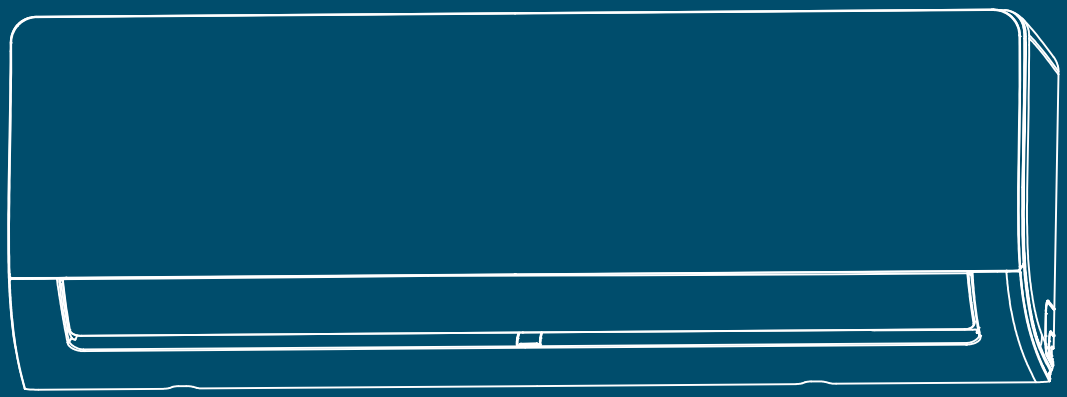
R32 WALL MOUNTED AIR CONDITIONER

Installation Manual

KSI Series

KSI-2.0 | KSI-2.5 | KSI-3.5 | KSI-5.0
KSI-7.0 | KSI-7.6 | KSI-9.0



kaden°™
your perfect climate

Important note

This appliance must be installed in accordance with:

Manufacturer's Installation Instructions

Current AS/NZS 3000, AS/NZS 5149

Local Regulations and Municipal Building Codes including local OH&S requirements

This appliance must be installed, maintained, and removed only by an Authorised Person.

For continued safety of this appliance, it must be installed and maintained in accordance with the manufacturer's Instructions.





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Important note

Read this manual carefully before installing
or operating your new air conditioning unit.
Make sure to save this manual for future reference.

1. Safety precautions

Read safety precautions before operation and installation

Incorrect installation due to ignoring instructions can cause serious damage or injury.
The seriousness of potential damage or injuries is classified as either a WARNING or CAUTION.



This symbol is a WARNING, and indicates that ignoring instructions may cause death or serious injury.



This symbol is a CAUTION, and indicates that ignoring instructions may cause moderate injury to your person, or damage to your unit or other property.



This symbol indicates that you must never perform the action indicated.

⚠ WARNING

- ⊘ **Do not** share the electrical outlet with other appliances. Improper or insufficient power supply can cause fire or electrical shock.
- ⊘ When connecting refrigerant piping, **do not** let substances or gases other than the specified refrigerant enter the unit. The presence of other gases or substances will lower the unit's capacity, and can cause abnormally high pressure in the refrigeration cycle. This can cause explosion and injury.
- ⊘ **Do not** allow children to play with the air conditioner. Children must be supervised around the unit at all times.

1. Installation must be performed by a licensed installer. Defective installation can cause water leakage, electrical shock, or fire.
2. Installation must be performed according to the installation instructions. Improper installation can cause water leakage, electrical shock, or fire.
3. Contact an authorised service technician for repair or maintenance of this unit.
4. Only use the included accessories, parts, and specified parts for installation. Using non-standard parts can cause water leakage, electrical shock, fire, and can cause the unit to fail.
5. Install the unit in a firm location that can support the unit's weight. If the chosen location cannot support the unit's weight, or the installation is not done properly, the unit may drop and cause serious injury and damage.
6. Only fully qualified licensed personnel should install service or carry out maintenance to this air conditioning unit. All electrical work is to follow local and national wiring standards and the Installation Manual.
7. You must use an independent circuit and single outlet to supply power. **Do not** connect other appliances to the same outlet. Insufficient electrical capacity or defects in electrical work can cause electrical shock or fire.
8. For all electrical work, use the specified cables. Connect cables tightly, and clamp them securely to prevent external forces from damaging the terminal. Improper electrical connections can overheat and cause fire, and may also cause shock.
9. All wiring must be properly arranged to ensure that the control board cover can close properly. If the control board cover is not closed properly, it can lead to corrosion and cause the connection points on the terminal to heat up, catch fire, or cause electrical shock.
10. In certain functional environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.
11. This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children must not play with the appliance. Cleaning and user maintenance must not be made by children without supervision.

CAUTION

⊘ **Do not** install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it may cause fire.

⊘ **Do not** operate your air conditioner in a wet room such as a bathroom or laundry room. Too much exposure to water can cause electrical components to short circuit.

1. The product must be properly grounded at the time of installation, or electrical shock may occur.
2. Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property.

Note about fluorinated gases

1. This air-conditioning unit contains fluorinated gases. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself.
2. Installation, decommissioning, service, maintenance and repair of this unit must be performed by a licensed technician.
3. Product decommissioning and recycling must be performed by a licensed technician.
4. If the system has a leak-detection system installed, it must be checked for leaks at least every 12 months.
5. When the unit is checked for leaks, proper record-keeping of all checks is strongly recommended.
6. Only ARC (Australian Refrigeration Council) licence holders can install and commission this air conditioner. This air conditioner must be installed to meet the requirements of the current version of AS/NZS 5149. It is illegal to vent some types of refrigerant to the atmosphere.

REFRIGERANT

This appliance uses R32 (difluoromethane) refrigerant, which is a flammable gas class 2.2 according to AS/NZS 5149 and must be handled by a refrigeration mechanic with appropriate Australian refrigerant handling licence.

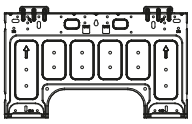
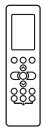
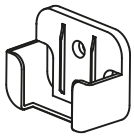
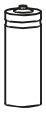
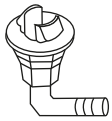
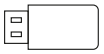
- WARNING risk of fire/flammable material. If the refrigerant is leaked, together with an external ignition source, there is possibility of ignition.
- Read all the OPERATING INSTRUCTIONS carefully before operation.
- Service personnel are required to carefully read the OPERATING INSTRUCTIONS and INSTALLATION MANUAL before operation.
- Further information is available in the OPERATING INSTRUCTIONS, INSTALLATION MANUAL and the like.

Certain levels of refrigerant require minimum room sizes. Please ensure that these minimum room sizes are adhered to for standard installations (up to 10m pipe length). If larger refrigerant charges than standard are used then please consult AS/NZS 60335.2.40 to determine the safe minimum floor area for the installation.

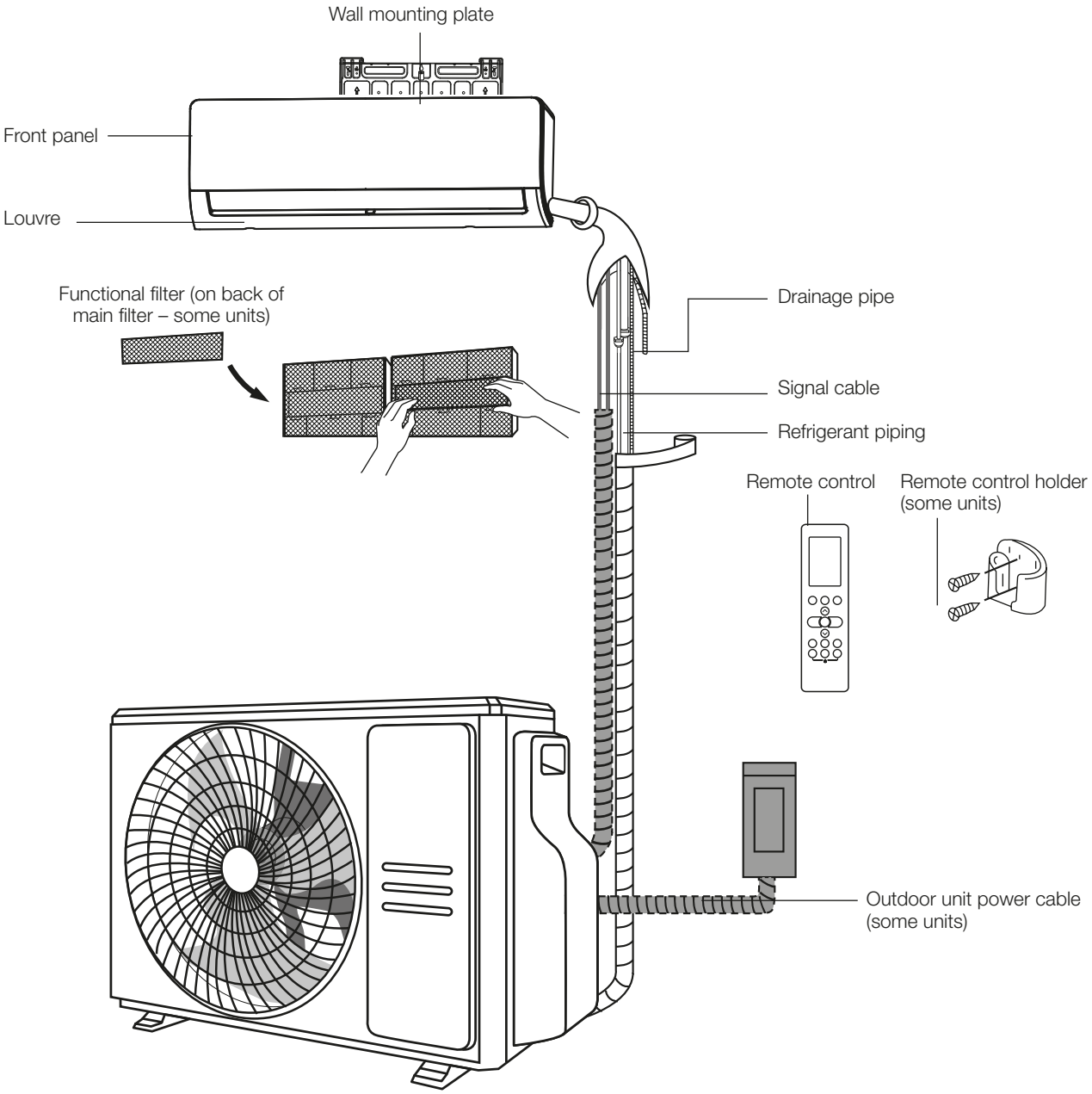
Make sure that the area has been made safe by having suitable ventilation and is free from ignition sources before charging or recovering the charge of R32.

2. Accessories

The air conditioning system comes with the following accessories. Use all of the installation parts and accessories to install the air conditioner. Improper installation may result in water leakage, electrical shock and fire, or cause the equipment to fail.

Name of Accessories	Qty (pc)	Shape
Mounting plate	1	
Clip anchor	5	
Mounting plate fixing screw ST3.9 X 25	5	
Remote controller	1	
Fixing screw for remote controller holder ST2.9 x 10	2	
Remote controller holder	1	
Dry battery AAA.LR03	2	
Drain seal	1	
Drain joint	1	
Owner's manual	1	
Installation manual	1	
Remote controller manual	1	
Wi-Fi dongle	1	

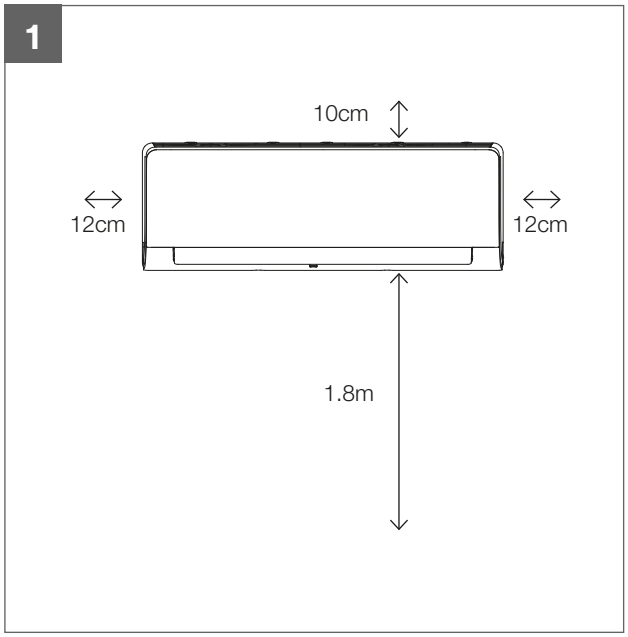
3. Unit parts



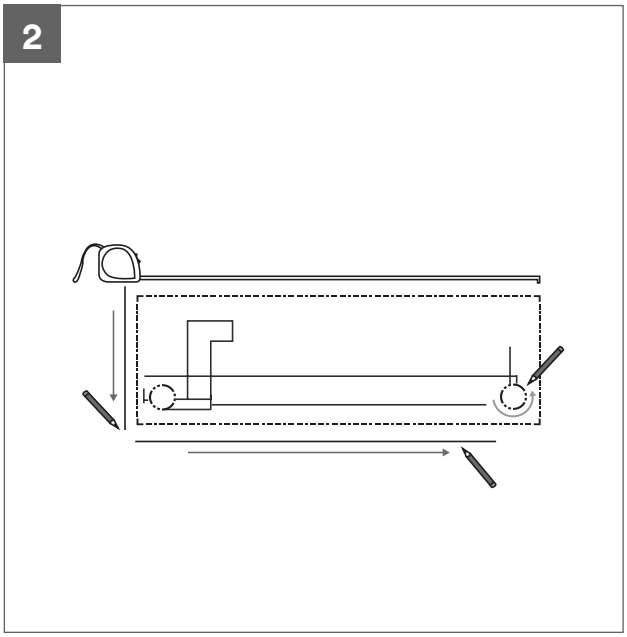
Note on illustrations

Illustrations in this manual are for explanatory purposes. The actual shape of your indoor unit may be slightly different.

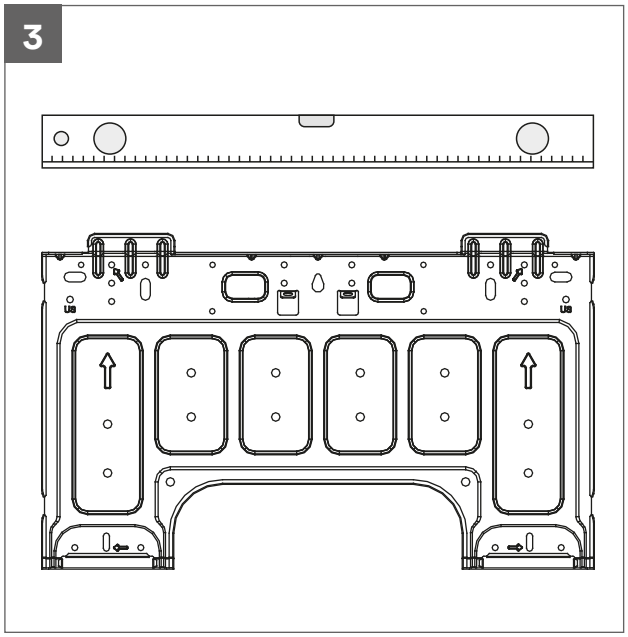
4. Installation summary – indoor unit



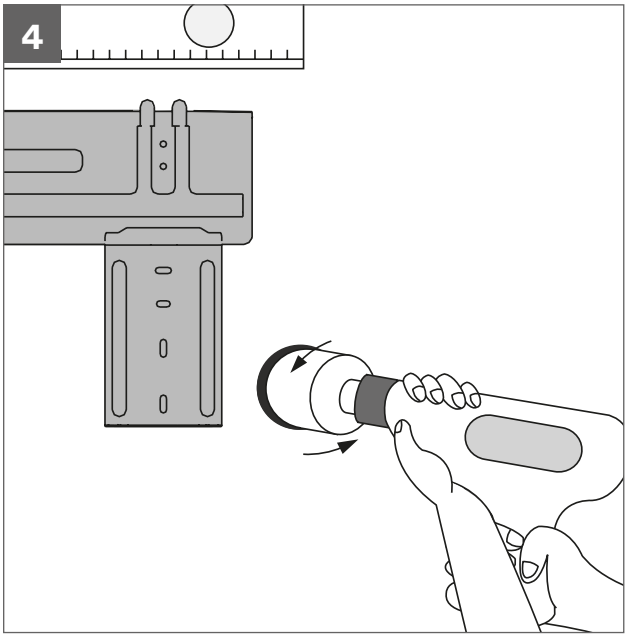
Select installation location (page 11)



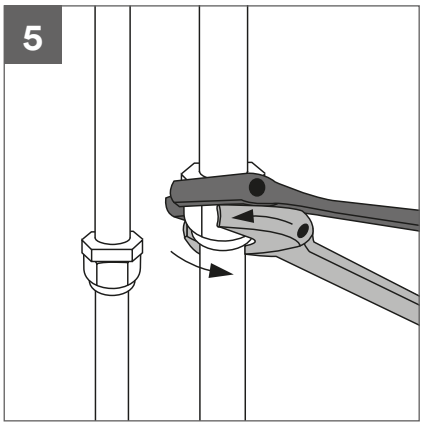
Determine wall hole position (page 11)



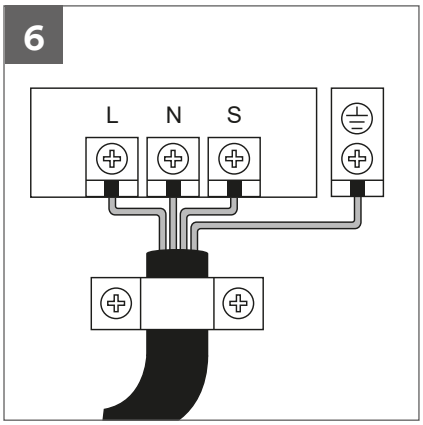
Attach mounting plate (page 12)



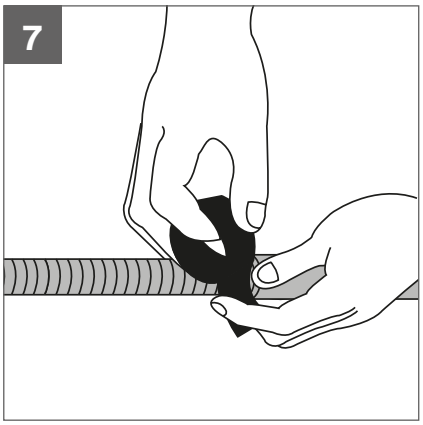
Drill wall hole (page 12)



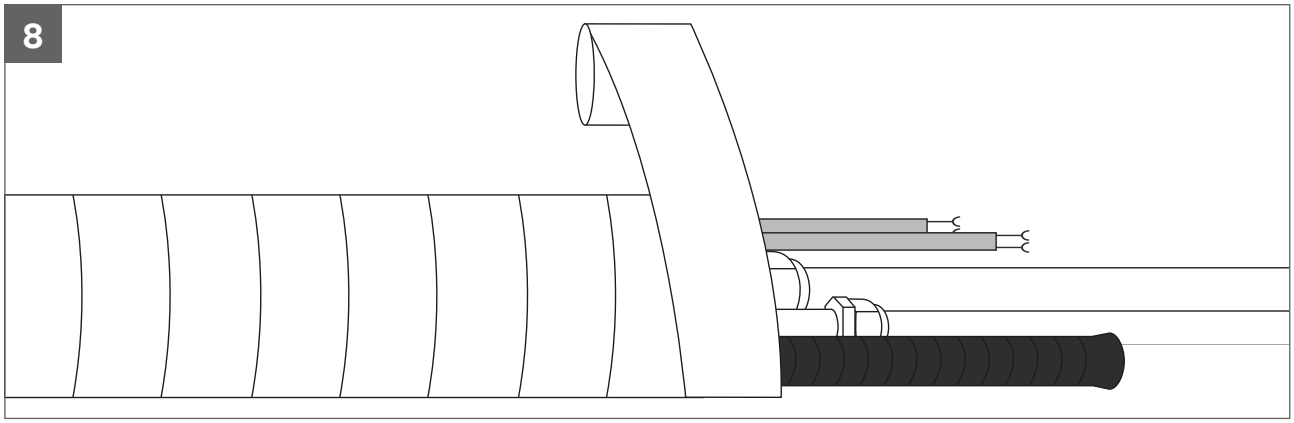
Connect piping (page 26)



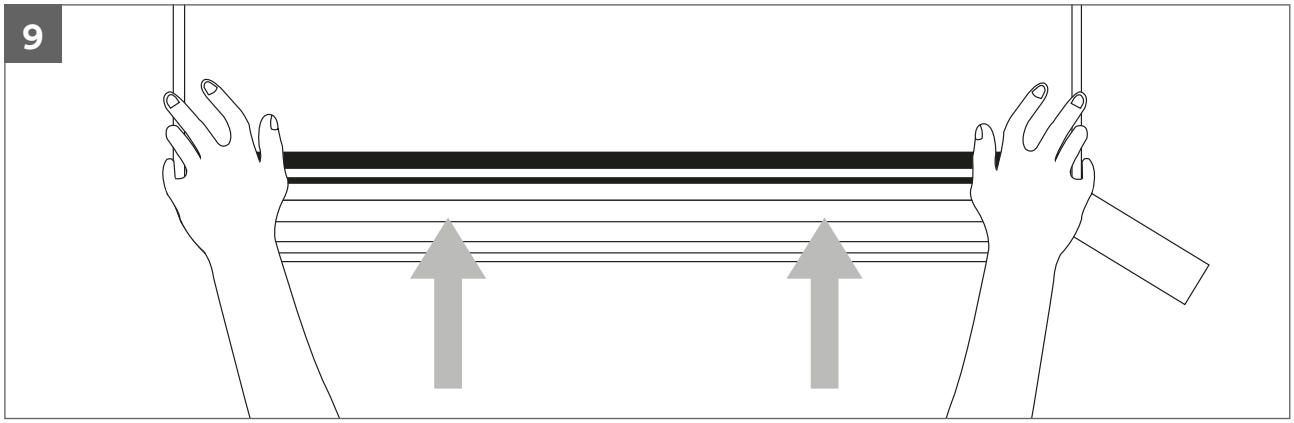
Connect wiring (page 17)



Prepare drain hose (page 15)

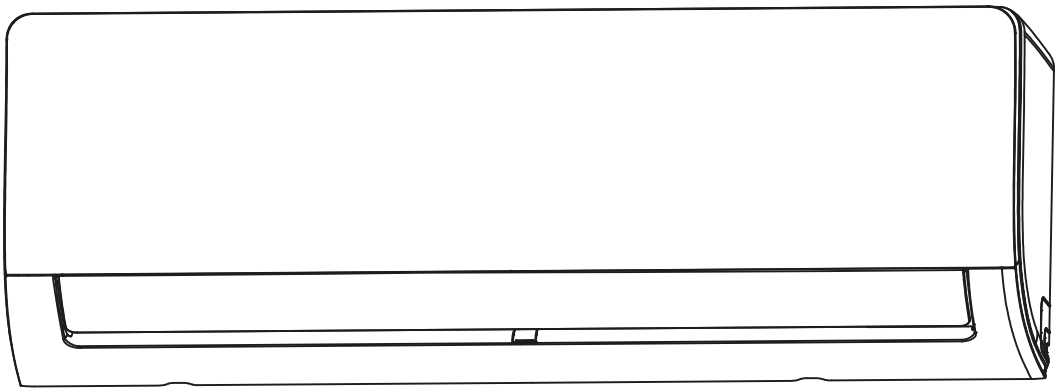


Wrap piping and cable (page 19)



Mount indoor unit (page 19)

5. Indoor unit installation



Installation instructions – indoor unit

Prior to installation

Before installing the indoor unit, refer to the label on the product box to make sure that the model number of the indoor unit matches the model number of the outdoor unit.

Step 1: Select installation location

Before installing the indoor unit, you must choose an appropriate location. The following are standards that will help you choose an appropriate location for the unit.

Proper installation locations meet the following standards:

- ✓ Good air circulation
- ✓ Convenient drainage
- ✓ Noise from the unit will not disturb other people
- ✓ Firm and solid — the location will not vibrate
- ✓ Strong enough to support the weight of the unit
- ✓ A location at least one meter from all other electrical devices (e.g. TV, radio, computer)

DO NOT install unit in the following locations:

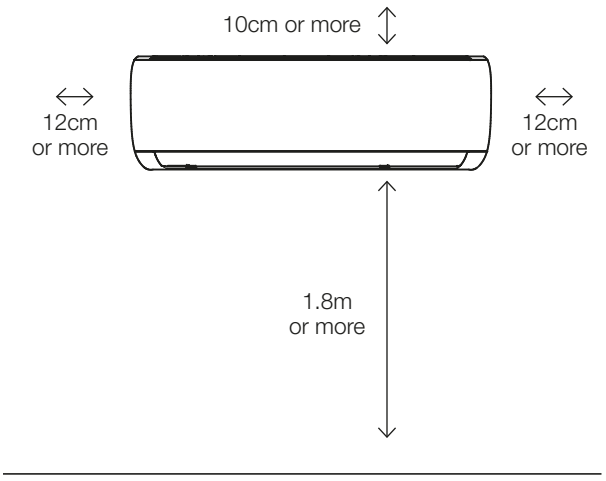
- ✕ Near an obstacle that will block air inlets and outlets.
- ✕ Near any obstacle that might block air circulation
- ✕ Near the doorway
- ✕ In a location subject to direct sunlight

Note about wall hole

While choosing a location, be aware that you should leave ample room for a wall hole (see drill wall hole for connective piping step) for the signal and power cable and refrigerant piping that connect the indoor and outdoor units. The default position for all piping is the right side of the indoor unit (while facing the unit).

However, the unit can accommodate piping to both the left and right.

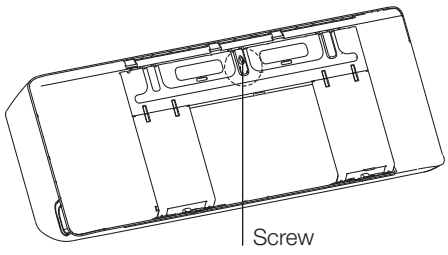
Refer to the following diagram to ensure proper distance from walls and ceiling:



Step 2: Attach mounting plate to wall

The mounting plate is the device on which you will mount the indoor unit.

- Remove the screw that attaches the mounting plate to the back of the indoor unit.



- Secure the mounting plate to the wall with the screws provided. Make sure that mounting plate is flat against the wall.

Note for concrete or brick walls

If the wall is made of brick, concrete, or similar material, drill 5mm diameter holes in the wall and insert the sleeve anchors provided. Then secure the mounting plate to the wall by tightening the screws directly into the clip anchors.

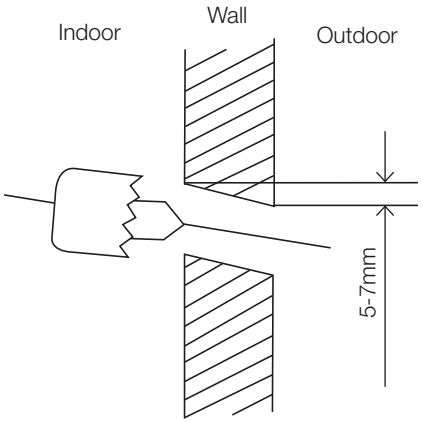
Step 3: Drill wall hole for connective piping

You must drill a hole in the wall for refrigerant piping, the drainage pipe, and the signal cable that will connect the indoor and outdoor units.

1. Determine the location of the wall hole based on the position of the mounting plate. Refer to mounting plate dimensions on the next page to help you determine the optimal position. The wall hole should have a 65mm diameter at least, and at a slightly lower angle to facilitate drainage.
2. Using a 65mm or 90mm (depending on models) core drill, drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 5mm to 7mm. This will ensure proper water drainage.
3. Place the protective wall cuff in the hole. This protects the edges of the hole and will help seal it when you finish the installation process.

CAUTION

When drilling the wall hole, make sure to avoid wires, plumbing, and other sensitive components.



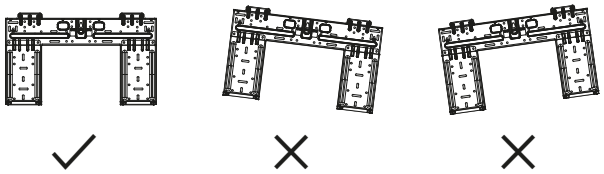
Mounting plate dimensions

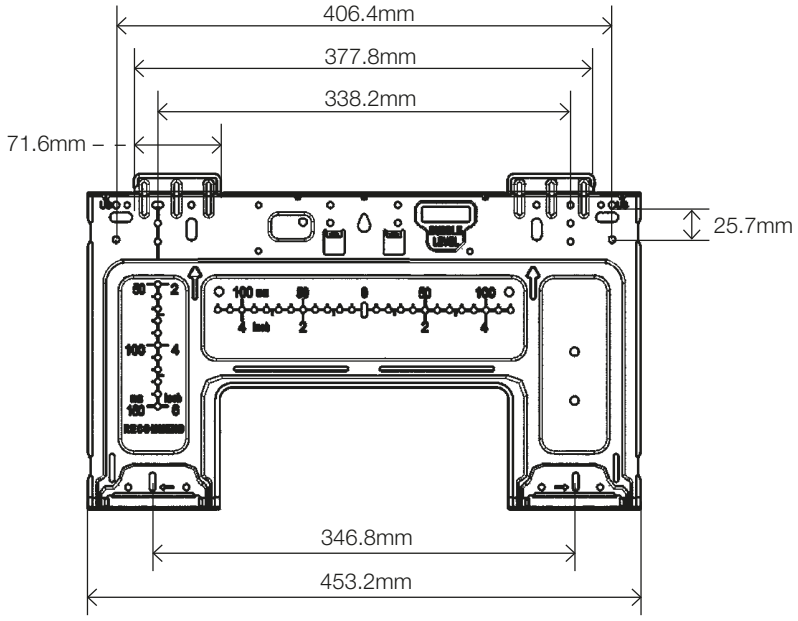
Different models have different mounting plates. In order to ensure that you have ample room to mount the indoor unit, the diagrams to the right show different types of mounting plates along with the following dimensions:

- Width of mounting plate
- Height of mounting plate
- Width of indoor unit relative to plate
- Height of indoor unit relative to plate
- Recommended position of wall hole (both to the left and right of mounting plate)
- Relative distances between screw holes

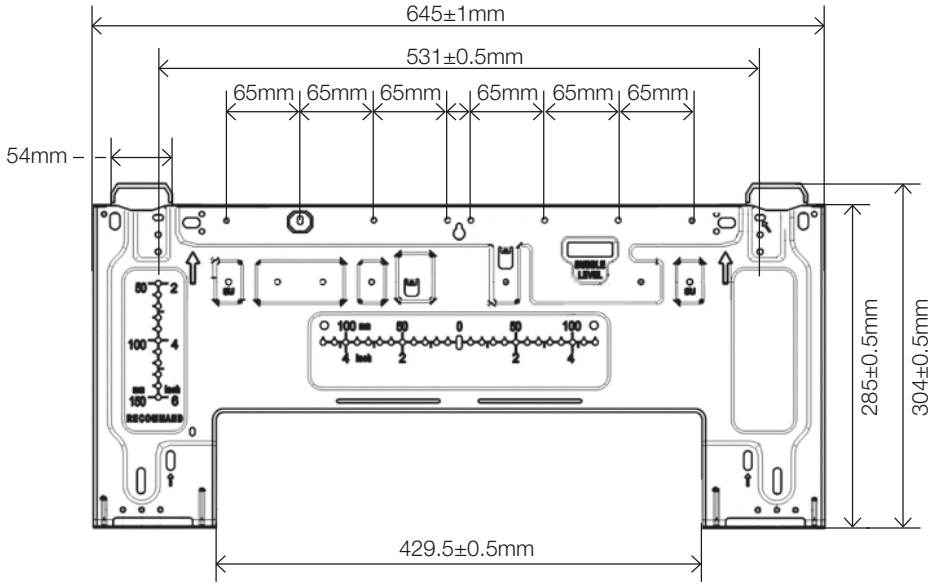
Model	Width of indoor unit relative to plate
Model A – KSI2.0/2.5/3.5	453.2mm
Model E – KSI5.0/7.0/7.6	645±1mm
Model F – KSI9.0	915.4mm

Correct orientation of mounting plate

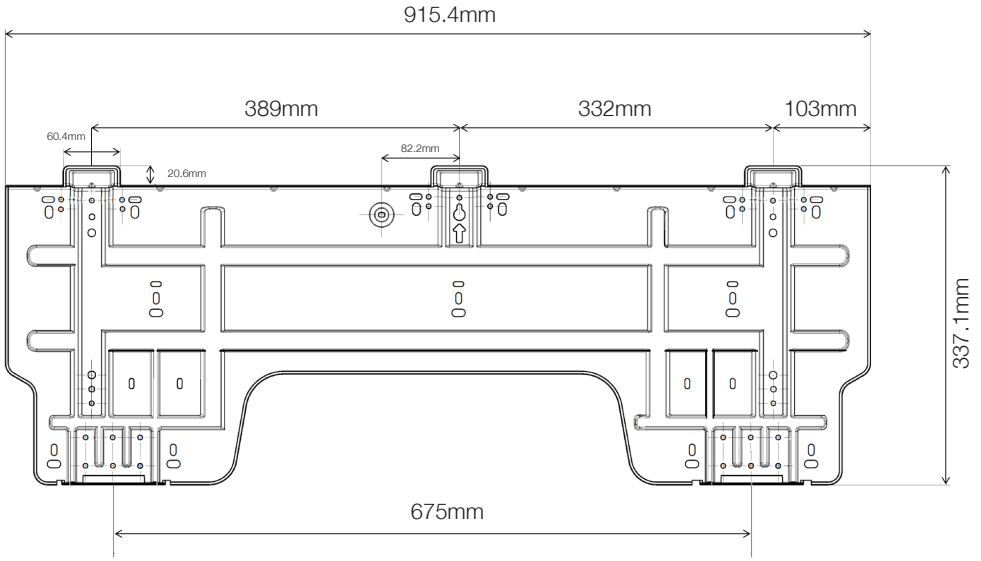




Model A – KSI2.0 / KSI2.5 / KSI3.5



Model E - KSI5.0 / KSI7.0 / KSI7.6

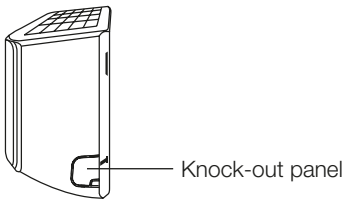


Model E - KSI9.0

Step 4: Prepare refrigerant piping

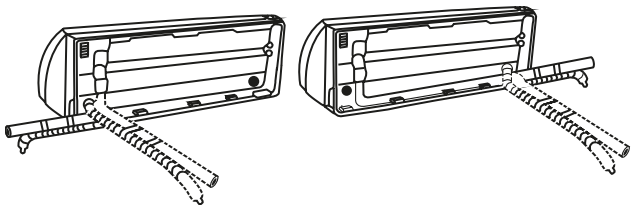
The refrigerant piping is inside an insulating sleeve attached to the back of the unit. You must prepare the piping before passing it through the hole in the wall.

1. Based on the position of the wall hole relative to the mounting plate, choose the side from which the piping will exit the unit.
2. If the wall hole is behind the unit, keep the knock-out panel in place. If the wall hole is to the side of the indoor unit, remove the plastic knock-out panel from that side of the unit. This will create a slot through which your piping can exit the unit. Use needle nose pliers if the plastic panel is too difficult to remove by hand.



3. Connect drain hose step. If there is no embedded piping, connect the indoor unit's refrigerant piping to the connective piping that will join the indoor and outdoor units. Refer to the Refrigerant piping connection section of this manual for detailed instructions.

NOTE ON PIPING ANGLE: Refrigerant piping can exit the indoor unit from four different angles: left-hand side, right-hand side, left rear, right rear.



CAUTION

Be extremely careful not to dent or damage the piping while bending them away from the unit. Any dents in the piping will affect the unit's performance.

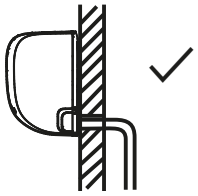
Step 5: Connect drain hose

By default, the drain hose is attached to the left-hand side of unit (when you're facing the back of the unit). However, it can also be attached to the right-hand side. To ensure proper drainage, attach the drain hose on the same side that your refrigerant piping exits the unit. Attach drain hose extension (purchased separately) to the end of drain hose.

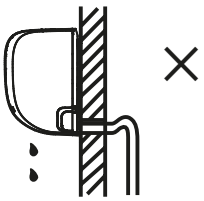
- Wrap the connection point firmly with teflon tape to ensure a good seal and to prevent leaks.
- For the portion of the drain hose that will remain indoors, wrap it with foam pipe insulation to prevent condensation.
- Remove the air filter and pour a small amount of water into the drain pan to make sure that water flows from the unit smoothly.

NOTE ON DRAIN HOSE PLACEMENT

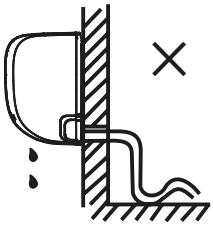
Make sure to arrange the drain hose according to the following figures.



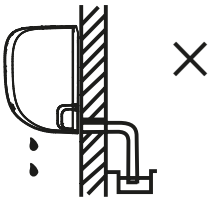
CORRECT
Make sure there are no kinks or dent in drain hose to ensure proper drainage.



NOT CORRECT
Kinks in the drain hose will create water traps.



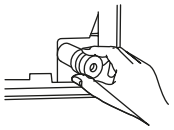
NOT CORRECT
Kinks in the drain hose will create water traps.



NOT CORRECT
Do not place the end of the drain hose in water or in containers that collect water. This will prevent proper drainage.

Plug the unused drain hole

To prevent unwanted leaks you must plug the unused drain hole with the rubber plug provided.



BEFORE PERFORMING ANY ELECTRICAL WORK, READ THESE REQUIREMENTS

1. All wiring must comply with local and national electrical codes, and must be installed by a licensed electrician.
2. All electrical connections must be made according to the electrical connection diagram located on the panels of the indoor and outdoor units.
3. If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client, and refuse to install the unit until the safety issue is properly resolved.
4. Power voltage should be within 90-100% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.
5. If connecting power to fixed wiring, install a surge protector and main power switch with a capacity of 1.5 times the maximum current of the unit.
6. If connecting power to fixed wiring, a switch or circuit breaker that disconnects all poles and has a contact separation of at least 3mm must be incorporated in the fixed wiring. The qualified technician must use an approved circuit breaker or switch.
7. Only connect the unit to an individual branch circuit outlet. **Do not** connect another appliance to that outlet.
8. Make sure to properly ground the air conditioner.
9. Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.
10. **Do not** let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.

WARNING

Before performing any electrical or wiring work, turn off the main power to the system.

Choose the right cable size

The size of the power supply cable, signal cable, fuse, and switch needed is determined by the maximum current of the unit. The maximum current is indicated on the nameplate located on the side panel of the unit. Refer to this nameplate to choose the right cable, fuse, or switch.

Electrical requirement

The indoor unit is powered by the outdoor unit. Do not power indoor unit from separate power source.

Cable	Conductor size (mm^2)	Type	Remarks
Connection cable	1.5	Type 60245 IEC 57	3 cable + Earth (Ground) 1 Ø 230 V

Cable length: Limit voltage drop to less than 2%. Increase cable gauge if voltage drop is 2% or more.

If the interconnect cable exceeds 30M in length 2.5mm thick cable should be used.

The cable specifications are based on the assumption that a metal or plastic conduit is used with no more than three cables contained in a conduit and a voltage drop of 2%.

WARNING

Standard for electrical wiring and equipment differs in each country or region. Before you start electrical work, confirm related regulations, codes or standards.

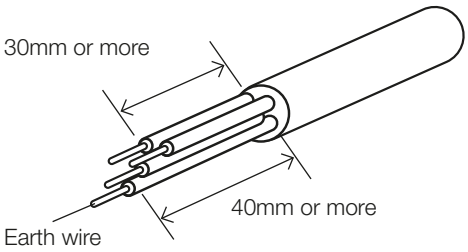
Electrical wiring work

- Before installation, make sure that the power source complies with the air-conditioner's power specification
- Carry out electrical wiring work according to following guidelines

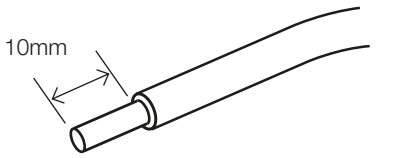
Preparing cable

1. **Selecting cable.** Select the connecting cable in accordance with the specifications mentioned below. 4-core* 1.5mm² conformed with 60245 IEC57. *1 Earth wire is included (yellow/green).
2. Arrange each wire length as shown below. Make sure that each wire is stripped 10mm from the end.

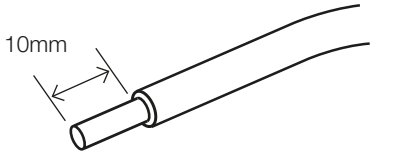
Connecting cable

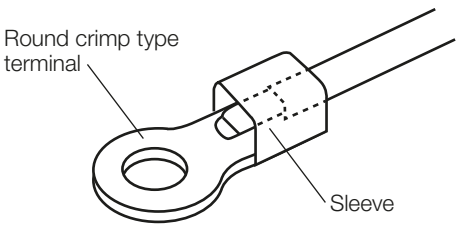


Wire end



3. Attach round crimp-type terminal to each wire as shown below. Select the size of round crimp-type terminal after considering the specifications of terminal block and wire diameter.



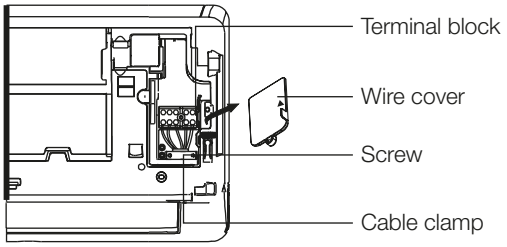


Take note of fuse specifications

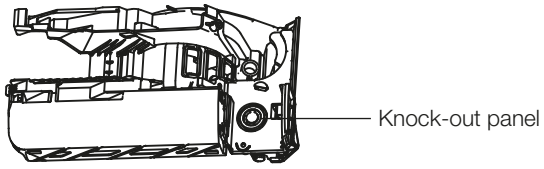
The air conditioner's circuit board (PCB) is designed with a fuse to provide overcurrent protection. The specifications of the fuse are printed on the circuit board, such as: T3.15A/250VAC, T5A/250VAC, etc.

1. Open front panel of the indoor unit.
2. Using a screwdriver, open the wire box cover on the right side of the unit. This will reveal the terminal block.

Front view



Back view (for some units only)



NOTE:

- For the units with conduit tube to connect the cable, remove the big plastic knock-out panel to create a slot through which the conduit tube can be installed.
- For the units with five-core cable, remove the middle small plastic knock-out panel to create a slot through which the cable can exit.
- Use needle nose pliers if the plastic panel is too difficult to remove by hand.

3. Unscrew the cable clamp below the terminal block and place it to the side.
4. Facing the back of the unit, remove the plastic panel on the bottom left-hand side.
5. Feed the signal wire through this slot, from the back of the unit to the front.
6. Facing the front of the unit, connect the wire according to the indoor unit's wiring diagram, connect the u-lug and firmly screw each wire to its corresponding terminal.

⚠ WARNING

DO NOT MIX UP LIVE AND NULL WIRES
This is dangerous, and can cause the air conditioning unit to malfunction.

7. Unscrew the cable clamp below the terminal block and place it to the side.
8. Facing the back of the unit, remove the plastic panel on the bottom left-hand side.
9. Feed the signal wire through this slot, from the back of the unit to the front.
10. Facing the front of the unit, match the wire colours with the labels on the terminal block, connect the u-lug and firmly screw each wire to its corresponding terminal.
11. After checking to make sure every connection is secure, use the cable clamp to fasten the signal cable to the unit. Screw the cable clamp down tightly.
12. Replace the wire cover on the front of the unit, and the plastic panel on the back.

⚠ NOTE ABOUT WIRING

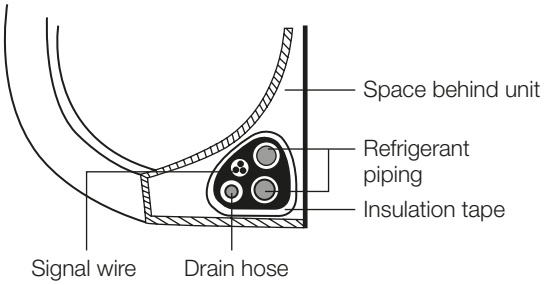
The wiring connection process may differ slightly between units.

Step 6: Wrap piping and cables

Before passing the piping, drain hose, and the signal cable through the wall hole, you must bundle them together to save space, protect them, and insulate them.

1. Bundle the drain hose, refrigerant pipes, and signal cable.

Indoor unit



Drain hose must be on bottom

Make sure that the drain hose is at the bottom of the bundle. Putting the drain hose at the top of the bundle can cause the drain pan to overflow, which can lead to fire or water damage.

Do not intertwine signal cable with other wires

While bundling these items together, **do not** intertwine or cross the signal cable with any other wiring.

2. Using adhesive vinyl tape, attach the drain hose to the underside of the refrigerant pipes.
3. Using insulation tape, wrap the signal wire, refrigerant pipes, and drain hose tightly together.

Do not wrap ends of piping

When wrapping the bundle, keep the ends of the piping unwrapped. You need to access them to test for leaks during of the installation process (refer to Electrical checks and Leak checks section of this manual).

Step 7: Mount indoor unit

If you installed new connective piping to the outdoor unit, do the following:

1. If you have already passed the refrigerant piping through the hole in the wall, proceed to Step 4.
2. Otherwise, double-check that the ends of the refrigerant pipes are sealed to prevent dirt or foreign materials from entering the pipes.
3. Slowly pass the wrapped bundle of refrigerant pipes, drain hose, and signal wire through the hole in the wall.
4. Hook the top of the indoor unit on the upper hook of the mounting plate.
5. Check that unit is hooked firmly on mounting by applying slight pressure to the left and right-hand sides of the unit. The unit should not jiggle or shift.
6. Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.
7. Again, check that the unit is firmly mounted by applying slight pressure to the left and the right-hand sides of the unit.

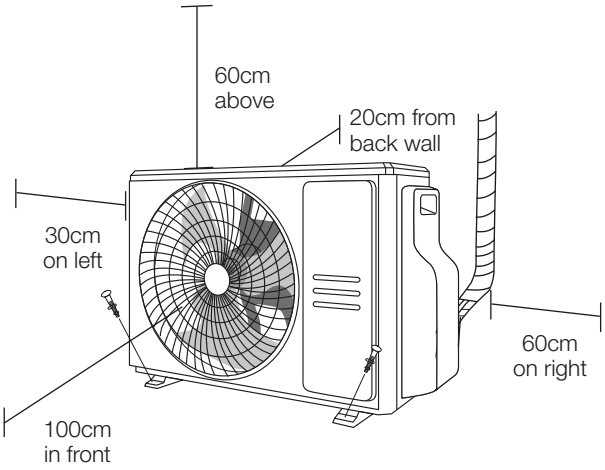
If refrigerant piping is already roughed into the wall

New refrigerant piping must be used as older piping may not meet the safe working pressure requirements of R32.

Residual mineral oil in existing pipe work is not compatible with R32 and POE oil.

1. Hook the top of the indoor unit on the upper hook of the mounting plate.
2. Use a bracket or wedge to prop up the unit, giving you enough room to connect the refrigerant piping, signal cable, and drain hose.
3. Connect drain hose and refrigerant piping (refer to refrigerant piping connection section of this manual for instructions).
4. Keep pipe connection point exposed to perform the leak test (refer to Electrical checks and Leak checks section of this manual).
5. After the leak test, wrap the connection point with insulation tape.
6. Remove the bracket or wedge that is propping up the unit.
7. Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.

6. Outdoor unit installation



Installation instructions – outdoor unit

Step 1: Select installation location

Before installing the outdoor unit, you must choose an appropriate location. The following are standards that will help you choose an appropriate location for the unit.

Proper installation locations meet the following standards:

- ✓ Meets all spatial requirements shown in installation space requirements above.
- ✓ Good air circulation and ventilation.
- ✓ Firm and solid – the location can support the unit and will not vibrate.
- ✓ Noise from the unit will not disturb others.
- ✓ Protected from prolonged periods of direct sunlight or rain.
- ✓ Where snowfall is anticipated, raise the unit above the base pad to prevent ice build-up and coil damage. Mount the unit high enough to be above the average accumulated area snowfall. The minimum height must be 46cm.

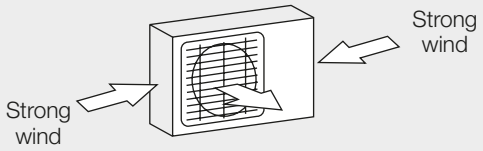
DO NOT install unit in the following locations:

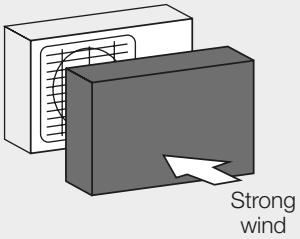
- ✗ Near an obstacle that will block air inlets and outlets.
- ✗ Near a public street, crowded areas, or where noise from the unit will disturb others.
- ✗ Near animals or plants that will be harmed by hot air discharge.
- ✗ Near any source of combustible gas.
- ✗ In a location that is exposed to large amounts of dust.
- ✗ In a location exposed to a excessive amounts of salty air.

Special considerations for extreme weather

If the unit is exposed to heavy wind:

Install unit so that air outlet fan is at a 90° angle to the direction of the prevailing wind. If needed, build a barrier in front of the unit to protect it from extremely heavy winds. See figures below.





If the unit is frequently exposed to heavy rain or snow:

Build a shelter above the unit to protect it from the rain or snow. Be careful not to obstruct air flow around the unit.

Step 2: Install drain joint

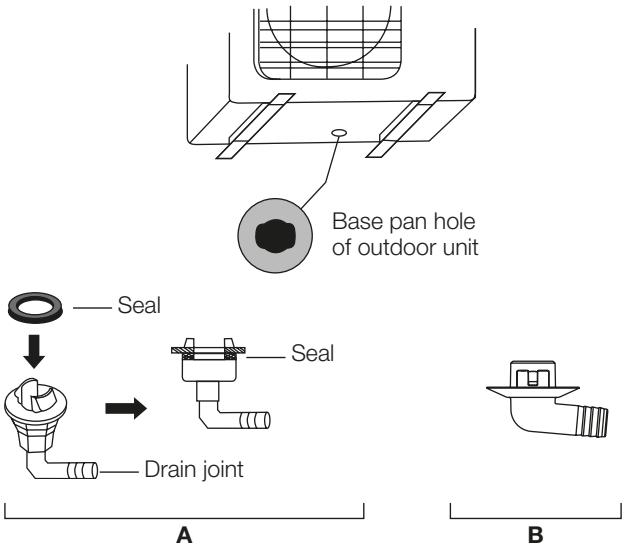
Heat pump units require a drain joint. Before bolting the outdoor unit in place, you must install the drain joint at the bottom of the unit. Note that there are two different types of drain joints depending on the type of outdoor unit.

The drain joint comes with a rubber seal, do the following:

1. Fit the rubber seal on the end of the drain joint that will connect to the outdoor unit.
2. Insert the drain joint into the hole in the base pan of the unit.
3. Rotate the drain joint 90° until it clicks in place facing the front of the unit.
4. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.

IN COLD CLIMATES

In cold climates, make sure that the drain hose is as vertical as possible to ensure swift water drainage. If water drains too slowly, it can freeze in the hose and flood the unit.

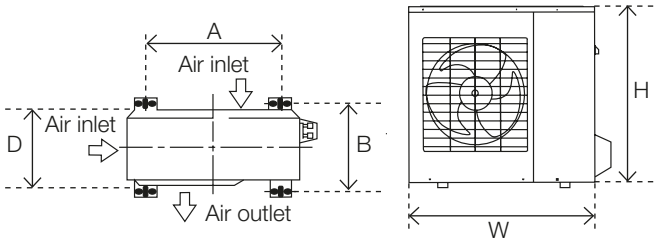


Step 3: Anchor outdoor unit

The outdoor unit can be anchored to the ground or to a wall-mounted bracket.

Unit mounting dimensions

The following is a list of different outdoor unit sizes and the distance between their mounting feet. Prepare the installation base of the unit according to the dimensions below.



Model	Outdoor unit dimensions (mm) W x H x D	Mounting dimensions	
		Distance A (mm)	Distance B (mm)
KSI2.0, 2.5	770x555x300	487	298
KSI3.5	800x554x333	514	340
KSI5.0, 7.0, 7.6	890x673x342	663	354
KSI9.0	946x810x410	673	403

If you will install the unit on the ground or on a concrete mounting platform, do the following:

1. Mark the positions for four expansion bolts based on dimensions in the unit mounting dimensions chart.
2. Pre-drill holes for expansion bolts.
3. Clean concrete dust away from holes.
4. Place a nut on the end of each expansion bolt.
5. Hammer expansion bolts into the pre-drilled holes.
6. Remove the nuts from expansion bolts, and place outdoor unit on bolts.
7. Put washer on each expansion bolt, then replace the nuts.
8. Using a wrench, tighten each nut until snug.

⚠ WARNING

When drilling into concrete, eye protection is recommended at all times.

If you will install the unit on a wall-mounted bracket, do the following:

CAUTION

Before installing a wall-mounted unit, make sure that the wall is made of solid brick, concrete, or of similarly strong material. The wall must be able to support at least four times the weight of the unit.

1. Mark the position of bracket holes based on dimensions in the unit mounting dimensions chart.
2. Pre-drill the holes for the expansion bolts.
3. Clean dust and debris away from holes.
4. Place a washer and nut on the end of each expansion bolt.
5. Thread expansion bolts through holes in mounting brackets, put mounting brackets in position, and hammer expansion bolts into the wall.
6. Check that the mounting brackets are level.
7. Carefully lift unit and place its mounting feet on brackets.
8. Bolt the unit firmly to the brackets.

To reduce vibrations of wall mounted unit

If allowed, you can install the wall-mounted unit with rubber gaskets to reduce vibrations and noise.

Step 3: Connect signal and power cables

The outside unit's terminal block is protected by an electrical wiring cover on the side of the unit. A comprehensive wiring diagram is printed on the inside of the terminal cover.

BEFORE PERFORMING ELECTRICAL WORK, READ THESE REQUIREMENTS

1. All wiring must comply with local and national electrical codes, and must be installed by a licensed electrician.
2. All electrical connections must be made according to the electrical connection diagram located on the side panels of the indoor and outdoor units.
3. If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client, and refuse to install the unit until the safety issue is properly resolved.
4. Power voltage should be within 90-100% of rated voltage. Insufficient power supply can cause electrical shock or fire.
5. If connecting power to fixed wiring, install a surge protector and main power switch with a capacity of 1.5 times the maximum current of the unit.
6. If connecting power to fixed wiring, a switch or circuit breaker that disconnects all poles and has a contact separation of at least 3mm must be incorporated in the fixed wiring. The qualified technician must use an approved circuit breaker or switch.
7. Only connect the unit to an individual branch circuit outlet. Do not connect another appliance to that outlet.
8. Make sure to properly ground the air conditioner.
9. Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.
10. Do not let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.

⚠ WARNING

Before performing any electrical or wiring work, turn off the main power to the system.

Electrical requirement

The indoor unit is powered by the outdoor unit. Do not power indoor unit from separate power source.

⚠ WARNING

Standard for electrical wiring and equipment differs in each country or region. Before you start electrical working, confirm related regulations, codes or standards.

Cable	Conductor size (mm²)	Type	Remarks
Power source cable	2.5	Type 60245 IEC 57	2 core + Earth (Ground) 1 Ø 230 V

Cable length: Limit voltage drop to less than 2%.
Increase cable gauge if voltage drop is 2% or more.

If the power cable length exceeds 30M on KSI2.0/KSI2.5/KSI3.5 or 15M on KSI5.0/KSI7.0/KSI7.6/KSI9.0 in length, 4.0mm2 cable thick cable should be used

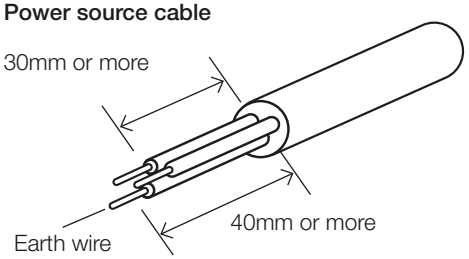
The cable specifications are based on the assumption that a metal or plastic conduit is used with no more than three cables contained in a conduit and a voltage drop of 2%.

Preparing cable

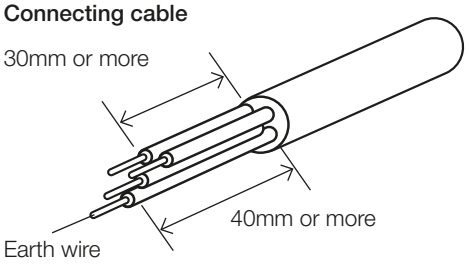
1. **Selecting cable**
   Select the power source cable and connecting cable in accordance with the specifications mentioned below:
   a. Power source cable
   3-core* 2.5mm² or more, conformed with 60245 IEC57.
   When selecting the power source cable length, make sure that voltage drop is less than 2%. If the wire length gets longer, increase the wire diameter.

   b. Connecting cable
   4-core* 1.5mm², conformed with 60245 IEC57.
2. Arrange each wire length as shown. Make sure that each wire is stripped 10mm from the end.
3. Attach round crimp-type terminal to each wire as shown to the right. Select the size of round crimp-type terminal after considering the specifications of terminal block and wire diameter.

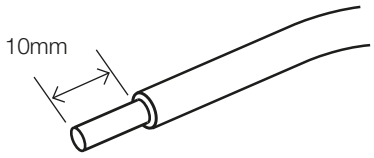
Power source cable

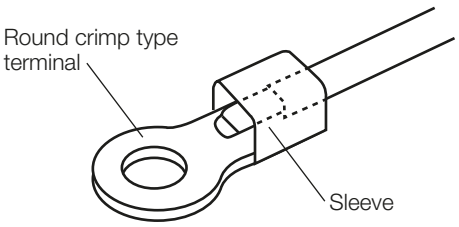


Connecting cable



Wire end





CAUTION

Power source cable and connecting cable must conform to the specifications mentioned in the manual. Using cables with wrong specifications may result in unit malfunction.

1. Unscrew the electrical terminal cover and remove it.
2. Unscrew the cable clamp below the terminal block and place it to the side.
3. Match the wire colours/labels with the labels on the terminal block, and firmly screw the u-lug of each wire to its corresponding terminal.
4. After checking to make sure every connection is secure, loop the wires around to prevent rain water from flowing into the terminal.
5. Using the cable clamp, fasten the cable to the unit. Screw the cable clamp down tightly.
6. Insulate unused wires with PVC electrical tape. Arrange them so that they do not touch any electrical or metal parts.
7. Replace the wire cover on the side of the unit, and screw it in place.

Pay attention to line wire

While crimping wires, make sure you clearly distinguish the line (“L”) wire from other wires.

WARNING

All wiring must performed strictly in accordance with the wiring diagram located inside the outdoor unit’s terminal cover and to local and national requirements.

Breaker specifications

All breakers must be sized and installed by a fully qualified electrician. Please refer to table below for breaker sizing.

Model	Circuit breaker (Amps)
KSI2.0	16
KSI2.5	16
KSI3.5	16
KSI5.0	20
KSI7.0	25
KSI7.6	25
KSI9.0	25

DR Control Box – Operation and installation instructions

Incorrect installation due to ignoring instructions can cause serious damage or injury.
The seriousness of potential damage or injuries is classified as either a WARNING or CAUTION.

CAUTION

Before you start:

- Read and understand this manual before operating this equipment. The manual should be kept for future reference with the product supplied. Improper installation or handling will cause leakage, electric shock, or fire.
- DR control box is only to be installed by a qualified person who is familiar with the installation, construction, operation or maintenance of the equipment and the hazards involved. In addition this person is competent, trained and authorized to undertake the work involved in accordance with established safety and working procedures.
- **Do not** turn on the power before all work has been completed. Otherwise it may cause serious accidents such as electric shock or fire.

Functions

- During the operation of the unit, if DR control box receives the signals via the mains input from the DCSR, it will send signals of DR1, DR2 or DR3 to the indoor unit. Then the indoor unit display area will display d1, d2 or d3. The DR information (including DR malfunction) can not be displayed when the unit is off or under abnormal condition, self clean operation, or LED display feature is activated.

DR Mode	Description of operation in this mode
DR mode 1	Compressor off.
DR mode 2	The air conditioner continues to cool or heat during the Demand Response event, but the electrical energy consumed by the air conditioner in a half hour period is not more than 50% of the total electrical energy that would be consumed if operating at the rated capacity in a half hour period.
DR mode 3	The air conditioner continues to cool or heat during the Demand Response event, but the electrical energy consumed by the air conditioner in a half hour period is not more than 75% of the total electrical energy that would be consumed if operating at the rated capacity in a half hour period.

- When DR signal input malfunction occurs, the display area of indoor unit will display dE and the unit will perform the operation without DR mode.
- Either initiating forced cool operation under DR mode, or going into DR mode under forced cool operation is valid. Under DR mode, after the unit operates on forced cool mode for half an hour, the unit will go into Auto mode with the setting temperature of 24ºC.
- The DR mode is not valid under Self Clean operation. Activating Self Clean feature by using the remote controller are valid in DR mode.
- When the unit goes into a DR mode, it performs moderate operation though the cooling or heating effect may be reduced.

DR Control Box Connection

⚠ WARNING

Before performing any electrical work, unplug the unit and turn off the main power to the system. During connection, no wire should be allowed to touch refrigerant tubing, the compressor or any high voltage parts. All wiring must performed strictly in accordance with the wiring diagram located inside the outdoor unit's wire cover.

1. Unscrew the electrical/wiring cover and remove it, the DR connector (CN3) can be found beside the terminal block. *(See Fig. 1)*
2. Please see the outdoor unit wiring diagrams and *Fig. 2* as shown to the right.

Signal Receiver supplied by Electric Power Company.

NOTE: The DR connection connector provided with the machine differ from appliance to appliance. The actual shape of the outdoor unit you purchased may be slightly different. See the *Fig. 1* for the KSI model.

Fig. 1

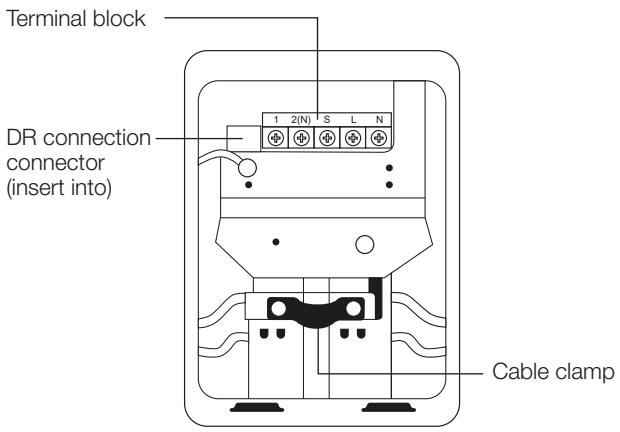
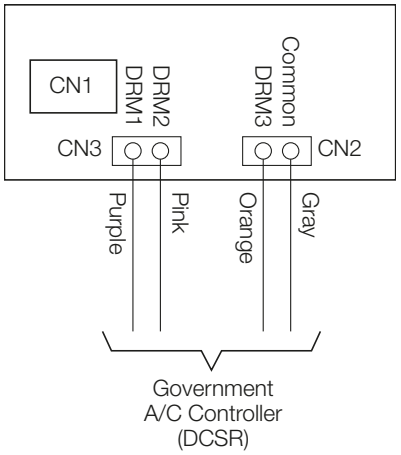
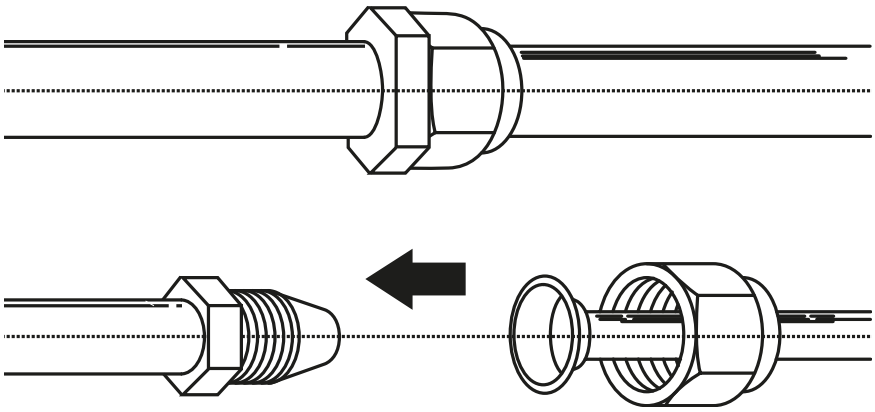


Fig. 2



7. Refrigerant piping connection



Note on pipe length

The length of refrigerant piping will affect the performance and energy efficiency of the unit. Nominal efficiency is tested on units with a pipe length of 5 meters.

Refer to the table below for specifications on the maximum length and drop height of piping.

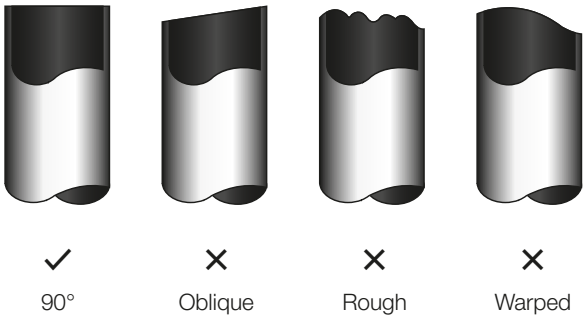
Maximum length and drop height of refrigerant piping per unit model

Model	Capacity (kW)	Min. length (m)	Max. length (m)	Max. height difference (m)
KSI2.0	2.0	3	25	10
KSI2.5	2.5	3	25	10
KSI3.5	3.5	3	25	10
KSI5.0	5.0	3	30	20
KSI7.0	7.0	3	50	25
KSI7.6	7.6	3	50	25
KSI9.0	9.0	3	50	25

Connection instructions – refrigerant piping

Step 1: Cut pipes

1. Measure the distance between the indoor and outdoor units.
2. Using a pipe cutter, cut the pipe a little longer than the measured distance.
3. Make sure that the pipe is cut at a perfect 90° angle.



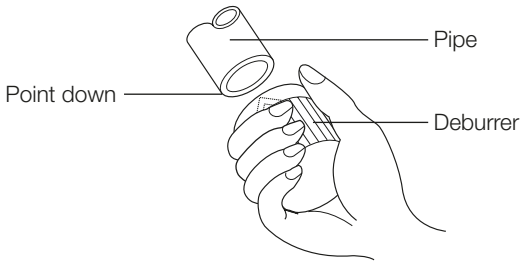
DO NOT DEFORM PIPE WHILE CUTTING

Be extra careful not to damage, dent, or deform the pipe while cutting. This will drastically reduce the heating efficiency of the unit.

Step 2: Remove burrs

Burrs can affect the tight seal of refrigerant piping connection. They must be completely removed.

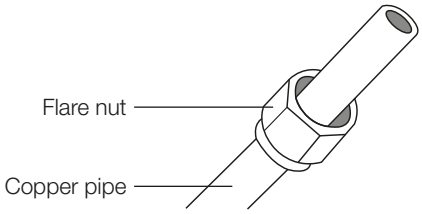
1. Hold the pipe at a downward angle to prevent burrs from falling into the pipe.
2. Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.



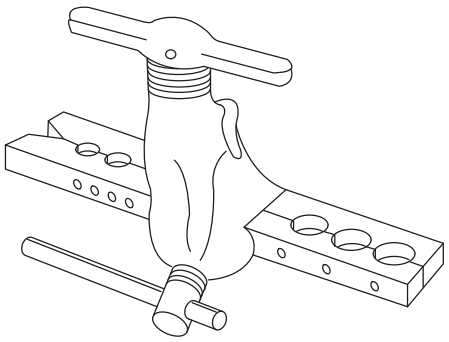
Step 3: Flare pipe ends

Proper flaring is essential to achieve a tight seal.

1. After removing burrs from cut pipe, seal the ends with PVC tape to prevent foreign materials from entering the pipe.
2. Sheath the pipe with insulating material.

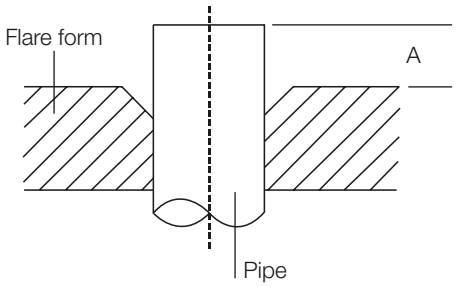


3. Place flare nuts on both ends of pipe. Make sure they are facing in the right direction, because you can't put them on or change their direction after flaring.
4. Remove PVC tape from ends of pipe when ready to perform flaring work.
5. Clamp flare form on the end of the pipe. The end of the pipe must extend beyond the edge of the flare form in accordance with the dimensions shown in the table below.



Flare connection size (A)	A (mm)	
	Min.	Max.
Ø 6.35	0.7	1.3
Ø 9.52	1.0	1.6
Ø 12.70	1.0	1.8
Ø 15.88	2.0	2.2

6. Place flaring tool onto the form.
7. Turn the handle of the flaring tool clockwise until the pipe is fully flared.
8. Remove the flaring tool and flare form, then inspect the end of the pipe for cracks and even flaring.



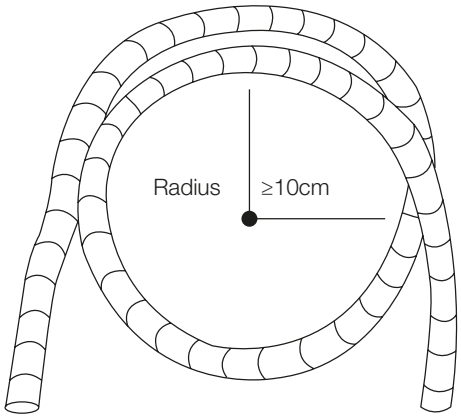
Step 4: Connect pipes

When connecting refrigerant pipes, be careful not to use excessive torque or to deform the piping in any way. You should first connect the low-pressure pipe, then the high-pressure pipe.

1. After removing burrs from cut pipe, seal the ends with PVC tape to prevent foreign materials from entering the pipe.
2. Sheath the pipe with insulating material.
3. Place flare nuts on both ends of pipe. Make sure they are facing in the right direction, because you can't put them on or change their direction after flaring. =

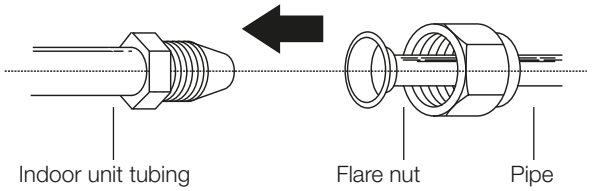
Minimum bend radius

When bending connective refrigerant piping, the minimum bending radius is 10cm. =

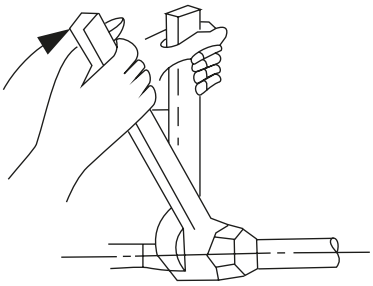


Instructions for connecting piping to indoor unit

1. Add refrigerant oil to the flare faces.
2. Align the centre of the two pipes that you will connect.



3. Tighten the flare nut as tightly as possible by hand.
4. Using a spanner, grip the nut on the unit tubing.
5. While firmly gripping the nut on the unit tubing, use a torque wrench to tighten the flare nut according to the torque values in the torque requirements table below. Loosen the flaring nut slightly, then tighten again.



Torque requirements

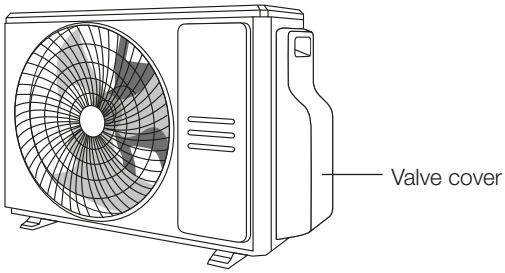
Outer diameter of pipe (mm)	Tightening torque (N•m)	Add tightening torque (N•m)
Ø 6.35	15	16
Ø 9.52	25	26
Ø 12.70	35	36
Ø 15.88	45	47

DO NOT USE EXCESSIVE TORQUE

Excessive force can break the nut or damage the refrigerant piping. You must not exceed torque requirements shown in the table above.

Instructions for connecting piping to outdoor unit

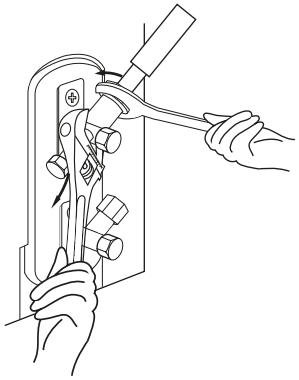
1. Unscrew the cover from the packed valve on the side of the outdoor unit.
2. Remove protective caps from ends of valves.



3. Add refrigerant oil to flare faces.
4. Align flared pipe end with each valve, and tighten the flare nut as tightly as possible by hand.
5. Using a spanner, grip the body of the valve. Do not grip the nut that seals the service valve.

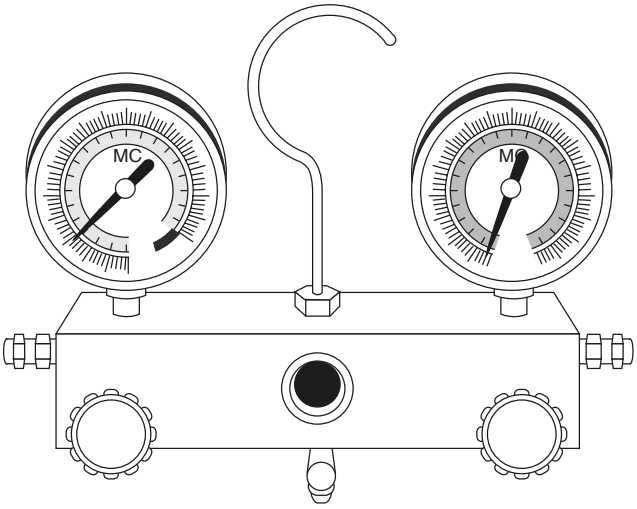
USE SPANNER TO GRIP MAIN BODY OF VALVE

Torque from tightening the flare nut can snap off other parts of valve.



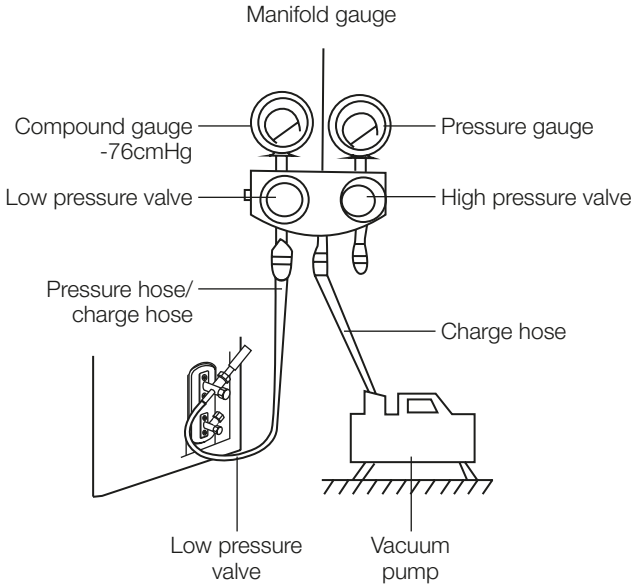
6. While firmly gripping the body of the valve, use a torque wrench to tighten the flare nut according to the correct torque values.
7. Loosen the flaring nut slightly, then tighten again.
8. Repeat Steps 3 to 6 for the remaining pipe.

8. Leak testing and evacuation



Leak, pressure test and evacuation

The interconnecting pipe work and indoor unit must be pressure tested at 1000kpa and leak tested before being evacuated. Before using the manifold gauge and vacuum pump, read their operation manuals to familiarise yourself with how to use them properly.



1. Connect the charge hose of the manifold gauge to service port on the outdoor unit's low pressure valve.
2. Connect another charge hose from the manifold gauge to the vacuum pump.
3. Monitor test pressure and check with a leak detector and bubble solution. Safely release the test pressure.
4. Open the Low Pressure side of the manifold gauge. Keep the High Pressure side closed.
5. Turn on the vacuum pump to evacuate the system.
6. Evacuate the interconnecting pipes to <=500 microns.
7. Close the Low Pressure side of the manifold gauge, and turn off the vacuum pump.
8. Wait for 5 minutes, then check that there has been no change in system vacuum.
9. If the vacuum does not settle, repeat from Step 1 of Leak, pressure test and evacuation. If there is no change in system vacuum, unscrew the cap from the packed valve (high pressure valve).

Preparations and precautions

Air and foreign matter in the refrigerant circuit can cause abnormal rises in pressure, which can damage the air conditioner, reduce its efficiency, and cause injury. Use a vacuum pump and manifold gauge to evacuate the refrigerant circuit, removing any non-condensible gas and moisture from the system.

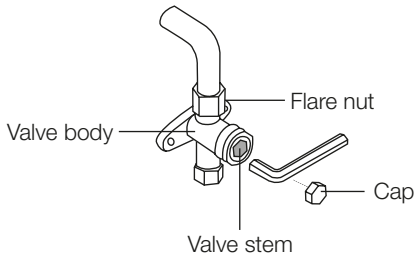
Evacuation should be performed upon initial installation and when unit is relocated.

Before performing evacuation

- ✓ Check to make sure that both high pressure and low-pressure pipes between the indoor and outdoor units are connected properly in accordance with the Refrigerant piping connection section of this manual.
- ✓ Pressure test the interconnecting pipes.
- ✓ Check to make sure all wiring is connected properly.

Opening outdoor unit valves

1. Insert hexagonal wrench into the packed valve (high pressure valve) and open the valve by turning the wrench in a 1/4 counter clockwise turn. Listen for gas to exit the system, then close the valve after 5 seconds.



2. Watch the pressure gauge for one minute to make sure that there is no change in pressure. The pressure gauge should read slightly higher than atmospheric pressure.
3. Remove the charge hose from the service port.
4. Using hexagonal wrench, fully open both the high pressure and low pressure valves.
5. Tighten valve caps on all three valves (service port, high pressure, low pressure) by hand. You may tighten it further using a torque wrench if needed.

Note on adding refrigerant

Some systems require additional charging depending on pipe lengths. The additional refrigerant to be charged can be calculated using the below.

Additional refrigerant per pipe length

Connective pipe length (m)	Evacuation method	Additional refrigerant
Standard pipe length is 15m	Vacuum pump	R32
		6.35mm – 12g/m 9.52mm – 24g/m

CAUTION

Do not mix refrigerant types.

9. Electrical checks

Electrical safety checks

After installation, confirm that all electrical wiring is installed in accordance with local and national requirements, and according to the Installation Manual.

Before test run

Check grounding work

Measure grounding resistance by visual detection and with grounding resistance tester. Grounding resistance must be less than 4 Ω.

During test run

Check for electrical leakage

During the test run, use an electroprobe and multimeter to perform a comprehensive electrical leakage test.

If electrical leakage is detected, turn off the unit immediately and call a licensed electrician to find and resolve the cause of the leakage.

⚠ WARNING – RISK OF ELECTRIC SHOCK

All wiring must comply with local and national electrical codes, and must be installed by a licensed electrician.

Wi-Fi operation setup

For instructions on setting up Wi-Fi connectivity for your Kaden air conditioner, please scan the QR code below, or visit kadenair.com.au

10. Test run

Before test run

Only perform test run after you have completed the following steps:

- Refrigerant leak checks – check all flare nut connections and confirm that the system is not leaking
- Electrical safety checks – confirm that the unit's electrical system is safe and operating properly
- Confirm that gas and liquid (high and low pressure) valves are fully open

Test run instructions

You should perform the test run for at least 30 minutes.

1. Connect power to the unit.
2. Press the ON/OFF button on the remote controller to turn it on.
3. Press the MODE button to scroll through the following functions, one at a time:
   - COOL – Select lowest possible temperature
   - HEAT – Select highest possible temperature
4. Let each function run for 5 minutes, and perform the following checks:

List of checks to perform	Pass/fail	
No electrical leakage		
Unit is properly grounded		
All electrical terminals properly covered		
Indoor and outdoor units are solidly installed		
All pipe connection points do not leak	Outdoor (2):	Indoor (2):
Water drains properly from drain hose		
All piping is properly insulated		
Unit performs COOL function properly		
Unit performs HEAT function properly		
Indoor unit louvres rotate properly		
Indoor unit responds to remote controller		

Double-check pipe connections

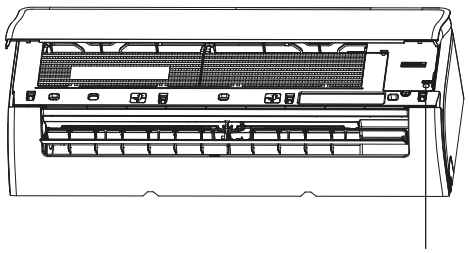
During operation, the pressure of the refrigerant circuit will increase. This may reveal leaks that were not present during your initial leak check. Take time during the test run to double-check that all refrigerant pipe connection points **do not** have leaks. Refer to gas leak check section for instructions.

5. After the test run is successfully completed, and you confirm that all checks points in list of checks to perform have PASSED, do the following:
   a. Using remote control, return unit to normal operating temperature.
   b. Using insulation tape, wrap the indoor refrigerant pipe connections that you left uncovered during the indoor unit installation process.

If ambient temperature is below 17°C (63°F)

You can't use the remote controller to turn on the COOL function when the ambient temperature is below 17°C. In this instance, you can use the MANUAL CONTROL button to test the COOL function.

1. The MANUAL CONTROL button is located on the right-hand side panel of the unit, see Fig.8.1.
2. Press the button 2 times to select the COOL function.
3. Perform test run as normal.



Manual control button

11. Electrical diagrams

Indoor and outdoor unit wiring diagram

Indoor unit		Outdoor unit	
IDU model	IDU wiring diagram	ODU model	ODU wiring diagram
KSI2.0	16022000024595	KSI2.0	16022000033989
KSI2.5		KSI2.5	
KSI3.5		KSI3.5	
KSI5.0	16022000032436	KSI5.0	16022000033970
KSI7.0		KSI7.0	
KSI7.6		KSI7.6	
KSI9.0	16022000032769	KSI9.0	16022000033989

Outdoor unit printed circuit board diagram

Outdoor unit	
ODU model	ODU printed circuit board
KSI2.0	17122000048121
KSI2.5	
KSI3.5	
KSI5.0	17122000048064
KSI7.0	
KSI7.6	
KSI9.0	17122000059778

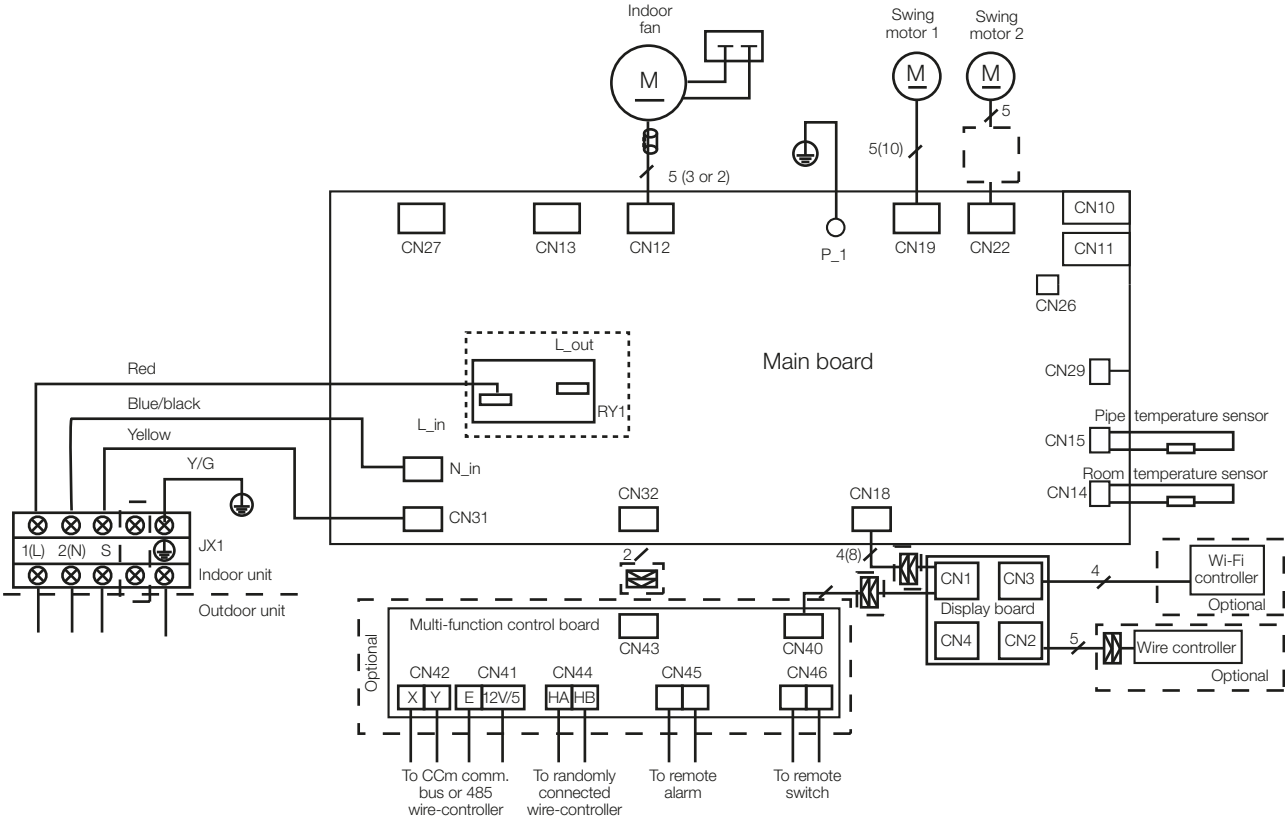
Indoor unit abbreviations

Abbreviation	Paraphrase
Y/G	Yellow-green conductor
ION	Positive and negative ion generator
CAP	Capacitor
PLASMA	Electronic dust collector
L	LIVE
N	NEUTRAL

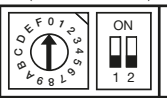
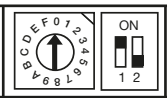
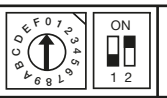
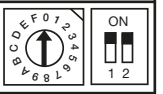
Outdoor unit abbreviations

Abbreviation	Paraphrase
4-WAY	Gas valve assembly/4-WAY VALVE
AC-FAN	Alternating current FAN
DC-FAN	Direct current FAN
COMP	Compressor
L-PRO	Low pressure switch
H-PRO	High pressure switch
EEV	Electronic expansion valve

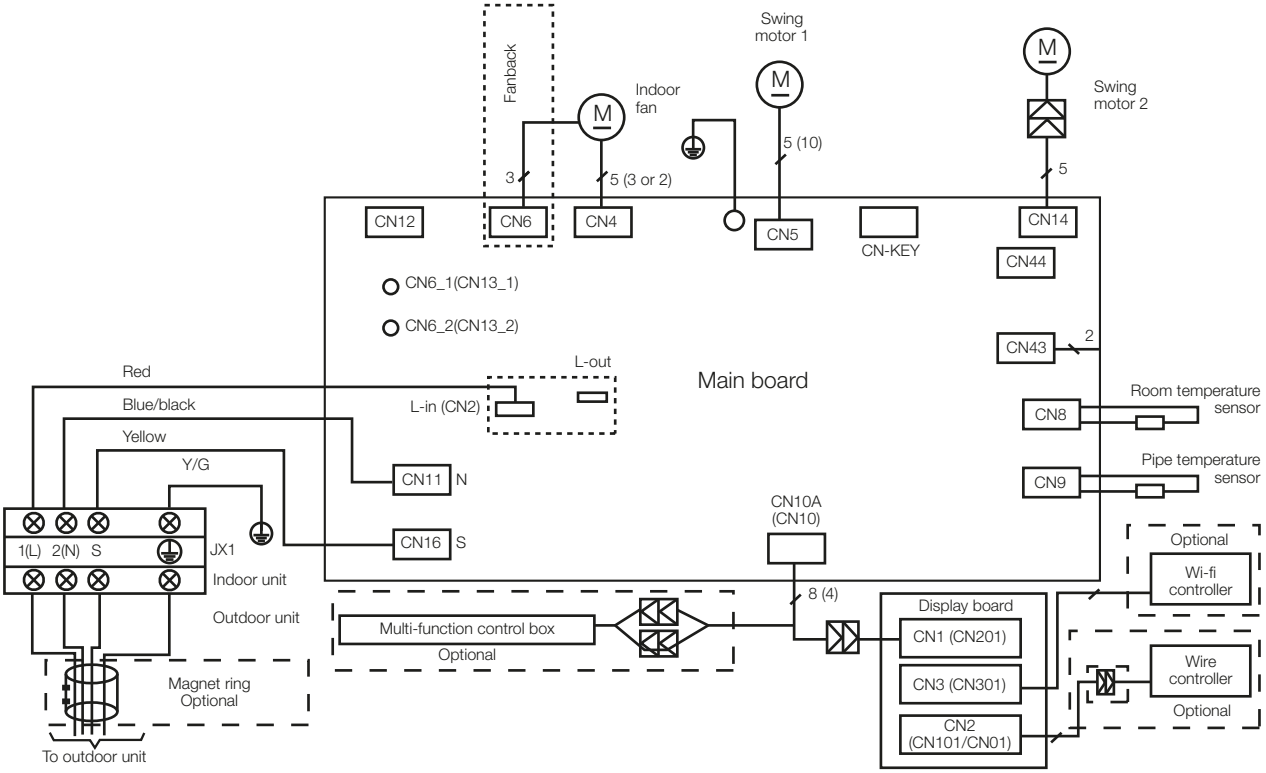
KSI2.0, KSI2.5, KSI3.5, KSI5.0 Indoor unit wiring diagram: 16022000024595



This symbol indicates the element is optional, the actual shape shall prevail.

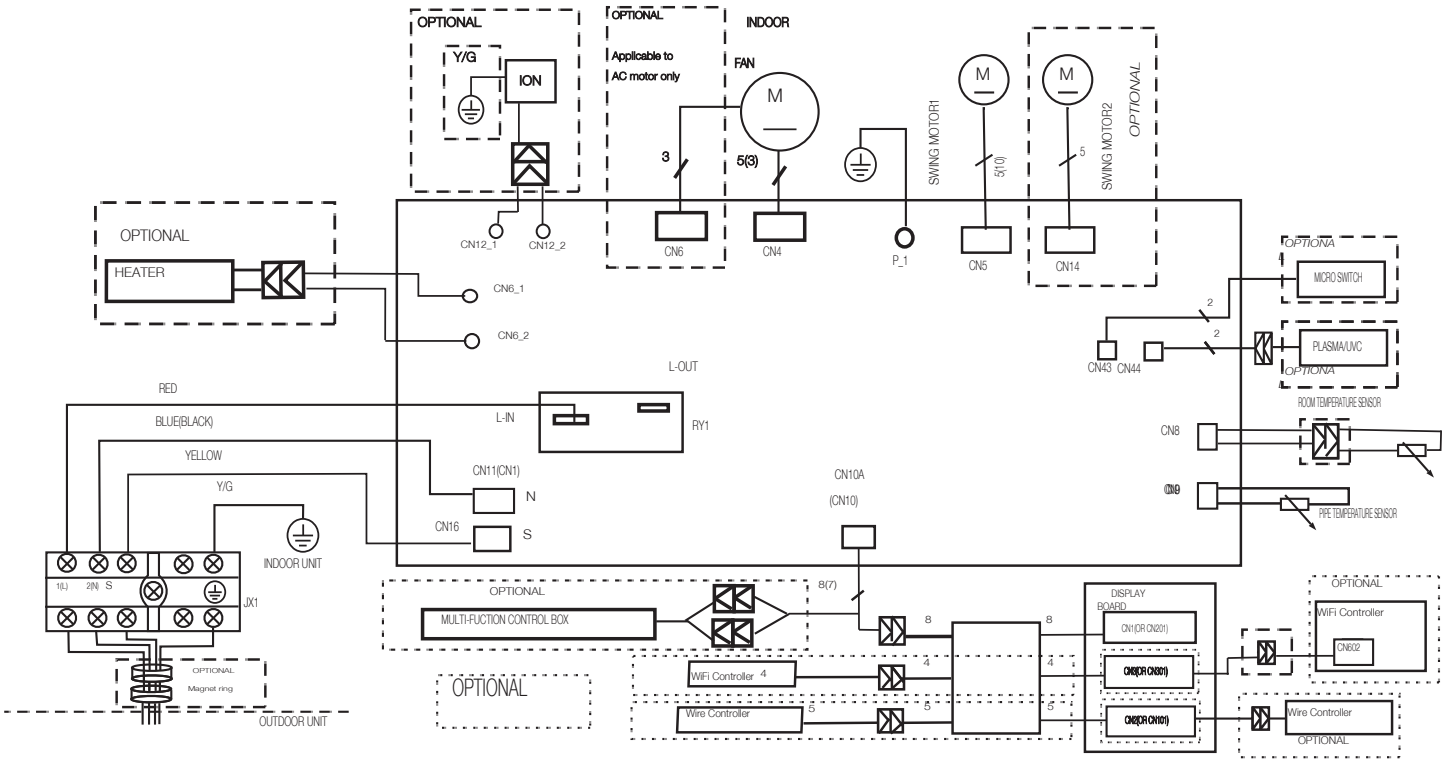
For setting netaddress (CCM comm. bus)				
ENC3+F1 (Multi-function control board)				
Code	0~F	0~F	0~F	0~F
Netaddress	0~15	16~31	32~47	48~63
Factory setting	✓			

KSI7.0,KSI7.6 Indoor unit wiring diagram: 16022000032436



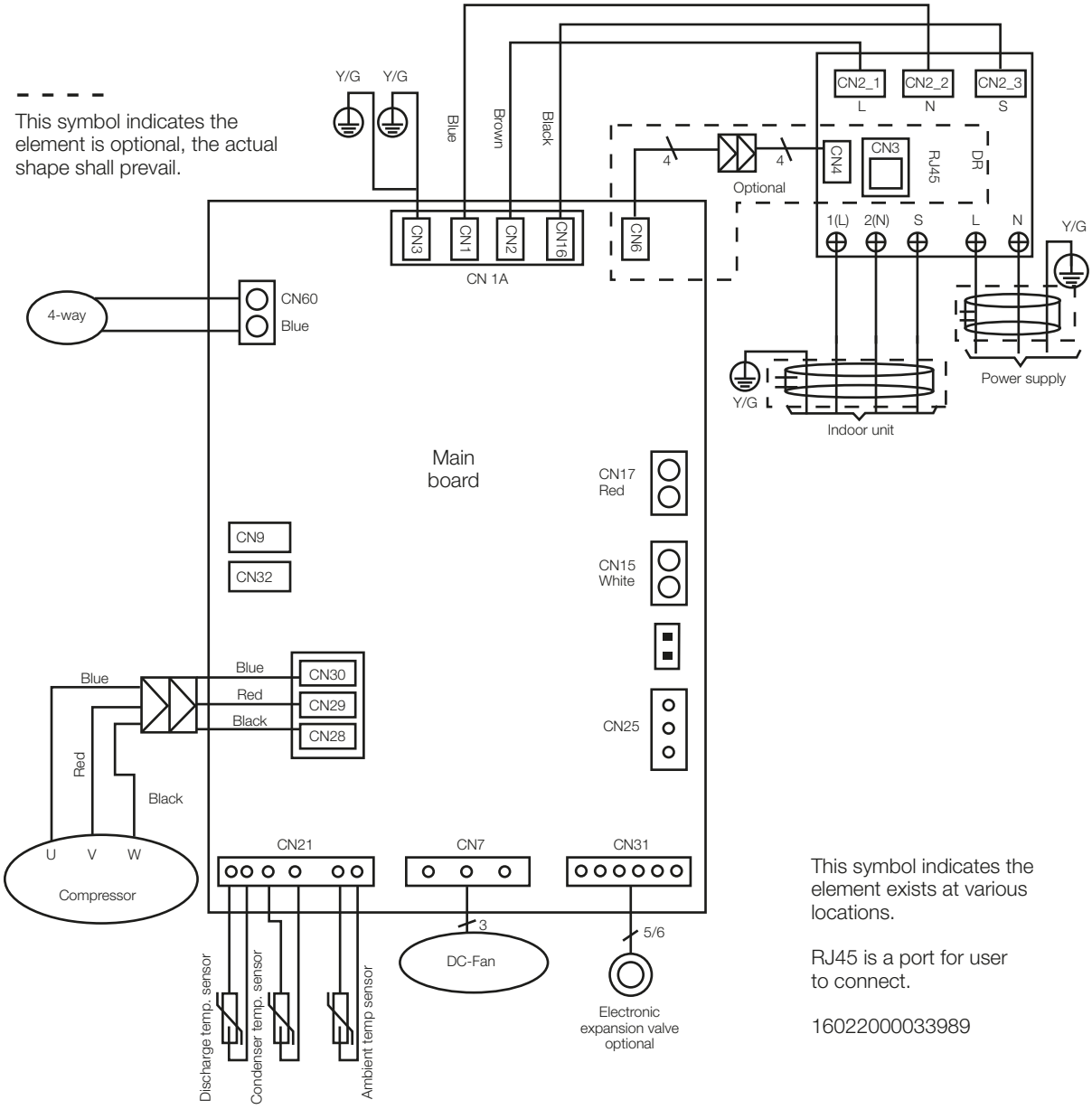
This symbol indicates the element is optional, the actual shape shall prevail.

KSI9.0 Indoor unit wiring diagram: 16022000032769

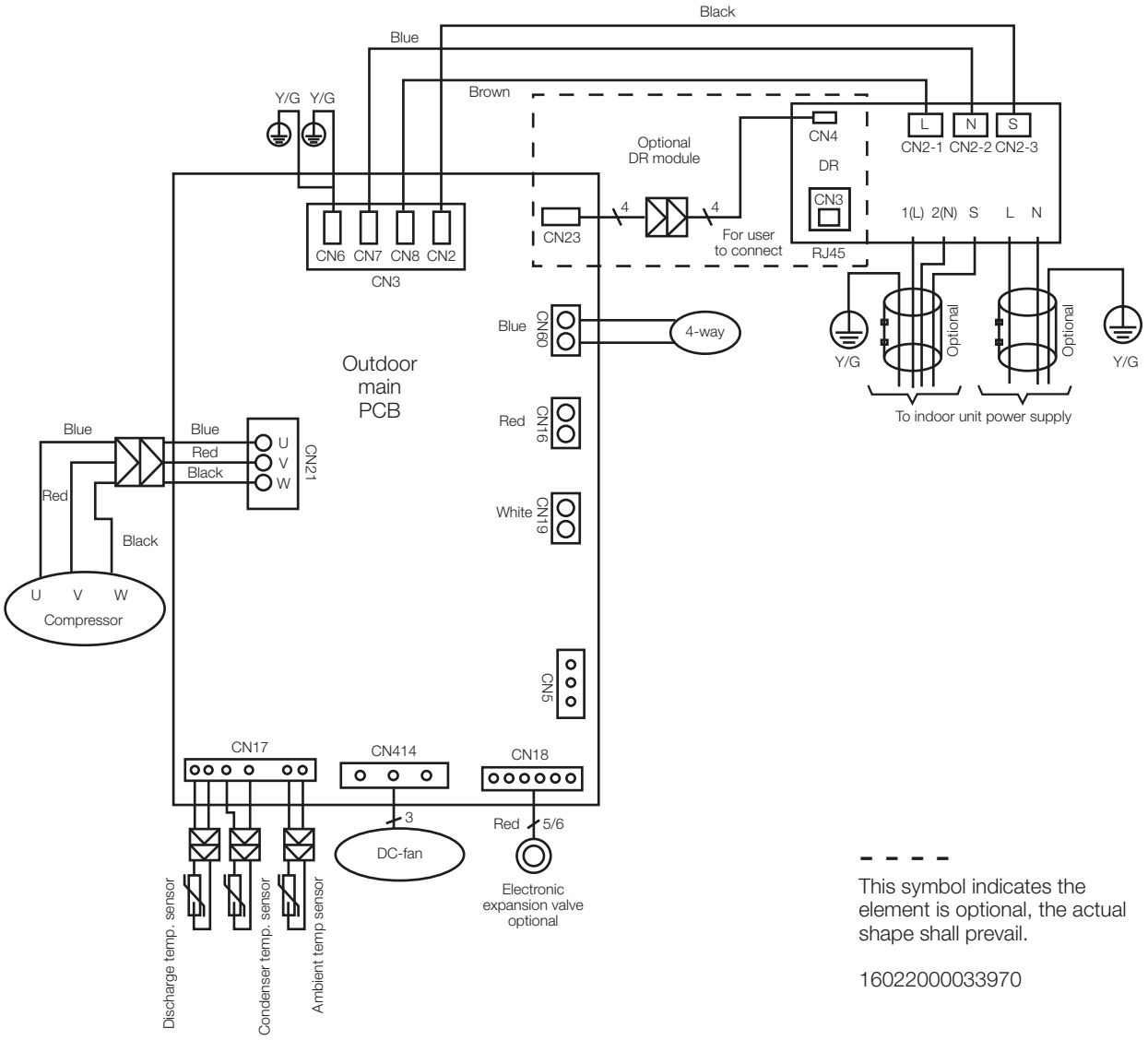


This symbol indicates the element is optional, the actual shape shall prevail.

KSI2.0, KSI2.5, KSI3.5 Outdoor unit wiring diagram: 16022000033989



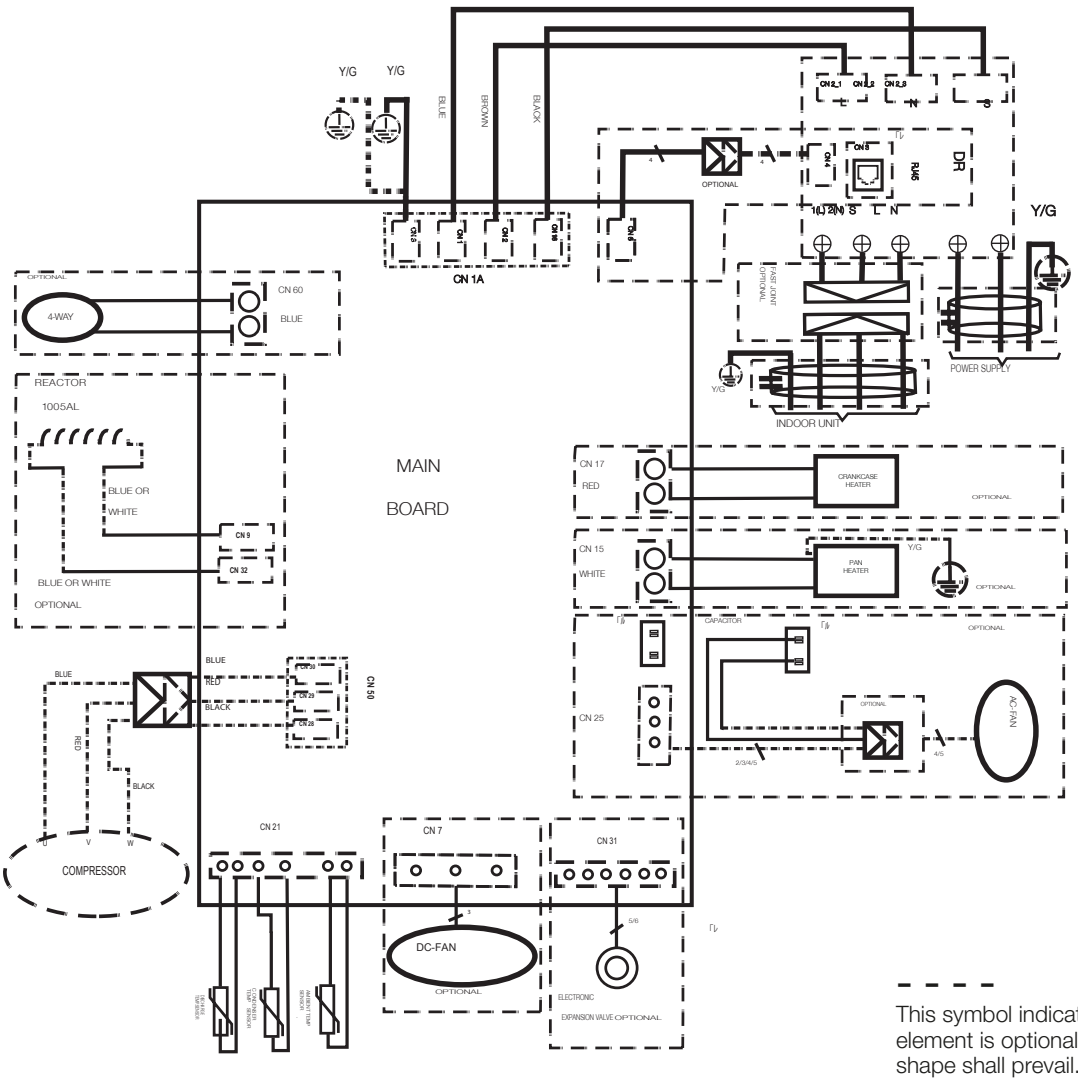
KSI5.0, KSI7.0, KSI7.6 Outdoor unit wiring diagram: 16022000033970



This symbol indicates the element is optional, the actual shape shall prevail.

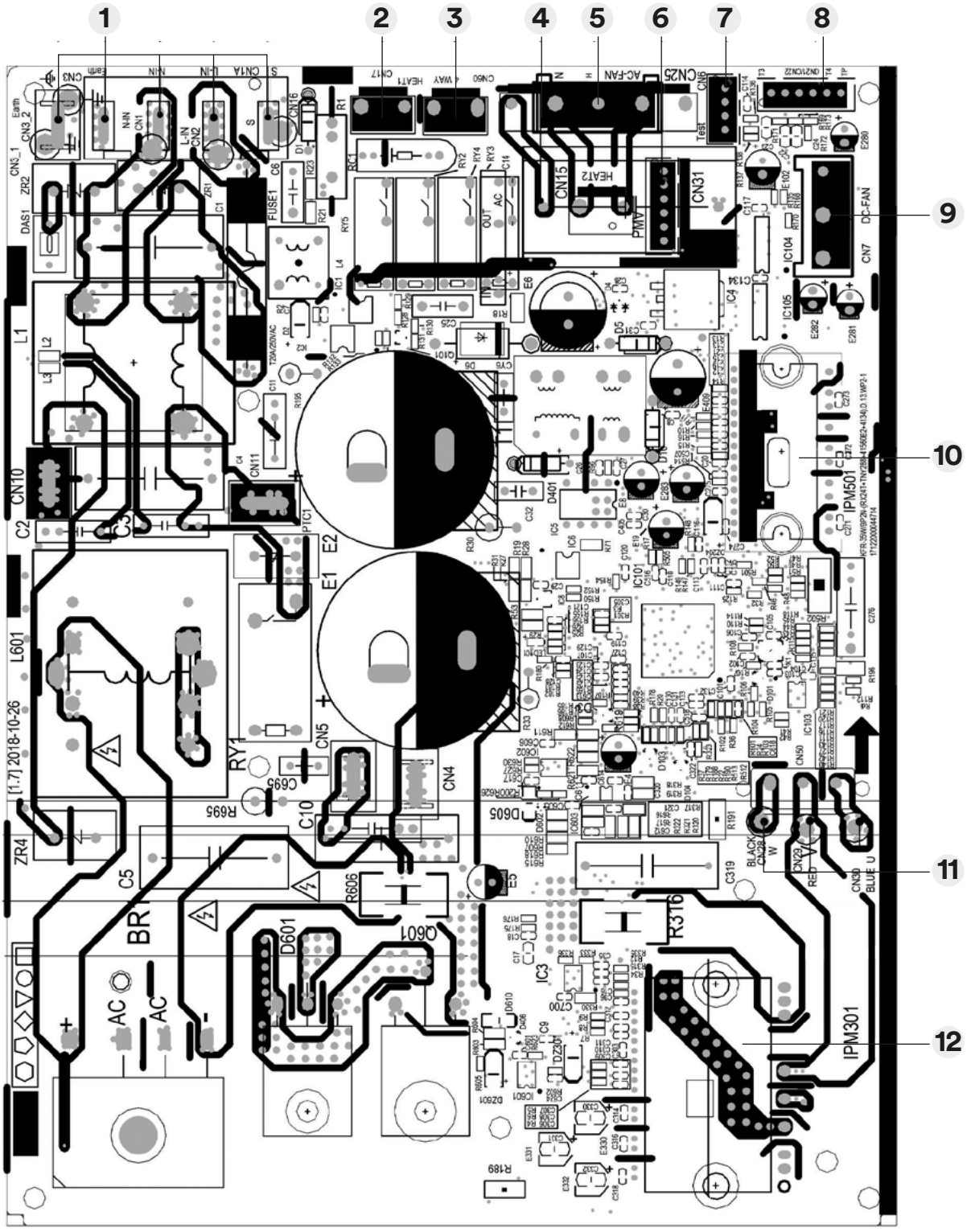
16022000033970

KSI9.0 Outdoor unit wiring diagram: 16022000033989



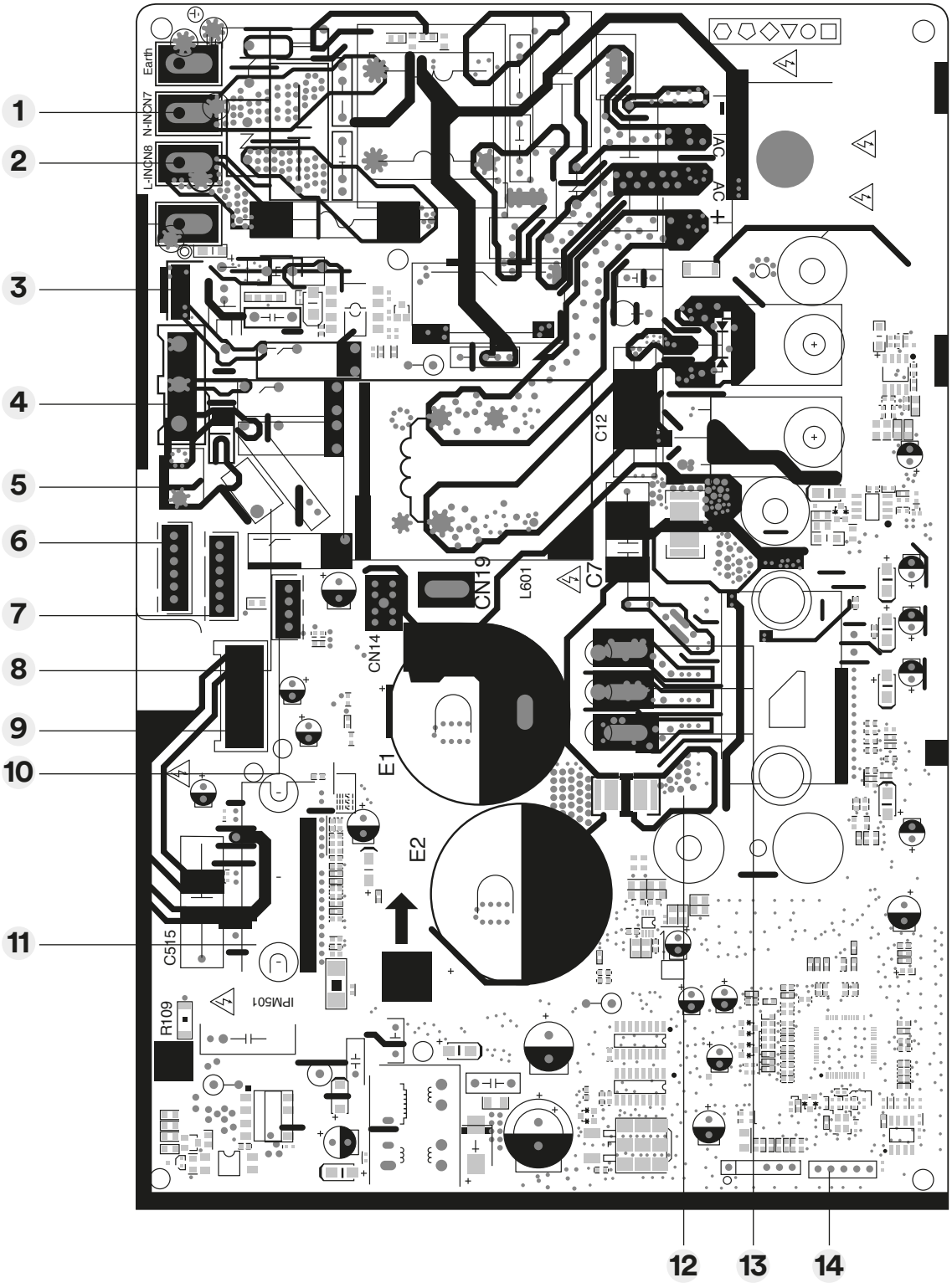
This symbol indicates the element is optional, the actual shape shall prevail.

KSI2.0, KSI2.5, KSI3.5 Outdoor unit printed circuit board diagram: 17122000048121



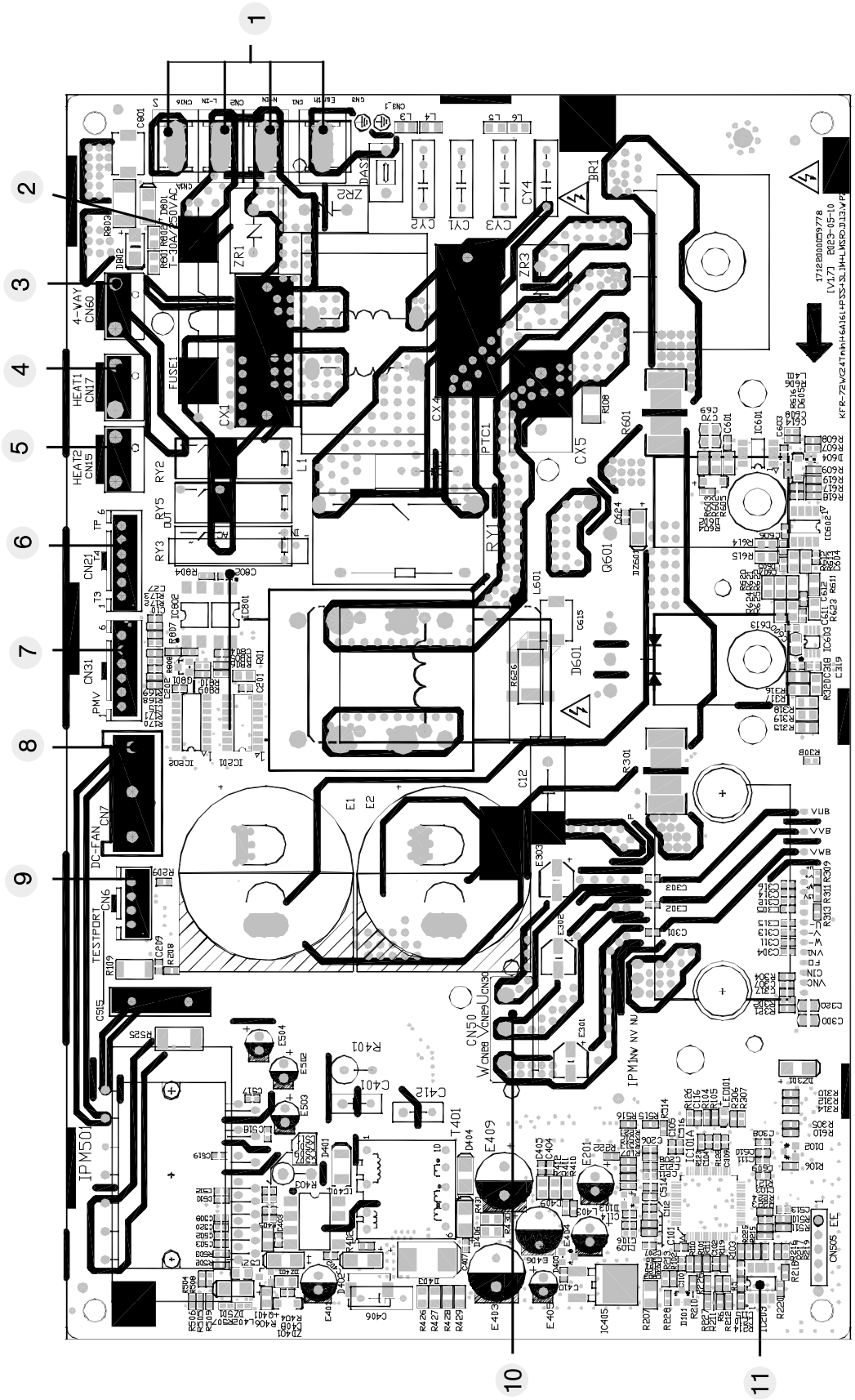
No.	Name	CN#	Meaning
1	CN1A	CN3	Earth: connect to ground
		CN1	N_in: connect to N-line (208-230V AC input)
		CN2	L_in: connect to L-line (208-230V AC input)
		CN16	S: connect to indoor unit communication
2	HEAT1	CN17	Connect to compressor heater, 208-230V AC when is ON
3	4-WAY	CN60	Connect to 4 way valve, 208-230V AC when is ON
4	HEAT2	CN15	Connect to chassis heater, 208-230V AC when is ON
5	AC-FAN	CN25	Connect to AC fan
6	PMV	CN31	Connect to electric expansion valve
7	TESTPORT	CN6	Used for testing
8	TP T4 T3	CN21/CN22	Connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP
9	DC-FAN	CN7	Connect to DC fan
10	FAN_IPM	IPM501	IPM for DC fan
11	W	CN28	Connect to compressor
	V	CN29	0V AC (standby)
	U	CN30	10-200V AC (running)
12	COMP_IPM	IPM 301	IPM for compressor

KSI5.0, KSI7.0, KSI7.6 Outdoor unit printed circuit board diagram: 17122000048064



No.	Name	CN#	Meaning
1	Power supply	CN6	Earth: connect to ground
		CN7	N_in: connect to N-line (208-230V AC input)
		CN8	L_in: connect to L-line (208-230V AC input)
2	S	CN2	S: connect to indoor unit communication
3	4-WAY	CN60	Connect to 4 way valve, 208-230V AC when is ON
4	AC-FAN	CN5	Connect to AC fan
5	HEAT2	CN19	Connect to chassis heater, 208-230V AC when is ON
6	TP T4 T3	CN17	Connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP
7	PMV	CN18	Connect to electric expansion valve
8	HEAT1	CN16	Connect to compressor heater, 208-230V AC when is ON
9	DC-FAN	CN414	Connect to DC fan
10	TESTPORT	CN23	Used for testing
11	FAN_IPM	IPM501	IPM for DC fan
12	COMP_IPM	IPM1	IPM for compressor
13	U	CN27	Connect to compressor
	V	CN28	0V AC (standby)
	W	CN29	200-300V AC (running)
14	EE_PORT	CN505	EEPROM programer port

KSI9.0 Outdoor unit printed circuit board diagram: 17122000059778



No.	Name	CN#	Meaning
1	Power supply	/	S: connect to indoor unit communication
		/	L_in: connect to L-line (208-240V AC input)
		/	N_in: connect to N-line (208-240V AC input)
		/	Earth: connect to Ground
2	FUSE	FUSE1	T-30A/250VAC
3	4-WAY	CN60	Connect to 4 way valve, 208-240V AC when is ON
4	HEAT1	CN17	Connect to compressor heater, 208-240V AC when is ON
5	HEAT2	CN15	Connect to chassis heater, 208-240V AC when is ON
6	TP T4 T3	CN21	Connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP
7	PMV	CN31	Connect to electric expansion valve
8	DC-FAN	CN7	Connect to DC fan
9	TESTPORT	CN6	Used for testing
13	U	CN50	Connect to compressor,0V AC (standby),200-300V AC (running)
	V		
	W		
14	EE_PORT	IX203	EEPROM programer port

12. Error codes

Error display (indoor unit)

When the indoor unit encounters a recognized error on different models.

1. The running LED with flash in a corresponding series, the timer LED may turn on or begin flashing;
2. An error code will be displayed;
3. Both 1 and 2.

These error codes are described in the following tables:

Running lamp	Timer lamp	Display	Information	Solution
1 time	×	EH 00/EH 0A	Indoor unit EEPROM parameter error	TS01-IDU
2 times	×	EL 01	Indoor/outdoor unit communication error	TS02-S-INV
3 times	×	EH 02	Zero-crossing signal detection error	TS03
4 times	×	EH 03	The indoor fan speed is operating outside of the normal range	TS04-S-IDU
5 times	×	EC 51	Outdoor unit EEPROM parameter error	TS01-ODU
5 times	×	EC 52	Condenser coil temperature sensor T3 is in open circuit or has short circuited	TS05-ODU
5 times	×	EC 53	Outdoor room temperature sensor T4 is in open circuit or has short circuited	TS05-ODU
5 times	×	EC 54	Compressor discharge temperature sensor TP is in open circuit or has short circuited	TS05-ODU
5 times	×	EC 56	Evaporator coil outlet temperature sensor T2B is in open circuit or has short circuited (for free-match indoor units)	TS05-ODU
6 times	×	EH 60	Indoor room temperature sensor T1 is in open circuit or has short circuited	TS05-IDU
6 times	×	EH 61	Evaporator coil middle temperature sensor T2 is in open circuit or has short circuited	TS05-IDU
12 times	×	EC 07	The outdoor fan speed is operating outside of the normal range	TS04-ODU
9 times	×	EH 0b	Indoor PCB/Display board communication error	TS07
8 times	×	EL 0C	Refrigerant leakage detection	TS06-INV
7 times	△	PC 00	IPM malfunction or IGBT over-strong current protection	TS09-S
2 times	△	PC 01	Over voltage or over low voltage protection	TS10-S
3 times	△	PC 02	Top temperature protection of compressor or High temperature protection of IPM module or High pressure protection	TS11-S-INV
5 times	△	PC 04	Inverter compressor drive error	TS12-S
1 time	△	PC 08	Current overload protection	TS08-S
6 times	△	PC 40	Communication error between outdoor main chip and compressor driven chip	TS33
7 times	△	PC 03	Low pressure protection	TS13-INV
1 time	○		Indoor units mode conflict (match with multi outdoor unit)	TS14

○ on
× off
△ flash

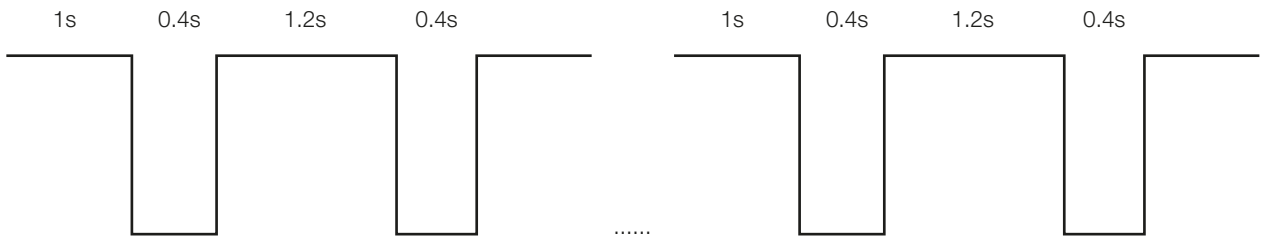
For other errors:

The display board may show a garbled code or a code undefined by the service manual. Ensure that this code is not a temperature reading.

Troubleshooting:

Test the unit using the remote control. If the unit does not respond to the remote, the indoor PCB requires replacement. If the unit responds, the display board requires replacement.

88 flash frequency:



The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details. Any updates to the manual will be uploaded to the service website. Please check for the latest version.

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V3