

**SAMSUNG**

AC\*\*\*JXADCH  
AC\*\*\*KXADCH

# Air Conditioner installation manual

imagine the possibilities

Thank you for purchasing this Samsung product.



EN ES FR PT DB68-05138A-07

**SAMSUNG**

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# Safety precautions

## **WARNING**

### State of California Proposition 65 Warning (US only)

This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Carefully follow the precautions listed below because they are essential to guarantee the safety of the equipment.

## **WARNING**

- Always disconnect the air conditioner from the power supply before servicing it or accessing its internal components.
- Verify that installation and testing operations are performed by qualified personnel.
- Verify that the air conditioner is not installed in an easily accessible area.

## General information

- ▶ Carefully read the content of this manual before installing the air conditioner and store the manual in a safe place in order to be able to use it as reference after installation.
- ▶ For maximum safety, installers should always carefully read the following warnings.
- ▶ Store the operation and installation manual in a safe location and remember to hand it over to the new owner if the air conditioner is sold or transferred.
- ▶ This manual explains how to install an indoor unit with a split system with two SAMSUNG units. The use of other types of units with different control systems may damage the units and invalidate the warranty. The manufacturer shall not be responsible for damages arising from the use of non compliant units.
- ▶ The manufacturer shall not be responsible for damage originating from unauthorized changes or the improper connection of electric and requirements set forth in the "Operating limits" table, included in the manual, shall immediately invalidate the warranty.
- ▶ The air conditioner should be used only for the applications for which it has been designed: the indoor unit is not suitable to be installed in areas used for laundry.
- ▶ Do not use the units if damaged. If problems occur, switch the unit off and disconnect it from the power supply.
- ▶ In order to prevent electric shocks, fires or injuries, always stop the unit, disable the protection switch and contact SAMSUNG's technical support if the unit produces smoke, if the power cable is hot or damaged or if the unit is very noisy.
- ▶ Always remember to inspect the unit, electric connections, refrigerant tubes and protections regularly. These operations should be performed by qualified personnel only.
- ▶ The unit contains moving parts, which should always be kept out of the reach of children.
- ▶ Do not attempt to repair, move, alter or reinstall the unit. If performed by unauthorized personnel, these operations may cause electric shocks or fires.
- ▶ Do not place containers with liquids or other objects on the unit.
- ▶ All the materials used for the manufacture and packaging of the air conditioner are recyclable.
- ▶ The packing material and exhaust batteries of the remote controller(optional) must be disposed of in accordance with current laws.
- ▶ The air conditioner contains a refrigerant that has to be disposed of as special waste. At the end of its life cycle, the air conditioner must be disposed of in authorized centers or returned to the retailer so that it can be disposed of correctly and safely.
- ▶ This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

# Safety precautions

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## Installing the unit

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- ▶ **IMPORTANT:** When installing the unit, always remember to connect first the refrigerant tubes, then the electrical lines. Always disassemble the electric lines before the refrigerant tubes.
- ▶ Upon receipt, inspect the product to verify that it has not been damaged during transport. If the product appears damaged, **DO NOT INSTALL** it and immediately report the damage to the carrier or retailer (if the installer or the authorized technician has collected the material from the retailer.)
- ▶ After completing the installation, always carry out a functional test and provide the instructions on how to operate the air conditioner to the user.
- ▶ Do not use the air conditioner in environments with hazardous substances or close to equipment that release free flames to avoid the occurrence of fires, explosions or injuries.
- ▶ Our units should be installed in compliance with the spaces shown in the installation manual, to ensure accessibility from both sides and allow repairs or maintenance operations to be carried out. The unit's components should be accessible and easy to disassemble without endangering people and objects.
- ▶ For this reason, when provisions of the installation manual are not complied with, the cost required to access and repair the units (in **SAFETY CONDITIONS**, as set out in prevailing regulations) with harnesses, ladders, scaffolding or any other elevation system will **NOT** be considered part of the warranty and will be charged to the end customer.
- ▶ If you operate the cooling operation of air conditioner in the condition that ambient temperature is lower than 23 °F DB(Dry bulb), a wind baffle should be installed to protect the compressor of the outdoor unit.

## Power supply line, fuse or circuit breaker

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- ▶ Always make sure that the power supply is compliant with current safety standards. Always install the air conditioner in compliance with current local safety standards.
- ▶ Always verify that a suitable grounding connection is available.
- ▶ Verify that the voltage and frequency of the power supply comply with the specifications and that the installed power is sufficient to ensure the operation of any other domestic appliance connected to the same electric lines.
- ▶ Always verify that the cut-off and protection switches are suitably dimensioned.
- ▶ Verify that the air conditioner is connected to the power supply in accordance with the instructions provided in the wiring diagram included in the manual.
- ▶ Always verify that electric connections (cable entry, section of leads, protections...) are compliant with the electric specifications and with the instructions provided in the wiring scheme. Always verify that all connections comply with the standards applicable to the installation of air conditioners.
- ▶ Devices disconnected from the power supply should be completely disconnected in the condition of overvoltage category.
- ▶ Be sure not to perform power cable modification, extension wiring, and multiple wire connection.
  - It may cause electric shock or fire due to poor connection, poor insulation, or current limit override.
  - When extension wiring is required due to power line damage, refer to "Extending the power cable" in the installation manual.

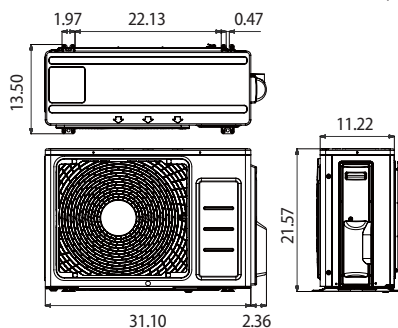
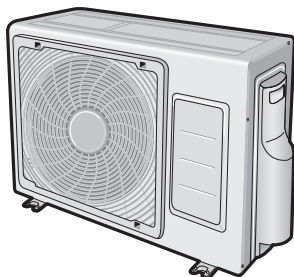
# Preparation for outdoor unit installation

The air conditioner uses R-410A refrigerant.

**A Type:** AC009KXADCH/ AC012KXADCH

Heat pump

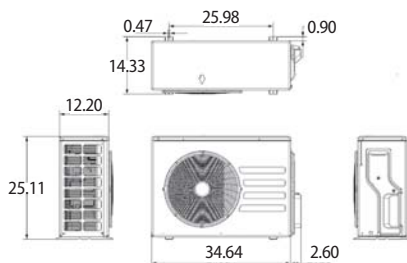
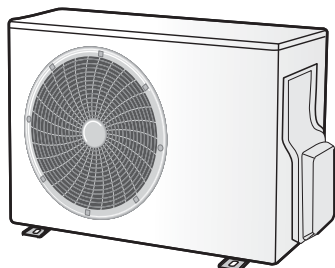
(Unit : inch)



**B Type:** AC018JXADCH/ AC018KXADCH

Heat pump

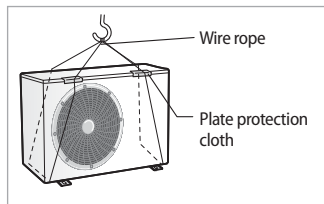
(Unit : inch)



## Moving the Outdoor Unit by Wire Rope

Fasten the outdoor unit by two 26.2 ft or longer wire ropes as shown at the figure. To prevent from damage or scratches, insert a piece of cloth between the outdoor unit and rope, then move the unit.

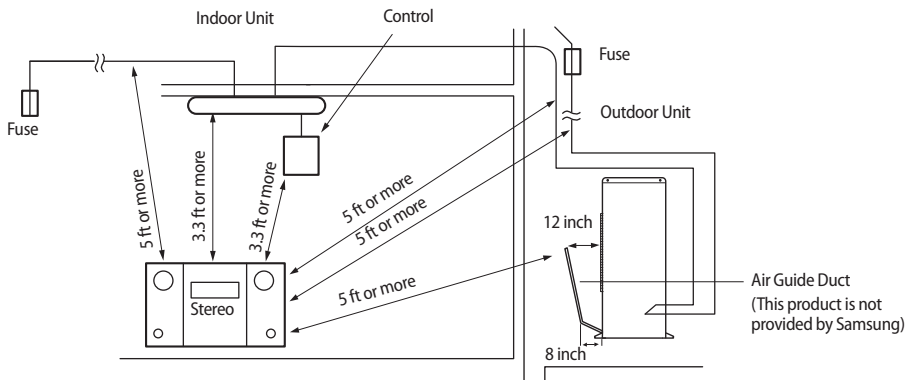
\* The appearance of the unit may be different from the picture depending on the model.



# Deciding on where to install the outdoor unit

## Outdoor Unit

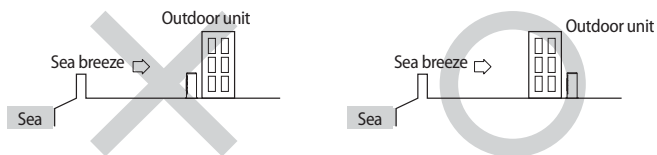
- ▶ The outdoor unit must not be placed on its side or upside down, as the compressor lubrication oil will run into the cooling circuit and seriously damage the unit.
- ▶ Choose a location that is dry and sunny, but not exposed to direct sunlight or strong winds.
- ▶ Do not block any passageways or thoroughfares.
- ▶ Choose a location where the noise of the air conditioner when running and the discharged air do not disturb any neighbours.
- ▶ Choose a position that enables the pipes and cables to be easily connected to the indoor unit.
- ▶ Install the outdoor unit on a flat, stable surface that can support its weight and does not generate any unnecessary noise and vibration.
- ▶ Position the outdoor unit so that the air flow is directed towards the open area.
- ▶ Maintain sufficient clearance around the outdoor unit, especially from a radio, computer, stereo system, etc.



- ▶ If the outdoor unit is installed at a height, ensure that its base is firmly fixed in position.
- ▶ Make sure that the water dripping from the drain hose runs away correctly and safely.
- ▶ When you install the outdoor unit at wayside, you should install it above 6.6 ft height or make sure that the heat from the outdoor unit shouldn't be in direct contact with passersby. (The ground for application :The revision of regulation for facility in building by the law of the Ministry of Construction and Transportation.

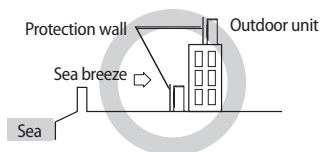
- When installing the outdoor unit near seashore, make sure it is not directly exposed to sea breeze. If you can not find a adequate place without direct sea breeze, protection wall should be constructed.

- Install the outdoor unit in a place (such as near buildings etc.) where it can be prevented from sea breeze which can damage the outdoor unit.



- If you cannot avoid installing the outdoor unit by the seashore, construct a protection wall around to block the sea breeze.

Protection wall should be constructed with a solid material such as concrete to block the sea breeze and the height and the width of the wall should be 1.5 times larger than the size of the outdoor unit. Also, secure over 27.6 inch between the protection wall and the outdoor unit for exhausted air to ventilate.



- Install the outdoor unit in a place where water can drain smoothly.
- If you cannot find a place satisfying above conditions, please contact manufacturer. Make sure to clean the sea water and the dust on the outdoor unit heat exchanger and spread corrosion inhibitor on heat exchanger. (At least one time per one year.)



CAUTION

- You have just purchased a system air conditioner and it has been installed by your installation specialist.
- This device must be installed according to the national electrical rules.
- With an outdoor unit having net weight upper than 132.2 lb, we suggest do not install it suspended on wall, but considering floor standing one.
- When the outdoor unit is installed near seashore or in a place where sulfuric acid gas may leak, corrosion may occur in outdoor unit and cause product malfunction.

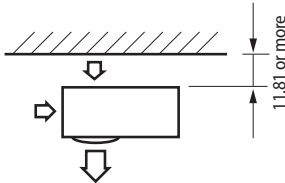


# Deciding on where to install the outdoor unit

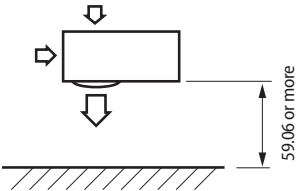
## Space Requirements for Outdoor Unit

### When installing 1 outdoor unit

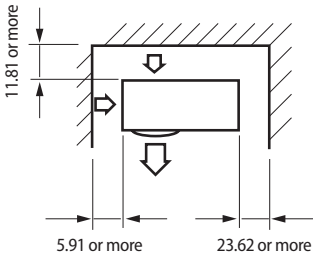
(Unit : inch)



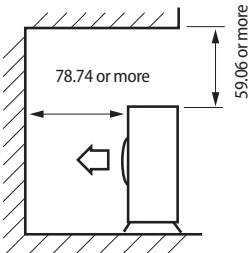
\* When the air outlet is opposite the wall



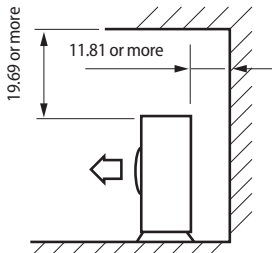
\* When the air outlet is towards the wall



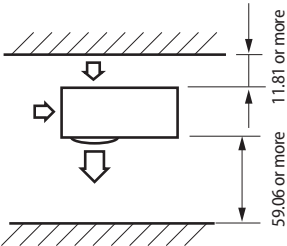
\* When 3 sides of the outdoor unit are blocked by the wall



\* The upper part of the outdoor unit and the air outlet is towards the wall



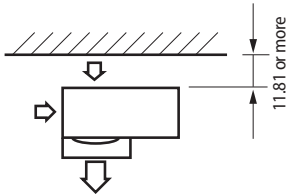
\* The upper part of the outdoor unit and the air outlet is opposite the wall



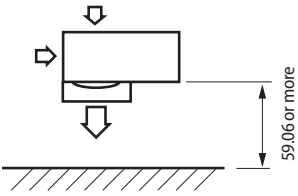
\* When front and rear side of the outdoor unit is towards the wall

When installing 1 outdoor unit (with wind baffle)

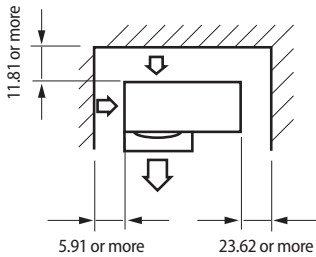
(Unit : inch)



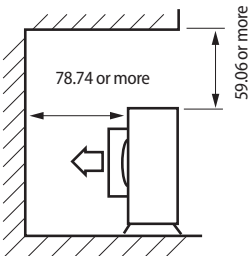
\* When the air outlet is opposite the wall



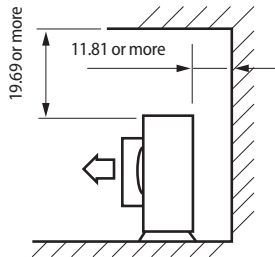
\* When the air outlet is towards the wall



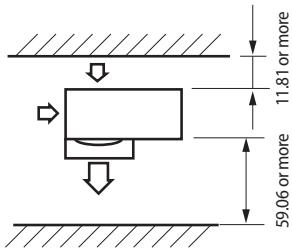
\* When 3 sides of the outdoor unit are blocked by the wall



\* The upper part of the outdoor unit and the air outlet is towards the wall



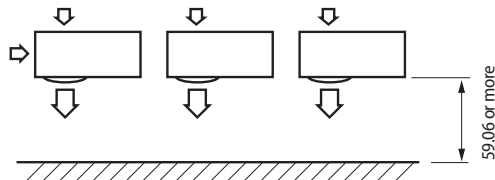
\* The upper part of the outdoor unit and the air outlet is opposite the wall



\* When front and rear side of the outdoor unit is towards the wall

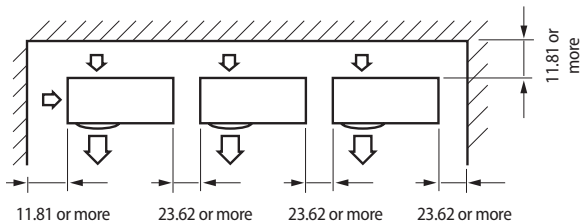
When installing more than 1 outdoor unit

(Unit : inch)

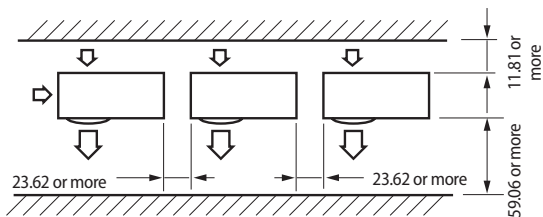


\* When the air outlet is towards the wall

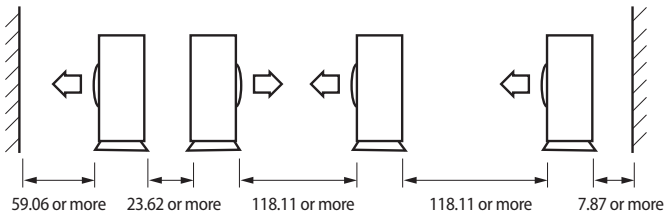
# Deciding on where to install the outdoor unit



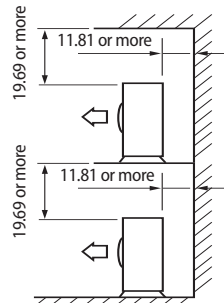
\* When 3 sides of the outdoor unit are blocked by the wall



\* When front and rear side of the outdoor unit is towards the wall



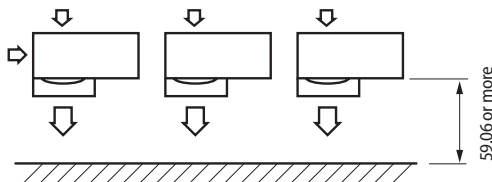
\* When front and rear side of the outdoor unit is towards the wall.



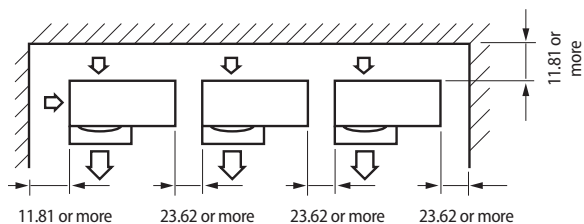
\* The upper part of the outdoor unit and the air outlet is towards the wall

## When installing more than 1 outdoor unit (with wind baffle)

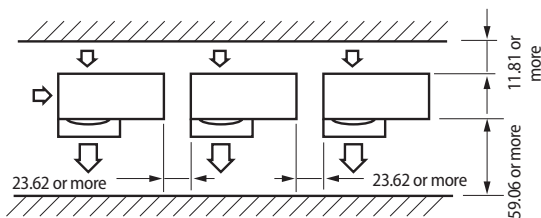
(Unit : inch)



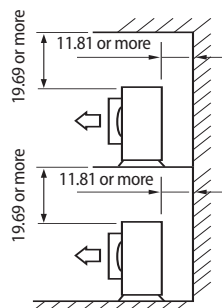
\* When the air outlet is towards the wall



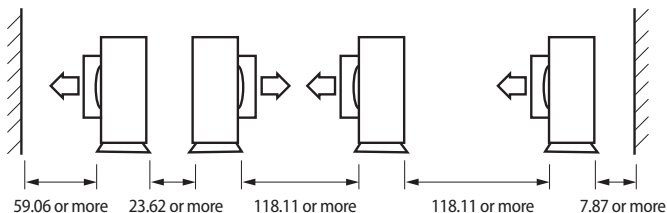
\* When 3 sides of the outdoor unit are blocked by the wall



\* When front and rear side of the outdoor unit is towards the wall



\* The upper part of the outdoor unit and the air outlet is towards the wall



\* When 3 sides of the outdoor unit are blocked by the wall



- The units must be installed according to distances declared, in order to permit accessibility from each side, either to guarantee correct operation of maintenance or repairing products.  
The unit's parts must be reachable and removable completely under safety condition (for people or things).

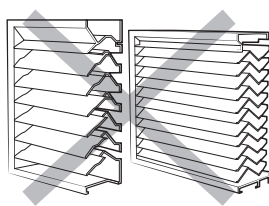


- Should adopt bar type louver. Don't use a type of rain resistance louver.

[Bar type louver]



[Rain resistance louver]



- Louver specifications.
  - Angle criteria : less than 20°
  - Opening ratio criteria : greater than 80%

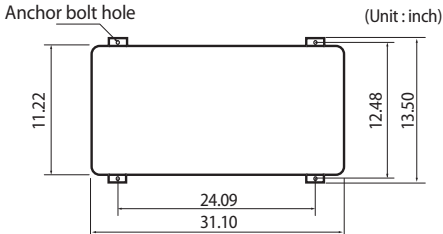
# Outdoor unit installation

The outdoor unit must be installed on a rigid and stable base to avoid any increase in the noise level and vibration, particularly if the outdoor unit is to be installed in a location exposed to strong winds or at a height, the unit must be fixed to an appropriate support (wall or ground).

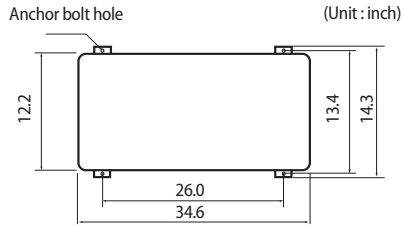
**Fix the outdoor unit with anchor bolts.**



- The anchor bolt must be 0.79 inch or higher from the base surface.



**A Type : AC009KXADCH/ AC012KXADCH**

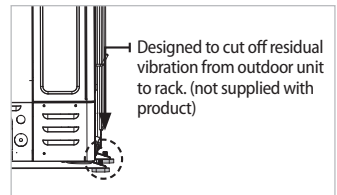
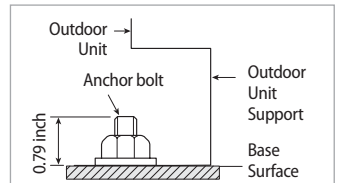
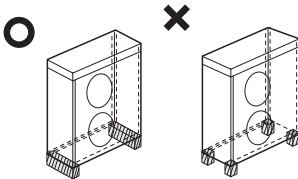


**B Type : AC018JXADCH/ AC018KXADCH**



- Make a drain outlet around the base for outdoor unit drainage.
- If the outdoor unit is installed on the roof, you have to check the ceiling strength and waterproof the unit.

## Outdoor Unit Support



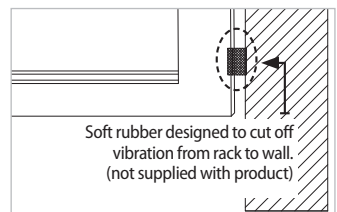
### OUTDOOR UNIT INSTALLED ON THE WALL BY RACK

- ▶ Ensure the wall will be able to suspend the weight of rack and outdoor unit ;
- ▶ Install the rack close to the column as much as possible ;
- ▶ Install proper grommet in order to reduce noise and residual vibration transferred by outdoor unit towards wall.



#### When installing air guide duct

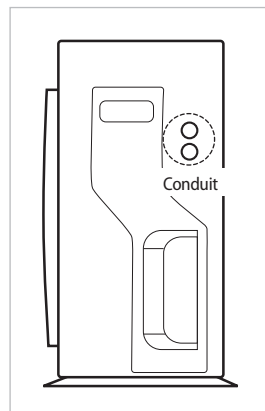
- Check and make sure that screws do not damage the copper pipe.
- Secure air guide duct on guard fan.



# Connecting the cable

**Two electronic cables must be connected to the outdoor unit.**

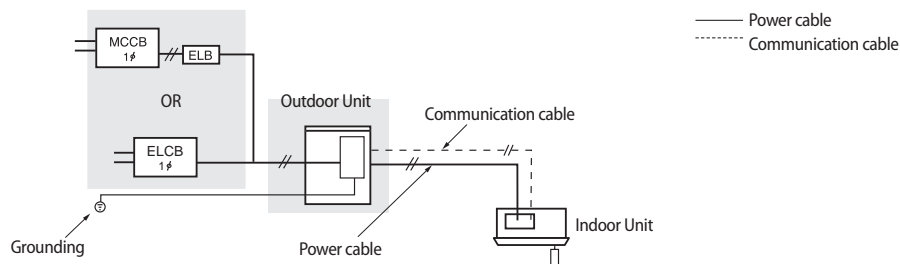
- ▶ The connection cord between indoor unit and outdoor unit.
- ▶ The power cable between outdoor unit and auxiliary circuit breaker.
- ▶ Be sure to run the power supply cable and the communication cable through electrical conduit as seen in the picture.
- ▶ Protect the power and communication cable using the protection tube individually.
- ▶ Make a knockout hole.
- ▶ After making a knockout hole, apply rust resisting paint around the hole.
- ▶ Secure the cable tube to the outdoor knockout using the CD connector and bushing.



- During the unit installation make first refrigerant connections and then electrical connections. If unit is uninstalled first disconnect electrical cables, then refrigerant connections.
- Connect the air conditioner to grounding system before performing the electrical connection.
- When installing the unit, you shouldn't use inter connection wire.

## Example of Air Conditioner System

### When using ELCB for 1 phase



# Connecting the cable

## Power Cable Specifications

- The power cable is not supplied with air conditioner.
  - Select the power supply cable in accordance with relevant local and national regulations.
  - Wire size must comply with the applicable local and national code.
  - Specifications for local wiring power cord and branch wiring are in compliance with local cord.

Model		Power Source	RLA	FLA		MCA	MOP
Outdoor	Indoor			Outdoor	Indoor		
AC018JXADCH/AA	AC018JN4DCH/AA	208~230V/60Hz	6.10 A	0.13 A	0.33 A	8.1	15
	AC018NN4DCH/AA	208~230V/60Hz	6.10 A	0.13 A	0.33 A	8.1	15
	AC018JNHDCH/AA	208~230V/60Hz	6.10 A	0.13 A	0.85 A	8.6	15
	AC018KN4DCH/AA	208~230V/60Hz	6.10 A	0.13 A	0.33 A	8.1	15
	AC018KNZDCH/AA	208~230V/60Hz	6.10 A	0.13 A	1.55 A	9.4	15
	AC018MNHADCH/AA	208~230V/60Hz	6.10 A	0.13 A	1.10 A	10.0	15
	AC018MNADCH/AA	208~230V/60Hz	6.10 A	0.13 A	0.70 A	10.0	15
AC009KXADCH/AA	AC009KNLDCH/AA	208~230V/60Hz	8.10 A	0.17 A	0.31 A	10.7	15
AC012KXADCH/AA	AC012KNLDCH/AA	208~230V/60Hz	8.10 A	0.17 A	0.31 A	10.7	15
	AC012MNADCH/AA	208~230V/60Hz	8.10 A	0.17 A	0.40 A	10.7	15
AC018KXADCH/AA	AC018KNLDCH/AA	208~230V/60Hz	9.70 A	0.17 A	0.38 A	12.7	20



1. RLA is based on AHRI 210/240 colling standard condition [Indoor temp. : 26.7 °C / 80 °F(DB) / 19.46 °C / 67 °F(WB), Outdoor temp. : 35 °C / 95 °F(DB)]
2. Voltage tolerance is  $\pm 10\%$ .
3. Maxium allowable voltage between phases is 2 %.

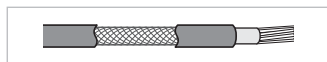
### Symbols

- RLA : Rated Load Ampere
- FLA : Full Load Ampere
- MCA : Minumum Circuit Ampere (A)
- MOP : Maximum Overcurrent Protective Device (A)

## Between Indoor unit and Outdoor unit Connection Cable Specifications(Common in use)

Power supply			Commuation Cable
Power supply	Max/Min(V)	Indoor Power Cable	
1Φ, 208~230V, 60Hz	$\pm 10\%$	0.0039 in <sup>2</sup> 1, 3wires	0.0011~0.0023 in <sup>2</sup> , 2wires

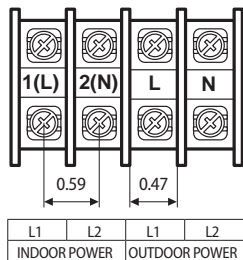
- Power supply cords of parts of appliances for outdoor use shall not be lighter than polychloroprene sheathed flexible cord. (Code designation IEC:60245 IEC 57 / CENELEC: H05RN-F or IEC:60245 IEC 66 / CENELEC: H07RN-F)



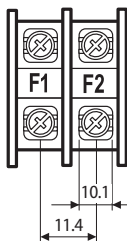
When installing the indoor unit in a computer room or net work room, use the double shielded (Tape aluminum / polyester braid + copper ) cable of FROHH2R type.

## 1-phase terminal block spec

AC power : M4 screw

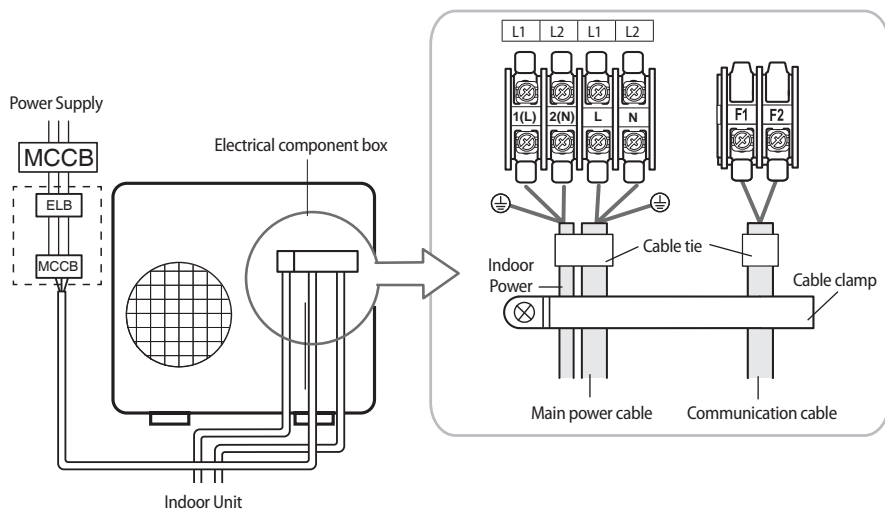


Communication : M4 screw



## Wiring Diagram of Power Cable

When using ELB for 1 phase



\* The appearance of the unit may be different from the picture depending on the model.



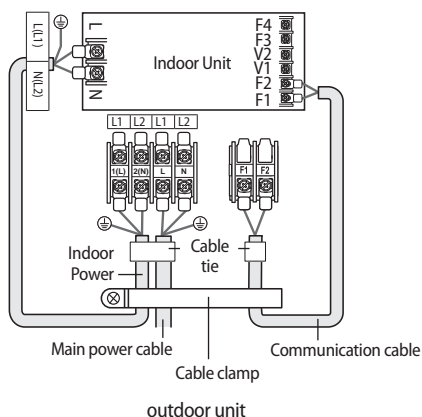
# Connecting the cable



- You should connect the power cable into the power cable terminal and fasten it with a clamp.
- The unbalanced power must be maintained within 2% of supply rating.
  - If the power is unbalanced greatly, it may shorten the life of the condenser. If the unbalanced power is exceeded over 4% of supply rating, the indoor unit is protected, stopped and the error mode indicates.
- To protect the product from water and possible shock, you should keep the power cable and the connection cord of the indoor and outdoor units within ducts. (with appropriate IP rating and material selection for your application)
- Ensure that main supply connection is made through a switch that disconnects all poles, with contact gap of at least 0.12 in.
- Devices disconnected from the power supply should be completely disconnected in the condition of overvoltage category.
- Keep distances of 1.97 in. or more between power cable and communication cable.

## Wiring Diagram of Connection Cord

### 1 phase

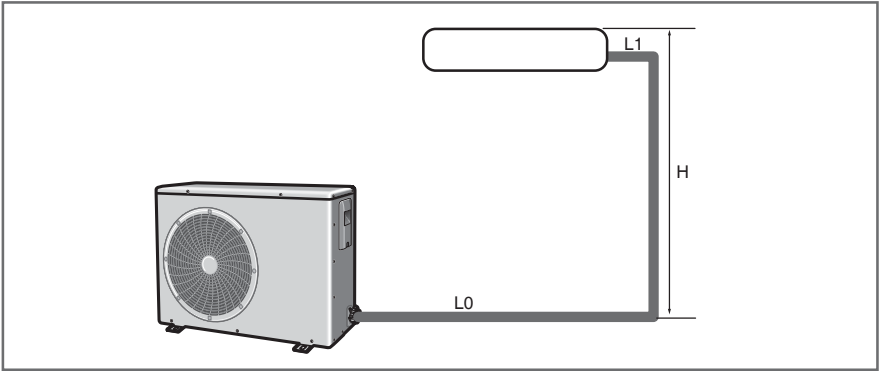


- Lay the electrical wiring so that the front cover does not rise up when doing wiring work and attach the front cover securely.
- Ground wire for the indoor unit and outdoor unit connection cable must be clamped to a soft copper tin-plated eyelet terminal with M4 screw hole (NOT SUPPLIED WITH UNIT ACCESSORIES).



# Connecting the refrigerant pipe

## Refrigerant piping system



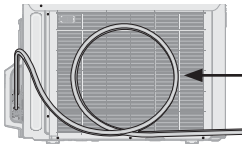
Refrigerant piping system table			Pipe length or height	
			AC009KXADCH AC012KXADCH	AC018JXADCH AC018KXADCH
Max. allowable length	Actual pipe length	$L_0 + H + L_1$	65.6 ft (20 m) or less	98.4 ft (30 m) or less
Allowable height length	Actual pipe length	H	49.2 ft (15 m) or less	65.6 ft (20 m) or less

### ► Temper grade and minimum thickness of the refrigerant pipe

Outer diameter [inch]	Minimum thickness [inch]	Temper grade
1/4	0.0276	C1220T-O
3/8	0.0276	
1/2	0.0315	
5/8	0.0394	
5/8	0.0315	C1220T-1/2H OR C1220T-H
3/4	0.0354	
7/8	0.0354	



- Make sure to use C1220T-1/2H (Semi-hard) pipe for more than 3/4 in. In case of using C1220T-O (Soft) pipe for 3/4 in., pipe may be broken, which can result in an injury.



Make at least one round:  
It will reduce noise and vibration

\* The appearance of the unit may be different from the diagram depending on the model.



- After connecting pipes with knock-out treatment, plug the space.
- Following the pipe connection, make sure to proceed precisely to prevent interference with the internal parts.

# Adding refrigerant (R-410A)

The outdoor unit is loaded with sufficient refrigerant for the standard piping. Thus, refrigerant must be added if the piping is lengthened. This operation can only be performed by a qualified refrigeration specialist. For quantity of adding refrigerant, refer to page 19.

1. Check that the stop valve is closed entirely.
2. Charge the refrigerant through the service port of liquid stop valve.

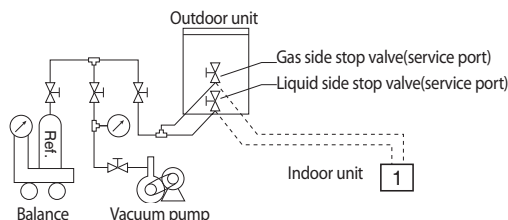


• Do not charge the refrigerant through the gas side service port.

3. If you cannot charge the refrigerant according to the upper steps, following these :
  - 1) Open both liquid stop valve and gas stop valve.
  - 2) Operate the air conditioner by pressing the K2 key on the outdoor unit PCB.
  - 3) About 30 minutes later, charge the refrigerant through the service port of gas stop valve.



• If necessary, refer to the pressure table classified by outdoor temperature.



## How to Calculate the Quantity of Adding Refrigerant

- ◆ The outdoor unit is loaded with sufficient R-410 A refrigerant for 24.6 ft(7.5 m) of piping.

If you have used more than "24.6 ft(7.5 m)", add "A" of refrigerant for extra meter.

The quantity of additional refrigerant is variable according to the installation situation. Thus, make sure the outdoor unit situation before adding refrigerant.

This operation can only be performed by a qualified refrigeration specialist.

Outdoor Unit	Pipe length [ft(m)]	"A" Unit amount of refrigerant [oz/ft(g/m)]
AC018JXADCH	24.6 ~ 98.4 (7.5 ~ 30)	0.108 (10)
AC009KXADCH	24.6 ~ 65.6 (7.5 ~ 20)	0.108 (10)
AC012KXADCH	24.6 ~ 65.6 (7.5 ~ 20)	0.108 (10)
AC018KXADCH	24.6 ~ 98.4 (7.5 ~ 30)	0.108 (10)

# Connecting up and removing air in the circuit



- When installing, make sure there is no leakage. When recovering the refrigerant, ground the compressor first before removing the connection pipe. If the refrigerant pipe is not properly connected and the compressor works with the service valve open, the pipe inhales the air and it makes the pressure inside of the refrigerant cycle abnormally high. It may cause explosion and injury.

The air in the indoor unit and in the pipe must be purged. If air remains in the refrigeration pipes, it will affect the compressor either reduce cooling/heating capacity or lead to a malfunction. Refrigerant for air purging is not charged in the outdoor unit. Use Vacuum Pump as shown at the right figure.

- Connect each assembly pipe to the appropriate valve on the outdoor unit and tighten the flare nut.
- Referring to the illustration opposite, tighten the flare nut on section B first manually and then with a torque wrench, applying the following torque.

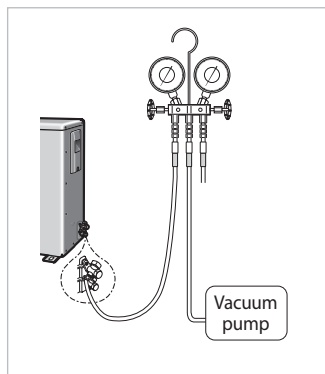
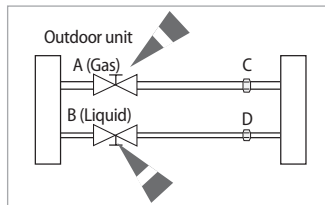
Outer Diameter (D)	Torque [N·m(lbf·ft)]
ø6.35 mm(1/4")	14~18(10.3~13.3)
ø9.52 mm(3/8")	34~42(25.1~31.0)
ø12.70 mm(1/2")	49~61(36.1~45.0)
ø15.88 mm(5/8")	68~82(50.2~60.5)
ø19.05 mm(3/4")	100~120(73.8~88.5)

- Connect the charging hose of low pressure side of manifold gauge to the packed valve having a service port as shown at the figure.



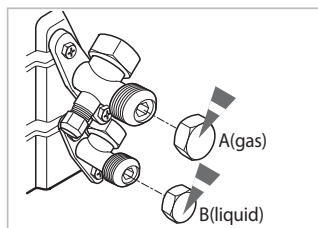
- Make the electrical connection and leave the system into "stand by mode". Do not turn on the system.
- This is necessary to speed up vacuum operation (full OPEN position of Electronic Expansion Valve - EEV -).

- Open the valve of the low pressure side(A) of manifold gauge counterclockwise.



\* The designs and shape are subject to change according to the model.

5. Purge the air from the system using vacuum pump for about 10 minutes.
  - ▶ Close the valve of the low pressure side of manifold gauge clockwise.
  - ▶ Make sure that pressure gauge shows -0.1 MPa(-76cmHg) after about 10 minutes. This procedure is very important to avoid a gas leak.
  - ▶ Turn off the vacuum pump.
  - ▶ Remove the hose of the low pressure side of manifold gauge.
6. Set valve cork of both liquid side and gas side of packed valve to the open position.
7. Mount the valve stem nuts and the service port cap to the valve, and tighten them at the torque of 158.8 lbf·in with a torque wrench.
8. Check for gas leakage.
  - ▶ At this time, especially check for gas leakage from the 3-way valve's stem nuts(A port), and from the service port cap.

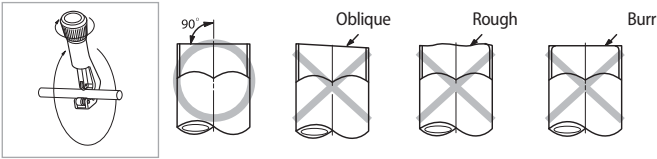


CAUTION

- Connect the indoor and outdoor units using pipes with flared connections (not supplied). For the lines, use insulated, unwelded, degreased and deoxidized copper pipe, (Cu DHP type to ISO 1337 or UNI EN 12735-1), suitable for operating pressures of at least 4200 kPa and for a burst pressure of at least 20700 kPa. Copper pipe for hydro-sanitary applications is completely unsuitable.
- For sizing and limits (height difference, line length, max. bends, refrigerant charge, etc.) see "Connecting refrigerant pipe section".

# Cutting/Flaring the pipes

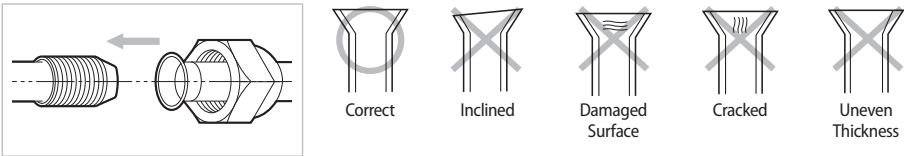
- 1. Make sure that you have the required tools available. (pipe cutter, reamer, flaring tool and pipe holder)
- 2. If you wish to shorten the pipes, cut it with a pipe cutter, taking care to ensure that the cut edge remains at a 90° angle with the side of the pipe. Refer to the illustrations below for examples of edges cut correctly and incorrectly.



- 3. To prevent any gas from leaking out, remove all burrs at the cut edge of the pipe, using a reamer.
- 4. Slide a flare nut on to the pipe and modify the flare.

	Outer Diameter (D)	Depth (A)
	ø6.35 mm(1/4")	0.051 inch
	ø9.52 mm(3/8")	0.071 inch
	ø12.70 mm(1/2")	0.079 inch
	ø15.88 mm(5/8")	0.087 inch
	ø19.05 mm(3/4")	0.087 inch

- 5. Check that the flaring is correct, referring to the illustrations below for examples of incorrect flaring.



Outer diameter [D,mm(inch)]	Connection torque [N·m(lbf·ft)]	Flare dimension [L,mm(inch)]	Flare shape (mm)
Ø 6.35 (1/4")	14~18(10.3~13.3)	8.7~9.1(0.34~0.36)	
Ø 9.52 (3/8")	34~42(25.1~31.0)	12.8~13.2(0.50~0.52)	
Ø 12.70 (1/2")	49~61(36.1~45.0)	16.2~16.6(0.64~0.65)	
Ø 15.88 (5/8")	68~82(50.1~60.5)	19.3~19.7(0.76~0.78)	
Ø 19.05 (3/4")	100~120(73.8~88.5)	23.6~24.0(0.93~0.94)	



- If the pipes require brazing ensure that OFN(Oxygen Free Nitrogen) is flowing through the system.
- Nitrogen blowing pressure range is 0.02 ~ 0.05 MPa.

# Performing leak tests

## LEAK TEST WITH NITROGEN (before opening valves)

In order to detect basic refrigerant leaks, before recreating the vacuum and recirculating the R-410A, it's responsible of installer to pressurize the whole system with nitrogen (using a cylinder with pressure reducer) at a pressure above 40 bar (gauge).

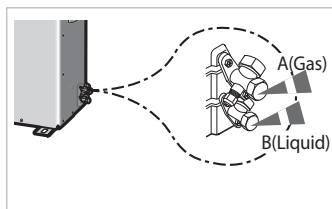
## LEAK TEST WITH R-410A (after opening valves)

Before opening valves, discharge all the nitrogen into the system and create vacuum. After opening valves check leaks using a leak detector for refrigerant R-410A.

Once you have completed all the connections, check for possible leaks using leak detector specifically designed for HFC refrigerants.

**To check for gas leaks on the**  
Outdoor unit

**Then, using a leak detector, check the**  
Valves on sections A and B.

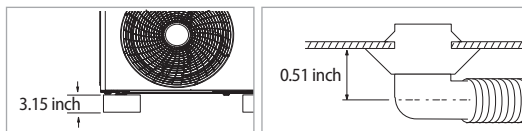


\* The designs and shape are subject to change according to the model.

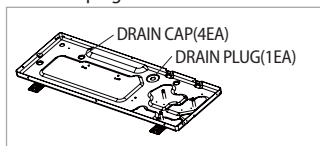
# Connecting the drain hose to the outdoor unit

When using the air conditioner in the heating mode, ice may accumulate. During de-icing (defrost operation), the condensed water must be drained off safely. Consequently, you must install a drain hose on the outdoor unit, following the instructions below.

1. Make space more than 3.15 inch between the bottom of the outdoor unit and the ground for installation of the drain hose, as shown in figure.
2. Insert the drain plug into the hole on the underside of the outdoor unit.
3. Connect the drain hose to the drain plug.
4. Ensure that the drained water runs off correctly and safely.



5. Be sure to plug the rest of drain holes not connected with drain plugs using drain caps.




- \* When installing the product, make sure that the rack is not placed under the drain hole.
- \* If the product is installed in a region of heavy snow, allow enough separation distance between the product and the ground.



# Insulation

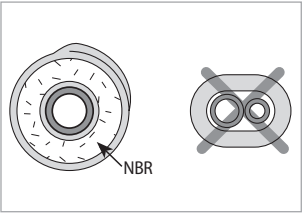
Once you have checked that there are no leaks in the system, you can insulate the piping and hose.


1. To avoid condensation problems, place an insulator around each refrigerant pipe.



NOTE

- When insulate the pipe, be sure to overlap the insulation.
- The insulation has to be produced in full compliance of European regulation reg. EEC / EU 2037/ 2000 that requires the use of sheaths insulation form without using CFC and HCFC gases for health and the environment.





CAUTION

- When insulating the pipe, use non-slit insulator.

2. Select the insulation of the refrigerant pipe.
- ▶ Insulate the gas side and liquid side pipe referring to the thickness according to the pipe size.
  - ▶ Less than Indoor temperature of 86 °C and humidity of 85 % is the standard condition. If installing in a high humidity condition, use one grade thicker insulator by referring to the table below. If installing in an unfavorable conditions, use thicker one.
  - ▶ Insulator's heat-resistance temperature should be more than 248 °F.

Pipe	Pipe size	Insulation Type (Heating/Cooling)		Remarks
		Standard [Less than 86 °F, 85 %]	High humidity [over 86 °F, 85 %]	
		EPDM, NBR		
Liquid pipe	1/4"~ 3/8"	0.35 t	0.35 t	Internal temperature is higher than 248 °F
	1/2"~ 3/4"	0.51 t	0.51 t	
Gas pipe	1/4"	0.51 t	0.75 t	
	3/8" ~ 3/4"	0.75 t	0.98 t	

- ▶ When installing insulation in places and conditions below, use the same insulation that is used for high humidity conditions.
- <Geological condition>
- High humidity places such as shoreline, hot spring, near lake or river, and ridge (when the part of the building is covered by earth and sand.)
- <Operation purpose condition>
- Restaurant ceiling, sauna, swimming pool etc.
- <Building construction condition>
- The ceiling frequently exposed to moisture and cooling is not covered.  
e.g. The pipe installed at a corridor of a dormitory and studio or near an exit that opens and closes frequently.
  - The place where the pipe is installed is highly humid due to the lack of ventilation system.

# Using stop valve

## To Open the Stop Valve

1. Open the cap and turn the stop valve counterclockwise by using a hexagonal wrench.
2. Turn it until the axis is stopped.



NOTE

- Do not apply excessive force to the stop valve and always use special instruments. Otherwise, the stopping box can be damaged and the back sheet can leak.
- If the watertight sheet leaks, turn the axis back by half, tighten the stopping box, then check the leakage again. If there is no leakage any more, tighten the axis entirely.

3. Tighten the cap securely.

## To Close the Stop Valve

1. Remove the cap.
2. Turn the stop valve clockwise by using a hexagonal wrench.
3. Tighten the axis until the valve reached the sealing point.
4. Tighten the cap securely.



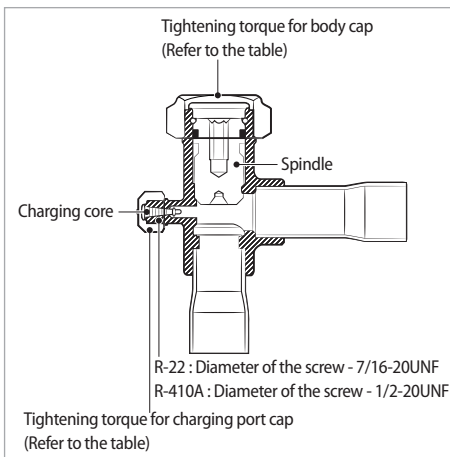
CAUTION

- When you use the service port, always use a charging hose, too.
- Check the leakage of refrigerant gas after tightening the cap.
- Must use a spanner and wrench when you open/tighten the stop valve.

- ▶ Before inspecting the leakage, use a torque wrench to close the cap for the service valve. (Comply with a tightening torque for each size of the diameter, and tighten the cap firmly to prevent any leakage.)
- ▶ To check for any possible leakage, inert gas into the pipes connected to indoor/outdoor units and check the connection part of the indoor/outdoor units with soap lather or liquid for leakage test.

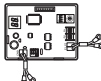



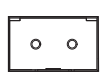

Outer diameter [mm(inch)]	Tightening torque	
	Body cap [N·m(lbf·ft)]	Charging port cap [N·m(lbf·ft)]
Ø6.35(1/4")	20~25(14.75~18.44)	10~12(7.38~8.85)
Ø9.52(3/8")	20~25(14.75~18.44)	
Ø12.70(1/2")	25~30(18.44~22.13)	
Ø15.88(5/8")	30~35(22.13~25.81)	
Over Ø19.05(3/4")	35~40(25.81~29.50)	

※ 1 N·m = 10 kgf·cm

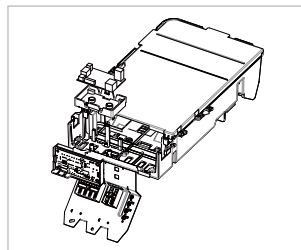


# Interface module Installation (Optional)

## Accessories (Interface module : MIM-B14)

Interface module	Interface module power cable	Interface module communication cable	Installation Manual	Case	Cable-tie
					

1. Fix the case at with bolts on the side of the control box in the outdoor unit.  
(See the picture)
2. Attach the Interface module PCB to the case in the control box in the outdoor unit, then connect the power and the communication cable between the Interface module and the outdoor unit; refer to the figure of pages 15.
3. If you install a Interface module to an outdoor unit, every indoor unit which is connected to an outdoor unit can be controlled simultaneously.
4. Each outdoor unit connected to the same centralized controller has its own Interface module.

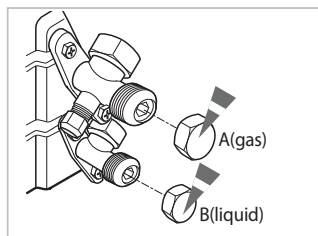


Fix the case with hinges  
(Control Box in the outdoor unit)

## Pump down Procedure

Pump down will be carried out when an evaporator is replaced or when the unit is relocated in another area.

1. Remove the cap from the low pressure side.
2. Turn the low pressure side valve clockwise to close and connect a pressure gauge (low pressure side) to the service valve, and open the valve again.
3. Set the unit to the cooling Test mode by pushing K2 button (Check if the compressor is operating.)
4. Turn the high pressure side valve clockwise to close.
5. When the pressure gauge indicates "0" turn the low pressure side valve clockwise to close.
6. Stop operation of the air conditioner by pushing K3 button.
7. Close the each cap of valve.



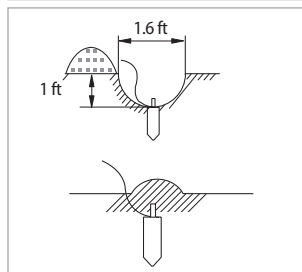
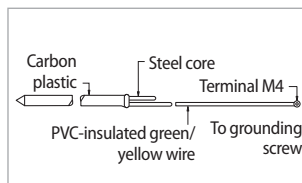
### Relocation of the air conditioner

- Refer to this procedure when the unit is relocated.
- Carry out the pump down procedure (refer to the details of 'pump down').
- Remove the power cord.
- Disconnect the assembly cable from the indoor and outdoor units.
- Remove the flare nut connecting the indoor unit and the pipe.
- At this time, cover the pipe of the indoor unit and the other pipe using a cap or vinyl plug to avoid foreign material entering.
- Disconnect the pipe connected to the outdoor unit. At this time, cover the valve of the outdoor unit and the other pipe using a cap or vinyl plug to avoid foreign material entering.
- Make sure you do not bend the connection pipes in the middle and store together with the cables.
- Move the indoor and outdoor units to a new location.
- Remove the mounting plate for the indoor unit and move it to a new location.

# Checking correct grounding

If the power distribution circuit does not have a grounding or the grounding does not comply with specifications, an grounding electrode must be installed. The corresponding accessories are not supplied with the air conditioner.

1. Select an grounding electrode that complies with the specifications given in the illustration.
2. Connect the flexible hose to the flexible hose port.
  - ▶ In damp hard soil rather than loose sandy or gravel soil that has a higher grounding resistance.
  - ▶ Away from underground structures or facilities, such as gas pipes, water pipes, telephone lines and underground cables.
  - ▶ At least two metres away from a lightening conductor grounding electrode and its cable.



- The grounding wire for the telephone line cannot be used to ground the air conditioner.

3. Finish wrapping insulating tape around the rest of the pipes leading to the outdoor unit.

4. Install a green/yellow coloured grounding wire :
  - ▶ If the grounding wire is too short, connect an extension lead, in a mechanical way and wrapping it with insulating tape (do not bury the connection).
  - ▶ Secure the grounding wire in position with staples.



- If the grounding electrode is installed in an area of heavy traffic, its wire must be connected securely.

5. Carefully check the installation, by measuring the grounding resistance with a ground resistance tester. If the resistance is above required level, drive the electrode deeper into the ground or increase the number of grounding electrodes.
6. Connect the grounding wire to the electrical component box inside of the outdoor unit.

# Testing operations

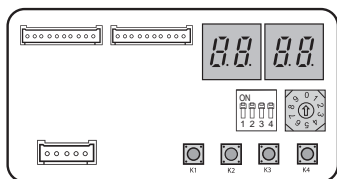
1. Check the power supply between the outdoor unit and the auxiliary circuit breaker.
  - ▶ 1 phase power supply : L1, L2
2. Check the indoor unit.
  - 1) Check that you have connected the power and communication cables correctly. (If the power cable and communication cables are mixed up or connected incorrectly, the PCB will be damaged.)
  - 2) Check the thermistor sensor, drain pump/hose, and display are connected correctly.
3. Press K1 or K2 on the outdoor unit PCB to run the test mode and stop.

Key	Push type		Mode	Display			
				SEG 1	SEG 2	SEG 3	SEG 4
K1	Short	1st	Heating test mode	<i>F</i>	<i>1</i>	<i>8</i>	<i>8</i>
		2nd	Defrost test mode*	<i>F</i>	<i>3</i>	<i>8</i>	<i>8</i>
		3rd	Stop	<i>8</i>	<i>8</i>	<i>8</i>	<i>8</i>
K2	Short	1st	Cooling test	<i>F</i>	<i>2</i>	<i>8</i>	<i>8</i>
		2nd	Inverter check	<i>F</i>	<i>4</i>	<i>8</i>	<i>8</i>
		3rd	Pump down	<i>F</i>	<i>6</i>	<i>8</i>	<i>8</i>
		4th	Stop	<i>8</i>	<i>8</i>	<i>8</i>	<i>8</i>
K3	Short	1st	Reset Release Eco mode*	<i>8</i>	<i>8</i>	<i>8</i>	<i>8</i>

Condition 1 : The outdoor temperature is under 50 °F

Condition 2 : All the temperature conditions should meet the defrost conditions

- ▶ KEY buttons are on Sub Display of Outdoor Unit



4. After 12 minutes of stationary condition check each indoor unit air treatment :
  - ▶ Cooling mode(indoor unit check) → Inlet air temp. – Outlet air temp.  $\geq 18$  °F(reference only)
  - ▶ Heating mode(indoor unit check) → Inlet air temp. – Outlet air temp.  $\geq 19.8$  °F(reference only)
  - ▶ In heating mode, the indoor fan motor can remain off to avoid cold air blown into conditioned space.
5. How to reset the power supply of the outdoor unit and deactivate the eco mode (standby mode) :
  - ▶ Press [K3] button over 1 sec to reset the power supply of the outdoor unit and deactivate the eco mode (standby mode).

6. View Mode : When the K4 switch is pressed, you can see information about our system state as below.

Short push	Display contents	SEG1	SEG2	SEG3	SEG4	Unit
1	Order frequency	1	Hundreds' digit	Tens' digit	Unit digit	Hz
2	Current frequency	2	Hundreds' digit	Tens' digit	Unit digit	Hz
3	The number of current indoor units	3	Hundreds' digit	Tens' digit	Unit digit	EA
4	The sensor for outdoor air intake	4	+ / -	Tens' digit	Unit digit	°C
5	Discharge sensor	5	Hundreds' digit	Tens' digit	Unit digit	°C
6	Eva-Mid sensor	6	+ / -	Tens' digit	Unit digit	°C
7	Cond sensor	7	+ / -	Tens' digit	Unit digit	°C
8	Current	8	Tens' digit	Unit digit	The first place of decimals	A
9	Fan RPM	9	Thousands' digit	Hundreds' digit	Tens' digit	rpm
10	Target discharge temperature	A	Hundreds' digit	Tens' digit	Unit digit	°C
11	EEV	B	Hundreds' digit	Tens' digit	Unit digit	step
12	The capacity sum of indoor units	C	Tens' digit	Unit digit	The first place of decimals	kW
13	Protective control	D	0: Cooling 1: Heating	Protective control 0: No Protective control 1: Freezing 2: Non-stop defrosting 3: Over-load 4: Discharge 5: Total electric current	Frequency status 0: Normal 1: Hold 2: Down 3: Up_limit 4: Down_limit	-
14	The temperature of heat radiating plate	E	Hundreds' digit	Tens' digit	Unit digit	-
15	The number of connected indoor units	F	0	Tens' digit	Unit digit	EA

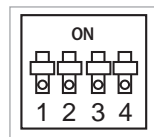
Long push 1	Main micom version	Year (Dec)	Month (Hex)	Date (Tens' digit)	Date (Unit digit)
After short push 1	Inverter micom version	Year (Dec)	Month (Hex)	Date (Tens' digit)	Date (Unit digit)
After short push 1	E2P version	Year (Dec)	Month (Hex)	Date (Tens' digit)	Date (Unit digit)
After short push 1	Display automatically assigned address (communication address) of the unit Page1 -AUTO Page2 - (SEG1,2 - Indoor unit: "A","0")(SEG3,4 - Address: ex) 00				
After short push 1	Display manually assigned address of the unit Page1 -MANU Page2 - (SEG1,2 - Indoor unit: "A","0")(SEG3,4 - Address: ex) 00				

\* Long push K4(Main micom ver.) → short push 1 more(Inv. micom ver.) → short push 1 more(E2P. ver.)

# Testing operations

## 7. DIP switch option

	On (default)	Off
Switch 2	Disable snow prevention control	Enable snow prevention control
Switch 3	Silence Mode option	
Switch 4		



✱ When snow prevention mode is in use, eco mode(standby mode)will not be functional.

## 8. Silence Mode DIP switch option

Switch 3	Switch 4	Operation
On	On	Disable Silence mode
On	Off	Silence mode 1st step
Off	On	Silence mode 2nd step
Off	Off	Silence mode 3rd step

## 9. Setting the address manually(high level controller)

- a Turn off the air conditioner, press and hold the K2 switch for a while to enter the Option mode. (Initial value: 00AU)
  - You cannot enter the Option mode when the air conditioner is running.
- b Set the address in SEG3 and SEG4 by pressing the K2 switch shortly.

Option	SEG1	SEG2	SEG3	SEG4	Function
Channel address	0	0	A	U	The address is set automatically.
			00 to 15		The address is set manually. You can set a value from 0 to 15.

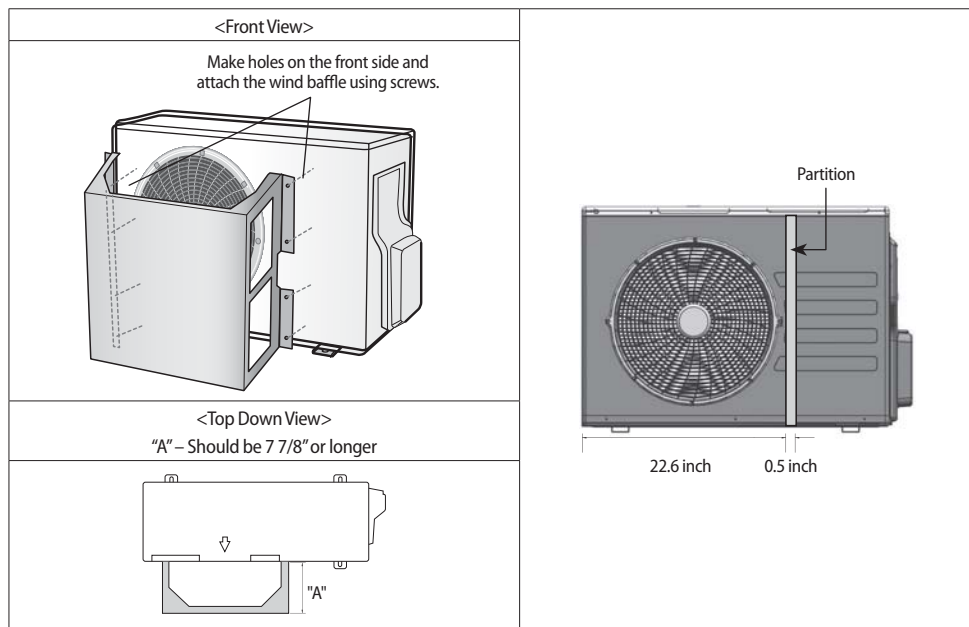
- c Press and hold the K2 switch for a while to save the address and exit the Option mode. Each segment will flicker for 3 seconds in the current display state. Then if you need to change the address, reset the system, and then repeat all steps again. Press and hold the K1 switch to exit without save.

✱ If you want to restore the setting to factory default, press and hold the K4 button while you are in the option setting mode.

- If you press and hold the K4 button, setting will be restored to factory default but it doesn't mean that restored setting is saved.Press and hold the K2 button. When the segments shows that tracking mode is in progress, setting will be saved.

# Installing the wind baffle

If you operate the cooling operation of air conditioner in the condition where ambient temperature is lower than 23 °F DB(Dry bulb), or the outdoor unit might be faced with strong wind directly, the wind baffle should be installed to prevent the outdoor unit fan from operating in reverse way.



- When attaching the wind baffle using screws, be careful that the screws do not damage the partition.



- Install outdoor units with the back surface facing wall side to eliminate the effects of external wind.



# Troubleshooting

The table below give indication about self diagnostic routine. Some of error code requires activities exclusively for Authorized Service Center.

## Outdoor unit





If an error occurs during the operation, it is displayed on the outdoor unit PCB LED, both MAIN PCB and INVERTER PCB.

No.	Error Code	Meaning	Remarks
1	E108	Error due to duplicated communication address	Check on repeated indoor unit main address
2	E121	Error on room temperature sensor of indoor unit (Short or Open)	Indoor unit Room Thermistor Open/Short
3	E122	Error on EVA IN sensor of indoor unit (Short or Open)	Indoor unit EVA_IN Thermistor Open/Short
4	E123	Error on EVA OUT sensor of indoor unit (Short or Open)	Indoor unit EVA_OUT Thermistor Open/Short
5	E153	Error on float switch (2nd detection)	Indoor unit Float Switch Open/Short Drain Pump operation Check
6	E154	Indoor fan error	Check on indoor unit indoor Fan operation
7	E198	Error on thermal fuse of indoor unit (Open)	Thermal Fuse Open Check of indoor unit Terminal Block
8	E201	Communication error between the indoor unit and outdoor unit (Pre-tracking failure or when the actual number of indoor units are different from the indoor unit quantity setting on the outdoor unit) Error due to communication tracking failure after initial power is supplied (The error occurs regardless of the number of units.)	Check indoor quantity setting in outdoor
9	E202	Communication error between indoor unit and outdoor unit (When there is no response from indoor units after tracking is completed)	Check electrical connection and setting between indoor unit and outdoor unit
10	E203	Communication error between the outdoor unit and main micom (For PF #4 to #6 controllers, error will be determined from the time when the compressor is turned on.)	Check electrical connection and setting between indoor unit MAIN PBA - INVERTER PBA
11	E221	Error on outdoor temperature sensor (Short or Open)	Check Outdoor sensor Open / Short
12	E231	Error on outdoor COND OUT sensor (Short or Open)	Check Cond-Out sensor Open / Short
13	E251	Error on discharge temperature sensor of compressor 1 (Short or Open)	Check Discharge sensor Open / Short
14	E320	Error on OLP sensor (Short or Open)	Check OLP sensor Open / Short
15	E403	Compressor down due to freeze protection control	Check Outdoor Cond.
16	E404	System stop due to overload protection control	Check Comp. when it starts
17	E416	System stop due to discharge temperature	-
18	E422	Blockage detected on high pressure pipe	1. Check if the service valve is open 2. Check for refrigerant leakage (pipe connections, heat exchanger) and charge refrigerant if necessary 3. Check if there's any blockage on the refrigerant cycle (indoor unit/outdoor unit) 4. Check if additional refrigerant has been added after pipe extension

No.	Error Code	Meaning	Remarks
19	E440	Heating operation restricted at outdoor temperature over Theat_high value	HEATING
20	E441	Cooling operation restricted at outdoor temperature below Tcool_low value	COOLING
21	E458	Fan speed error	FAN1 ERROR
22	E461	Error due to operation failure of inverter compressor	-
23	E462	System stop due to full current control	-
24	E463	Over current trip / PFC over current error	Check OLP sensor
25	E464	IPM Over Current(O.C)	IPM
26	E465	Comp. Over load error	-
27	E466	DC-Link voltage under/over error	Check AC Power and DC Link Voltage
28	E467	Error due to abnormal rotation of the compressor or unconnected wire of compressor	Check Comp wire
29	E468	Error on current sensor (Short or Open)	Check Outdoor Inverter PBA.
30	E469	Error on DC-Link voltage sensor (Short or Open)	-
31	E470	Outdoor unit EEPROM Read/Write error (Option)	Check Outdoor EEPROM Data
32	E471	Outdoor unit EEPROM Read/Write error (H/W)	Check Outdoor EEPROM PBA
33	E474	Error on IPM Heat Sink sensor of inverter 1 (Short or Open)	Check Outdoor Inverter PBA.
34	E483	Over Voltage Protecting Error	Check Outdoor inverter PBA
35	E484	PFC Overload (Over current) Error	Check Outdoor Inverter PBA.
36	E485	Error on input current sensor of inverter 1 (Short or Open)	Check Outdoor EEPROM PBA
37	E488	AC Input Voltage limit Sensor Error	Check Outdoor inverter PBA
38	E500	IPM over heat error on inverter 1	Check Outdoor Inverter PBA.
39	E508	Smart install is not installed	-
40	E554	Gas leak detected	Check the refrigerant
41	E556	Error due to mismatching capacity of indoor and outdoor unit	Check the indoor and outdoor unit capacity
42	E557	When DPM mode, Product option are not same between indoor units	-
43	E590	Inverter EEPROM Checksum error	-

# Extending the power cable

1. Prepare the following tools.

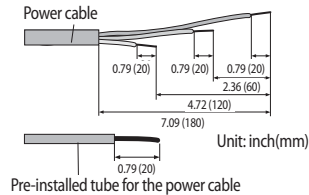
Tools	Crimping pliers	Connection sleeve	Insulation tape	Contraction tube
Spec	MH-14	20xØ0.26 inch(6.5 mm) (HxOD)	Width 0.75 inch(19 mm)	70xØ0.31 inch(8.0 mm) (LxOD)
Shape				

2. As shown in the figure, peel off the shields from the rubber and wire of the power cable.

- Peel off 0.79 inch(20 mm) of cable shields from the pre-installed tube.



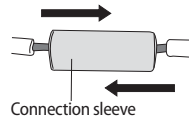
- For information about the power cable specifications for indoor and outdoor units, refer to the installation manual.
- After peeling off cable wires from the pre-installed tube, insert a contraction tube.



3. Insert both sides of core wire of the power cable into the connection sleeve.

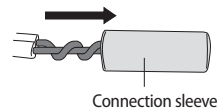
► **Method 1**

- Push the core wire into the sleeve from both sides.



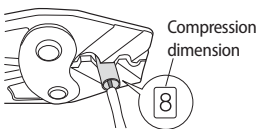
► **Method 2**

- Twist the wire cores together and push it into the sleeve.



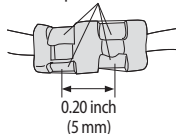
4. Using a crimping tool, compress the two points and flip it over and compress another two points in the same location.

- The compression dimension should be 0.31 inch (8.0 mm).
- After compressing it, pull both sides of the wire to make sure it is firmly pressed.



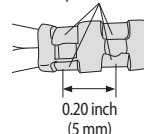
► **Method 1**

Compress it 4 times.



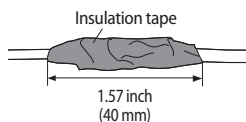
► **Method 2**

Compress it 4 times.

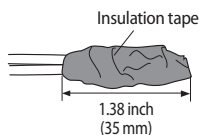


5. Wrap it with the insulation tape twice or more and position your contraction tube in the middle of the insulation tape. Three or more layers of insulation are required.

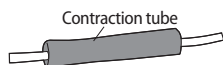
► **Method 1**



► **Method 2**



6. Apply heat to the contraction tube to contract it.

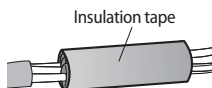


7. After tube contraction work is completed, wrap it with the insulation tape to finish.



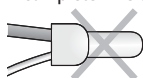
CAUTION

- Make sure that the connection parts are not exposed to outside.
- Be sure to use insulation tape and a contraction tube made of approved reinforced insulating materials that have the same level of withstand voltage with the power cable. (Comply with the local regulations on extensions.)



WARNING

- In case of extending the electric wire, please **DO NOT** use a round-shaped Pressing socket.
- Incomplete wire connections can cause electric shock or a fire.



**IMPORTANT**

- This product has been designed and manufactured to meet ENERGY STAR criteria for energy efficiency when matched with appropriate coil components. However, proper refrigerant charge and proper air flow are critical to achieve rated capacity and efficiency. Installation of this product should follow the manufacturer's refrigerant charging and air flow instructions. **Failure to confirm proper charge and airflow may reduce energy efficiency and shorten equipment life.**