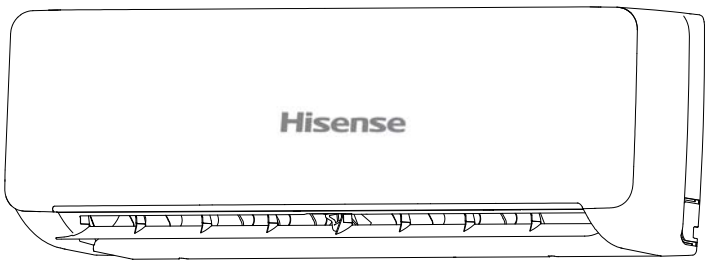
Hisense

Operation Installation & Maintenance Manual

INVERTER-DRIVEN MULTI-SPLIT AIR-CONDITIONER (HEAT PUMP)



- INDOOR UNIT -

Type	Model
Wall-Mounted Type	AVS-07UR2SABA ; AVS-07UR2SABB AVS-09UR2SABA ; AVS-09UR2SABB AVS-12UR2SABA ; AVS-12UR2SABB AVS-14UR2SABA ; AVS-14UR2SABB AVS-17UR2SABA ; AVS-17UR2SABB

IMPORTANT:

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

P00842Q

ORIGINAL INSTRUCTIONS

IMPORTANT NOTICE

- HISENSE pursues a policy of continuing improvement in design and performance of products. The right is therefore reserved to vary specifications without notice.
- HISENSE cannot anticipate every possible circumstance that might involve a potential hazard.
- This heat pump air conditioner is designed for standard air conditioning only. Do not use this heat pump air conditioner for other purposes such as drying clothes, refrigerating foods or for any other cooling or heating process.
- The installer and system specialist shall secure safety against leakage according to local regulations or standards. The following standards may be applicable if local regulations are not available. British Standard, BS4434 or Japan Standard, KHKS0010.
- No part of this manual may be reproduced without written permission.
- Signal words (DANGER, WARNING and CAUTION) are used to identify levels of hazard seriousness. Definitions for identifying hazard levels are provided below with their respective signal words.

⚠DANGER : Immediate hazards which WILL result in severe personal injury or death.

⚠WARNING : Hazards or unsafe practices which COULD result in severe personal injury or death.

⚠CAUTION : Hazards or unsafe practices which COULD result in minor personal injury or product or property damage.

NOTE : Useful information for operation and/or maintenance.

- It is assumed that this heat pump air conditioner will be operated and serviced by English speaking people. If this is not the case, the customer should add safety, caution and operating signs in the native language.
- If you have any questions, contact your distributor or dealer of HISENSE.
- This manual gives a common description and information for this heat pump air conditioner which you operate as well as for other models.
- This heat pump air conditioner has been designed for the following temperatures. Operate the heat pump air conditioner within this range.

Temperature (°C)

		Maximum	Minimum
Cooling Operation	Indoor	32DB/23WB	21 DB/15 WB
	Outdoor	43 DB	-5 DB
Heating Operation	Indoor	27 DB	15 DB
	Outdoor	15 WB	-15 WB

DB: Dry Bulb, WB: Wet Bulb

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

IMPORTANT NOTICE

Correct Disposal of this product

This marking indicates that this product should not be disposed with other household wastes. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

CHECKING PRODUCT RECEIVED

- Upon receiving this product, inspect it for any shipping damage.
  Claims for damage, either apparent or concealed, should be filed immediately with the shipping company.
- Check the model number, electrical characteristics (power supply, voltage and frequency) and accessories to determine if they are correct.

The standard utilization of the unit shall be explained in these instructions.
Therefore, the utilization of the unit other than those indicated in these instructions is not recommended.
Please contact your local agent, as the occasion arises.
HISENSE's liability shall not cover defects arising from the alteration performed by a customer without HISENSE's consent in a written form.

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Section1 Operation Manual

1. Safety Summary

⚠DANGER

- **Do not pour water into the indoor or outdoor unit. These products are equipped with electrical parts. If poured, it will cause a serious electrical shock.**
- **Do not touch or adjust safety devices inside the indoor or outdoor units. If these devices are touched or readjusted, it may cause a serious accident.**
- **Do not open the service cover or access the indoor or outdoor units without turning OFF the main power supply.**

⚠WARNING

- **Refrigerant leakage can cause difficulty with breathing due to insufficient air. If leakage occurs, turn OFF the main switch, put out fire at once and contact your service contractor.**
- **Do not use any sprays such as insecticide, lacquer, hair spray or other flammable gases within approximately one (1) meter from the system.**
- **If earth leakage breaker (ELB) or fuse is often activated, stop the system and contact your service contractor.**

⚠CAUTION

- **The appliance is not to be used by children or person 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 that they do not play with the appliance.**
- **The appliance should not be installed in the laundry.**
- **If the supply cord is damaged, it must be replaced by the manufacturer,its service agent or similarly qualified persons in order to avoid a hazard.**

NOTE

It is recommended that the room be ventilated every 3 to 4 hours.

2. System Description

A maximum total capacity of 130% and a minimum total capacity of 50% can be chosen by combination of the indoor units (Table 2.1).

The heat pump air conditioner is designed to offer cooling, heating, dry and fan operations.
These operation modes are controlled by the remote control switch (optional).

Table 2.1 Indoor Unit Type List

Indoor Unit Type	Nominal Capacity ($\times 10^3$Btu/h)				
	07	09	12	14	17
Wall-Mounted Type	○	○	○	○	○

○ : Available

2.1 Identification of Parts

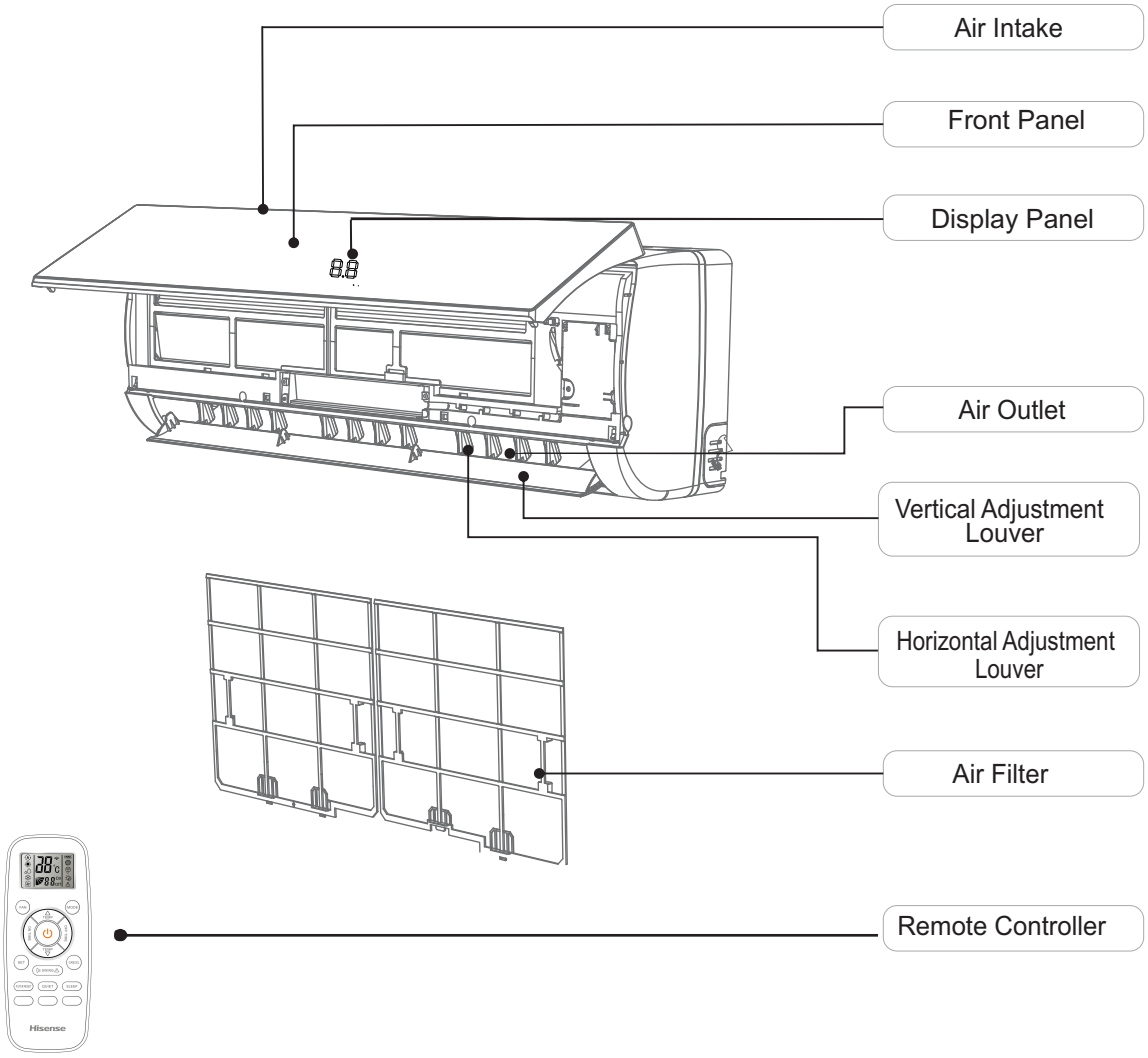


Fig.2.1 External Parts of System

3. Remote Control Switch

⚠CAUTION

- **Press switches only with fingers. Do not press switches by any other item,as it may break switches.**
- **Do not touch "⧉" and "☑" two switch simultaneously.These switch is only for servicing. If touched, press two switch again to reset.**

- **Temperature Setting**
  When the TEMP switch is pressed, temperature increases by 1 degree. The minimum setting indication is 17°C and the maximum setting indication is 30°C.
- **Set and Actual Temperature**
  The set temperature is for the air temperature at the sensor (thermistor) of the indoor unit. The actual room temperature may be different from the air temperature of the sensor due to the difference of the sensing location.
- **Touching Type Switches**
  This control switch is of touching type. Slightly press the switch by finger. The operation can be checked by the display of the liquid crystal.
- **Multiple-Unit Control**
  16 indoor units, as a maximum number, can be controlled by one remote control switch. Refer to the Installation Manual for Remote Control Switch.

NOTE

Regarding the instructions of Wired Remote Control Switch or Wireless Remote Control Switch,read the operation manual attached to the control switch.
The pictures of Control Switch are only example. The matter is related to the optional parts of customer choices.

If use the Wired Remote Control Switch， the connecting wire of siginal receptor should be removed , if not , the receiver display alarm code.

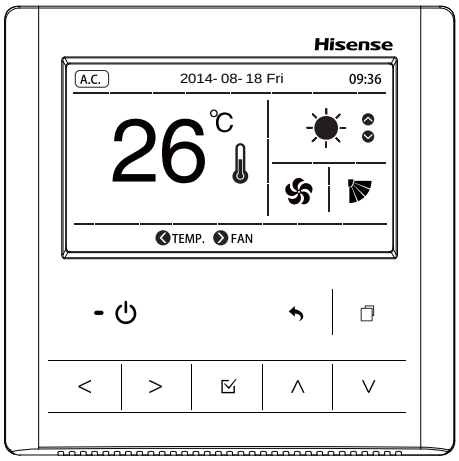


Fig.2.1 Example of Remote Controller

4. Signal Receptor

Display introduction

Temperature indicator 1

Display set temperature.
It shows FC after 200 hours of usage as reminder to clean the filter.
After filter cleaning press the filter reset button located on the indoor unit behind the frontpanel in order to reset the display.

Running indicator 2

It lights up when the AC is running.
It flashes during defrosting.

Sleep indicator 3

It lights up in sleep mode.

Temperature control indicator 4

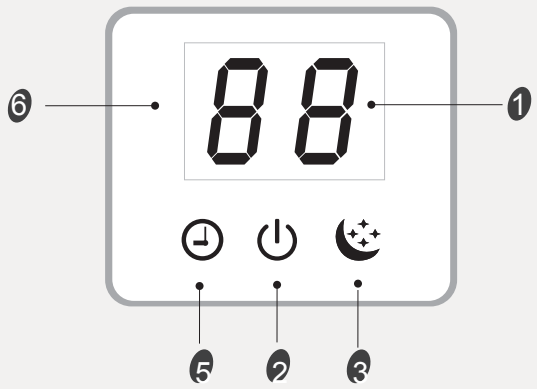
It lights up when temperature deviate the set temperature.

Timer indicator 5

It lights up during set time.

Signal Receptor 6

BA series



BB series

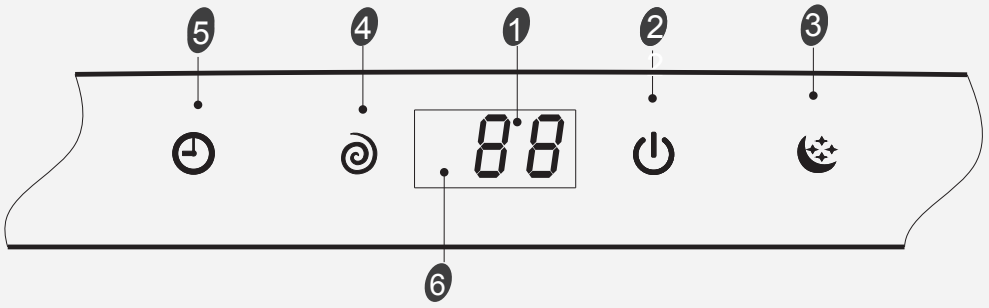


Fig.4.1 Signal Receptor

NOTE

To operate the room air conditioner, aim the remote controller to the signal receptor.
The remote controller will operate the air conditioner at a distance of up to 7m when pointing at signal receptor of indoor unit.
Signal display lights for 10 seconds, when operate the wireless remote control switch.

5. Before Operation

⚠CAUTION

- **Supply electrical power to the system for approximately 12 hours before start-up after long shutdown. Do not start the system immediately after power supply, it may cause a compressor failure, because the compressor is not heated well.**
- **Make sure that the outdoor unit is not covered with snow or ice. If covered, remove it by using hot water (approximately 50°C).**
- **If the water temperature is higher than 50°C, it will cause damage to plastic parts.**

When the system is started after a shutdown longer than approximately 3 months, it is recommended that the system be checked by your service contractor.

Turn OFF the main switch when the system is stopped for a long period of time. If the main switch is not turned OFF, electricity is consumed, because the oil heater is always energized during compressor stopping.

6. Setting of Automatic Swing Louver

6.1 Common

When the " SWING " switch is pressed, the swing louver starts its operation. When " ◥ " is moving, it indicates the operation of the louver continuously. When the swinging operation of the louver is not required, press the " SWING " switch again. The louver is stopped at an angle indicated by the direction of this mark " ◥ ".

NOTE

1. There exists a time lag between the actual angle of the louver and the liquid crystal indication.
2. When the " SWING " switch is pressed, the louver will not stop immediately. The louver will move one extra swing at the next.
3. During the cases in item (A), the louvers are fixed automatically.
   However, indication of the louvers is changed at setting before.
   (A) Discharge air angle is fixed at horizontal position during start-up of heating operation and defrosting operation and when thermostat is ON.
   When the outlet air temperature reaches higher than approximately 30°C, swinging of louvers is started.
4. During the defrosting operation, fan stops running.

⚠CAUTION

Do not turn the air louver by hand. If moved, the louver mechanism will be damaged.

7. Automatic Control

The system is equipped with the following functions.

- **Three Minute Guard** (Enforced Stoppage)
  The compressor remains off for at least 3 minutes once it has stopped. If the system is started within approximately 3 minutes after it has stopped, the RUN indicator is activated. However, the cooling operation or the heating operation remains off and does not start until after 3 minutes has elapsed.
- **Three Minute Guard** (Enforced Operation)
  If all indoor units of the system are Thermo-OFF within approximately 3 minutes after compressor has started, compressor is operated during 3 minutes continuously. However, if all indoor units of the system are stopped by remote control switch, compressor is stopped.
- **Oil Return Operation**
  If an indoor unit is stopped more than 2 hours continuously, this function is operated during a few minutes.
  It has this function to prevent to accumulate in the heat exchanger of stoppage indoor unit at cooling operation.
- **Frost Prevention During Cooling Operation**
  When the indoor unit is operated at low discharge air temperature, the cooling operation may be changed to fan operation for a while to avoid frost formation on the indoor heat exchanger.
- **Hot Start During Heating Operation**
  To prevent cold air discharge in the room, the fan speed is controlled from the slow position and the low position and then to the set position according to the discharge air temperature. At this time the louver is fixed horizontally.
- **Slow Air Control During Defrosting Operation**
  When the outdoor unit is performing the automatic defrosting operation, the indoor fan is stopped and the louver is fixed horizontally.
- **Cooling of Indoor Unit**
  When the heating operation is stopped, the indoor fan operation is maintained at the slow position for the maximum of 2 minutes to lower temperature of the inside unit.
- **Automatic Defrosting Cycle**
  When the heating operation is stopped by pressing RUN/STOP switch, frosting on the outdoor unit is checked and the defrosting operation may be performed for the maximum of 10 minutes.
- **Prevention of Overload Operation**
  When the outdoor temperature is high during heating operation, heating operation is stopped due to activation of the outdoor thermistor until the temperature becomes low.

8. Filter Cleaning

⚠CAUTION

Do not operate the system without the air filter to protect the indoor unit heat exchange against being clogged.

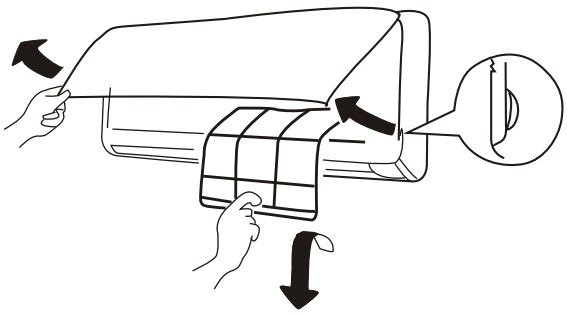
Turn OFF the main power switch before taking out the filter. (The previous operation mode may appear.)

8.1 Taking Out the Filter

The indication, “FILTER” is shown on the display of the remote control switch after approximately 1,200 hour operation.
Take out the air filter according to the following steps.

Step 1
Open the air inlet grille.

Step 2
Take out the air filter from the air inlet grille.



8.2 Clean the Filter

Clean the air filter according to the following steps.

Step 1
Use a vacuum cleaner or let water flow onto the air filter for removing the dirt from the air filter.

⚠CAUTION

Do not use hot water higher than approximately 40°C.

Step 2
Dry the air filter in the shade after shaking off moisture.

8.3 Reset of Filter Indication

After cleaning the air filter, press the"FILTER RESET" button. The FILTER indication will disappear and the next filter cleaning time will be set.

9. Troubleshooting

⚠CAUTION

- **When overflow of drain water from the indoor unit occurs, stop the operation and contact your contractor.**
- **When you smell or see white smoke coming from the unit, turn OFF the main power supply and contacty your contractor.**

9.1 If Trouble Still Remains

If the trouble still remains even after checking the following, contact your contractor and inform them of the following items.
(1) Unit Model Name
(2) Content of Trouble
(3) Alarm Code No. on Liquid Crystal Display

9.2 No Operation

Check whether the SET TEMP is set at the correct temperature.

9.3 Not Cooling or Heating Well

- Check for obstruction of air flow of the outside or inside units.
- Check if too much heat source exists in the room.
- Check if the air filter is clogged with dust.
- Check to see if the doors or windows are opened or not.
- Check if the temperature condition is not within the operation range.

9.4 This is Not Abnormal

- **Smells from Indoor Unit**
  Smell adheres on indoor unit after a long period of time. Clean the air filter and panels or allow a good ventilation.
- **Sound from Deforming Parts**
  During system starting or stopping, an abrading sound might be heard. However, this is due to thermal deformation of plastic parts. It is not abnormal.
- **Steam from Outdoor Heat Exchanger**
  During defrosting operation, ice on the outdoor heat exchanger is melted, resulting in making steam.
- **Dew on Air Panel**
  When the cooling operation continues for a long period of time under high humidity conditions (higher than 27°C/80% R.H.), dew can form on the air panel.
- **Refrigerant Flow Sound**
  While the system is being started or stopped, sound from the refrigerant flow may be heard.

Section2 Installation & Maintenance Manual

1. Safety Summary

⚠WARNING

- **Do not perform installation work, refrigerant piping work, drain piping and electrical wiring connection without referring to the installation manual.**
- **Check that the ground wire is securely connected.**
- **Connect a fuse of specified capacity.**
- **Users can not change power lines by themselves, replaced by professional maintenance staffs.**

⚠CAUTION

Do not install the indoor unit, outdoor unit, remote control switch and cable within approximately 3 meters from strong electromagnetic wave radiators such as medical equipment.

2. Necessary Tools and Instrument List for Installation

No.	Tool	No.	Tool
1	Handsaw	11	Spanner
2	Screwdriver	12	Charging Cylinder
3	Vacuum Pump	13	Gauge Manifold
4	Refrigerant Gas Hose	14	Cutter for Wires
5	Megohmmeter	15	Gas Leak Detector
6	Copper Pipe Bender	16	Leveller
7	Manual Water Pump	17	Clamper for Solderless Terminals
8	Pipe Cutter	18	Hoist (for Indoor Unit)
9	Brazing Kit	19	Ammeter
10	Hexagon Wrench	20	Voltage Meter

NOTE

About vacuum pump, gas hose, charging cylinder, gauge manifold, please use suitable equipments for R410A respectively. Do not mix other refrigerant.

3. Transportation and Handling

3.1 Transportation

Transport the product as close to the installation location as practical before unpacking.

⚠CAUTION

Do not put any material on the product.

3.2 Handling of Indoor Unit

⚠WARNING

Do not put any irrelevant material into the indoor unit and check to ensure that none exists in the indoor unit before the installation and test run. Otherwise, a fire or failure, etc. may occur.

⚠CAUTION

Be careful not to damage on insulation materials of unitís surface when lifting.

4. Indoor Unit Installation

⚠DANGER

Do not install the indoor unit in a flammable environment to avoid fire or an explosion.

⚠WARNING

- **Check to ensure that the wall and hanging board is strong enough. If not strong enough, the indoor unit may fall down.**
- **Do not install the indoor unit in the outdoor. If installed outdoors, an electric hazard or electric leakage will occur.**

It is recommended that indoor units be installated higher than 2.3 meters from the floor level.

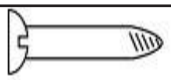
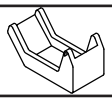
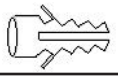
4.1 Factory-Supplied Accessories

Check to ensure that the following accessories are packed with the indoor unit.

NOTE

If any of these accessories are not packed with the unit, please contact your contractor.

Table 4.1 Factory-Supplied Accessories

Accessory	Quantity	Purpose
Mounting Bracket 	1	For Mounting Indoor Unit
Wireless Remote Control Switch 	1	For Control the Indoor Unit
Screw ϕ4.0×40L 	6	For Mounting Bracket
Crew Cover 	3	For Crew of Air Outlet
Thermal Insulation Pipe 	1	For Refrigerant Pipe
Expansion Bolts 	6	For Mounting Bracket

4.2 Initial Check

- Install the indoor unit with a proper clearance around it for operation and maintenance working space, as shown in Fig. 4.1.

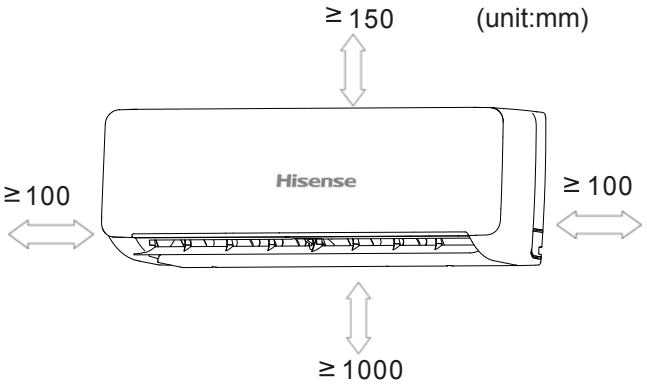


Fig. 4.1 Operation and Maintenance Space

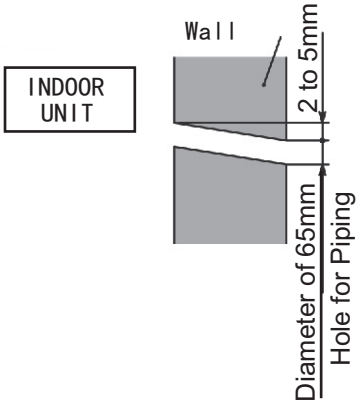


Fig. 4.2 Hole for Piping on the Wall

- Consider the air distribution from the indoor unit to the space of the room, and select a suitable location so that uniform air temperature in the room can be obtained.
- Avoid obstacles which may hamper the air intake or the air discharge flow.
- Do not install the indoor unit in a machine shop or kitchen where vapor from oil or its mist flows to the indoor unit.

  The oil will deposit on the heat exchanger, thereby reducing the indoor unit performance, and may deform and in the worst case, break the plastic parts of the indoor unit.
- Pay attention to the following points when the indoor unit is installed in a hospital or other facilities where there are electronic waves from medical equipment.

(A) Do not install the indoor unit where the electromagnetic wave is directly radiated to the electrical box, remote control cable or remote control switch.

(B) Install the indoor unit and components as far as practical or at least 3 meters from the electromagnetic wave radiator.

(C) Prepare a steel box and install the remote control switch in it. Prepare a steel conduit tube and wire the remote control cable in it. Then, connect the ground wire with the box and the tube.

(D) Install a noise filter when the power supply emits harmful noises.

- To avoid any corrosive action to the heat exchangers, do not install the indoor unit in an acid or alkaline environment.

4.3 Installation

The dimensions of the mounting bracket and the unit installation are indicated in Fig. 4.3.

4.3.1 Mounting Bracket onto Wall

When the mounting bracket is directly attached to a wood wall or a concrete wall, check to ensure of 2000N.

Attach the mounting bracket to the concrete wall with anchor bolts as shown in Fig. 4.4

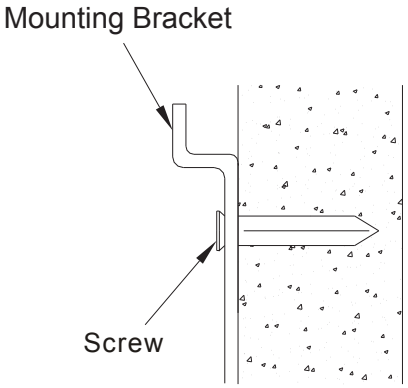


Fig. 4.4 Mounting on Concrete Wall

Capacity(KBut/h):07/09/12/14/17 (unit:mm)

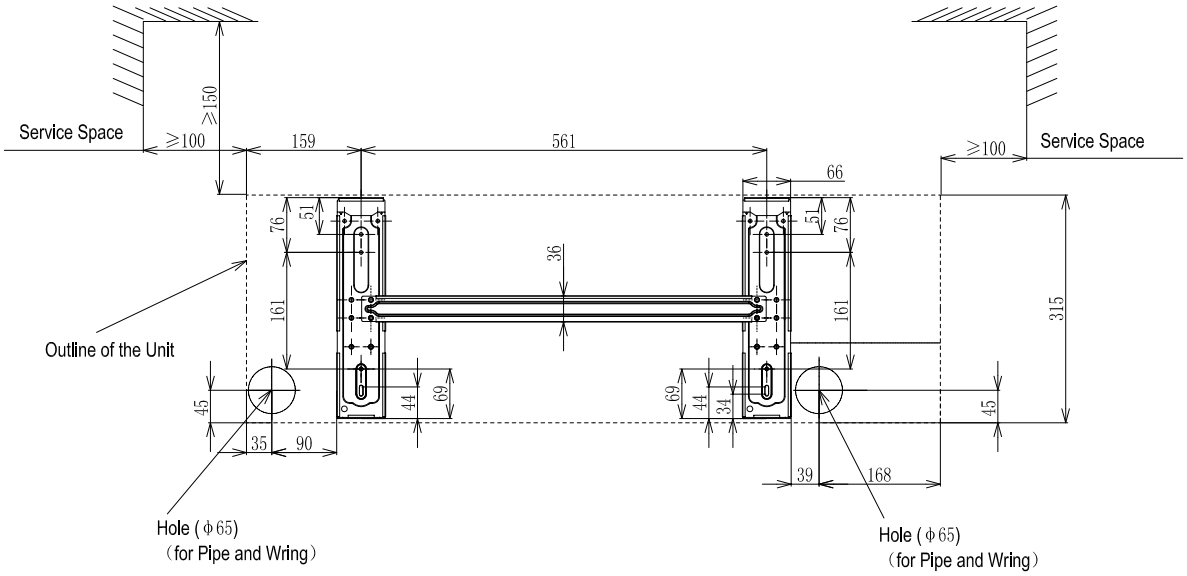


Fig.4.3 Mounting Bracket

4.3.2 Mounting the Indoor Units

Hook the indoor unit to the mounting bracket, maintaining the indoor unit upright.

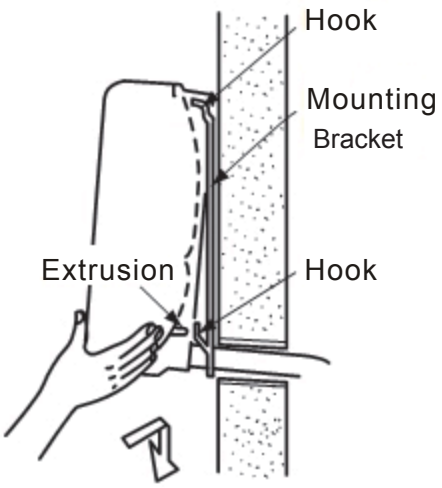


Fig 4.5 Mounting of the Indoor Units

(1) Check to ensure that the unit is completely hooked onto the mounting bracket.If not,it may drop from the bracket, resulting in a serious accident.

(2) On one side of the drain pipe is downward-sloping 2 degrees or 3 degrees in the process of the unit installation.

(3) Check the drainage of the drain pan through water overflow test.

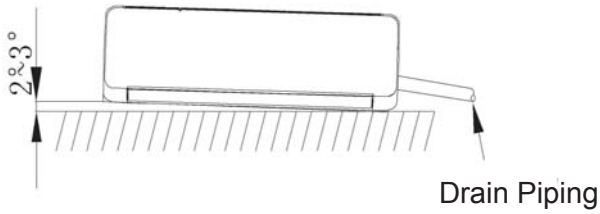
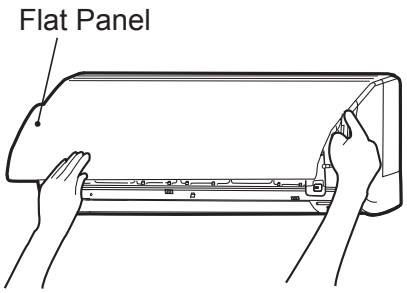


Fig 4.6 Slop angle of the Indoor Units

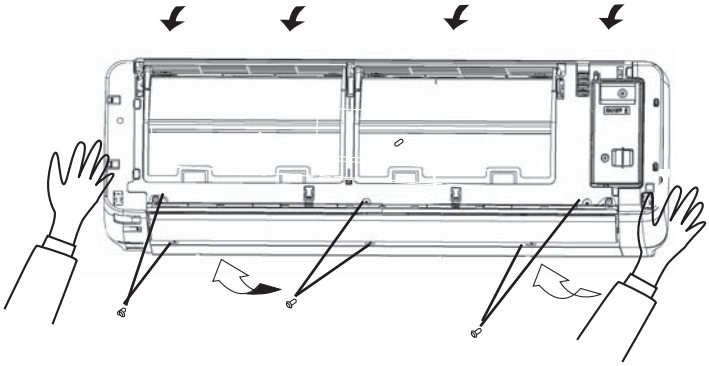
4.3.3 Removing Front Panel

In order to connect the refrigerant piping, wiring and to check drain water flow, removing the front panel is needed. Perform these work according to the following instructions. Pay attention to the resin components not to scratch.

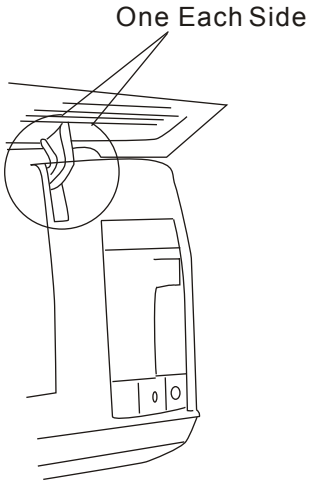
(1) Hold both sides of the flat panel and open it, and pull the right arm toward the inner side. Slightly close the flat panel and pull it, then remove the flat panel.



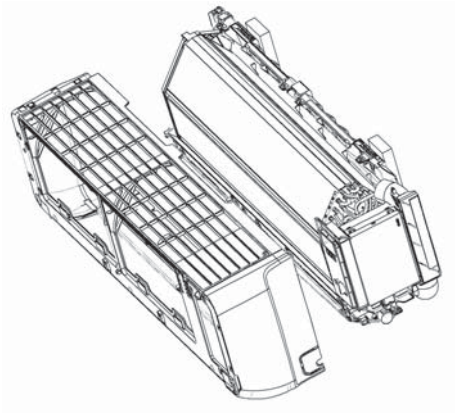
(2) Remove the air filter and six (6) screws. Slowly pull the lower side of the front panel and release the catch by paying attention to the air outlet part without touching the outlet grille.



(3) Pay attention to the junction of grille from each side, to prevent breaking off.

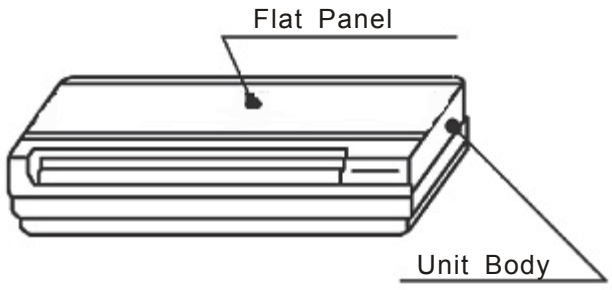


(4) Slightly lift the front panel upward in order to release the combined parts of upper side of the front pane



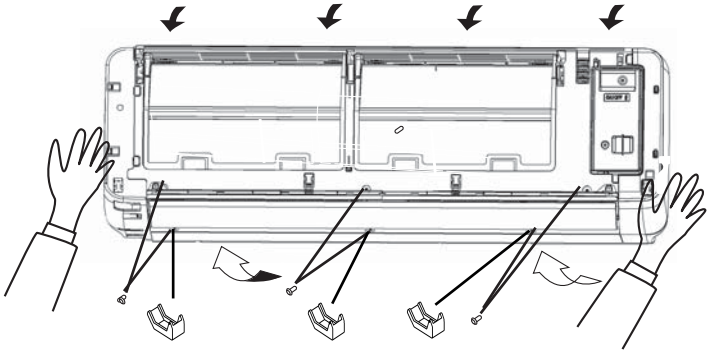
⚠CAUTION

When removing flat panel, do not apply strong forces by hitting, etc. It may break the unit body.

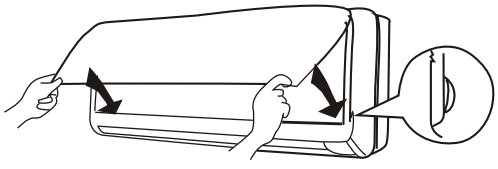


4.3.4 Install Front Panel

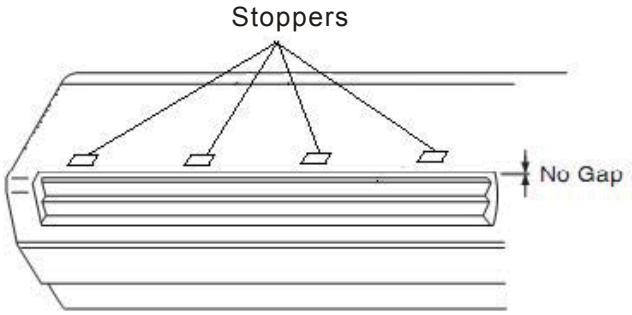
(1) Firstly, put the four joints of the front panel back into the grid, and then push inside to make the one tightly fasten, finally, install six crews for the front panel and three crew covers for air outlet crews.



(2) Press flat panel down , make the two joints of the front panel tightly fasten.



(3) There are four stoppers inside of the flat panel.Check to ensure that there is no gap between flat panel and unit body.



⚠CAUTION

Any gap will lead to leak or frost.

5. Refrigerant Piping Work

⚠DANGER

Use refrigerant R410A in the refrigerant cycle. Do not charge oxygen, acetylene or other flammable and poisonous gases into the refrigerant cycle when performing a leakage test or an air-tight test. These types of gases are extremely dangerous and can cause an explosion. It is recommended that compressed air, nitrogen or refrigerant be used for these types of tests.

5.1 Piping Materials

(1) Prepare locally-supplied copper pipes.

(2) Select the piping size from the following table.

unit:mm(in.)

model(KBtu/h)	Gas pipe	Liquid pipe
07/09/12/14/17	ϕ12.7 (1/2)	ϕ6.35 (1/4)

(3) Select clean copper pipes making sure there is no dust and moisture inside the tubes. Before connecting pipes,blow the inside of the pipes with nitrogen or dry air,to remove any dust or foreign materials.

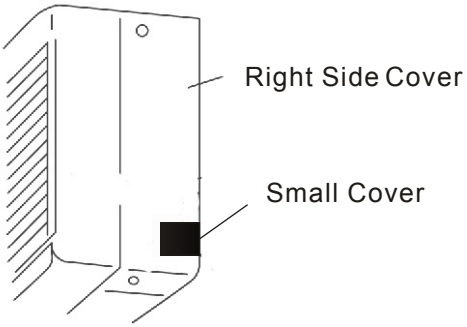
5.2 Piping Connection

(1) Position of piping connection is shown in Figure 5.1 and 5.2.

(2) Piping Direction for the Indoor Unit Three directions of piping connection to the indoor unit can be performed; to the rear side, the right side and the left side of the unit, respectively. Therefore, most appropriate piping for a room can be selected.

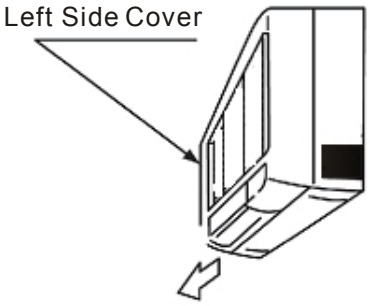
● Right Side Piping

Take off the small cover from right side.



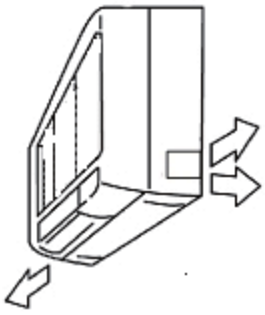
● Left Side Piping

Take off the small cover from left side.



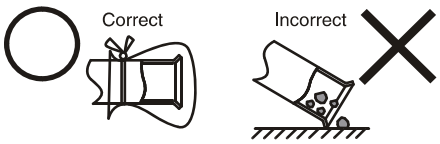
● Rear Side Piping

Bend pipe backwards directly.



⚠CAUTION

- **Cap the end of the pipe when the pipe is to be inserted through a hole.**
- **Do not put pipes on the ground directly without a cap or vinyl tape at the end of the pipe.**



● When bending the pipes, firmly fix the pipe at the heat exchanger side.

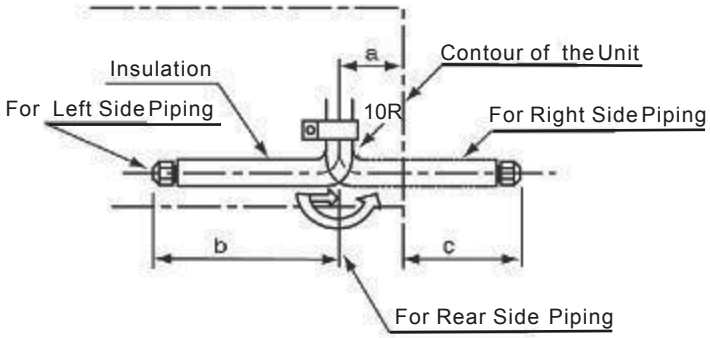


Fig. 5.1 Liquid pipe

(unit:mm)

Model(KBtu/h)	a	b	c
07/09/12/14/17	64	437	373

● Bend the gas pipe at the flexible pipe part.

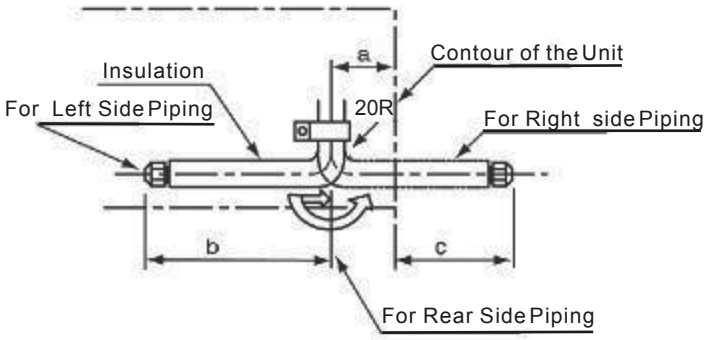
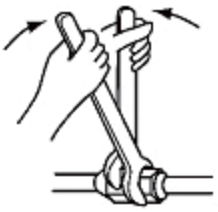


Fig. 5.2 Gas pipe

(unit:mm)

Model(KBtu/h)	a	b	c
07/09/12/14/17	78	396	318

(3) When tightening the flare nut, use two spanners as shown in Fig. 5.3



Pipe diameter	Torque (N·m)
ϕ6. 35	20
ϕ12. 7	60

Fig.5.3 Tightening Work of Flare Nut

(4) Insulate the refrigerant pipes as shown in Fig. 5.4.

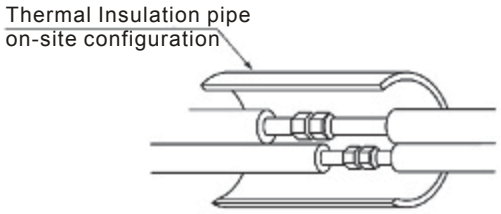


Fig. 5.4 Insulation on pipes

(5) Evacuation and refrigerant charging procedures should be performed according to “Installation & Maintenance Manual ” of the outdoor unit.

⚠CAUTION

An excess or a shortage of refrigerant is the main cause of trouble to the units. Charge the correct refrigerant quantity.

(6) When connecting the pipes, use the unit spacer (factory-supplied) as shown in Fig. 5.5.

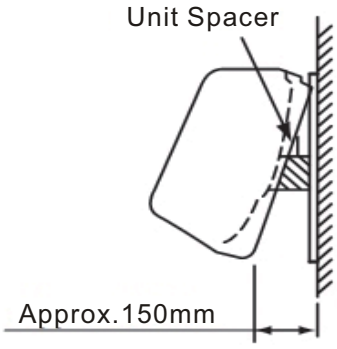


Fig. 5.5 Using the Unit Spacer

(7) Fix the plate of pipes (factory-supplied) as shown in Fig. 5.6.

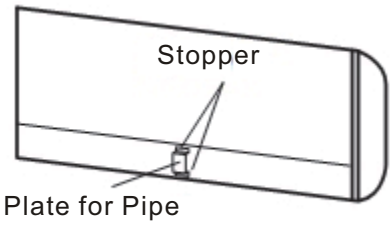


Fig. 5.6

6. Drain Piping

(1) The standard direction of drain piping connection is right side as viewed from the discharge grilles. However, it can be performed from the left side or rear side.

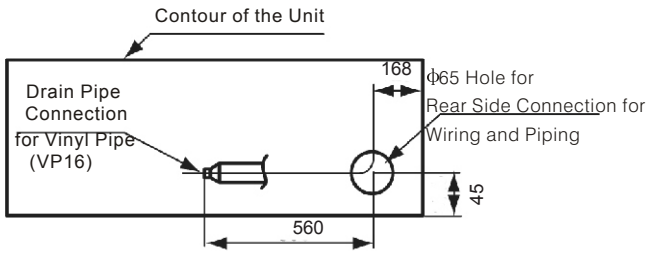


Fig. 6.1 07~17 Direction of Drain Piping

NOTE

Must attach the cap to the left side drain pipe, when the left side drain piping connection is performed.

(2) For 07~17, when the left side drain piping connection is performed, remove the cap of left side drain pipe, and then attach this cap to the right side drain pipe in order to change drain piping connection from right side to left side.

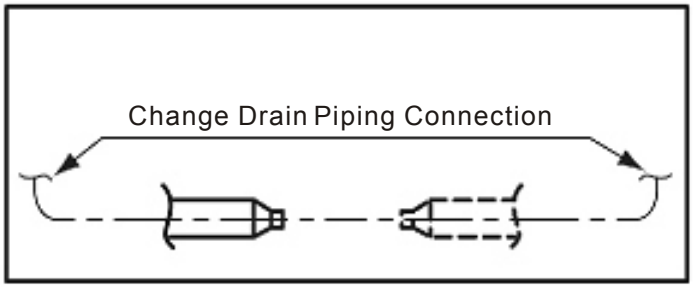


Fig. 6.2 Left Side Connect

(3) Provide a vinyl chloride pipe, VP20.
(4) Connect a drain piping as shown in Fig. 6.3.
Use adhesive tape for connecting the drain pipe.

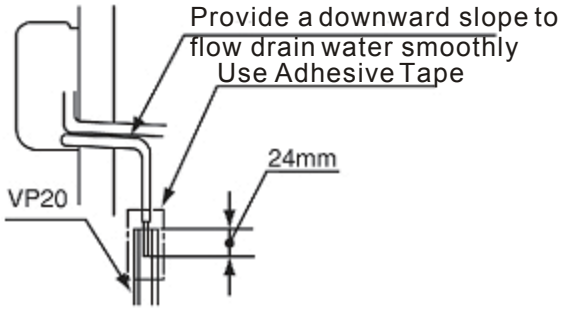


Fig. 6.3 Connection of Drain Piping

(5) Pour water into the drain pan and check to ensure that water can flow smoothly.

⚠CAUTION

- **Do not connect the drain pipes with sanitary or sewage or any other drainage pipe.**
- **When installing the pipe, do not tie the drain pipe and refrigerant pipe together.**
- **Pay attention to the thickness of the insulation when the left side piping is performed. If it is too thick, piping can not be installed in the unit.**

⚠CAUTION

(1) Do not create an upper-slope or rise for the drain piping, since drain water can flow back to the unit and leakage to the room will occur when the unit operation is stopped.

(2) Do not connect the drain pipe with sanitary or sewage piping or any other drainage piping.

(3) When the common drain piping is connected with other indoor units, the connected position of each indoor unit must be higher than the common piping. The pipe size of the common drain pipe must be large enough according to the unit size and number of units.

7. Electrical Wiring

⚠WARNING

- **Turn OFF the main power switch to the indoor unit and the outdoor unit before electrical wiring work or a periodical check is performed.**
- **Check to ensure that the indoor fan and the outdoor fan have stopped before electrical wiring work or a periodical check is performed.**
- **Protect the wires, drain pipe electrical parts, etc. from rats or other small animals. If not protected, rats may gnaw at unprotected parts and at the worst, a fire will occur.**

⚠CAUTION

- **Tighten screws according to the following torque.**
  M3.5: 1.2 N·m
  M5: 2.0 to 2.4 N·m
- **Wrap the accessory packing around the wires, and plug the wiring connection hole with the seal material to protect the product from any condensate water or insects.**
- **Tightly secure the wires with the cord clamp inside the indoor unit.**
- **Secure the cable of the remote control switch using the cord clamp inside the electrical box.**

7.1 General Check

(1) Make sure that the field-supplied electrical components (main power switches, circuit breakers, wires, conduit connectors and wire terminals) have been properly selected according to the electrical data given in “Technical Catalog Ⅰ”. Make sure that the components comply with National Electrical Code (NEC).

(2) Use shielded twist pair cable for control cable between outdoor unit and indoor unit, control cable between indoor units and remote control switch .

(3) Check to ensure that the power supply voltage is within ±10% of the rated voltage.

(4) Check the capacity of the electrical wires.
If the power source capacity is too low, the system cannot be started due to the voltage drop.

(5) Check to ensure that the earth wire is connected.

(6) PowerSource Main Switch

Install a multi-pole main switch with a space of 3.5mm or more between each phase.

7.2 Electrical Wiring Connection

The electrical wiring connection for the indoor unit is shown in Fig. 7.1.

(1) Connect the cable of an optional remote control switch to A, B terminals of the terminal board inside the electrical box through the connecting hole in the cabinet.

(2) Connect the wires between the indoor unit and the outdoor unit to 1,2 terminals of the terminal board inside the electrical box through the connecting hole in the cabinet.

(3) The power supply and earth wires have been connected in the factory. Please connect to the power circuit with a ELB(Fig.7.1).

(4) Connecting the wires to TB1.
The screws of terminal box can not be removed from the terminal box to protect the screws from falling. When fastening the terminal, ensure that the screw is fastened through the hole of terminal.

Check to ensure that the terminal specification, shall be applied to the screw (M4 for power supply, M3.5 for operating line) of the terminal box.

NOTE

ELB must be connected to the power circuit. If not ,it may be danger.

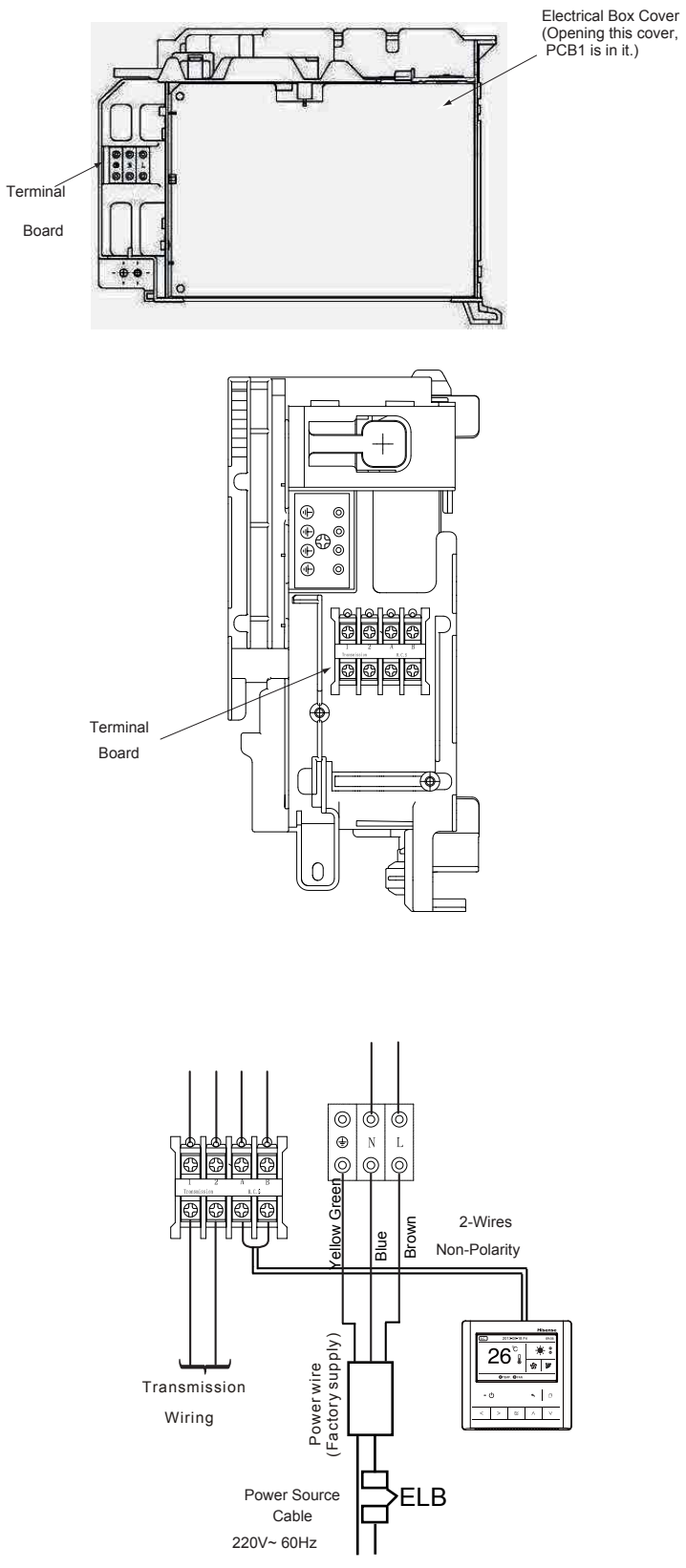


Fig.7.1 Wiring Connection for Electrical Box and Terminal Board

8. Test Run

Test run should be performed according to "Installation & Maintenance Manual" of the outdoor unit.

⚠WARNING

- **Do not operate the system until all the check points have been cleared.**
  - **(A) Check to ensure that the electrical resistance is more than 1 megohm, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.**
  - **(B) Check to ensure that the stop valves of the outdoor unit are fully opened, and then start the system.**
  - **(C) Check to ensure that the switch on the main power source has been ON for more than 12 hours, to warm the compressor oil by the crankcase heater.**
- **Pay attention to the following items while the system is running.**
  - **(A) Do not touch any of the parts by hand at the discharge gas side, since the compressor chamber and the pipes at the discharge side are heated higher than 90°C.**
  - **(B) DO NOT PUSH THE BUTTON OF THE MAGNETIC SWITCH(ES). It will cause a serious accident.**

9. Safety and Control Device Setting

Indoor Unit

Model			07~17
For ControlCircuit Fuse Capacity		A	3.15
Freeze Protection Thermostat	Cut-Out	℃	0
	Cut-In	℃	14
Thermostat Differential		℃	2

10. Common

10.1 Field Minimum Wire Sizes for Power Souce

⚠WARNING

● Use an ELB (Electric Leakage Breaker). If not used, it will cause an electric shock or a fire.

Model	Power Source	Rated Current	Power Source Cable Size EN60335-1*1	Transmtting Cable Size EN60335-1*1
07~09	220V~ 60Hz	0.55A	2.5mm^2	0.75mm^2
12~14		0.65A		
17		0.75A		

NOTES:

1) Follow local codes and regulations when selecting field wires.

2) The wire sizes marked with *1 in the above table are selected at the maximum current of the unit according to the European Standard, EN60335-1.Use the wires which are not lighter than the ordinary polyvinyl chloride sheathed flexible cord (code designation H05VV-F).

3) Use a shielded cable for the transmitting circuit and connect it to ground.

4) In the case that power cables are connected in series, add each unit maximum current and select wires below.

Selection According to EN60335-1

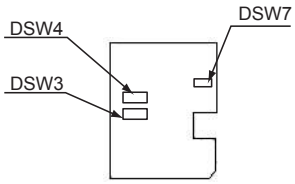
Rated current of appliance A	Nominal cross-sectional area mm^2
≤3	1 to 2,5
>3 and ≤6	1 to 2,5
>6 and ≤10	1 to 2,5
>10 and ≤16	1,5 to 4
>16 and ≤25	2,5 to 6
>25 and ≤32	4 to 10
>32 and ≤50	6 to 16
>50 and ≤63	10 to 25

*In the case that current exceeds 63A, do not connect cables in series.

10.2 Setting of Dip Switches

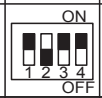
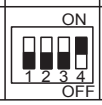
(A) Position of Dip Switches

PCB for Indoor unit



(B) The PCB in the indoor unit is equipped with 3 types of dip switches and rotary switch.
Before testing unit,set these dip switches according to the following instructions.
Unless these dip switches are set in the field, the unit can not be operated.

(1) Capacity Code Setting(DSW3)
No setting is required,due to setting before shipment.This switch is utilized for setting the capacity code which corresponds to the Horse Power of the indoor unit.

Horsepower	07	09	12	14
Setting Position				
Horsepower	17			
Setting Position				

(2) Fuse Recover(DSW7)
No setting is required.
Setting position before shipment is all OFF.

*In the case of applying high voltage to the terminal 1,2 of TB2,the fuse(0.5A) on the PCB,is cut.
In such a case,firstly connect the wiring to TB2,and then turn on NO.1 pin.

NOTE

- The "■" mark indicates position of dip switches. Figures show setting before shipment.

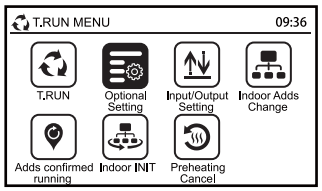
⚠CAUTION

Before setting dip switches, firstly turn OFF power source and set the position of the dip switches. If the switches are set without turning OFF the power source, the switches can not function.

10.3 Setting the Filter Indication Interval

The FILTER indication interval on the remote control switch can be set approximately 100, 1,200 or 2,500 hours (factory setting: 1200 hours). If 100, 1,200 or 2,500 hours interval is required, follow the instructions below.

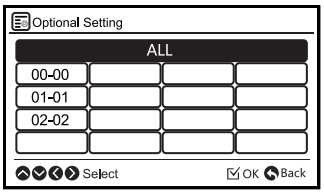
(1) Press and hold "⧉" (menu) and "↩" (return) simultaneously for at least 3 seconds during the normal mode (when unit is not operated) .The test run menu will be displayed.



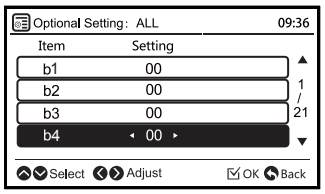
(2) Select " Optional Setting " from the test run menu pressing "☑".

(3) Select the indoor unit by pressing " ∧ ∨ < >" and press " ☑" .

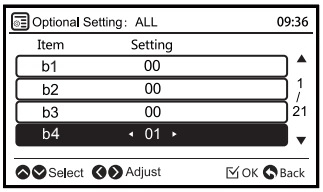
(This screen is NOT displayed when the number of indoor unit connected with the remote control switch is 1(one). In this case,(4) will be displayed.)



(4) Press "∧ ∨ " and select the item.



(5) Press "< >" and change the setting.

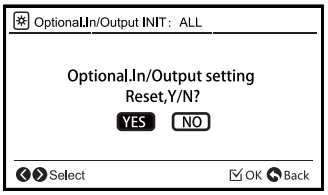


FILTER Indication Interval				
Approx. 100 hr.	Approx. 200 hr.	Approx. 1,200 hr.	Approx. 2,500 hr.	No. Indication
b4 01	b4 00(*)	b4 02	b4 03	b4 04

(*): Standard

(6) Press " ☑ " so that the confirmation screen will be displayed.

(7) Select " Yes " and press "☑". The test run menu will be displayed after the setting is confirmed. If " NO" is pressed, the screen will return to (4).



(8) Press "↩" (return) on the test run menu to return to the normal mode.

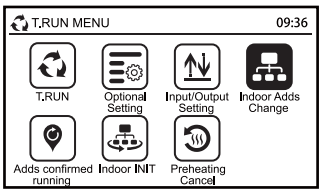
To set other units, press "↩" (return) at (4) (5) so that the screen will return to (3). (If the number of indoor unit connected with the remote control switch is 1 (one), the screen will return to (1).)

10.4 Indoor Unit Address

● Indoor Unit Address Change

This function changes the address (refrigerant cycle number and indoor unit number) of indoor units.

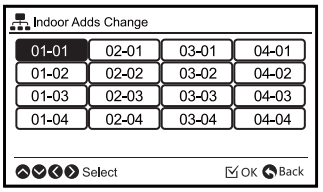
(1) Press and hold "⧉" (menu) and "↩" (return) simultaneously for at least 3 seconds during the normal mode (when unit is not operated) .The test run menu will be displayed.



(2) Select "Indoor Adds Change" from the test run menu pressing "∧ ∨ < >" and "☑".

(3) Select the indoor unit by pressing " ∧ ∨ < >" and press " ☑" .

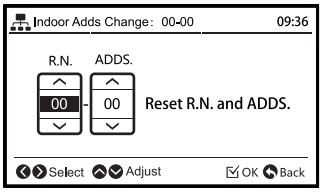
*Indoor units which are not supporting " Indoor Adds Change " function can not be selected.



(4) Determine the new indoor unit address.

Press "∧ ∨ < >" to switch the refrigerant cycle number and address in range of 00-63.

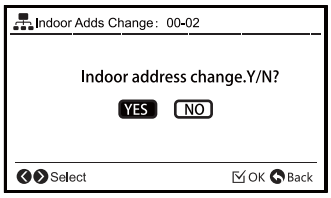
To display confirmation screen press "☑".



* " R.N No.99 " is used temporarily address only when all the cycle numbers and unit numbers are in use (occupied).

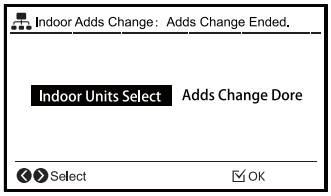
If " R.N No.99" is used temporarily, the address must be changed within the standard range of 00-63.

(5) The confirmation screen will be displayed. Select " Yes" and press "☑" to stard address change process. Result will be displayed in seconds. If " No" is pressed, the screen will go to (6).



*When the process successfully completes, " Adds Change Ended " will be displayed.

Otherwise the process has been failed. Check the setting and contents again.



(6) To change the address for another indoor unit, select " Indoor Units Select " and press "☑" ,the screen will return to (3). To finish this function select " Adds Change Done " and press "☑".

*If " Indoor Adds Change" is successfully completed, connection check will be started automatically.

(7) Turn OFF the power supply of the indoor units for 3-5 minuts. Wait until the remote control switchs display turn off, and turn ON the power supply of indoor units again.

NOTE

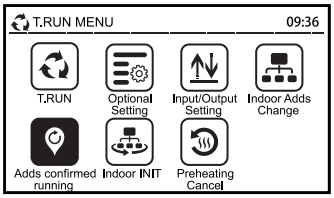
" Indoor Adds Change " is not available when the control of 2 remote control switches (main and sub) are used.

Do not operate from the central controlling devices while " Indoor Adds Change" is performed by the remote control switch.

This function should not be used if there is a Central Control in the HI-NET.

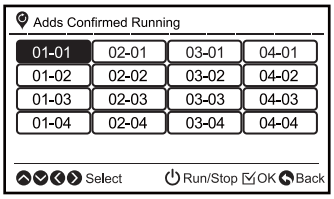
● Address Check Operation

This function is used to check the relation between the indoor unit and I.U. address. This operation is effective when multiple indoor units are connected to the remote control switch and address of the certain unit is unknown.



(1) Press and hold "⧉"(menu) and"↩" (return) simultaneously for at least 3 seconds during the normal mode (when unit is not operated) .The test run menu will be displayed.

(2) Select " Adds confirmed running" from the test run menu pressing "∧∨<>" and "☑".



(3) Select the indoor unit by pressing " ∧∨< >".

(4) To start operation of the indoor unit selected in (3) press "⏻ (run/stop). To return to (3) screen press "⏻ (run/stop) while indoor units is operated.

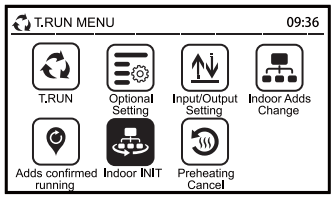
* Repeat (3)-(4) until desired indoor unit address is confirmed.

(5) To return to the test run menu press "↩" (return) while indoor unit is not operated.

● Indoor Unit Address Initialization

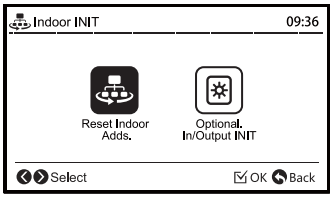
This function initializes the indoor unit address that has been changed by " Indoor Adds Change " function or set by the automatic address a llocation. Initializing the address will be changed to the dip switch setting.

(1) Press and hold "⧉"(menu) and "↩"(return) simultaneously for at least 3 seconds during the normal mode (when unit is not operated) .The test run menu will be displayed.

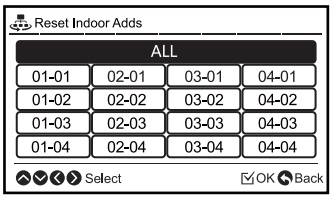


(2) Select "Indoor INIT" from the test run menu pressing "< > ∧ ∨" and "☑".

(3) Select the" Reset Indoor Adds "by pressing "∧∨ " and press "☑" .

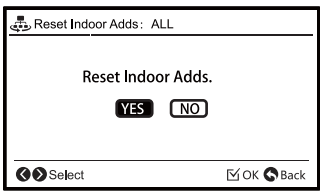


(4) Select the indoor unit by pressing " ∧∨< >" and press " ☑" . The confirmation screen will be displayed.



*Indoor units which are not supporting " Reset Indoor Adds" function can not be selected.

The address of indoor unit that does not support " Reset Indoor Adds" function will not be initialized even when " All" is specificated.



(5) Select " Yes" and press " " to start the address initialization process.

*If the address initialization is successfully completed, connection check will be started automatically.