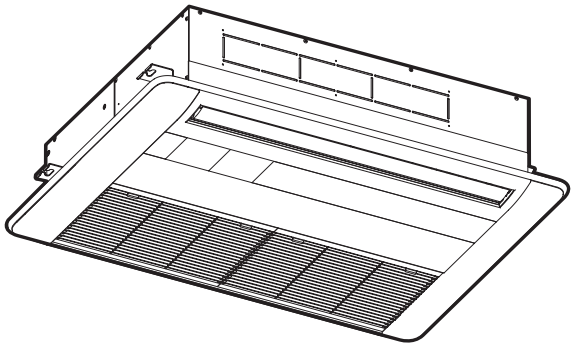
ENGINEERING MANUAL

INVERTER-DRIVEN MULTI-SPLIT SYSTEM
HEAT PUMP AIR CONDITIONERS



Engineering Manual

< Indoor Units >

- 1-Way Cassette
  - (H,Y,C)IC1006B21S
  - (H,Y,C)IC1008B21S
  - (H,Y,C)IC1012B21S
  - (H,Y,C)IC1015B21S

TC-18002

IMPORTANT NOTICE AND SAFETY SUMMARY

1. Introduction

This Engineering Manual concentrates on air conditioning units for use in heat pump and heat recovery systems. 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 wet 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.

- Prevent moisture, dust, or non condensable compounds from entering 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 collect. 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 aware of noise and electronic interference Electromagnetic Interference (EMI). Do not install where EMI 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 adapter. If you do, you may have condensate flowing back which may cause leaks.
- Be sure the condensate 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 ventilation unit 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 supply, 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 32 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 wind baffle.
  - A snowy area: Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow protection hood.
- 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, damage, 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 mist 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 condensate 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 issues. If the condensate pipe 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. The installation should meet the requirements in ASHRAE Standards 15 and 34. 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.
- When R410A is used, 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 to such parts as the expansion valve causing operational issues.
- 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 verify the appropriate tools are on hand 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 properly and the compressor starts with the stop valve opened, air may be pulled into the system and 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 with additional insulating material (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 excessive force to the stop valve when opening. If damaged, the stop valve could come apart 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 setup 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, shut off and tag all disconnect switches. Never assume electrical power is disconnected. Always verify with a meter.
- 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 installed 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 external equipment* referred to below.
  - If the power supply wiring for this external equipment* and the new air conditioner unit are located in close proximity to each other.

    external equipment*: (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 cable must be a minimum of AWG18 (0.82mm^2), 2-Conductor, Stranded Copper. Shielded cable must be used 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 a dedicated circuit for the air conditioner at the unit's rated voltage.
- 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.
- 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, shut off and tag all disconnect switches. Never assume electrical power is disconnected. Always verify with a meter.
- 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, 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.

■ 1-Way Cassette Models

(H,Y,C)IC1006B21S, (H,Y,C)IC1008B21S, (H,Y,C)IC1012B21S, (H,Y,C)IC1015B21S

● Wide Range Line-up

Table 1.1 Indoor Unit Type List

Indoor Unit Type		Capacity (MBH)			
		6	8	12	15
1-Way Cassette	(H,Y,C)IC1_B21S	○	○	○	○

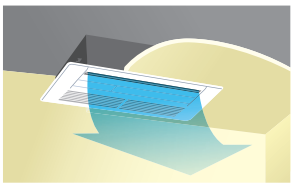
○ : Available

FEATURES

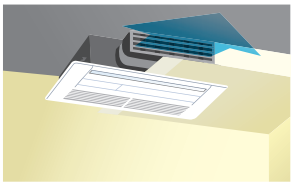
- Flexible Design

(1) Ability to choose from three installation types

• Corner Type (Standard)
It is possible to install the unit closer to the wall side of the ceiling.
No interference with ceiling equipment such as lighting, and assists in providing additional space for ceiling equipment.

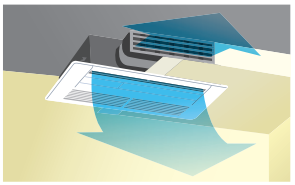


• Clipped Ceiling for 1-Way Discharge Type (Optional)
It is suitable if requirements are not to embed the unit directly into the ceiling because of ceiling equipment.



NOTE:
Not suitable for installing on a high ceiling as the heated air has difficulty reaching the floor.

• Clipped Ceiling for 2-Way Discharge Type (Optional)
Discharged air is discharged horizontally from the front air outlet and downward from the lower air outlet for wide air distribution.



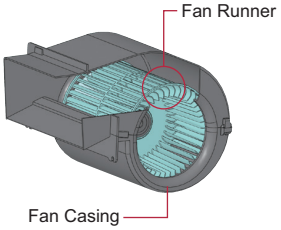
NOTE:
As for 2-Way Discharge Type, air reaching distance is shorter than 1-Way Discharged Type.
When installing, make sure that ceiling height is within 8.9 ft. (2.7m)

(2) Flexibility of installation on a high ceiling
If the unit is installed on a high ceiling, use the high speed function to select the airflow volume which is higher than the normal airflow volume.
Set High Speed using the wired controller depending on the ceiling height as shown in the table below.

Ceiling Height		High Speed Setting Function
(H,Y,C)IC1006B21S (H,Y,C)IC1008B21S	(H,Y,C)IC1012B21S (H,Y,C)IC1015B21S	
Less than 9 ft. (2.7m)	Less than 10 ft. (3.1m)	Standard
9 ft. to 10 ft. (2.7 - 3.0m)	10 ft. to 12 ft. (3.1 - 3.5m)	High Speed

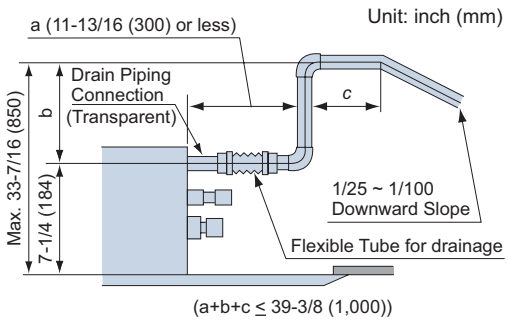
- Slim and Stylish Design
The unit height is only 9-1/4 inches (235mm).
It can be installed at a small installation height such as a clipped ceiling.
Decorative panel design is simple and stylish.
The shutter function closes the air outlet with the louver when the operation is stopped.

- Highly-Advanced Low Sound Pressure Level
By improving the fan wing shape and air outlet design, there is highly improved efficiency of the airflow operation and lower sound pressure level.



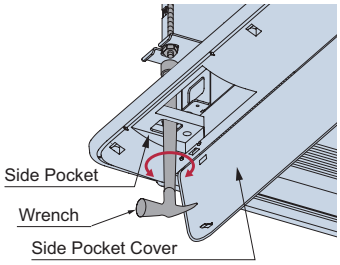
- Easy Installation

  (1) Equipped with a condensate mechanism with high-life pump.



High-lift pump with flexible condensate tube makes it possible to raise the condensate pipe, up to 33-1/2 inches (838mm) from the false ceiling surface.

  (2) Easier Height Adjustment



Side pocket covers are provided on both sides of the decorative panel so that the height of the unit can be adjusted easily without removing the panel.

  (3) Ability to embed receiver kit (optional part) in decorative panel

  Even after installing the decorative panel, there is the ability to embed the receiver kit (optional part) to the decorative panel while still providing a stylish appearance.

- Easy Maintenance

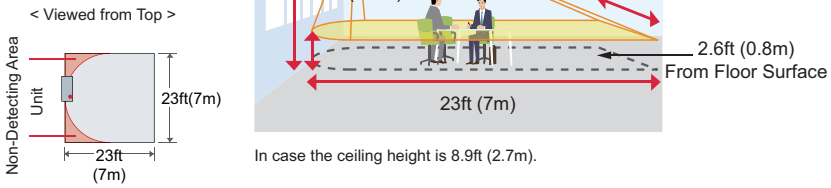
  The silver ions antibacterial agent is in the condensate pan and inhibits the generation of mold or bacteria which is the cause of clogging.

- Motion Sensor Kit (Optional Part)

(1) By adding the motion sensor on the corner of the decorative panel, air conditioning capacity is saved automatically depending on the amount of detection of human activity. In addition, the operation can be stopped automatically if activity is absent and continues for more than 30 minutes.* The motion sensor allows for continuation of a comfortable indoor environment while eliminating unnecessary operation.

☛ The default setting is “Continuous Running”. However, “Automatic Stop” can be selected using the wired controller.

(2) Detection Area (For a ceiling height of 9 ft. (2.8m))
Detecting Diameter: Approx. 23 ft. (7m) (2.6ft (0.8m) from floor surface)



In case the ceiling height is 8.9ft (2.7m).

NOTE:

* The motion sensor detects human activity. However, if someone is in a room with very little activity, the motion sensors may not detect motion.
* The motion sensor may detect human activity if the indoor unit with the motion sensor is installed near a moving object which has a temperature different than the environment.
* The motion sensors may detect an absence of activity if the indoor unit is installed on a high ceiling of 13 ft. (4m) or more if fingerprints or contaminants are on the motion sensors’ lenses, even if someone is in a room.
* Make sure to operate the motion sensor with a wired controller.
* This cannot be used with a wireless controller alone.

2. 1-Way Cassette Type

2.1 Unit Nomenclature

Model Descriptions

Example

H I C1 006 B 2 1 S

Nomenclature Description

H = Hitachi Brand Y = York Brand C = Coleman Brand	H
Indoor Unit	I
Indoor Unit Type C1 = 1-Way Cassette Type	C1
Capacity (MBH)	006
Refrigerant Type B = R410A	B
Power Supply 2 = 208/230Volts - 1Phase - 60Hz	2
1 = 1st Generation	1
S = Standard Type	S

2.2 Line-up

Type		Capacity		Model
		RT	MBH	
Indoor Unit	1-Way Cassette	0.5	6	(H,Y,C)IC1006B21S
		0.7	8	(H,Y,C)IC1008B21S
		1.0	12	(H,Y,C)IC1012B21S
		1.3	15	(H,Y,C)IC1015B21S

2.3 General Data

Indoor Unit Type		1-Way Cassette Type			
Model		(H,Y,C)IC1006B21S	(H,Y,C)IC1008B21S	(H,Y,C)IC1012B21S	(H,Y,C)IC1015B21S
Indoor Unit Power Supply		AC 1Phase, 208/230V, 60Hz			
Nominal Cooling Capacity*1	Btu/h (kW)	6,000 (1.8)	8,000 (2.3)	12,000 (3.5)	15,000 (4.4)
Nominal Heating Capacity*1	Btu/h (kW)	6,700 (2.0)	9,000 (2.6)	13,500 (4.0)	17,000 (5.0)
Sound Pressure Level*2 (Overall A Scale) (Hi2-Hi-Me-Lo)	dB	34-32-29-27	36-34-31-28	40-37-33-31	42-38-35-31
Outer Dimensions					
Height	in.(mm)	9-1/4 (235)	9-1/4 (235)	9-1/4 (235)	9-1/4 (235)
Width	in.(mm)	35-7/16 (900)	35-7/16 (900)	35-7/16 (900)	35-7/16 (900)
Depth	in.(mm)	27-15/16 (710)	27-15/16 (710)	27-15/16 (710)	27-15/16 (710)
Net Weight	lbs(kg)	55 (25)	55 (25)	57 (26)	57 (26)
Refrigerant		R410A			
Indoor Fan					
Airflow Rate (Hi2-Hi-Me-Lo)	cfm (m^3/min)	300-265-229-212 (8.5-7.5-6.5-6)	335-300-265-229 (9.5-8.5-7.5-6.5)	459-406-353-300 (13-11.5-10-8.5)	512-459-388-335 (14.5-13-11-9.5)
External Pressure					
	in.W.G (Pa)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
Motor Nominal Output	W	50	50	50	50
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)	1 (25)	1 (25)	1 (25)	1 (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)

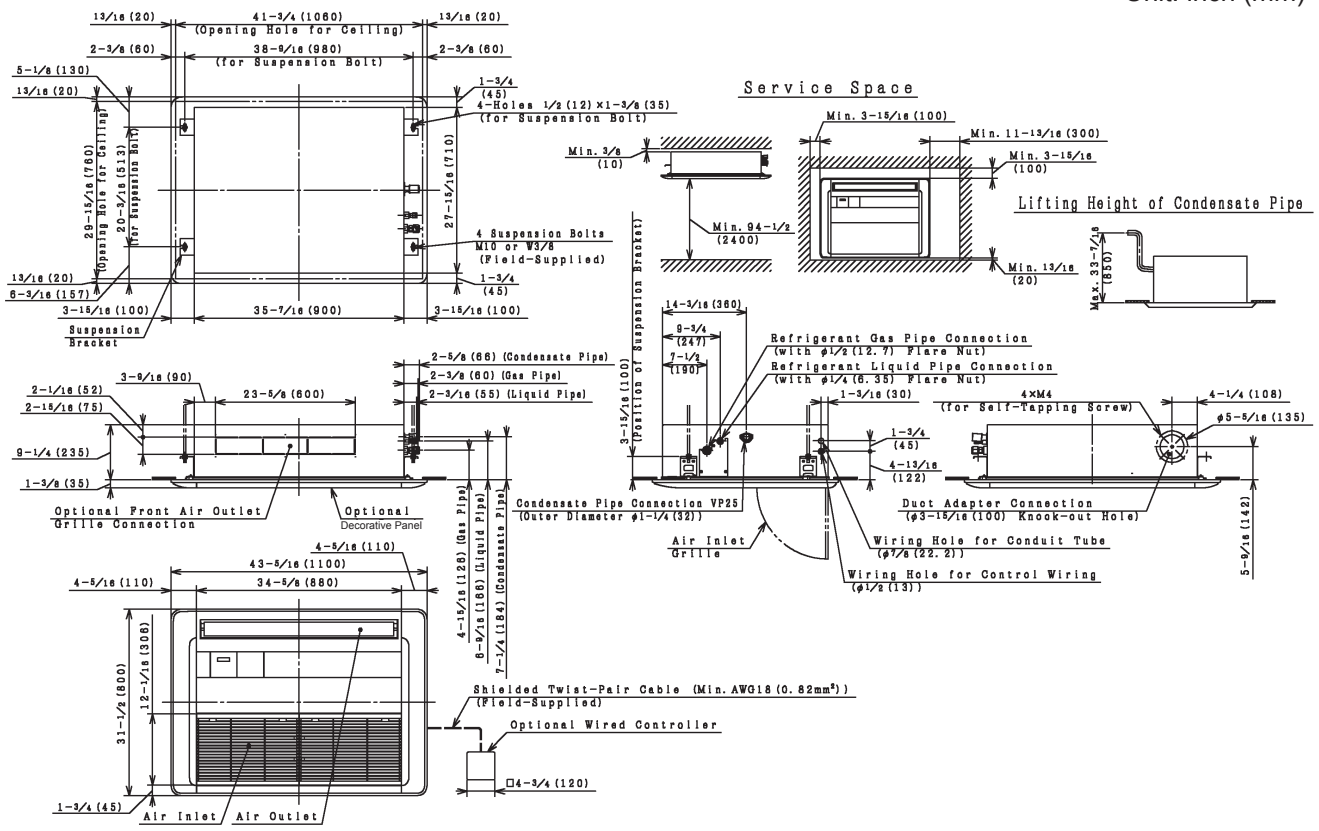
*2. Sound pressure level is based on following conditions:
4.9 ft. (1.5m) beneath the unit.
Above data was measured in an anechoic chamber so that reflected sound should be taken into consideration in the field.

Adaptable Panel Model		P-AP36CNA	P-AP56CNA
Applicable Indoor Unit Model		(H,Y,C)IC1006B21S and (H,Y,C)IC1008B21S	(H,Y,C)IC1012B21S and (H,Y,C)IC1015B21S
Color		Neutral White	
Outer Dimensions			
Height	in.(mm)	1-3/8 (35)	1-3/8 (35)
Width	in.(mm)	43-5/16 (1100)	43-5/16 (1100)
Depth	in.(mm)	31-1/2 (800)	31-1/2 (800)
Net Weight	lbs(kg)	10 (4.5)	10 (4.5)

2.4 Dimensional Data

Models: (H,Y,C)IC1006B21S and (H,Y,C)IC1008B21S with Decorative Panel P-AP36CNA
(H,Y,C)IC1012B21S and (H,Y,C)IC1015B21S with Decorative Panel P-AP56CNA

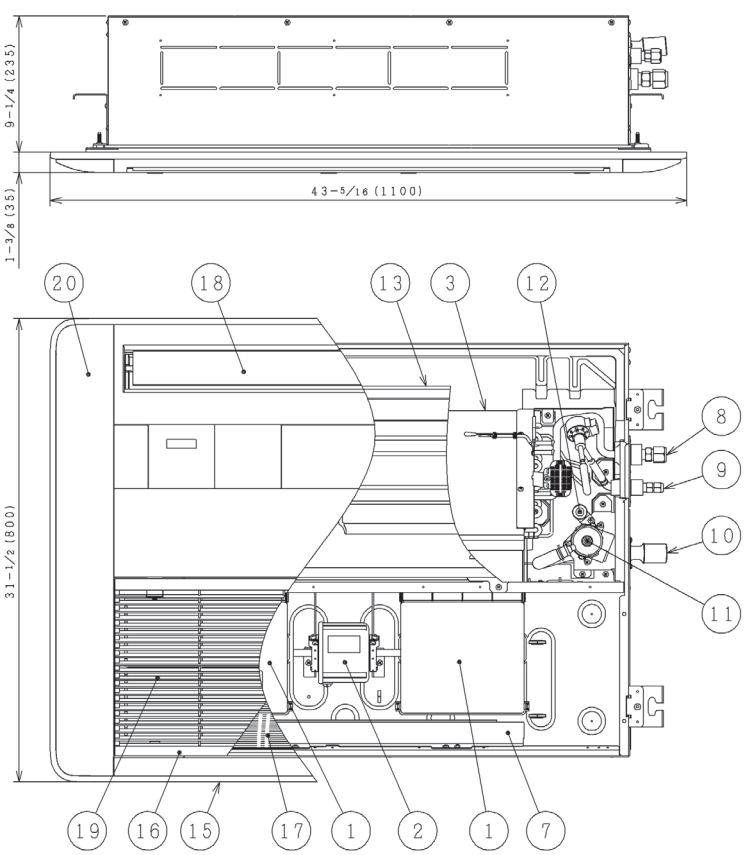
Unit: inch (mm)

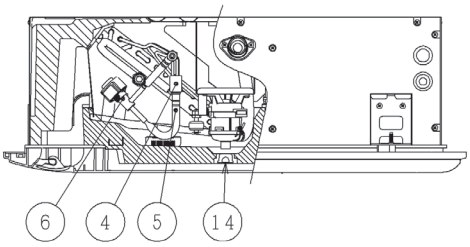


NOTE:
Distance between the wall and louver side panel edge must be a minimum of 59-1/16 inches (1500mm) to prevent short circuiting.

2.5 Structure

Unit: inch (mm)





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	Condensate Pipe Connection	VP25 (OD ϕ1-1/4 (32))
11	Condensate Mechanism	
12	Float Switch	
13	Condensate Pan	
14	Rubber Plug for Drain	
15	Decorative Panel (P-AP36CNA, P-AP56CNA)	Optional
16	Air Inlet Grille	
17	Air Filter	
18	Air Outlet	
19	Air Inlet	
20	Cover for Corner Pocket	(P-AP36CNA) (P-AP56CNA)

Model	a	b
(H,Y,C)IC1006B21S	1/2 (12.7)	1/4 (6.35)
(H,Y,C)IC1008B21S	1/2 (12.7)	1/4 (6.35)
(H,Y,C)IC1012B21S	1/2 (12.7)	1/4 (6.35)
(H,Y,C)IC1015B21S	1/2 (12.7)	1/4 (6.35)

2.6 Component Data

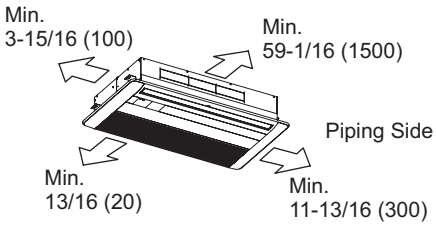
Indoor Heat Exchanger and Fan

Model			(H,Y,C)IC1006B21S	(H,Y,C)IC1008B21S	(H,Y,C)IC1012B21S	(H,Y,C)IC1015B21S
Heat Exchanger Type			Multi-Pass Cross Finned Tube			
Tube	Material		Copper Tube			
	Outer Diameter	ϕ in (mm)	1/4 (7.0)	1/4 (7.0)	1/4 (7.0)	1/4 (7.0)
	Rows		2	2	3	3
	Number of Tube/Coil		22	22	40	40
Fin	Material		Aluminum			
	Pitch	in (mm)	0.078 (1.8)	0.078 (1.8)	0.078 (1.8)	0.078 (1.8)
Maximum Operating Pressure		psi (MPa)	601 (4.15)	601 (4.15)	601 (4.15)	601 (4.15)
Total Face Area		ft^2 (m^2)	22.00 (6.70)	22.00 (6.70)	32.80 (10.00)	32.80 (10.00)
Number of Coil/Unit			1	1	1	1
Indoor Fan			Multi-Blade Centrifugal Fan			
Number/Unit			2	2	2	2
Outer Diameter		ϕ in (mm)	6-5/16 (161)	6-5/16 (161)	6-5/16 (161)	6-5/16 (161)
Nominal Airflow (Hi2-Hi-Me-Lo)		cfm (m^3/min)	300-265-229-212 (8.5-7.5-6.5-6)	335-300-265-229 (9.5-8.5-7.5-6.5)	459-406-353-300 (13-11.5-10-8.5)	512-459-388-335 (14.5-13-11-9.5)
Indoor Fan Motor			Drip-Proof Type Enclosure			
Starting Method			DC Motor			
Nominal Output		W	50	50	50	50
Quantity			1	1	1	1
Insulation Class			E	E	E	E

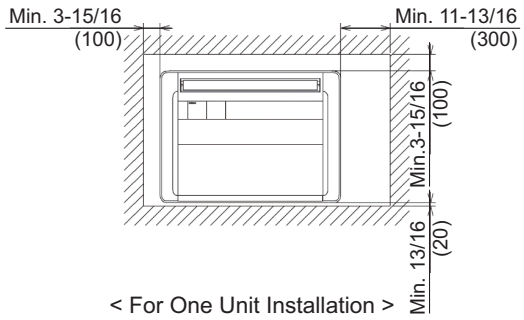
2.7 Operation Space

Models: (H,Y,C)IC1006B21S, (H,Y,C)IC1008B21S, (H,Y,C)IC1012B21S and (H,Y,C)IC1015B21S

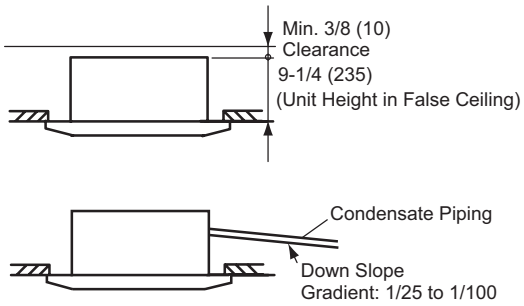
Unit: inch (mm)

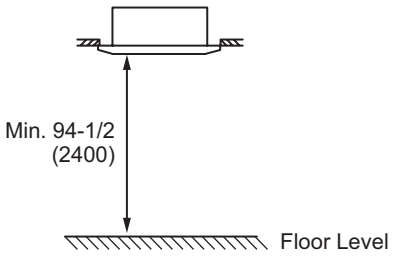


Distance from Wall



< For One Unit Installation >





NOTE:
This figure indicates the minimum service space. There are no obstacles which may hamper incoming and discharged air.

2.8 Sensible Heat Factor (SHF)

Model	SHF*
(H,Y,C)IC1006B21S	0.79
(H,Y,C)IC1008B21S	0.80
(H,Y,C)IC1012B21S	0.83
(H,Y,C)IC1015B21S	0.83

NOTE:
* 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)

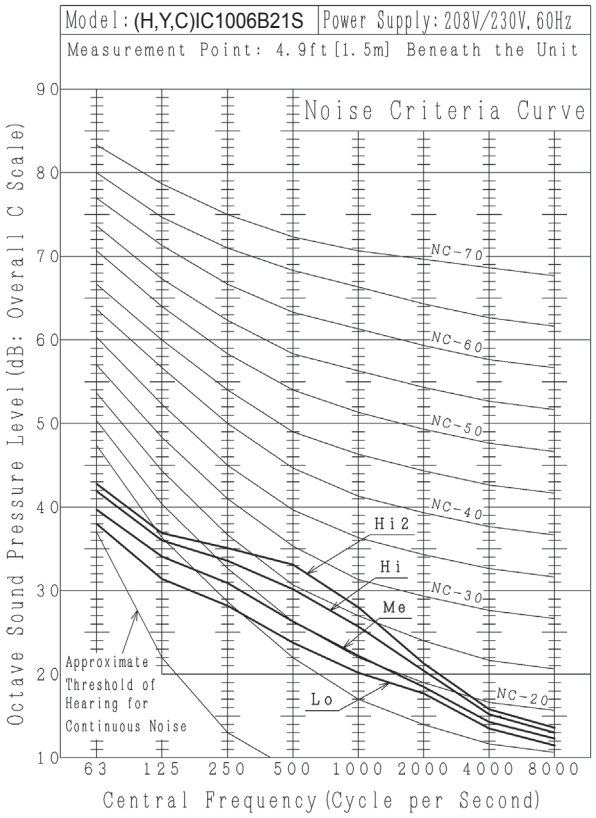
2.9 Electrical Data

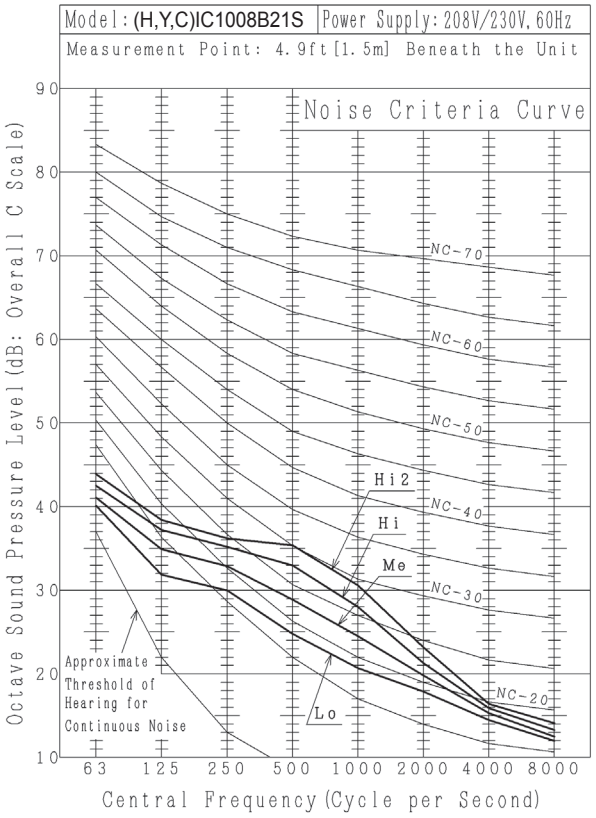
Model	Unit Main Power			Applicable Voltage		Power Supply		Indoor Fan Motor	Unit
	VOL	PH	HZ	Maximum	Minimum	MCA	MFA	OPT	FLA
(H,Y,C)IC1006B21S	208/230	1	60	253	188	0.2	15	0.050	0.2
(H,Y,C)IC1008B21S						0.3	15	0.050	0.2
(H,Y,C)IC1012B21S						0.4	15	0.050	0.3
(H,Y,C)IC1015B21S						0.5	15	0.050	0.4

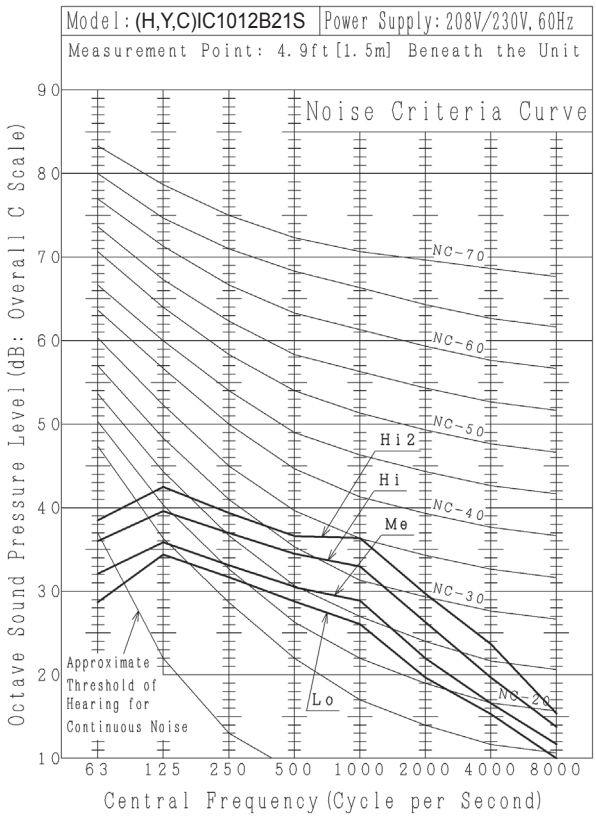
VOL: Rated Unit Power Supply Voltage (V)
PH: Phase (ϕ)
HZ: Frequency (Hz)
MCA: Minimum Circuit Ampacity (A)
MFA: Maximum Fuse Ampacity (A)
OPT: Rated Motor Output (kW)
FLA: Full Load Ampacity (A)

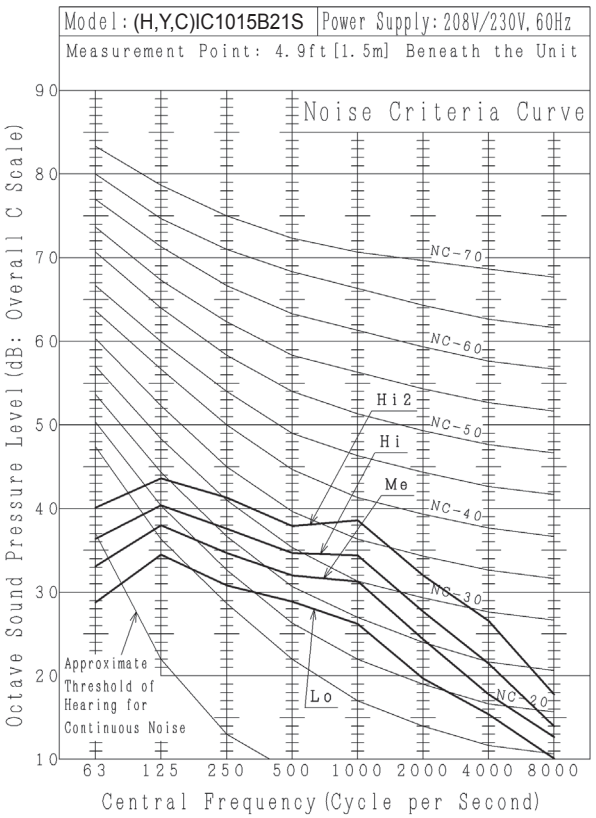
NOTE:
Power supply voltage should be satisfied with the following.
Supply Voltage: Rated Voltage within ±10%
Starting Voltage: Rated Voltage within -15%
Operating Voltage: Rated Voltage within ±10%

2.10 Sound Data







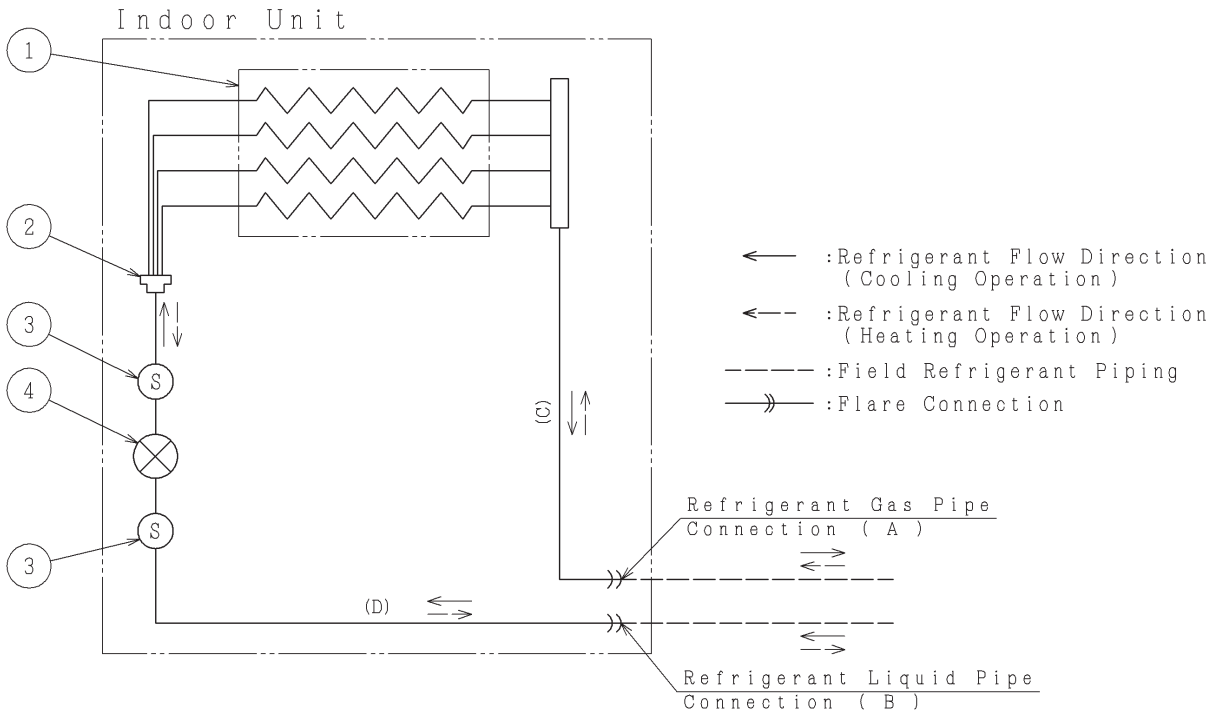


NOTE:
Operation sound is equivalent to an anechoic chamber (free space).
Noise level will be increased by the surrounding noise and echoes.

2.11 Control System

2.11.1 Refrigerant System

Models: (H,Y,C)IC1006B21S, (H,Y,C)IC1008B21S, (H,Y,C)IC1012B21S and (H,Y,C)IC1015B21S



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,C)IC1006B21S	3 Pass	ϕ1/2 (12.7)	ϕ1/4 (6.35)	ϕ1/2×t0.031 (12.7×0.8)	ϕ1/2×t0.031 (12.7×0.8)
(H,Y,C)IC1008B21S	3 Pass	ϕ1/2 (12.7)	ϕ1/4 (6.35)	ϕ1/2×t0.031 (12.7×0.8)	ϕ1/2×t0.031 (12.7×0.8)
(H,Y,C)IC1012B21S	5 Pass	ϕ1/2 (12.7)	ϕ1/4 (6.35)	ϕ1/2×t0.031 (12.7×0.8)	ϕ1/2×t0.031 (12.7×0.8)
(H,Y,C)IC1015B21S	5 Pass	ϕ1/2 (12.7)	ϕ1/4 (6.35)	ϕ1/2×t0.031 (12.7×0.8)	ϕ1/2×t0.031 (12.7×0.8)

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 “Outdoor Unit Engineering Manual” for details.

■ Dry Operation

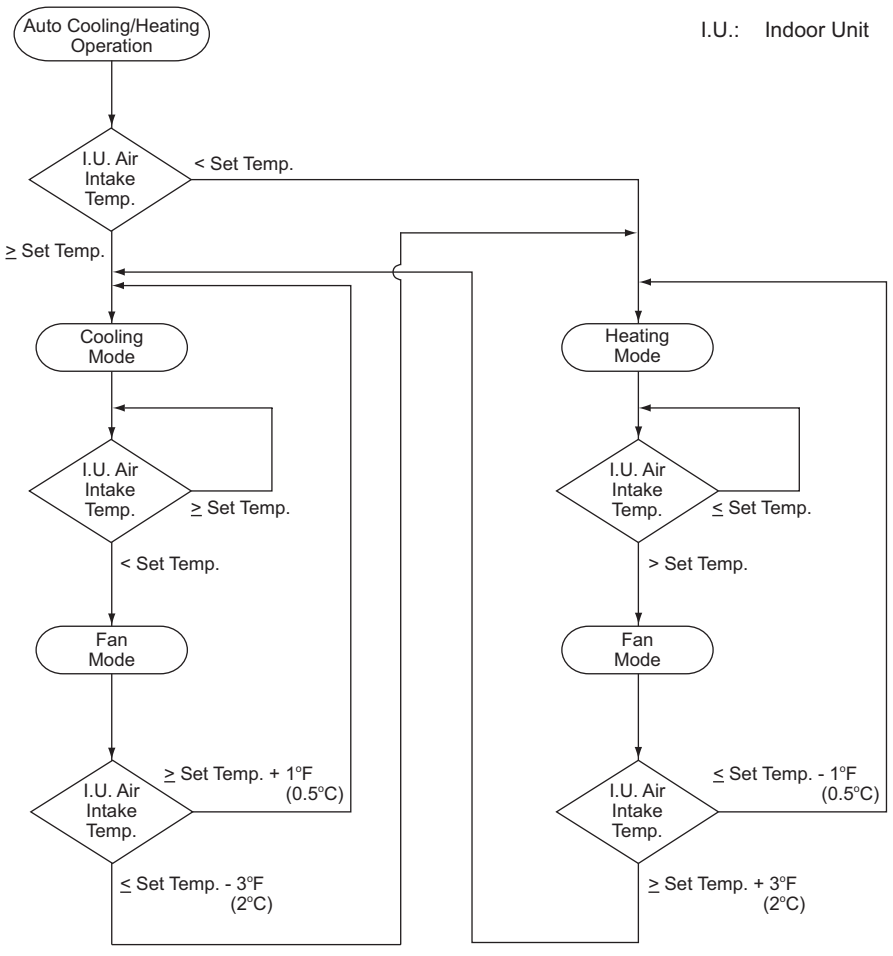
The sequence may be different depending on the outdoor unit model to be connected. Refer to the “Outdoor Unit Engineering Manual” for details.

■ Heating Operation

The sequence may be different depending on the outdoor unit model to be connected. Refer to the “Outdoor Unit Engineering Manual” for details.

■ Automatic Cooling and Heating Operation

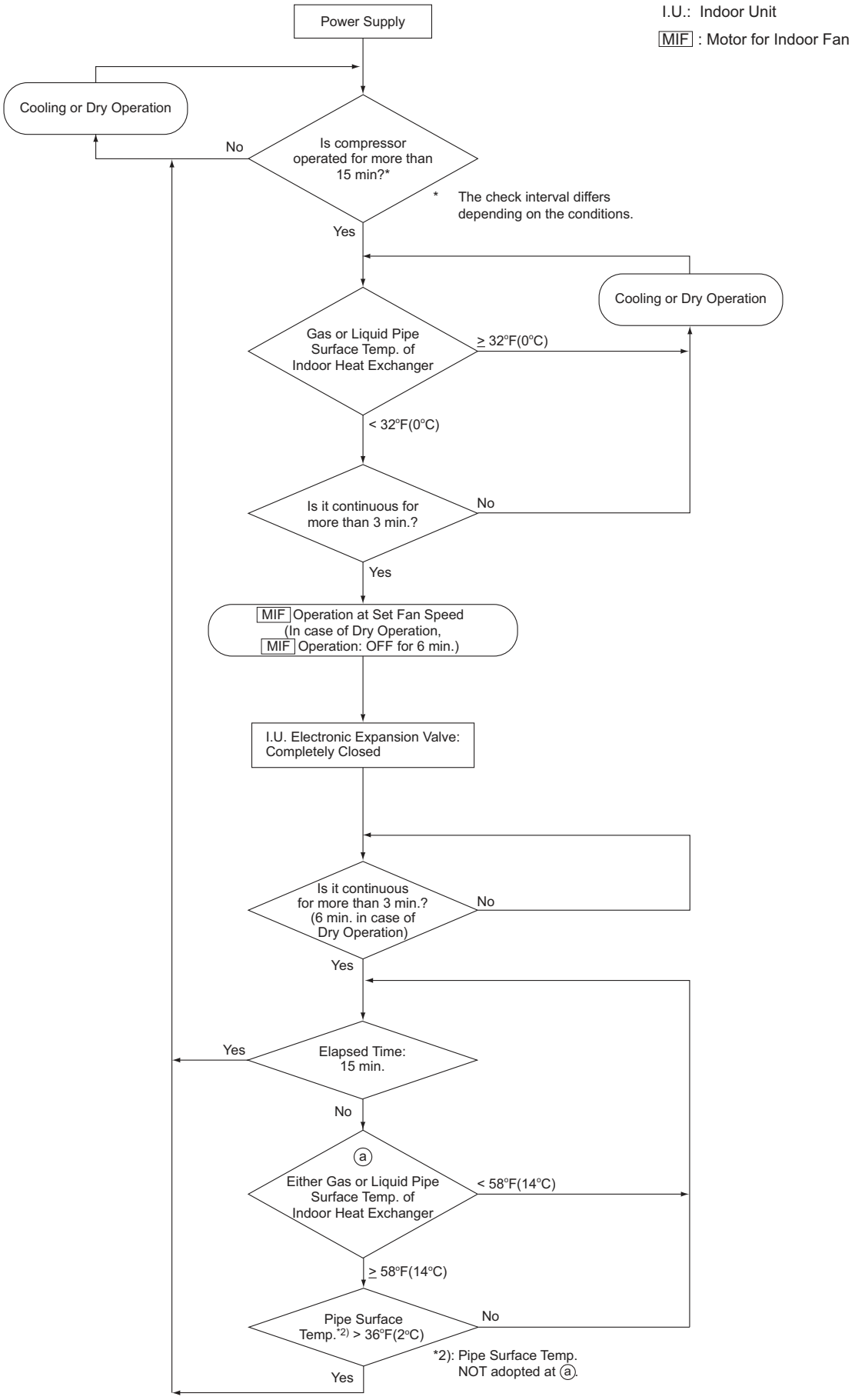
It is applicable only for the Heat Recovery System.



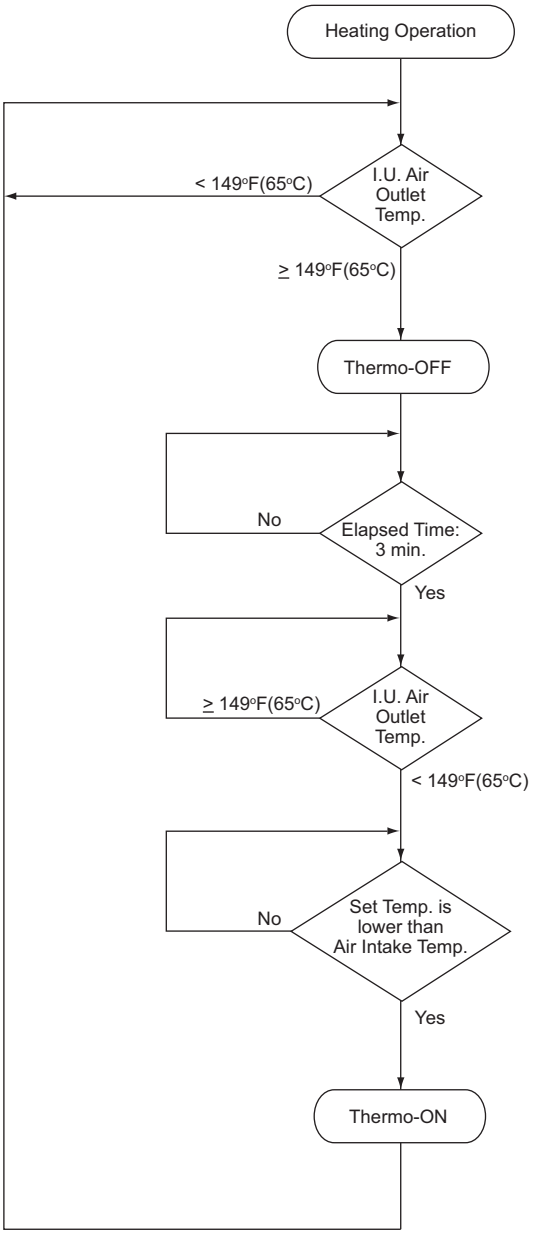
■ Defrosting Operation

The sequence may be different depending on the outdoor unit model to be connected. Refer to the “Outdoor Unit Engineering Manual” for details.

■ Freeze Protection Control during Cooling or Dry Operation



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



I.U.: Indoor Unit

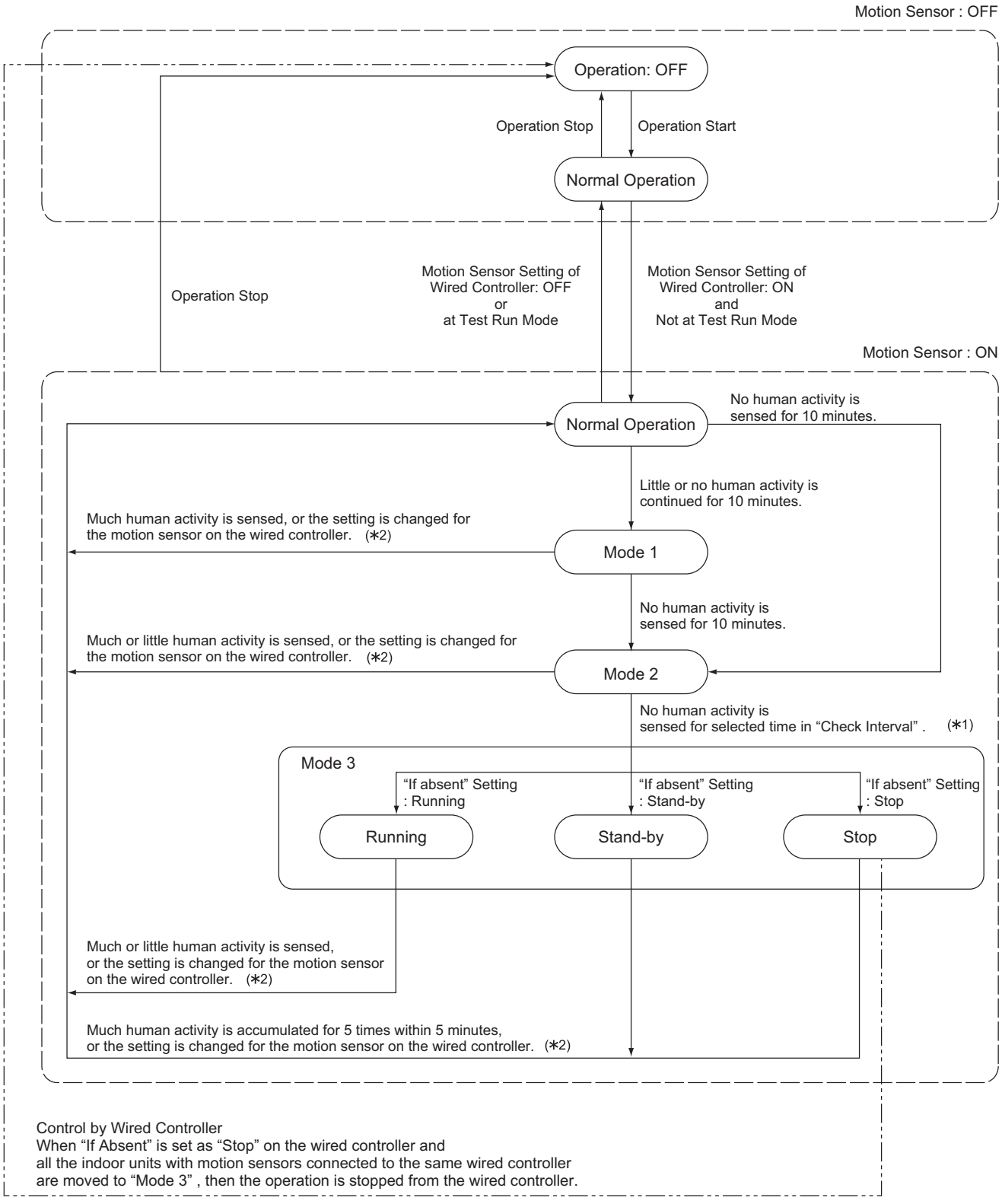
Thermo-ON/OFF Control for Indoor Unit

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 “Outdoor Unit Engineering Manual” for details.

■ Control for Motion Sensor (Optional Part)



(*1) If no human activity is detected before moving to the next mode, this accumulated interval will be included in the next mode. (If there is no action for 10 minutes, do not reset the time.)

(*2) 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 by the motion sensor.

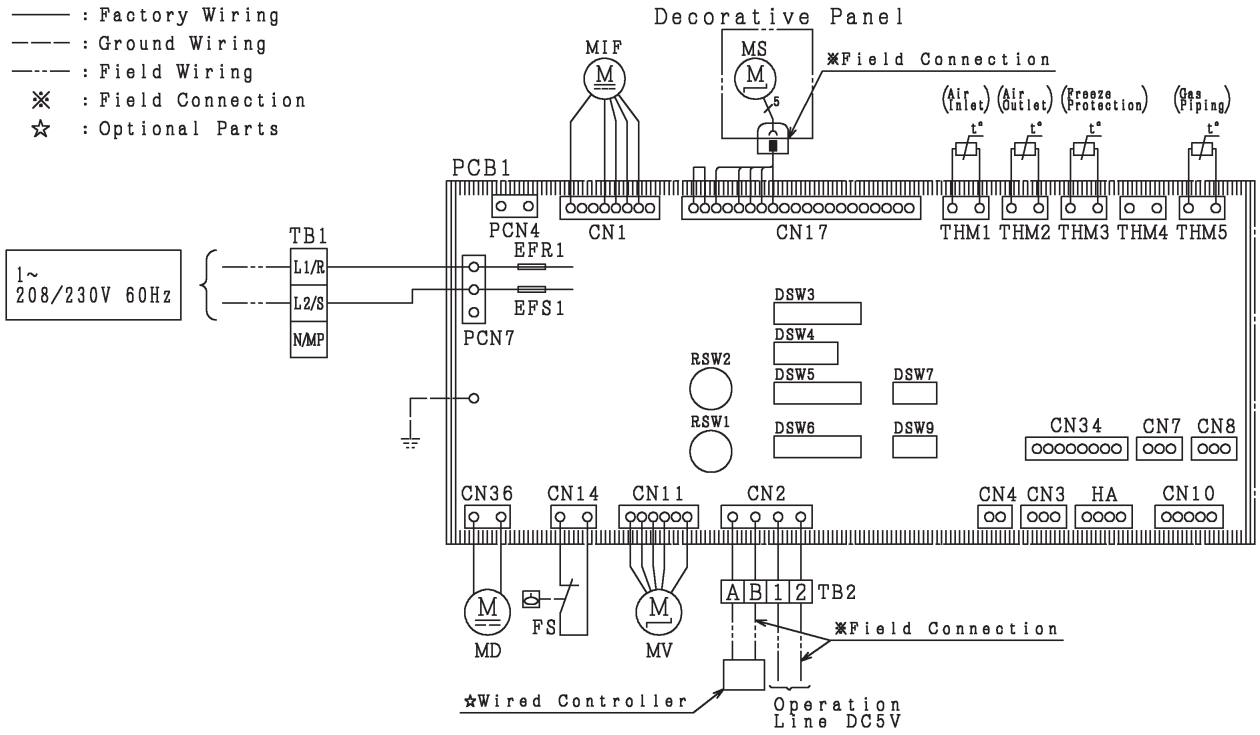
None: No Human Activity (Absent)
Small: Little Human Activity
Large: Much Human Activity

2.11.3 Safety and Control Device Setting

Model			(H,Y,C)IC1006B21S, (H,Y,C)IC1008B21S (H,Y,C)IC1012B21S, (H,Y,C)IC1015B21S
For Evaporator Fan Motor Thermostat	Cut-Out	°F (°C)	212 $^{\pm 7}$ (100 $^{\pm 4}$)
	Cut-In	°F (°C)	203 $^{\pm 7}$ (95 $^{\pm 4}$)
For Control Circuit Fuse Capacity		 A	 5

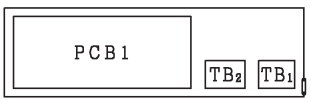
2.11.4 Wiring Diagram

Models: (H,Y,C)IC1006B21S, (H,Y,C)IC1008B21S, (H,Y,C)IC1012B21S and (H,Y,C)IC1015B21S

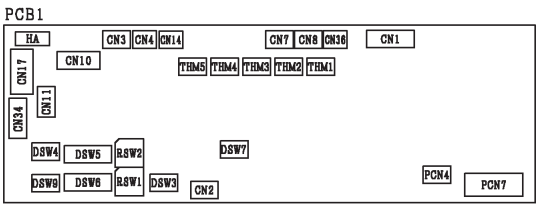


Mark	Name
CN3	Optional Connector (For Signal Input)
CN7, 8	Optional Connector (For Signal Output)
CN10	Optional Connector (For Motion Sensor)
DSW3, 4, 7, 9	DIP Switch for Setting
EFR1, EFS1	Fuse
FS	Float Switch
MD	Motor for Drain-up Mechanism
MIF	Motor for Indoor Fan
MS1~4	Motor for Automatic Swing Louver
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, 34, HA, PCN4	Reserved Connector on PCB

Electrical Control Box of Indoor Unit



Printed Circuit Board



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

3. Optional Parts

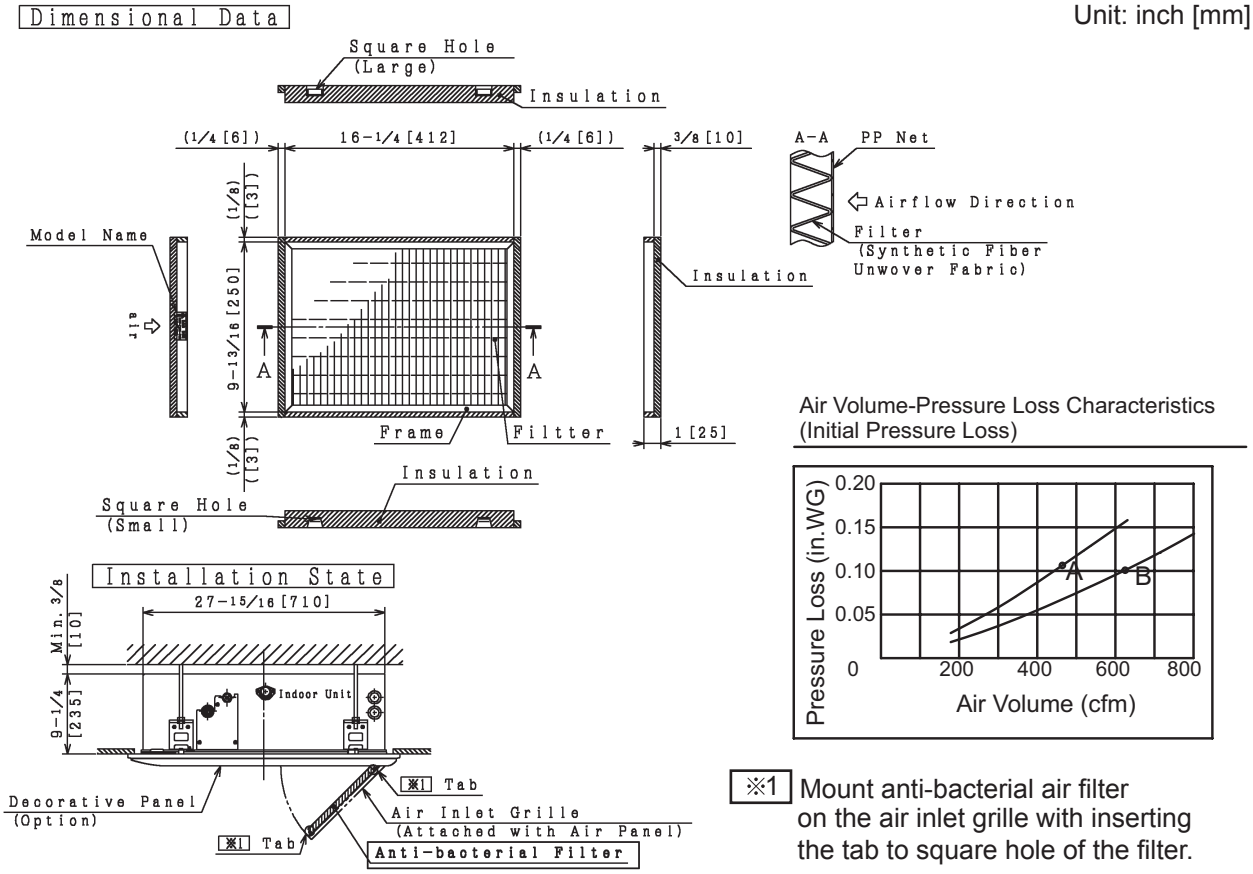
3.1 Line Up

Item No.	Optional Parts	Optional Parts Model Name
3.2	Anti-bacterial Air Filter	F-56MS-PK2
3.3	Motion Sensor Kit	SOR-NES
3.4	Duct Adapter	PD-100
3.5	Grille for Front Discharge	DG-56SW1
3.6	Air Outlet Shutter Plate	PIS-56LS
3.7	Infrared (IR) Receiver Kit	C1RK01
3.8	3P Connector Cable	PCC-1A
3.9	Remote Sensor	THM-R2A
3.10	Relay and 3 Pin Connector Kit	PSC-5RA
3.11	Wired Controller	CIW01
3.12	Simplified Wired Controller	CIS01
3.13	Wireless Controller	CIR01
3.14	Mini Central Controller	CCM01
3.15	Large Central Controller	CCL01
3.16	Computerized Central Controller Software / Adapter	CCCS01 / CCCA01

Refer to the Engineering Manual of Control for details of item 3.11 to 3.16.

3.2 Anti-bacterial Air Filter: F-56MS-PK2

Unit: inch [mm]



Air Volume-Pressure Loss Characteristics (Initial Pressure Loss)

※1 Mount anti-bacterial air filter on the air inlet grille with inserting the tab to square hole of the filter.

Specifications

Item \ Model		F-56MS-PK2
Applicable Indoor Unit Model ((H,Y,C)IC1**B21S)	MBH	006 to 015
Quantity per unit		2
Dust Collection Efficiency	%	65 (Colorimetric Method)
Airflow	cfm (m^3/min)	459 (13)
Initial Pressure Loss	in. WG (Pa)	0.11 (26.5)
End Pressure Loss	in. WG (Pa)	0.36 (90.0)
Material	Filter	Synthetic Fiber-Containing Nonwoven Fabric
	Net	P.P
	Color	White/Black (Filter / Net)
Operating Time	hours	about 1800
Weight	lbs(kg)	0.7 (0.3)
Regulation		Do not use with other air filters.

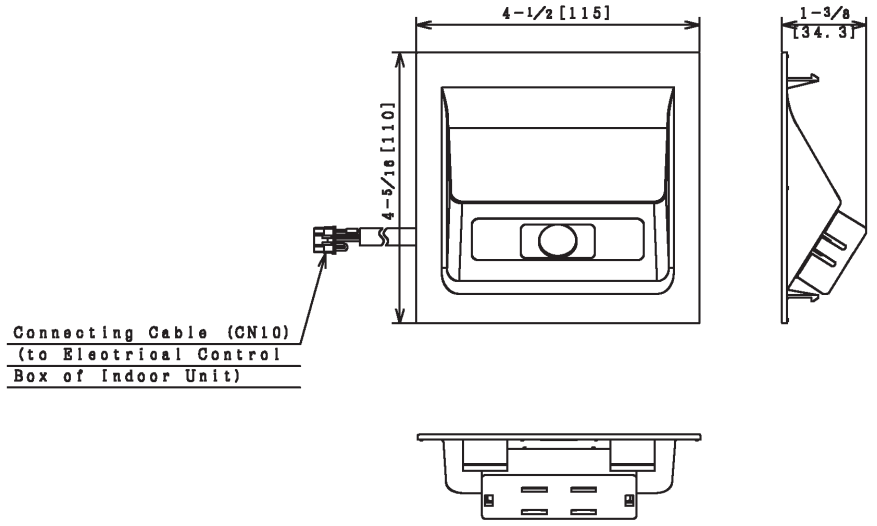
NOTES:

1. Dust collection efficiency depends on the general airborne dust (Dust Concentration: 0.15mg/m^3).
2. The air filter's longevity is dependent on environmental factors, such as oil or salt.
3. The air filter net needs to be maintained periodically. If dust accumulates on the net, vacuum the net.
4. Change the filter if its operating time appears to be no longer useful.
5. Select the function selection mode with the wired controller and set the high speed mode to “High Speed 1” before using this antibacterial air filter.
   Refer to the “Installation Manual for Anti-bacterial Air Filter” for high-speed mode details.
6. When the high speed mode “HIGH” or “HIGH 2” is used, there may be a noise level increase.
7. For this antibacterial long-life air filter, the airflow volume “HIGH 2” will be equal to “HIGH”.
8. Refer to the “Installation Manual for Anti-bacterial Air Filter” for more details.

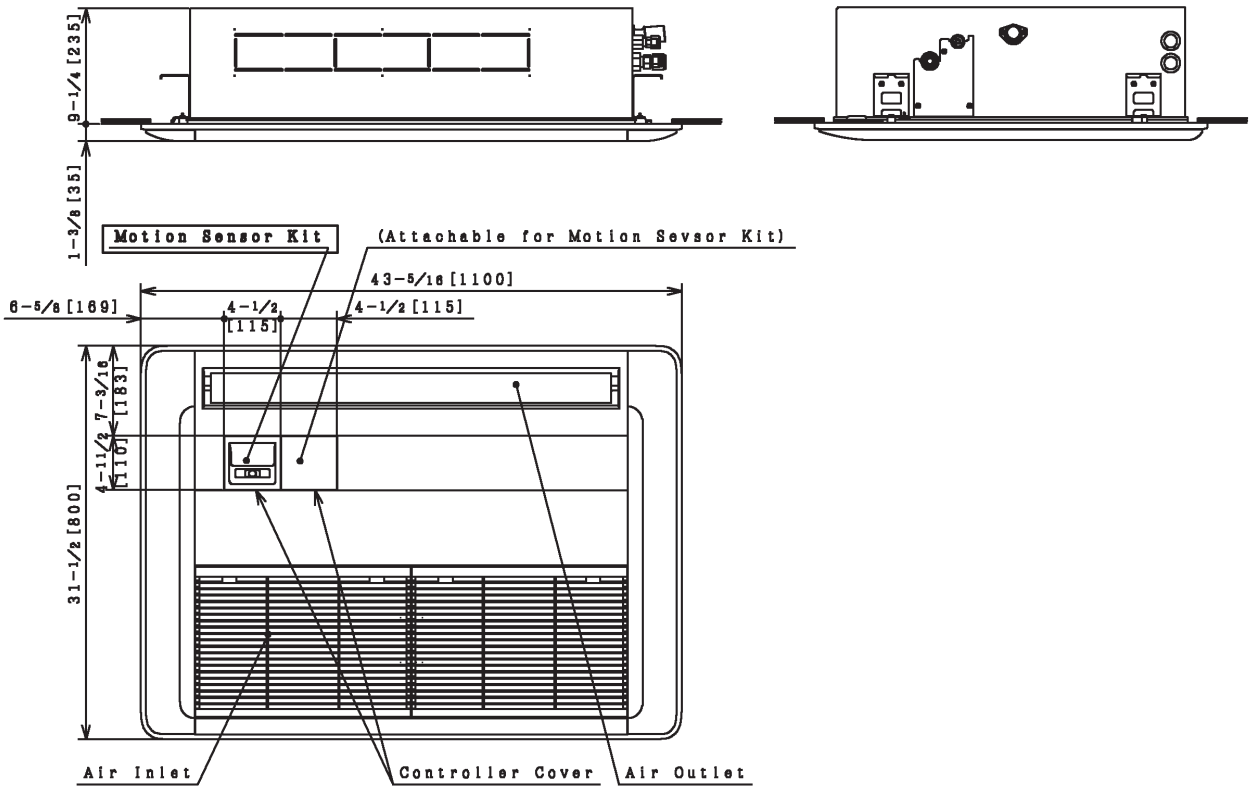
3.3 Motion Sensor Kit: SOR-NES

Unit: inch [mm]

Dimensional Data



Installation State

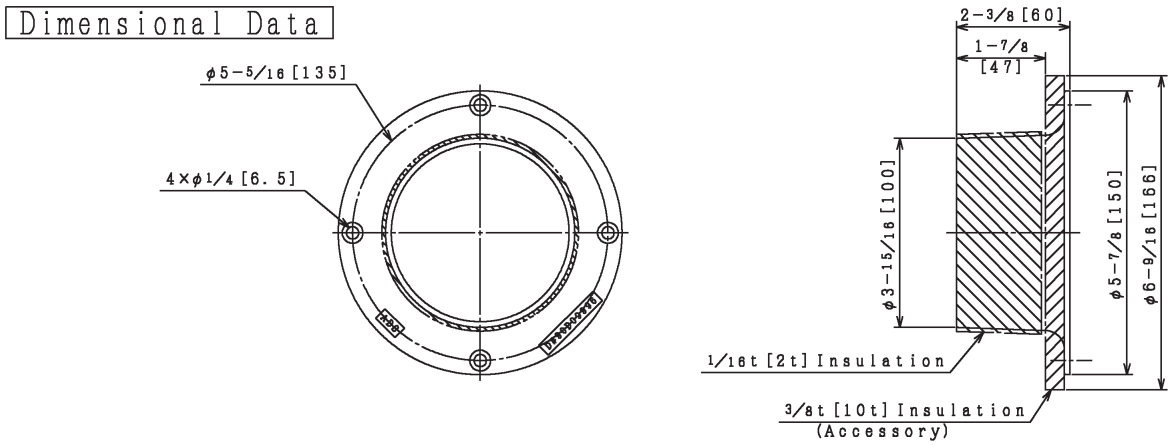


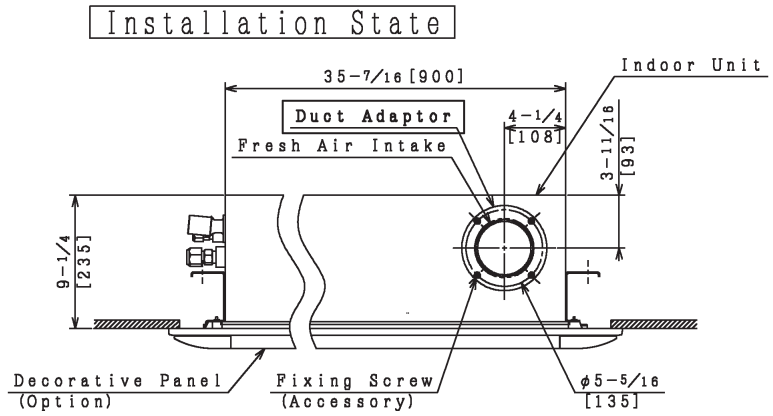
NOTES:

1. Remove the controller cover and attach the motion sensor kit to the cover. It can be attached to both sides of the controller cover.
2. Connect the wiring for the motion sensor kit to the connector CN10 on the indoor unit PCB in the electrical control box. Do not run the connecting cable for the motion sensor kit and the power source cable (208/230V) in parallel. This could cause electromagnetic interference (EMI) resulting in a malfunction of the motion sensor kit.
3. Refer to the “Installation Manual for Motion Sensor Kit” for installation and setting details.

3.4 Duct Adapter: PD-100

Unit: inch [mm]





Specifications

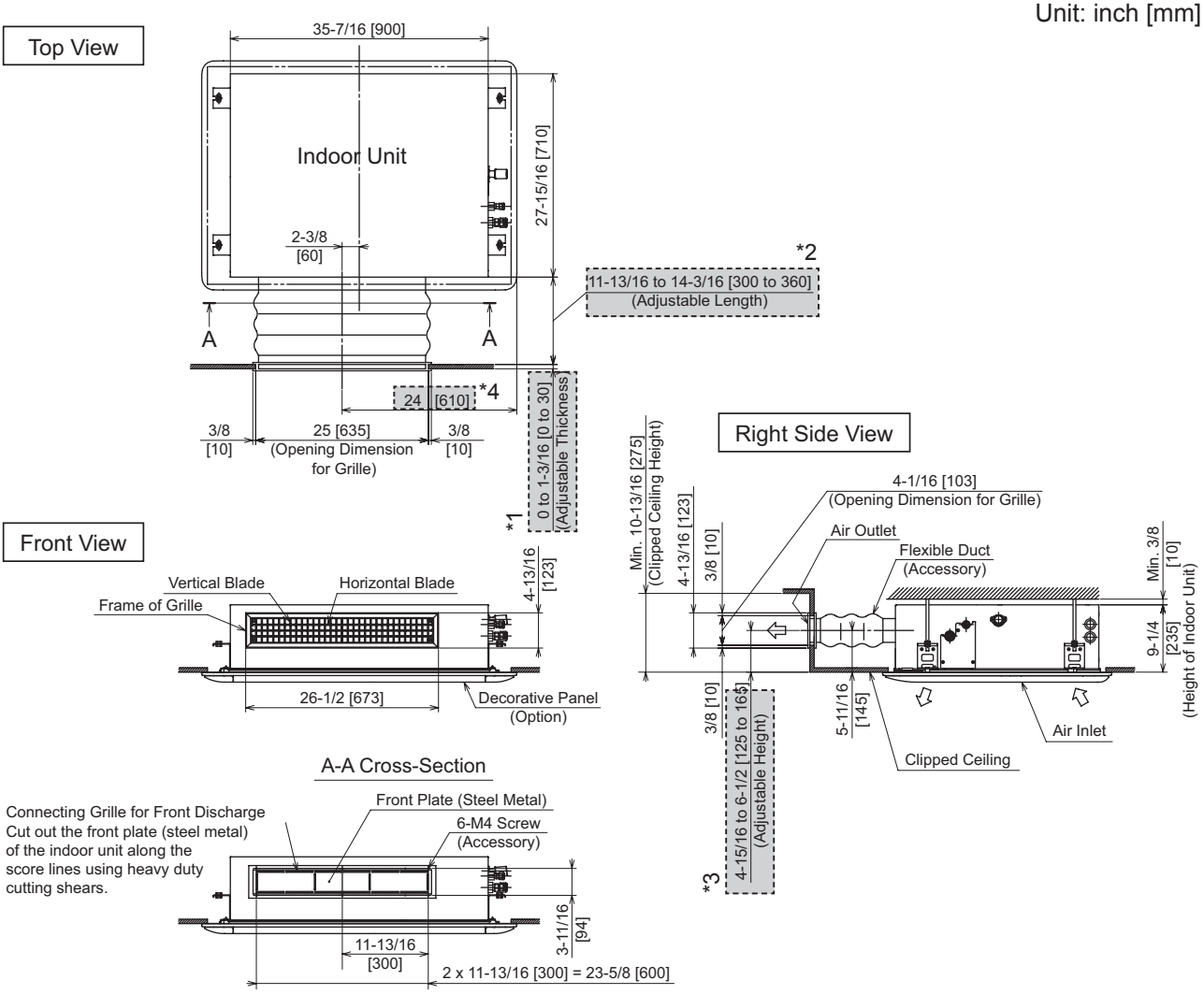
Item \ Model		PD-100
Applicable Indoor Unit Model ((H,Y,C)IC1**B21S)	MBH	006 to 015
Max. Capacity of Fresh Air Intake	cfm (m^3/min.)	35 (1)
Purpose		for Fresh Air Intake
Connecting Duct Diameter	inch(mm)	φ3-15/16 (φ100.0)
Material		ABS Resin (UL94V-0)

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 adapter provides a maximum quantity of fresh air intake of approximately 18cfm (0.5m^3/min) (for 3.3 ft. (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 Adapter” for more details.

3.5 Grille for Front Discharge: DG-56SW1

Unit: inch [mm]



Specifications

Item \ Model		DG-56SW1
Applicable Indoor Unit Model ((H,Y,C)IC1**B21S)	MBH	006 to 015
Grille	Material	Wood
	Color	White (5.5Y9.5/0.5)
Horizontal Blade	Material	Steel Plate
	Color	Gray
Vertical Blade	Material	Steel Plate
	Color	White
Flexible Duct	Material	Special PVC Tube, Glass Wool, Glass Cloth
Weight	lbs (kg)	12.1 (5.5)

NOTES:

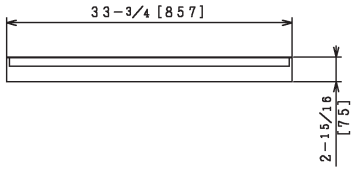
1. Make sure to use the factory-supplied duct (flexible duct). A field-supplied duct is not available.
2. This grille can be adjusted in the following ways during installation.
   - Wall Thickness (*1)
   - Duct Length (*2)
   - Duct Height (*3)
3. Install this grille with an adjustable dimension. However, it can not be adjusted in the left and right directions.
   (dimension of *4)
4. Refer to “Installation Manual for Grille for Front Discharge” for more details.

3.6 Air Outlet Shutter Plate: PIS-56LS

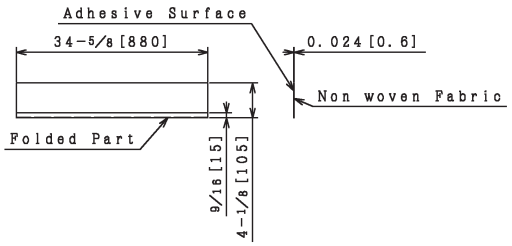
Unit: inch [mm]

Dimensional Data

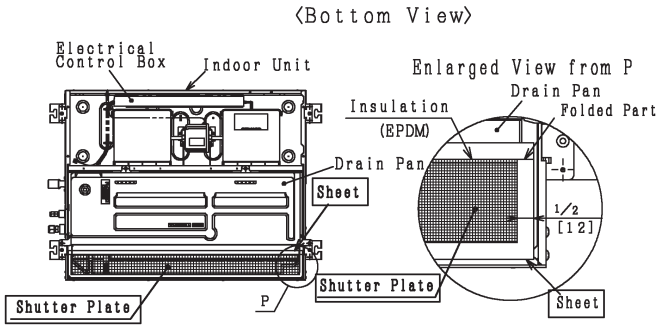
[Shutter Plate]

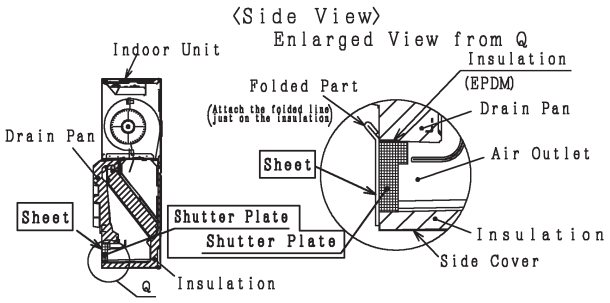


[Sheet]



Installation State





Specifications

Item \ Model		PI-160LS1
Applicable Indoor Unit Model ((H,Y,C)IC1**B21S)	MBH	006 to 015
Quantity per unit		1
Material	Shutter Plate	Polyethylenes
	Sheet	Non-woven Fabric (Flame Resistance: UL94V-0)

NOTES:

1. When the indoor unit is installed with a clipped ceiling, the air outlet shutter plate must be used.
2. Refer to the “Installation Manual for Air Outlet Shutter Plate” for more details.

3.7 Infrared (IR) Receiver Kit: C1RK01

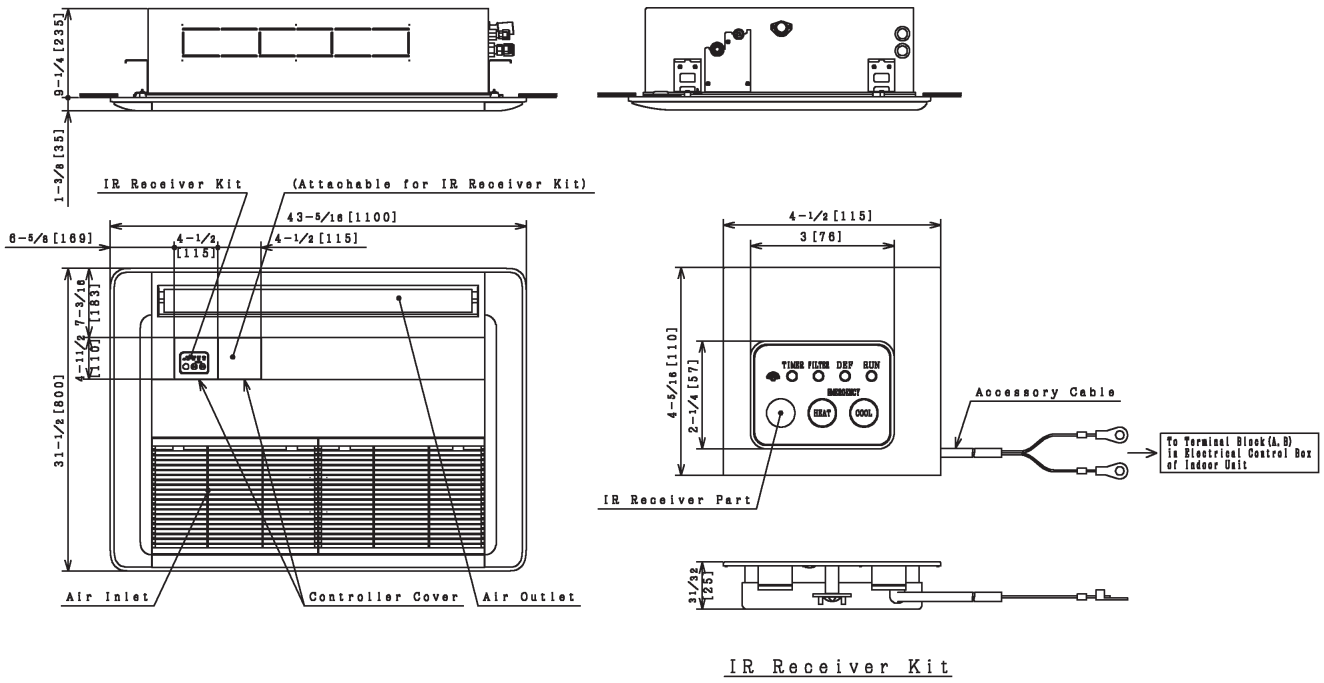
This IR receiver kit is installed with the 1-way cassette for use with the wireless controller.

3.7.1 Specifications

Model	C1IRK01
Outer Dimension < W × H × D >	4-1/2 × 4-5/16 × 1 inch (115 × 110 × 25 mm)

3.7.2 Dimensions

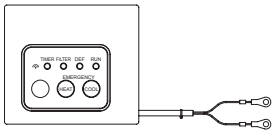
Unit: inch [mm]



3.7.3 Applicable Models

Model	C1IRK01
Applicable Indoor Unit Model	1-Way Cassette Type
Applicable Wireless Controller	CIR01

3.7.4 Accessories / Options

No.	Accessory	Q'ty	Remarks
①	IR Receiver Kit C1IRK01 	1	With Connecting Cable
②	Clamp 	1	For Fixing Cable
③	Tie-Wrap 	3	For Fixing Cable
④	Installation Manual	1	-
⑤	Operation Manual	1	-

3.7.5 Installation

⚠WARNING

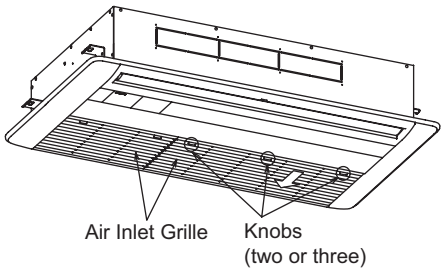
- Turn OFF the power source completely before setting the DIP switch, installation work and electrical wiring work for IR receiver kit.
  If not, it may cause an electric shock.
- Perform securely the installation work referring to this installation manual.
  If the installation is not completed, it may cause injury by falling down the IR receiver kit.
- Do not install the IR receiver kit where the flammable gases may generate or enter.
  It may cause heat generation or a fire.
- Perform securely the electrical wiring work.
  If the electrical work is not completed, heat generation at the connection, a fire or an electric shock may occur.
- Make sure that the electrical wires are securely fixed in order not to apply an external force to the terminal connections of the wirings. Not doing so may cause heat generation or a fire.

NOTICE

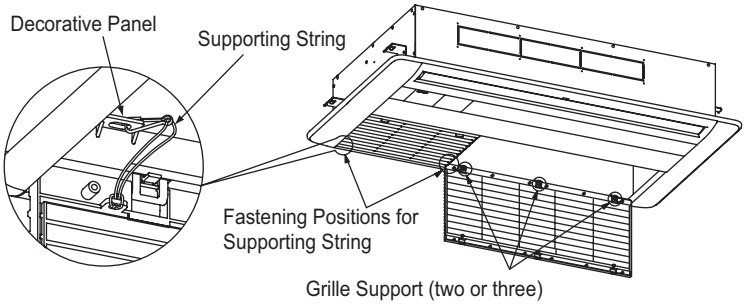
- When the IR receiver kit is near ambient lighting, it may not receive a signal from the wireless controller. Therefore, pay particular attention to the installation position of the IR receiver kit.
- Do not run the connecting cable for the IR receiver kit and the power source cable (208/230V) in parallel. It may cause a malfunction of the IR receiver kit.
- When the IR receiver kit is installed with the indoor units' installation, start from procedure 3.
- When the IR receiver kit is installed after the indoor units' installation, be sure to turn OFF the power source completely before starting installation.

1 Air Inlet Grille Removal

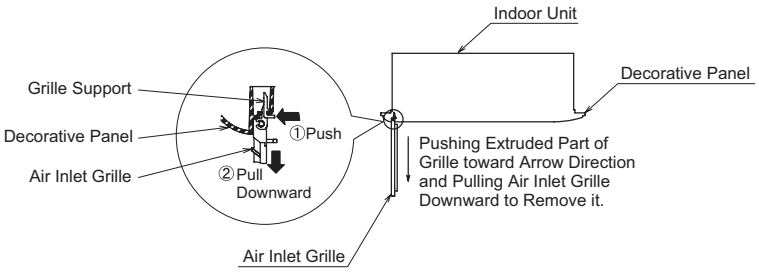
(1) The air inlet grille can be opened by pushing the knob of the air inlet grille backward.



(2) Remove the hook of the supporting string from the decorative panel.



(3) Open the air inlet grille. The air inlet grille can be removed by pushing the extruded part of the grille in the direction of the arrow, and pulling the air inlet grille downward as shown in the figure at the right.



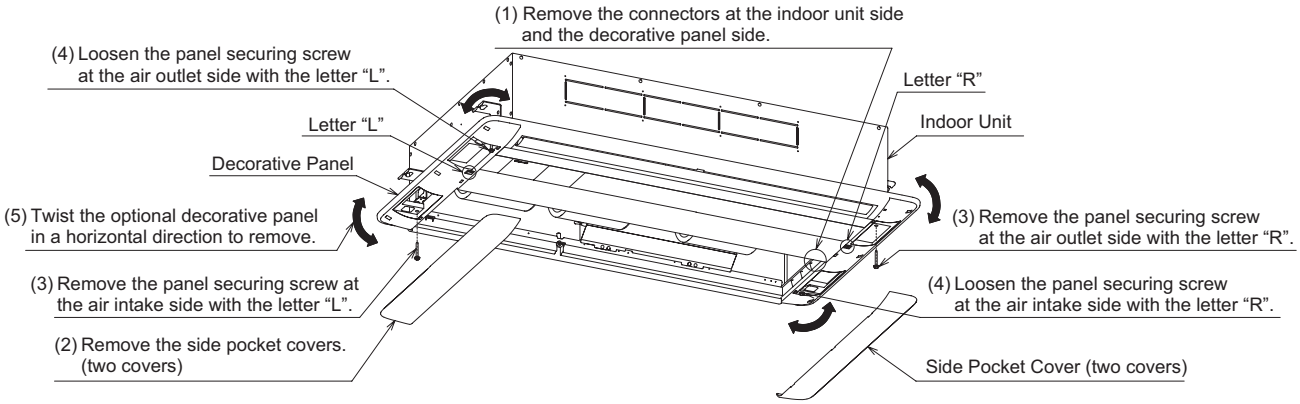
NOTICE

Be careful not to drop the air inlet grille or air filter when removing them.

2 Optional Air Panel Removal

Follow the procedures from (1) to (5).

At least two (2) people are required for removing.



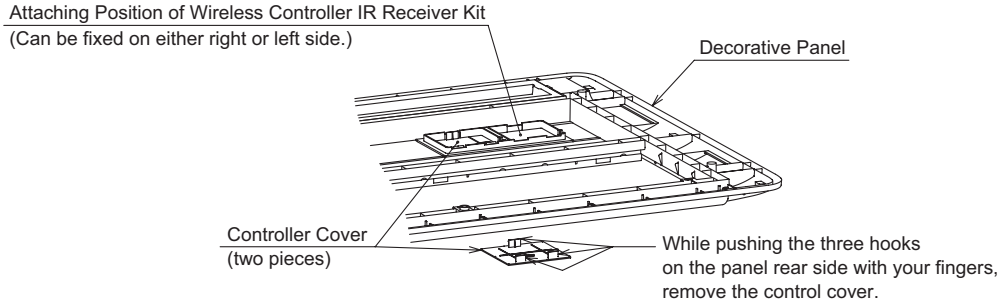
⚠CAUTION

- Do not apply excessive force removing the side pocket covers. Doing so may cause damage of the coupling hooks of the side pocket covers, or may result in injury.
- Hold the decorative panel securely to prevent it from falling when it is removed.

3 Controller Cover Removal

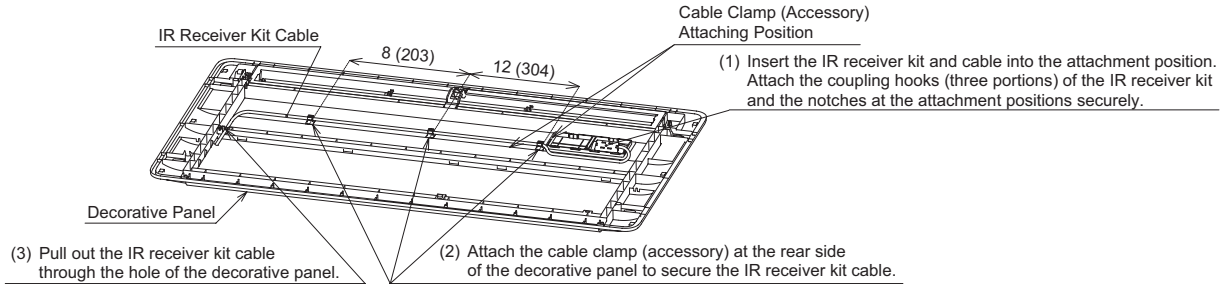
⚠CAUTION

Do not apply excessive force when removing the controller cover. Doing so cause of damage of the coupling hooks of the controller cover, or may result in injury.



4 Follow the procedures from (1) to (3) to attach the IR receiver kit on the decorative panel..

Unit: inch (mm)

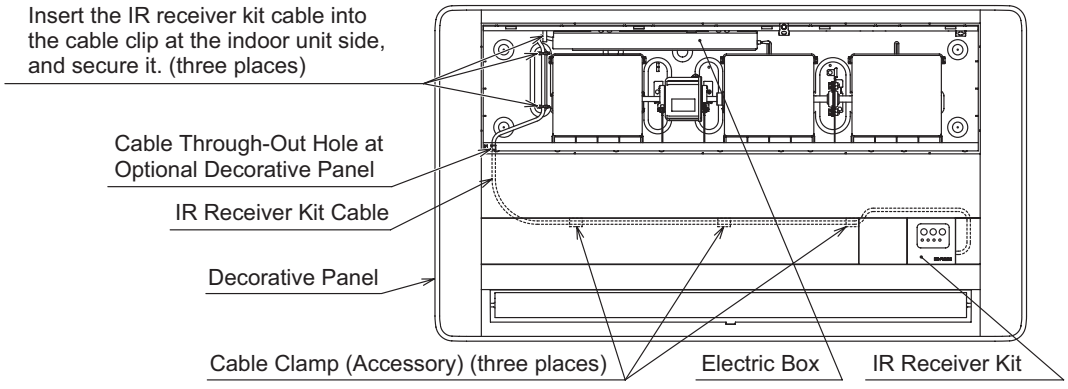


NOTICE

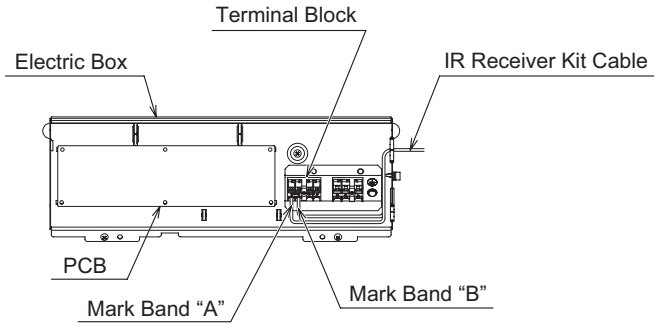
- Pay particular attention to the installation direction of the IR receiver kit. Number of coupling hooks of the IR receiver should match the notches at the installation position.
- Check to ensure that the IR receiver kit is securely installed.
- Be sure to attach the cable clamp (accessory) according to the required position.
  If not, condensation may occur because of a space between decorative panel and the indoor unit.

5 Install the decorative panel to the indoor unit according to the “Installation and Maintenance Manual” for the decorative panel.

6 Secure the IR receiver kit cable with the cable clamp of the indoor unit.



7 Remove the electric box cover of the indoor unit. Connect the IR receiver kit cable to the terminal blocks (A, B) in the electric box as shown at the right. (Terminals A and B have no polarity.)

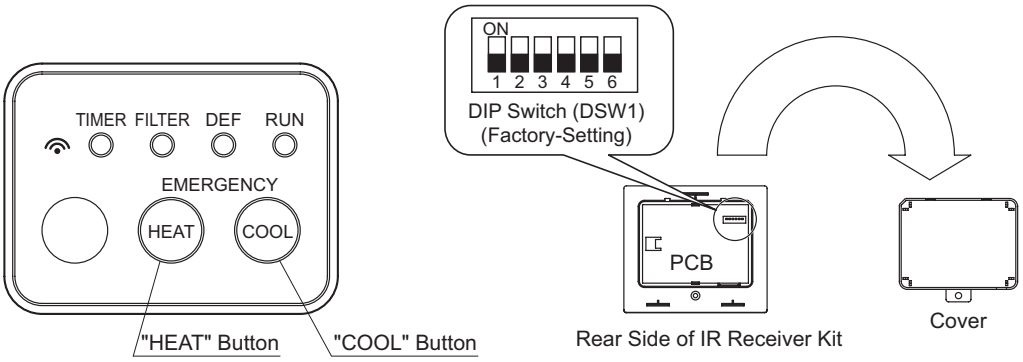


3.7.6 Optional Functions

⚠WARNING

Turn OFF the power source completely before setting the DIP switch for the IR receiver kit.
Not doing so may result in an electric shock.

1 The following switches are on the IR receiver kit.



2 Emergency Operation Setting

"COOL" and "HEAT" switches are used for emergency operation when the batteries for the wireless controller are low.

(1) Switch "COOL": Press "COOL" so that the cooling operation is started.
Press "COOL" again so that the cooling operation is stopped.

(2) Switch "HEAT": Press "HEAT" so that the heating operation is started.
Press "HEAT" again so that the heating operation is stopped.

NOTE:
During an emergency operation, a yellow light "((•))" flashes (0.5 second ON/0.5 second OFF).
The temperature set-point and the fan speed for the cooling/heating operation are the same as before starting an emergency operation.

3 The DIP switch (DSW1) is for the optional function selection. If the optional function selection is required, set the DIP switch as follows.

Optional Function	DIP Switch Setting (DSW1)						Details
	1	2	3	4	5	6	
Main/Sub Setting	O	X	X	X	X	X	Change main (OFF setting)/sub (ON setting) wireless controller for a two-wireless controller system.
Identification of Indoor Unit	X	O	X	X	X	X	It functions as B Mode (identification of indoor unit) of the wireless controller when it sets to "ON".
Invalidity of Emergency Operation	X	X	X	O	X	X	The switches for emergency operation are invalid.

O: ON
X: OFF

NOTICE

Review the following settings when the function for the IR receiver kit is selected from the wireless controller or the centralized controller.

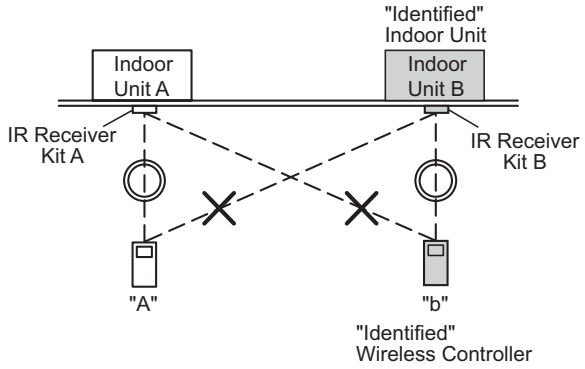
- The cooling lower limit for the temperature set-point and the heating upper limit for temperature set-point are not available. The setting is available beyond the upper and lower limit for temperature set-point from the wireless controller.
- The optional function setting "Fixing of Setting Temperature" is not available. When the operation mode is changed from the wireless controller, the indicated temperature on the wired controller becomes the set temperature of the wireless controller.

3.7.7 Identifying Indoor Units Installed in a Side-by-Side Operation

⚠WARNING

Turn OFF the power source completely before setting the DIP switch for the IR receiver kit.
Not doing so can cause an electric shock.

When two indoor units are installed side by side, the commands from the wireless controller may be received by both indoor units. The function, “Identifying of Indoor Units Installed Side by Side” enables operation of the individual unit correctly without interfering with the other unit’s operation. As shown in the figure at the right, the indoor units of A and B are set side by side. In this instance, unit B is set as “Identifying Indoor Units Installed Side by Side”.



< Setting of Identifying of Indoor Units Installed Side by Side >

1 IR Receiver Kit Setting
Set the Number 2 pin of the IR receiver kit DIP switch (DSW1) at the “Identified” Unit B “ON” side.

2 Wireless Controller
Set the wireless controller according to the Installation and Maintenance Manual for the Wireless Controller.

< Cancellation of Identifying of Indoor Units Installed Side by Side >

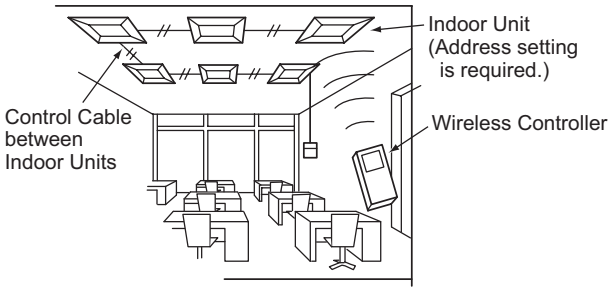
1 IR Receiver Kit Setting
Set the Number 2 pin of the IR receiver kit DIP switch (DSW1) “OFF” side for cancellation.

2 Wireless Controller
Cancel the wireless controller setting according to the Installation and Maintenance Manual for the Wireless Controller.

3.7.8 Simultaneous Operation

Up to 16 indoor units can be simultaneously controlled using one wireless controller.
When multiple indoor units are installed in a large room, all the indoor units can be controlled to start/stop with only one wireless controller.

NOTE:
Do not apply a simultaneous operation for the indoor units installed separately in different rooms.
Some units may be left without turning OFF the power source.

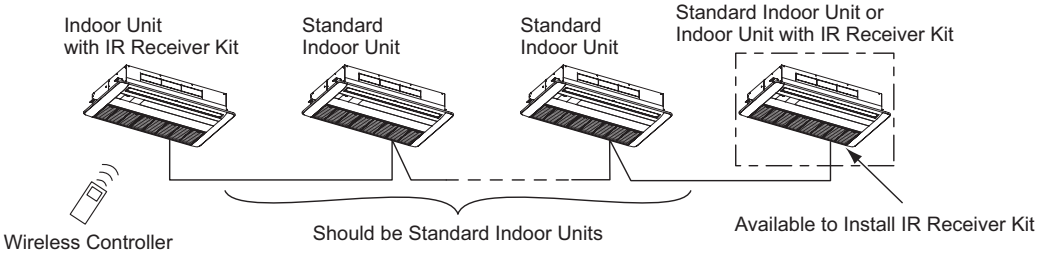


Control Example of Simultaneous Operation of Multiple Units

(The figure shows for 4-way cassette type indoor units.)

< Installation of IR Receiver Kit >

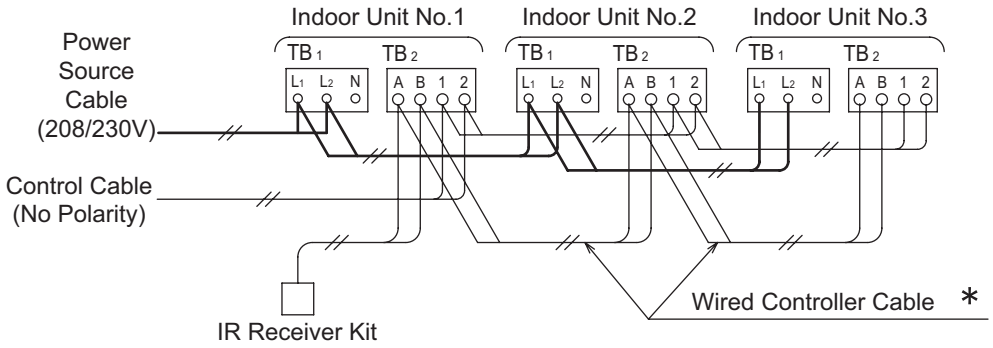
In an instance of simultaneous operation of multiple (up to 16) indoor units by the wireless controller, install the IR receiver kit only to the unit to be operated. Other units should be standard units without the IR receiver kit. If multiple IR receiver kits are required be installed, two IR receiver kits are the maximum.



< Electrical Wiring Connecting and Setting >

1 Connection between Indoor Units
Perform the connection work as shown.

< Power Source Cable 208/230V >



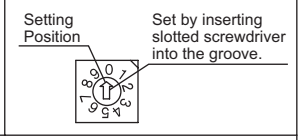
* For twin, triple or quad combinations, a communication cable for the wireless controller is not required.

Use the field-supplied communication cable (AWG18) for the wired controller cable. The total length should be within 1640ft (500m). If the total length is less than 98ft (30m), AWG22 cable can be used.

2 Do not run the connected wireless controller cable and the power source cable (208/230V) in parallel in the indoor units.
Stabilize the cable with plastic bands. Along with the wiring outside the indoor units, the control cables should not run with the power source cable (208/230V). Keep a separation of more than 12 inches, or run the cable through a grounded metal conduit and ground the tube end.

3 Unit Number Setting
The indoor unit numbers are set by the auto-address function. Therefore, the indoor unit number setting is not required. If the indoor unit number is fixed, set the unit numbers of all indoor units respectively and serially. It is recommended that the unit number settings begin with “1”. The setting is set not to overlap the unit number.

Unit Number Setting

DSW6 (Tens Digit)	RSW1 (Units Digit)	Ex.: Set for No. 16 Unit
		 Set No.1 pin ON. Set at "6".
Factory setting for DSW6 and RSW1 were set to "0". Max. 63 units are available for setting.		

3.7.9 Test Run for Wireless Controller (CIR01)

After all installations are completed, a test run should be performed.

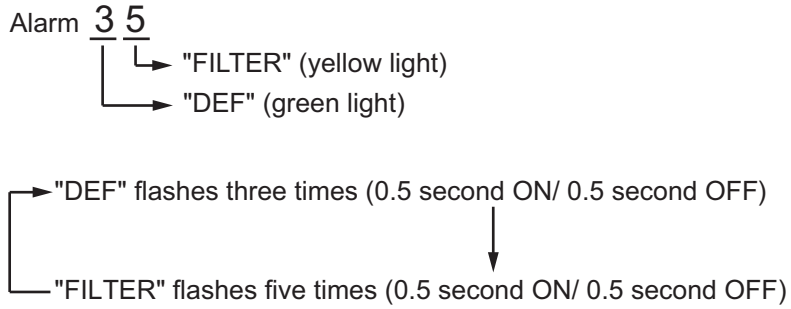
(1) Perform the test run according to the installation manual for the wireless controller.
(2) The test run for the wireless controller will take two hours to complete. If the TIMER indicator (green) is flashing (0.5 second ON/0.5 second OFF) after two hours, an alarm may occur. Operate the indoor unit and check for abnormality.

3.7.10 Alarm Indication

NOTICE

- If a malfunction occurs, such as safety device actuation, during the run test or the normal operation, “RUN” (red light) flashes (0.5 second ON / 0.5 second OFF).
- The alarm codes are indicated by the flashing of “DEF” (green light) and “FILTER” (yellow light).
  The first LED light is green. The number of times this LED flashes (0.5 second ON and OFF) will tell you the “DEF” Alarm Code.
  The second LED light is yellow. The number of times this LED flashes (0.5 second ON and OFF) will tell you the “FILTER” Alarm Code.

< Example >



These signals are repeated until the alarm is reset.

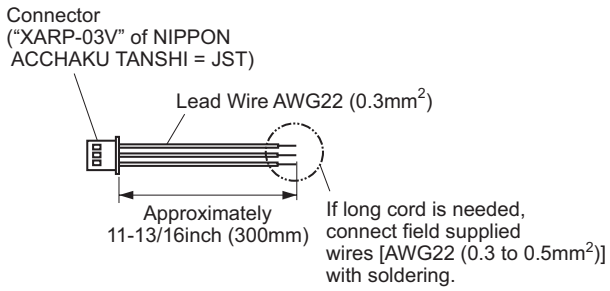
- ”RUN” (red light) flashing (1 second ON/1 second OFF) indicates an abnormal transmission (connector loose, connector disconnection, broken wire, or incorrect wiring, or something similar) between the indoor unit and the IR receiver kit.
- When the IR receiver kit is connected to multiple indoor units, the alarm code is indicated for each indoor unit in order.

< Alarm Code Table >

For alarm code details, refer to the Installation and Maintenance Manual for the indoor units.

3.8 3P Connector Cable: PCC-1A

This accessory connector is utilized to provide remote start/stop capability (binary input) to an indoor unit and provide operating status (binary output) of an indoor unit's functions. (System Parts: One set contains five 3P cords.)



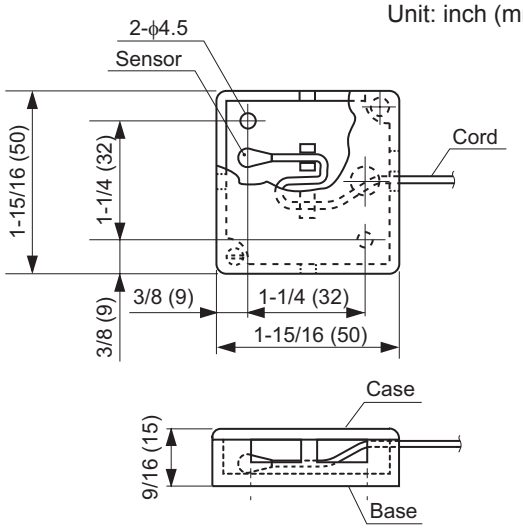
3P Connector Cable

Name	3P Connector Cable
Model	PCC-1A
Remarks	One set contains five 3P connector cables.

3.9 Remote Sensor: THM-R2A

When a remote temperature sensor is installed with an indoor unit, the indoor unit is configurable to use the temperature at the location of the remote sensor OR the average of the unit's return air temperature and the temperature at the location of the remote sensor to control that unit. (reference the specific controller Installation Manual for function configuration details)

Unit: inch (mm)



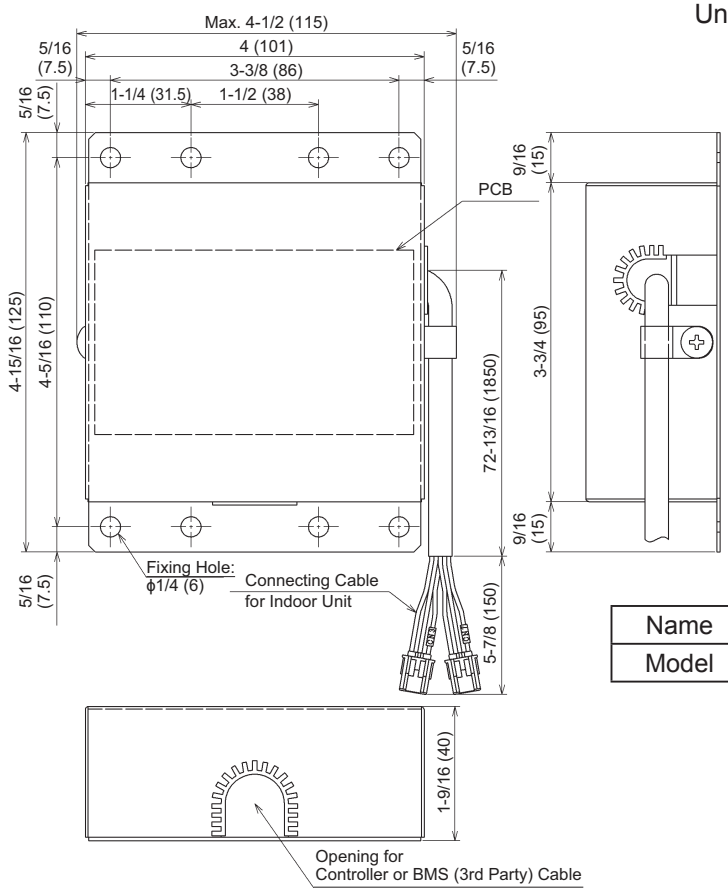
Specifications

Item		Specification
Model		THM-R2A
Case	Material	ABS Resin
	Color	Silky White
Base	Material	ABS Resin
	Color	Silky White
Sensor	Part Name	Thermistor
	Cord Length	approx. 26 ft (8m)

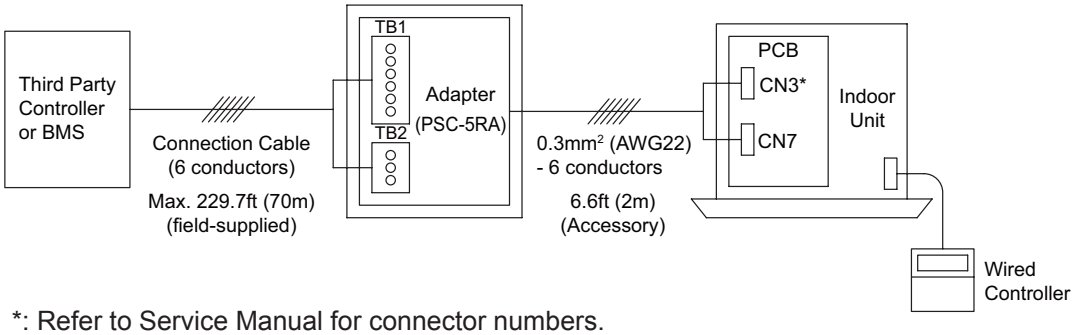
3.10 Relay and 3 Pin Connector Kit: PSC-5RA

This relay kit provides for basic input/output integration functionality (indoor unit ON/OFF, operating mode, alarm status) to third party controllers and Building Management Systems (BMS).

Unit: inch (mm)



Name	Relay and 3 Pin Connector Kit
Model	PSC-5RA



*: Refer to Service Manual for connector numbers.

Item	Signal	Description	Specifications
Third Party Controller or BMS	Input 1	Input level signal or pulse signal for voltage from the third party controller or BMS	Voltage: 12VDC, 10mA Voltage: 24VDC, 10mA Pulse Range: 500ms or more
	Input 2		
Third Party Controller or BMS	Output 1	Output signal from the wired controller	24VDC From 10mA to 1A
	Output 2		

Refer to the Indoor Unit Manual for Input/Output mode setting by the wired controller.

4. Selection Data

4.1 Selection Guide

Refer to Engineering Manual for the Outdoor Unit.

4.2 Capacity Table

4.2.1 Cooling Capacity

Models: (H,Y,C)IC1006B21S, (H,Y,C)IC1008B21S, (H,Y,C)IC1012B21S and (H,Y,C)IC1015B21S

Indoor Unit Model	Indoor 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	4.9	6.3	4.9	6.5	4.9	6.5	4.9	6.7	5.0	6.9	5.0	7.1	5.0
	80	6.0	4.7	6.1	4.8	6.2	4.8	6.3	4.9	6.5	4.9	6.7	4.9	6.9	5.0
	95	5.6	4.6	5.8	4.6	5.9	4.7	6.0	4.7	6.2	4.8	6.4	4.8	6.5	4.8
	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	3.4	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	2.8	2.8	2.7	2.8	2.8	2.8	2.7	2.8	2.7	2.8	2.8	2.8	2.7
008	70	8.3	6.6	8.4	6.6	8.6	6.6	8.7	6.6	9.0	6.8	9.2	6.7	9.4	6.8
	80	8.0	6.4	8.2	6.5	8.3	6.5	8.4	6.6	8.7	6.6	8.9	6.6	9.1	6.6
	95	7.5	6.2	7.7	6.2	7.8	6.2	8.0	6.3	8.3	6.5	8.5	6.5	8.7	6.5
	110	5.4	5.1	5.3	5.0	5.2	5.0	5.1	4.9	5.1	4.9	5.2	5.0	5.2	5.0
	114	4.5	4.4	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	3.6	3.7	3.6	3.7	3.7	3.7	3.6	3.7	3.7	3.7	3.7	3.7	3.7
012	70	12.4	10.2	12.7	10.4	12.9	10.3	13.0	10.4	13.5	10.5	13.8	10.6	14.2	10.8
	80	12.1	10.0	12.3	10.1	12.5	10.1	12.6	10.2	13.0	10.4	13.4	10.5	13.7	10.5
	95	11.3	9.6	11.5	9.7	11.8	9.9	12.0	10.0	12.4	10.0	12.8	10.2	13.1	10.3
	110	8.1	8.1	7.9	7.9	7.8	7.8	7.6	7.6	7.7	7.7	7.7	7.7	7.8	7.8
	114	6.8	6.8	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	12.9	15.8	13.0	16.2	13.1	16.3	13.0	16.8	13.3	17.3	13.5	17.7	13.6
	80	15.1	12.5	15.3	12.7	15.6	12.8	15.8	12.8	16.3	13.0	16.8	13.1	17.1	13.3
	95	14.1	12.0	14.4	12.2	14.7	12.3	15.0	12.5	15.5	12.7	16.0	12.8	16.3	12.9
	110	10.1	10.0	9.9	9.8	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.

4.2.2 Heating Capacity

Models: (H,Y,C)IC1006B21S, (H,Y,C)IC1008B21S, (H,Y,C)IC1012B21S and (H,Y,C)IC1015B21S

Indoor Unit Model	Outdoor air Temp °FWB \ Indoor air Temp °FDB	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

Indoor Unit Model	Outdoor air Temp °FWB \ Indoor air Temp °FDB	63	66	68	70	74	77
		TC [MBH]	TC [MBH]	TC [MBH]	TC [MBH]	TC [MBH]	TC [MBH]
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.

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