Operation Manual

INVERTER-DRIVEN
MULTI-SPLIT SYSTEM
HEAT PUMP
AIR CONDITIONERS

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

IMPORTANT:

READ AND UNDERSTAND THIS MANUAL BEFORE USING THIS HEAT PUMP AIR CONDITIONER.
KEEP THIS MANUAL FOR FUTURE REFERENCE.

PMGB0387 rev.1

Important Notice

- Johnson Controls, Inc. pursues a policy of continuing improvement in design and performance in its products. As such, Johnson Controls reserves the right to make changes at any time without prior notice.
- Johnson Controls cannot anticipate every possible circumstance that might involve a potential hazard.
- This heat pump air conditioning unit is designed for standard air conditioning applications only. Do not use this unit for anything other than the purposes for which it was intended.
- The installer and system specialist shall safeguard against leakage in accordance with local codes. The following standards may be applicable, if local regulations are not available. International Organization for Standardization: (ISO 5149 or European Standard, EN 378). No part of this manual may be reproduced in any way without the expressed written consent of Johnson Controls.
- This heat pump air conditioning unit is operated and serviced in the United States of America and comes with a full complement of the appropriate Safety, Dangers, Cautions, and Warnings.
- If you have questions, please contact your distributor or contractor.
- This manual provides common descriptions, basic and advanced information to maintain and service this heat pump air conditioning unit which you operate, as well for other models.
- This heat pump air conditioning unit has been designed for a specific temperature range. For optimum performance and long life, operate this unit within the range limits according to the table below.

Temperature

		Maximum	Minimum
Cooling Operation	Indoor	89°F DB/73°F WB (32°C DB/23°C WB)	69°F DB/59°F WB (21°C DB/15°C WB)
	Outdoor	118°F DB (48°C DB) *	14°F DB (-10°C DB) *
Heating Operation	Indoor	80°F DB (27°C DB)	59°F DB (15°C DB)
	Outdoor	59°F WB (15°C WB) *	-4°F WB (-20°C WB) *

DB: Dry Bulb, WB: Wet Bulb

* The temperature may change depending on the outdoor unit.

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

TABLE OF CONTENTS

1. Introduction

Read this manual carefully before working with this product.
Keep this information with the product.

Forward this manual and the warranty to the next team of installers and then users.
Ask them to keep this manual with the air conditioning unit.
(Refrigerant Piping Work) → (Electrical Wiring Work) → (Ref. Charge Work) → (Test Run) → (User)

- For details on wiring between the indoor unit and the outdoor unit, refer to the installation and maintenance manual for the outdoor unit.
- For details on the optional decorative panel, refer to the installation and maintenance manual for the optional decorative panel.
- For details on the optional controller, refer to the installation and maintenance manual for that optional controller module.
- For details on each optional part, refer to the installation and maintenance manual for each optional part.
- For central controller, refer to the installation and maintenance manual for the central controller.

2. 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 safety instructions as needed.*

- This system, including the controller, 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 an 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 because of a falling unit.

- Use appropriate personal protective equipment (PPE), such as gloves, protective goggles and electrical protection equipment and tools suited for electrical operation purposes.
- When transporting, be careful when picking up, moving and mounting these units. Although the controller may be packed using plastic straps, do not use them for transporting from one location to another. Do not stand on or put any material on the controller.
- When installing the controller cabling to the units, 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.
- Use only Johnson Controls recommended, provided as standardized, or replacement parts.
- 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.

- Do not touch the main circuit board or electronic components in the controller or remote devices. Make sure that dust and/or steam does not accumulate on the circuit board.
- When installing the unit in a hospital or other facility where electromagnetic waves are generated from nearby medical and/or electronic devices, be prepared for Electromagnetic Interference (EMI). Do not install where the waves can directly radiate into the electrical box, controller cable, or controller. Inverters, appliances, high-frequency medical equipment, and radio communications equipment may cause the unit to malfunction. The operation of the unit may also adversely affect these same devices. Install the unit at least 10 ft. (approximately 3m) away from such devices.
- Locate the wireless controller at a distance of at least 3 ft. (approximately 1m) between the indoor unit and electric lighting. Otherwise, the receiver part of the unit may have difficulty receiving operation commands.
- If the wired controller is installed in a location where electromagnetic radiation is generated, make sure that the wired controller is shielded and cables are sleeved inside conduit tubing.
- If there is a source of electrical interference near the power source, install noise suppression equipment (filter).
- During the test run, check the unit's operation temperature. If the unit is used in an environment where the temperature exceeds the operation boundary, it may cause severe damage. Check the operational temperature boundary in the manual. If there is no specified temperature, use the unit within the operational temperature boundary of 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.

- 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 is 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.

- Perform a test run using the controller 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.

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

Electrical Precautions

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

- Only use electrical protection equipment and tools suited for this installation.
- Insulate the wired controller against moisture and temperature extremes.
- Use specified cables between units and the controller.
- Communication cabling should be a minimum of AWG18 (0.82mm^2), 2-Conductor, Stranded Copper. Shielded cable must be considered for applications and routing in areas of high EMI and other sources of potentially excessive electrical noise to reduce the potential for communication errors. When shielded cabling is applied, proper bonding and termination of the cable shield is required as per Johnson Controls guidelines. Plenum and riser ratings for communication cables must be considered per application and local code requirements.
- 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.
- The polarity of the input terminals is important, so be sure to match the polarity when using contacts that have polarity.
- Highly dangerous electrical voltages may be used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause serious injury or death.
- Before installing the controller or remote devices, ensure that the indoor and outdoor unit operation has been stopped. Further, be sure to wait at least five minutes before turning off the main power switch to the indoor or outdoor units. Otherwise, water leakage or electrical breakdown may result.
- Do not open the service cover or access panel to the indoor or outdoor units without turning OFF the main power supply. Before connecting or servicing the controller or cables to indoor or outdoor units, open and tag all disconnect switches. Never assume electrical power is disconnected. Check with a meter and equipment.
- Use an exclusive power supply at the controller’s rated voltage.
- Be sure to install circuit breakers (ground fault circuit interrupter, isolating switch, molded case circuit breaker, and so forth) with the specified capacity. Ensure that the wiring terminals are tightened securely to recommended torque specifications.
- Clamp electrical wires securely with a cable band after all wiring is connected to the terminal block. In addition, run wires securely through the wiring access channel.
- When installing the power lines, do not apply tension to the cables. Secure the suspended cables at regular intervals, but not too tightly.
- Make sure that the terminals do not come into contact with the surface of the electrical box. If the terminals are too close to the surface, it may lead to failures at the terminal connection.
- Do not clean with, or pour water into, the controller as it could cause electric shock and/or damage the unit. Do not use strong detergent such as a solvent. Clean with a soft cloth.
- Check that the ground wire is securely connected. Do not connect ground wiring to gas piping, water piping, lighting conductor, or telephone ground wiring.

Operation

⚠ WARNING
● Do not insert fingers or objects into an air inlet/outlet. Injury can result from rotating fan blades or energized electrical components.
● Do not touch the wired controller with wet hands. It can result in a malfunction of the wired controller or an electrical shock.
● Hair spray, insecticides, lacquers, and other pressurized substances should not be used within 3.3ft (1m) of any air conditioning unit. It can react with energized electrical components and cause fire.
● Do not install the indoor unit anywhere discharge airflow can pass directly toward nearby heating equipment (such as space heaters). It may interfere with the combustion process in these units.
● When the indoor unit is operating in an area with heat sources, ventilate a room sufficiently. Any leaked refrigerant gases that happen to come into contact with any heat source can become toxic on contact which can cause asphyxiation in the immediate area.
● Shut down at the main power source if the GFCI (Ground Fault Circuit Interrupter) activates frequently. Contact your distributor or contractor immediately. Failure to act accordingly can result in serious injury and damage to the unit.
● If you smell anything burning, shut down the unit and turn OFF the power at the main power source. Contact the fire department and your installer or electrical contractor.
● Make sure that a test for leakage of refrigerant gases has been performed. The refrigerant used for this unit (HFC R410A), is a non-flammable, non-toxic, and odorless gas. However if refrigerant should leak and make contact with sparks, fire and toxic gas is generated. Also, because fluorocarbon is heavier than air, it will accumulate on the floor causing asphyxiation. ● If fluorocarbon gas should leak, turn OFF all heating equipment and ventilate the room immediately. Mop or vacuum floor areas to remove residual toxic particulate.
● Do not operate indoor units with the electrical box and switch panel open and exposed. Accidental contact with energized components can be fatal.

NOTICE
● Air circulation should be optimized to achieve the best distribution pattern and not settle into isolated pockets creating an uncomfortable environment.

Repair / Relocation

⚠WARNING

- When the air conditioning unit is to be repaired or transported to a new location, contact your distributor or contractor. If the repair and the installation are not completed correctly, it may cause an electric shock or fire.

Other

⚠WARNING

- Turn OFF all power at the main power source before performing maintenance work. Failure to do so can result in not only damage to internal components but severe or fatal electrical shock.
- Insulate all electrical components and connections from exposure to moisture. Failure to do so can result in an electrical short circuit and fire.
- Do not tamper with or attempt to "repair" electrical wiring or connections. Call your installer or electrical contractor. Serious or fatal injury can occur.
- Perform all maintenance work on a firm and stable foundation to minimize the risk of injury.
- Do not attempt to "clean" indoor unit components with liquid or powdered cleaning agents during maintenance. Electric shock, sparks, flame, and serious or fatal injury can occur.
- System piping is charged with refrigerant and highly pressurized.

⚠CAUTION

- Hold the air filter and the air inlet grille firmly when attaching or removing it. Carelessness can result in accident or injury.

NOTICE

- When cleaning the lens surface of the motion sensor, do not make unnecessary contact as it can be easily scratched.

3. Before Operation

NOTICE

Apply power to the outdoor unit(s) at least 12 hours prior to system operation to allow for preheating of the compressor oil. Do not start the system immediately without preheating the compressor. Otherwise, the compressor can be damaged. Check that the outdoor unit is free of ice and snow. If snow covered, remove with hot water at 122°F (50°C). If hot water temperature is higher than 122°F (50°C), it can cause damage to plastic parts.

- When the system is restarted after a shutdown longer than approximately three months, it is recommended that the system be checked over by your service contractor.
- Turn off main power (service disconnect) when the system has been off for a long period of time. If the main switch is not turned OFF, electricity is consumed because the oil heater is always energized during periods of compressor stoppage.

3.1 Operating Range

This heat pump air conditioner has been designed for the following temperatures. Operate the heat pump air conditioner within this range.

Temperature

		Maximum	Minimum
Cooling Operation	Indoor	89°F DB/73°F WB (32°C DB/23°C WB)	69°F DB/59°F WB (21°C DB/15°C WB)
	Outdoor	118°F DB (48°C DB) *	14°F DB (-10°C DB) *
Heating Operation	Indoor	80°F DB (27°C DB)	59°F DB (15°C DB)
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DB: Dry Bulb, WB: Wet Bulb

* The temperature may change depending on the outdoor unit.

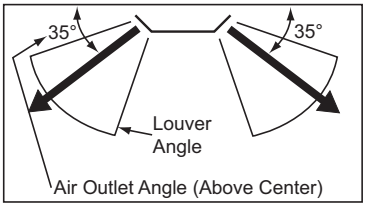
3.2 Efficient Use of Indoor Unit

- **Do not leave windows or doors open.**
  Operating efficiency is degraded.
  Condensation and problems relating to it can result. (Also ventilate a room sufficiently.)
- **Attach a curtain or a blind to a window.**
  Direct sunlight is blocked so the cooling efficiency is enhanced.
- **Avoid using heating equipment during the cooling operation as much as possible.**
  Cooling efficiency is decreased. It may cause condensation and dripping.
- **Use the built-in circulating fan if warm air tends to remain around the ceiling.**
  Comfort is increased. Contact your distributor for details.
- **Redirect airflow downward if ceiling surface areas become discolored due to airborne particulate.**
  It is recommended that airflow be redirected 30° downward.
- **Turn OFF power at the main power source if the indoor unit is not being used over a prolonged period of time.**
  This results in excess electrical consumption while the unit rests in standby mode.

3.3 Efficient Use of Cooling and Heating

COOLING

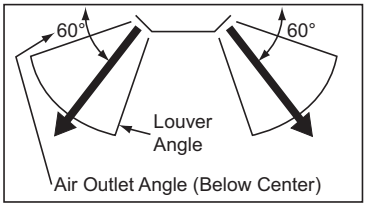
(1) Airflow Direction
The appropriate air outlet angle is approximately 35°.
If cooling is not sufficient, change the airflow direction.



(2) Airflow Volume
"AUTO" should usually be used.

HEATING

(1) Airflow Direction
The appropriate air outlet angle is approximately 60°.
If heating is not sufficient, change the airflow direction.



(2) Airflow Volume
"AUTO" should usually be used.

NOTE

For Multi-Split Systems

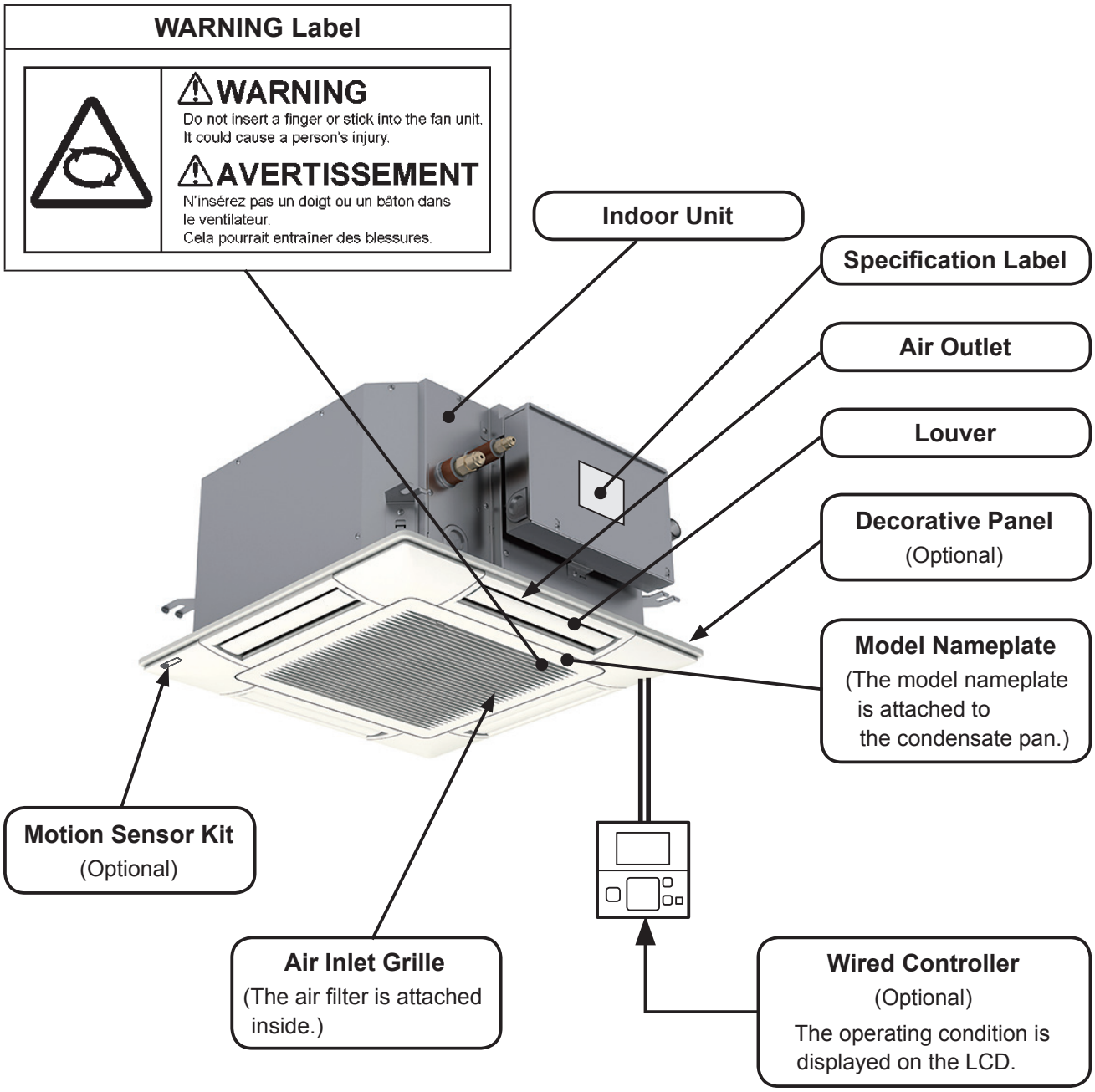
When the number of the indoor units in operation or the operating mode is changed, the change in air outlet temperature can cause the indoor temperature to change. In this case, adjust the settings as follows.

- During Cooling Operation: Lower the temperature setpoint slightly.
- During Heating Operation: Raise the temperature setpoint slightly.

4. Names of Parts and Indications for Safety Consideration

Safety labels are affixed to the indoor unit in order to ensure safe use.
Read and understand this manual before using the indoor unit.

4.1 Indoor Unit

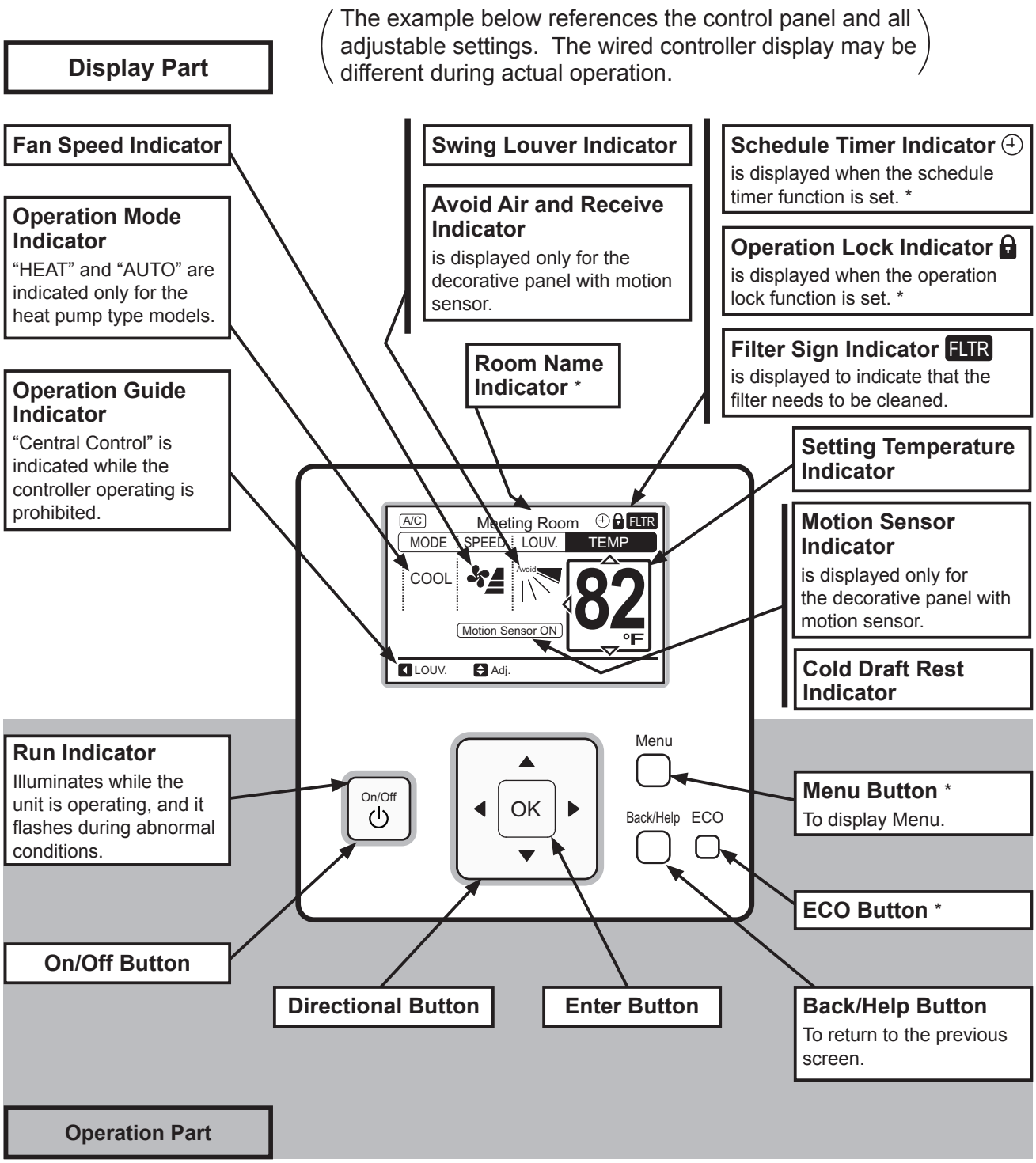


NOTE

- Press switches lightly to control the wired controller. Do not press them with a sharp object such as a pen, as it could cause damage to the controller.
- Review the Installation manual for the optional Wireless Controller and Receiver Kit.

4.2 Wired Controller (CIW01)

Following is an example of how the CIW01 is utilized. If other models of the controller are utilized, operate the unit according to the manual for that controller.

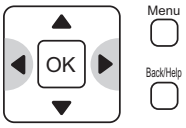
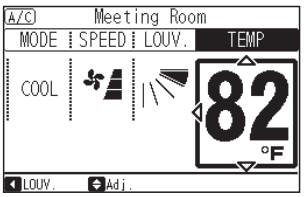
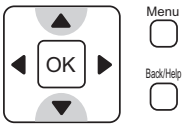
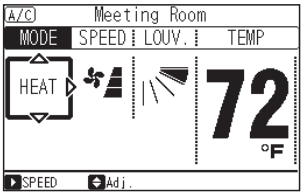


NOTE

* For detailed descriptions, refer to the "Operation Manual" for the wired controller.

5. Operation Method

5.1 Basic Operation

Item Selection	By pressing “◁”or “▷”, the icon “⬚” moves between “MODE”, “SPEED”, “LOUV.” and “TEMP”.		
Change of Settings	With “MODE”, “SPEED”, “LOUV.” or “TEMP” selected, press “△” or “▽”, and the setting changes.		

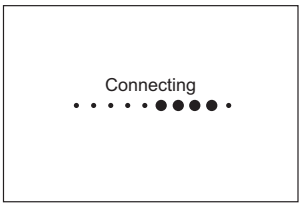
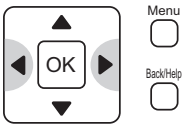
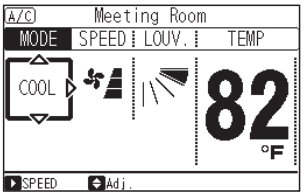
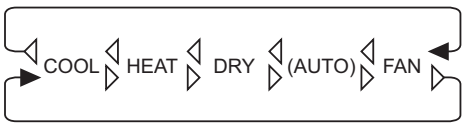
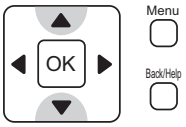
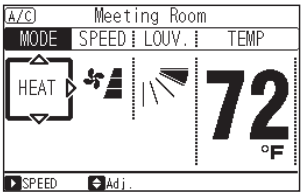
5.2 Cooling / Heating / Fan Operation

Heating Operation is for VRF systems only and is not available for typical systems.

Function

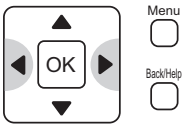
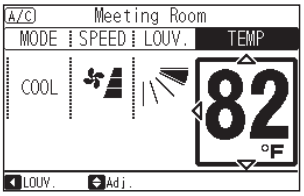
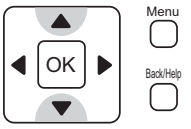
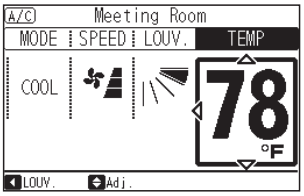
* Cooling Operation: To decrease room temperature.
* Heating Operation: To increase room temperature.
* Dry Operation: To decrease humidity in the room.
* Fan Operation: To increase air circulation in the room.

- Dry operation may not run properly if there are other heat sources which exceed the capacity of the unit.
- The control of humidity is unavailable for this unit. If you require dehumidification and the control of humidity, choose specialized equipments.
- In case where the individual setting is operated, decreasing of the humidity during dry operation might be unavailable.

Before Operation	Turn ON the power supply. Turn ON the main power approximately 12 hours before operation in order to preheat the compressor. Do not turn OFF the main power to the indoor unit during heating or cooling season.		
1	Press "◁" or "▷" to select "MODE".		
2	By pressing "△" or "▽", the mode is changed as follows. 		

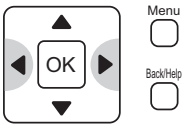
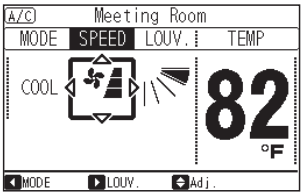
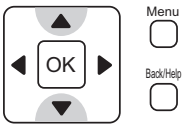
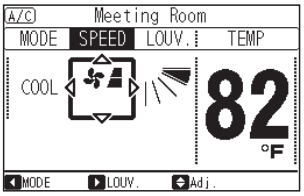
- Automatic heating/cooling operation requires extra settings. Contact your distributor or contractor for details.

5.3 Temperature Setting

1	Press “◁” or “▷” and select “TEMP”.		
2	By pressing “△”, temperature is increased by 1°F (0.5°C). (Max. 86°F (30°C)) By pressing “▽”, temperature is decreased by 1°F (0.5°C). COOL, FAN operation: Min. 66°F (19°C) HEAT operation: Min. 62°F (17°C)		

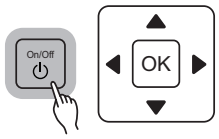
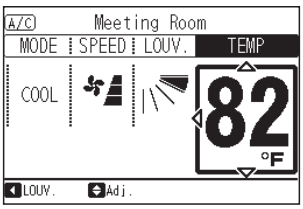
- If the optional function “Automatic Reset of Setting Temperature” is set:
  Even if changing the temperature setpoint on the wired controller, it automatically returns to the set temperature by “Automatic Reset Temperature” after a set time.
- The minimum/maximum temperature settings can be changed by adjusting the lower limit for the set temperature for cooling (or the upper limit for setting temperature for heating) from the function selection.
- Contact your distributor for details on optional functions “Automatic Reset for Setting Temperature”, "Cooling Lower Limit for Set Temperature”, and “Heating Upper Limit for Set Temperature.”

5.4 Fan Speed

1	Press “◁” or “▷” and select “SPEED”.		
2	By pressing “△” or “▽”, fan speed is changed as follows. HIGH 2 ⇔ HIGH ⇔ MED ⇔ LOW ⇔ AUTO		

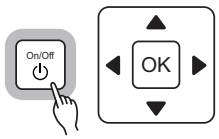
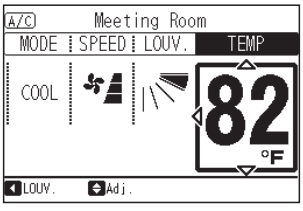
- During the dry operation, the fan speed is automatically adjusted to “LOW” and cannot be changed to any other fan speed. (“LOW” is NOT displayed on the Liquid Crystal Display (LCD) at this time. The present setting condition is displayed on the LCD.)
- The fan speed setting “HIGH 2” may not be available depending on the indoor unit type.

5.5 Operation

Operation Start	Press “⏻ On/Off”. The RUN indicator is turned ON and the operation starts.		

Temperature/Airflow Setting

- The setting condition is stored. Therefore, no daily setting is required. Temperature setpoint and airflow settings are retained after the indoor unit is turned OFF at the controller. In a case where the setting change is required, refer to Sections 5.2 to 5.4.

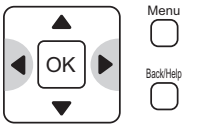
Operation Stop	Press “⏻ On/Off” again. The RUN indicator is turned OFF and the operation will stop.		

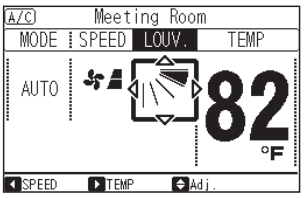
- The indoor unit fan may continue to operate for up to two minutes following the heating cycle to dissipate residual heat from the indoor unit.

5.6 Louver Swing Direction

1

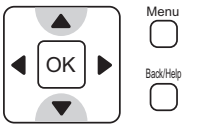
Press "⏻ On/Off".
Make sure that the operation is started.
Press "◁" or "▷" and select "LOUV.".

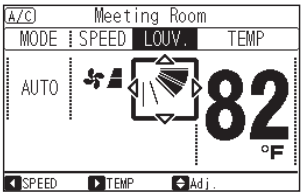




2

By pressing "△" or "▽", the louver direction is changed as follows.





Step	1	2	3	4	5	6	7	-
LCD Indication								
Louver Angle	Approx. 20°	Approx. 35°	Approx. 40°	Approx. 45°	Approx. 55°	Approx. 60°	Approx. 65°	Auto Swing
FAN		Recommended Angle	Angle Range					
			Auto-Swing Range					
Louver Angle	Approx. 20°	Approx. 35°	Approx.40°	Approx. 45°	Approx. 55°	Approx. 60°	Approx. 65°	
COOL and DRY		Recommended Angle	Angle Range			(※)	(※)	
			Auto-Swing Range					
Louver Angle	Approx. 25°	Approx. 35°	Approx. 40°	Approx. 45°	Approx. 55°	Approx. 60°	Approx. 65°	
HEAT			Angle Range			Recommended Angle		
			Auto-Swing Range					

NOTE:
Even if 60° or 65° is selected during cooling and drying operations, the louver angle is automatically fixed at 55°.
(※) If "Individual Louver Setting" mode is used, a louver setting of 60° or 65° can be corrected.

: Auto-swing operation is activated.
At this time, the animated louver graphic on the LCD appears to swing.

- The louver angle indicated on the LCD and the actual louver angle do not correspond precisely with each other during auto-swing mode operation. When the louver angle is established, set the louver angle according to the louver position indicated on the LCD.
- Louver movement may NOT stop immediately after the switch is pressed.

5.7 Individual Louver Setting

Function

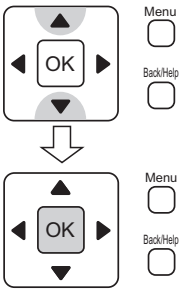
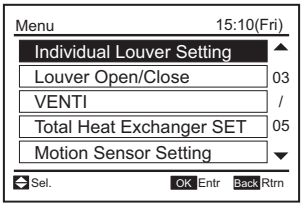
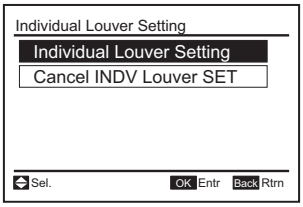
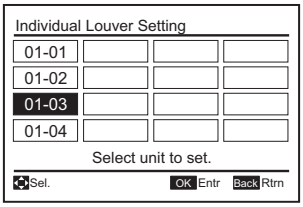
- This setting is available only for indoor models equipped with the individual louver.
- Each louver angle can be set individually.

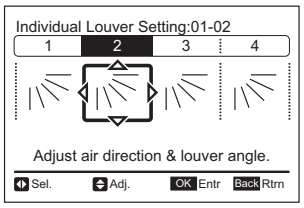
  Example
  Units equipped with Auto-Swing have a set of options to allow for airflow adjustment from vertical to horizontal.

NOTICE

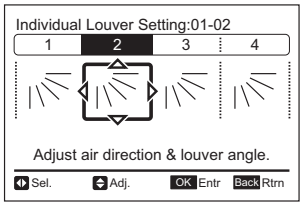
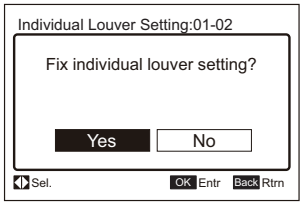
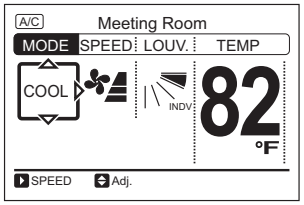
- This function cannot be set if the unit is not operating.
- After the individual louver setting is set during the heating operation, the louver angles can be adjusted automatically to 25°. Louver angles assume this setting after a short period of time.
- Fan speed slows down to “LOW” while this function is being set. (After the setting process is completed, the unit operation returns to normal speed.)
- As for “Start-up of Heating Operation”, “During Defrost Operation” and “Activation of Thermistors”, all louver angles become fixed at 25° automatically, even when this function is set.
- This function is not displayed if two controllers (including wired controller + wireless controller) are used.
- Less than 16 units can be set to Individual Louver Setting per wired controller.

5.7.1 Individual Louver Settings

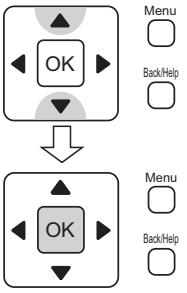
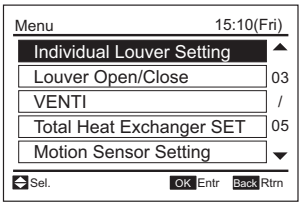
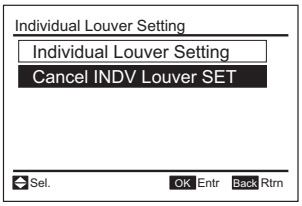
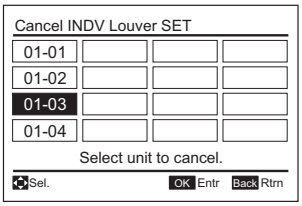
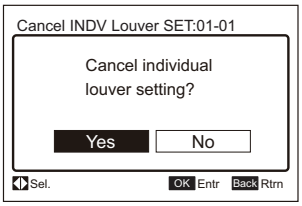
1	Press “Menu”. Select “Individual Louver Setting” from the menu by pressing “△” or “▽” and press “OK”. The Individual Louver Setting menu is displayed.		
2	Select “Individual Louver Setting” from the Individual Louver Setting menu and press “OK”. The connected indoor unit's selection for the individual louver setting is displayed. <u>NOTE:</u> If the connected indoor unit is one (1) in the system, the louver direction setting at procedure "4" is displayed.		
3	Select the indoor unit to change the louver direction by pressing “△”, “▽”, “◁” or “▷”. Press “OK”. The louver direction setting is displayed. <u>NOTE:</u> The indoor unit displayed on the screen flashes when the individual louver is set.		

4	Press “◁” or “▷” and select the louver direction from 1 to 4 (as shown). The selected louver is opened and the other louvers are seen horizontally.	

- If the louver position is hard to distinguish, press “△” or “▽” to set the position  .
- In the default setting, the number-one louver is on the electrical box. Looking up from underneath the unit, the louver numbers run in a clockwise direction: numbered "one", "two", "three", and "four". The louver number can also be changed. Contact your distributor for details.

5	Select the louver angle by pressing “△” or “▽” and press “OK”. The confirmation screen is displayed. The louver angle is changed as shown below.  NOTE: The louver direction without “INDV” complies with the normal mode setting.	
6	Select “Yes” by pressing “◁” or “▷” and press “OK”. The setting is confirmed and the screen returns to the normal mode.	
7	Verify that “INDV” is turned on at the airflow section on the normal mode.	

5.7.2 Cancellation of Louver Setting

1	Press “Menu”. Select “Individual Louver Setting” from the menu by pressing “△” or “▽” and press “OK”. The Individual Louver Setting menu is displayed.		
2	Select “Cancel INDV Louver SET” from the Individual Louver Setting menu and press “OK”. The connected indoor unit's selection of the cancelled louver setting is displayed. <u>NOTE:</u> If the connected indoor unit is one (1) in the system, the cancel individual louver setting at procedure "4" is displayed.		
3	Select the indoor unit to cancel by pressing “△”, “▽”, “◁” or “▷”. Press “OK”. <u>NOTE:</u> The indoor unit displayed on the screen flashes when the individual louver is set.		
4	Select “Yes” by pressing “◁” or “▷” and press “OK”. The Individual Louver Setting is canceled and the screen returns to the normal mode. <u>NOTE:</u> All the individual louver settings are canceled.		

5.8 Motion Sensor

5.8.1 Function

This setting is available only for the decorative panel with motion sensor kit.

- The motion sensor can detect human activity or occupancy by measuring the level of change in infrared light emitted by humans or objects.
  This function saves air conditioning capacity (adjusting the set temperature, the airflow volume and the airflow direction) automatically depending on a situation.
- The operation after the motion sensor detects an absence can be selected from “Running”, “Stand-by” or “Stop” on the controller with the capacity saving.

NOTICE

- The motion sensor detects human activity. Do not use the motion sensor function in situations where there may be little or no activity such as for disabled persons or infants. The motion sensor may detect an absence and the operation may be stopped if there is too little motion during a period of time.
- The motion sensor may detect human activity if the indoor unit with the motion sensor is installed near a moving object which is different in temperature than the atmosphere.
- If the indoor units are operated by two controllers, the motion sensor setting is available only from the main controller.
- The indoor unit operation can be stopped by the motion sensor control.

  NOTE:
  Indoor units with and without a motion sensor kit can be integrated together into a system installation. In this instance, when the operation is stopped by the motion sensor control, the indoor unit without the motion sensor kit also stops the operation.
- While air conditioning capacity is saved or operation is stopped by the motion sensor control, “Motion sensor is activated” is displayed on the LCD.
- If the function “Prohibiting operation by controller” is activated from the centralized controller, select the command “Running” or “Standby” inside an “If absent” condition at the motion sensor controls setting. If the command “Stop” is selected, the motion sensor control is lost and cannot be performed correctly as follows.
  * In an instance where “If absent: Stop” of motion sensor setting is set by the controller and “Prohibiting operation by controller” (for all functions) is set by the centralized controller, the operation can not be stopped even if in the indoor unit operation stoppage condition of “If absent: Stop”.
  * In an instance where “If absent: Stop” of motion sensor setting is set and “Prohibiting operation by controller” (for some functions) is set by the centralized controller, the indoor unit operation is stopped by the motion sensor control. However, the indoor unit operation cannot be restarted from the centralized controller.

5.8.2 Details for Motion Sensor Control

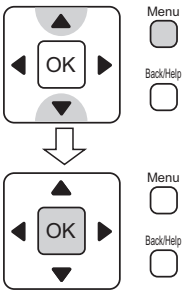
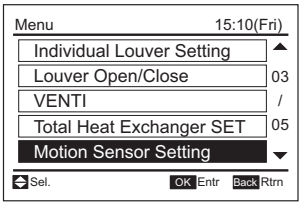
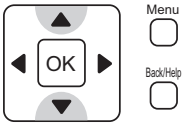
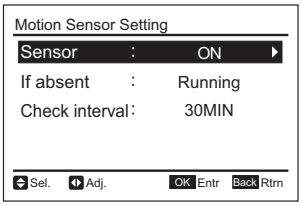
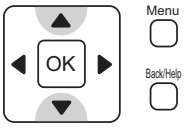
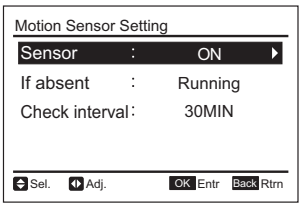
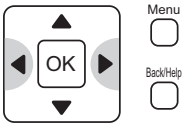
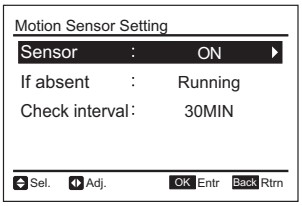
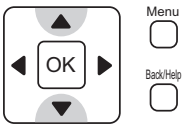
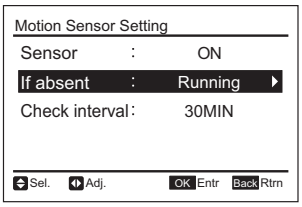
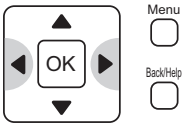
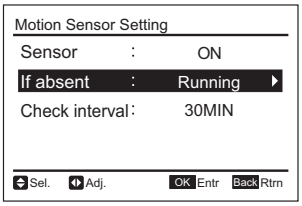
The motion sensor control automatically adjusts the following functions depending on a situation.

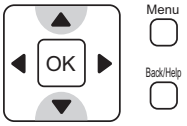
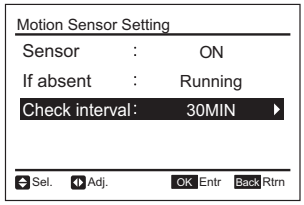
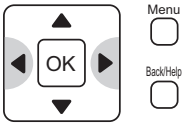
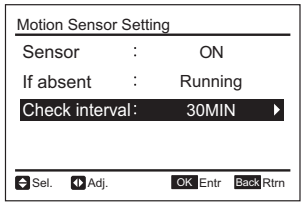
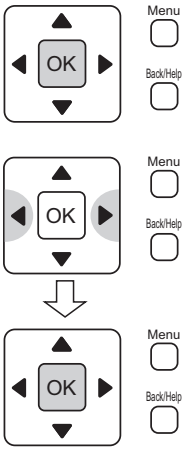
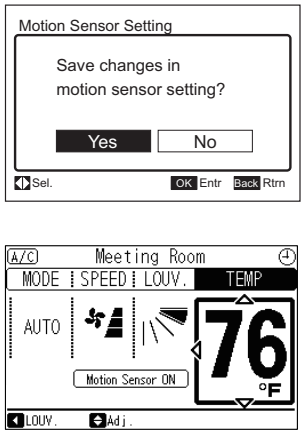
* Setting Temperature:
  The temperature is adjusted 2°F or 3°F (1°C or 2°C) for saving capacity.
* Airflow Volume:
  The airflow volume is adjusted to lower one volume or to “Slo” (except during the dry operation).
* Airflow Direction:
  The airflow direction is adjusted to horizontal.

5.8.3 Descriptions for Setting Functions

- Motion Sensor Setting
  * ON: The operating control function by the motion sensor is activated.
  * OFF: The operating control function by the motion sensor is not activated.
  (The default setting is “ON”.)
- If Absent
  The operation mode for activations can be selected from “Running”, “Stand-by”, or “Stop” on the wired controller. It is set for the indoor unit operation after the motion sensor detects as an absence for set time in “Check Interval”.
  * Running:
    The operation is continued with saving capacity after detected as an absence.
    If human activity is detected over a period of time, the normal operation is performed again.
  * Stand-by:
    The operation mode is the fan operating at “Slow” speed. If human activity or occupancy is detected for a period of time, the normal operation is performed again.
  * Stop:
    The operation is stopped by the wired controller when all the indoor units with motion sensor kits detect an absence of activity and are connected with the same wired controller. If human activity is detected for a period of time by the stoppage, the normal operation is performed again.
- Check Interval
  When the motion sensor kit detects an absence at selected check time interval, the function “If absent” (Function 1) is executed. The interval can be selected from choices ranging from: 30, 60, 90, 120, or 180 minutes.
  (The default setting is 30 minutes.)

5.8.4 Setting the Motion Sensor

1	Press “Menu”. Select “Motion Sensor Setting” from the menu by pressing “△” or “▽” and press “OK”.		
2	"Motion Sensor Setting” is displayed. The highlighted item changes to “Sensor”, “If absent”, and “Check interval” by pressing “△” or “▽”. • To set “Sensor”, go to procedure "3" below. • To set “If absent”, go to procedure "5" below. • To set “Check interval”, go to procedure "7" below.		
3	Press “△” or “▽” and select “Sensor”.		
4	The display is switched “ON” and “OFF” in order by pressing “◁” or “▷” to change the setting. If other settings are not required, go to procedure "9".		
5	Press “△” or “▽” and select “If absent”.		
6	The display changes to “Running”, “Stand-by” and “Stop” in order by pressing “◁” or “▷” to change the setting. If other settings are not required, go to procedure "9".		

7	Press “△” or “▽” and select “Check interval”.		
8	The intervals are displayed: “30MIN”, “60MIN”, “90MIN”, “120MIN”, and “180MIN” in order by pressing “◁” or “▷” to change the setting. If other settings are not required, go to procedure "9" below.		
9	Press “OK” after the setting is made. The confirmation screen is displayed. Select “Yes” by pressing “◁” or “▷” and press “OK”. The motion sensor setting is confirmed and the screen returns to normal mode (operation mode indicator).		

NOTICE

If more than two controllers are utilized, setting of the motion sensor is available by simply using the main controller only.

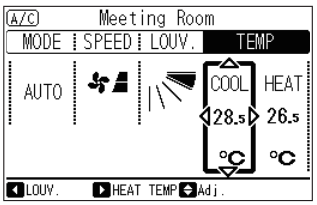
An automatic heating/cooling operation and setback operation requires extra settings.
Contact your distributor or contractor for details.

5.9 Automatic Heating/Cooling Operation

In case dual setpoint is selected in automatic heating/cooling operation, during auto mode both cooling setpoint and heating setpoint can be selected.

By default, temperature when the heating/cooling mode changes are as follows.
Cooling mode changes to heating mode when the indoor temperature is heating setpoint -2°F (-1°C).
Heating mode changes to cooling mode when the indoor temperature is cooling setpoint +2°F (+1°C).

If the temperature for changing modes requires to be changed, contact your distributor or contractor for details.



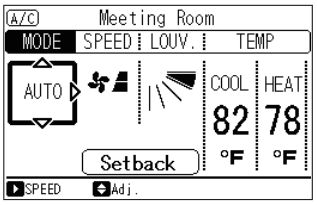
NOTE:
In case of Celsius Indication.

5.10 Setback Operation

If the setback operation is enabled and the card key is removed, the louver starts to open in approximately 5 seconds, the setpoint is adjusted for setback, and the fan operates at “Low” speed.
During this time, “Setback” is displayed on the LCD.

By default,
Cooling: Setpoint +4°F (+2.5°C)
Heating: Setpoint -4°F (-2.5°C)

If the adjustment for setback operation must be changed, contact your distributor or contractor for details.



NOTE:
In case of Fahrenheit Indication.

6. Automatic Control

This air conditioning unit automatically starts the following operations based on conditions.

The system is equipped with the following functions:

Three-Minute Guard		**Enforced Stoppage:** The compressor remains OFF for at least three minutes once it has stopped. If the system is restarted within approximately three minutes after it has stopped, the RUN indicator is activated. However, the cooling operation or the heating operation remains OFF and does not start until after three minutes have elapsed. **Enforced Operation:** If all indoor units of a system are Thermo-OFF* within approximately three minutes after the compressor has started, compressor operate continuously during those three minutes. However, if all indoor units of a system are stopped by a controller, the compressor is stopped.
Cooling and Dry	Frost Prevention	When the indoor unit is operating at a low discharge air temperature, the cooling operation may be changed to a fan operation for a while to avoid frost formation on the indoor heat exchanger.
	Self-Cleaning of Expansion Valve	Self-cleaning of the electronic expansion valve when the operation is stopped at cooling. The sound of refrigerant flows may be heard from the indoor unit during the self-cleaning. However, it is not abnormal.
Heating	Hot Start	To prevent cold air discharge into a heated space, the fan speed is controlled from the SLOW / LOW setting and then to a set position based on discharge air temperature. At this time, the louver is in a fixed horizontal position and “HOT START” is displayed on the LCD of the wired controller.
	Defrosting Operation	The indoor unit fan operation is stopped to prevent cold air discharge during the defrosting operation. At this time, the message “HOT-START” is displayed on the LCD of the wired controller and the indoor unit fan louver angle is fixed horizontally.
	Residual Heat Removal	When the heating operation is stopped, indoor fan operation may remain at the slow speed for a maximum of two minutes to lower the internal temperature of the indoor unit.
	Prevention of Overload Operation	When the outdoor temperature is high (approximately 70°F (21°C) or more) during heating operation, the operation is stopped by activation of the outdoor thermistor.

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

NOTE

- This air conditioning unit adopts a hot air circulation system for the heating operation.
- Any oversized room with a low ambient air temperature requires an extended amount of time to warm up. Once the air temperature gets to the required temperature setpoint, the display “HOT START” is turned OFF.
- The indication “HOT-START” may be displayed during, or right after, the defrosting operation. Activating the hot start operation prevents cold drafts. This is NOT abnormal.

7. Maintenance

⚠WARNING

- Turn OFF the power source before maintenance work. If the power source is not turned off, it may cause a fire or an electric shock.
- Perform the maintenance work with a stable foothold or foundation. This may prevent falling or injury.

⚠CAUTION

- Hold the air filter and the air inlet grille firmly by hand when attaching or removing it. Not doing so may cause the unit to fall, resulting in serious injury.

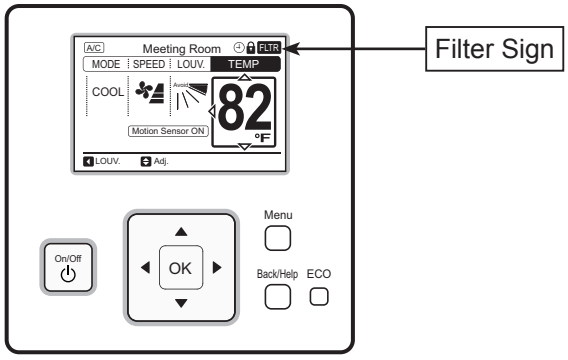
NOTICE

- Use light pressure with a clean soft cloth when cleaning the lens of the motion sensor. The surface material of the lens is easily scratched, or blemished, and can result in degraded performance of the sensor.

7.1 Maintenance

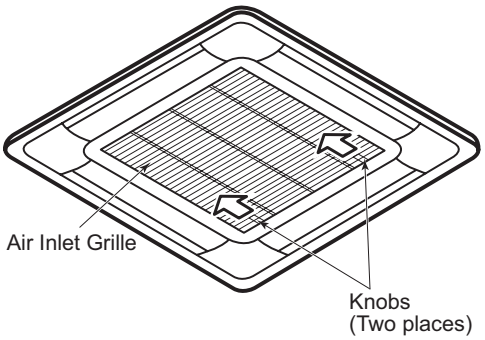
7.1.1 Cleaning Air Filter

Clean the air filter when the filter sign is ON.



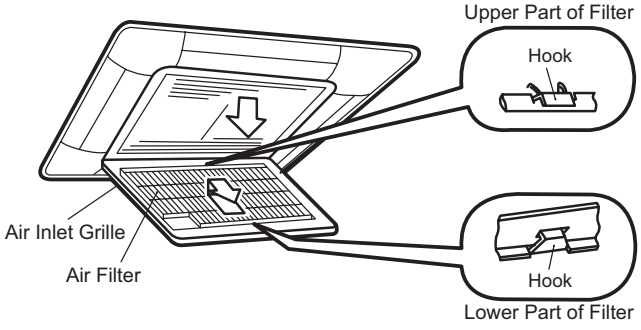
(1) Open the air inlet grille.

Slide the knobs on both sides of the air inlet grille in the direction of the arrows as shown and open the air inlet grille.



(2) Remove the air filter.

Support the underside of the air inlet grille as shown. Unhook the filter from the air inlet grille and remove the air filter.



(3) Clean the air filter.

- Vacuum dust off with a hand-held vacuum cleaner, or wash the air filter with water or a neutral detergent.
- Dry the air filter in a shaded area.

NOTE

- Do not use water warmer than 122°F (50°C). Filter elements can be damaged.
- Do not dry the air filter by holding it over open flame, with a hair dryer, or any type of heating device. Filter elements can be damaged by heat.

(4) Install the air filter.

After the air filter is dried, install it in the reverse order from what is shown procedure "2".

(5) Close the air inlet grille.

NOTE

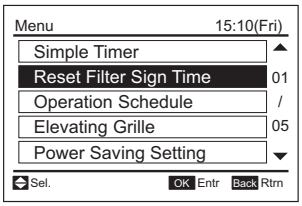
- Be sure to install the air filter.
  Operating the indoor unit without a filter installed will cause serious damage and breakdown.
- Make sure that the air inlet grille is securely locked in place by the knobs. If not properly secured, it could swing open and strike someone below and cause injuries.

(6) Reset the filter sign.

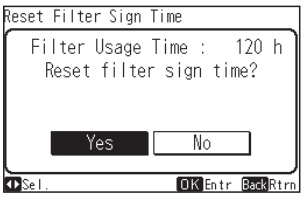
NOTE

If the accumulated operation time is shorter than that indicated by the filter sign setting, the icon "☒" activates and "Setting Disabled" is displayed.

- Press "Menu".
  Select "Reset Filter Sign Time" from the menu and press "OK".



- The confirmation screen is displayed.
  Select "Yes" by pressing "◁" or "▷" and press "OK".
  The "FLTR" indication is turned OFF and the screen returns to normal mode.



7.1.2 Removing, Cleaning and Attaching Air Inlet Grille

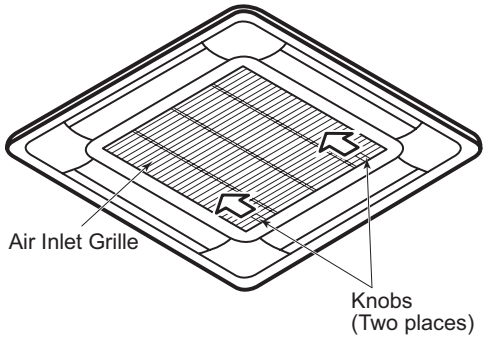
System/equipment maintenance is recommended every six months. This timeline could be less (monthly) depending on the environment where the equipment is installed.
Wipe down the decorative panel with a soft cloth soaked in lukewarm water and wrung out.

NOTICE

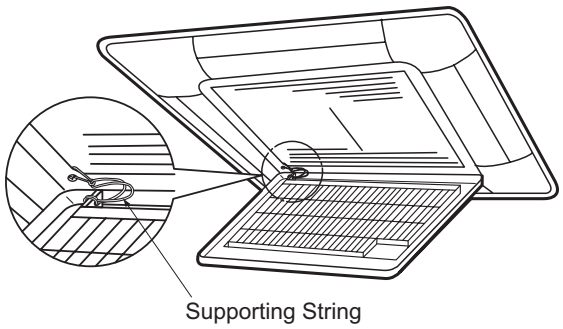
- Gently wipe down using only a clean soft cloth. Avoid the use of benzene type thinners or chemical detergents and abrasives as cleaning agents which damages the finish of outer plastic surfaces and louvers. Avoid using excessive force when cleaning these surfaces as they can be easily damaged.

The air inlet grille can be removed and cleaned.

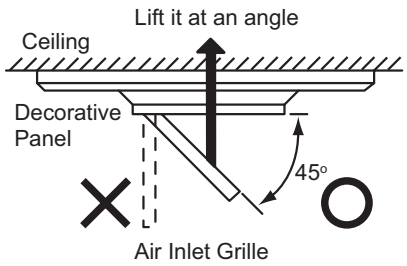
(1) Open the air inlet grille.
While sliding the knobs on both sides of the air inlet grille in the arrow direction, open the air inlet grille.



(2) Remove the air inlet grille.
- Unhook the supporting string from the decorative panel.



- Open the air inlet grille at an approximately 45° angle from the decorative panel surface.
- Tilt the air inlet grille and lift it up to remove it.



NOTE:
Although the air inlet grille can be opened up to 90°, it cannot be removed from the decorative panel at that angle. Tilt it to a 45° angle when removing it.

(3) Clean the air inlet grille.
(4) Reattach the air inlet grille.
Reattach in reverse order.

7.2 Maintenance Before and After Use

Before Use

- Remove any obstacles around the air inlet grilles and the air outlet of both the indoor and outdoor units.
- Check that the air filter is not clogged with dust and dirt.

After Use

- Clean the air filter, the air inlet grille and the decorative panel.

8. Troubleshooting

8.1 These are Normal

Event		Cause
Operation Stopped	All indicator LEDs on the wired controller are turned OFF.	The microprocessor is activated to protect the device from electromagnetic interference (EMI). Restart the operation.
	"Motion Sensor ON" is turned ON on the wired controller.	The operation has stopped automatically because the motion sensor is set as "If absent: Stop". It detected an absence of motion for a period of time. (All indoor units connected to the same controller are stopped.)
	After Power Failure	Restart the operation. If the instantaneous power failure is within two seconds, the operation restarts automatically.
White Steam from Indoor Unit	During Heating Operation	Dust that accumulated over time on the evaporative coil of the indoor unit is pushed into the occupied space, which could generate white steam coming out of the discharge side of the indoor unit.
White Smoke from Indoor Unit	At Beginning of Heating Season	This might occur when dust attached to the heat exchanger has dried.
Mist from Indoor Unit	In Restaurant or Kitchen	This can occur when oily residue coats the fins and heat exchanger efficiency is degraded.
	During Dry Operation	This might occur due to the air outlet temperature decreasing. Change the operation mode.
	During Cooling Operation in Humid Environment	This might occur due to the air outlet temperature decreasing. Raise the set temperature and airflow volume.
Odor from Indoor Unit	Odors Emanating from Indoor Unit Air Discharge	The intake of cigarette smoke is the likely reason, with nicotine deposits coating or clogging the cells and surfaces of the air filter. Ventilate the unit well in fan mode and clean the air filter, the air outlet and air inlet grill.
Sound from Indoor Unit	Grating sound is heard when starting or stopping the operation.	This is the sound made when the components are rubbing up against one another due to expansion and contraction of plastic formed parts brought on by temperature change.
	Sound of water flowing or bubbling is heard during the operation.	This is the sound made when the refrigerant flows or the drain-up mechanism drains water. The sound may be heard especially when starting the operation or stopping the compressor (for approximately three minutes).
	Growling sound may be heard temporarily right after the airflow volume is changed.	It is generated because the fan motor makes a temporary sound with change of fan speed.
Condensation on Decorative Panel	Condensation on Decorative Panel or Cabinet	This might occur when the operation is performed in a humid environment over a prolonged period of time (relative humidity around 80%).
Temperature Irregularity	Airflow volume and temperature irregularities exist for each outlet.	This might occur for structural reasons, such as the size of an air outlet and the location of heat exchanger.
"HOT-START" on LCD Illuminated (ON)		This might occur according to the operation mode or operational conditions.
Operation Mode on LCD Flashing		

8.2 Before Contact

Check these problems before contacting a contractor.

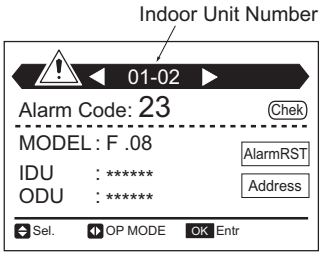
Problem		Checking Point	Action
Operation Unavailable		Check that the main power source is turned ON.	Turn ON the power at the main power source for the air conditioner.
		Check that the fuse is not blown or the circuit breaker from the main power source is not tripped.	Replace the fuse or reset the circuit breaker. If the problem recurs, contact your contractor or distributor.
Immediate shutdown after start-up	Cooling	Check that the air inlet and outlet for the outdoor unit are not obstructed.	Remove objects obstructing the air inlet and outlet.
	Heating	Check if there are any obstacles impeding the airflow near the air inlet and outlet of the outdoor unit.	Remove any obstacles obstructing airflow.
		Check that the outlet air is not redirected into the air inlet.	
Insufficient Cooling or Heating		Check that the operation mode is appropriate.	If the fan mode is selected, switch the operation mode to cooling/heating.
		Check that the set temperature is appropriate.	If not, change the temperature setting by pressing "△" or "▽" with the wired controller.
		Check that the airflow direction is appropriate.	If not, change the airflow direction. If the room is not heated well during the heating operation, change the louver downward.
		Check that the air filter is not clogged.	Clean the air filter.
		Verify that there are no open windows and doors.	Close windows and doors.
		Check that there are no obstacles impeding airflow near the air inlet and outlet for both indoor and outdoor units.	Remove the obstacles.

8.3 Contact Distributor

If trouble still persists, even after checking off previously listed items or detecting problems not mentioned in the previous pages, stop using this product and call your distributor or contractor immediately.

⚠ WARNING

If there is any perceived abnormality present (noises or odors associated with electrical short, fire, or burning elements), shut down immediately and shut OFF at the main power source. Contact your distributor or contractor without delay.

Problem	Action before Contact
Protection devices (fuses, breakers, and GFCIs) activate frequently or the operation switch does not work.	Turn OFF the power source.
Water leakage from the indoor unit.	Stop the operation.
"Motion Sensor ON" is flashing.	There is a possibility of malfunction of the motion sensor. Make the setting of motion sensor and “Floor HEAT Control” invalid and contact your distributor. In that case, after the LCD of the wired controller display disappears and until service is finished, the unit is operable.
● The RUN indicator (red) is flashing. ● The indoor unit number, alarm code, unit model code, and the number of connected indoor units are displayed on the LCD. ● If multiple indoor units are connected to one controller, the above abnormality information for each indoor unit is displayed individually. Check the details on the LCD and contact your distributor. 	Refer to Section 8.4, the alarm code table. Contact your distributor and advise of the alarm code details indicated on the LCD of the wired controller.

Provide the following information when contacting your distributor.

1) Unit model.
2) Symptoms and nature of the problem.
3) Number of the alarm code or any flashing indicator on the LCD.

8.4 Alarm Codes

Code	Category	Content of Abnormality
01	Indoor Unit	Activation of Protection Device
02	Outdoor Unit	Activation of Protection Device (High Pressure Cut)
03	Communication	Operational Irregularities between Indoor and Outdoor
04		Problem between Inverter PCB and Outdoor PCB
05	Supply Phase	Problem of Power Source Phases
06	Voltage	Abnormal Voltage Drop in Outdoor Unit
07	Cycle	Decrease in Superheated Discharge Gas
08		Increase in Discharge Gas Temperature
09	Outdoor Unit	Activation of Protection Device for Outdoor Fan
11	Sensor on Indoor Unit	Inlet Air Thermistor Failure
12		Outlet Air Thermistor Failure
13		Freeze Protection Thermistor Failure
14		Gas Piping Thermistor Failure
19	Fan Motor	Activation of Protection Device for Indoor Fan
20	Sensor on Outdoor Unit	Compressor Thermistor Failure
21		High Pressure Sensor Failure
22		Outdoor Air Thermistor Failure
23		Discharge Gas Thermistor Failure
24		Evaporating Thermistor Failure
29		Low Pressure Sensor Failure
31	System	Incorrect Capacity Setting of Outdoor Unit and Indoor Unit
32		Incorrect Setting of Other Indoor Unit Number

Code	Category	Content of Abnormality
35	System	Incorrect Setting of Indoor Unit No.
36		Incorrect Indoor Unit Combination
38		Problem with Protective Pickup Circuit in Outdoor Unit
39	Compressor	Problem with Running Current at Constant Speed Compressor
41	Pressure	Overload Cooling
42		Overload Heating
43	Protection Device	Activation of Pressure Ratio Decrease Protection Device
44		Activation of Low Pressure Decrease Protection Device
45		Activation of Low Pressure Increase Protection Device
46		Activation of High Pressure Increase Protection Device
47		Activation of High Pressure Decrease Protection Device
48		Activation of Overcurrent Protection Device
51	Inverter	Problem with Inverter Current Sensor
52		Activation of Inverter Overcurrent Protection
53		Activation of Transistor Module Protection
54		Abnormality of Inverter Fin Temperature
56	Outdoor Fan	Abnormality of Detection for Fan Motor Position
57		Activation of Fan Controller Protection
58		Abnormality of Fan Controller
b0	System	Incorrect Setting of Unit Capacity
b1		Incorrect Setting of Unit and Refrigerant System No.
EE	Compressor	Compressor Protection Alarm

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