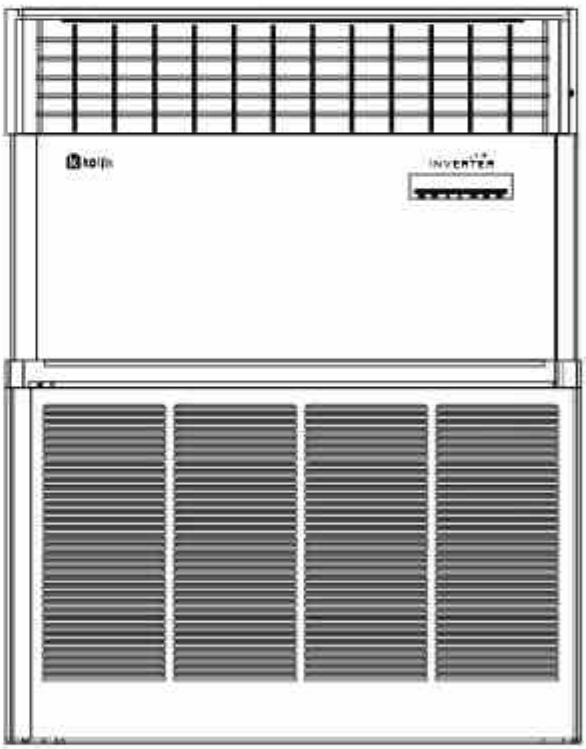
kolin

FLOOR MOUNTED
INVERTER AIR CONDITIONER

OWNER'S MANUAL



MODEL:
KLG-IF100-4F3M410

Thank you for purchasing our air conditioner. Please read this manual carefully before operating your new air conditioning unit. Make sure to save this manual for future reference.

Kolin Phils. Int'l., Inc.

To Users

Thank you for selecting Kolin product. Please read this instruction manual carefully before installing and using the product, so as to master and correctly use the product. In order to guide you to correctly install and use our product and achieve expected operating effect, we hereby instruct as below:

(1) 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.

(2) In order to ensure reliability of product, the product may consume some power under stand-by status for maintaining normal communication of system and preheating refrigerant and lubricant. If the product is not to be used for long, cut off the power supply; please energize and preheat the unit in advance before reusing it.

(3) Please properly select the model according to actual using environment, otherwise it may impact the using convenience.

(4) This product can't be installed at corrosive, inflammable or explosive environment or the place with special requirements, such as kitchen. Otherwise, it will affect the normal operation or shorten the service life of the unit, or even cause fire hazard or serious injury. As for above special places, please adopt special air conditioner with anti-corrosive or anti-explosion function.

(5) If the product needs to be installed, moved or maintained, please contact our Kolin service hotline for professional support. Users should not disassemble or maintain the unit by themselves, otherwise it may cause relative damage, and our company will bear no responsibilities.

(6) All the illustrations and information in the instruction manual are only for reference. In order to make the product better, we will continuously conduct improvement and innovation. If there is adjustment in the product, please subject to actual product.

Exception Clauses

Manufacturer will bear no responsibilities when personal injury or property loss is caused by the following reasons:

(1) Damage the product due to improper use or misuse of the product.

(2) Alter, change, maintain or use the product with other equipment without abiding by the instruction manual of manufacturer.

(3) After verification, the defect of product is directly caused by corrosive gas.

(4) After verification, defects are due to improper operation during transportation of product.

(5) Operate, repair, maintain the unit without abiding by instruction manual or related regulations.

(6) After verification, the problem or dispute is caused by the quality specification or performance of parts and components that produced by other manufacturers.

(7) The damage is caused by natural calamities, bad using environment or force majeure.

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I. SAFETY PRECAUTIONS

1.1 Safety Notices (Please be sure to abide)

WARNING: If not abide strictly, it may cause severe damage to the unit or the people.

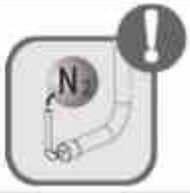
NOTE: If not abide strictly, it may cause slight or medium damage to the unit or the people.

This sign indicates that the operation must be prohibited. Improper operation may cause severe damage or death to people.

This sign indicates that the items must be observed. Improper operation may cause damage to people or property.

WARNING!

This product can't be installed at corrosive, inflammable or explosive environment or the place with special requirements, such as kitchen or washing room. Otherwise, it will affect the normal operation or shorten the service life of the unit, or even cause fire hazard or serious injury. As for above special places, please adopt special air conditioner with anti-corrosive or anti-explosion function.

	Please install the unit according to instructions in this manual. Read this manual carefully before starting up or checking the machine.		Installation should be performed by Kolin Authorized service center. Do not install the product by yourself. Improper installation may result in water leakage, electric shock or fire hazard.
	Make sure the local power supply is in accordance with units before installation, and check the power supply carefully.		This air conditioner must be properly grounded through the receptacle to avoid electric shock. The grounding wire shouldn't be connected with gas pipe, water pipe, lightning arrester or telephone line.
	Please use specialized accessories or parts to carry out installation, or water leakage, electric shock, fire hazard may resulted.		R410A refrigerant can produce poisonous gas once it meets fire, so please ventilate the room immediately if refrigerant leaks out during installation.
	Diameter of power cord must be large enough. Damaged power cord and connecting wire must be replaced by specialized electric cable.		After the power cord is Connected, please install the cover of electric box to avoid danger.
	Nitrogen must be charged according to technical requirements.		Short circuit is forbidden. Do not cancel the pressure switch in case the unit may be damaged.

	For units with wired controller, do not connect power supply until the wired controller is well installed. Otherwise, the wired controller cannot be used.		When the installation is finished, please check and make sure the drain pipe, pipeline and electric wire are all well connected in order to avoid water leakage, refrigerant leakage, electric shock or fire hazard.
	Do not extend fingers or objects into air outlet or air return grille.		If you use gas heater or petroleum heater in the same room, please open the door or window to maintain good air circulation in case the room may lack of oxygen.
	Never start or stop the air conditioner by inserting or removing the power cord.		Do not turn off the air conditioner until it runs for at least 5 minutes. Otherwise, oil-return of the compressor will be affected.
	Children are not allowed to operate the air conditioner.		Do not operate the air conditioner with wet hands.
	Please turn the unit off and unplug your air conditioner before cleaning. Otherwise, it may cause electric shock or personal injury.		Do not spray water on the air conditioner or it will cause malfunction or electric shock.
	Do not expose the air conditioner directly to water or place it in a damp or corrosive environment.		Connect power supply 8 hours before operation. Do not disconnect power if you want to stop the unit in a short period of time, e.g. in one night. (This is for protecting the compressor.)
	Volatile liquid like thinner or gasoline will damage the appearance of air conditioner. (Please use soft dry cloth and wet cloth with mild detergent to clean the outer case of air conditioner.)		During Cooling mode, indoor temperature should not be set too low. Keep the difference between indoor temp and outdoor temp within 5°C.
	If abnormal condition occurs (e.g. unpleasant smell), please turn off the unit at once and disconnect power supply. Then contact Kolin Service Hotlines. If the air conditioner continues to operate despite of abnormal condition, the unit may be damaged and it may cause electric shock or fire hazard.		Do not repair the air conditioner by yourself. Improper repair will cause electric shock or fire hazard. Please contactKolin Authorized center and have it repaired by professional technicians.

1.2 Power Supply Demand

(1) Provided sufficient capacity of power supply and the cross area of electrical wires.

(2) Confirm the reliable earth connection, and the earth wire should be connected to special device of the building. Never connect the earth wire to the gas pipe, water pipe, the earth wires of telephone and lighting rod.

(3) Make sure that the wiring is done by the qualified technicians according to the relevant regulations.

(4) In fixed circuit, there must be electricity leakage protection switch of enough power capacity and air switch with enough space.

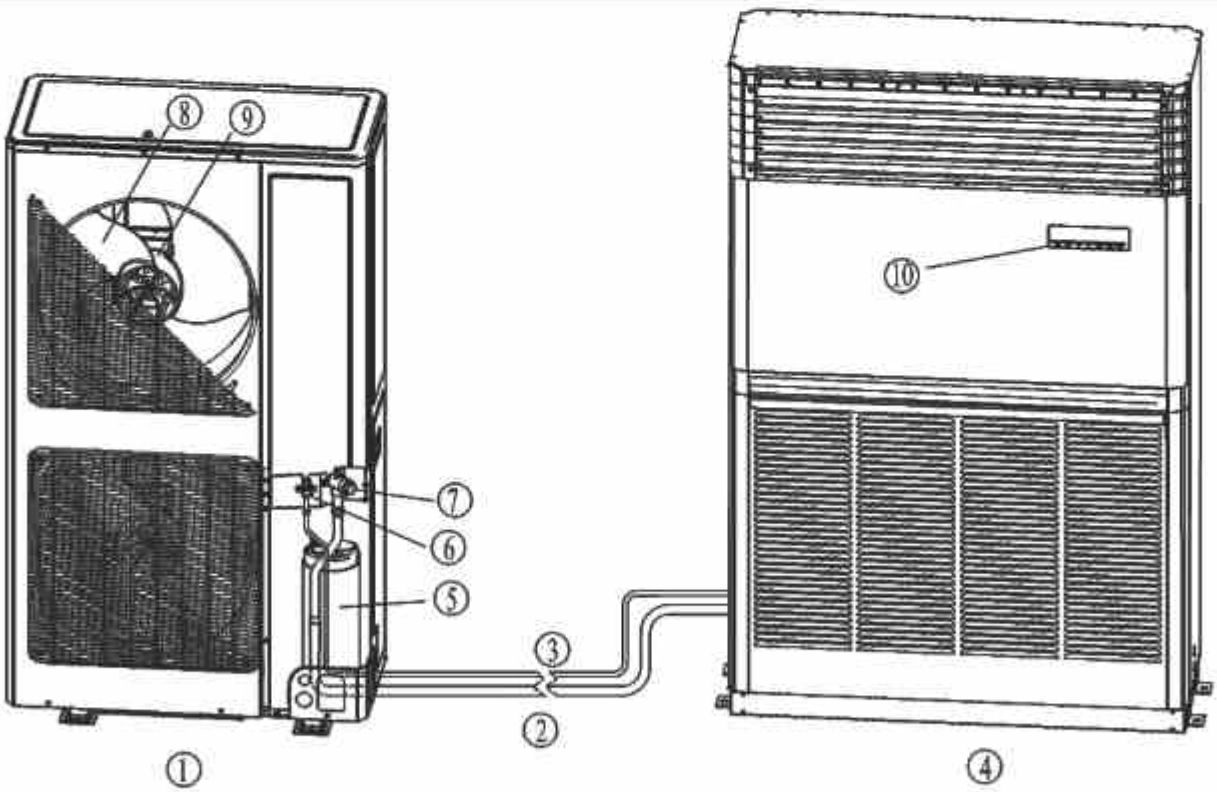
(5) An all-pole disconnection device which has at least 3mm separation distance in all pole and a residual current device(RCD)with the rating of above 10mA shall be incorporated in the fixed wiring according to the national rule.

(6) The appliance shall be installed in accordance with national wiring regulations.

(7) The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.

II. PRODUCT INTRODUCTION

2.1 Structure of Air Conditioner



No.	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
Name	Outdoor unit	Gas pipe	Liquid pipe	Indoor unit	Compressor	Liquid pipe valve	Gas pipe valve	Fan blade	Motor	Control panel

NOTE:

This product consists of indoor unit and outdoor unit, connection pipe is not included.

2.2 Working Temperature Range

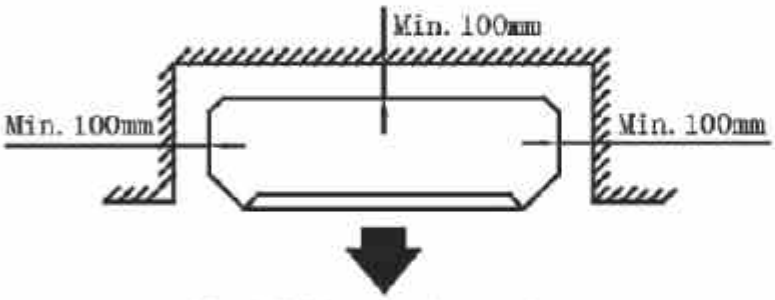
Testing conditions	Indoor section Dry-Bulb / Wet-Bulb(℃)	Outdoor section Dry-Bulb / Wet-Bulb(℃)
Max. Cooling	32/23	52/31
Min. Cooling	21/15	21/-
Max. Heating	27/-	24/18
Min. Heating	20/-	-15/-

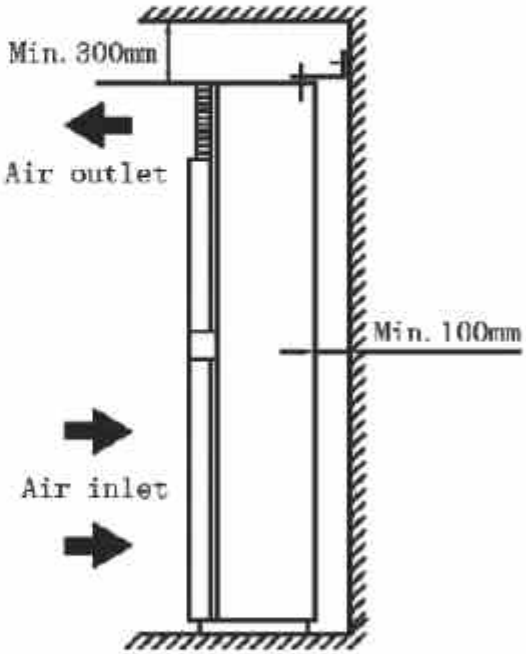
III. PREPARATION BEFORE INSTALLATION

3.1 Selection of Installation Location

3.1.1 Indoor Unit

Diagram of installation space:





(1) Make sure the installation location is strong enough to withstand the unit's weight.

(2) Select a place for easy water drainage of the drain pipe.

(3) The air inlet and air outlet should not be obstructed in order to keep good air circulation.

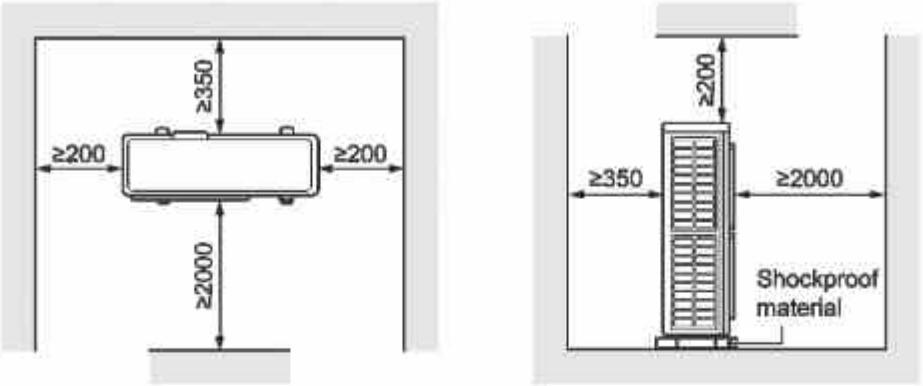
(4) Provide the required installation distance of indoor unit as shown to ensure sufficient space for maintenance.

(5) Selection a location that is far away from heat source, leakage of inflammable gas and smog.

3.1.2 Outdoor Unit

Diagram of installation space:

Unit: mm



(1) The installation of unit should be horizontal. Ensure the discharge air will not return and provide sufficient space around the unit for maintenance.

(2) The air circulation of the installation location must be good to make sure that the unit can get in and discharge sufficient air. Make sure that there is no obstacle to affect air inlet and outlet. If there is an obstacle, please move it away.

(3) The location should be able to withstand the weight, insulate noise and reduce vibration. Make sure the air outlet and noise do not affect the neighbors.

(4) Avoid direct sunlight. It is better to build up an awning for protection.

(5) The rain and water formed in defrosting can be drained way.

(6) Make sure that the unit will not be covered up by snow and will not be affected by garbage and oil fog.

(7) Make sure that the air outlet doesn't face the strong wind.

3.2 Requirements for Connecting Pipe

The maximum pipe length is as shown in following sheet. If the distance between indoor unit and outdoor unit (pipe length) exceeds the max imum distance, proper operation of the unit can not be ensured.

Model	Pipe dimension (mm)		Max pipe length (m)	Max height difference between indoor unit and outdoor unit (m)
	Liquid pipe	Gas pipe		
KLG-IF100-4F3M410	Φ9.52	Φ22.2	70	30

NOTES:

① Pipe bearing pressure should be 4.3MPa.

② The loss of cooling capacity and heating capacity will be bigger if the connection pipe is longer.

3.3 Requirements for Connecting Electricity

NOTES:

① Selection of circuit breaker and power cord in the above table is based upon unit's maximum power (maximum current).

② Specification of power cord is based on the working condition where ambient temperature is 40℃ and multi-core copper cable (working temperature is 90℃, e.g. power cable with YJV cross-linked copper, insulated PE and PVC sheath) is lying on the surface of slot. If working condition changes, please adjust the specification according to national standard.

③ Specification of circuit breaker is based on the working condition where ambient temperature of circuit breaker is 40℃.working condition changes, please adjust the specification according to national standard.

IV. PREPARATION BEFORE INSTALLATION

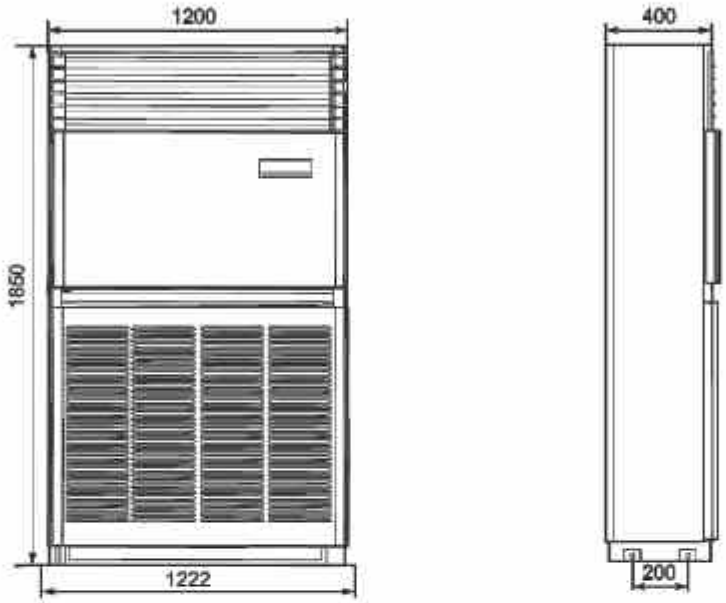
4.1 Installation of Indoor Unit

NOTE:

The installation location should be strong enough to withstand five times of the unit's weight in order to reduce noise and vibration.

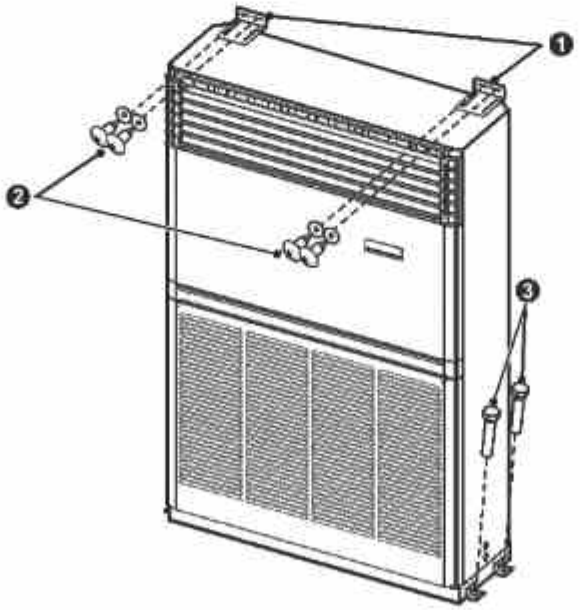
4.1.1 Installation of the Indoor Unit

Unit: mm



4.1.2 Installation of the Unit

In order to avoid incline of the indoor unit, please fix the mounting plate of top cover on the wall and the fixing plate of the chassis on the floor.

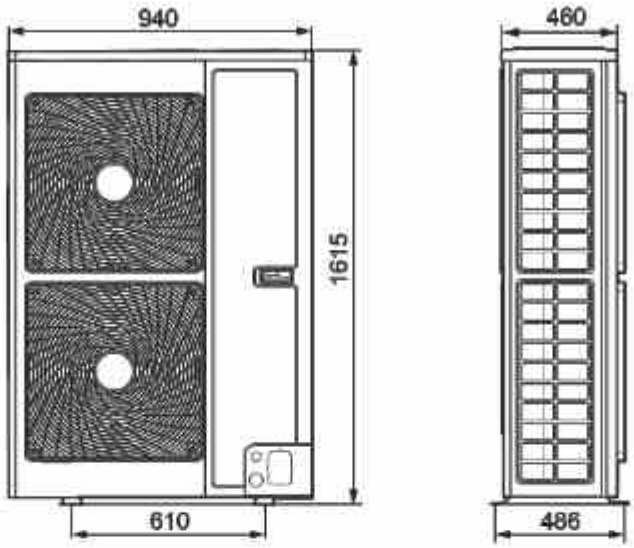


①Mounting Plate ②Screw ③Bo lt

4.2 Installation of Outdoor Unit

Unit Outline and Installation Dimension

Unit: mm



In order to ensure good running of the unit, the selection of installation location must follow the rules below:

(1) Fix the outdoor unit with bolts in the holes as shown below as the outdoor unit may face strong wind.

(2) In heating mode, the condensation water will drain from outdoor unit. Please purchase the drainage pipe and install it on the drain joint.

(3) Except the installation holes at the bottom of outdoor unit, stuff all holes to prevent water leakage.

4.3 Connection of Pipeline

NOTES:

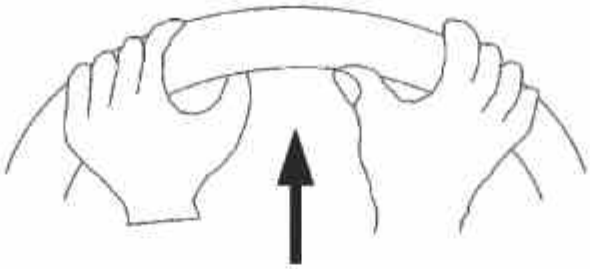
① Do not remove the plug sealing the pipe port before installing the connection pipe between indoor unit and outdoor unit.

② Pipe connection must follow the rules below: the connection pipeline shall be as short as possible; height difference between indoor unit and outdoor unit shall be as small as possible; pipeline bending angle shall be as few as possible; bending radius shall be as big as possible.

4.3.1 Bending Pipe

When pipe bending is needed, the bending radius must be bigger than 200mm and the connection pipe shall not be bent or stretched for several times. Otherwise, the pipe will get harder. The bending time at the same position of a pipe shall not exceed 3 times. The thumbs of two hands shall be placed at the inner side when bending pipe, as shown in the following figure:

Inflex the pipe with thumbs.



The bend radius≥200mm

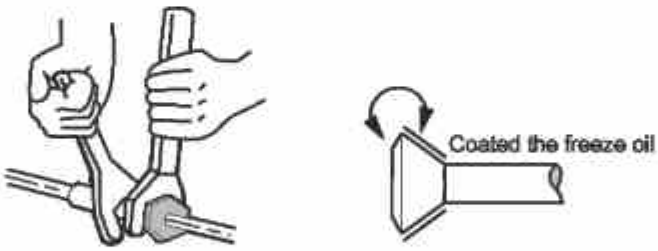
4.3.2 Bending Pipe

The connection pipe and indoor unit adopt the combination connection way of welding and thread connection. Please follow the instructions below:

(1) Diameter of liquid pipe is 9.52mm. Connect the connection pipe and indoor unit with thread connection.

(2) Diameter of gas pipe is 22.2mm. The unit is equipped with one piece of corrugated pipe. Welding the connection pipe of gas pipe with this corrugated pipe and then connect the corrugated pipe with the thread of indoor unit.

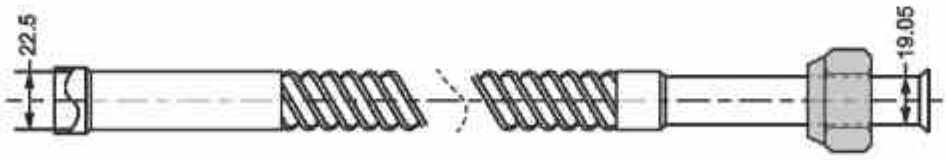
(3) When connecting pipe,the flared port of connection pipe shall face the pipe joint of indoor unit.Screw up the nut of connection pipe with hand and then screw it up with a spanner. Coat the nut with freeze oil when connecting it, as shown in the following figure:



NOTES:

① Both the specification of gap pipe joint and nut of corrugated pipe joint of indoor unit are 19.05mm. The outer diameter of connection pipe welded after corrugated pipe is 22.2mm.

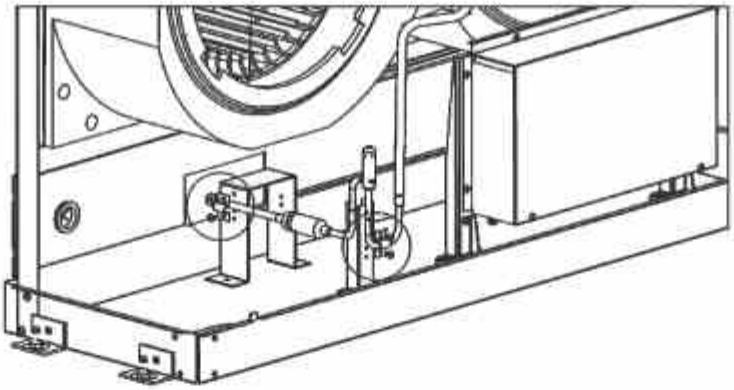
Unit:mm



The following sheet shows the required tightening torque.

Outer diameter(m)	Tightening torque(N·m)
Φ9.52	35~40
Φ19.05	65~75

② After the installation of the unit, Loosen the retaining clips for the liquid pipe It can effectively reduce the abnormal noise caused by refrigerant flow, as follows:



The connection pipe and outdoor unit adopt welding connection. Please follow the instructions below:

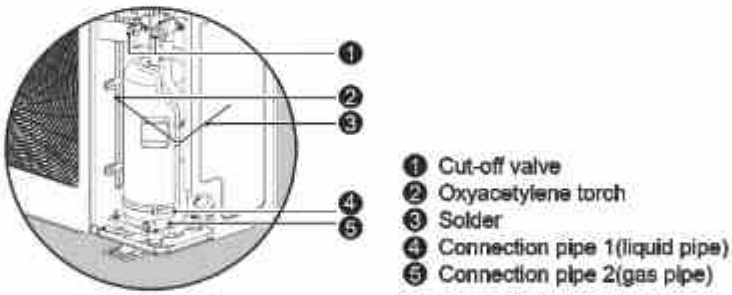
(1) Remove the front side plate, rear side plate and connection board.

(2) Then open the soundproof cotton. Use an oxyacetylene torch to unsolder connection pipe 1 and connection pipe 2. Rotate them to a proper angle and install them to their respective position.

(3) Seal the apertures with solder. First weld connection pipe 1 (liquid pipe) and then weld connection pipe 2 (gas pipe).During welding, it's necessary to use wet gauze to wrap up the filter near connection pipe 2 and the two cut-off valves.

(4) Make sure the flame won't burn the soundproof cotton or other components.

(5) During engineering installation, the connection pipe inside the unit must be wrapped by insulation sleeve.

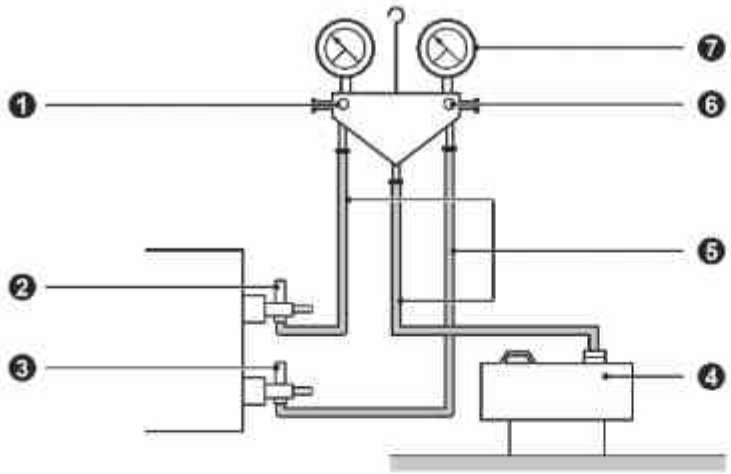


4.3.3 Vacuum Pumping

(1) Outdoor unit has been charged with refrigerant before delivery. If the connection pipe length is more than 7.5m,additional refrigerant is needed.

(2) Confirm whether outdoor liquid and gas valves are closed.

(3) Use vacuum pump to withdraw the air inside indoor unit and connection pipe from the outdoor valve, as shown below.



❶ "LO"Knob
❷ Gas pipe stop valve
❸ Liquid pipe stop valve
❹ Vacuuming pump
❺ Connection hose
❻ "HI"Knob
❼ Manometer

4.3.4 Additional Refrigerants Charging

(1) Length of connection pipe is decided on site. Therefore the amount of additional refrigerant shall be decided on site according to the dimension and length of field-installed liquid pipe.

(2) Record the amount of additional refrigerant for convenience of after-sales service.

(3) Calculation of the amount of additional refrigerant:

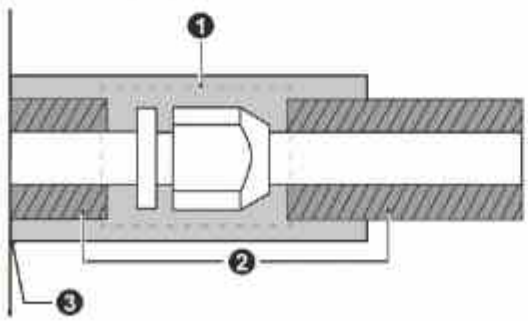
Outer diameter of liquid pipe (mm)	Quantity of additional refrigerant per meter when connection pipe length exceeds 7.5m
9.52	54 g/m

4.3.5 Thermal Insulation for Pipeline

(1) To avoid condensate or water leakage on the connection pipe, the gas pipe and liquid pipe must be wrapped with thermal insulating material and adhesive tape for insulation from the air.

(2) Thermal insulating material shall be able to bear the pipe temperature. For heat pump unit, liquid pipe should bear 70 °C or above and gas pipe should bear 120℃ or above. For cooling only unit, both liquid pipe and gas pipe should bear 70 °C or above. Example: Polyethylene foam (bear 120℃ or above); foaming polyethylene (bear 100℃ or above).

(3) Joints of indoor and outdoor unit should be wrapped with insulating material and leave no gap between pipe and wall.



❶ Thermal insulating layer is required to be wrapped at this part
❷ Thermal insulating pipe
❸ No clearance

4.4 Electric Wiring

4.4.1 Notices for Wiring

(1) Install units according to national wiring codes.

(2) Use air conditioner specialized power supply and make sure that it is consistent with system's rated voltage.

(3) Do not pull the power cord with force.

(4) All electrical installation must be performed by qualified technicians in accordance with local laws, regulations and this user manual.

(5) Diameter of power cord must be large enough. Damaged power cord or connecting wire must be replaced by specialized electric cable.

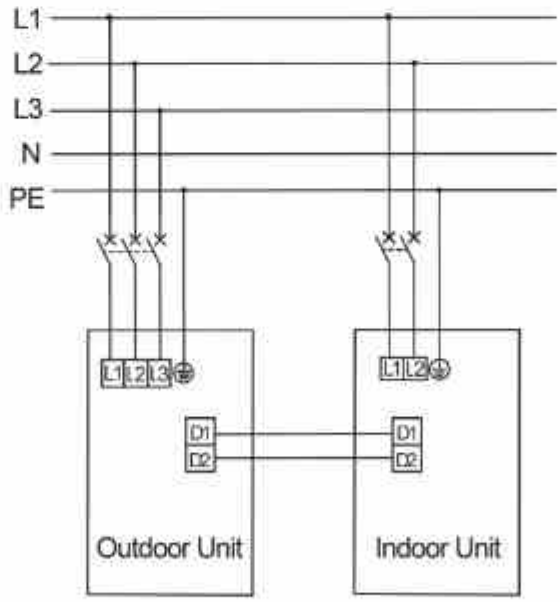
(6) It's a must to install air switch and current circuit breaker that can cut off the power of the entire system. The circuit breaker should include magnetic trip function and thermal trip function so that the system can be protected from short circuit and overload.

(7) The yellow-green wire inside the unit is a ground wire. Do not cut it off or secure it with tapping screws, otherwise it will lead to electric shock.

(8) Power supply must include secure grounding terminal. Do not connect the ground wire to the following places: Water pipe; Gas pipe; Drain pipe; Other places that are deemed as not secure by professional technicians.

(9) For the wiring of power cord, please refer to the wiring instruction label on the unit.

4.4.2 Unit Wiring Diagram



NOTES:

① For the specification of power cord, please refer to the wiring requirements in "Requirements for Connecting Electricity".

② Take two wires of 0.75mm^2 as the communication cable between indoor unit and outdoor unit. Max wire length is 50m. Please select the suitable wire length according to actual installation situation. The communication cable cannot twisted together.

③ If air conditioner used under strong electronic-magnetic interference circumstance, STP (shielded twisted pair) communication cable must be adopted.

④ As for the unit whose wiring board is 4-bit, please connect the engineering earthing wire at the grounding position of sheet metal of electric box.

V. CHECK ITEMS INSTALLATION AND TEST OPERATION

5.1 Check Items AfterInstallation and Test Operation

Check items	Possible conditions due to improper installation	Check
Each part of the unit is installed securely?	Unit may drop, shake or emit noise.	
Gas leakage test is taken or not?	Insufficient cooling (heating) capacity.	
Unit gets proper thermal insulation or not?	There may be condensation and dripping.	
Drainage is smooth or not?	There may be condensation and dripping.	
Is the voltage in accordance with the rated voltage specified on the nameplate?	Unit may have malfunction or components may get damaged.	
Is the electric wiring and pipe connection installed correctly?	Unit may have malfunction or components may get damaged.	
Unit is securely grounded or not?	Electrical leakage.	
Power cord meets the required specification?	Unit may have malfunction or components may get damaged.	
Is the air inlet/outlet blocked?	Insufficient cooling (heating) capacity.	
Length of refrigerant pipe and the charging amount of refrigerant are recorded or not?	The refrigerant charging amount is not accurate.	
Binding pieces on compressor feet are removed or not?	Compressor may get damaged.	

5.2 Test Operation and Debugging

NOTES:

① After finishing the first installation or replacing the main board of outdoor unit, it is necessary to perform test operation and debugging. Otherwise, unit won't be able to work.

② Test operation and debugging must be performed by professional technicians or under the guidance of professional technicians.

5.2.1 Test Operation and Debugging

(1) Do not connect power until all installation work is finished.

(2) All control circuits and wires are correctly and securely connected.

(3) Check whether the fixing loops for compressor foots are removed.

(4) All small pieces, especially metal chips, thread ends and forceps holder, must be removed from the unit.

(5) Check whether unit's appearance and pipeline system has been damaged during transportation.

(6) Calculate the quantity of refrigerant that needs to be added according to the pipe length. Pre-charge the refrigerant. In case that the required charging quantity is not reached while refrigerant can't be added, record the quantity of refrigerant that still needs to add and complement the quantity during test operation. For details of adding refrigerant during test operation, see below.

(7) After refrigerant is added, make sure valves of outdoor unit are completely open.

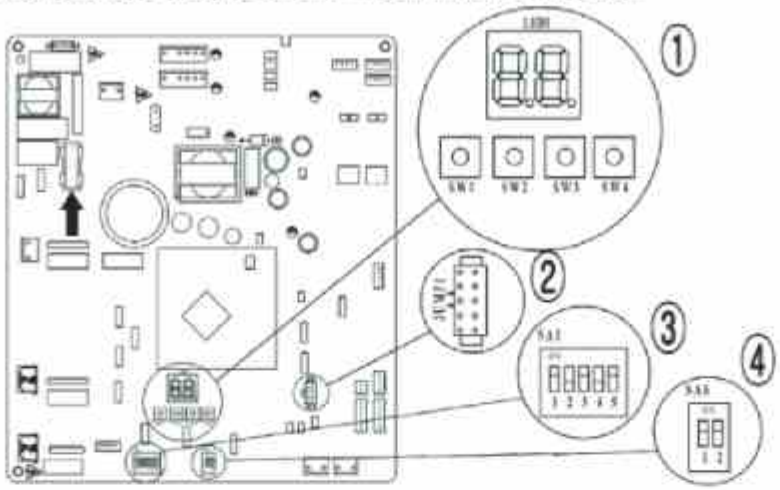
(8) For the convenience of troubleshooting during debugging, unit shall be connected to a PC with applicable debugging software. Make sure unit's real-time data can be checked through this computer. The installation and connection of debugging software can be found in the Service Manual.

(9) Before test operation, make sure unit is power on and compressor has been preheated for more than 8 hours. Touch the unit to check whether it's normally preheated. If yes, start test operation. Otherwise, compressor might be damaged.

5.2.2 Test Operation and Debugging

Once the unit is energized and turned on for the first time, the display tube of outdoor unit displays "A0", which indicates debugging standby status. At this time, hold SW3 button successively for 5s on the main module to enter into the automatic debugging, and then the engineering debugging will perform according to the set procedures. Step3(conformation of outdoor unit' quantity) and step4(conformation of indoor unit' quantity) should be confirmed manually by pressing "SW3", while other procedures will be performed automatically. Once the debugging for each step is finished, "oC" will be displayed; once all engineering debugging are finished, "oF" will be displayed, which indicates the unit is under standby status.

Buttons and digital display tube on the motherboard location



Instruction:

① Indicator of main board (digital display tube) "LED1" and four button: "SW1", "SW2", "SW3" and "SW4".

Key No.	SW1	SW2	SW3	SW4
Function	Up	Down	OK	Back

② "JUMP1": jumper cap of the unit. Jumper cap No. varies from different type of unit.

③ DIP switch "SA1", DIP switch varies from different cooling capcity, before leaving the factory, DIP switch is set for different models and fixed with glue.

④ The main control function DIP switch "SA6" is used to set master module and subsidiary module, the defaulted factory setting is the main module. As the fig is shown, dialing to "ON" side represents "0" and dialing to the figure side represents "1", the defaulted setting for the unit is "00". For the system with two outdoor units, one of them shall be set as the main module, namely, dial "SA6" to "00", then set the other unit as subsidiary module, namely, dial the "SA6" to "10".

Function	SA6	
	1	2
Master module	0	0
Subsidiary module	1	0

SA6

5.2.2.1 Basic Operation of Project Debugging

(1) Start project debugging.

Press "SW3" button consecutively in the master module for over 5s to enter auto debugging.

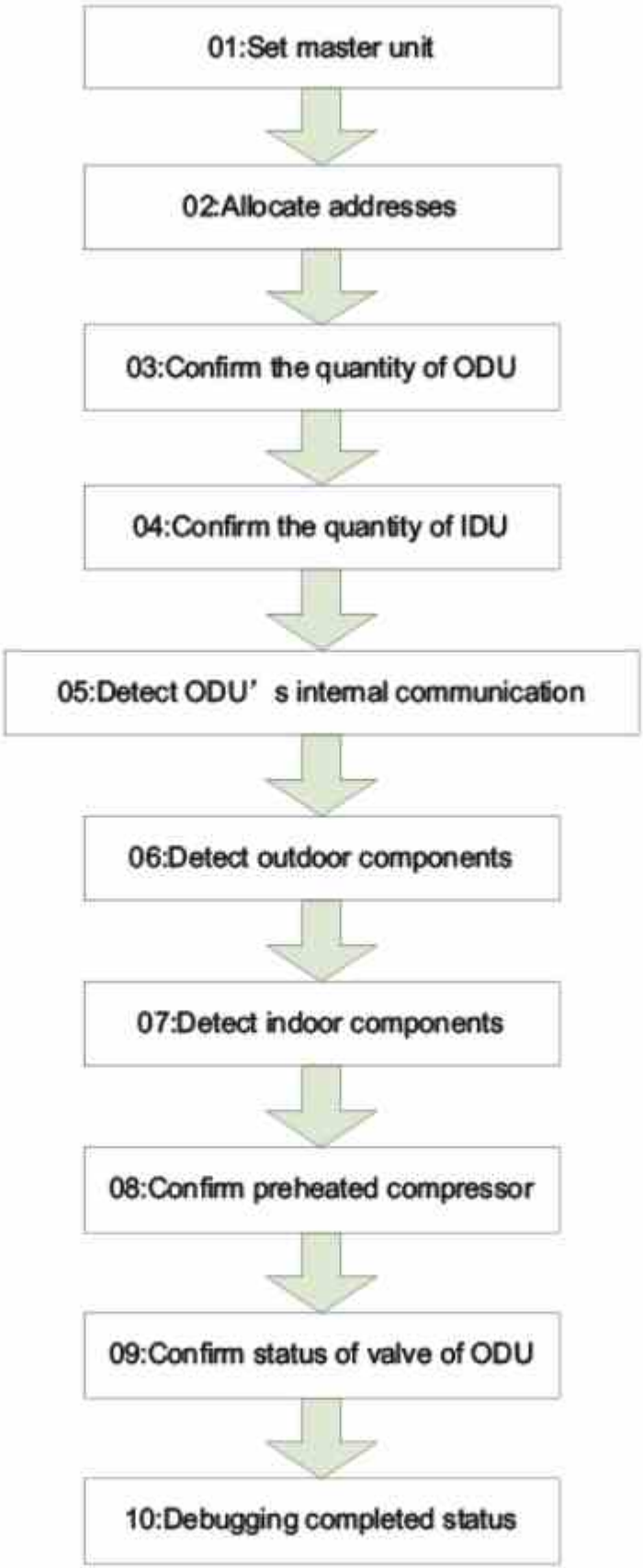
(2) Exit project debugging.

After entering project debugging, press "SW3" button consecutively in the master module for over 5s to exit the debugging.

(3) Complete project debugging.

After entering project debugging and completing step "04", press "SW2" and "SW3" button consecutively in the master module for over 5s to exit the debugging, then the system can operate normally.

Flow-process diagram of debugging:



5.2.2.2 Debugging process

Debugging procedure for test run, display instruction for indicator on main board of outdoor unit and operation method are as below:

Description of each stage of debugging progress			
——	Debugging code		Instruction for Code and Operating Method
Progress	LED		
	Display code	Display status	
Start	A0	Always ON	No debugged yeat. Press "SW3" button consecutively in the master module for over 5s to enter auto debugging.
01_Master unit setting	01/CC	Display repeatedly	The system has no master unit. Debugging can't be continued, all buttons are invalid, disconnect the power to reset the correct "SA6" DIP.
	01/CF	Display repeatedly	The system has two or more master units. Debugging can't be continued, all buttons are invalid, disconnect the power to reset the correct "SA6" DIP.
	01/oC	Display repeatedly	The system has only one master unit. After displaying once circularly, the system wil l enter the next step automatically.
02_Address allocation	02	Bllink	The system is allocating address, which might takes 10s.
	02/L7	Display repeatedly	No master indoor unit. It will display for 1min continuously. The user can set master through debugging the software within 1min. If n o master unit is set manually within 1min, the system will set the indoor unit with the smallest IP address automatically as the master indoor unit.
	02/oC	Display repeatedly	Address allocation of the system is complete with master indoor unit. After displaying once cir cularly, the system will enter the next step automatically.
03_ Confirm quantity of outdoor units	03/ quantity of modules in the system	Display repeatedly	Confirmation of quantity of modules in the system. To differentiate from the debugging step, the QT Y of module will display only 1-digit on the right.
	03/oC	Display repeatedly	After 10S, all the nixie tubes of modules will display "03" and "oC", after displaying once circularly, the system will enter the next step automatically.

Description of each stage of debugging progress			
——	Debugging code		Instruction for Code and Operating Method
Progress	LED		
	Display code	Display status	
04_Confirm quantity of indoor units	04/Cb	Display repeatedly	The quantity of indoor unit is more than 1. The system shall not connect more than 1 indoor unit, after inspection, please redebug for confirmation.
	04/oC	Display repeatedly	The quantity of indoor unit is 1. After confirming the quantity of indoor unit, it will enter the next step 2s later.
05_ Internal communication of outdoor unit	05/C2	Display repeatedly	Communication error between master control and compressor drive. Please check the connection between the main board of outdoor unit and communication cord of drive board, after eliminating the errors, enter the next step. If the ODU should be powered off for troubleshooting, after re-energizing the unit, please conduct debugging from the above 01 step.
	05/oC	Display repeatedly	Communication between the master control of outdoor unit and drive is normal. After displaying once circularly, the system wil l enter the next step automatically.
06_ Component detection of outdoor unit	06/ Corresponding error code	Display repeatedly	Component error of outdoor unit. If cooling only unit displays "06", "bE", "06" and "b2" circularly, please refer to "system cooling and heating function setting" and set corresponding function item of unit to "nC". After eliminating all the errors, enter the next step automatically, if the ODU should be powered off for troubleshooting, after re-energizing the unit, please conduct debugging from the above 01 step.
	06/oC	Display repeatedly	No component error of outdoor unit. After displaying for 10s circularly, the system will enter the next step automatically.
07_ Component inspection of indoor unit	07/ Corresponding error code	Display repeatedly	Component error of indoor unit. After eliminating all the errors, enter the next step automatically,if the ODU should be powered off for troubleshooting, after re-energizing the unit, please conduct debugging from the above 01 step.
	07/oC	Display repeatedly	No component error of indoor unit. After displaying for 5s circularly, the system will enter the next step automatically.
08_ Preheat confirmation of compressor	08/oC	Display repeatedly	After displaying for 2s circularly, the system will enter the next step automatically.
09_ Confirmation of valve of outdoor unit	09/oF	Display repeatedly	Standby status, ready to start.
	09/On	Display repeatedly	The system has started.
	09/U6	Display repeatedly	Malfunction shutdown. The nixie tube of faulted module will display "09" and "U6" repeatedly and the nixie tube of other modules will display "09" and "J0". In canse malfunction occurd, please check if the valve is opened and if the connection pipes among different modules are correctly connected.
	09/oC	Display repeatedly	Confirmation of valve status. All modules are halted normally, nixie tubes of all modules will display once circularly.
10_ Debugging completed	01/oF	Display repeatedly	Debugging is completed, the system is in standby status.

5.2.3 Appendix: Reference of Normal Operation Parameters

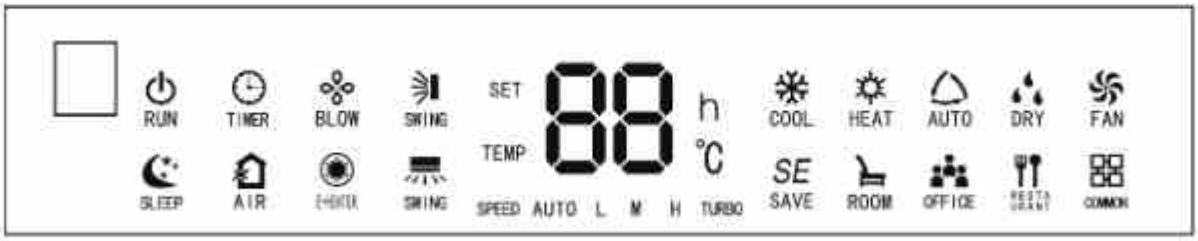
No.	Debug item		Parameter name	Unit	Reference
1	System parameters	ODU parameters	Outdoor temperature	℃	——
2			Compressor discharge temperature	℃	•When compressor starts, discharge temp in cooling mode is within 70~105℃ and at least 10℃ higher than the high pressure saturation temp. •As for temp in heating mode, it is within 65~90℃ and at least 10℃ higher than the high pressure saturation temp.
3			Defrosting temperature	℃	•In cooling mode, defrosting temp is 4~10 ℃ lower than system's high pressure value. •In heating mode, defrosting temp is about 2℃ different from system's low pressure value.
4			System high pressure	℃	•In cooling mode, the normal high pressure value is within 20℃~55℃. According to the change of ambient temp and system's operating capacity, the high pressure value will be 10℃~30℃ higher than ambient temp. The higher ambient temp is, the smaller temp difference is. If ambient temp is 25~35℃ in cooling mode, system's high pressure value will be within 44~53℃. •In heating mode, if ambient temp is above -5℃, system's high pressure value is within 40~52℃. If ambient temp is low and many IDUs are turned on, the high pressure will be lower.
5			System low pressure	℃	•When ambient temp in cooling mode is 25~35℃, the low pressure value is 0~8℃. •When ambient temp in heating mode i s above -5℃, the low pressure value is -15~8℃.

5.2.3 Appendix: Reference of Normal Operation Parameters

No.	Debug item		Parameter name	Unit	Reference
6	System Parameters		Opening angle of thermal EXV	PLS	•In cooling mode, the thermal electronic expansion valve remains 480PLS. •In heating mode, the adjustable opening angle of EXV is 60~480PLS.
7			Compressor working current	A	When compressor works normally, the current is no more than 23.0A.
8			Compressor's IPM temp	℃	When ambient temperature is below 35℃, IPM temperature is lower than 70℃. Maximum temperature is 80℃.
9		IDU parameters	IDU ambient temp	℃	——
10			Indoor heat exchanger's inlet temp	℃	•According to ambient temp, for a same IDU in cooling mode, the inlet temp will be 1℃~7℃ lower than the outlet temp, and 4~9℃ higher than the low pressure value. •For a same IDU in heating mode, the inlet temp will be 10℃~20℃ lower than the outlet temp.
11			Indoor heat exchanger's inlet temp	℃	
12			Opening angle of indoor EXV	PLS	•In cooling mode, the opening angle of indoor EXV varies within 40~480PLS. •In heating mode, the opening angle of indoor EXV varies within 70~480PLS.
13	Communication parameters		Communication data	—	Number of IDUs detected by software is the same with the actual number. No communication error.
14	Drainage system		——	—	Indoor unit can drain water out completely and smoothly. Condensate pipe has no backward slope of water; Water of outdoor unit can be drained completely through drain pipe. No water drop from unit base.
15	Others		——	—	Compressor and indoor/outdoor fan motor do not have strange noise. Unit can operate normally.

VI. CONTROL AND DISPLAY OF INDOOR UNIT

6.1 Control Panel



NOTE:

"AIR" function is an optional function of indoor unit, for the unit without such function, this function is invalid; "E-HEATER", "ROOM", "OFFICE", "RESTAURANT", "COMMON" are obligate functions of indoor unit that cannot be set.

6.2 Operational Instruction

6.2.1 Start Up and Close Down Unit

Press "ON/OFF" button to start up the unit. Press "ON/OFF" button to close down the unit.

6.2.2 Mode Setting

Under power-on status, each time press "Mode" button, the mode will be switched according to the following order circularly:

NOTES:

① Under auto mode, if the indoor unit is in auto cooling, the "⌂" and "❄" icons are on; if the indoor unit is in auto heating, the "⌂" and "☼" icons are on.

② Cooling only unit doesn't have heating function and heating mode cannot be set.

6.2.3 Setting of Light ON/OFF Function

Light ON/OFF Function: can set the ON and OFF of light for display panel.

(1) Under power-on or power-off status, press "Light" button to turn on and turn off the light of display panel.

(2) When the light of display panel is turned off, press the other buttons other than "Light" button, the light on display panel will be turned off after 5 seconds.

6.2.4 Temperature Setting

Press "▼" or "▲" buttons under power-on status, the set temperature will be increased or decreased at 1℃ each time; when long press the buttons, the temperature will be increased or decreased at 1℃ every 0.3 seconds. The temperature setting range is: 16℃~30℃.

NOTE:

Under auto mode, the temperature cannot be set through pressing "▼" or "▲" buttons.

6.2.5 Function Setting

Press "FUNCTION" button under power-on or power-off status, it can enter into function setting status. Under function setting status, press "ON/OFF" button or without pressing any buttons for consecutively 5 seconds, it will quit the function setting status.

(1) Left and right swing function settings

Press "FUNCTION" button under power-on status to switch to left and right swing function, when " " flickers, press "▲" or "▼" button to start up or cancel the left and right swing function. If " " icon is on it means the function has been started up; if "" icon is off it means the function has been cancelled.

(2) Settings of X-fan

X-fan function: after closing down the unit under cooling and dry mode, the air conditioner will automatically dry the water of evaporator of indoor unit to prevent breeding of bacteria and mildew.

Turn on or cancel X-fan function: with the unit is started up, under cooling or dry mode, press "FUNCTION" button to switch to X-fan function, when " " flickers, press "▲"or"▼" buttons to start or cancel X-fan function. If "" icon is on it means the X-fan function has been started up, if "" icon is off it means the X-fan function has been cancelled.

(3) Settings of Timer Function

1) Timer Function: under power-on status, the countdown of power-off time can be set. Under power-off status, the countdown of power-on time can be set.
2) Timer setting: press "FUNCTION" button to switch to timer function, when " " icon flickers, press "▲" or "▼" button to adjust the setting time. After setting the time, press "ON/OFF" button or without pressing any buttons for consecutive 5 seconds, the setting time is confirmed and quit the function setting status. After quitting the function setting status, the "" icon is on, it means the timer function has been turned on.
3) Cancel timer: press "FUNCTION" button to switch to timer function, when "" icon flickers, press "▲" or "▼" button to set the time to be "00", then the timer function is cancelled; press "ON/OFF" button or without pressing any buttons for consecutive 5

seconds, it will quit the function setting status. After quitting the function setting status, the "" icon is off, it means the timer function has been cancelled.

4) Count down setting range: 00~24 hours, in which "00" refers to closedown of timer function. Each time press "▲" or "▼" button, if it is within 10 hours, it will increase or decrease 0.5 hour each time, if long press "▲" or "▼" button, it will increase or decrease 0.5 hour every 0.3 second; if it is over 10 hours, each time press "▲" or "▼" button will increase or decrease 1 hour each time, and if long press "▲" or "▼" button, it will increase or decrease 1 hour every 0.3 second.

(4) Setting of air renewal function(There is no this function for this unit)

1) Air renewal function: through adjusting the fresh air volume to improve the air quality and keep the indoor fresh air.

2) Air renewal setting: press "FUNCTION" button to switch to air renewal function, when "" icon flickers, press "▲" or "▼" button to adjust the air renewal level; after setting air renewal level, press "ON/OFF" button or without pressing any buttons for consecutive 5 seconds, the air renewal function has been confirmed to be turned on and then quit the function setting status. After quitting the function setting status, the "" icon is on, it means the air renewal function has been turned on.

3) Cancel air renewal: press "FUNCTION" button to switch to air renewal function, when "" icon flickers, press "▲" or "▼" button to set the air renewal as "00", then the air renewal function is cancelled; press "ON/OFF" button or without pressing any buttons for consecutive 5 seconds, it will quit the function setting status. After quiting function setting status, the "" icon is off, it means the air renewal function is cancelled.

4) Adjustment range of air renewal level: it can adjust the air renewal level to be 00~10, in which "00" refers to closing down air renewal function.

(5) Setting of Sleeping Function

1) Sleeping function: set the unit to enter into sleeping operational status, the unit will operate according to the preset sleeping temperature curve to create a comfortable sleeping environment and improve sleeping quality.

2) Turn on or cancel sleeping function: press "FUNCTION" button under power-on status to switch to sleeping function, when "" icon flickers, press "▲" or "▼" button to turn on or cancel sleeping function. If "" icon is on, it means the sleeping function is turned on; if "" icon is off, it means the sleeping function is cancelled.

3) There is no sleeping function under auto and swing mode.

(6) Setting of energy-saving function

1) Energy-saving function: through setting the lower temperature limit of cooling and dry mode and upper temperature limit of heating mode, to make the air conditioner operate in a smaller temperature range, thus save energy.

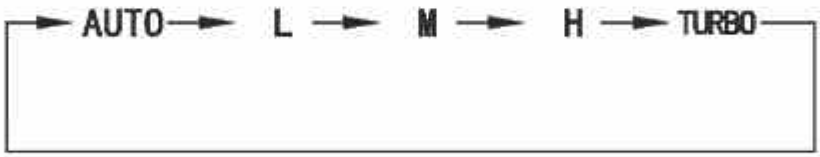
2) Turn on cooling energy-saving: with the unit is started up, under cooling or dry mode, press "FUNCTION" button to switch to energy-saving function, when "SE" icon flickers, press "▲"or "▼" button to adjust cooling temperature limit, after setting cooling temperature limit, press "ON/OFF" button or without pressing any buttons for consecutive 5 seconds, the energy-saving function is confirmed to be turned on and quit the function setting status. After quitting function setting status, the "SE" icon is on, it means the cooling energy-saving function has been turned on.

3) Turn on heating energy-saving: with the unit is started up, under heating mode, press "FUNCTION" button to switch to energy-saving function, press "▲"or "▼" button to adjust heating temperature limit, if the "SE" icon flickers, after setting heating temperature limit, press "ON/OFF" button or without pressing any buttons for consecutive 5 seconds, the energy-saving function is confirmed to be turned on and quit the function setting status. After quitting function setting status, the "SE" icon is on, it means the heating energy-saving function has been turned on.

4) Cancel energy-saving function: under energy-saving function setting status or under normal power-on status, press "FUNCTION" button and "▼" button simultaneously to cancel energy-saving function, when "SE" icon is off, it means the energy-saving function is cancelled.

6.2.6 Speed Settings

Under power-on status, press "SPEED" button, the speed will be circularly switched according to the following order:



NOTES:

① Under dry mode, the speed cannot be adjusted, it will be automatically set to be low.

② When the speed of indoor unit is adjusted to be auto speed, the indoor unit will automatically change speed according to the indoor ambient temperature, to make the indoor ambient temperature be more stable and comfortable.

6.2.7 Speed Settings

(1) Inquire address of indoor unit

Under power-off status, press "SPEED" button and "ON/OFF" button simultaneously for 5 seconds, then the "88" LED will display the engineering No. of the indoor unit for 5 seconds; if the engineering No. is over two digits, it will circularly display the higher two digits and lower two digits.

(2) Inquire unit type

Under power-off status, simultaneously press"MODE" button and "ON/OFF" button for 5 seconds, then the "88" LED will display corresponding code for 5 seconds: heat pump unit will display "nA", cooling only unit will display "nC", heating only unit will display "nH", swing type unit will display "nF".

(3) Setting of power-fail memory function

Under power-off status, simultaneously press "MODE" button and "▲" button for 5 seconds to switch the memory method: if "88" LED displays "on", it means it will memorize the on and off status of the unit after being de energized (that is, after de energizing and energizing the unit, the unit will resume to be the status before it is de energized); if "88" LED displays "oF", it means it will not memorize the on and off status of the unit after being de-energized (that is, after de-energizing and energizing the unit, the unit will still be under power-off status).

(4) Setting of master indoor unit function

Under power-off status, long press "MODE" button for 5 seconds to set the indoor unit to be master pattern indoor unit (master indoor unit), after finishing setting, the "88" LED will display "UC" for 5 seconds.

NOTE:

When the master indoor unit is started up, the operation light "⏻" on display panel will flicker for three times.

(5) Settings of Child Lock Function

1) Under power-on or power-off status, simultaneously press "▲" button and "▼" button for 5 seconds, it will turn on child lock function, the "88" LED will flicker and display "An" for three times; press "▲" button and "▼" button again for 5 seconds, it will cancel child lock function.
2) Under child lock status, the unit will not response if pressing other buttons, and the "88" LED will flicker and display "An" to remind the user that the unit is under child lock status.

(6) Long-distance Shielding Function

1) Long-distance shielding function: long-distance monitor or centralized controller can remotely control related functions of indoor unit or conduct shielding to make the operation invalid, thus realize long-distance control function.

2) Long-distance shielding function can be divided into full shielding and partial shielding. When it is in full shielding, all the remote control or operation by pressing buttons to the indoor unit will be invalid. If it is in partial shielding, the remote control or operation by pressing buttons to the shielded function of indoor unit will be invalid.

3) When long-distance monitor or centralized controller conducts long distance shielding to indoor unit, if the user wants to remotely control or operate the unit by pressing buttons, the "88" LED will flicker and display "Ay" to remind the user that it is under long distance shielding status.

VII. CONTROL AND DISPLAY OF OUTDOOR UNIT

When the unit is energized, hold on pressing SW2 button on master control unit for 5s and system nixie tube displays "function code/setting status" circularly.

Function code	Function name
A7	Outdoor silent mode setting
A6	Heating and cooling function setting
n0	System energy-saving operation
n1	Defrosting cycle
n4	Limit for max. capacity/output capacity
n6	Error inquiry
n7	Parameter inquiry
nb	ODU barcode inquiry
nH	Target high pressure correction
nL	Target low pressure correction
nP	Defrosting temperature correction
qy	Compressor heating belt operation mode

7.1 Setting of Cooling & Heating Function

When unit enters setting of this function, nixie tube of master module flickers and displays the set value of current system. Press "SW1" and "SW2" to select corresponding cooling and heating mode. Press "SW3" to confirm the selection and nixie tube changes to always on status:

Nixie tube	
Display code	Display way
System current value	Flicker

Press "SW3" to confirm the selected mode

Nixie tube	
Display code	Display way
nC / nH / nA / nF	ON

NOTE:

Code "nC" is cooling only mode and code" nH" is heating only mode, code "nF" is fan only mode and code" nA" is cooling and heating mode. After finishing setting, master control unit memorizes this setting and doesn't clear the setting after de-energization and energization.

7.2 Restore Factory Defaults

(1) If you want to restore factory defaults, hold SW1 and SW4 button on the main board of ODU for more than 10s, then the LED will blink "oC" for 3s. Main board will cancel all setting, including the IP addresses and project codes of IDU and ODU. The mark for finishing debugging is "0".

(2) If you want to restore factory defaults and don't need project debugging, hold SW2 and SW4 on the main board of ODU for more than 10s, then the LED will blink "oC" for 5s. All settings are cleared out, including the IP addresses and project codes of IDU and ODU. The mark for finishing debugging remains the same.

(3) When you only want to restore the default functions, hold SW3 and SW4 on the main board of ODU for more than 10s, then the LED will blink "oC" for 7s. All function settings are cleared out, but IDU and ODU's project codes and the mark for finishing debugging remain the same.

VIII. COMMON MALFUNCTION AND TROUBLESHOOTING

NOTES:

① If there is abnormal condition (e.g. unpleasant smell), turn unit off and disconnect power immediately. Then contact Kolin authorized service center. If unit continues operation despite the abnormal condition, it may get damaged and lead to electric shock or fire hazard.

② Do not repair the air conditioner by yourself. Improper maintenance may lead to electric shock or fire hazard. Please contact Kolin authorized service center for maintenance.

Please check the items below before calling for maintenance.

Problems	Causes	What to do
Unit doesn't work.	Fuse or circuit breaker is cut off.	Replace fuse or reset the circuit breaker
	Power failure.	Restart unit when power is restored
	Power is not connected.	Connect the power
	Remote controller's power is not enough.	Replace new battery
	Remote controller is out of the control range.	Control range is within 8m
Unit runs but stops immediately.	Air inlet or air outlet of indoor and outdoor units is blocked.	Clear obstacles
Abnormal cooling or heating	Air inlet or air outlet of indoor and outdoor units is blocked.	Clear obstacles
	Improper temperature setting	Adjust setting at remote controller or wired controller
	Fan speed is set too low.	Adjust setting at remote controller or wired controller
	Wind direction is not correct.	Adjust setting at remote controller or wired controller
	Door or window is open.	Close the door or window
	Direct sunshine	Draw curtain or louver
	Too many people in the room.	
	Too many heat resources in the room.	Reduce heat resources
	Filter is blocked and dirty.	Clean the filter

Following circumstances are not malfunctions.

Malfunction		Reason
Unit doesn't run.	Unit starts up immediately after it is turned off.	Overload protection switch makes it run after a 3-min delay
	Power is just turned on.	Standby operation lasts for about 1min
Mist comes from the unit.	Under cooling	Indoor air with high humidity is cooled rapidly
Noise is emitted.	Slight cracking sound is heard when unit is just turned on.	It is the noise when electronic expansion valve is initialized
	There is consecutive sound when cooling.	It is the sound for gas refrigerant flowing in the unit
	There is sound when unit starts or stops.	It is the sound when gas refrigerant stops flowing
	There is slight and consecutive sound when unit is running or after running.	This is the sound of drainage operation
	Cracking sound is heard when unit is running or after running.	This is the sound caused by the expansion of panel and other parts of the unit due to temperature change
Unit blows out dust.	Unit starts up after not operating for a long time.	Dust in indoor unit is blown out
Unit emits odor.	Under operation	Unit absorbs the room odor and then blows it out

IX. MAINTENANCE AND CARE

Regular check, maintenance and care can extend unit's service life. Please have specialized person in charge of the management of air conditioners.

9.1 Outdoor Heat Exchanger

Outdoor heat exchanger shall be cleaned regularly, which is at least once every two months. You can use a dust catcher with nylon brush to clean away the dust on the heat exchanger. If compressed air source is available, it also can be used to clean the heat exchanger. Do not clean it with water.

9.2 Drain Pipe

Please check regularly whether drain pipe is blocked or not.Make sure condensate can be drained out smoothly.

9.3 Notice Before Seasonal Use

(1) Check whether air inlets and air outlets of indoor and outdoor units are blocked.

(2) Check whether ground connection is reliable or not.

(3) Check whether batteries in the remote controller are replaced or not.

(4) Check whether air filter is properly installed.

(5) If unit starts up after not operating for a long time, it should be power on 8 hours before operation starts so as to preheat the outdoor compressor.

(6) Check whether outdoor unit is securely installed. If there is any problem, please contact Kolin Service Hotline.

9.4 Maintenance after Season Use

(1) Disconnect power of the entire system.

(2) Clean the air filter and outer case of indoor and outdoor units.

(3) Clean away the dust and obstacles on indoor and outdoor units.

(4) If outdoor unit has rust, please apply some paint to it so as to prevent the rust from growing.

9.5 Parts Replacement

Parts and components can be obtained from nearby Kolin office.

NOTES:

When you are conducting air tightness test and leakage test, do not mix oxygen, C_2H_2 or other dangerous gas into the refrigerant circuit. Otherwise, it may lead to danger. Use nitrogen or refrigerant to conduct the tests.

X. AFTER-SALES SERVICE

If there's quality defect or other problems in the product, please contact Kolin local after-sales service department for help.

Warranty must be based on the following conditions:

(1) Product's initial startup must be performed by professional technicians from Kolin service center or persons assigned by Kolin.

(2) Only Kolin spare parts are used.

(3) All instructions of unit operation and maintenance in this manual must be strictly followed according to set period and set frequency.

(4) Any breach of the above conditions will disable the warranty.

Kolin Phils. Int'l., Inc.
SERVICE CENTERS

BRANCH	ADDRESS	TEL. NO.
Bacolod	Door #A-2 & A-3 UTC Bldg., Alunan St., Brgy. Singcang, Bacolod City	(034) 433-0031
Cagayan De Oro	Door #3 De oro Land Bldg., Julio Pacana St., Puntod, Cagayan De Oro City	(088) 856-4672
Cebu	Unit #6 A. Geson Bldg., D. Jakosalem cor. F. Ramos St., Cebu City	(032) 253-9997 / (032) 253-7944
Dagupan	Unit #1107 Caranglaan District, Dagupan City Pangasinan	(075) 523-2832
Davao	Blk 17 Lot 9, Calamansi St., Juna Subd., Matina, Davao City	(082) 227 - 7063
Iloilo	Door #4 D' Appliance Arcade, South Fundidor, Moli, Iloilo City	(033) 336-1970
Pampanga	LRK Commercial Bldg., Jose Abad Ave., Lagundi Mexico, Pampanga	(045) 455-2934

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OFFICE
Kolin Bldg., 1854 Sta. Rita St., Guadalupe Nuevo, Makati City
Service Hotline: (02) 8852-6868

PLANT
Blk 3 Lot 5, Main Drive First Cavite Industrial Estate, Langkaan 1, Dasmariñas City, Cavite
Tel. No.: (046) 402-0793