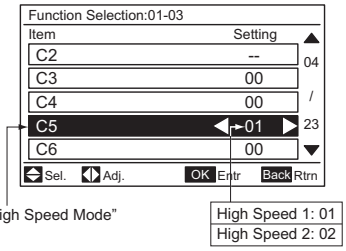
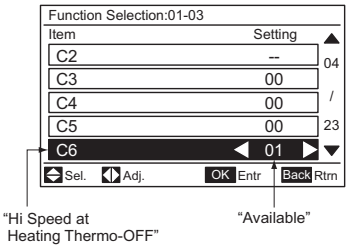
| Item \ Model | | F-56MP-K1 | F-90MP-K1 | F-160MP-K1 |
|---|---|---|---|---|
| Applicable Unit | | (H,Y)ICS015B21S | (H,Y)ICS024B21S | (H,Y)ICS030B21S<br>(H,Y)ICS036B21S |
| Qty. / Unit | | One Set (Two filters per one unit) | | |
| Average Trapping Efficiency | | 65% | | |
| Air Flow Volume (HIGH2) | | 530cfm (15.0$m^3$/min) | 847cfm (24.0$m^3$/min) | 1306cfm (37.0$m^3$/min) |
| Initial Pressure Loss | | 0.10in.W.G.(25.0Pa) | 0.11in.W.G.(27.0Pa) | 0.14in.W.G.(34.0Pa) |
| Final Pressure Loss | | 0.18in.W.G.(46.0Pa) | 0.24in.W.G.(60.0Pa) | 0.31in.W.G.(76.0Pa) |
| Filter Material / Color | Filter Material | Synthetics Nonwoven Fabric | | |
| | Color | Frame: Gray<br>Filter: White | | |
| Patience Time | | About 2500h (Discard It after One Year) | | |
| Weight | | 1.1lb (0.5kg) x 2 | 1.3lb (0.6kg) x 2 | 1.8lb (0.8kg) x 2 |
| Restrictions | | Do not reuse it by washing. | | |
| Filter Box Model (Optional) | | B-56MP | B-90MP | B-160MP |

NOTE:

1. The patience time during operation is for reference, it will change depends on the installation environment. (In case of operating in the oily atmosphere, the patience time is extremely shorter than the reference time.)
2. Make sure to exchange the antibacterial air filter after it passed the patience time. (Do not reuse it by washing.)
3. Each antibacterial air filter is shipped by one set (two filters) per one indoor unit.
4. When using this antibacterial air filter, make sure to change the air flow volume to "High Speed 1" by the wired controller to maintain "Low Air Flow Volume". (Refer to the next page "Setting of Fan Speed" for details.)
5. When the air flow volume is set by " High Speed" function and "HIGH2", the operating noise may be loud.
6. When using this antibacterial air filter, the air flow volume of “High 2” will be equal to “High”. (As shown on the catalogue.) In addition, the patience time of the air filter will be a little shorter than operating by the air flow volume of "HIGH".

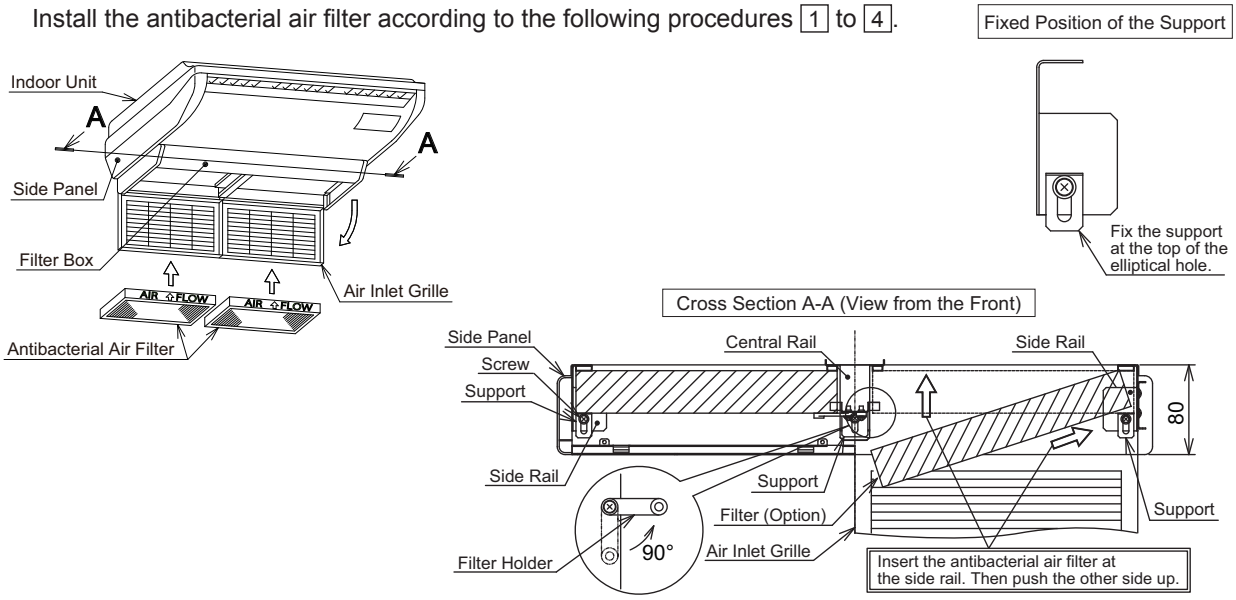
< Setting of Fan Speed>

- Select the function selection mode from the wired controller and set the high speed mode to “High Speed 1” before attaching the antibacterial air filter.
- When using this antibacterial air filter, the airflow volume of “High 2” will be equal to “High”.
- The standard airflow volume will be valid during the heating Thermo-OFF. If the high speed mode is required, set “Hi Speed at Heating Thermo-OFF” from the wired controller.
- The setting details of the wired controller should be referred to in the “Installation Manual” for the wired controller.

| | Setting of “High Speed 1” | Setting of “Hi Speed at Heating Thermo-OFF” |
|---|---|---|
| Liquid Crystal Display (LCD) of Wired Controller (CIW01) |  |  |

< Attaching Antibacterial Air Filter to Indoor Unit >

Install the antibacterial air filter according to the following procedures 1 to 4.




1 Open the air inlet grille for the filter box (option).

2 Check the fixed position of the support attached to the side rail and central rail. The fixed position of the support before shipping should be as in the figure above and is unnecessary to adjust. Loosen the screw if it is necessary, but do not remove.

3 Secure the antibacterial air filter by pushing the filter to the filter box frame and rotating the filter holder on the central rail 90° after attaching to the indoor unit.
Insert the antibacterial air filter into the filter box while paying attention to the “AIR FLOW” direction on the antibacterial air filter so it isn’t upside down.

4 Close the air inlet grille tightly and securely. Refer to the “Installation Manual” for the filter box (option) if the air inlet grille fails to close.

**NOTE:**
Reposition the filter holder to the position before shipping when removing the antibacterial air filter.

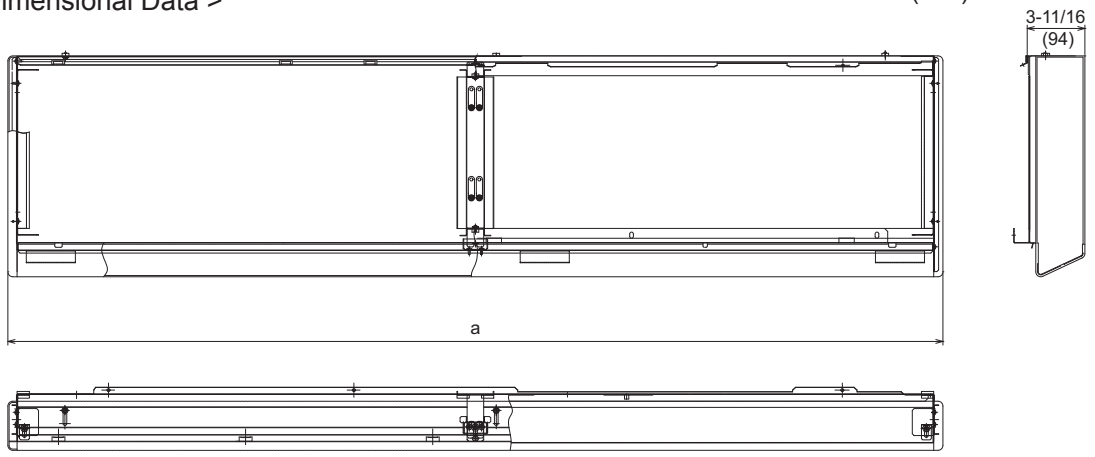
**⚠CAUTION**

Install the antibacterial air filters one at a time. Otherwise, they may fall and cause injury and breakage if installing two filters simultaneously.

### 5.3.2 Filter Box: B-56MP, B-90MP and B-160MP

< Dimensional Data >

Unit: inch (mm)




| Model \ Dimension | a |
|---|---|
| B-56MP | 35-9/16 (904) |
| B-90MP | 47-13/16 (1214) |
| B-160MP | 60 (1524) |

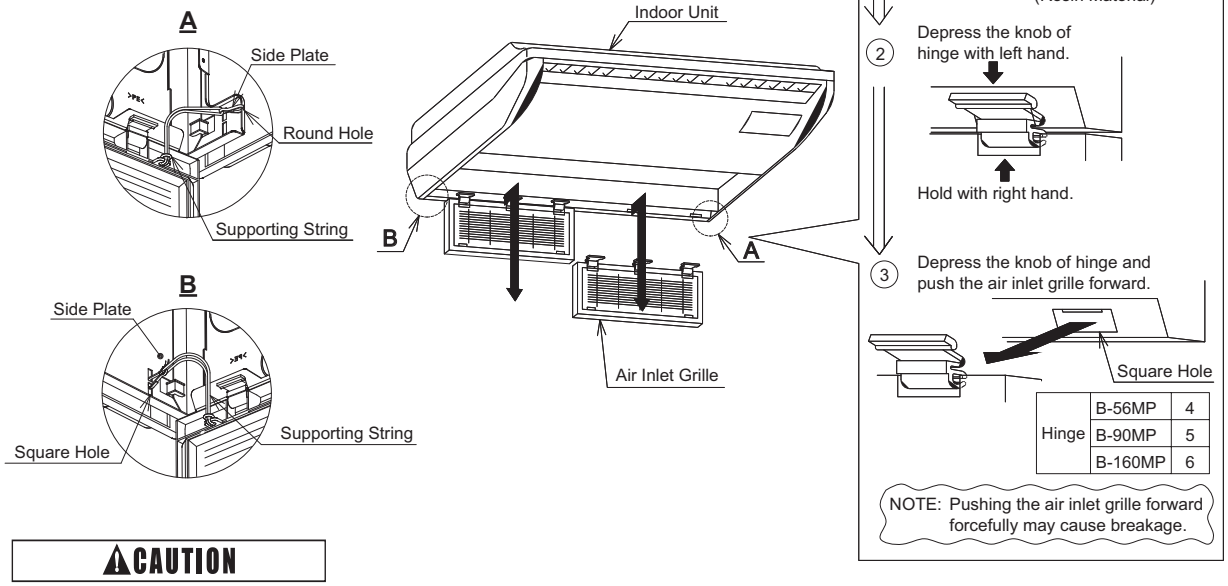
< Installing Filter Box to Indoor Unit >

1 Prepare indoor unit for filter box installation.

(1) Open the air inlet grille.

(2) Remove the supporting string from the indoor unit. (Refer to figures A and B below.)

(3) While the air inlet grille is being opened, depress the knobs of the hinge, push the air inlet grille toward the arrow direction and remove the air inlet grille. (According to procedures ① to ③ below.)




**⚠CAUTION**

- The removed air inlet grille and hinge will be used when installing the filter box. Keep track and do not lose them.
- The air inlet grille and hinge are made of resin. Do not push forward or twist forcefully to avoid breakage.

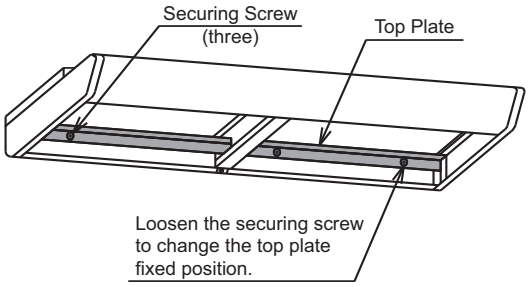
2 Install the filter box after preparation of the indoor unit.

(1) Check if the top plate for the filter box is at the lowest position.

(2) Remove the screws on the air outlet side of the indoor unit. (015 Type: three, 024, 030, 036 Type: four)

(3) Insert the hooks (two) of the filter box to the rectangular holes on the indoor unit air outlet side (on the right side and left side). After inserting the hooks, push up the other side of the filter box and fit the holes on the rear side of the filter box and the screw holes on the rear side of the indoor unit.

(4) Tighten the securing screws (M4: three) on the rear side then tighten the screws (M4: three or four) on the air outlet side.




NOTE:
When installing, push up the filter box to the end and make sure there is no gap between the filter box and indoor unit. Then fix them tightly with screws.

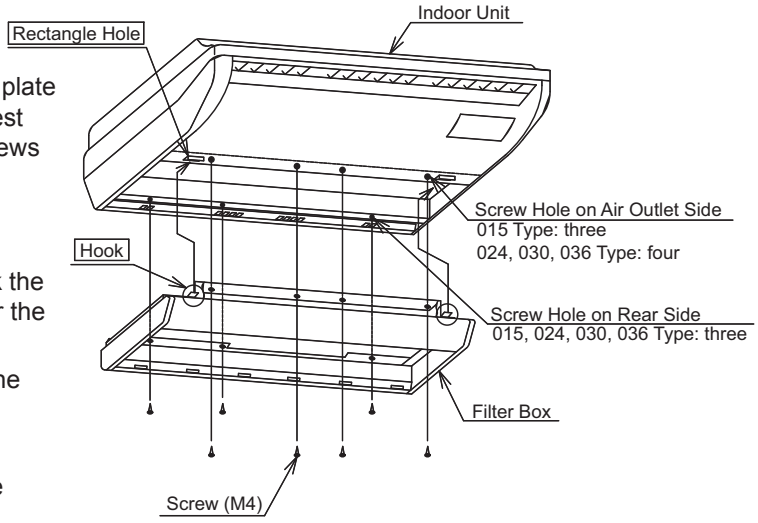
(5) Loosen the securing screw of the top plate for the filter box. Push up to the highest position, then fasten the securing screws (three). (Do not remove the screws)

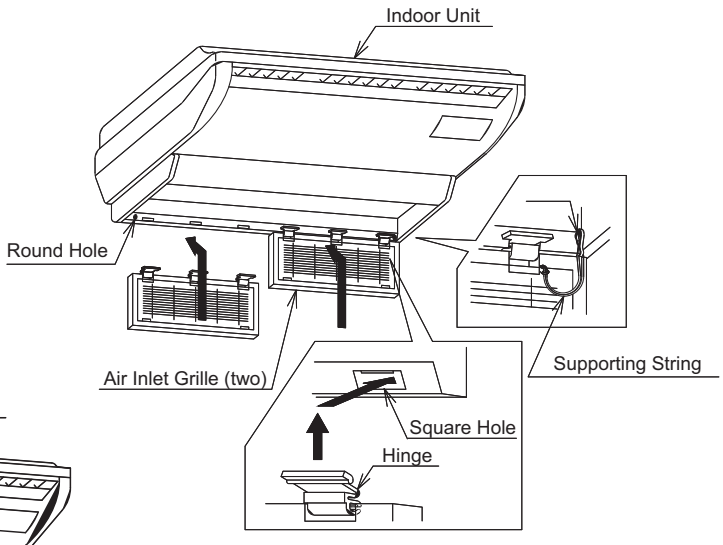
(6) Install the air inlet grille in a reverse procedure of 1.

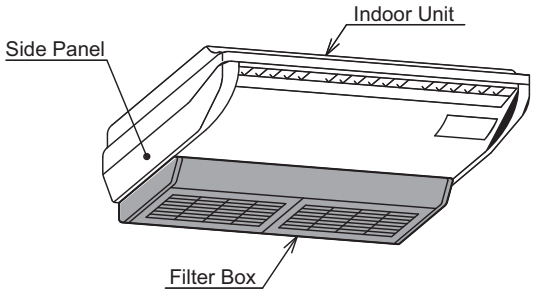
(7) After installing the air inlet grille, hook the supporting string to the round hole for the filter box (two).

(8) Make sure there is no gap between the indoor unit and filter box.

NOTE:
When removing the filter box, remove the screws on the air outlet side of the indoor unit first. Then follow the procedures in reverse to the procedures above.



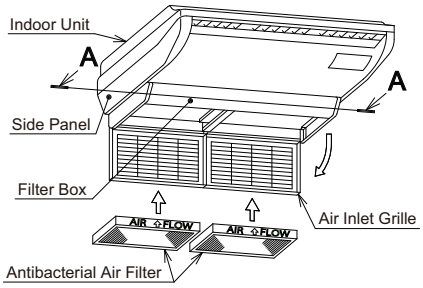



3 Attaching Antibacterial Air Filter.

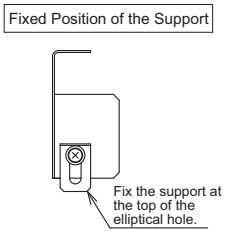
Install the antibacterial air filter (other option) according to the following procedures (1) and (2).

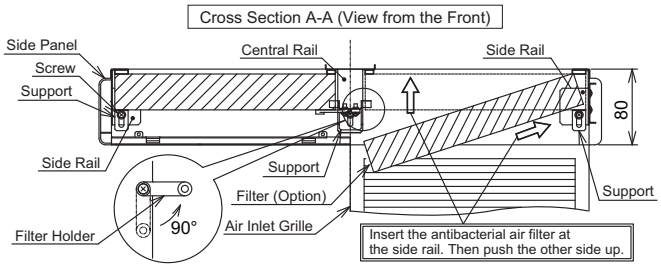
(1) Open the air inlet grille.

(2) Secure the antibacterial air filter by pushing the filter to the filter box frame and rotating the filter holder on the central rail 90° after attaching to the indoor unit.
Insert the antibacterial air filter into the filter box while paying attention to the “AIR FLOW” direction on the antibacterial air filter so as not to be upside down.




**NOTES**:
- The fixed position of the support is made before shipping and is unnecessary to adjust.
- Reposition the filter holder to the factory setting when removing the antibacterial air filter.



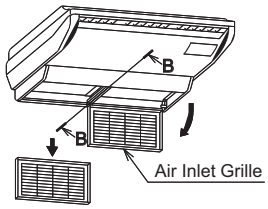

## ⚠CAUTION

Install the antibacterial air filters one by one. They may fall and cause injury and breakage if installing two filters simultaneously.

4 Electrical Box Maintenance and Fan Speed Setting.

Follow the procedures below for electrical box maintenance.

(1) Remove the air inlet grille.




(2) Loosen the screw on the air outlet side of the central rail and remove the screw on the rear side of the central rail.

(3) Loosen the three screws on the top plate and pull down to the lowest position.

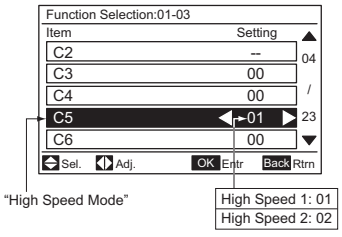
(4) Loosen the screw on the bottom of the electrical box. Pull the electrical box to lower position and hook the metallic part attached on the box to the drain on rear side of the indoor unit. (Refer to Figures 1 and 2 on the right.)

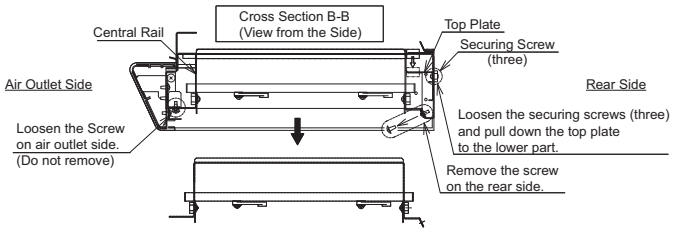
(5) Perform maintenance to the electrical box.

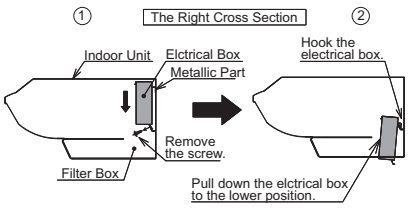
(6) Reposition the electrical box using reverse procedures.

Setting of Fan Speed

- Select the function selection mode from the wired controller and set the high speed mode to “High Speed 1” before attaching the antibacterial air filter.
- When using this antibacterial air filter, the airflow volume of “High 2” will be equal to “High”.
- The setting details of the wired controller should be referred to in the “Installation Manual” for the wired controller.



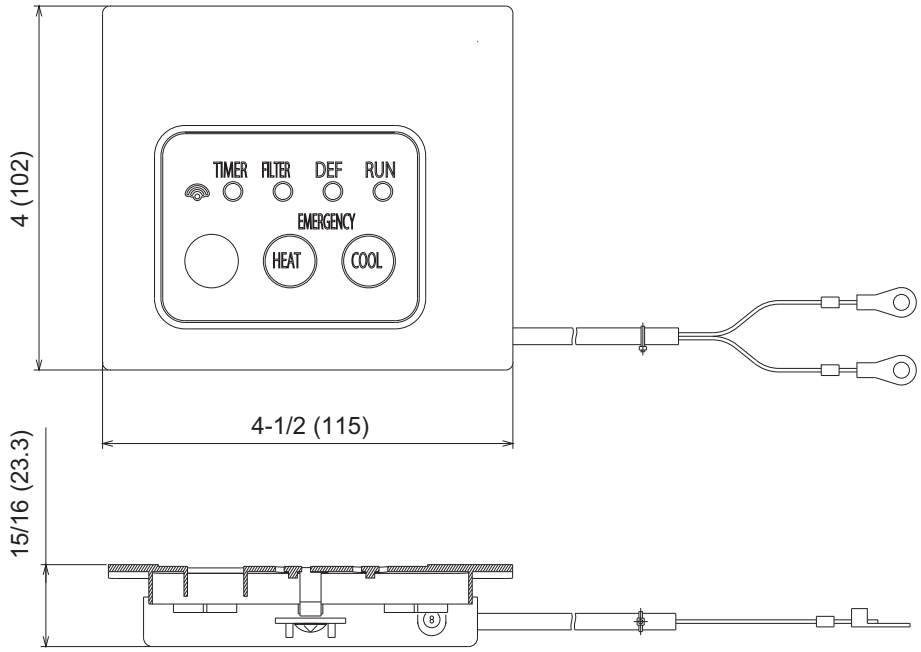



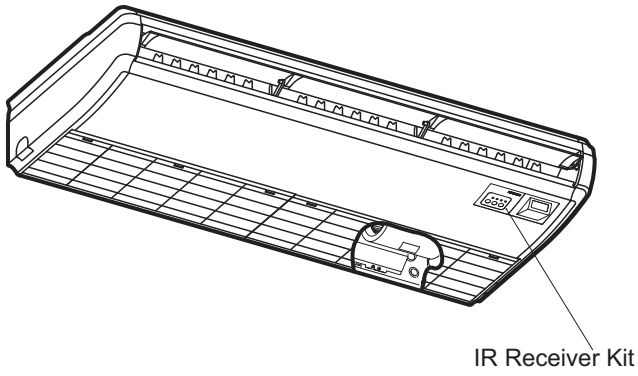

**NOTE:**
When installing the drain pump (option), loosen the wiring to the operation range; then pull down the electrical box.

### 5.3.3 IR Receiver Kit: CSIRK01

< Dimensional Data > Unit: inch (mm)




< Installation State >



< Installation >

**⚠WARNING**

- Turn OFF the power source completely before setting the DIP switches, installation work and electrical wiring work for IR receiver kit.
  If not, it may cause an electric shock.

***NOTICE***

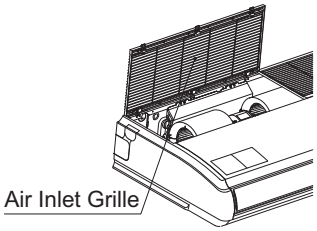
- When the IR receiver kit is installed near ambient lighting, it may not receive a signal from the wireless controller. Therefore, pay particular attention to the installation position of the IR receiver kit.
- Do not run the connecting cable for the IR receiver kit and the power source cable (208/230V) in parallel. It may cause malfunction of the IR receiver kit.

1 Perform the installation work for the IR receiver kit while the indoor unit is being installed.

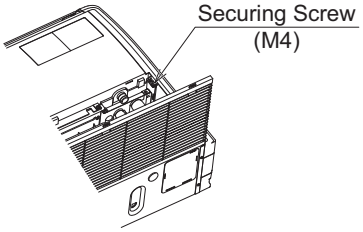
2 Turn OFF the power source of the indoor unit if the IR receiver kit is attached after the indoor unit is installed.

3 Remove the right side cover.

(1) Open the air inlet grille.

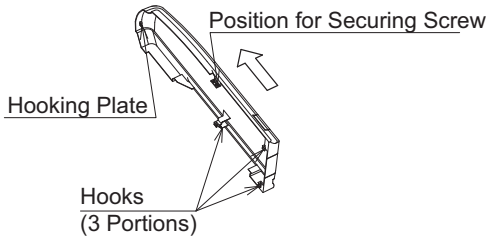



(2) Remove the securing screw (M4).




(3) Push the side cover to 9/16 inch (15mm) forward to remove the hooks and the hooking plate.

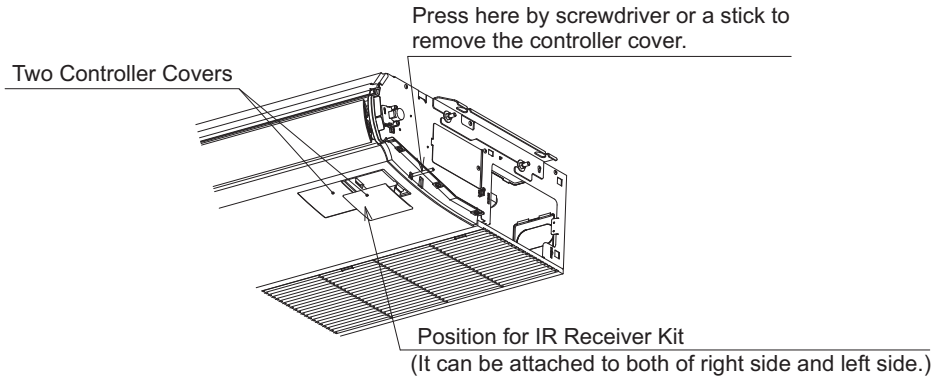
(4) Remove the side cover to lift upward.




4 Remove the controller cover attaching to the lower cover.

(1) Insert screwdriver or a stick (maximum ϕ3/16 inch (5mm)) into the service hole at the lower right side of lower cover.

(2) Press the service hole to remove the controller cover.

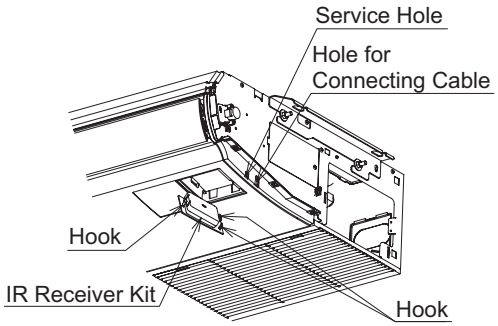


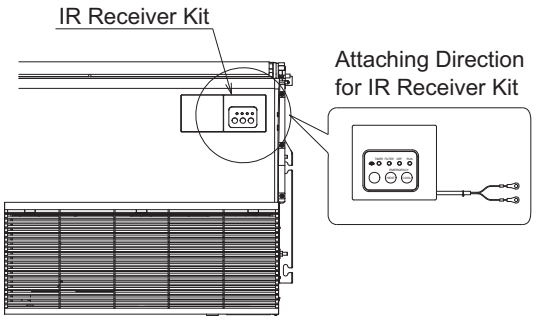
5 Attach the IR receiver kit to the lower cover.

(1) Insert the IR receiver kit and the connecting cable to the position for IR receiver kit.

(2) Lead the connecting cable through the hole for connecting cable.

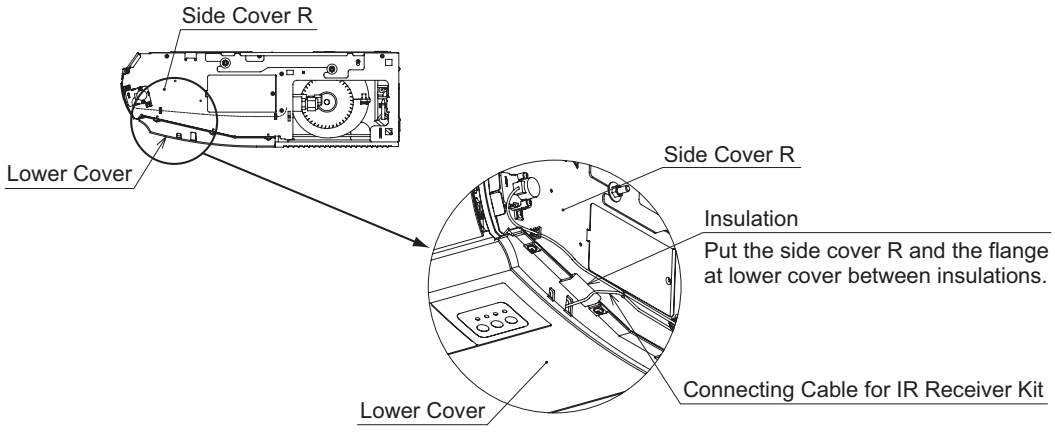
(3) Catch 3 hooks of IR receiver kit onto the square holes. Pay attention to the direction of IR receiver kit when it is attached.



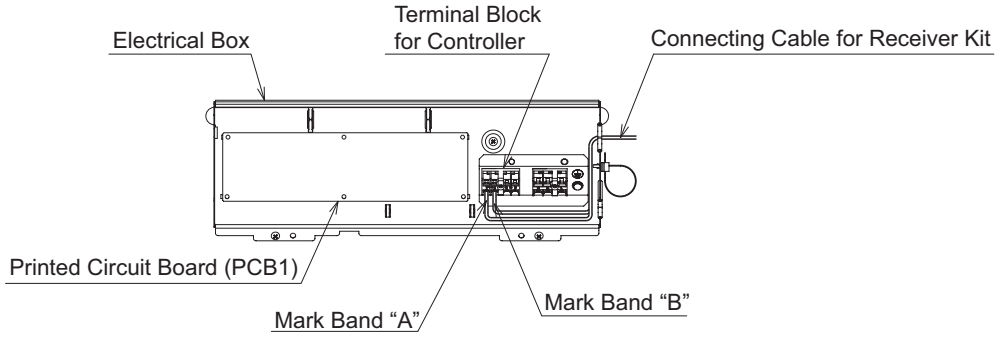




NOTE:
Check whether the IR receiver kit is securely fixed.

6 Lead the connecting cable into the electrical box with other wires.
Attach the accessory insulation to the edge of side cover R in order to prevent a scratch by contacting the connecting cable to the edge of side cover R.

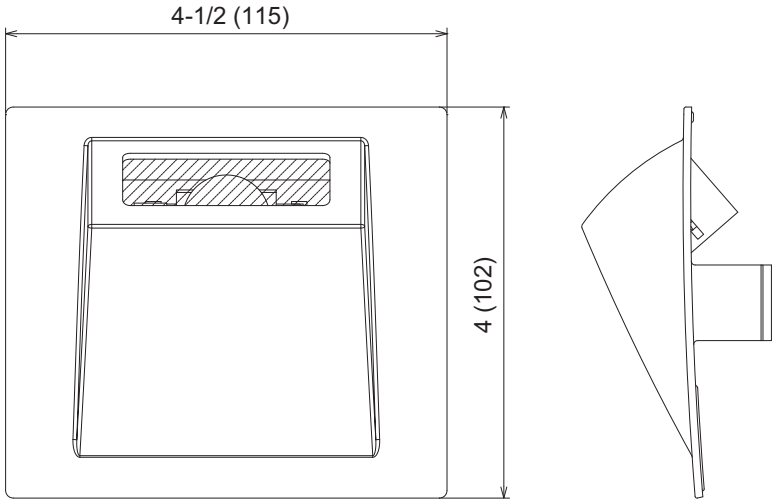



7 Remove the electrical box cover. Connect the connecting cable to the terminals A and B at the terminal block for controller as following figure. (There are no polarity between terminals A and B.)

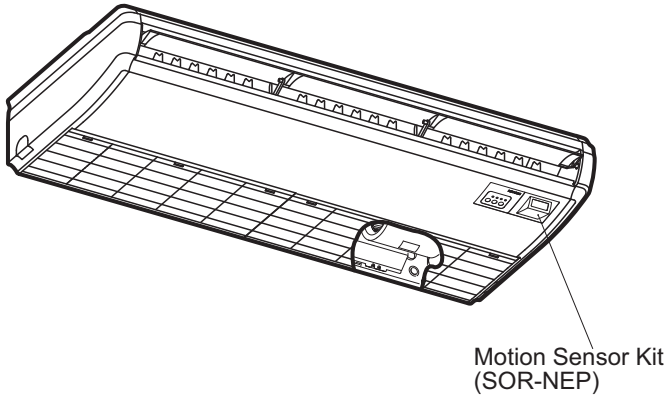


### 5.3.4 Motion Sensor Kit: SOR-NEP

< Dimensional Data > Unit: inch (mm)




< Installation State >



< Installation >

**NOTICE**

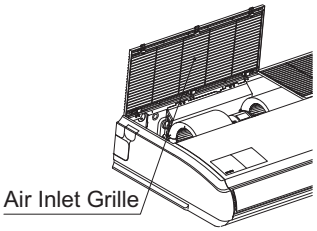
- Do not run the connecting cable for the motion sensor kit and the power supply wiring (208/230V) in parallel. It may cause a malfunction of the motion sensor kit from electromagnetic interference (EMI).
- When the motion sensor kit is installed along with the indoor unit, start from procedure 3.
- When the motion sensor kit is installed after the indoor unit's installation, be sure to turn off the power supply completely before starting installation.

1 Perform the installation work for the motion sensor kit with the indoor unit is already installed.

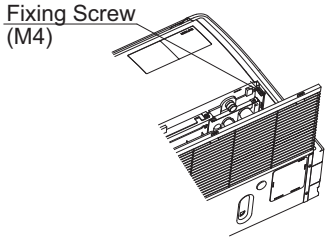
2 Be sure to turn OFF the power source of the indoor unit.

3 Remove the right side cover.

(1) Open the air inlet grille.

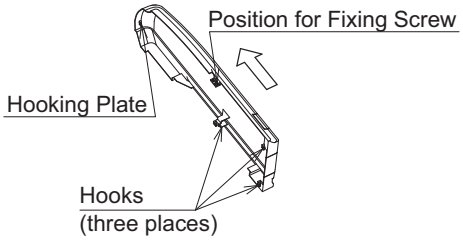



(2) Remove the fixing screw (M4).




(3) Push the side cover 9/16inch (15mm) forward to remove the hooks and the hooking plate.

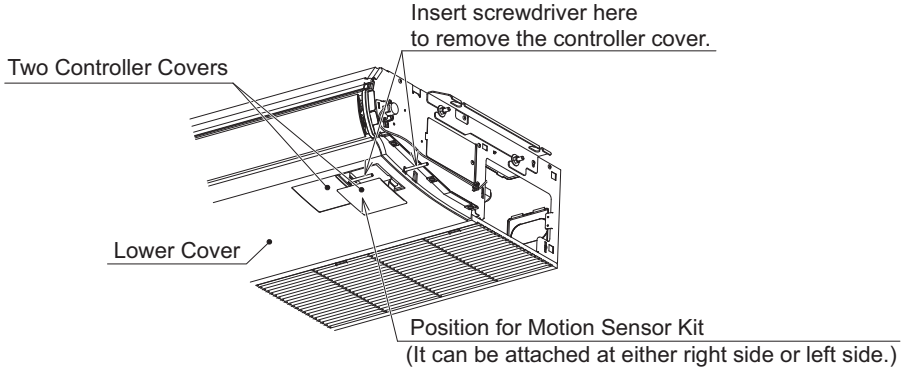
(4) Remove the side cover to lift upward.




4 Remove the controller cover attached to the lower cover.

(1) Insert screwdriver or a stick (maximum ϕ3/16inch (5mm)) into the service hole at the lower right side of lower cover.

(2) Press the service hole to remove the controller cover.

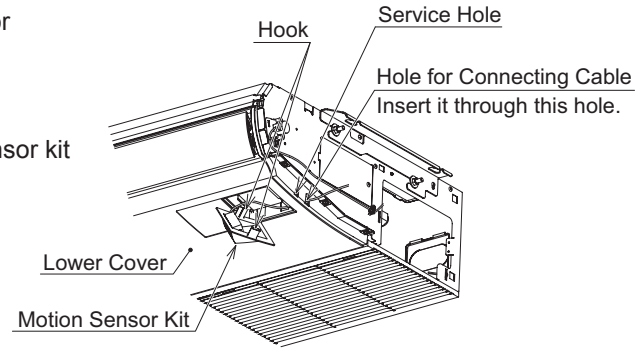


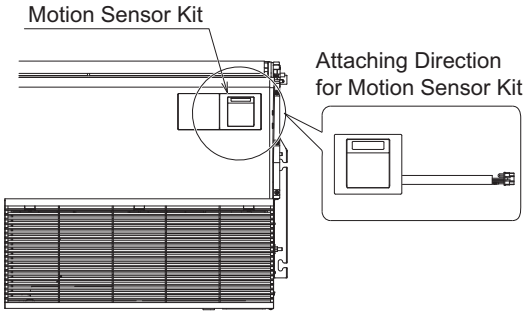
5 Attach the motion sensor kit on the lower cover.

(1) Insert the motion sensor kit and the connecting cable to the position for the motion sensor kit.

(2) Insert the connecting cable through the hole for connecting cable between insulations.

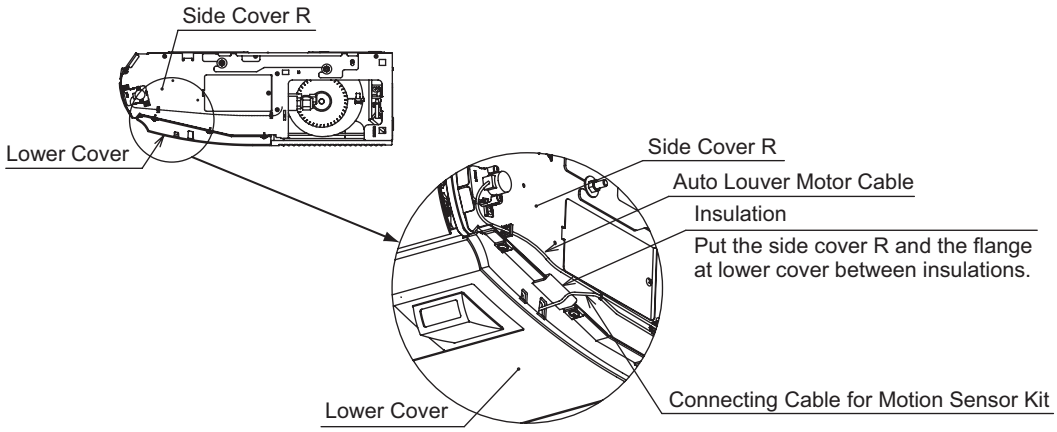
(3) Catch two hooks of the motion sensor kit onto the square holes.
Pay attention to the direction of the motion sensor kit when it is attached.



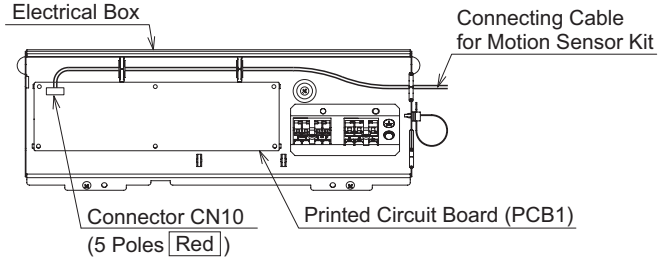




NOTE:
Check whether the motion sensor kit is securely fixed.

6 Insert the connecting cable into the electrical box with the auto louver motor cable.
Attach the accessory insulation to the edge of side cover R carefully in order to prevent the connecting cable from scratching against the edge of side cover R.




7 Remove the electrical box cover. Connect the connecting cable to the connector CN10 (5 poles, red) on PCB1 as in the following figure. The DIP switch setting is NOT required since the motion sensor kit is automatically recognized when the power source is turned ON.




NOTE:
After running the connecting cable, clamp the extra length of the connecting cable using the cable band and store it inside the electrical box.

After the installation work is completed, perform a test run according to the “Installation and Maintenance Manual” for the indoor unit.

### 5.3.5 Drain Pump Kit: DUPC-63K1 and DUPC-160K1

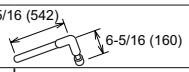
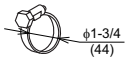
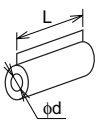
**NOTICE**

- To ensure correct performance, use this manual together with the “Installation and Maintenance Manual” for the indoor unit and the wireless controller. Forward this information to the building owner and request that they maintain all the equipment manuals.

## 1. Factory-Supplied Accessories

Check to ensure that the following accessories are packed with the drain pump.

Unit: inch (mm)

| No. | Accessory for Drain Pump Kit | | | DUPC-63K1 | DUPC-160K1 | Remarks |
|---|---|---|---|---|---|---|
| | | | | Qty. | | |
| ① | Drain Pump Body |  | | 1 | 1 | |
| ② | Drain Hose |   | | 1 | 1 | for Vertical Drain Piping |
| ③ | L-shaped Drain Pipe |   | | 1 | 1 | for Vertical Drain Piping |
| ④ | Hose Band |   | in vinyl package | 2 | 2 | for Attaching Drain Hose |
| ⑤ | Hose Band |   | | 1 | 1 | for Attaching Drain Pipe |
| ⑥ | Securing Screw |  | M4 x 8 | 4 | 4 | for Securing (1 for Spare) |
| ⑦ | Pipe Insulation |   | Packed with ③ | 1 | 1 | for Wrapping Drain Piping |
| ⑧ | Insulation |  | 3/8T x 5-1/8 x 9-1/16 (10T x 130 x 230) | 2 | 2 | for Wrapping Drain Piping Connection |
| ⑨ | Insulation |  | 3/8T x 1-15/16 x 7-7/8 (10T x 50 x 200) | 1 | 1 | for Wrapping Drain Piping Connection |
| ⑩ | Insulation |  | 3/16T x 2-13/16 x 2-13/16 (5T x 72 x 72) | 1 | 1 | for Vertical Drain Pipe |
| ⑪ | Insulation |  | 1/16 x 7-7/8 x 6-5/16 (2T x 200 x 160) | 1 | 1 | for Covering Gap |
| No. | Accessory for Upper Piping Set | | | SSF-63K | SSF-160K | Remarks |
| | | | | Qty. | | |
| 1 | Refrigerant Liquid Pipe |   ϕd x L | ϕ1/4 x 7-5/8 (ϕ6.35 x 193) | 1 | - | |
| | | | ϕ3/8 x 7-5/8 (ϕ9.52 x 193) | - | 1 | |
| 2 | Refrigerant Gas Pipe | | ϕ1/2 x 9 (ϕ12.7 x 228) | 1 | - | |
| | | | ϕ5/8 x 9 (ϕ15.88 x 228) | - | 1 | |
| 3 | Pipe Insulation (for Liquid) |   | ϕ11/16 (ϕ18) | 1 | - | for Wrapping Field Refrigerant Piping Connection |
| | | | ϕ7/8 (ϕ22) | - | 1 | |
| 4 | Pipe Insulation (for Gas) | | ϕ1 (ϕ26) | 1 | - | |
| | | | ϕ1-1/4 (ϕ32) | - | 1 | |
| 5 | Cable Clamp |  | | 6 | 6 | for Attaching Pipe Insulations (3 and 4) |

## 2. Necessary Tools and Instruments

Prepare the following onsite.

| No. | Tool | No. | Tool |
|---|---|---|---|
| 1 | Phillips Screwdriver | 6 | PVC (VP25) |
| 2 | Screwdriver | 7 | PVC Glue |
| 3 | Cutter | 8 | Insulation for Drain Pipe |
| 4 | Side Cutter | 9 | Vinyl Tape (Gray) |
| 5 | 2 Adjustable Wrenches | 10 | Coating Treatment |

# 3. Installation

## 3.1 Installation Space and Position

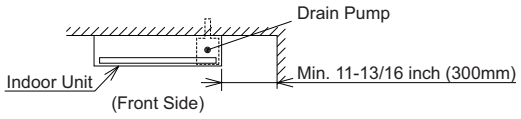
**NOTICE**

- For this drain pump, the drain piping connection changes from VP20 to VP25. (PVC pipe).
- The drain piping and the refrigerant piping can be connected from only the top right side of the indoor unit viewing from the front.

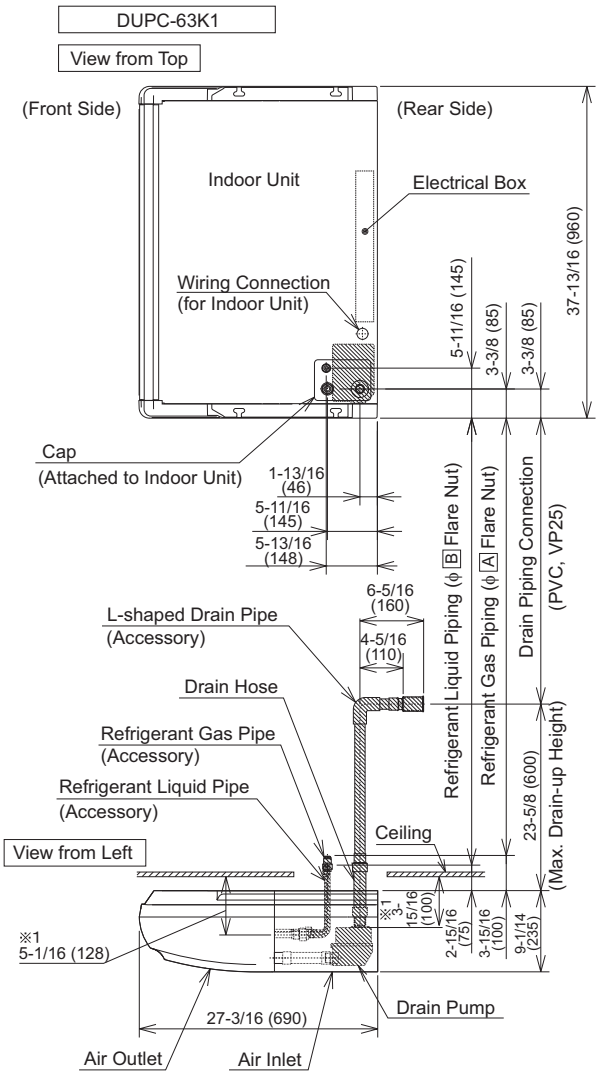
(1) Maintain the service space at the right side of the indoor unit viewing from the front as shown in the figure below when the drain pump is installed.

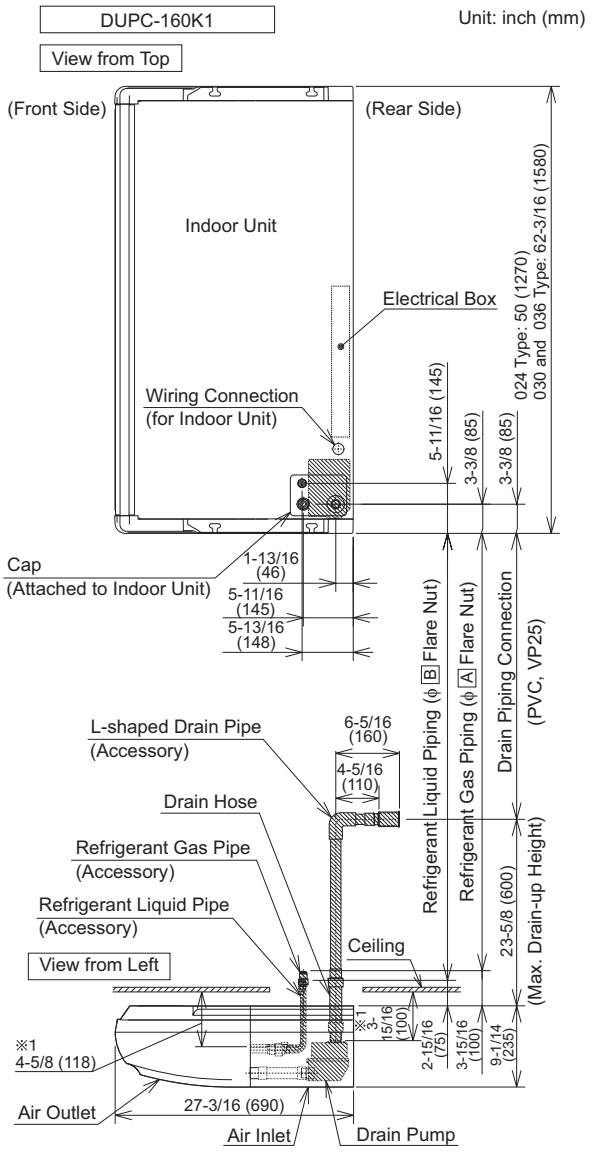
(2) Select the installation place where a sufficient ceiling height is maintained to facilitate the drain piping and 1/25 ~ 1/100 ratio of down-slope can be created.

(3) The following figures show the installation dimensions. (The drain pump is installed at the shaded part.)




Unit: inch (mm)




Unit: inch (mm)

| Model | | DUPC-63K1 | DUPC-160K1 |
|---|---|---|---|
| Applicable Indoor Unit Model | | (H,Y)ICS015B21S | (H,Y)ICS024-036B21S |
| Field Refrigerant Pipe | Gas | 1/2 (12.7) | 5/8 (15.88) |
| Flare Nut Connection | Liquid | 1/4 (6.35) | 3/8 (9.52) |

## 3.2 Installing to Indoor Unit

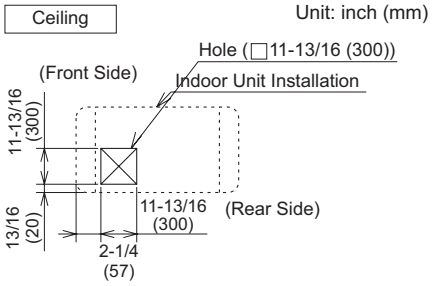
Refer to the “Installation and Maintenance Manual” for the indoor unit along with this manual.

### 3.2.1 Before Installing to Indoor Unit

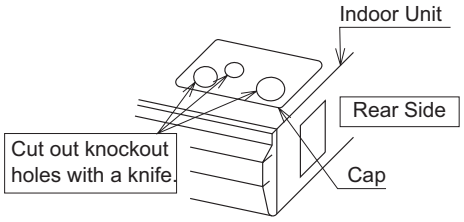
It is recommended that this drain pump kit be installed before the indoor unit is mounted although it is possible after the indoor unit is mounted.

※ If installing this drain pump kit after mounting the indoor unit, first install the drain piping and the refrigerant piping according to the dimensions shown with “※ 1” on the previous page.

(1) Make the hole for the piping connection in the ceiling as shown in the figure at the right.



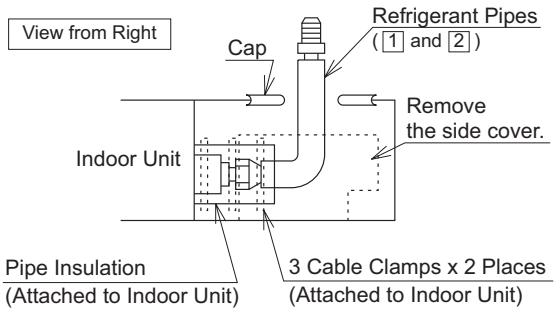

(2) Cut three knockout holes at the cap with a knife. Attach the cap again after cutting out.




(3) Open the air inlet grille and remove the side cover. (Refer to the “Installation and Maintenance Manual” for removing.)

(4) Connect the refrigerant pipes (1 and 2) to the indoor unit. (Use two wrenches.)

(5) Wrap the insulation attached to the indoor unit around the flare connection.



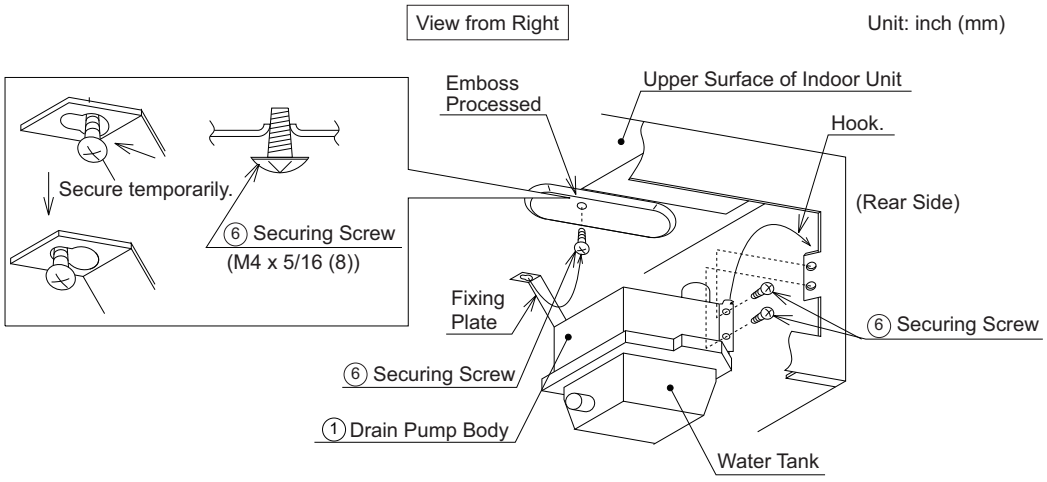

### 3.2.2 Installing Drain Pump Body

Install the drain pump body after the indoor unit is mounted (Refer to the “Installation and Maintenance Manual” for mounting the indoor unit.)

(1) Secure temporarily the securing screw (⑥) at the emboss processed part of the upper surface to hook the drain pump body temporarily.

(2) Hook and secure the right side of the drain pump body (①) with two securing screws (⑥).

NOTE:
Ensure the wires are clear of the securing screws when tightening.

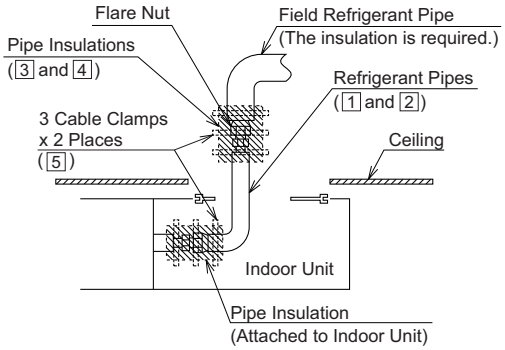


## 4. Refrigerant Piping Work

(1) Connect the refrigerant pipes (1 and 2) to field refrigerant pipe.

(2) Wrap the accessory pipe insulation (3 and 4) around the flare connection.

(3) Apply sealing material (field-supplied) at the refrigerant pipe hole to prevent air leakage
If air leakage occurs, it may cause decreasing performance or condensation.




## 5. Drain Piping Work

**⚠CAUTION**

Perform the piping work with the accessory L-shaped drain pipe in order to adequately drain water. Do not create an upper-slope or rise for the drain piping since drain water can flow back to the indoor unit and leakage into the room will occur. Especially, pay attention to the position of the cable band and applying adhesive.

Be sure to apply the PVC (Polyvinyl chloride) adhesive (field-supplied) completely around the PVC pipe connection. Securely connect the pipes at the following Ⓐ and Ⓑ in order to prevent water leakage. (Securely fix the pipe connection at Ⓒ using the cable band. Do NOT use adhesive.) Create 1/25 ~ 1/100 of a down-slope ratio for the PVC piping.

(1) Determine the drain-up height. The height can be adjusted according to the following figure.

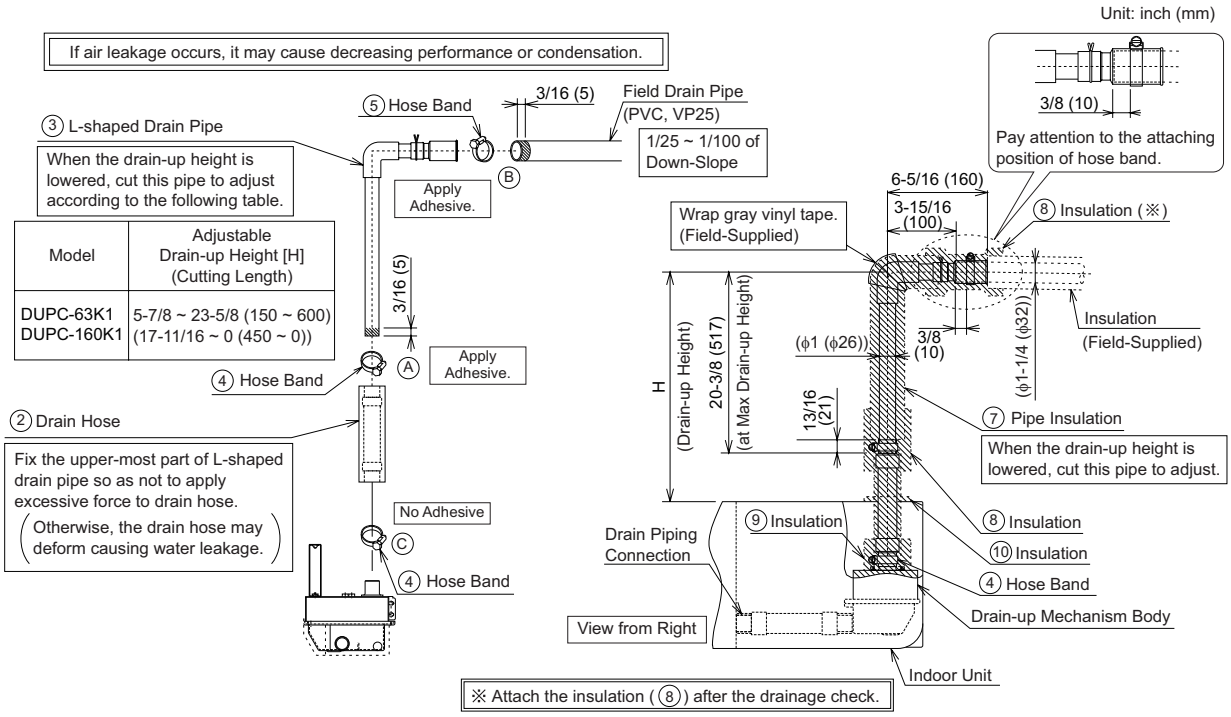
(2) Connect the drain hose (②), L-shaped drain pipe (③) to the drain-up mechanism (①) by hose band (④). (Tightening Torque: 1.8 to 2.5 lbf-ft (2.5 to 3.4 N-m))

(3) Connect the field drain pipe to the L-shaped drain pipe (③) with a hose band (⑤). (Tightening Torque: 1.8 to 2.5 lbf-ft (2.5 to 3.4 N-m))

(4) Insulate around the drain pipe using pipe insulation (⑦) and insulations (⑧ and ⑨) as follows. For the pipe insulation (⑦), wrap the vinyl tape (field-supplied) around it in order to prevent condensation. Additionally, perform the insulation work for the field drain pipe.

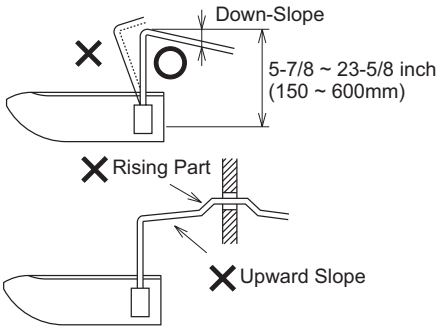
(5) Cover the gap around the cap by insulation (⑩) after the L-shaped drain pipe (③) runs through the cap.

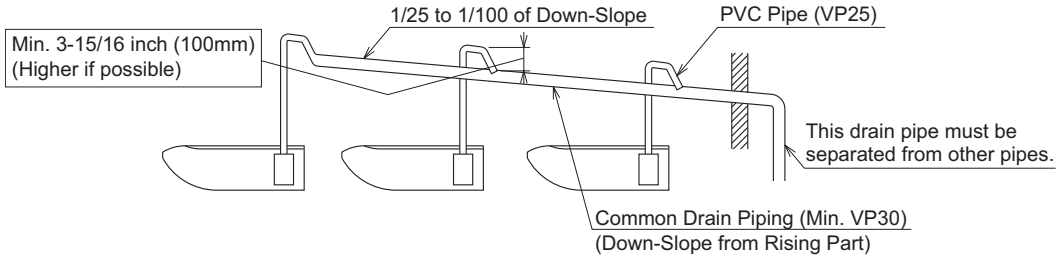
Unit: inch (mm)



## NOTICE

- Use the accessory L-shaped pipe to create vertical drain piping. Otherwise, the drain water will flow back to the unit, causing overflowing. Additionally, do not create a rising part at the top of the L-shaped pipe.
- Do not create a rising part for the drain piping or upper slope. The drain water will flow back to the unit and it may cause water leakage when the unit operation is stopped.
- Do not connect the drain pipe with sanitary or sewage piping or any other drain piping. When the common drain piping is provided for multiple indoor units, the connected position of each indoor unit must be higher than the common piping. The pipe size of the common drain pipe must be larger than VP30 (nominal diameter 1-3/16 inch (30mm), outer diameter 1-1/2 inch (38mm)) according to the number of indoor units.



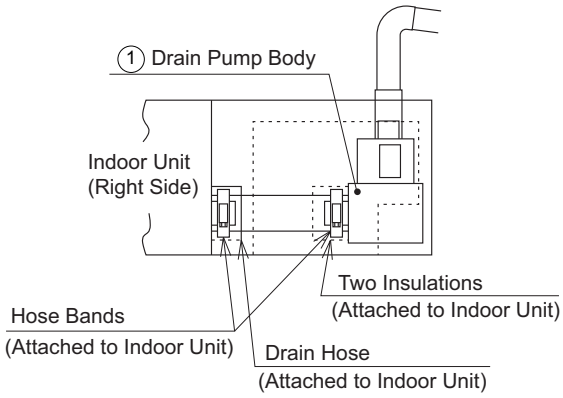




(6) Connect the already-installed drain pipe with the drain-up mechanism (①).
(Tightening Torque: 1.8 to 2.5 lbf-ft (2.5 to 3.4 N-m))

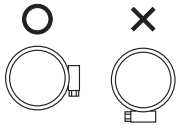
(7) Connect the connection at the indoor unit to the connection at the drain-up mechanism (①) with the drain hose attached to the indoor unit. Fix each drain pipe connection using the hose band attached to the indoor unit.
NOTE:
Do not use adhesive at the drain hose connection because the drain hose connection is required to be removed for servicing.

(8) Wrap two insulations attached to the indoor unit around the hose band.
NOTE:
Insert the drain hose completely without any gap. Attach the insulation without any gap to prevent condensation.

(9) After the drain piping work is completed, ensure there is no air gap at the connection location. If there is a gap, cut the insulation (⑪) and fill in the gap.




Fixing Direction of Hose Band



(Bottom Side)

If the direction is incorrect, it may cause water leakage.

## 6. Electrical Wiring

**⚠WARNING**

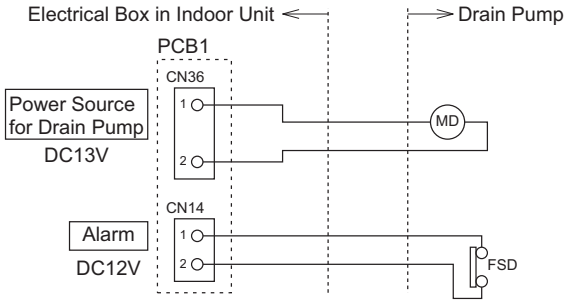
- Do not perform the electrical wiring connection without referring to the installation manual. If the instructions are not followed correctly, it may result in heat generation at connection, electrical shock or a fire.
- Make sure that the electrical wires are securely fixed in order not to apply an external force to the terminal connections of the wirings. If fixing is not completed, it may cause heat generation or a fire.
- Do not open the service cover for the indoor or outdoor unit without turning OFF the main power source. Otherwise, an electrical shock may occur.

### 6.1 Before Wiring Connection

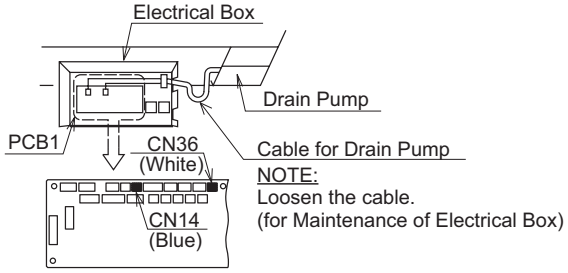
Disconnect the connector CN14 (blue) on the indoor unit PCB1.
NOTE:
Do not repeatedly connect and disconnect the connector. The terminal board may become damaged.

### 6.2 Electrical Wiring Connection

Connect the cable for the drain-up mechanism to the indoor unit according to the following figure.




| Mark | Name | Remarks |
|---|---|---|
| MD | Motor for Drain Pump | Drain Pump |
| FSD | Float Switch for Drain Pump | |
| PCB1 | Printed Circuit Board | Indoor Unit |




< Enlarged View of PCB1 >

※ Disconnect the connector for CN14 (Blue) and connect the cable for the drain-up mechanism to the indoor unit.

## 7. Test Run

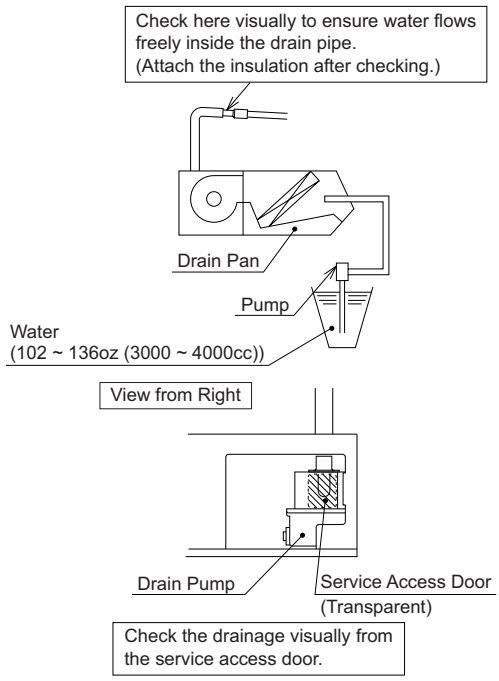
**⚠CAUTION**

Check that the power source is turned ON before the test run.
If the water is poured without turning ON, it overflows because the drain pump is not operating.

(1) Drainage and Water Leakage Check
After performing the drain piping work and the electrical wiring, check to ensure that water flows freely as in the following procedures.

● Drainage Operation by Float Switch
The following are regular procedures to check the float switch operation.

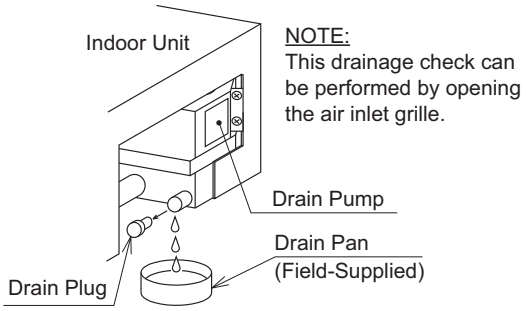
(a) Turn ON the power source.
(b) Pour 102 oz to 136 oz (3000cc to 4000cc) of water gradually from the air outlet into the drain pan.
(c) Check that the water flows freely inside the transparent drain pipe connection and ensure no water leakage occurs.
(d) If the drainage cannot be checked, pour gradually an additional 34 oz to 68 oz (1000cc to 2000cc) of water into the drain pan. If the end of the drain pipe cannot be checked visually, remove the right side cover and check the drainage from the transparent service access door at the drain pump.
If the water overflows from the drain pan, the drain piping is not providing adequate drainage. Recheck the drain piping.

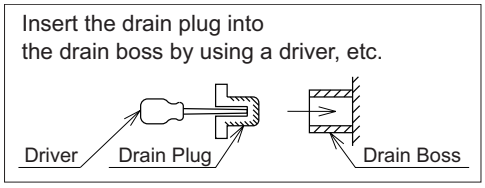



● Drainage Check by Indoor Unit Operation

(a) Turn ON the power source.
(b) Perform the cooling operation.
(For the heating season, perform the cooling operation with the Test Run Mode. There are restrictions for the Test Run Mode. Refer to the “Installation and Maintenance Manual” for the indoor unit for details.)

(c) Pour 51 oz to 68 oz (1500cc to 2000cc) of water gradually from the air outlet into the drain pan.
NOTE:
Drain water which is poured into the drain pan to check the drainage in the heating season should be drained completely from the drain pan. Prepare the drain pan (field-supplied) and remove the drain plug when the drain water is drained. After the drain water is completely drained, securely insert the drain plug again.




Ensure there is no leakage or excess moisture prior to test run.

## 8. Maintenance

**⚠WARNING**

The maintenance for the drain-up mechanism must be performed by your contractor or authorized service engineer. Otherwise, it may cause malfunction, water leakage, an electrical shock or injury from a fall by the drain-up mechanism.

### 8.1 Operation Method

The drain pump is built in the indoor unit. It is continuously operated with a cooling operation. (It is NOT operated at the fan and heating operation.)
For the indoor unit operation, refer to the “Operation Manual” for the indoor unit.

**NOTICE**

- The drain pump is operated in order to drain the water left after the cooling operation is stopped. Turn OFF the main power source after approximately five minutes.
- The sound of water flowing may be heard because the drain-up mechanism drains the drain water. It is not an abnormality.
- Drain the water from the drain plug if the indoor unit is not used for a long time.

### 8.2 Cleaning Drain Pump

If the drain pump is used for a long time, clogging can occur inside the water tank which causes failure of the drain pump. Perform the periodic maintenance work as follows.
Turn OFF the power source when the maintenance work is performed.

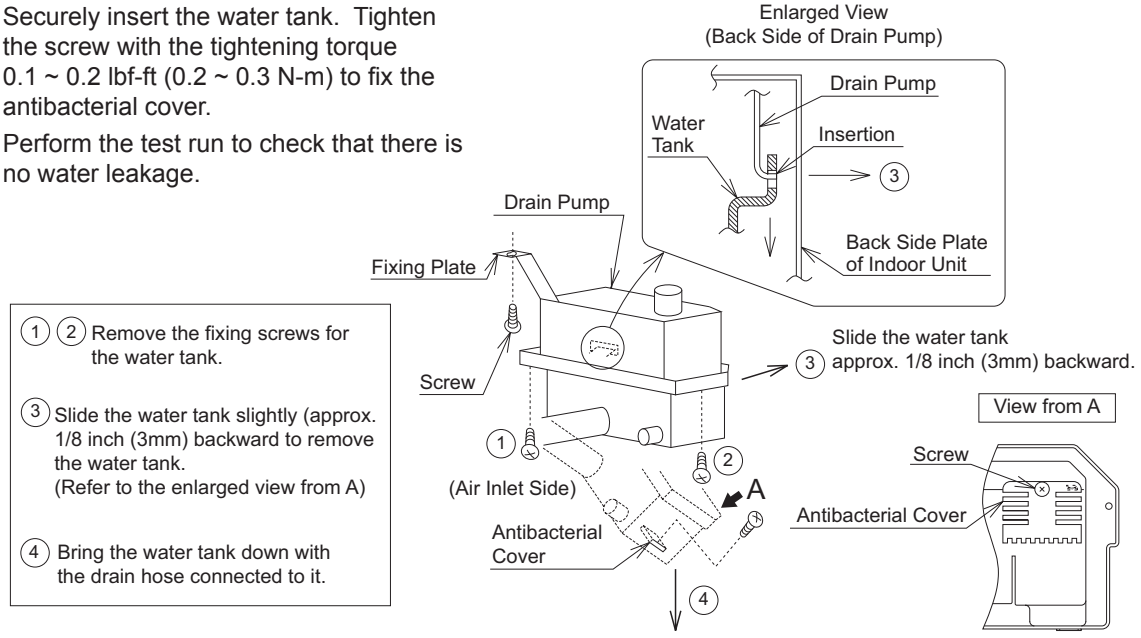
Parts Requiring Maintenance
Water Tank, Drain Pump and Float Switch: Once a year
Antibacterial Agent: 10000 Hours with Cooling Operation
(Approximately Five Years)

< Removing Water Tank >

(1) Remove the screw for the fixing plate.
(2) Remove the water tank according to procedures ① through ④ in the figure below.
(3) Clean inside the water tank with a brush. When the antibacterial agent is replaced, remove the screw for the antibacterial cover. (At this time, the water tank is hung onto the indoor unit.)
(4) Attach the water tank and the antibacterial cover again.

NOTE:
Securely insert the water tank. Tighten the screw with the tightening torque 0.1 ~ 0.2 lbf-ft (0.2 ~ 0.3 N-m) to fix the antibacterial cover.

(5) Perform the test run to check that there is no water leakage.



## 9. Troubleshooting

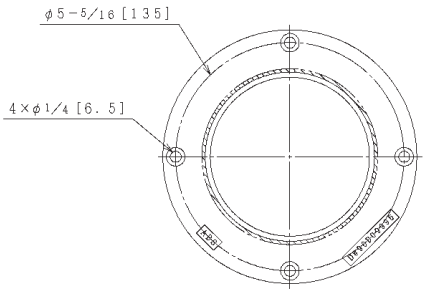
In the following instance, failure of the drain pump or float switch or an abnormality of drain piping may occur. Stop the indoor unit operation and contact your distributor.

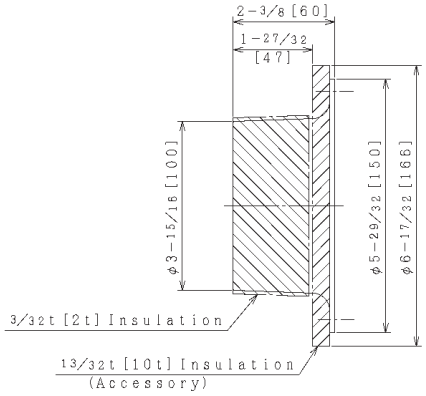
(1) The alarm code “01” is indicated on LCD of remote control switch.

(2) Water leakage occurs at the indoor unit.

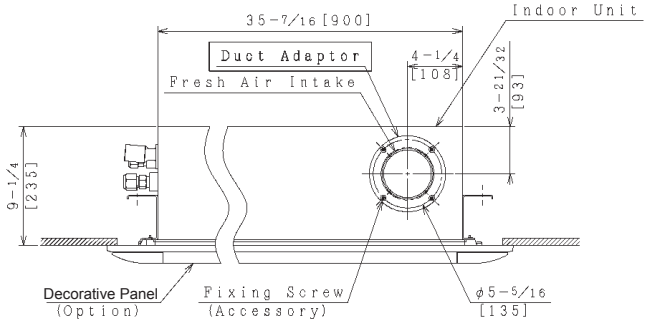
## 5.3.6 Duct Adaptor: PD-100

Unit: inch [mm]




Installation State




**Specifications**

| Item \ Model | | PD-100 |
|---|---|---|
| Applicable Indoor Unit Model ((H,Y)ICS**B21S) | MBH | 015 to 036 |
| Max. Capacity of Fresh Air Intake | cfm ($m^3$/min.) | 35 (1) |
| Purpose | | for Fresh Air Intake |
| Connecting Duct Diameter | inch(mm) | φ3-15/16 (φ100.0) |
| Material | | ABS Resin (UL94V-0) |

NOTES:

1. The maximum capacity for fresh air intake is shown above. Do not exceed the limit amount. (Doing so could cause condensation.)
2. Do not install the unit where abnormal odors are in the atmosphere.
3. The duct adaptor provides a maximum quantity of fresh air intake of approximately 18cfm (0.5$m^3$/min) (for 3 ft. 3-19/32 in. (1m) straight pipe duct). When more fresh air intake is required, be sure to install the dedicated outside air system. In this case, do not utilize the dedicated outside air system.
4. Insulate the duct and the duct connection to prevent air leakage and condensation. The duct and insulation materials should be nonflammable.
5. Refer to the “Installation Manual for Duct Adaptor” for more details.

## 6. Control Device

Refer to Engineering Manual No. TC-15001.

# 7. Selection Data

## 7.1 Selection Guide

Refer to Engineering Manual for the Outdoor Unit.

## 7.2 Capacity Table

### 7.2.1 Cooling Capacity

(1) Mini Cassette (H,Y)ICM006~018B21S

| Indoor Unit Model | Indoor Unit Air Temp. (°FWB) / Outdoor Air Temp. (°FDB) | 61 | | 63 | | 65 | | 67 | | 69 | | 71 | | 73 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) |
| 008 | 70 | 8.3 | 6.3 | 8.4 | 6.3 | 8.6 | 6.4 | 8.7 | 6.4 | 9.0 | 6.4 | 9.2 | 6.4 | 9.4 | 6.4 |
| | 80 | 8.0 | 6.2 | 8.2 | 6.2 | 8.3 | 6.2 | 8.4 | 6.2 | 8.7 | 6.3 | 8.9 | 6.2 | 9.1 | 6.4 |
| | 95 | 7.5 | 5.9 | 7.7 | 6.0 | 7.8 | 5.9 | 8.0 | 6.0 | 8.3 | 6.1 | 8.5 | 6.1 | 8.7 | 6.2 |
| | 110 | 5.4 | 4.9 | 5.3 | 4.8 | 5.2 | 4.7 | 5.1 | 4.7 | 5.1 | 4.6 | 5.2 | 4.8 | 5.2 | 4.7 |
| | 114 | 4.5 | 4.4 | 4.5 | 4.0 | 4.4 | 4.0 | 4.4 | 4.4 | 4.4 | 4.2 | 4.4 | 4.2 | 4.5 | 4.5 |
| | 118 | 3.7 | 3.7 | 3.7 | 3.3 | 3.7 | 3.3 | 3.7 | 3.7 | 3.7 | 3.3 | 3.7 | 3.7 | 3.7 | 3.7 |
| 012 | 70 | 12.4 | 9.5 | 12.7 | 9.5 | 12.9 | 9.5 | 13.0 | 9.5 | 13.5 | 9.7 | 13.8 | 9.7 | 14.2 | 9.8 |
| | 80 | 12.1 | 9.3 | 12.3 | 9.3 | 12.5 | 9.4 | 12.6 | 9.3 | 13.0 | 9.4 | 13.4 | 9.5 | 13.7 | 9.6 |
| | 95 | 11.3 | 8.9 | 11.5 | 9.0 | 11.8 | 9.1 | 12.0 | 9.1 | 12.4 | 9.2 | 12.8 | 9.2 | 13.1 | 9.3 |
| | 110 | 8.1 | 7.4 | 7.9 | 7.3 | 7.8 | 7.2 | 7.6 | 7.1 | 7.7 | 7.2 | 7.7 | 7.2 | 7.8 | 7.3 |
| | 114 | 6.8 | 6.6 | 6.7 | 6.5 | 6.7 | 6.6 | 6.6 | 6.5 | 6.6 | 6.5 | 6.7 | 6.6 | 6.7 | 6.5 |
| | 118 | 5.5 | 5.5 | 5.5 | 5.2 | 5.6 | 5.6 | 5.6 | 5.3 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.4 |
| 015 | 70 | 15.5 | 12.7 | 15.8 | 12.8 | 16.2 | 13.0 | 16.3 | 12.9 | 16.8 | 13.1 | 17.3 | 13.1 | 17.7 | 13.3 |
| | 80 | 15.1 | 12.5 | 15.3 | 12.5 | 15.6 | 12.6 | 15.8 | 12.6 | 16.3 | 12.9 | 16.8 | 12.9 | 17.1 | 13.2 |
| | 95 | 14.1 | 12.0 | 14.4 | 12.1 | 14.7 | 12.2 | 15.0 | 12.3 | 15.5 | 12.6 | 16.0 | 12.6 | 16.3 | 12.7 |
| | 110 | 10.1 | 10.1 | 9.9 | 9.9 | 9.7 | 9.7 | 9.5 | 9.5 | 9.6 | 9.6 | 9.7 | 9.7 | 9.7 | 9.7 |
| | 114 | 8.5 | 8.5 | 8.4 | 8.4 | 8.3 | 8.3 | 8.2 | 8.2 | 8.3 | 8.3 | 8.3 | 8.3 | 8.4 | 8.4 |
| | 118 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 018 | 70 | 18.6 | 15.3 | 19.0 | 15.6 | 19.4 | 15.5 | 19.6 | 15.7 | 20.2 | 15.8 | 20.7 | 15.9 | 21.2 | 16.1 |
| | 80 | 18.1 | 15.0 | 18.4 | 15.1 | 18.7 | 15.1 | 18.9 | 15.3 | 19.6 | 15.5 | 20.1 | 15.7 | 20.6 | 15.9 |
| | 95 | 16.9 | 14.5 | 17.3 | 14.7 | 17.6 | 14.6 | 18.0 | 14.8 | 18.6 | 15.1 | 19.2 | 15.2 | 19.6 | 15.5 |
| | 110 | 12.1 | 12.1 | 11.9 | 11.9 | 11.6 | 11.6 | 11.4 | 11.4 | 11.5 | 11.5 | 11.6 | 11.6 | 11.7 | 11.7 |
| | 114 | 10.2 | 10.2 | 10.1 | 10.1 | 10.0 | 10.0 | 9.9 | 9.9 | 9.9 | 9.9 | 10.0 | 10.0 | 10.0 | 10.0 |
| | 118 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.4 | 8.4 | 8.4 | 8.4 | 8.4 | 8.4 |

TC: Total capacity
SHC: Sensible heat capacity

Refer to Outdoor Unit Capacity Tables as actual performance data affected by indoor and outdoor unit combination.

(2) Ceiling Suspended (H,Y)ICS015~036B21S

| Indoor Unit Model | Indoor Unit Air Temp. (°FWB) / Outdoor Air Temp. (°FDB) | 61 | | 63 | | 65 | | 67 | | 69 | | 71 | | 73 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) |
| 015 | 70 | 15.5 | 12.7 | 15.8 | 13.0 | 16.2 | 13.0 | 16.3 | 12.9 | 16.8 | 13.1 | 17.3 | 13.3 | 17.7 | 13.5 |
| | 80 | 15.1 | 12.5 | 15.3 | 12.5 | 15.6 | 12.6 | 15.8 | 12.8 | 16.3 | 12.9 | 16.8 | 13.1 | 17.1 | 13.2 |
| | 95 | 14.1 | 12.0 | 14.4 | 12.1 | 14.7 | 12.2 | 15.0 | 12.3 | 15.5 | 12.6 | 16.0 | 12.8 | 16.3 | 12.9 |
| | 110 | 10.1 | 10.0 | 9.9 | 9.9 | 9.7 | 9.7 | 9.5 | 9.5 | 9.6 | 9.6 | 9.7 | 9.7 | 9.7 | 9.7 |
| | 114 | 8.5 | 8.5 | 8.4 | 8.4 | 8.3 | 8.3 | 8.2 | 8.2 | 8.3 | 8.3 | 8.3 | 8.3 | 8.4 | 8.4 |
| | 118 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 024 | 70 | 24.8 | 20.3 | 25.3 | 20.7 | 25.9 | 20.7 | 26.1 | 20.9 | 26.9 | 21.3 | 27.7 | 21.3 | 28.3 | 21.5 |
| | 80 | 24.1 | 20.0 | 24.5 | 20.1 | 24.9 | 20.2 | 25.2 | 20.4 | 26.1 | 20.6 | 26.8 | 20.9 | 27.4 | 21.1 |
| | 95 | 22.6 | 19.2 | 23.0 | 19.3 | 23.5 | 19.5 | 24.0 | 19.7 | 24.8 | 20.1 | 25.6 | 20.5 | 26.1 | 20.6 |
| | 110 | 16.2 | 16.0 | 15.8 | 15.6 | 15.5 | 15.5 | 15.2 | 15.2 | 15.3 | 15.3 | 15.5 | 15.5 | 15.5 | 15.5 |
| | 114 | 13.6 | 13.6 | 13.5 | 13.5 | 13.3 | 13.3 | 13.2 | 13.2 | 13.2 | 13.2 | 13.3 | 13.3 | 13.4 | 13.4 |
| | 118 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.2 | 11.2 | 11.2 | 11.2 | 11.2 | 11.2 |
| 030 | 70 | 31.0 | 26.0 | 31.6 | 26.2 | 32.3 | 26.2 | 32.6 | 26.4 | 33.7 | 27.0 | 34.6 | 27.3 | 35.4 | 27.3 |
| | 80 | 30.2 | 25.4 | 30.7 | 25.8 | 31.2 | 25.9 | 31.6 | 25.9 | 32.6 | 26.4 | 33.5 | 26.5 | 34.3 | 27.1 |
| | 95 | 28.2 | 24.5 | 28.8 | 24.8 | 29.4 | 25.0 | 30.0 | 25.2 | 31.0 | 25.7 | 32.0 | 25.9 | 32.6 | 26.1 |
| | 110 | 20.2 | 20.2 | 19.8 | 19.8 | 19.4 | 19.4 | 19.0 | 19.0 | 19.2 | 19.2 | 19.3 | 19.3 | 19.4 | 19.4 |
| | 114 | 17.0 | 17.0 | 16.8 | 16.8 | 16.6 | 16.6 | 16.5 | 16.5 | 16.6 | 16.6 | 16.7 | 16.7 | 16.7 | 16.7 |
| | 118 | 13.8 | 13.8 | 13.8 | 13.8 | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 | 14.0 | 14.0 | 14.0 | 14.0 |
| 036 | 70 | 37.2 | 31.2 | 38.0 | 31.5 | 38.8 | 31.8 | 39.1 | 32.1 | 40.4 | 32.3 | 41.5 | 32.8 | 42.5 | 33.2 |
| | 80 | 36.2 | 30.8 | 36.8 | 30.9 | 37.4 | 31.0 | 37.9 | 31.5 | 39.1 | 31.7 | 40.2 | 32.2 | 41.2 | 32.5 |
| | 95 | 33.8 | 29.4 | 34.6 | 29.8 | 35.3 | 30.0 | 36.0 | 30.6 | 37.2 | 30.9 | 38.4 | 31.5 | 39.2 | 31.8 |
| | 110 | 24.2 | 24.2 | 23.8 | 23.8 | 23.3 | 23.3 | 22.8 | 22.8 | 23.0 | 23.0 | 23.2 | 23.2 | 23.3 | 23.3 |
| | 114 | 20.4 | 20.4 | 20.2 | 20.2 | 20.0 | 20.0 | 19.7 | 19.7 | 19.9 | 19.9 | 20.0 | 20.0 | 20.1 | 20.1 |
| | 118 | 16.6 | 16.6 | 16.6 | 16.6 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 16.8 | 16.8 | 16.8 | 16.8 |

TC: Total capacity
SHC: Sensible heat capacity

Refer to Outdoor Unit Capacity Tables as actual performance data affected by indoor and outdoor unit combination.

(3) Floor Exposed and Floor Concealed (H,Y)IFE006~015B21S, (H,Y)IFC006~015B21S

| Indoor Unit Model | Indoor Unit Air Temp. (°FWB) / Outdoor Air Temp. (°FDB) | 61 | | 63 | | 65 | | 67 | | 69 | | 71 | | 73 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) | TC (MBH) | SHC (MBH) |
| 006 | 70 | 6.2 | 4.8 | 6.3 | 4.9 | 6.5 | 4.9 | 6.5 | 4.9 | 6.7 | 4.9 | 6.9 | 5.0 | 7.1 | 5.0 |
| | 80 | 6.0 | 4.7 | 6.1 | 4.8 | 6.2 | 4.8 | 6.3 | 4.8 | 6.5 | 4.8 | 6.7 | 4.9 | 6.9 | 5.0 |
| | 95 | 5.6 | 4.5 | 5.8 | 4.6 | 5.9 | 4.7 | 6.0 | 4.7 | 6.2 | 4.7 | 6.4 | 4.7 | 6.5 | 4.7 |
| | 110 | 4.0 | 3.8 | 4.0 | 3.8 | 3.9 | 3.7 | 3.8 | 3.6 | 3.8 | 3.6 | 3.9 | 3.7 | 3.9 | 3.7 |
| | 114 | 3.4 | 3.3 | 3.4 | 3.4 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 |
| | 118 | 2.8 | 2.7 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |
| 008 | 70 | 8.3 | 6.6 | 8.4 | 6.6 | 8.6 | 6.6 | 8.7 | 6.7 | 9.0 | 6.8 | 9.2 | 6.8 | 9.4 | 6.9 |
| | 80 | 8.0 | 6.5 | 8.2 | 6.6 | 8.3 | 6.6 | 8.4 | 6.6 | 8.7 | 6.6 | 8.9 | 6.7 | 9.1 | 6.7 |
| | 95 | 7.5 | 6.2 | 7.7 | 6.3 | 7.8 | 6.3 | 8.0 | 6.4 | 8.3 | 6.5 | 8.5 | 6.5 | 8.7 | 6.5 |
| | 110 | 5.4 | 5.2 | 5.3 | 5.1 | 5.2 | 5.0 | 5.1 | 5.0 | 5.1 | 5.0 | 5.2 | 5.1 | 5.2 | 5.1 |
| | 114 | 4.5 | 4.5 | 4.5 | 4.5 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.5 | 4.5 |
| | 118 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 |
| 012 | 70 | 12.4 | 9.8 | 12.7 | 9.9 | 12.9 | 9.8 | 13.0 | 9.9 | 13.5 | 10.0 | 13.8 | 10.1 | 14.2 | 10.1 |
| | 80 | 12.1 | 9.6 | 12.3 | 9.7 | 12.5 | 9.8 | 12.6 | 9.7 | 13.0 | 9.8 | 13.4 | 9.9 | 13.7 | 9.9 |
| | 95 | 11.3 | 9.3 | 11.5 | 9.3 | 11.8 | 9.4 | 12.0 | 9.5 | 12.4 | 9.5 | 12.8 | 9.6 | 13.1 | 9.7 |
| | 110 | 8.1 | 7.7 | 7.9 | 7.5 | 7.8 | 7.5 | 7.6 | 7.4 | 7.7 | 7.4 | 7.7 | 7.5 | 7.8 | 7.5 |
| | 114 | 6.8 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.6 | 6.6 | 6.6 | 6.6 | 6.7 | 6.7 | 6.7 | 6.7 |
| | 118 | 5.5 | 5.5 | 5.5 | 5.5 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 |
| 015 | 70 | 15.5 | 12.7 | 15.8 | 12.8 | 16.2 | 13.0 | 16.3 | 13.0 | 16.8 | 13.3 | 17.3 | 13.3 | 17.7 | 13.5 |
| | 80 | 15.1 | 12.5 | 15.3 | 12.7 | 15.6 | 12.8 | 15.8 | 12.8 | 16.3 | 12.9 | 16.8 | 13.1 | 17.1 | 13.2 |
| | 95 | 14.1 | 12.0 | 14.4 | 12.1 | 14.7 | 12.3 | 15.0 | 12.5 | 15.5 | 12.6 | 16.0 | 12.8 | 16.3 | 12.9 |
| | 110 | 10.1 | 10.1 | 9.9 | 9.9 | 9.7 | 9.7 | 9.5 | 9.5 | 9.6 | 9.6 | 9.7 | 9.7 | 9.7 | 9.7 |
| | 114 | 8.5 | 8.5 | 8.4 | 8.4 | 8.3 | 8.3 | 8.2 | 8.2 | 8.3 | 8.3 | 8.3 | 8.3 | 8.4 | 8.4 |
| | 118 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |

TC: Total capacity
SHC: Sensible heat capacity

Refer to Outdoor Unit Capacity Tables as actual performance data affected by indoor and outdoor unit combination.

### 7.2.2 Heating Capacity

(1) Mini Cassette (H,Y)ICM006~018B21S

| Indoor Unit Model | Indoor Unit Air Temp. (°FDB) / Outdoor Air Temp. (°FWB) | 63 | 66 | 68 | 70 | 74 | 77 |
|---|---|---|---|---|---|---|---|
| | | TC (MBH) | TC (MBH) | TC (MBH) | TC (MBH) | TC (MBH) | TC (MBH) |
| 008 | 21 | 7.1 | 7.1 | 7.1 | (MBH) | 7.0 | 7.0 |
| | 25 | 7.4 | 7.4 | 7.4 | 7.4 | 7.3 | 7.2 |
| | 29 | 7.8 | 7.8 | 7.8 | 7.8 | 7.6 | 7.5 |
| | 33 | 8.1 | 8.1 | 8.1 | 8.1 | 8.0 | 7.8 |
| | 37 | 8.5 | 8.5 | 8.5 | 8.5 | 8.3 | 8.1 |
| | 41 | 8.8 | 8.8 | 8.8 | 8.8 | 8.6 | 8.4 |
| | 43 | 9.0 | 9.0 | 9.0 | 9.0 | 8.7 | 8.5 |
| | 47 | 9.4 | 9.4 | 9.4 | 9.3 | 9.0 | 8.5 |
| | 51 | 9.7 | 9.7 | 9.7 | 9.6 | 9.0 | 8.5 |
| | 55 | 10.2 | 10.1 | 9.8 | 9.6 | 9.0 | 8.5 |
| | 59 | 10.2 | 10.1 | 9.8 | 9.6 | 9.0 | 8.5 |
| 012 | 21 | 10.6 | 10.6 | 10.6 | 10.6 | 10.5 | 10.4 |
| | 25 | 11.1 | 11.1 | 11.2 | 11.2 | 11.0 | 10.9 |
| | 29 | 11.7 | 11.7 | 11.7 | 11.7 | 11.5 | 11.3 |
| | 33 | 12.2 | 12.2 | 12.2 | 12.2 | 11.9 | 11.7 |
| | 37 | 12.7 | 12.7 | 12.7 | 12.7 | 12.4 | 12.2 |
| | 41 | 13.3 | 13.3 | 13.2 | 13.2 | 12.9 | 12.6 |
| | 43 | 13.5 | 13.5 | 13.5 | 13.5 | 13.1 | 12.8 |
| | 47 | 14.1 | 14.0 | 14.0 | 14.0 | 13.5 | 12.8 |
| | 51 | 14.6 | 14.6 | 14.6 | 14.4 | 13.5 | 12.8 |
| | 55 | 15.3 | 15.1 | 14.8 | 14.4 | 13.5 | 12.8 |
| | 59 | 15.3 | 15.1 | 14.8 | 14.4 | 13.5 | 12.8 |
| 015 | 21 | 13.4 | 13.4 | 13.4 | 13.4 | 13.3 | 13.1 |
| | 25 | 14.0 | 14.0 | 14.0 | 14.1 | 13.8 | 13.7 |
| | 29 | 14.7 | 14.7 | 14.7 | 14.7 | 14.4 | 14.2 |
| | 33 | 15.4 | 15.4 | 15.4 | 15.4 | 15.0 | 14.8 |
| | 37 | 16.0 | 16.0 | 16.0 | 16.0 | 15.6 | 15.3 |
| | 41 | 16.7 | 16.7 | 16.7 | 16.7 | 16.2 | 15.9 |
| | 43 | 17.0 | 17.0 | 17.0 | 17.0 | 16.5 | 16.1 |
| | 47 | 17.7 | 17.7 | 17.7 | 17.7 | 17.0 | 16.1 |
| | 51 | 18.4 | 18.4 | 18.3 | 18.2 | 17.0 | 16.1 |
| | 55 | 19.3 | 19.0 | 18.6 | 18.2 | 17.0 | 16.1 |
| | 59 | 19.3 | 19.0 | 18.6 | 18.2 | 17.0 | 16.1 |
| 018 | 21 | 15.7 | 15.7 | 15.7 | 15.8 | 15.6 | 15.5 |
| | 25 | 16.5 | 16.5 | 16.5 | 16.5 | 16.3 | 16.1 |
| | 29 | 17.3 | 17.3 | 17.3 | 17.3 | 17.0 | 16.7 |
| | 33 | 18.1 | 18.1 | 18.1 | 18.1 | 17.7 | 17.4 |
| | 37 | 18.9 | 18.9 | 18.9 | 18.8 | 18.4 | 18.0 |
| | 41 | 19.7 | 19.6 | 19.6 | 19.6 | 19.1 | 18.7 |
| | 43 | 20.1 | 20.0 | 20.0 | 20.0 | 19.4 | 19.0 |
| | 47 | 20.8 | 20.8 | 20.8 | 20.8 | 20.0 | 19.0 |
| | 51 | 21.6 | 21.6 | 21.6 | 21.4 | 20.0 | 19.0 |
| | 55 | 22.7 | 22.4 | 21.9 | 21.4 | 20.0 | 19.0 |
| | 59 | 22.7 | 22.4 | 21.9 | 21.4 | 20.0 | 19.0 |

TC: Total capacity

Refer to Outdoor Unit Capacity Tables as actual performance data affected by indoor and outdoor unit combination.

(2) Ceiling Suspended TICS015~036B21S

| Indoor Unit Model | Indoor Unit Air Temp. (°FDB) / Outdoor Air Temp. (°FWB) | 63 | 66 | 68 | 70 | 74 | 77 |
|---|---|---|---|---|---|---|---|
| | | TC (MBH) | TC (MBH) | TC (MBH) | TC (MBH) | TC (MBH) | TC (MBH) |
| 015 | 21 | 13.4 | 13.4 | 13.4 | 13.4 | 13.3 | 13.1 |
| | 25 | 14.0 | 14.0 | 14.0 | 14.1 | 13.8 | 13.7 |
| | 29 | 14.7 | 14.7 | 14.7 | 14.7 | 14.4 | 14.2 |
| | 33 | 15.4 | 15.4 | 15.4 | 15.4 | 15.0 | 14.8 |
| | 37 | 16.0 | 16.0 | 16.0 | 16.0 | 15.6 | 15.3 |
| | 41 | 16.7 | 16.7 | 16.7 | 16.7 | 16.2 | 15.9 |
| | 43 | 17.0 | 17.0 | 17.0 | 17.0 | 16.5 | 16.1 |
| | 47 | 17.7 | 17.7 | 17.7 | 17.7 | 17.0 | 16.1 |
| | 51 | 18.4 | 18.4 | 18.3 | 18.2 | 17.0 | 16.1 |
| | 55 | 19.3 | 19.0 | 18.6 | 18.2 | 17.0 | 16.1 |
| | 59 | 19.3 | 19.0 | 18.6 | 18.2 | 17.0 | 16.1 |
| 024 | 21 | 21.2 | 21.2 | 21.3 | 21.3 | 21.0 | 20.9 |
| | 25 | 22.3 | 22.3 | 22.3 | 22.3 | 22.0 | 21.7 |
| | 29 | 23.4 | 23.3 | 23.4 | 23.4 | 22.9 | 22.6 |
| | 33 | 24.4 | 24.4 | 24.4 | 24.4 | 23.9 | 23.5 |
| | 37 | 25.5 | 25.5 | 25.4 | 25.4 | 24.8 | 24.3 |
| | 41 | 26.5 | 26.5 | 26.5 | 26.5 | 25.7 | 25.2 |
| | 43 | 27.1 | 27.0 | 27.0 | 27.0 | 26.2 | 25.6 |
| | 47 | 28.1 | 28.1 | 28.1 | 28.0 | 27.0 | 25.6 |
| | 51 | 29.2 | 29.2 | 29.1 | 28.8 | 27.0 | 25.6 |
| | 55 | 30.6 | 30.2 | 29.5 | 28.8 | 27.0 | 25.6 |
| | 59 | 30.6 | 30.2 | 29.5 | 28.8 | 27.0 | 25.6 |
| 030 | 21 | 26.7 | 26.7 | 26.8 | 26.8 | 26.5 | 26.3 |
| | 25 | 28.1 | 28.1 | 28.1 | 28.1 | 27.7 | 27.4 |
| | 29 | 29.4 | 29.4 | 29.4 | 29.4 | 28.9 | 28.5 |
| | 33 | 30.7 | 30.7 | 30.7 | 30.7 | 30.1 | 29.5 |
| | 37 | 32.1 | 32.1 | 32.0 | 32.0 | 31.2 | 30.6 |
| | 41 | 33.4 | 33.4 | 33.4 | 33.3 | 32.4 | 31.7 |
| | 43 | 34.1 | 34.0 | 34.0 | 34.0 | 33.0 | 32.3 |
| | 47 | 35.4 | 35.4 | 35.3 | 35.3 | 34.0 | 32.3 |
| | 51 | 36.8 | 36.7 | 36.7 | 36.3 | 34.0 | 32.3 |
| | 55 | 38.6 | 38.1 | 37.2 | 36.3 | 34.0 | 32.3 |
| | 59 | 38.6 | 38.1 | 37.2 | 36.3 | 34.0 | 32.3 |
| 036 | 21 | 31.4 | 31.4 | 31.5 | 31.5 | 31.2 | 30.9 |
| | 25 | 33.0 | 33.0 | 33.0 | 33.1 | 32.6 | 32.2 |
| | 29 | 34.6 | 34.6 | 34.6 | 34.6 | 34.0 | 33.5 |
| | 33 | 36.2 | 36.1 | 36.1 | 36.1 | 35.4 | 34.7 |
| | 37 | 37.8 | 37.7 | 37.7 | 37.7 | 36.7 | 36.0 |
| | 41 | 39.3 | 39.3 | 39.2 | 39.2 | 38.1 | 37.3 |
| | 43 | 40.1 | 40.1 | 40.0 | 40.0 | 38.8 | 38.0 |
| | 47 | 41.7 | 41.6 | 41.6 | 41.5 | 40.0 | 38.0 |
| | 51 | 43.3 | 43.2 | 43.1 | 42.7 | 40.0 | 38.0 |
| | 55 | 45.4 | 44.8 | 43.8 | 42.7 | 40.0 | 38.0 |
| | 59 | 45.4 | 44.8 | 43.8 | 42.7 | 40.0 | 38.0 |

TC: Total capacity

Refer to Outdoor Unit Capacity Tables as actual performance data affected by indoor and outdoor unit combination.

(3) Floor Exposed and Floor Concealed TIFE006~015B21S, TIFC006~015B21S

| Indoor Unit Model | Indoor Unit Air Temp. (°FDB) / Outdoor Air Temp. (°FWB) | 63 | 66 | 68 | 70 | 74 | 77 |
|---|---|---|---|---|---|---|---|
| | | TC (MBH) | TC (MBH) | TC (MBH) | TC (MBH) | TC (MBH) | TC (MBH) |
| 006 | 21 | 5.3 | 5.3 | 5.3 | 5.3 | 5.2 | 5.2 |
| | 25 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.4 |
| | 29 | 5.8 | 5.8 | 5.8 | 5.8 | 5.7 | 5.6 |
| | 33 | 6.1 | 6.1 | 6.1 | 6.1 | 5.9 | 5.8 |
| | 37 | 6.3 | 6.3 | 6.3 | 6.3 | 6.2 | 6.0 |
| | 41 | 6.6 | 6.6 | 6.6 | 6.6 | 6.4 | 6.3 |
| | 43 | 6.7 | 6.7 | 6.7 | 6.7 | 6.5 | 6.4 |
| | 47 | 7.0 | 7.0 | 7.0 | 7.0 | 6.7 | 6.4 |
| | 51 | 7.2 | 7.2 | 7.2 | 7.2 | 6.7 | 6.4 |
| | 55 | 7.6 | 7.5 | 7.3 | 7.2 | 6.7 | 6.4 |
| | 59 | 7.6 | 7.5 | 7.3 | 7.2 | 6.7 | 6.4 |
| 008 | 21 | 7.1 | 7.1 | 7.1 | 7.1 | 7.0 | 7.0 |
| | 25 | 7.4 | 7.4 | 7.4 | 7.4 | 7.3 | 7.2 |
| | 29 | 7.8 | 7.8 | 7.8 | 7.8 | 7.6 | 7.5 |
| | 33 | 8.1 | 8.1 | 8.1 | 8.1 | 8.0 | 7.8 |
| | 37 | 8.5 | 8.5 | 8.5 | 8.5 | 8.3 | 8.1 |
| | 41 | 8.8 | 8.8 | 8.8 | 8.8 | 8.6 | 8.4 |
| | 43 | 9.0 | 9.0 | 9.0 | 9.0 | 8.7 | 8.5 |
| | 47 | 9.4 | 9.4 | 9.4 | 9.3 | 9.0 | 8.5 |
| | 51 | 9.7 | 9.7 | 9.7 | 9.6 | 9.0 | 8.5 |
| | 55 | 10.2 | 10.1 | 9.8 | 9.6 | 9.0 | 8.5 |
| | 59 | 10.2 | 10.1 | 9.8 | 9.6 | 9.0 | 8.5 |
| 012 | 21 | 10.6 | 10.6 | 10.6 | 10.6 | 10.5 | 10.4 |
| | 25 | 11.1 | 11.1 | 11.2 | 11.2 | 11.0 | 10.9 |
| | 29 | 11.7 | 11.7 | 11.7 | 11.7 | 11.5 | 11.3 |
| | 33 | 12.2 | 12.2 | 12.2 | 12.2 | 11.9 | 11.7 |
| | 37 | 12.7 | 12.7 | 12.7 | 12.7 | 12.4 | 12.2 |
| | 41 | 13.3 | 13.3 | 13.2 | 13.2 | 12.9 | 12.6 |
| | 43 | 13.5 | 13.5 | 13.5 | 13.5 | 13.1 | 12.8 |
| | 47 | 14.1 | 14.0 | 14.0 | 14.0 | 13.5 | 12.8 |
| | 51 | 14.6 | 14.6 | 14.6 | 14.4 | 13.5 | 12.8 |
| | 55 | 15.3 | 15.1 | 14.8 | 14.4 | 13.5 | 12.8 |
| | 59 | 15.3 | 15.1 | 14.8 | 14.4 | 13.5 | 12.8 |
| 015 | 21 | 13.4 | 13.4 | 13.4 | 13.4 | 13.3 | 13.1 |
| | 25 | 14.0 | 14.0 | 14.0 | 14.1 | 13.8 | 13.7 |
| | 29 | 14.7 | 14.7 | 14.7 | 14.7 | 14.4 | 14.2 |
| | 33 | 15.4 | 15.4 | 15.4 | 15.4 | 15.0 | 14.8 |
| | 37 | 16.0 | 16.0 | 16.0 | 16.0 | 15.6 | 15.3 |
| | 41 | 16.7 | 16.7 | 16.7 | 16.7 | 16.2 | 15.9 |
| | 43 | 17.0 | 17.0 | 17.0 | 17.0 | 16.5 | 16.1 |
| | 47 | 17.7 | 17.7 | 17.7 | 17.7 | 17.0 | 16.1 |
| | 51 | 18.4 | 18.4 | 18.3 | 18.2 | 17.0 | 16.1 |
| | 55 | 19.3 | 19.0 | 18.6 | 18.2 | 17.0 | 16.1 |
| | 59 | 19.3 | 19.0 | 18.6 | 18.2 | 17.0 | 16.1 |

TC: Total capacity

Refer to Outdoor Unit Capacity Tables as actual performance data affected by indoor and outdoor unit combination.