TRV-10116-IU/TRV-10117-OU
TRV-13116-IU/TRV-13117-OU
TRV-19116-IU/TRV-19117-OU
TRV-25116-IU/TRV-25117-OU

USER MANUAL

Split type Inverter Air-conditioner

Please read this manual carefully before use this product

CONTENTS

In line with the company's policy of continual product improvement, the aesthetic and dimensional characteristics, technical data and accessories of this appliance may be changed without notice.

INTRODUCTION TO REFRIGERANTS R32&R290

■ Introduction to Refrigerants R32 & R290

The refrigerants used for air conditioners are environmentally friendly hydrocarbons R32 and R290. The two kinds of refrigerants are combustible and odorless. Moreover, they can burn and explode under certain condition. However, there will be no risk of burning and explosion if you comply with the following table to install your air conditioner in a room with an appropriate area and use it correctly.

Compared with ordinary refrigerants, Refrigerants R32 & R290 are environmentally friendly and do not destroy the ozone sphere and that their values of greenhouse effect are also very low.

■ Room area requests for air conditioner with Refrigerants R32 &

Refrigerants	Capacity (Btu)	Room Area
R32	9K	Above 4 m^2
	12K	Above 4 m^2
	18K	Above 15 m^2
	22K/24K	Above 25 m^2

⚠ Warnings

- Please read the manual before installation, using, maintenance.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- Do not pierce or burn the appliance.
- The appliance shall be stored in a room without continuously operating sources (for example: open flames, an operating ignition gas appliance or an operating electric heater.)
- Please contact the nearest after-sale service center when maintenance is necessary. At the time of maintenance, the maintenance personnel must strictly comply with the Operation Manual provided by the corresponding manufacturer and any non-professional is prohibited to maintain the air conditioner.
- It is necessary to comply with the provisions of gas-related national laws and regulations.
- It is necessary to clear away the refrigerant in the system when maintaining or scrapping an air conditioner.

Warning: Combustible & Dangerous

Read the user manual

Read the installation manual

Read the service manual

SAFETY RULES AND RECOMMENDATIONS FOR THE INSTALLER

⚠ Read this guide before installing and using the appliance.

⚠ During the installation of the indoor and outdoor units the access to the working area should be forbidden to children.
Unforeseeable accidents could happen.

⚠ Make sure that the base of the outdoor unit is firmly fixed.

⚠ Check that air cannot enter the refrigerant system and check for refrigerant leaks when moving the air con ditioner.

⚠ Carry out a test cycle after installing the air conditioner and record the operating data.

⚠ The ratings of the fuse installed in the built in-control unit are T 5A / 250V .

⚠ The user must protect the indoor unit with a fuse of suitable capacity for the maximum input current or with another overload protection device.

⚠ Ensure that the mains voltage corresponds to that stamped on the rating plate . Keep the switch or power plug clean. Insert the power plug correctly and firmly into the socket, thereby avoiding the risk of electric shock or fire due to insufficient contact.

⚠ Check that the socket is suitable for the plug , otherwise have the socket changed.

⚠ The appliance must be fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III conditions, and these means must be incorporated in the fixed wiring in accordance with the wiring rules.

⚠ The air conditioner must be installed by professional or qualified persons.

⚠ Do not install the appliance at a distance of less than 50 cm from inflammable substances (alcohol, etc.) Or from pressurised containers (e.g. spray cans).

⚠ If the appliance is used in areas without the possibility of ventilation, precautions must be taken to prevent any leaks of refrigerant gas from remaining in the environment and creating a danger of fire

⚠ The packaging materials are recyclable and should be disposed of in the separate waste bins .Take the air conditioner at the end of its useful life to a special waste collection centre for disposal.

⚠ Only use the air conditioner as instructed in this booklet . These instructions are not intended to cover every possible condition and situation . As with any electrical household appliance , common sense and caution are therefore always recommended for installation, operation and maintenance.

⚠ The appliance must be installed in accordance with applicable national regulations.

⚠ Before accessing the terminals , all the power circuits must be disconnected from the power supply.

⚠ The appliance shall be installed in accordance with national wiring regulations.

⚠ 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 shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

SAFETY RULES AND RECOMMENDATIONS FOR THE USER

⚠ Do not try to install the conditioner alone; always contact specialized technical personnel.

⚠ Cleaning and maintenance must be carried out by specialised technical personnel. In any case disconnect the appliance from the mains electricity supply before carrying out any cleaning or maintenance.

⚠ Ensure that the mains voltage corresponds to that stamped on the rating plate. Keep the switch or power plug clean. Insert the power plug correctly and firmly into the socket , thereby avoiding the risk of electric shock or fire due to insufficient contact.

⚠ Do not pull out the plug to switch off the appliance when it is in operation, since this could create a spark and cause a fire, etc.

⚠ This appliance has been made for air conditioning domestic environments and must not be used for any other purpose , such as for drying clothes, cooling food, etc.

⚠ The packaging materials are recyclable and should be disposed of in the sparate waste bins . Take the air conditioner at the end of its useful life to a special waste collection centre for disposal.

⚠ Always use the appliance with the air filter mounted . The use of the conditioner without air filter could cause an excessive accumulation of dust or waste on the inner parts of the device with possible subsequent failures.

⚠ The user is responsible for having the appliance installed by a qualified technician , who must check that it is earthed in accordance with current legislation and insert a thermomagnetic circuit breaker.

⚠ The batteries in remote controller must be recycled or disposed of properly.
Disposal of Scrap Batteries --- Please discard the batteries as sorted municipal waste at the accessible collection point.

⚠ Never remain directly exposed to the flow of cold air for a long time. The direct and prolonged exposition to cold air could be dangerous for your health .Particular care should be taken in the rooms where there are children , old or sick people.

⚠ If the appliance gives off smoke or there is a smell of burning, immediately cut off the pow er supply and contact the Service Centre.

⚠ The prolonged use of the device in such conditions could cause fire or electrocution.

⚠ Have repairs carried out only by an authorised Service Centre of the manufacturer . Incorrect repair could expose the user to the risk of electric shock, etc.

⚠ Unhook the automatic switch if you foresee not to use the device for a long time.
The airflow direction must be properly adjusted.

⚠ The flaps must be directed downwards in the heating mode and upwards in the cooling mode.

⚠ Only use the air conditioner as instructed in this booklet.These instructions are not int ended to cover every possible condition and situation.As with any electrical household appliance, common sense and caution are therefore always recommended for installation , operation and maintenance.

⚠ Ensure that the appliance is disconnected from the power supply when it will remain inoperative for a long period and before carrying out any cleaning or maintenance.

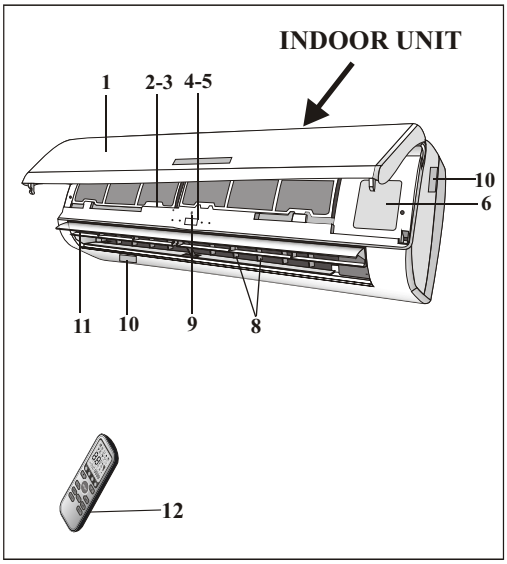
⚠ Selecting the most suitable temperature can prevent damage to the appliance.

SAFETY RULES AND PROHIBITIONS

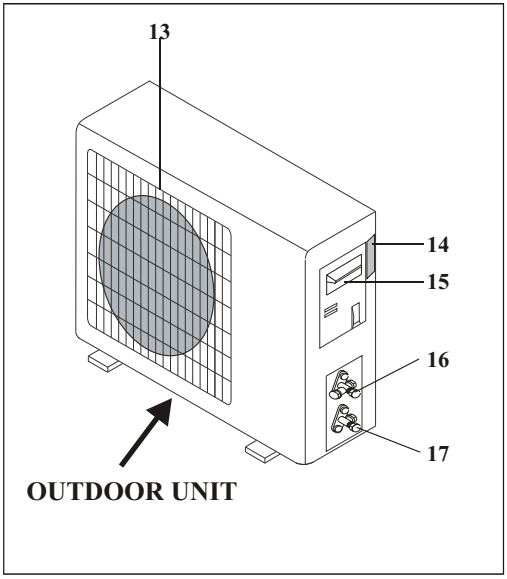
- Do not bend , tug or compress the power cord since this could damage it. Electrical shocks or fire are probably due to a damaged power cord. Specialised technical personnel only must replace a damaged power cord.
- Do not use extensions or gang modules.
- Do not touch the appliance when barefoot or parts of the body are wet or damp.
- Do not obstruct the air inlet or outlet of the indoor or the outdoor unit.
  The obstruction of these openings causes a reduction in the operative efficiency of the conditioner with possible consequent failures or damages.
- In no way alter the characteristics of the appliance.
- Do not install the appliance in environments where the air could contain gas , oil or sulphur or near sources of heat.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Do not climb onto or place any heavy or hot objects on top of the appliance.
- Do not leave windows or doors open for long when the air conditioner is operating.
- Do not direct the airflow onto plants or animals.
- A long direct exposition to the flow of cold air of the conditioner could have negative effects on plants and animals.
- Do not put the conditioner in contact with water.
  The electrical insulation could be damaged and thus causing electrocution.
- Do not climb onto or place any objects on the outdoor unit
- Never insert a stick or similar object into the appliance. It could cause injury.
- Children should be supervised to ensure that they do not play with the appliance. 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.

NAMES OF PARTS

INDOOR UNIT	
No.	Description
1	Front panel
2	Air filter
3	Optional filter (if installed)
4	LED Display
5	Signal receiver
6	Terminal block cover
8	Deflectors
9	Emergency button
10	Indoor unit rating label (Stick position optional)
11	Airflow direction louver
12	Remote controller



OUTDOOR UNIT	
No.	Description
13	Air outlet grille
14	Outdoor unit rating label
15	Terminal block cover
16	gas valve
17	liquid valve



Note: the above figures are only intended to be a simple diagram of the appliance and may not correspond to the appearance of the units that have been purchased.

INDOOR UNIT DISPLAY

No.	Led		Function
1	SLEEP		SLEEP mode
2	Temperaturedisplay (if present) / Error code	88	(1) Lights up during Timer operation when the air conditioner is operational (2)Displays the malfunction code whenf ault occurs.
3	TIMER		Lights up during Timer operation.

⚠ *The shape and position of switches and indicators may be different according to the model, but their function is the same.*

EMERGENCY FUNCTION & AUTO-RESTART FUNCTION

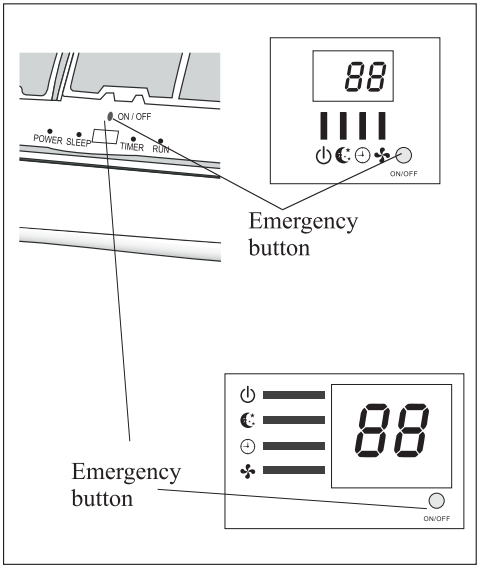
AUTO-RESTART FUNCTION

The appliance is preset auto - restart function by manufacturer. In case of a sudden power failure, the module memorizes the setting conditions before the power failure. when the power restores, the unit restarts automatically with all the previous settings preserved by the memory function.

To deactivate the AUTO-RESTART function ,proceed as follows:

1. Switch the air conditioner off and plug it off.
2. Press the emergency button meanwhile plug it in.
3. Keep pressing the emergency button for more than 10 seconds until you hear four short beeps from the unit. The AUTO-RESTART function is deactivate.

- To activate the AUTO - RESTART function , follow the same procedure until you hear three short beeps from the unit.



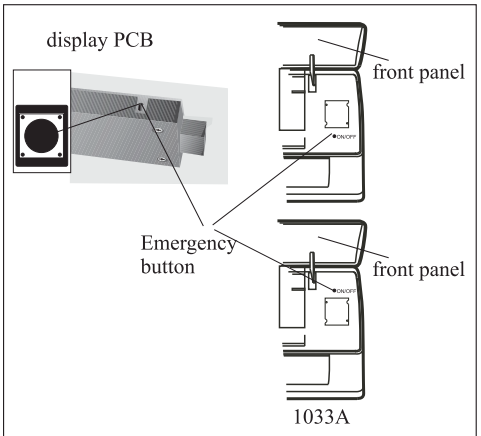
EMERGENCY FUNCTION

If the remote controller fails to work or maintenance necessary, proceed as follows:

Open and lift the front panel up to an angleto reach the emergency button.

1. One press of the emergency button(one beep) will lead to the forced COOLING operation
2. Two press of the emergency button within 3 sec (two beeps) will lead to the forced HEATING operation.
3. To switch off the unit , you just need to press the button again (a single long beep) .
4. After 30 minutes in forced operation , the air conditioner will automatically start working in 23℃ cooling mode, auto fan speed.

* The FEEL function is described in page16 .



The emergency button in some models could be on the right part of the unit under the front panel.

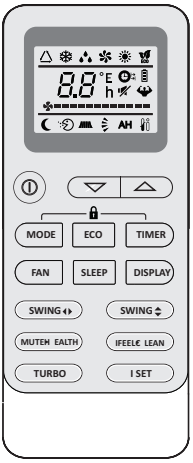
⚠ *The shape and position of the emergency button may be different according to the model, but their function is the same.*

Remark: the external static pressure of heat pumps is 0 Pa for all models.

REMOTE CONTROLLER

Remote controller DISPLAY
Meaning of symbols on the liquid crystal display

No.	Symbols	Meaning
1		Battery indicator
2		Auto Mode
3		Cooling Mode
4		Dry Mode
5		Fan only Mode
6		Heating Mode
7	ECO	ECO Mode
8		Timer
9	8.8 °E	Temperature indicator
10		Fan speed: Auto/ low/ mid/ high
11		Mute function
12		TURBO function
13		Up-down auto swing
14		Left-right auto swing
15	or	SLEEP function
16		Health function
17		I FEEL function
18		Signal indicator
19		Child-Lock



⚠ The display and some functions of the remote control may vary according to the model.

REMOTE CONTROLLER

Functions of the Remote controller buttons

No.	Button	Function
1	⏻	To turn on/off the air conditioner .
2	∧	To decrease temperature, or Timer setting hours.
3	∨	To increase temperature, or Timer setting hours.
4	MODE	To select the mode of operation (AUTO, COOL, DRY, FAN, HEAT).
5	ECO	To activate/deactivate the ECO function.
6	TURBO	To activate/deactivate the TURBO function.
7	FAN	To select the fan speed of auto/low/mid/high.
8	TIMER	To set the time for timer on/off.
9	SLEEP	To switch-on/off the function SLEEP.
10	DISPLAY	To switch-on/off the LED display.
11	SWING ⇕	To stop or start horizontal louver movement or set the desired up/down air flow direction.
12	SWING ⇔	To stop or start horizontal louver movement or set the desired left/rightair flow direction.
13	I FEEL	To switch-on/off the I FEEL function.
14	MUTE	To switch-on/off the MUTE function.
15	MODE + TIMER	To activate/deactivate the CHILD-LOCK function.
16	CLEAN	To activate/deactivate the SELF-CLEAN function (depending on models).
17	HEALTH	To activate/deactivate the HEALTH function (depending on models).
18	I SET	To memory the setting temperature, setting mode and setting fan speed as you need.

⚠ The display and some functions of the remote control may vary according to the model.

⚠ The shape and position of buttons and indicators may vary according to the model, but their function is the same.

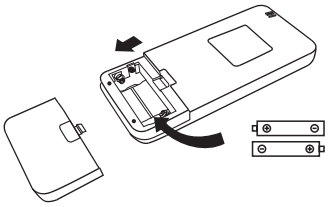
⚠ The unit confirms the correct reception of each button with the beep.

REMOTE CONTROLLER

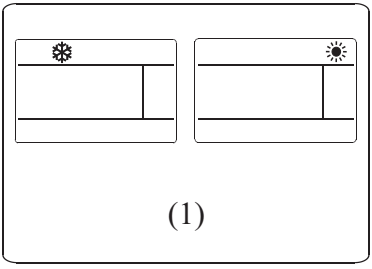
Replacement of Batteries

Remove the battery cover plate from the rear of the remote control, by sliding it in direction as the arrow.
Install the batteries according the direction (+ and -)shown on the Remote Control.
Reinstall the battery cover by sliding it into place.

⚠ Use 2 pieces LRO3 AAA (1.5V) batteries.
Do not use rechargeable batteries.
Replace the old batteries with new ones of the same type when the display is no longer legible.
Do not dispose batteries as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.



⚠ Refer to picture 1:
When you insert the batteries for the first time in the remote controller or if you change them, you need to program the remote controller of only cooling or cooling and heating.
When you insert the batteries, the symbols ❄ and ☀ start flashing. If you push whatever button when the symbol ❄ is displayed, the remote controller is adjusted in only cooling mode . If you push whatever button when the symbol ☀ is displayed , the remote controller is adjusted in Cooling and heating mode.



⚠ **Note:**

1. Direct the remote control toward the Air conditioner.
2. Check that there are no objects between the remote control and the Signal receptor in the indoor unit.
3. Never leave the remote control exposed to the rays of the sun.
4. Keep the remote control at a distance of at least 1m from the television or other electrical appliances.

REMOTE CONTROL

COOLING MODE

COOL ❄ The cooling function allows the air conditioner to cool the room and reduce Air humidity at the same time.

To activate the cooling function (COOL), press the **MODE** button until the symbol ❄ appears on the display.
With the button ⌄ or ⌃ set a temperature lower than that of the room.

HEATING MODE

HEAT ☼ The heating function allows the air conditioner to heat the room.

To activate the heating function (HEAT), press the **MODE** button until the symbol ☼ appears on the display.
With the button ⌄ or ⌃ set a temperature higher than that of the room.

⚠ In HEATING operation, the appliance can automatically activate a defrost cycle, which is essential to clean the frost on the condenser so as to recover its heat exchange function. This procedure usually lasts for 2-10 minutes. During defrosting, indoor unit fan stop operation. After defrosting, it resumes to HEATING mode automatically.

FAN MODE (Not FAN button)

FAN ✣ Fan mode, air ventilation only.

To set the FAN mode, press **MODE** until ✣ appears on the display.

DRY MODE

DRY This function reduces the humidity of the air to make the room more comfortable.

To set the DRY mode, Press **MODE** until appears in the display. An automatic function of pre-setting is activated.

FAN SPEED function (FAN button)

FAN Change the operating fan speed.

Press **FAN** button to set the running fan speed, it can be set to AUTO/ LOW/ MID/ HIGH speed circularly.

AUTO MODE

AUTO ⚠ Automatic mode.

To set the AUTO mode, press **MODE** until ⚠ appears on the display.
In AUTO mode the run mode will be set automatically according to the room temperature.

Child-Lock function

1. Long press **MODE** and **TIMER** button together to active this function, and do it again to deactivate this function.
2. Under this function, no single button will active.

REMOTE CONTROL

TIMER function ---- TIMER ON

To automatic switch on the appliance.

When the unit is switch-off, you can set the TIMER ON.

To set the time of automatic switch-on as below:

1. Press **TIMER** button first time to set the switch-on, and will appear on the remote display and flashes.
2. Press ∧ or ∨ to button to set desired Timer-on time. Each time you press the button, the time increases/decreases by half an hour between 0 and 10 hours and by one between 10 and 24 hours.
3. Press **TIMER** button second time to confirm.
4. After Timer-on setting, set the needed mode (Cool/ Heat/ Auto/ Fan/ Dry), by press the **MODE** button. And set the needed fan speed, by press **FAN** button. And press ∧ or ∨ to set the needed operation temperature.

CANCEL it by press **TIMER** button.

TIMER function ---- TIMER OFF

To automatic switch off the appliance.

When the unit is switch-on, you can set the TIMER OFF.

To set the time of automatic switch-off, as below:

1. Confirm the appliance is ON.
2. Press the **TIMER** button at first time to set the switch-off.
   Press ∧ or ∨ to set the needed timer.
3. Press **TIMER** button at the second time to confirm.

CANCEL it by press **TIMER** button.

Note: All programming should be operated within 5 seconds, otherwise the setting will be cancelled.

SWING function

1. Press the button SWING to activate the louver,
   1.1 Press SWING to activate the horizontal flaps to swing from up to down, the will appear on the remote display.
   Press again to stop the swing movement at the current angle.
   1.2 Press SWING to active the vertical deflectors to swing from left to right, the will appear on the remote display.
   Press again to stop the swing movement at the current angle.
2. If the vertical deflectors are positioned manually which placed under the flaps, they allow to move the air flow direct to rightward or leftward.
3. For some inverter heating models, press horizontal SWING and vertical SWING together button at the same time, it will activate the Self-Clean function.

⚠ This adjustment must be done while the appliance is switched off.

⚠ Never position "Flaps" manually, the delicate mechanism might seriously damaged!

⚠ Never put fingers, sticks or other objects into the air inlet or outlet vents. Such accidental contact with live parts might cause unforeseeable damage or injury.

TURBO function

To activate turbo function, press the **TURBO** button, and will appear on the display. Press again to cancel this function.

In COOL/ HEAT mode, when you select TURBO feature, the appliance will turn to quick COOL or quick HEAT mode, and operate the highest fan speed to blow strong airflow.

REMOTE CONTROL

MUTE function

MUTE

1. Press MUTE button to active this function, and will appears on the remote display. Do it again to deactivate this function.
2. When the MUTE function runs, the remote controller will display the auto fan speed, and the indoor unit will operate at lowest fan speed to be quiet feeling.
3. When press FAN/ TURBO button, the MUTE function will be cancel. MUTE function can not be activated under dry mode.

ECO function

ECO

In this mode the appliance automatically sets the operation to save energy.

Press the ECO button, the appears on the display, and the appliance will run in ECO mode. Press again to cancel it.

Note: The ECO function is available in both COOLING and HEATING modes.

SLEEP function

or

Pre-setting automatic operating program.

Press SLEEP button to activate the SLEEP function, and or appears on the display. Press again to cancel this function.

After 10 hours running in sleep mode, the air conditioner will change to the previous setting mode.

DISPLAY function (Indoor display)

DISPLAY

Switch ON/OFF the LED display on panel.

Press DISPLAY button to switch off the LED display on the panel. Press again to switch on the LED display.

I FEEL function (Optional)

I FEEL

Press I FEEL button to active the function, the will appear on the remote display.
Do it again to deactivate this function.

This function enables the remote control to measure the temperature at its current location, and send this signal to the air conditioner to optimize the temperature around you and ensure the comfort.
It will automatically deactivate 2 hours later.

Health function (Optional)

1. Turn on the indoor unit at first, and press HEALTH button to active this function, will appear on the display. Do it again to deactivate it.
2. When the HEALTH function is initiated, the Ionizer/ Plasma/ (depending on models) will be energized and running.
3. This function is optional and not ready for R32 models.

Remote control

SELF-CLEAN function (Optional)

Only optional for some heating pump inverter appliance.
To active this function, turn off the indoor unit at first, then press CLEAN button toward the indoor unit, until hear a beep, and [AC] will appear on the remote controller display and the indoor LED display.

1. This function helps carry away the accumulated dirt, bacteria, etc from the indoor evaporator.
2. This function will run about 30 minutes, and it will return to the pre-setting mode. You can press ⏻ button to cancel this function during the process.
   You will hear 2 beeps when it's finished or cancelled.

⚠ It's normal if there is some noise during this function process, as plastic materials expand with heat and contract with cold.

⚠ We suggest operating this function at the following ambient conditions to avoid certain safety protection features.

Indoor unit	Temp < 86°F (30°C)
Outdoor unit	41°F (5°C) < Temp < 86°F (30°C)

⚠ It's suggested to utilize this function every 3 months.

I SET function (Optional)

Remember your favorite setting and run into it by press One button
Remember the favorite setting:
1. In each mode (COOLING/ HEATING/ FAN/ DRY), long press " I SET " button over 3 seconds to remember it;
2. When "AU" flashing appears on the remote controller display, that means the remote controller remember your favorite setting;

* Press any button to quit, and you can reset it by repeat 1, 2 operation.

Run into the favorite setting:
1. In each mode (COOLING/ HEATING/ FAN/ DRY), one press " I SET " button to active;
2. The appliance will run as your favorite setting and you will see [AU] flashing on the remote controller;
3. Press it again or other buttons to cancel this function.

PROTECTION

- Attempt to use the air conditioner under the temperature beyond the specified range may cause the air conditioner protection device to start and the air conditioner may fail to operate. Therefore, try to use the air conditioner in the following temperature conditions.

Fixed air conditioner:

MODE / Temperature	Heating	Cooling	Dry
Room temperature	0˚C~27˚C	17˚C~32˚C	
Outdoor temperature	-7˚C~24˚C	T1 climate: 15˚C~43˚C	
		T3 climate: 15˚C~52˚C	

Inverter air conditioner:

MODE / Temperature	Heating	Cooling	Dry
Room temperature	0˚C~30˚C	17˚C~32˚C	
Outdoor temperature	-15˚C~30˚C (Low temperature heating: -20˚C~30˚C)	T1 climate: 15˚C~53˚C (Low temperature cooling: -15˚C~53˚C)	
		T3 climate: 15˚C~55˚C	

With the power supply connected, restart the air conditioner after shutdown, or switch it to other mode during operation, and the air conditioner protection device will start. The compressor will resume operation after 3 minutes.

- **Characteristics of heating operation (applicable to Heating pump)**

Preheating:

When the heating function is enabled, the indoor unit will take 2~5 minutes for preheating, after that the air conditioner will start heating and blows warm air.

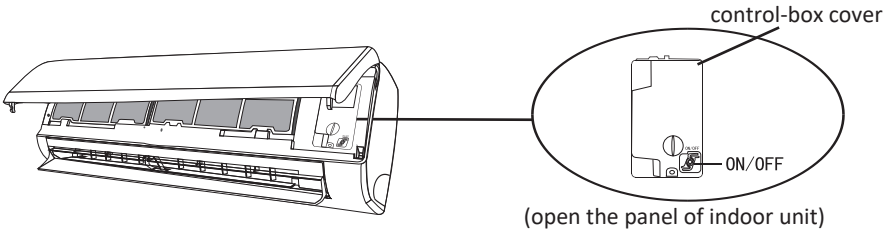
Defrosting:

During heating, when the outdoor unit frosted, the air conditioner will enable the automatic defrosting function to improve the heating effect. During defrosting, the indoor and outdoor fans stop running. The air conditioner will resume heating automatically after defrosting finish.

- **Emergency button:**

Open the panel and find the emergency button on the electronic control box when the remote controller fails . (Always press the emergency button with insulation material.)

Current status	Operation	Respond	Enter mode
Standby	Press the emergency button once	It beeps briefly once.	Cooling mode
Standby (Only for heating pump)	Press the emergency button twice in 3 seconds	It beeps briefly twice.	Heating mode
Running	Press the emergency button once	It keeps beeping for a while	Off mode



(open the panel of indoor unit)

■ Important Considerations

- The air conditioner you buy must be installed by professional personnel and the “Installation manual” is used only for the professional installation personnel! The installation specifications should be subject to our after-sale service regulations.
- When filling the combustible refrigerant, any of your rude operations may cause serious injury or injuries to human body or bodies and object or objects.
- A leak test must be done after the installation is completed.
- It is a must to do the safety inspection before maintaining or repairing an air conditioner using combustible refrigerant in order to ensure that the fire risk is reduced to minimum.
- It is necessary to operate the machine under a controlled procedure in order to ensure that any risk arising from the combustible gas or vapor during the operation is reduced to minimum.
- Requirements for the total weight of filled refrigerant and the area of a room to be equipped with an air conditioner (are shown as in the following Tables GG.1 and GG.2)

■ The maximum charge and the required minimum floor area

m_1 = (4 m^3) × LFL , m_2 = (26 m^3)) × LFL, m_3 = (130 m^3)× LFL

Where *LFL* is the lower flammable limit in kg/ m^3, R290 LFL is 0.038 kg/ m^3, R32 LFL is 0.306 kg/ m^3.

For the appliances with a charge amount $m_1 < M \leq m_2$:

The maximum charge in a room shall be in accordance with the following:$m_{max} = 2.5 \times (LFL)^{(5/4)} \times h_0 \times (A)^{1/2}$

The required minimum floor area *A*min to install an appliance with refrigerant charge *M* (kg)

shall be in accordance with following: $A_{min} = (M/ (2.5 \times (LFL)^{(5/4)} \times h_0))^2$

Where:

m_{max} is the allowable maximum charge in a room, in kg;

M is the refrigerant charge amount in appliance, in kg;

*A*min is the required minimum room area, in m^2;

A is the room area, in m^2;

LFL is the lower flammable limit, in kg/m^3;

h_0 is the installation height of the appliance, in meters for calculating m_{max} or A_{min}, 1.8 m for wall mounted;

Table GG.1 – Maximum charge (kg)

Category	LFL (kg/m^3)	h_0 (m)	Floor area（m^2）						
			4	7	10	15	20	30	50
R32	0. 306	0. 6	0. 68	0. 9	1. 08	1. 32	1. 53	1. 87	2. 41
		1	1. 14	1. 51	1. 8	2. 2	2. 54	3. 12	4. 02
		1. 8	2. 05	2. 71	3. 24	3. 97	4. 58	5. 61	7. 254
		2. 2	2. 5	3. 31	3. 96	4. 85	5. 6	6. 86	8. 85

Table GG.2 – Minimum room area (m^2)

Category	LFL (kg/m^3)	h_0 (m)	Charge amount (*M*) (kg) Minimum room area (m^2)						
			1.224 kg	1.836 kg	2.448 kg	3.672 kg	4.896 kg	6.12 kg	7.956 kg
R32	0. 306	0.6		29	51	116	206	321	543
		1		10	19	42	74	116	196
		1.8		3	6	13	23	36	60
		2.2		2	4	9	15	24	40

■ Installation Safety Principles

1. Site Safety

Open Flames Prohibited

Ventilation Necessary

2. Operation Safety

Mind Static Electricity

Open Flames Prohibited

Must wear protective clothing and anti-static gloves

Don't use mobile phone

3. Installation Safety

● Refrigerant Leak Detector ● Appropriate Installation Location	 The left picture is the schematic diagram of a refrigerant leak detector.

Please note that:

1. The installation site should be in a well-ventilated condition.

2. The sites for installing and maintaining an air conditioner using Refrigerant R290 should be free from open fire or welding, smoking, drying oven or any other heat source higher than 370℃ which easily produces open fire; the sites for installing and maintaining an air conditioner using Refrigerant R32 should be free from open fire or welding, smoking, drying oven or any other heat source higher than 548℃ which easily produces open fire.

3. When installing an air conditioner, it is necessary to take appropriate anti-static measures such as wear anti-static clothing and/or gloves.

4. It is necessary to choose the site convenient for installation or maintenance wherein the air inlets and outlets of the indoor and outdoor units should be not surrounded by obstacles or close to any heat source or combustible and/or explosive environment.

5. If the indoor unit suffers refrigerant leak during the installation, it is necessary to immediately turn off the valve of the outdoor unit and all the personnel should go out till the refrigerant leaks completely for 15 minutes. If the product is damaged, it is a must to carry such damaged product back to the maintenance station and it is prohibited to weld the refrigerant pipe or conduct other operations on the user's site.

6. It is necessary to choose the place where the inlet and outlet air of the indoor unit is even.

7. It is necessary to avoid the places where there are other electrical products, power switch plugs and sockets, kitchen cabinet, bed, sofa and other valuables right under the lines on two sides of the indoor unit.

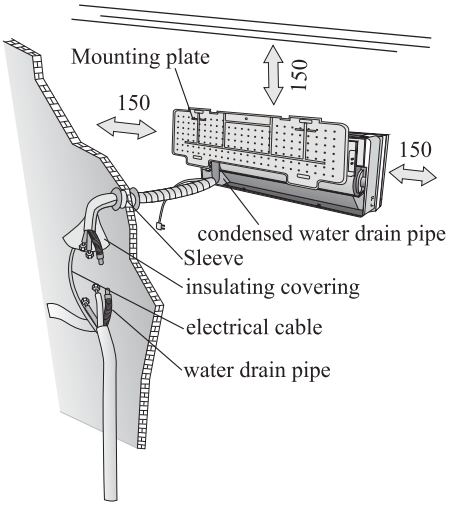
■ Special Tools

Tool Name	Requirement(s) for Use
Mini Vacuum Pump	It should be an explosion-proof vacuum pump; can ensure certain precision and its vacuum degree should be lower than 10Pa.
Filling Device	It should be a special explosion-proof filling device; have certain precision and its filling deviation should be less than 5g.
Leak Detector	It should be calibrated regularly; and its annual leak rate should not exceed 10g.
Concentration Detector	A) The maintenance site should be equipped with a fixed-type combustible refrigerant concentration detector and connected to a safeguard alarm system; its error must be not more than 5%. B) The installation site should be equipped with a portable combustible refrigerant concentration detector which can realize two-level audible and visual alarm; its error must be not more than 10%. C) The concentration detectors should be calibrated regularly. D) It is necessary to check and confirm the functions before using the concentration detectors.
Pressure Gauge	A) The pressure gauges should be calibrated regularly. B) The pressure gauge used for Refrigerant 22 can be used for Refrigerants R290 and R161; the pressure gauge used for R410A can be used for Refrigerant 32.
Fire Extinguisher	It is necessary to carry fire extinguisher(s) when installing and maintaining an air conditioner. On the maintenance site, there should be two or more kinds of dry powder, carbon dioxide and foam fire extinguishers and that such fire extinguishers should be placed at stipulated positions, with eye-catching labels and in handy places.

INSTALLATION MANUAL---Selecting the Installation Place

INDOOR UNIT

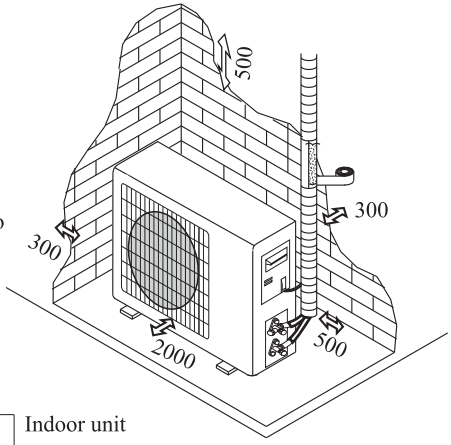
- Install the indoor unit on a strong wall that is not subject to vibrations.
- The in let and outlet ports should not be obstructed:the air should be able to blow all over the room.
- Do not install the unit near a source of heat , steam,or flammable gas.
- Install the unit near an electric socket or private circuit.
- Do not install the unit where it will be exposed to direct sunlight.
- Select a site where the condensed water can be easily drained out, and where it is easily connected to outdoor unit.
- Check the machine operation regularly and reserve the necessary spaces as shown in the picture.
- Select a place where the filter can be easily taken out.



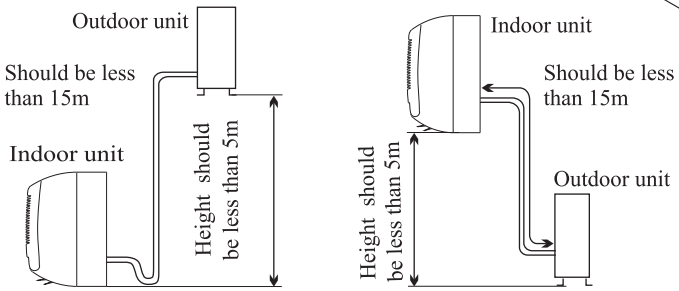
OUTDOOR UNIT

- Do not install the outdoor unit near sources of heat, steam or flammable gas.
- Do not install the unit in too windy or dusty places.
- Do not install the unit where people often pass.Select a place where the air discharge and operating sound will not disturb the neighbours.
- Avoid installing the unit where it will be exposed to direct sunlight (other wise use a protection , if necessary, that should not interfere with the air flow).
- Reserve the spaces as shown in the picture for the air to circulate freely.
- Install the outdoor unit in a safe and solid place.
- If the outdoor unit is subject to vibration, place rubber gaskets onto the feet of the unit..

minimum space to be reserved (mm) showing in the picture



Installation Diagram



The purchaser must ensure that the person and/or company who is to install, maintain or repair this air conditioner has qualifications and experience in refrigerant products.

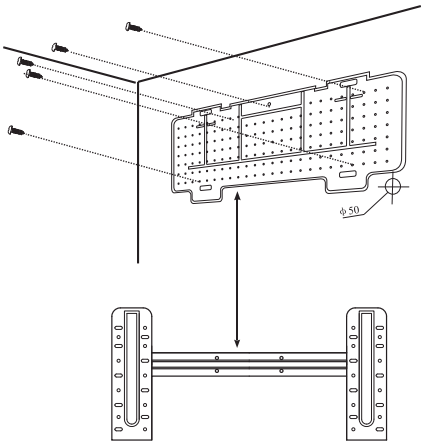
INSTALLATION MANUAL---Installation of the Indoor unit

Before starting installation, decide on the position of the indoor and outdoor units, taking into account the minimum space reserved around the units

⚠ Do not install your air conditioner in a wet room such as a bathroom or laundry etc

⚠ The installation site should be 250cm or more above the floor.

To install, proceed as follows:

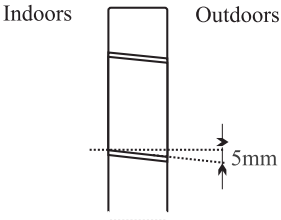


Installation of the mounting plate

1 Always mount the rear panel horizontally and vertically
2. Drill 32 mm deep holes in the wall to fix the plate;
3. Insert the plastic anchors into the hole;
4 .Fix the rear panel on the wall with provided tapping screws
5.Be sure that the rear panel has been fixed firmly enough to withstand the weight

Note : The shape of the mounting plate may be different from the one above, but installation method is similar .

Drilling a hole in the wall for the piping

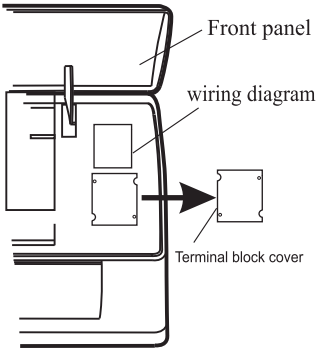


1. Make the piping hole (Φ55) in the wall at a slight downward slant to the outdoor side.
2. Insert the piping-hole sleeve into the hole to prevent the connection piping and wiring from being damaged when passing through the hole.

⚠ The hole must slope downwards towards the exterior

Note : Keep the drain pipe down towards the direction of the wall hole, otherwise leakage may occur.

Electrical connections---Indoor unit



1. Open the front panel.
2. Take off the cover as indicated in the piciure (by removing a screw or breaking the hooks).
3. For the electrical connections, see the circuit diagram on the right part of the unit under the front panel.
4. Connect the cable wires to the screw terminals by following the numbering ,Use wire size suitable to the electric power input (see name plate on the unit) and according to all current national safety code requirements.

⚠ The cable connecting the outdoor and indoor units must be suitable for outdoor use.

⚠ The plug must be accessible also after the appliance has been installed so that it can be pulled out if necessary.

⚠ An efficient earth connection must be ensured.

⚠ If the power cable is damaged, it must be replaced by an authorised Service Centre.

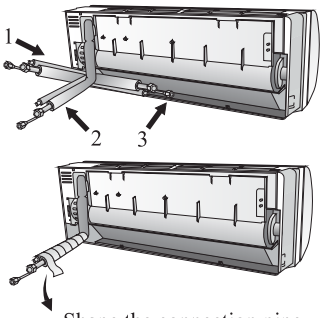
Note:Optional the wires can been connected to the main PCB of indoor unit by manufacturer according to the model without terminal block.

INSTALLATION MANUAL---Installation of the Indoor unit

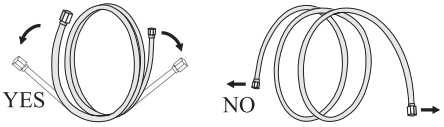
Refrigerant piping connection

The piping can be run in the 3 directions indicated by numbers in the picture . When the piping is run in direction 1or3, cut a notch along the groove on the side of the indoor unit with a cutter.
Run the piping in the direction of the wall hole and bind the copper pipes , the drain pipe and the power cables together with the tape with the drain pipe at the bottom, so that water can flow freely.

- Do not remove the cap from the pipe until connecting it, to avoid dampness or dirt from entering.
- If the pipe is bent or pulled too often , it will become stiff . Do not bend the pipe more than three times at one point.
- When extending the rolled pipe, straighten the pipe by unwinding it gently as shown in the picture.



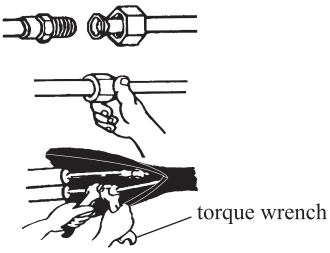
Shape the connection pipe



Extending the rolled pipe

Connections to the indoor unit

1. Remove the indoor unit pipe cap (check that there is no debris inside).
2. Insert the fare nut and create a flange at the extreme end of the connection pipe.
3. Tighten the connections by using two wrenches working in opposite directions

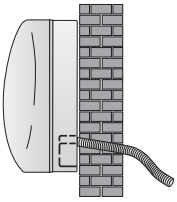


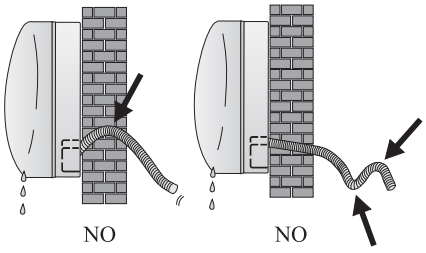
Indoor unit condensed water drainage

The indoor unit condensed water drainage is fundamental for the success of the installation.

1. Place the drain hose below the piping, taking care not to create siphons.
2. The drain hose must slant downwards to aid drainage.
3. Do not bend the drain hose or leave it protruding or twisted and do not put the end of it in water . If an extension is connected to the drain hose , ensure that it is lagged when it passes into the indoor unit.
4. If the piping is installed to the right, the pipes, power cable and drain hose must be lagged and secured onto the rear of the unit with a pipe connection.

1) Insert the pipe connection into the relative slot.
2) Press to join the pipe connection to the base.


YES

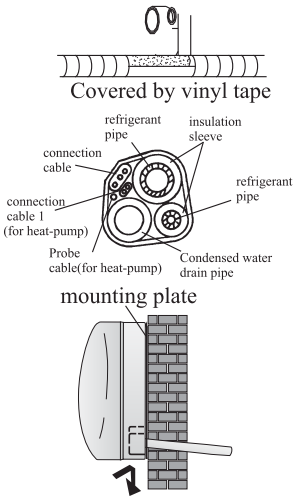


INSTALLATION MANUAL---Installation of the Indoor unit

INSTALLATION OF THE INDOOR UNIT

After having connected the pipe according to the instructions, install the connection cables. Now install the drain pipe. After connection,lag the pipe, cables and drain pipe with the insulating material.

1. Arrange the pipes ,cables and drain hose well.
2. Lag the pipe joints with insulating material , securing it with vinyl tape.
3. Run the bound pipe , Cables and drain pipe through the wall hole and mount the indoor unit onto the upper part of the mounting plate securely.
4. Press and push the lower part of the indoor unit tightly against the mounting plate



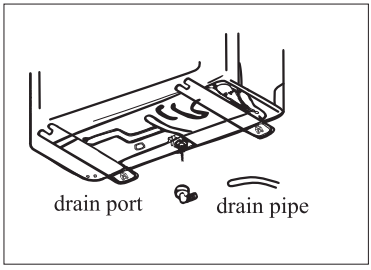
INSTALLATION MANUAL---Installation of the outdoor unit

- The outdoor unit should be installed on a solid wall and fastened securely.
- The following procedure must be observed before connecting the pipes and connecting cables : decide which is the best position on the wall and leave enough space to be able to carry out maintenance easily.
- Fasten the support to the wall using screw anchors which are particularly suited to the type of wall;
- Use a larger quantity of screw anchors than normally required for the weight they have to bear to aviod vibration during operation and remain fastened in the same position for years without the screws becoming loose.
- The unit must be installed following the national regulations.

Outdoor unit condensed water drainage (only for heat pump models)

The condensed water and the ice formed in the outdoor unit during heating operation can be drained away through the drain pipe

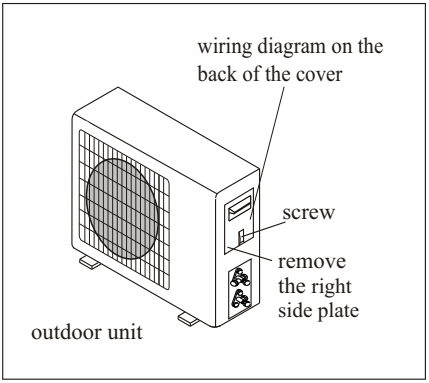
1. Fasten the drain port in the 25mm hole placed in the part of the unit as shown in the picture.
2. Connect the drain port and the drain pipe. Pay attention that water is drained in a suitable place.



INSTALLATION MANUAL---Installation of the outdoor unit

ELECTRICAL CONNECTIONS

1. Remove the handle on the right side plate of outdoor unit.
2. Connect the power connection cord to the terminal board. Wiring should fit that of indoor unit.
3. Fix the power connection cord with wire clamp.
4. Confirm if the wire has been fixed properly.
5. An efficient earth connection must be ensured.
6. Recover the handle.

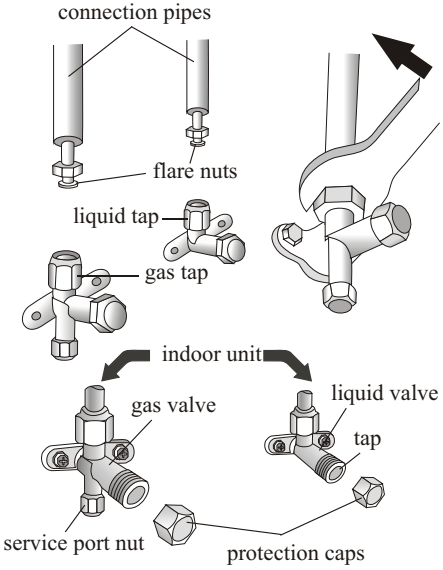


CONNECTING THE PIPES

Screw the flare nuts to the outdoor unit coupling with the same tightening procedures described for the indoor unit.

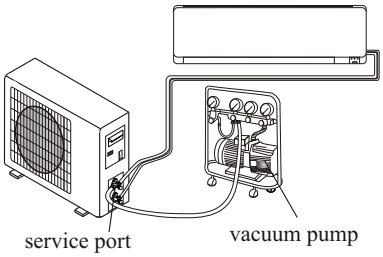
To avoid leakage, pay attention to the following points:

1. Tighten the flare nuts using two wrenches. Pay attention not to damage the pipes.
2. If the tightening torque is not sufficient , there will probably be some leakage. With excessive tightening torque there will also be some leakage, as the flange could be damaged.
3. The surest system consists in tightening the connection by using a fix wrench and a torque wrench:Please check the torque wrench table.



BLEEDING

Air and humidity left inside the refrigerant circuit can cause compressor malfunction. After having connected the indoor and outdoor units, bleed the air and humidity from the refrigerant circuit by using a vacuum pump.



Refrigerant Pressure Inspection

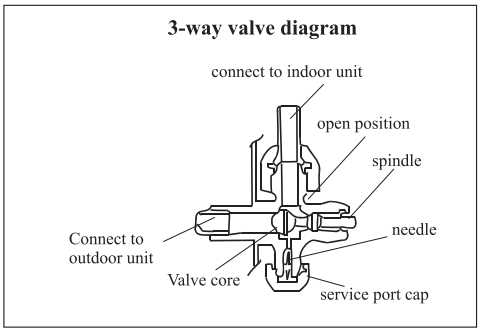
The low pressure range of refrigerant R290 is 0.4-0.6 Mpa, and the high pressure range is 1.5-2.0Mpa;The low pressure range of refrigerant R32 is 0.8-1.2Mpa,and the high pressure range is 3.2-3.7Mpa;It means that the refrigerating system or refrigerant of an air conditioner is abnormal if the low or high pressure ranges of the detected compressor exceed the normal ranges.

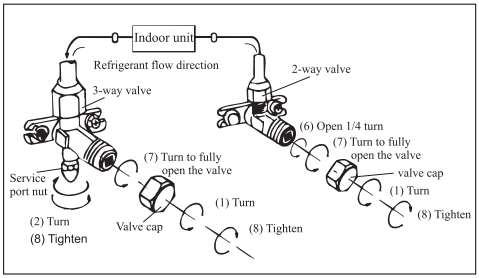
INSTALLATION MANUAL---Installation of the outdoor unit

BLEEDING

The air and humidity left inside the refrigerant circulation can cause compressor malfunction. After having connected the indoor and outdoor units, bleed the air and humidity from the refrigerant circulation using a vacuum pump.

(1) Unscrew and remove the caps from the 2 - way and 3-way valves.
(2) Unscrew and remove the cap from the service port.
(3) Connect the vacuum pump hose to the service port.
(4) Operate the vacuum pump for 10 - 15 minutes until an absolute vacuum of 10 mm Hg has been reached.
(5) With the vacuum pump still in operation , close the low - pressure knob on the vacuum pump coupling. Stop the vacuum pump.
(6) Open the 2 - way valve by 1/4 turn and then close it after10 seconds. Check all the joints for leaks using liquid soap or an electronic leak device.
(7) Turn the body of the 2-way and 3-way valves. Disconnect the vacuum pump hose.
(8) Replace and tighten all the caps on the valves.





INSTALLATION MANUAL--- operation test

1. Wind insulating covering around the joints of the indoor unit and fix it with insulating tape.
2. Fix the exceeding part of the signal cable to the piping or to the outdoor unit.
3. Fix the piping to the wall (after having coated it with insulating tape) using clamps or insert them into plastic slots.
4. Seal the hole in the wall through which the piping is passed so that no air or water can fill.

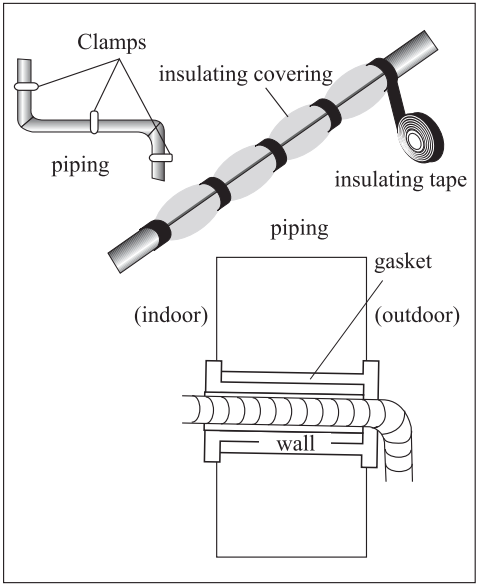
Indoor unit test

- Do the ON/OFF and FAN operate normally?
- Does the MODE operate normally?
- Do the set point and TIMER function properly?
- Does each lamp light normally?
- Do the flap for air flow direction operate normally?
- Is the condensed water drained regularly?

Outdoor unit test

- Is there any abnormal noise or vibration during operation?
- Could the noise , the air flow or the condensed water drainage disturb the neighbours?
- Is there any coolant leakage?

Note: the electronic controller allows the compressor to start only three minutes after voltage has reached the system.



MODEL capacity (Btu/h)	9k/12K	18k/24K
Lenght of pipe with standard charge	4m	4m
Maximum distance between indoor and outdoor unit	15m	15m
Additional refrigerant charge	15g/m	25g/m
Max. diff. in level between indoor and outdoor unit	5m	5m
Type of refrigerant(1)	R32	R32

*According to model's specification

(1) Refer to the data rating label sticked on the outdoor unit.

(2)The total charge amount should under the maximum according to the table GG.1 in page18.

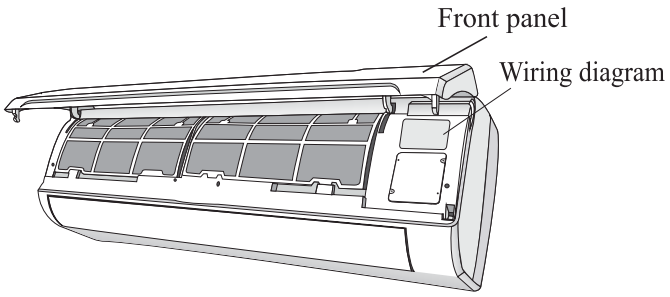
TIGHTENING TORQUE FOR PROTECTION CAPS AND FLANGE CONNECTION

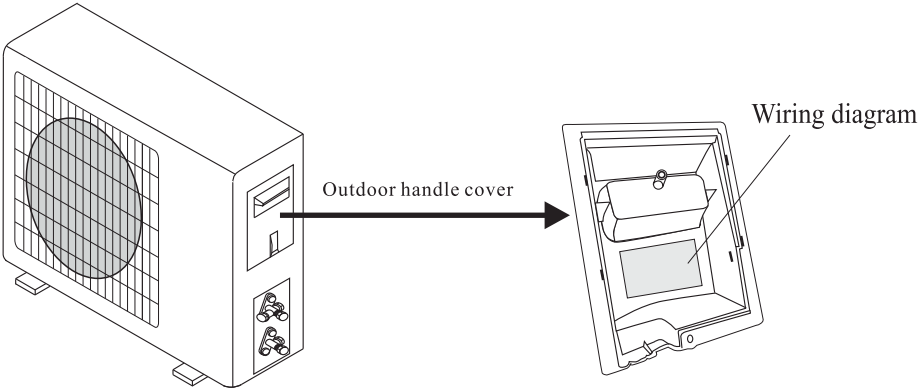
PIPE	TIGHTENING TORQUE [N x m]	CORRESPONDING STRESS (using a 20 cm wrench)		TIGHTENING TORQUE [N x m]
1/4 " (ϕ 6)	15 - 20	wrist strength	Service port nut	7 - 9
3/8 " (ϕ 9.52)	31 - 35	arm strength	Protection caps	25 - 30
1/2 " (ϕ 12)	35 - 45	arm strength		
5/8 " (ϕ 15.88)	75 - 80	arm strength		

WIRING DIAGRAM

For different models, the wiring diagram may be different. Please refer to the wiring diagrams pasted on the indoor unit and outdoor unit respectively.

On indoor unit, the wiring diagram is pasted under the front panel;
On outdoor unit, the wiring diagram is pasted on the backside of the outdoor handle cover.





Note: For some models the wires has been connected to the main PCB of indoor unit by manufacturer without terminal block.

CABLE WIRES SPECIFICATION

INVERTER TYPE MODEL capacity (Btu/h)				9k	12k	18/22k	24k	
		sectional area						
Power supply cable	N			1.0mm^2 (1.5mm^2) AWG18 (AWG16)	1.0mm^2 (1.5mm^2) AWG18 (AWG16)	1.5mm^2 AWG16	2.5mm^2 AWG14	
	L			1.0mm^2 (1.5mm^2) AWG18 (AWG16)	1.0mm^2 (1.5mm^2) AWG18 (AWG16)	1.5mm^2 AWG16	2.5mm^2 AWG14	
	E			1.0mm^2 (1.5mm^2) AWG18 (AWG16)	1.0mm^2 (1.5mm^2) AWG18 (AWG16)	1.5mm^2 AWG16	2.5mm^2 AWG14	
Connection supply cable	N			1.0mm^2 (1.5mm^2)	1.0mm^2 (1.5mm^2)	1.5mm^2	0.75mm^2	
	L			1.0mm^2 (1.5mm^2)	1.0mm^2 (1.5mm^2)	1.5mm^2	0.75mm^2	
	1			1.0mm^2 (1.5mm^2)	1.0mm^2 (1.5mm^2)	1.5mm^2	0.75mm^2	
	⏚			1.0mm^2 (1.5mm^2)	1.0mm^2 (1.5mm^2)	1.5mm^2	0.75mm^2	

- Above table is listing cable type you should use in order to complete installation in case your air conditioner is not including electric cabels in its packing.

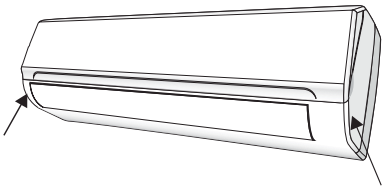
- 220V air conditioner indoor unit fuse parameter is 50T, 3,15A

- 220V 9K and 12K air conditioner outdoor unit fuse parameter is 61T, 15A

- 220V 18K and 24K air conditioner outdoor unit fuse parameter is 65TS, 25A

MAINTENANCE

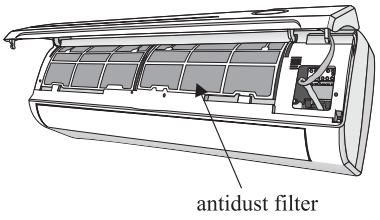
Periodic maintenance is essential for keeping your air conditioner efficient.
Before carrying out any maintenance , disconnect the power supply by taking the plug out from the socket.



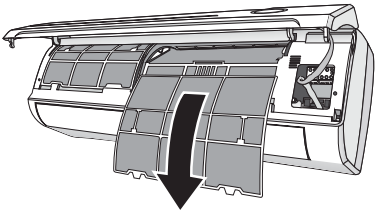
INDOOR UNIT

ANTIDUST FILTERS

1. Open the front panel following the direction of the arrow
2. Keeping the front panel raised with one hand, take out the air filter with the other hand
3. Clean the filter with water ; if the filter is soiled with oil,it can be washed with warm water (not exceeding 45℃).
   Leave to dry in a cool and dry place.
4. Keeping the front panel raised with one hand , insert the air filter with the other hand
5. Close



The electrostatic and the deodorant filter (if installed) cannot be washed or regenerated and must be replaced with new filters after every 6 months.



CLEANING THE HEAT EXCHANGER

1. Open the front panel of the unit and life it till its greatest stroke and then unhooking it from the hinges to make the cleaning easier.
2. Clean the indoor unit using a cloth with the water (not higher than 40℃) and neutral soap . Never use aggressive solvents or detergents.
3. If the outdoor unit is clogged , remove the leaves and the waste and remove the dust with air jet or a bit of water.

END OF SEASON MAINTENANCE

1. Disconnect the automatic switch or the plug.
2. Clean and replace the filters
3. On a sunny day let the conditioner work in ventilation for some hours , so that the inside of the unit can dry completely..

REPLACING THE BATTERIES

When: • There is no confirmation beep heard from the indoor unit.
• The LCD doesn’t act.

How: • Take off the cover at back.
• Place the new batteries respecting the symbols + and - .

N.B: Use only new batteries. Remove the batteries from the remote controller when the conditioner is not in operation

WARNING ! Do not throw batteries into common rubbish , they should be disposed of in the special containers situated in the collection points.

TROUBLESHOOTING

MALFUNCTION	POSSIBLE CAUSES
The appliance does not operate	Power failure/plug pulled out
	Damaged indoor/outdoor unit fan motor
	Faulty compressor thermomagnetic circuit breaker
	Faulty protective device or fuses.
	Loose connections or plug pulled out
	It sometimes stops operating to protect the appliance.
	Voltage higher or lower than the voltage range
	Active TIMER-ON function
	Damaged electronic control board
Strange odour	Air filter dirty
Noise of running water	Back flow of liquid in the refrigerant circulation
A fine mist comes from the air outlet	This occurs when the air in the room becomes very cold, for example in the "COOLING" or "DEHUMIDIFYING/DRY" modes.
A strange noise can be heard	This noise is made by the expansion or contraction of the front panel due to variations in temperature and does not indicate a problem.
Insufficient airflow, either hot or cold	Inappropriate temperature setting..
	Air inlet or outlet of indoor or outdoor unit has been blocked.
	Air filter is blocked.
	Fan speed set at minimum.
	Other sources of heat in the room.
	No refrigerant.
The appliance does not respond to commands	Remote control is not near enough to indoor unit.
	Battery in Remote controller may have been exhausted..
	Obstacles between remote control and signal receiver in indoor unit.
The display is off	Active LED function
	Power failure

Switch off the air conditioner immediately and cut off the power supply in the event of:
Strange noises during operation.
Faulty electronic control board
Faulty fuses or switches.
Spraying water or objects inside the appliance.
Overheated cables or plugs.
Very strong smells coming from the appliance.

TROUBLESHOOTING

ERROR CODE ON THE DISPLAY

In case of error, the display on the indoor unit shown the following error codes:

Display	Description of the trouble
E1	Indoor room temperature sensor fault
E2	Indoor pipe temperature sensor fault
E3	Outdoor pipe temperature sensor fault
E4	Refrigerant system leakage or fault
E6	Malfunction of indoor fan motor
E7	Outdoor ambient temperature sensor fault
E0	Indoor and outdoor communication fault
E8	Outdoor discharge temperature sensor fault
E9	Outdoor IPM module fault
EA	Outdoor current detect fault
EE	Outdoor PCB EEPROM fault
EF	Outdoor fan motor fault
EH	Outdoor suction temperature sensor fault

DISPOSAL GUIDELINE (European)

This appliance contains refrigerant and other potentially hazardous materials. When disposing of this appliance,the law requires special collection and treatment. **DO NOT** dispose of this product as household waste or unsorted municipal waste.

When disposing of this appliance, you have the following options:

- Dispose of the appliance at designated municipal electronic waste collection facility.
- When buying a new appliance, the retailer will take back the old appliance free of charge.
- The manufacturer will also take back the old appliance free of charge.
- Sell the appliance to certifid scrap metal dealers.
- Disposing of this appliance in the forest or other natural surroundings endangers your health and is bad for the environment. Hazardous substances may leak into the ground water and enter the food chain.

NOTICE ABOUT RECYCLING

Your product is designed and manufactured with high quality materials and components which can be recycled and reused. This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste. Please dispose of this equipment at your local community waste collection/ recycling centre.

In the European Union there are separate collection systems for used electrical and electronic products.

Please help us to conserve the environment we live in!

DECLARATION OF CONFORMITY

Herewith, we declare that this product, complies with the requirements of below Directives:

CE

EMC-Directive: 14 / 30 / EU
Low Voltage Directve: 14 / 35 / EU
RED Directive: 14 / 53 / EU
ErP Directive: 09 / 125 / EC
CE Marking Directive: 93 / 68 / EEC
RoHS Directive: 11 / 65 / EU & 15 / 863 / EU

Detailed declaration of conformity can be found at www.united-electronics.gr

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