ENGINEERING MANUAL

INVERTER-DRIVEN MULTI-SPLIT SYSTEM
HEAT PUMP AIR CONDITIONERS

Engineering Manual

< Indoor Units >

- Mini Cassette
  - (H,Y,C)ICM008B21S
  - (H,Y,C)ICM012B21S
  - (H,Y,C)ICM015B21S
  - (H,Y,C)ICM018B21S

TC-18003

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 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 $\pm 15^{\circ}$.

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.

- CONTENTS -

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.

■ Mini Cassette Models

(H,Y,C)ICM008B21S, (H,Y,C)ICM012B21S, (H,Y,C)ICM015B21S, (H,Y,C)ICM018B21S

● Wide Range Line-up

Table 1.1 Indoor Unit Type List

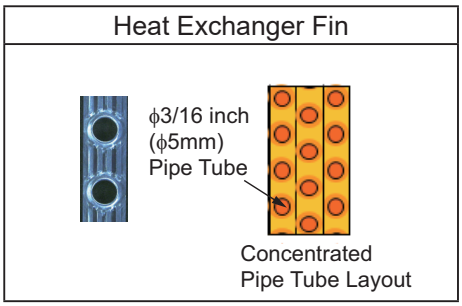
Indoor Unit Type		Capacity (MBH)			
		8	12	15	18
Mini Cassette	(H,Y,C)ICM_B21S	○	○	○	○

○ : Available

- Improvement of Energy-Saving

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

* High performance & high efficiency heat exchanger (ϕ3/16 inch (5mm) pipe tubes + new fins)



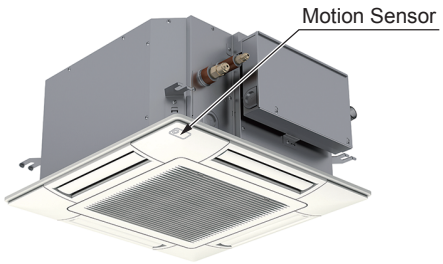
* New developed high efficiency turbo-fan with 3D twisted blade

* New lower electrical power condensate pump with DC motor

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

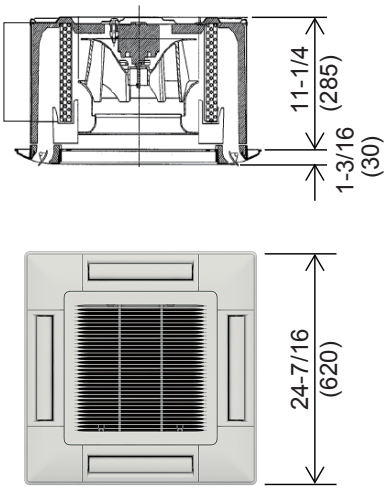
* Adopting Motion Sensor Function

- The motion sensor function can adjust the setting temperature according to the human activity and it controls the airflow volume and the airflow 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 3-1/8 inches (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		

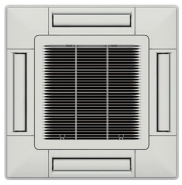
- Low Noise (Top-class Sound Pressure Level)
  New developed high efficiency turbo-fan is adopted. By improving 3D twisted blade of turbo-fan and air outlet, the fan efficiency is improved and the low noise performance is achieved.

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

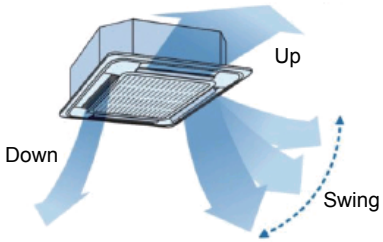

New Turbo-fan

- New Design & High Specification Decorative Panel

Simple & Stylish Design

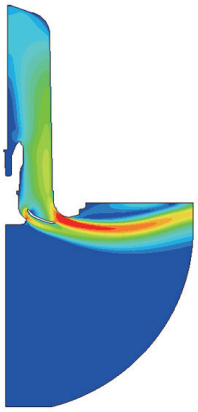


4-way Individual Louver



Fully Closed

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

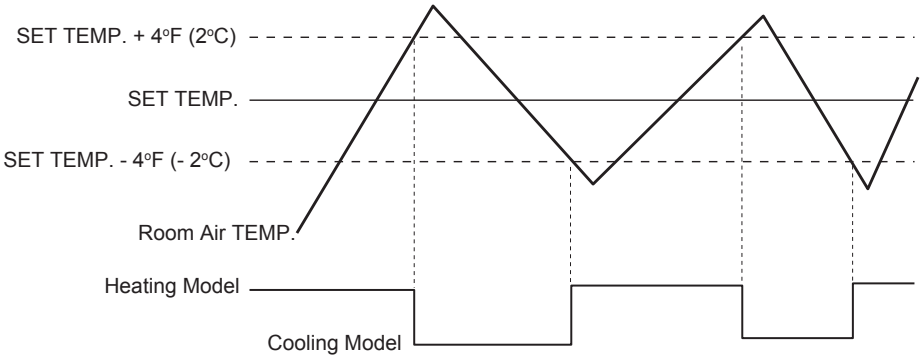


Horizontal Airflow (Image)

- Wide Range Airflow Volume Setting
  The four range airflow 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.

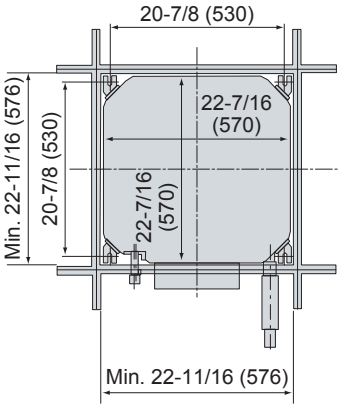
Control Flow of AUTO Mode



- Easy Installation

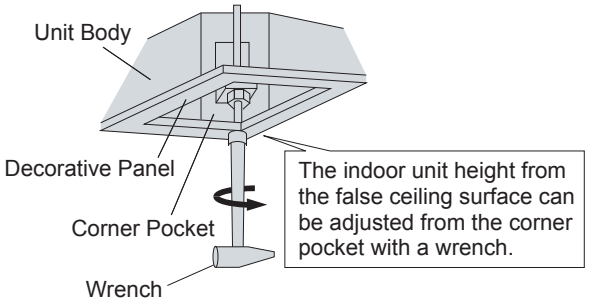
(1) Installation to Grid Ceiling
This product can be installed to a grid ceiling with a 23-5/8 x 23-5/8 inches (600 x 600mm) opening without cutting the grid.

inch (mm)



Grid Ceiling

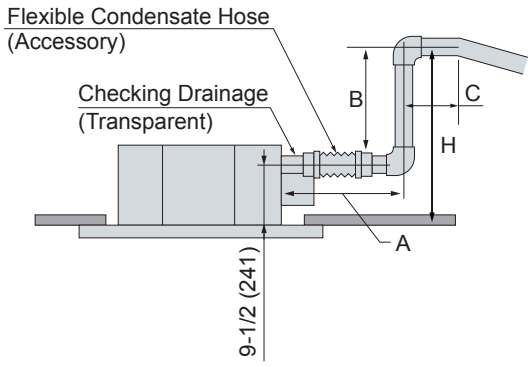
(2) Easier Height Adjustment
The unit height can be adjusted from 4 corner pockets, with the decorative panel attached to the unit.
Height adjustment from the corner pockets is suitable for fine adjustment.
To keep the unit level, avoid significant height adjustment.



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

inch (mm)

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



2. Mini Cassette Type

2.1 Unit Nomenclature

Model Descriptions

Example

H I CM 008 B 2 1 S

Nomenclature Description

H = Hitachi Brand Y = York Brand C = Coleman Brand	H
Indoor Unit	I
Indoor Unit Type CM = Mini Cassette Type	CM
Capacity (MBH)	008
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	Mini Cassette	0.7	8	(H,Y,C)ICM008B21S
		1.0	12	(H,Y,C)ICM012B21S
		1.3	15	(H,Y,C)ICM015B21S
		1.5	18	(H,Y,C)ICM018B21S

2.3 General Data

Indoor Unit Type		Mini Cassette Type			
Model		(H,Y,C)ICM008B21S	(H,Y,C)ICM012B21S	(H,Y,C)ICM015B21S	(H,Y,C)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					
Airflow Rate	cfm	424-353-300-212	459-388-335-247	530-424-353-282	565-494-424-353
(Hi2-Hi-Me-Lo)	(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)	1 (25)	1 (25)	1 (25)	1 (25)

Adaptable Panel Model		P-AP56NAM
Color		Neutral White
Outer Dimensions		
Height	in. (mm)	1-3/16 (30)
Width	in. (mm)	24-7/16 (620)
Depth	in. (mm)	24-7/16 (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)

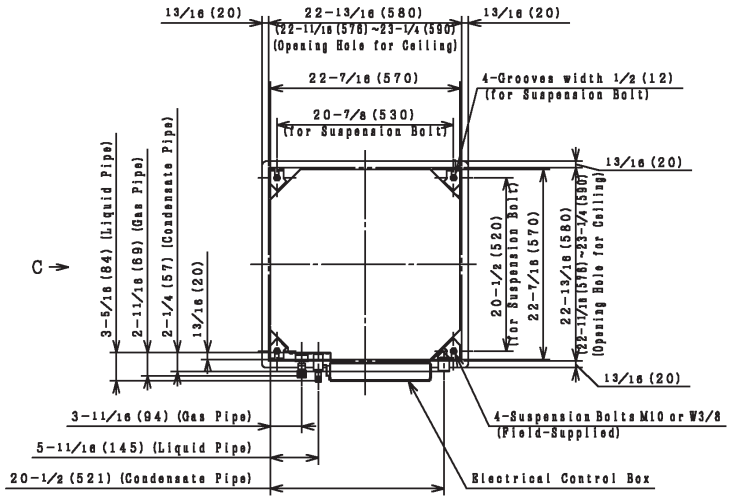
*2. Sound pressure level is based on following conditions.
4.9 ft. (1.5m) beneath the unit.
The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration in the field.

2.4 Dimensional Data

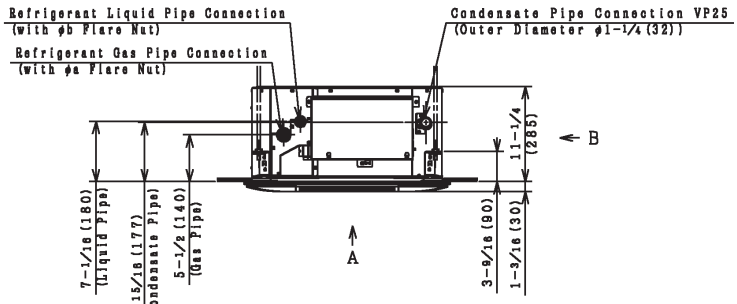
Models: (H,Y,C)ICM008B21S, (H,Y,C)ICM012B21S, (H,Y,C)ICM015B21S and (H,Y,C)ICM018B21S
with Decorative Panel P-AP56NAM

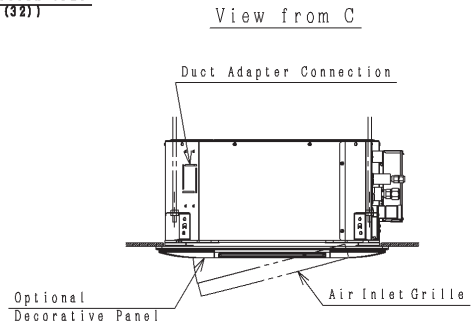
Unit: inch (mm)

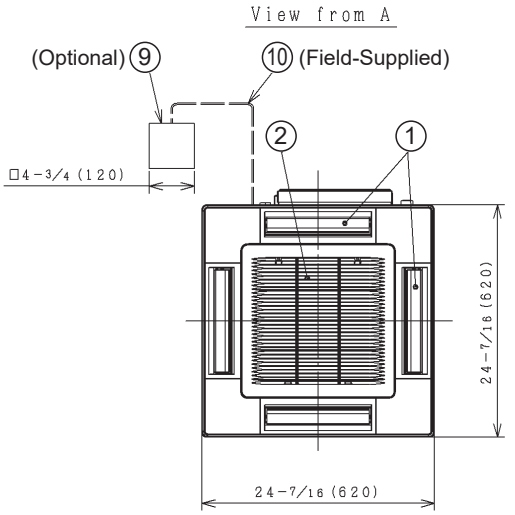
Mark	Name	Remark
1	Air Outlet	4-Way
2	Air Inlet	
3	Refrigerant Gas Pipe Connection	with ϕa Flare Nut
4	Refrigerant Liquid Pipe Connection	with ϕb Flare Nut
5	Condensate Pipe Connection	VP25 (OD ϕ1-1/4 (32))
6a	Wiring Hole for Conduit Tube	ϕ7/8 (22.2) Hole
6b	Wiring Hole	ϕ1-3/16 (30) Hole
7	Suspension 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

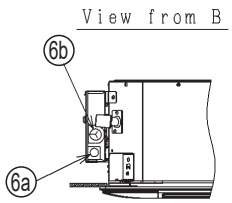


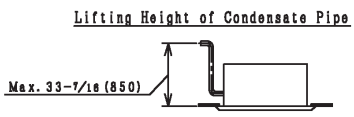
Dimension / Model	a	b
(H,Y,C)ICM008B21S	1/2 (12.7)	1/4 (6.35)
(H,Y,C)ICM012B21S		
(H,Y,C)ICM015B21S		
(H,Y,C)ICM018B21S	5/8 (15.88)	3/8 (9.52)



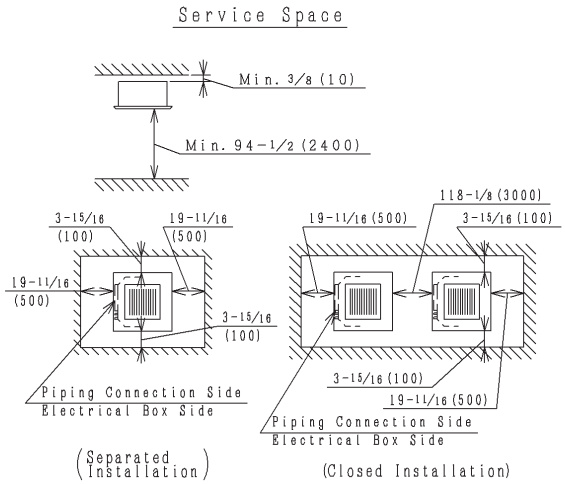






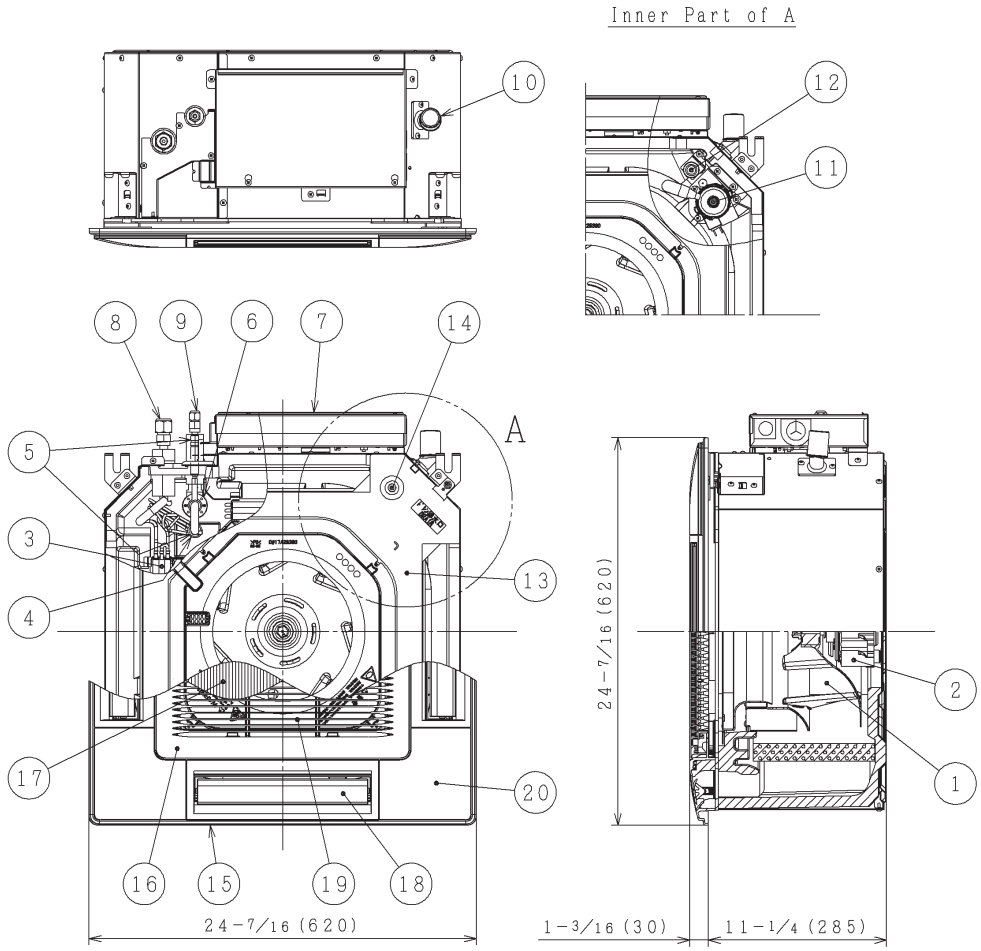


NOTES:
1. Distance between the wall and panel edge must be a min. 59-1/16inch (1500mm) to prevent short circuiting.



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	Drain-up Mechanism	
12	Float Switch	
13	Condensate 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,C)ICM008B21S	1/2 (12.7)	1/4 (6.35)
(H,Y,C)ICM012B21S	1/2 (12.7)	1/4 (6.35)
(H,Y,C)ICM015B21S	1/2 (12.7)	1/4 (6.35)
(H,Y,C)ICM018B21S	5/8 (15.88)	3/8 (9.52)

2.6 Component Data

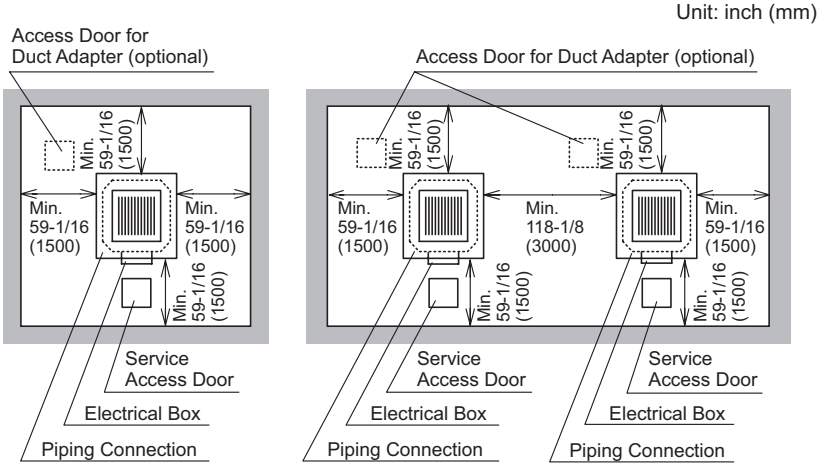
Indoor Heat Exchanger and Fan

Model		(H,Y,C)ICM008B21S	(H,Y,C)ICM012B21S	(H,Y,C)ICM015B21S	(H,Y,C)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)
Revolution (Hi2-Hi-Me-Lo)	rpm	701-590-507-368	756-645-562-423	901-733-620-508	952-789-676-564
Nominal Airflow (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

2.7 Operation Space

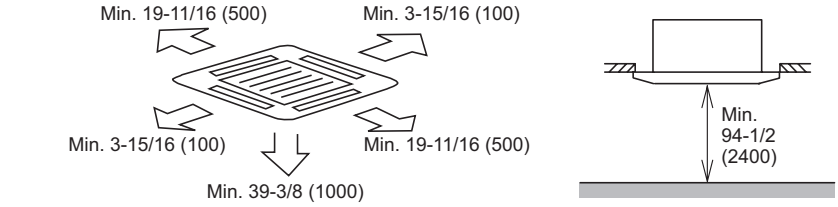
Models: (H,Y,C)ICM008B21S, (H,Y,C)ICM012B21S, (H,Y,C)ICM015B21S and (H,Y,C)ICM018B21S

Unit: inch (mm)



Distance from Wall Side

Unit: inch (mm)



Minimum Service Space

2.8 Sensible Heat Factor (SHF)

Model	SHF *
(H,Y,C)ICM008B21S	0.75
(H,Y,C)ICM012B21S	0.76
(H,Y,C)ICM015B21S	0.82
(H,Y,C)ICM018B21S	0.82

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)

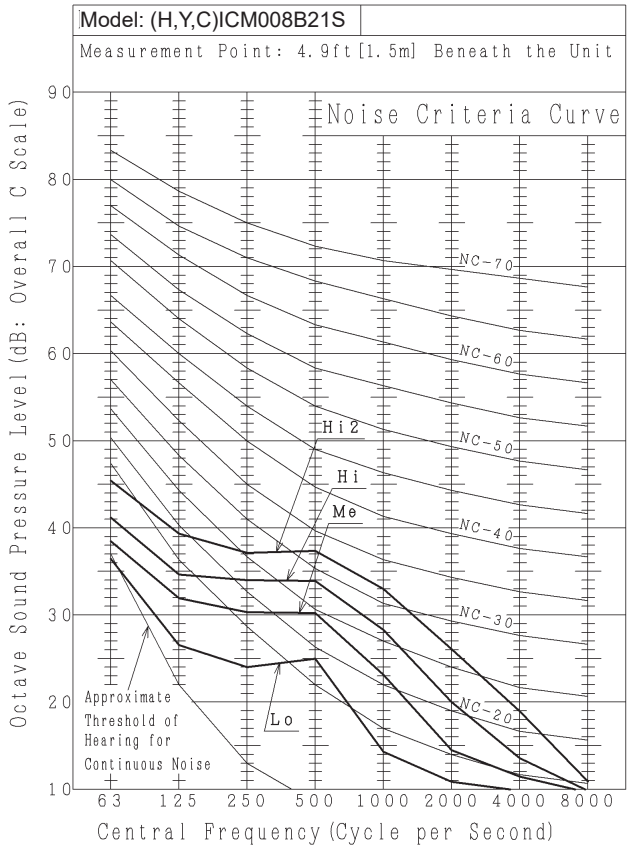
2.9 Electrical Data

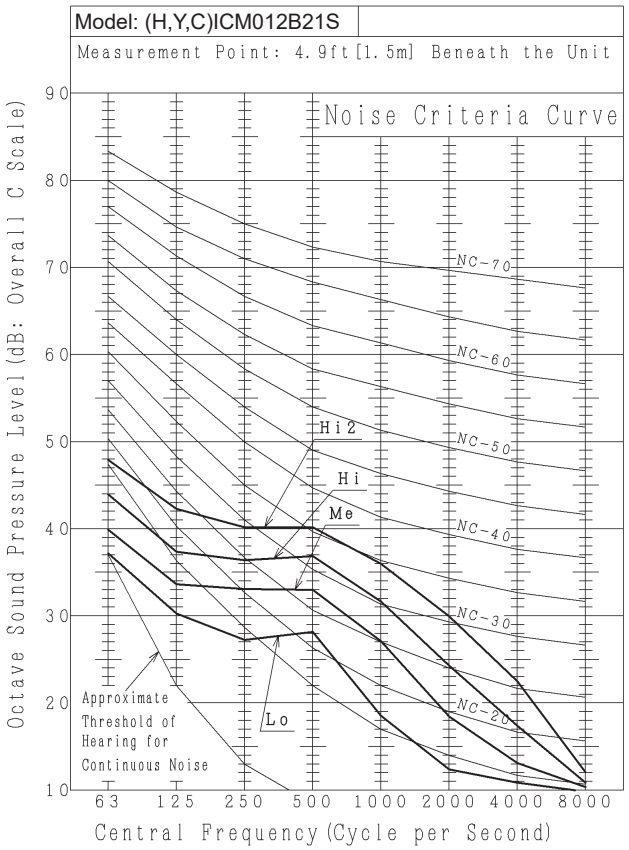
Model	Unit Main Power			Applicable Voltage		Power Supply		Indoor Fan Motor	Unit
	VOL	PH	HZ	Maximum	Minimum	MCA	MFA	OPT	FLA
(H,Y,C)ICM008B21S	208/230	1	60	253	188	0.7	15	0.057	0.56
(H,Y,C)ICM012B21S						0.8	15	0.057	0.61
(H,Y,C)ICM015B21S						1.0	15	0.057	0.73
(H,Y,C)ICM018B21S						1.0	15	0.057	0.78

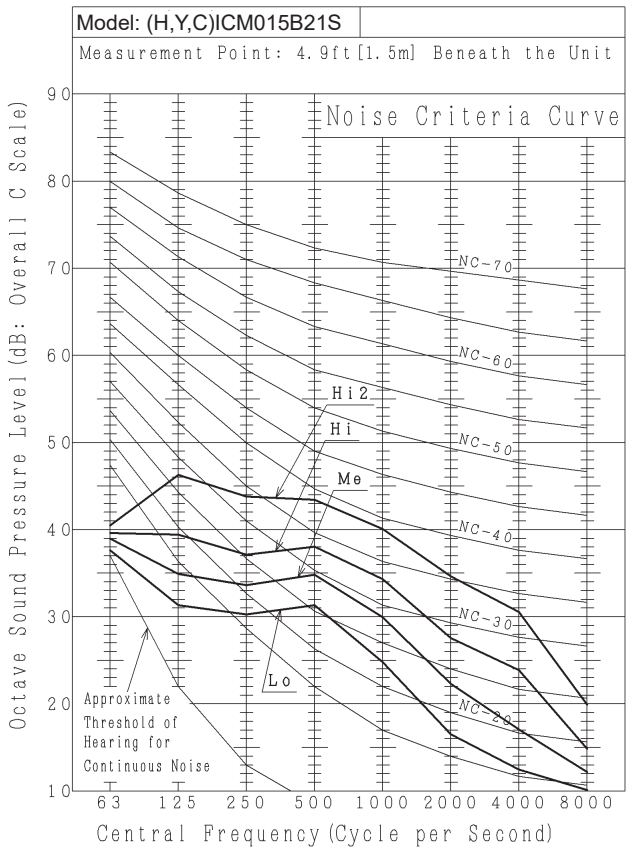
VOL: Rated Unit Power Supply Voltage (V)
PH: Phase
HZ: Frequency (Hz)
MCA: Minimum Circuit Ampacity (A)
MFA: Maximum Fuse Ampacity (A)
OPT: Rated Motor Output (kW)
FLA: Full Load Ampacity (A)

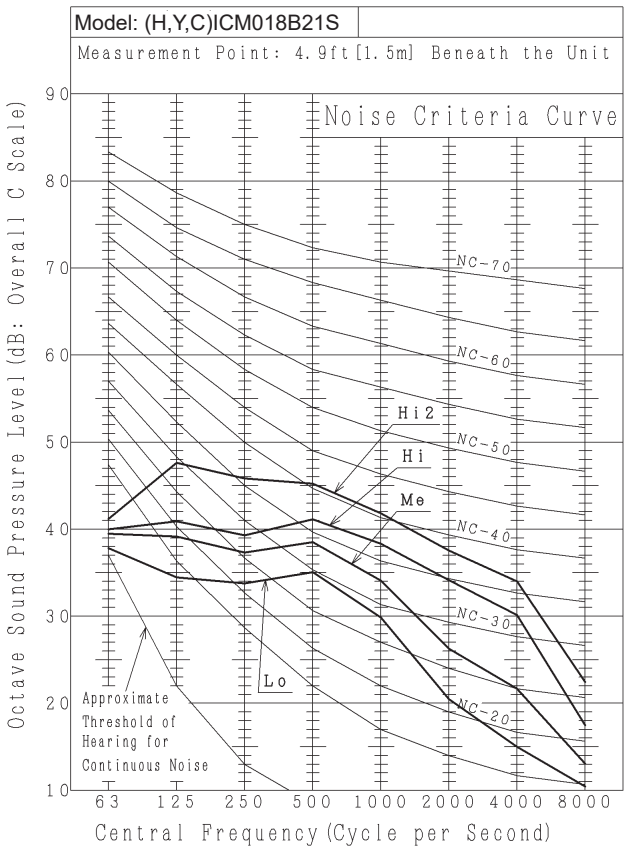
NOTE:
Power supply voltage should be satisfied with the following.
Supply Voltage: Rated Voltage within ±10%
Starting Voltage: Rated Voltage within -15%
Operating Voltage: Rated Voltage within ±10%

2.10 Sound Data







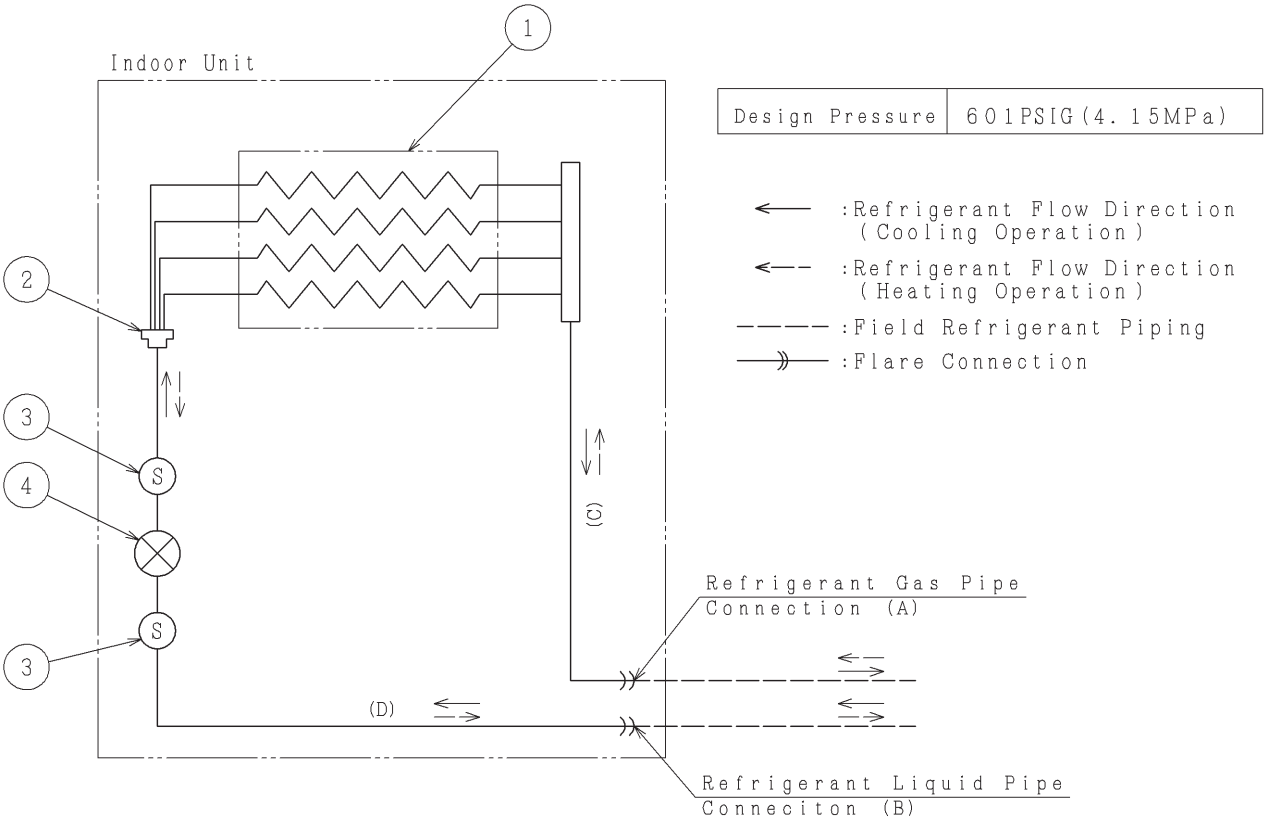


NOTE:
Operation sound is equivalent to an anechoic chamber (free space).
Noise level will be increased by the surrounding noise and echoes.

2.11 Control System

2.11.1 Refrigerant System

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

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

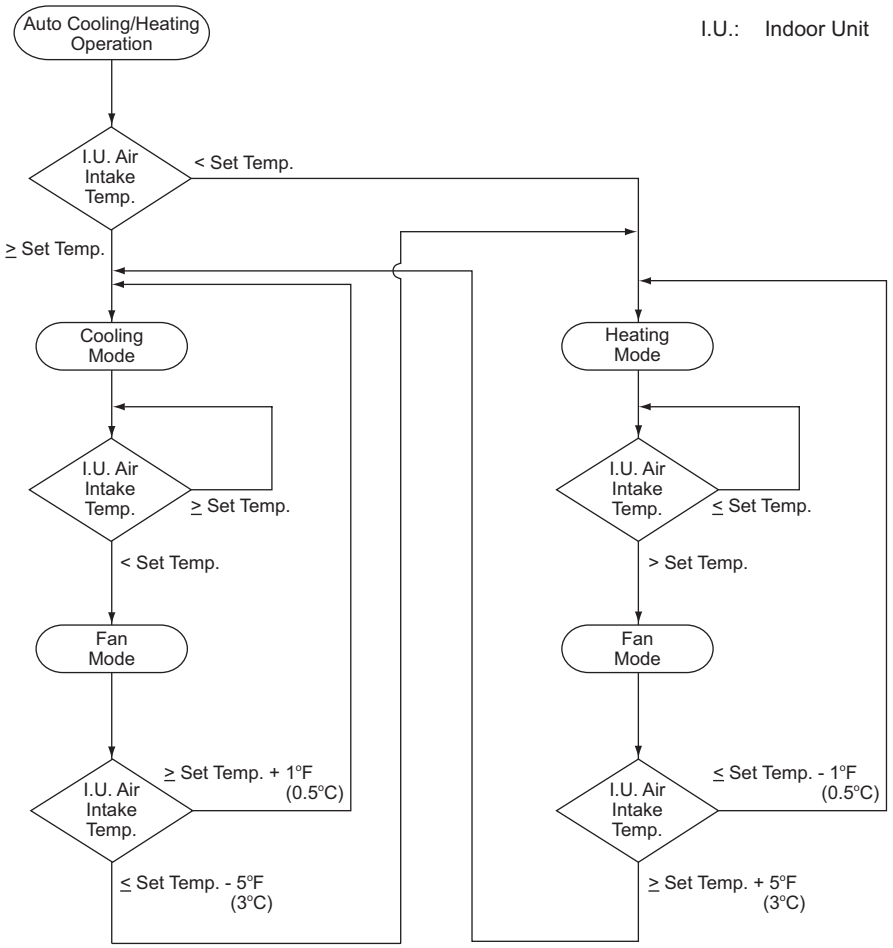
The sequence may be different depending on the outdoor unit model to be connected. Refer to the “Outdoor Unit Engineering Manual” for details.

■ 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.

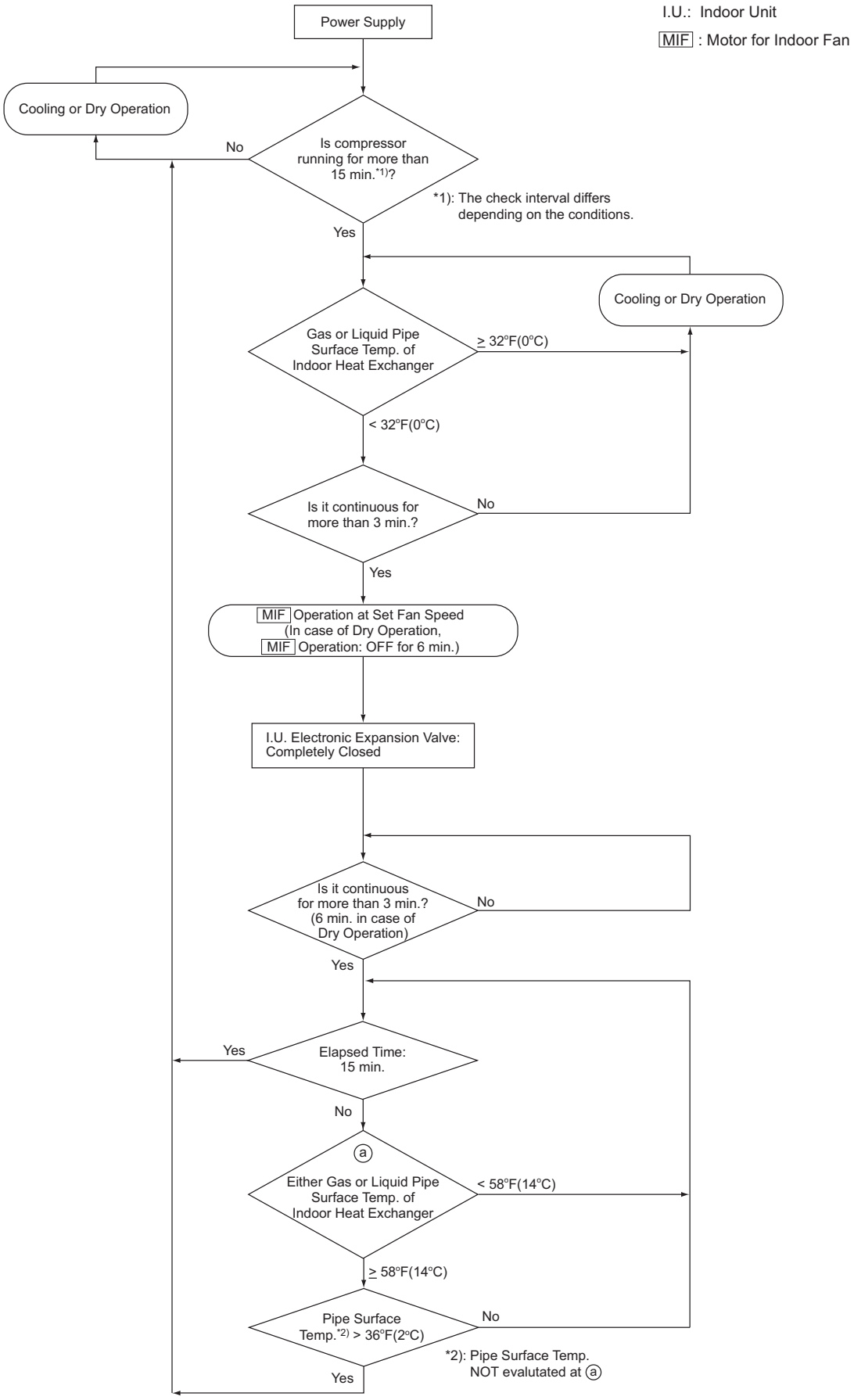


NOTE:
I.U. fan operates continuously when in Cooling, Heating and Fan Mode.

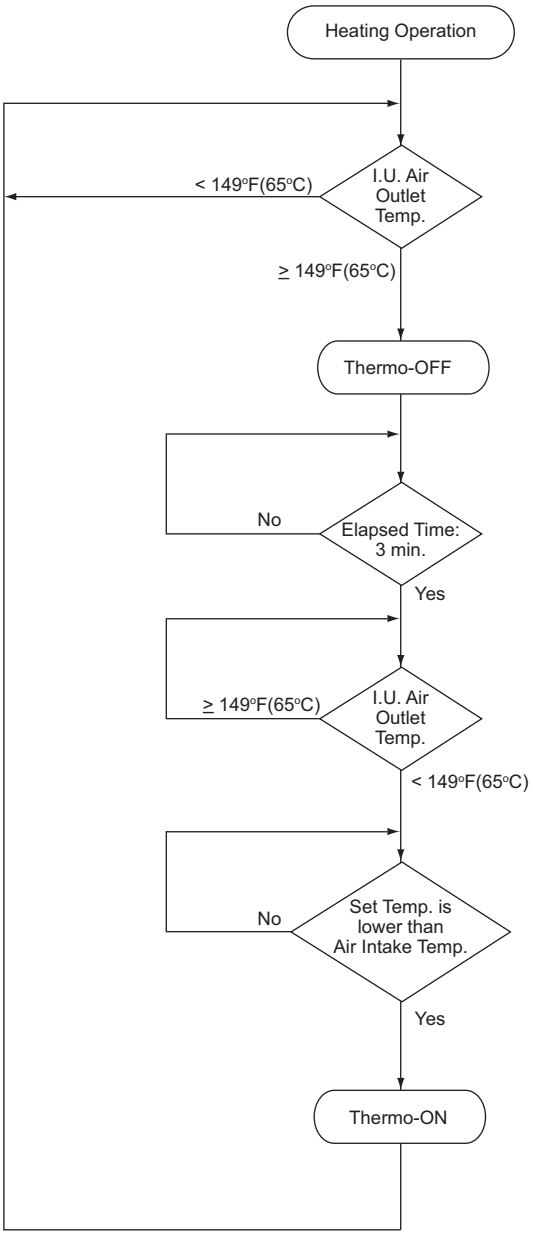
■ Defrosting Operation

The sequence may be different depending on the outdoor unit model to be connected. Refer to the “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)



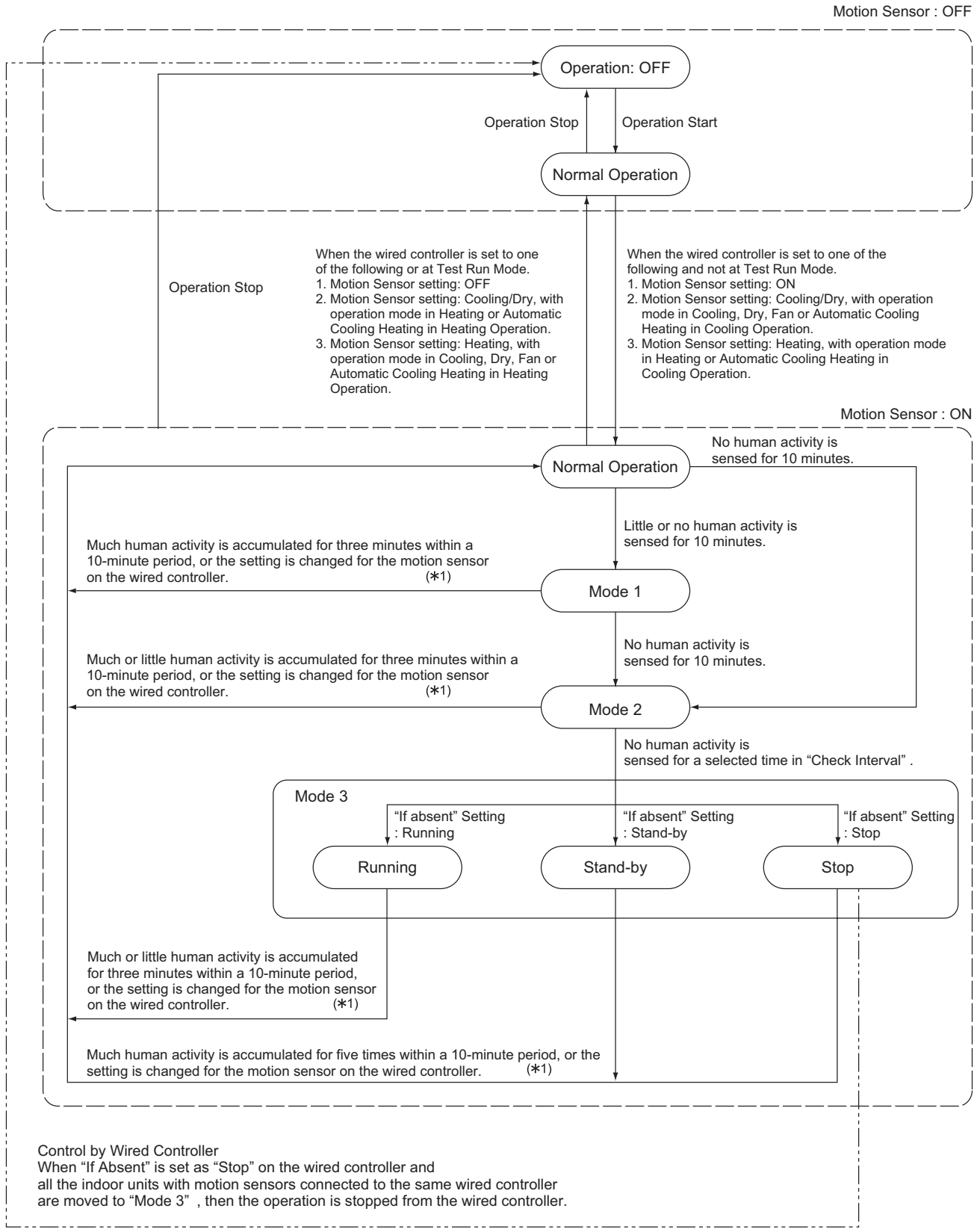
Thermo-ON/OFF Control for Indoor Unit

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 (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

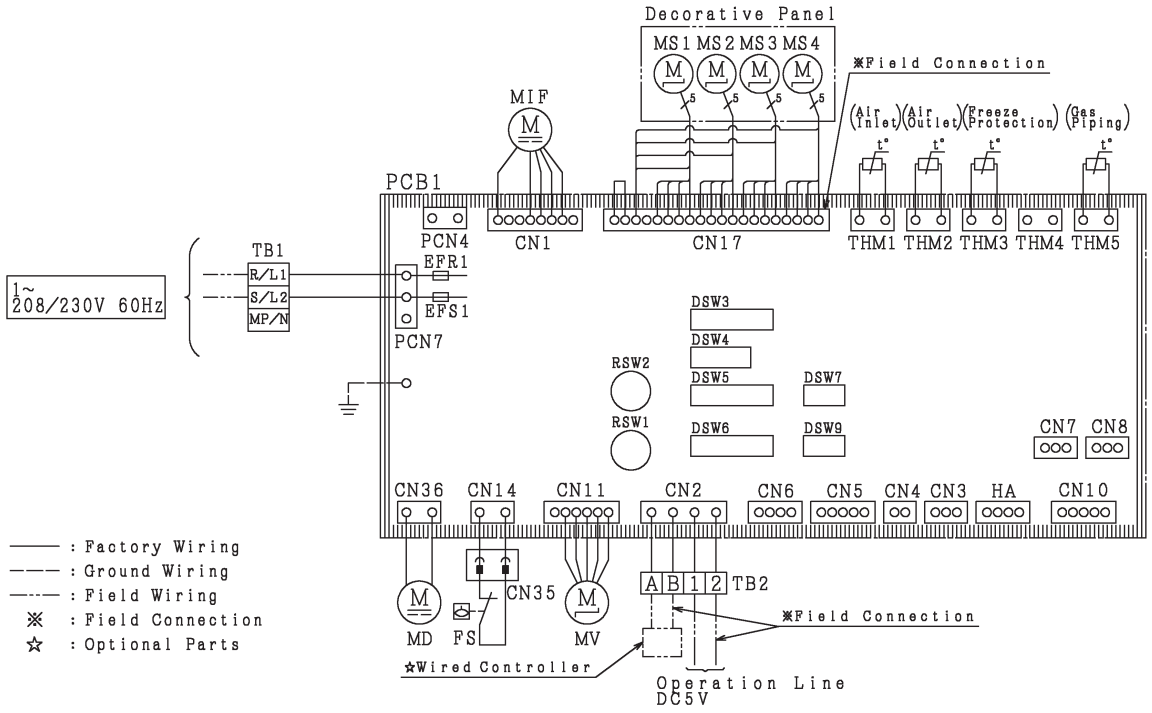
Large: Much Human Activity

2.11.3 Safety and Control Device Setting

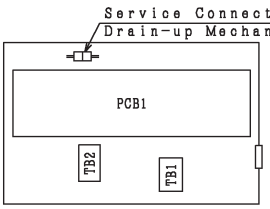
Model			(H,Y,C)ICM008B21S (H,Y,C)ICM012B21S (H,Y,C)ICM015B21S (H,Y,C)ICM018B21S
For Evaporator Fan Motor			
Thermostat	Cut-Out	°F (°C)	– –
	Cut-In	°F (°C)	– –
Chip Ceramic PTC Thermistor		°F (°C)	212 $^{+7}_{-}$ (100 $^{+4}_{-}$)
For Control Circuit Fuse Capacity		A	5

2.11.4 Wiring Diagram

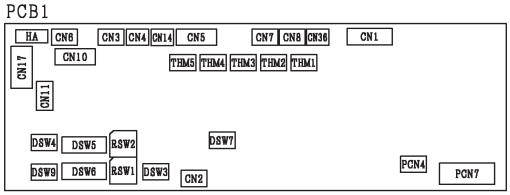
Models: (H,Y,C)ICM008B21S, (H,Y,C)ICM012B21S, (H,Y,C)ICM015B21S and (H,Y,C)ICM018B21S
with Decorative Panel P-AP56NAM



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
MD	Motor for Drain-up Mechanism
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. Optional Parts

3.1 Line Up

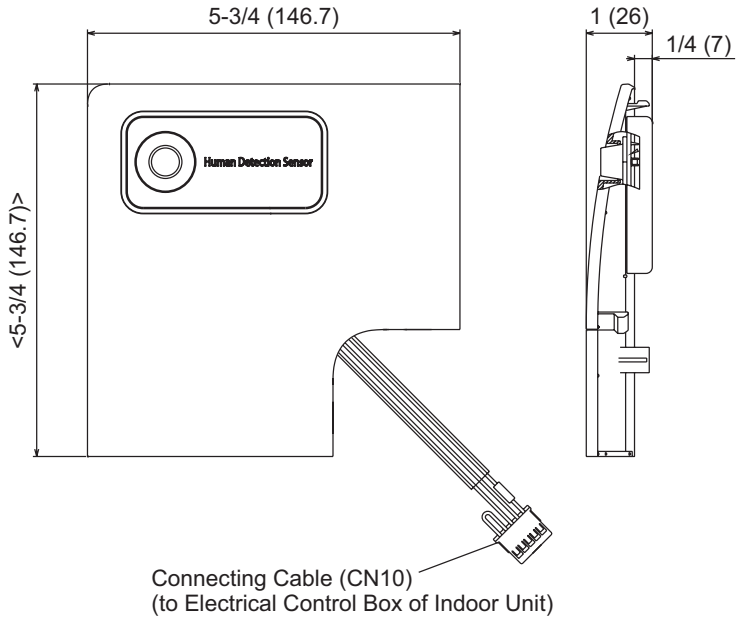
Item No.	Optional Parts	Optional Parts Model Name
3.2	Motion Sensor Kit	SOR-NEC
3.3	Duct Adapter	PD-75C
3.4	Infrared (IR) Receiver Kit	CMIRK01
3.5	3P Connector Cable	PCC-1A
3.6	Remote Sensor	THM-R2A
3.7	Relay and 3 Pin Connector Kit	PSC-5RA
3.8	Wired Controller	CIW01
3.9	Simplified Wired Controller	CIS01
3.10	Wireless Controller	CIR01
3.11	Mini Central Controller	CCM01
3.12	Large Central Controller	CCL01
3.13	Computerized Central Controller Software / Adapter	CCCS01 / CCCA01

Refer to the Engineering Manual of Control for details of item 3.8 to 3.13.

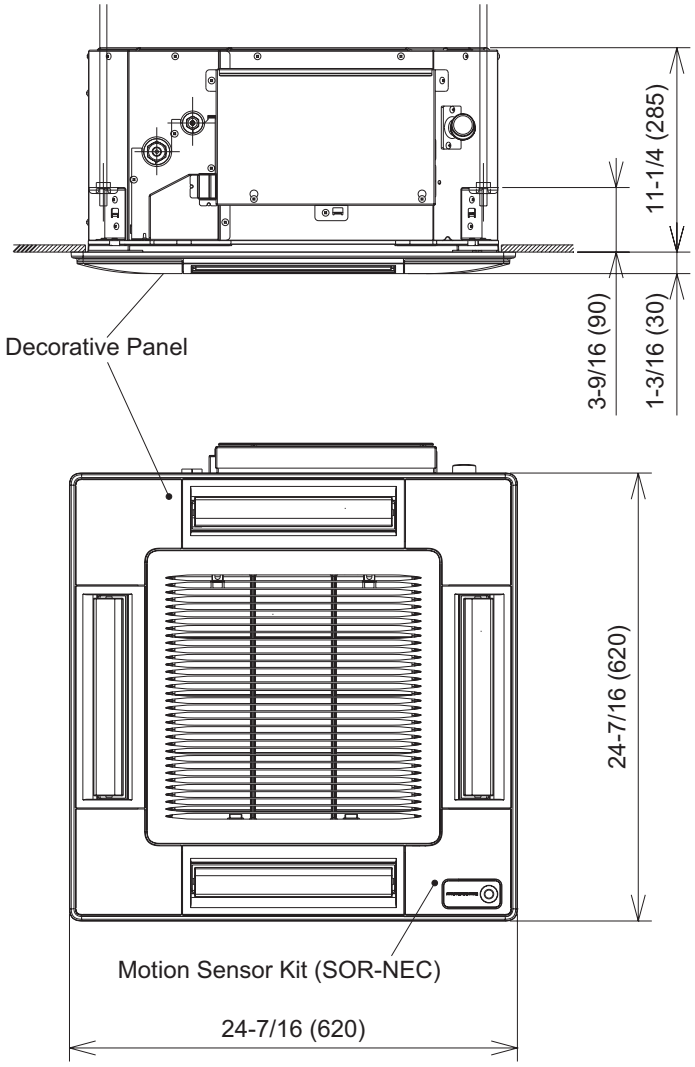
3.2 Motion Sensor Kit: SOR-NEC

Dimensional Data

Unit: inch (mm)



Installation State



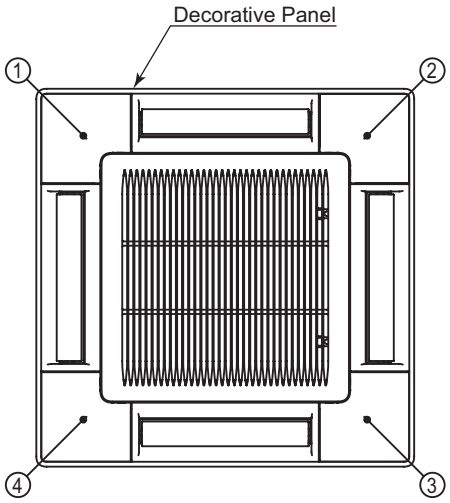
Installation

NOTICE

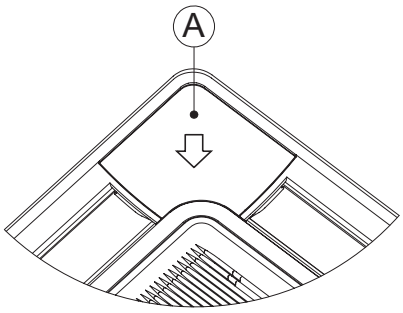
- Do not run the connecting cable for the motion sensor kit and the power supply wiring (208/230V) in parallel. It may cause a malfunction of the motion sensor kit from electromagnetic interference (EMI).
- When the motion sensor kit is installed along with the indoor unit, start from procedure 2.
- 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.

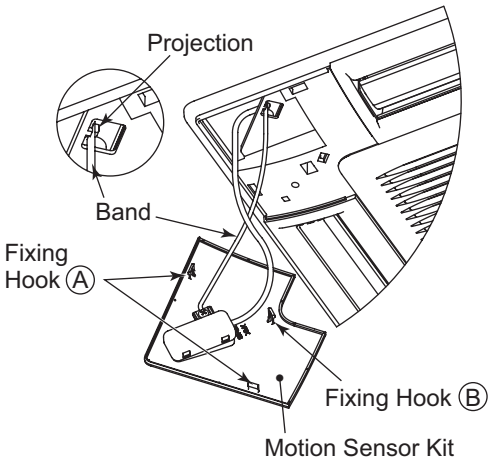


(2) Remove the corner pocket cover where the sensor will be installed. The corner pocket cover can be removed pulling the Ⓐ part toward the arrow direction in the figure below.



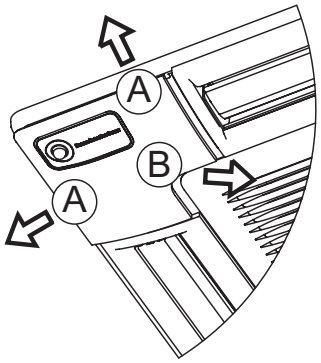
2 Attachment of Motion Sensor Kit

(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.



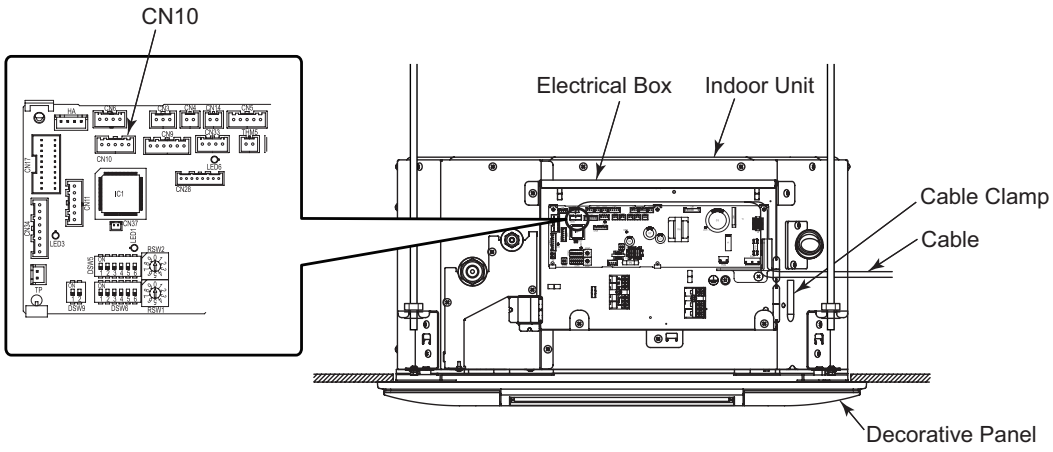
NOTE:
Ensure the cord band is secured to the projection on the decorative panel to prevent the sensor from falling during installation.

NOTICE

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

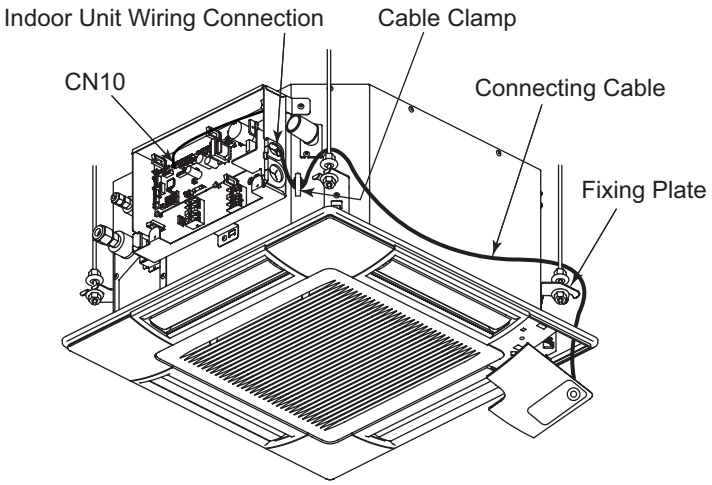
3 Connect the accessory connecting cable to CN10.

(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.

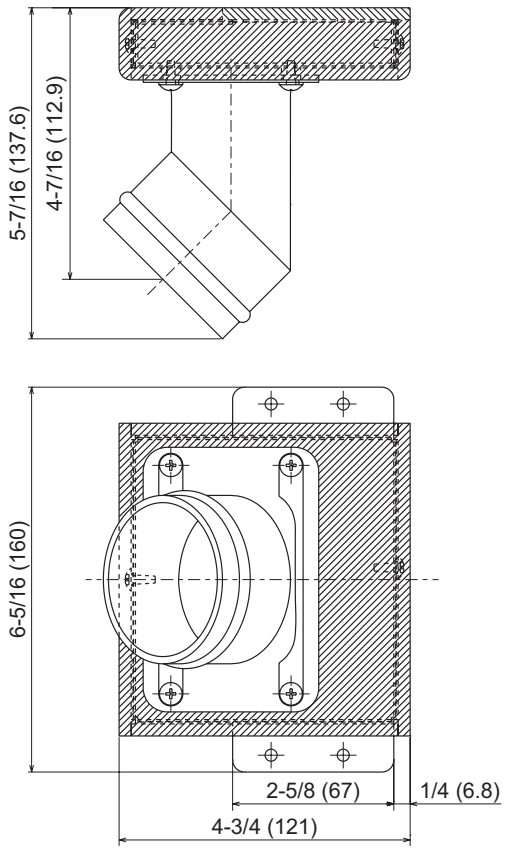
NOTICE

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

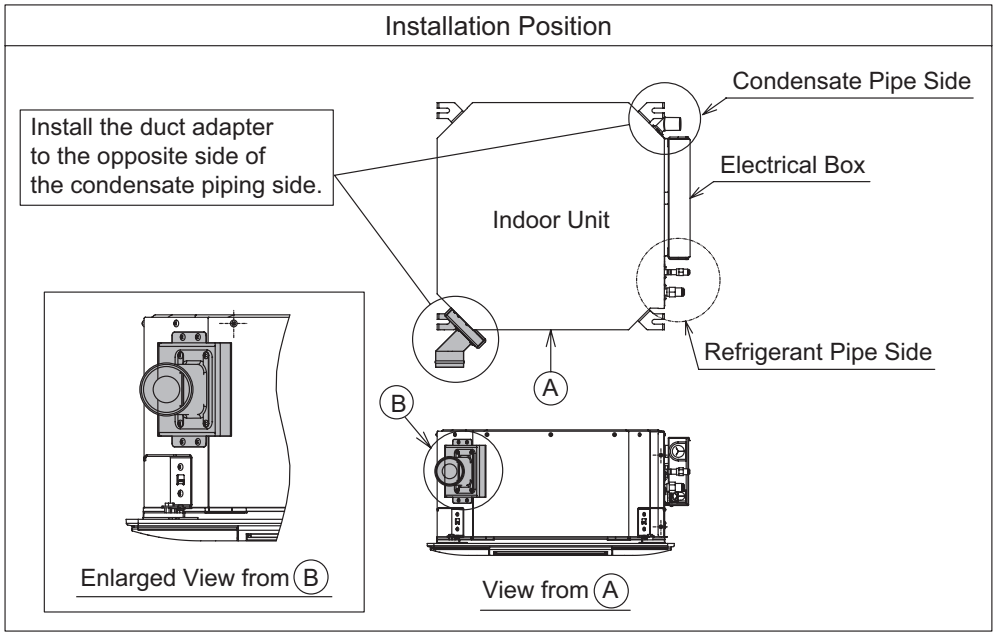
3.3 Duct Adapter: PD-75C

Dimensional Data

Unit: inch (mm)



Installation State



Specifications

Item \ Model		PD-75C
Applicable Indoor Unit Model ((H,Y,C)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

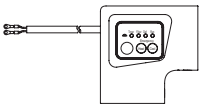
- If the air conditioning system is installed in a location where the difference between the indoor temperature and outdoor ambient temperature is 27 degrees Fahrenheit or greater, the ERV (Energy Recovery Ventilation) is required. If not, the air conditioning operation is not possible. In addition, 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 adapter 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 adapter. 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 adapter installation.

3.4 Infrared (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 supply completely before setting the DIP switches, installation work and electrical wiring work for IR receiver kit.
  If not, it may cause an electric shock.

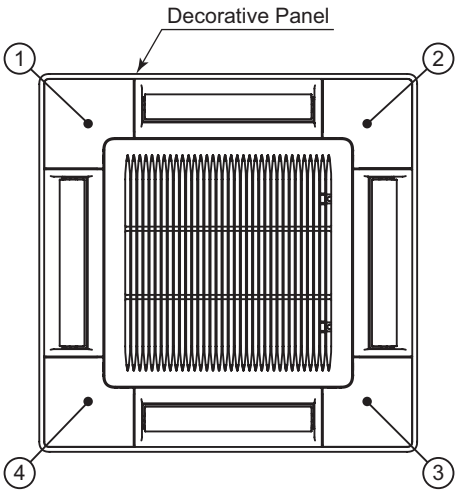
NOTICE

- 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 supply 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.

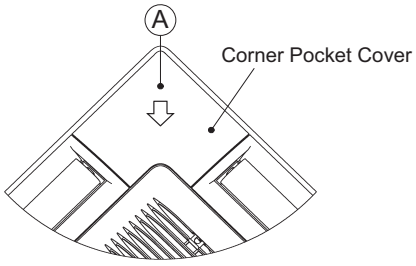
2 When the IR receiver kit is attached after the decorative panel is attached to the indoor unit, turn OFF the power supply of the indoor unit, and remove the decorative panel. Removing the decorative panel should be performed according to the installation manual for the decorative panel or the service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



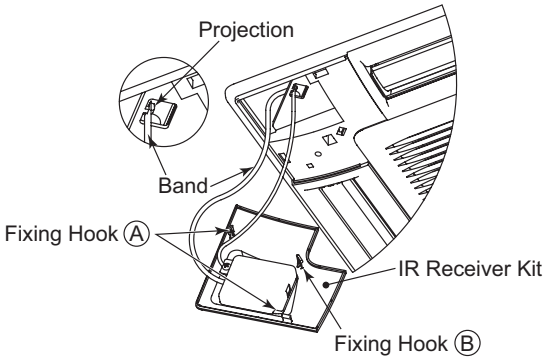
NOTE:
Setting the DIP switch for the IR receiver kit is possible at more than one function. If the optional function selection is required, perform work according to Section 4, "Optional Functions", before the IR receiver kit is attached to the decorative panel.

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



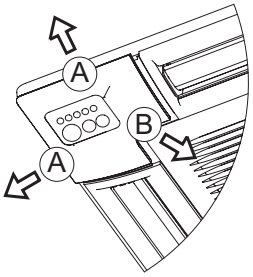
5 Affix the band at the rear side of the IR receiver kit onto the projection at the decorative panel as shown in the figure to the right.

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

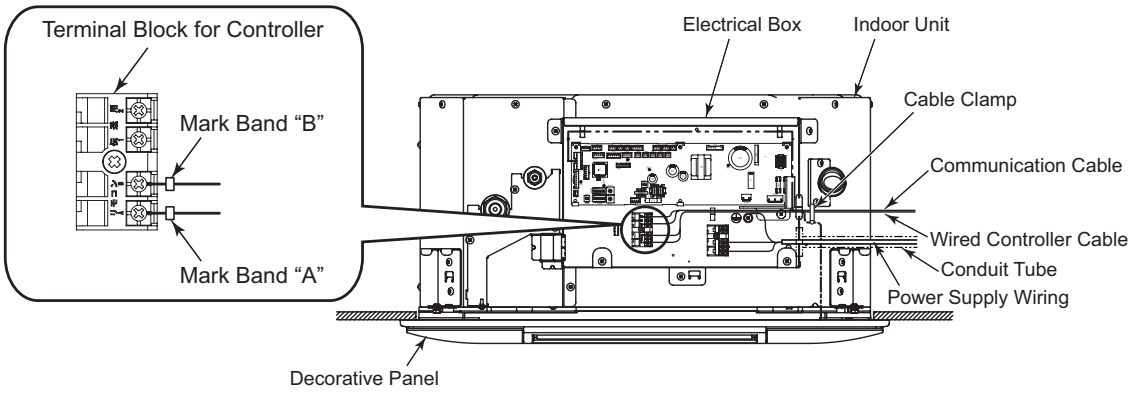


6 While pushing the wiring into the corner pocket, insert two coupling hooks at Ⓐ to the square hole of the decorative panel, and push the IR receiver kit in the direction of the arrow (Ⓐ). Then, insert the fixing hook at Ⓑ to the square hole of the decorative panel.

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

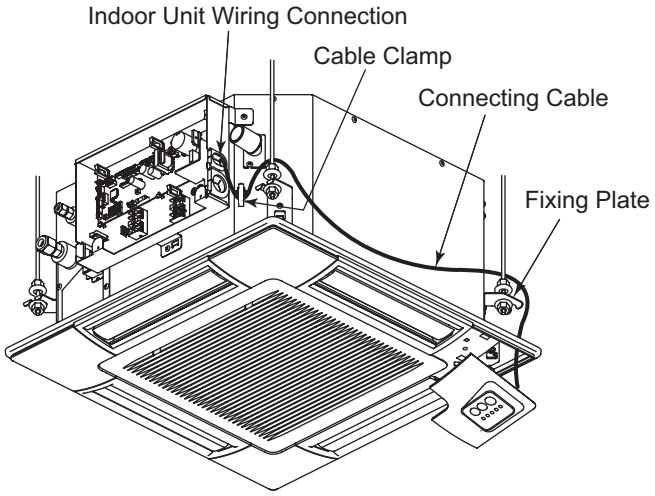


7 Connect the accessory connecting cable to the terminal block.
Open the electrical box cover of the indoor unit. Attach the connecting cable to terminals A and B in the electrical box. (There is no polarity with terminals A and B.)



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.

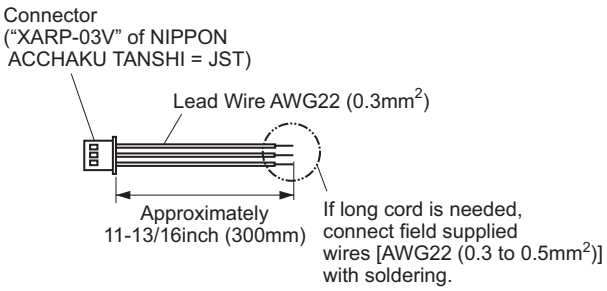
8 Attach the decorative panel.
Refer to the installation manual for the decorative panel.

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.

3.5 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.)



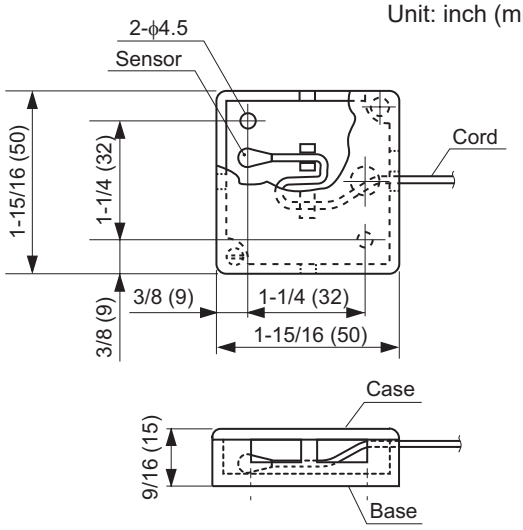
3P Connector Cable

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

3.6 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)



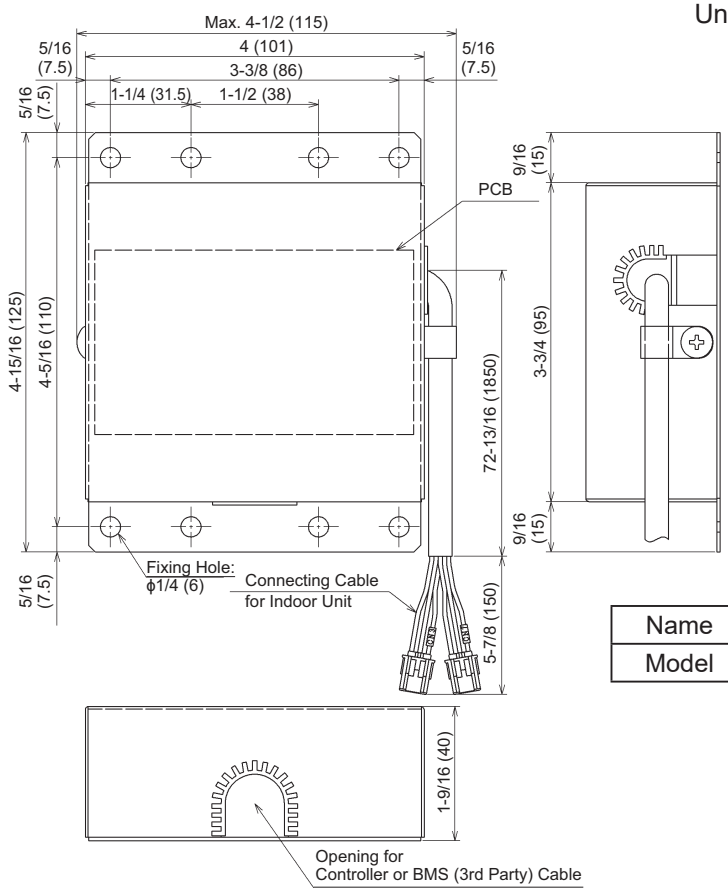
Specifications

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)

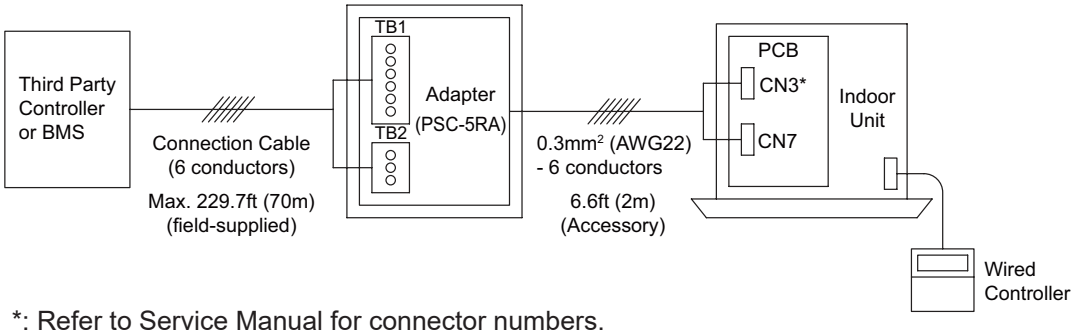
3.7 Relay and 3 Pin Connector Kit: PSC-5RA

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)ICM008B21S, (H,Y,C)ICM012B21S, (H,Y,C)ICM015B21S and (H,Y,C)ICM018B21S

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.

4.2.2 Heating Capacity

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

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	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
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.

Annex

Important Notices about Indoor Units Produced in September 2019 or Later*1

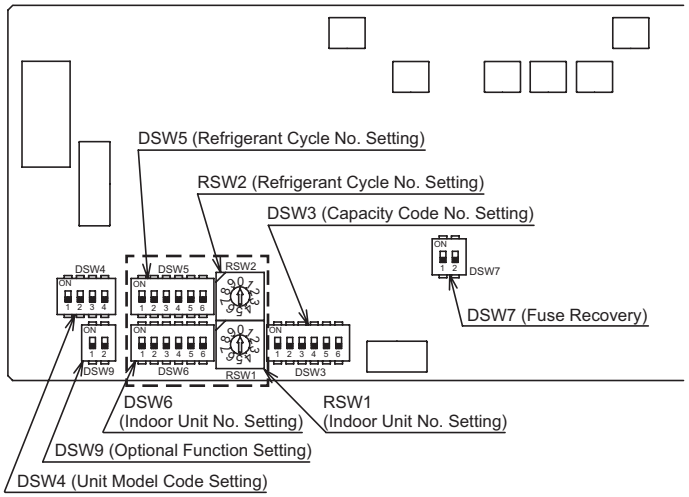
*1 Refer to Technical Bulletin for applicable serial numbers.

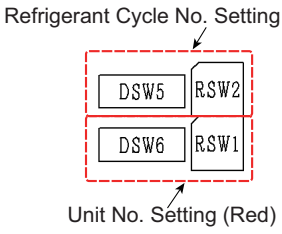
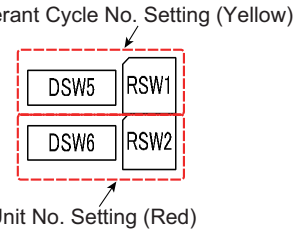
2. Indoor Unit Type

2.11.4 Wiring Diagram (Continued)

Control PCB for the following models are changed and layout of rotary switch and DIP switch settings are changed. Due to this change, wiring diagrams are also changed.

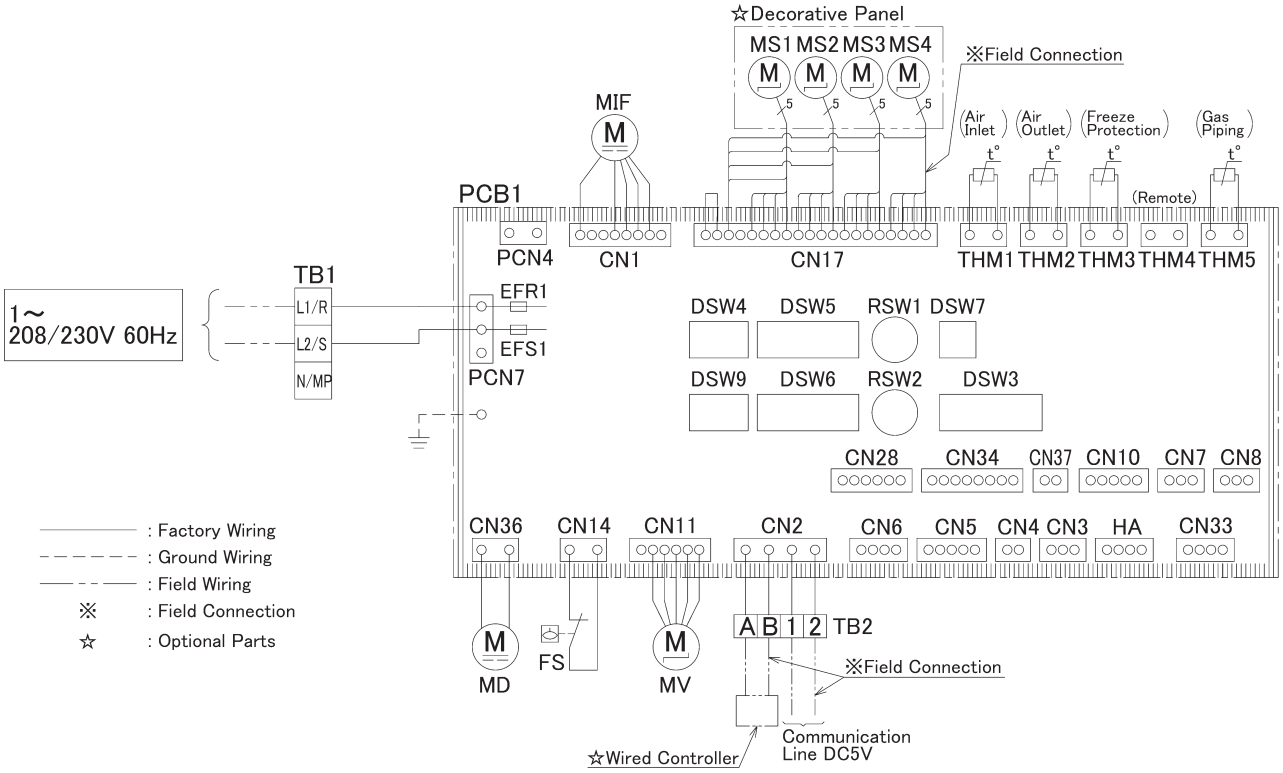
4-Way Cassette [(H,Y,C)IC4008 to 048B21S]
2-Way Cassette [(H,Y,C)IC2018, 024B21S]
1-Way Cassette [(H,Y,C)IC1006 to 015B21S]
4-Way Cassette Mini [(H,Y,C)ICM008 to 018B21S]
Ceiling Suspended [(H,Y,C)ICS015 to 036B21S]



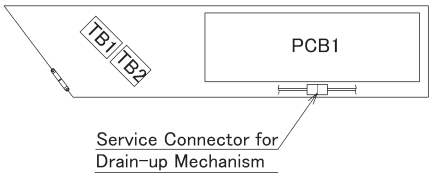
Produced in August 2019 or Earlier	Produced in September 2019 or Later
Arrangement of Rotary Switch and DIP Switch	Arrangement of Rotary Switch and DIP Switch
	
Unit No. Setting (RSW1 and DSW6) DSW6 (Tens Digit) / RSW1 (Units Digit) Setting Position — Set by inserting slotted screwdriver into the groove. ON / OFF 1 2 3 4 5 6 Before shipment, DSW6 and RSW1 are set at "0". For the units supporting H-LINK II, the unit No. can be set for Max. 64 indoor units (No.0~63). Ex.) Set at No.16 Unit DSW6: ON / OFF 1 2 3 4 5 6 Set No.1 Pin at ON side RSW1 Set at "6"	Unit No. Setting (RSW2 and DSW6) DSW6 (Tens Digit) / RSW2 (Units Digit) Setting Position — Set by inserting slotted screwdriver into the groove. ON / OFF 1 2 3 4 5 6 Before shipment, DSW6 and RSW2 are set at "0". For the units supporting H-LINK II, the unit No. can be set for Max. 64 indoor units (No.0~63). Ex.) Set at No.16 Unit DSW6: ON / OFF 1 2 3 4 5 6 Set No.1 Pin at ON side RSW2 Set at "6"
Refrigerant Cycle No. Setting (RSW2 and DSW5) DSW5 (Tens Digit) / RSW2 (Units Digit) Setting Position — Set by inserting slotted screwdriver into the groove. ON / OFF 1 2 3 4 5 6 Before shipment, DSW5 and RSW2 are set at "0". For the units supporting H-LINK II, the ref. cycle No. can be set for Max. 64 cycles. (No. 0~63) Ex.) Set at No.5 Cycle DSW5: ON / OFF 1 2 3 4 5 6 Set All Pins OFF RSW2 Set at "5"	Refrigerant Cycle No. Setting (RSW1 and DSW5) DSW5 (Tens Digit) / RSW1 (Units Digit) Setting Position — Set by inserting slotted screwdriver into the groove. ON / OFF 1 2 3 4 5 6 Before shipment, DSW5 and RSW1 are set at "0". For the units supporting H-LINK II, the ref. cycle No. can be set for Max. 64 cycles. (No. 0~63) Ex.) Set at No.5 Cycle DSW5: ON / OFF 1 2 3 4 5 6 Set All Pins OFF RSW1 Set at "5"

4-Way Cassette Type Indoor Unit

Models: (H,Y,C)IC4008B21S, (H,Y,C)IC4012B21S, (H,Y,C)IC4015B21S, (H,Y,C)IC4018B21S, (H,Y,C)IC4024B21S, (H,Y,C)IC4030B21S, (H,Y,C)IC4036B21S and (H,Y,C)IC4048B21S with Decorative Panel P-AP160NA2

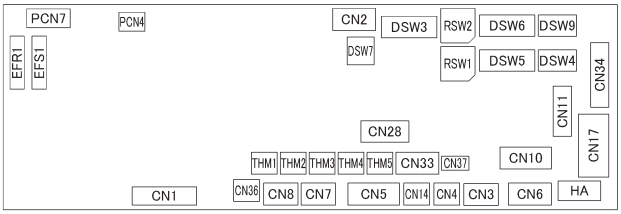


Electrical Control Box of Indoor Unit



Printed Circuit Board

PCB1

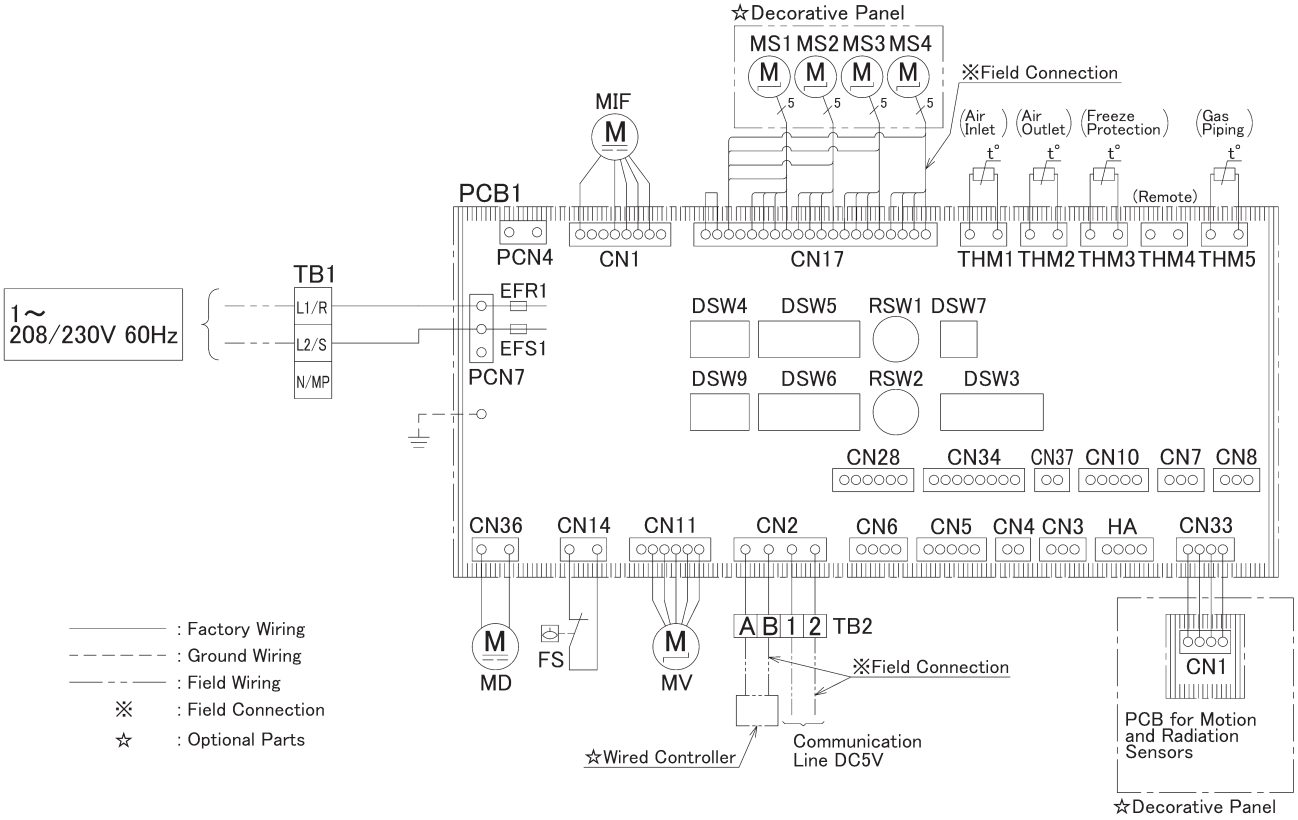


NOTE:

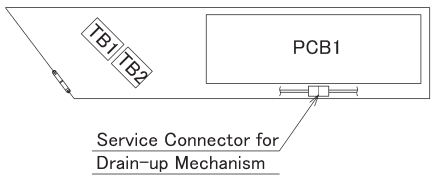
1. All the field wiring and equipment must comply with local codes.

Mark	Name
CN3	Optional Connector (For Signal Input)
CN7,8	Optional Connector (For Signal Output)
CN33	Optional Connector (For Motion and Radiation Sensors)
DSW3, 4, 7, 9	DIP Switch for Setting
EFR1, EFS1	Fuse
FS	Float Switch
MIF	Motor for Indoor Fan
MS1～4	Motor for Automatic Swing Louver
MV	Electronic Expansion Valve
MD	Motor for Drain-up Mechanism
PCB1	Printed Circuit Board
RSW1	Rotary Switch for Refrigerant Cycle No. Setting (Ones Digit)
DSW5	DIP Switch for Refrigerant Cycle No. Setting (Tens Digit)
RSW2	Rotary Switch for Unit No. Setting (Ones Digit)
DSW6	DIP Switch for Unit No. Setting (Tens Digit)
TB1,2	Terminal Block
THM1～3, 5	Thermistor
THM4	Optional Connector (For Remote Temperature Sensor)
CN4～6, 10, 28, 34, 37, HA, PCN4	Reserved Connector on PCB

Models: (H,Y,C)IC4008B21S, (H,Y,C)IC4012B21S, (H,Y,C)IC4015B21S, (H,Y,C)IC4018B21S, (H,Y,C)IC4024B21S, (H,Y,C)IC4030B21S, (H,Y,C)IC4036B21S and (H,Y,C)IC4048B21S with Decorative Panel P-AP160NAE1

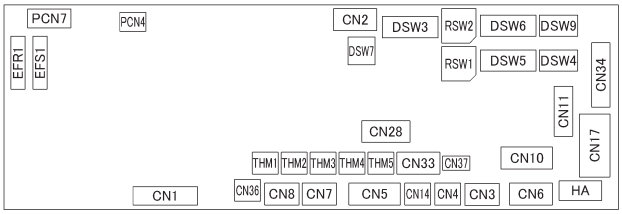


Electrical Control Box of Indoor Unit



Printed Circuit Board

PCB1



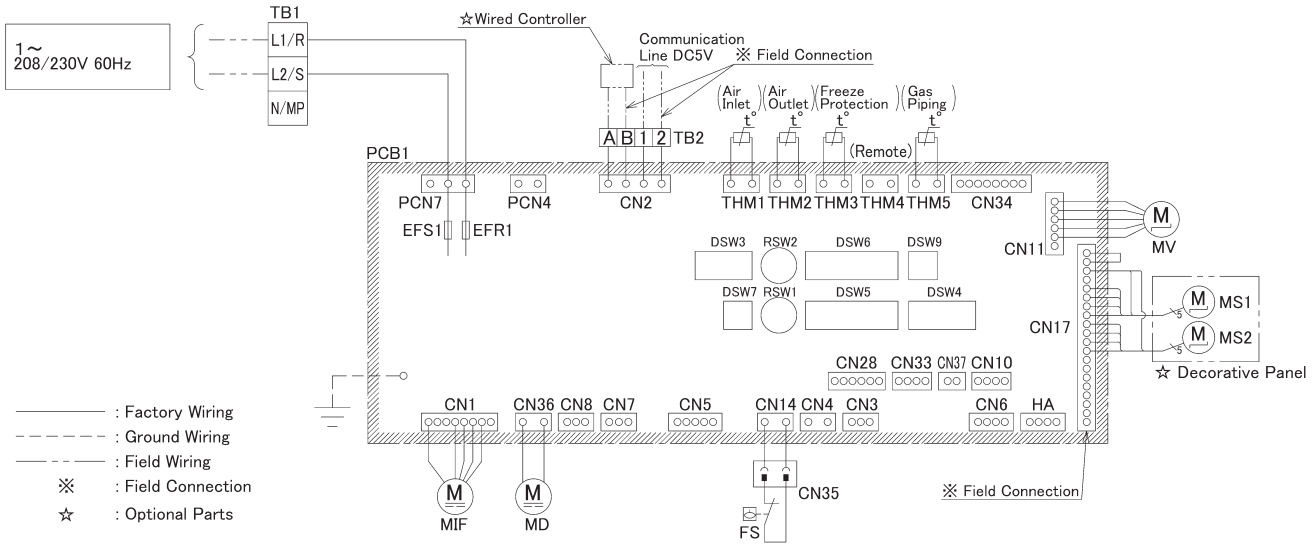
NOTE:

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

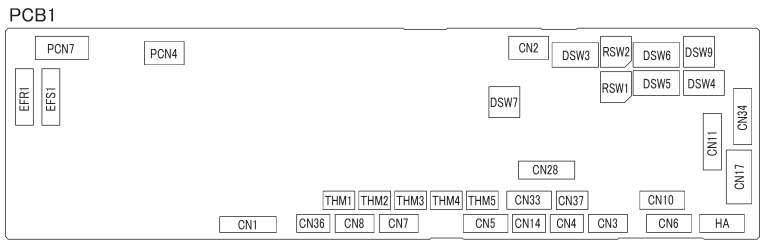
Mark	Name
CN3	Optional Connector (For Signal Input)
CN7,8	Optional Connector (For Signal Output)
DSW3, 4, 7, 9	DIP Switch for Setting
EFR1, EFS1	Fuse
FS	Float Switch
MIF	Motor for Indoor Fan
MS1～4	Motor for Automatic Swing Louver
MV	Electronic Expansion Valve
MD	Motor for Drain-up Mechanism
PCB1	Printed Circuit Board
RSW1	Rotary Switch for Refrigerant Cycle No. Setting (Ones Digit)
DSW5	DIP Switch for Refrigerant Cycle No. Setting (Tens Digit)
RSW2	Rotary Switch for Unit No. Setting (Ones Digit)
DSW6	DIP Switch for Unit No. Setting (Tens Digit)
TB1,2	Terminal Block
THM1～3, 5	Thermistor
THM4	Optional Connector (For Remote Temperature Sensor)
CN4～6, 10, 28, 34, 37, HA, PCN4	Reserved Connector on PCB

2-Way Cassette Type Indoor Unit

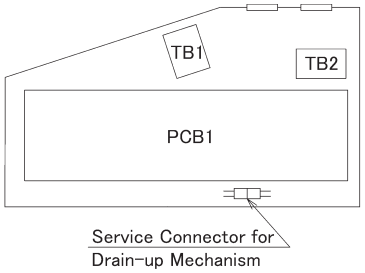
Models: (H,Y,C)IC2018B21S and (H,Y,C)IC2024B21S



Printed Circuit Board



Electrical Control Box of Indoor Unit



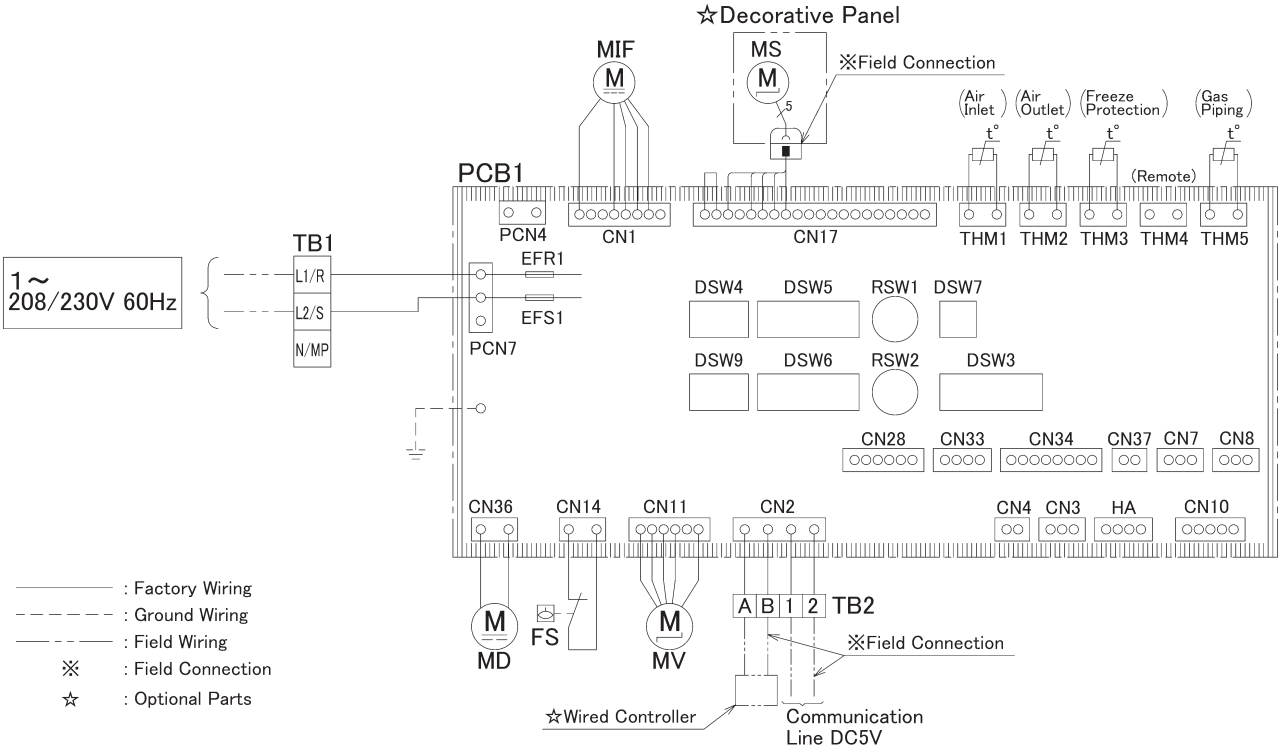
NOTE:

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
MS1, 2	Motor for Automatic Swing Louver
MV	Electronic Expansion Valve
MD	Motor for Drain-up Mechanism
PCB1	Printed Circuit Board
RSW1	Rotary Switch for Refrigerant Cycle No. Setting (Ones Digit)
DSW5	DIP Switch for Refrigerant Cycle No. Setting (Tens Digit)
RSW2	Rotary Switch for Unit No. Setting (Ones Digit)
DSW6	DIP Switch for Unit No. Setting (Tens Digit)
TB1,2	Terminal Block
THM1～3, 5	Thermistor
THM4	Optional Connector (For Remote Temperature Sensor)
CN4～6, 28, 33, 34, 37, HA, PCN4	Reserved Connector on PCB

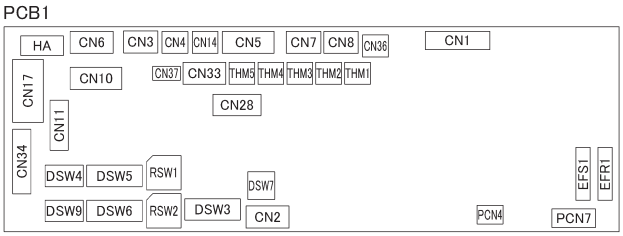
1-Way Cassette Type Indoor Unit

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



Electrical Control Box of Indoor Unit

Printed Circuit Board



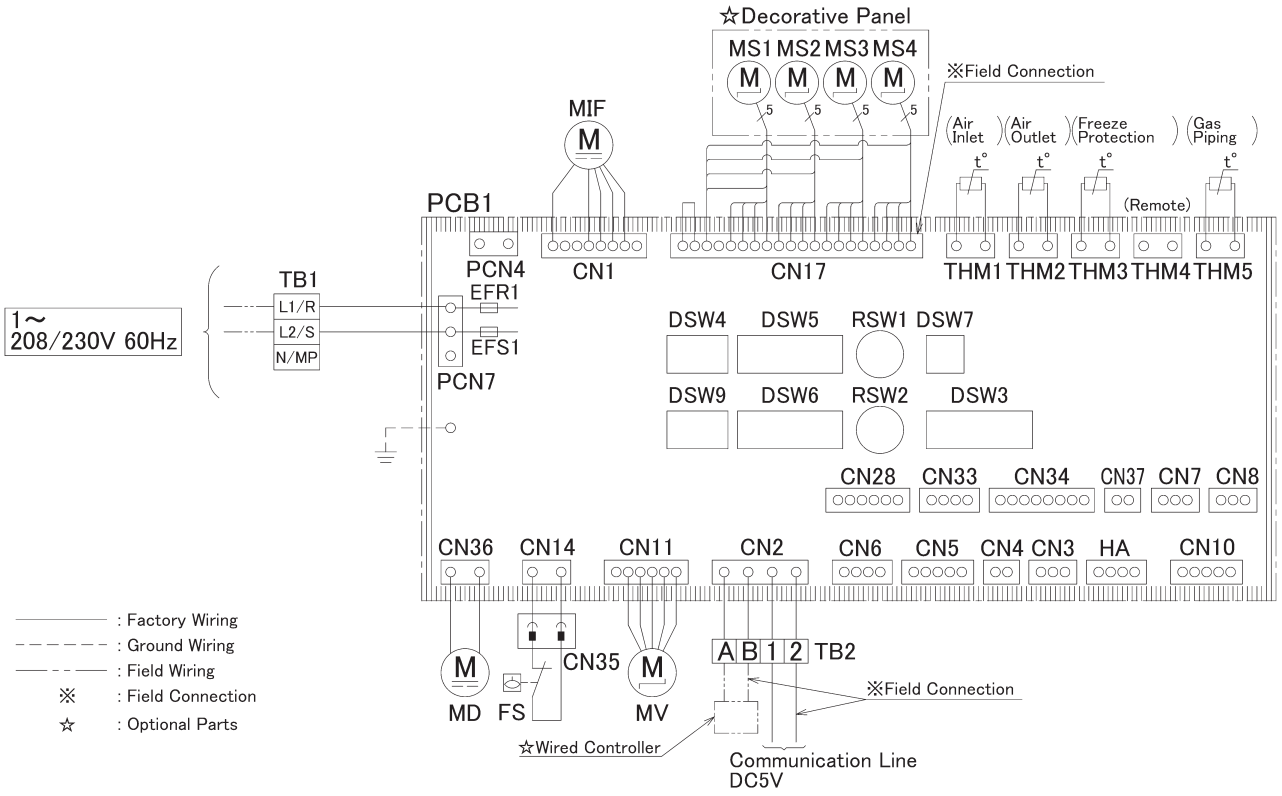
Note:

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

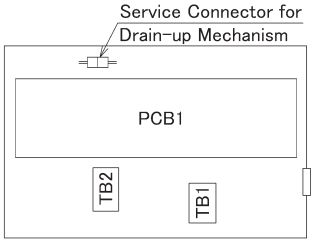
Mark	Name
CN3	Optional Connector (For Signal Input)
CN7,8	Optional Connector (For Signal Output)
CN10	Optional Connector (For Motion Sensor)
DSW3, 4, 7, 9	DIP Switch for Setting
EFR1, EFS1	Fuse
FS	Float Switch
MIF	Motor for Indoor Fan
MS	Motor for Automatic Swing Louver
MV	Electronic Expansion Valve
MD	Motor for Drain-up Mechanism
PCB1	Printed Circuit Board
RSW1	Rotary Switch for Refrigerant Cycle No. Setting (Ones Digit)
DSW5	DIP Switch for Refrigerant Cycle No. Setting (Tens Digit)
RSW2	Rotary Switch for Unit No. Setting (Ones Digit)
DSW6	DIP Switch for Unit No. Setting (Tens Digit)
TB1,2	Terminal Block
THM1～3, 5	Thermistor
THM4	Optional Connector (For Remote Temperature Sensor)
CN4～6, 28, 33, 34, 37, HA, PCN4	Reserved Connector on PCB

4-Way Cassette Mini Type Indoor Unit

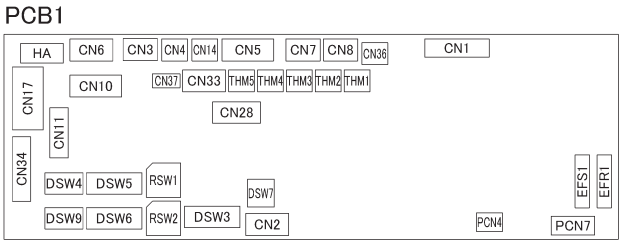
Models: (H,Y,C)ICM008B21S, (H,Y,C)ICM012B21S, (H,Y,C)ICM015B21S and (H,Y,C)ICM018B21S



Electrical Control Box of Indoor Unit



Printed Circuit Board



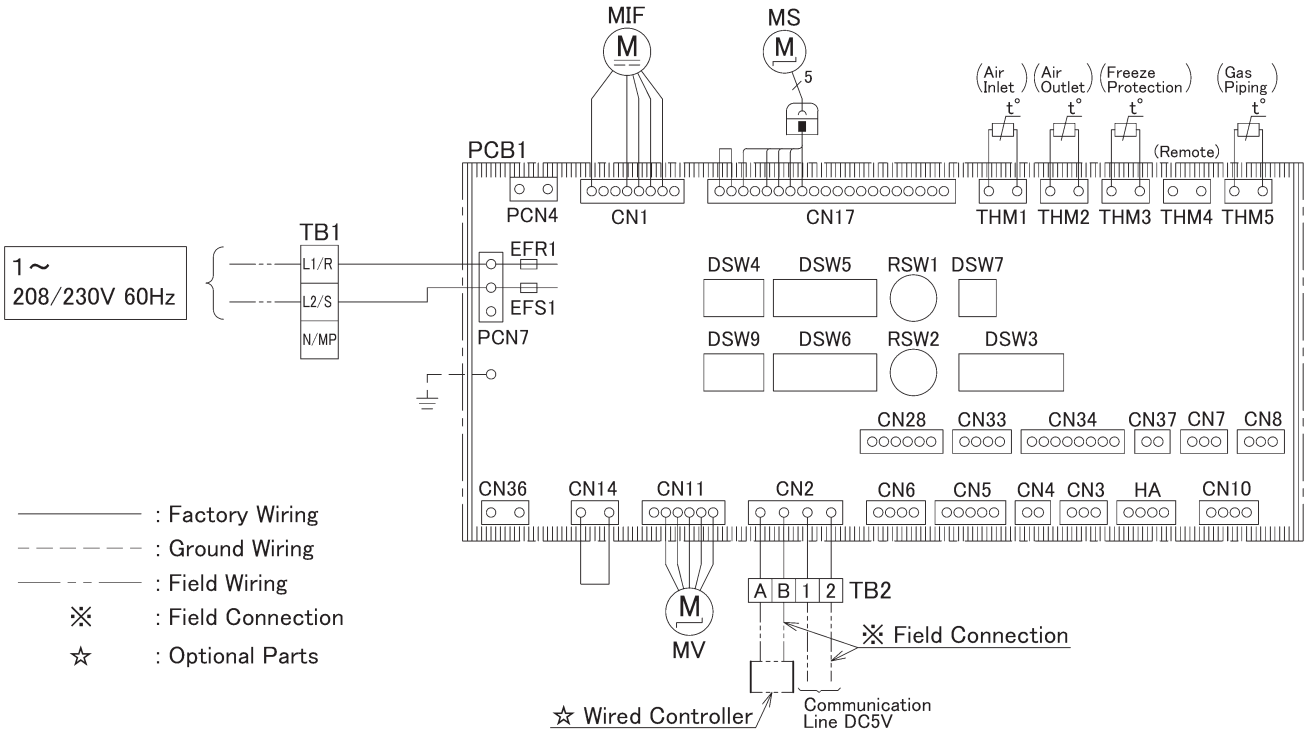
NOTE:

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
MS1～4	Motor for Automatic Swing Louver
MV	Electronic Expansion Valve
MD	Motor for Drain-up Mechanism
PCB1	Printed Circuit Board
RSW1	Rotary Switch for Refrigerant Cycle No. Setting (Ones Digit)
DSW5	DIP Switch for Refrigerant Cycle No. Setting (Tens Digit)
RSW2	Rotary Switch for Unit No. Setting (Ones Digit)
DSW6	DIP Switch for Unit No. Setting (Tens Digit)
TB1,2	Terminal Block
THM1～3, 5	Thermistor
THM4	Optional Connector (For Remote Temperature Sensor)
CN4～6, 28, 33, 34, 37, HA, PCN4	Reserved Connector on PCB

Ceiling Suspended Type Indoor Unit

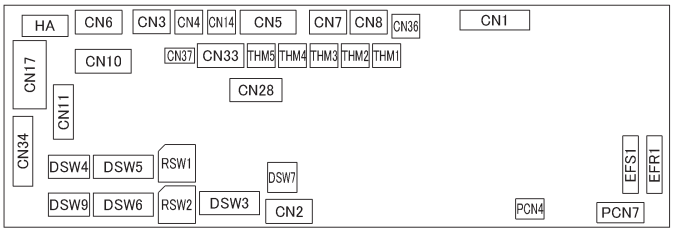
Models: (H,Y,C)ICS015B21S, (H,Y,C)ICS024B21S, (H,Y,C)ICS030B21S and (H,Y,C)ICS036B21S



Electrical Control Box of Indoor Unit

Printed Circuit Board

PCB1



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)
CN14, 36	Optional Connector (For Drain Pump Kit)
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 Refrigerant Cycle No. Setting (Ones Digit)
DSW5	DIP Switch for Refrigerant Cycle No. Setting (Tens Digit)
RSW2	Rotary Switch for Unit No. Setting (Ones Digit)
DSW6	DIP Switch for Unit No. Setting (Tens Digit)
TB1, 2	Terminal Block
THM1～3, 5	Thermistor
THM4	Optional Connector (For Remote Temperature Sensor)
CN4～6, 28, 33, 34, 37, HA, PCN4	Reserved Connector on PCB

3. Optional Parts

3.1 Line Up (Continued)

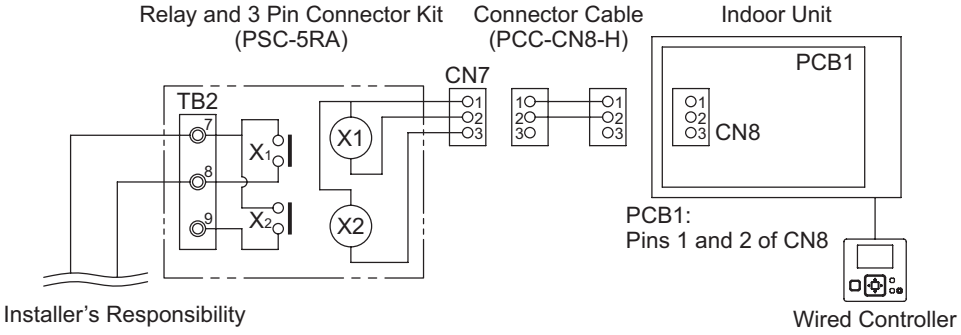
Item No.	Optional Parts	Adopting Unit Type	Adopting Model Name	Optional Parts Model Name
1	Connector Cable	Ducted (Medium Static) [1st Generation]	(H,Y,C)IDM006 to 048B21S	PCC-CN8-H
		Ducted (Slim)	(H,Y,C)IDS006 to 018B21S	
		Ducted (EconoFresh)	(H,Y,C)IDM030 to 048B21E	
		Wall Mount	TIWM006 to 030B22S	
		2-Way Cassette	(H,Y,C)IC2018, 024B21S	
		4-Way Cassette Mini	(H,Y,C)ICM008 to 018B21S	
		4-Way Cassette	(H,Y,C)IC4008 to 048B21S	
		1-Way Cassette	(H,Y,C)IC1006 to 015B21S	
		Ceiling Suspended	(H,Y,C)ICS015 to 036B21S	
2	Connector Cable	Ducted (High Static) [1st Generation]	(H,Y)IDH018 to 096B21S	PCC-CN1925-H
		Floor Exposed	(H,Y,C)IFE006 to 015B21S	
		Floor Concealed	(H,Y,C)IFC006 to 015B21S	
		DX-Kit for UPG VAH	EXV-018 to 060E	

1. Connector Cable: PCC-CN8-H

This optional connector is utilized to provide auxiliary heater signal output capability from indoor unit PCB connector (CN8) to PSC-5RA connector (CN7) for auxiliary heater installation. (System Parts: One set contains one connector cable.)

Name	Connector Cable
Model	PCC-CN8-H
Remarks	One set contains one connector cable.

Connect the connector cable as shown below.



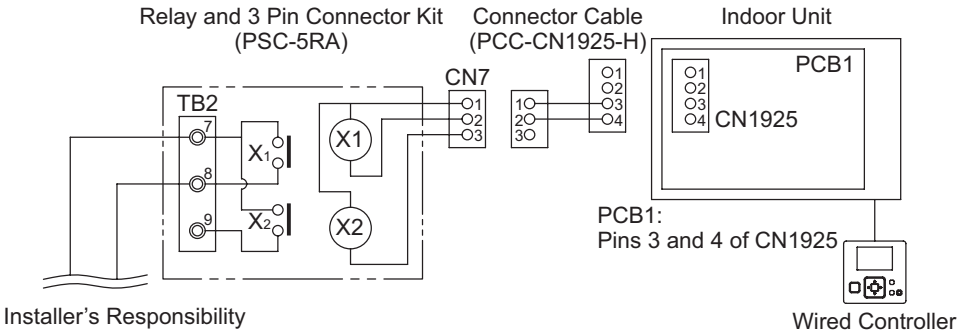
During installation, refer also to the "Installation and Maintenance Manual" for connecting indoor unit.

2. Connector Cable: PCC-CN1925-H

This optional connector is utilized to provide auxiliary heater signal output capability from indoor unit PCB connector (CN1925) to PSC-5RA connector (CN7) for auxiliary heater installation. (System Parts: One set contains one connector cable.)

Name	Connector Cable
Model	PCC-CN1925-H
Remarks	One set contains one connector cable.

Connect the connector cable as shown below.



During installation, refer also to the "Installation and Maintenance Manual" for connecting indoor unit.

TC-18003-rev.2

Code No. LIT-12013005
Revised September 2019