GUARDIAN®

Always on Duty.

Technical Catalogue

Indoor Model	Outdoor Model
URD09HW15STG1	URC09CN15STG1
URD12HW15STG1	URC12CN15STG1
UNI09HW23STG1	URC09CN23STG1
UNI12HW23STG1	URC12CN23STG1
UNI18HW23STG1	URC18CN23STG1
UNI24HW23STG1	URC24CN23STG1

Contents

1. Safety Considerations

IMPORTANT!
Please Read Before Starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system, so it operates safely and efficiently.

For safe installation and trouble-free operation, you must:
● Carefully read this instruction booklet before beginning.
● Follow each installation or repair step exactly as shown.
● Observe all local, state, and national electrical codes.
● Pay close attention to all warning and caution notices given in this manual.

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If Necessary, Get Help
These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.
In Case of Improper Installation
The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

When Wiring WARNING


ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.
● Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
● Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause accidental injury or death.
● Ground the unit following local electrical codes.
● Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
When Transporting
Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

When Installing

● In a Ceiling or Wall

Make sure the ceiling/wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support.

● In a Room

Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.

● In Moist or Uneven Locations

Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

● In an Area with High Winds

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

● In a Snowy Area (for Heat Pump-type Systems)

Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

When Connecting Refrigerant Tubing

△ Use the flare method for connecting tubing.

△ Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak free connection.

△ Check carefully for leaks before starting the test run.

When Servicing

△ Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.

△ Keep your fingers and clothing away from any moving parts.

△ Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.

Others

△ Ventilate any enclosed areas when installing or testing the refrigeration system. Escaped refrigerant gas, on contact with fire or heat, can produce dangerously toxic gas.

△ Confirm upon completing installation that no refrigerant gas is leaking. If escaped gas comes in contact with a stove, gas water heater, electric room heater or other heat source, it can produce dangerously toxic gas.

NOTE:

The figure、size and parameter of the product may not be identical with the service manual, please take the actual product as the standard.

For models using R32 and R454B refrigerant, piping connection should be conducted on outdoor side.

When a flammable refrigerant is used, the requirements for installation or maintenance space of appliance is determined according to following:

A_{min}(m2)	H_{inst}(m)				
M_c(kg)	1.8	2.0	2.2	2.4	2.5
1.8	6.56	5.91	5.38	4.94	4.74
2.0	7.29	6.56	5.97	5.48	5.26
2.2	8.01	7.22	6.56	6.02	5.78
2.4	8.74	7.87	7.16	6.56	6.3
2.6	9.46	8.52	7.75	7.11	6.83
2.8	10.18	9.17	8.34	7.65	7.35
3.0	10.91	9.82	8.93	8.19	7.87

A_{min} is the required minimum room area in m^2

m_c is the actual refrigerant charge in the system in kg

h_{inst} is the height of the bottom of the appliance relative to the floor of the room after installation.

WARNING: The minimum room area or minimum room area of conditioned space is based on releasable charge and total system refrigerant charge.

Precautions for using R32 refrigerant and R454B refrigerant

The basic installation work procedures are the same as the conventional refrigerant (R22 or R410A). However, pay attention to the following points:

1. Transport of equipment containing flammable refrigerants Compliance with the transport regulations
2. Marking of equipment using signs Compliance with local regulations
3. Disposal of equipment using flammable refrigerants Compliance with national regulations
4. Storage of equipment/appliances The storage of equipment should be in accordance with the manufacturer's instructions.
5. Storage of packed (unsold) equipment Storage package protection should be constructed such that mechanical damage to the equipment inside the package will not cause a leak of the refrigerant charge. The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.
6. Information on servicing

6-1 Checks to the area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.

6-2 Work procedure

Work shall be undertaken under a controlled procedure so as to minimize the risk of flammable gas or vapour being present while the work is being performed.

6-3 General work area

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.

6-4 Checking for presence of refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.

Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

6-5 Presence of fire extinguisher

If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand.

Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

6-6 No ignition sources

No person carrying out work in relation to a refrigeration system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.

All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which flammable refrigerant can possibly be released to the surrounding space.

Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

6-7 Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.

A degree of ventilation shall continue during the period that the work is carried out.

The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

6-8 Checks to the refrigeration equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using flammable refrigerants:

– The charge size is in accordance with the room size within which the refrigerant containing parts are installed;

– The ventilation machinery and outlets are operating adequately and are not obstructed;

– If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;

– Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;

– Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

6-9 Checks to electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.

If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.

If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used.

This shall be reported to the owner of the equipment so all parties are advised. Initial safety checks shall include:

– That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;

– That there no live electrical components and wiring are exposed while charging, recovering or purging the system;

– That there is continuity of earth bonding.

7. Repairs to sealed components

During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc.

If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected.

This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

Ensure that apparatus is mounted securely.

Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres.

Replacement parts shall be in accordance with the manufacturer's specifications.

NOTE:

The use of silicon sealant may inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

8. Repair to intrinsically safe components

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.

Replace components only with parts specified by the manufacturer.
Other parts may result in the ignition of refrigerant in the atmosphere from a leak.
9. Cabling
Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.
The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.
10.Detection of flammable refrigerants
Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks.
A halide torch (or any other detector using a naked flame) shall not be used.
11.Leak detection methods
The following leak detection methods are deemed acceptable for systems containing flammable refrigerants:
– Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
– Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
– Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25 % maximum) is confirmed.
– Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
– If a leak is suspected, all naked flames shall be removed/ extinguished.
– If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.
– Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.
12.Removal and evacuation
When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used.
However, it is important that best practice is followed since flammability is a consideration.
The following procedure shall be adhered to:
– Remove refrigerant;
– Purge the circuit with inert gas;
– Evacuate;
– Purge again with inert gas;
– Open the circuit by cutting or brazing.
The refrigerant charge shall be recovered into the correct recovery cylinders.
The system shall be “flushed” with OFN to render the unit safe.
This process may need to be repeated several times.
Compressed air or oxygen shall not be used for this task.
Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to
atmosphere, and finally pulling down to a vacuum.
This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric
pressure to enable work to take place.
This operation is absolutely vital if brazing operations on the pipe-work are to take place.
Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.
13.Charging procedures
In addition to conventional charging procedures, the following requirements shall be followed:

– Ensure that contamination of different refrigerants does not occur when using charging equipment.
– Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
– Cylinders shall be kept upright.
– Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
– Label the system when charging is complete (if not already).
– Extreme care shall be taken not to overfill the refrigeration system.
Prior to recharging the system it shall be pressure tested with OFN.
The system shall be leak tested on completion of charging but prior to commissioning.
A follow up leak test shall be carried out prior to leaving the site.
14.Decommissioning
Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail.
It is recommended good practice that all refrigerants are recovered safely.
Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential
that electrical power is available before the task is commenced.
a) Become familiar with the equipment and its operation.
b) Isolate system electrically.
c) Before attempting the procedure ensure that:
– Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
– All personal protective equipment is available and being used correctly;
– The recovery process is supervised at all times by a competent person;
– Recovery equipment and cylinders conform to the appropriate standards.
d) Pump down refrigerant system, if possible.
e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
f) Make sure that cylinder is situated on the scales before recovery takes place.
g) Start the recovery machine and operate in accordance with manufacturer's instructions.
h) Do not overfill cylinders. (No more than 80 % volume liquid charge). I) Do not exceed the maximum working pressure of the cylinder, even temporarily.
j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.
15.Labelling
Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant.
The label shall be dated and signed.
Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.
16.Recovery
When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
Ensure that the correct number of cylinders for holding the total system charge is available.
All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).
Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order.
Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is

at hand and shall be suitable for the recovery of flammable refrigerants.
In addition, a set of calibrated weighing scales shall be available and in good working order.
Hoses shall be complete with leak-free disconnect couplings and in good condition.
Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release.
Consult manufacturer if in doubt.
The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged.
Do not mix refrigerants in recovery units and especially not in cylinders.
If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.
The evacuation process shall be carried out prior to returning the compressor to the suppliers.
Only electric heating to the compressor body shall be employed to accelerate this process.
When oil is drained from a system, it shall be carried out safely.
When moving or relocating the air conditioner, consult experienced service technicians for disconnection and reinstallation of the unit.
Do not place any other electrical products or household belongings under indoor unit or outdoor unit.
Condensation dripping from the unit might get them wet, and may cause damage or malfunction of your property.
Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
The appliance shall be stored in a room without continuously operating ignition sources(for example, open flames, an operating gas appliance or an operating electric heater).
Do not pierce or burn.
Be aware that refrigerants may not contain an odor.
To keep ventilation openings clear of obstruction.
The appliance shall be stored in a well-ventilated area where the room size
corresponds to the room area as specified for operation.
The appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and ignition sources (for example an operating electric heater).
Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorized their competence to handle refrigerants safely in accordance with an industry recognized assessment specification.
Servicing shall only be performed as recommended by the equipment manufacturer.
Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
Appliance shall be installed, operated and stored in a room with a floor area larger than 10 m^2.
The installation of pipe-work shall be kept to a room with a floor area larger than 10 m^2.
The pipe-work shall be compliance with national gas regulations. The maximum refrigerant charge amount is 2.5 kg.
Mechanical connectors used indoors shall comply with ISO 14903. When mechanical connectors are reused indoors, sealing parts shall be renewed.
When flared joints are reused indoors, the flare part shall be re-fabricated.
The installation of pipe-work shall be kept to a minimum.
Mechanical connections shall be accessible for maintenance purposes.
The indoor unit shall only be connected to outdoor units suitable for the same refrigerant.
The unit is a partial unit air conditioner, complying with partial unit requirements of the International Standard, and must only be connected to other units that have been confirmed as complying to corresponding partial unit

requirements.

Explanation of symbols displayed on the indoor unit or outdoor unit.

	**WARNING**	This symbol shows that this appliance uses a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	**CAUTION**	This symbol shows that the operation manual should be read carefully.
	**CAUTION**	This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.
	**CAUTION**	This symbol shows that information is available such as the operating manual or installation manual.
A2L	**WARNING**	The refrigerant is named according to ASHRAE safety classification, with mild flammability and low toxicity.

2. Product Specifications

IDU Model		UNI09HW23STG1	UNI12HW23STG1	UNI18HW23STG1	UNI24HW23STG1
ODU Model		URC09CN23STG1	URC12CN23STG1	URC18CN23STG1	URC24CN23STG1
Type		T1, INVERTER	T1, INVERTER	T1, INVERTER	T1, INVERTER
Cooling Capacity (95 ºF) '	Btu/h	9000	12000	18000	24000
Heating Capacity (47 ºF) '	Btu/h	9000	12000	18000	24000
Cooling Capacity Range	Btu/h	3600-10000	4000-13000	6500-19000	8000-25000
Heating Capacity Range	Btu/h	3600-10000	4000-13000	6500-19000	8000-25000
SEER2	Cooling	25.0	23.0	21.0	22.5
HSPF2(IV)	Heatling	11.0	10.0	10.0	9.5
EER2 for Cooling (95 ºF) '	Btu/W	13.64	12.28	13.30	12.28
COP2 for Heating (47 ºF) '	W/W	4.00	3.90	3.70	3.30
COP for Heating	Btu/W	13.65	13.31	12.62	11.26
Heating at -8.3 ºC(17ºF) Capacity: Rated	Btu/h	9000	10800	18000	22000
Heating Capacity: Max ' -15 ºC (5 ºF) '	Btu/h	9000	10500	17500	19200
COP at ' -15 ºC (5 ºF) '	W/W	2.1	2	1.9	1.9
Heating Max Capacity ' -20 ºC (-5 ºF)	Btu/h	6700	7700	13700	10300
Heating Max Capacity ' -25 ºC (-13 ºF)	Btu/h	5400	6100	11500	11000
Moisture Removal	L/H.r	0.9	1.2	1.5	2.2
Air Circulation	m3/h	580	620	1100	1200
Air Circulation(Ultrahigh)	m3/h	650	670	1100	1200
Air Circulation(high)	m3/h	580	620	1000	1100
Air Circulation(medium)	m3/h	500	530	820	950
Air Circulation(low)	m3/h	420	430	650	750
Refrigerant		R454B	R454B	R454B	R454B
Refrigerant charge volume	g	1000	1080	1500	2000
	lbs	2.20	2.38	3.31	4.41
Indoor Sound Pressure(Higer/H/M/L/silence)	dB (A)	42/39/32/29/26	42/39/32/29/26	48/45/41/37/34	50/47/42/36/33
Outdoor Sound pressure	dB (A)	53	53	55	58
Voltage, Frequency, Phase	V	208V~,230V~,60Hz,1P			
Max Fuse Size/Fusible Max.	A	15.0	15.0	20.0	30.0
Min.Circuit Ampacity	A	10.0	10.0	15.0	20.0
Compressor type		Rotary	Rotary	Rotary	Rotary
System MCA		9.5	10.5	20	22
System MOP		15	15	30	35

IDU Model		UNI09HW23STG1	UNI12HW23STG1	UNI18HW23STG1	UNI24HW23STG1
ODU Model		URC09CN23STG1	URC12CN23STG1	URC18CN23STG1	URC24CN23STG1
Expansion Device		EEV	EEV	EEV	EEV
Indoor DC motor		Yes	Yes	Yes	Yes
Outdoor DC motor		Yes	Yes	Yes	Yes
Liquid Pipe	inch	1/4	1/4	1/4	
Gas Pipe	inch	3/8	3/8	1/2	
Max. Pipe Length (Total)	m	20	20	30	30
Max. Elevation (indoor units higher than outdoor unit)	m	15	15	15	15
Pre-charge Pipe Length	m	7.5	7.5	7.5	7.5
Net Dimensions WxHxD (mm)	Indoor Unit mm	835×280×220	835×280×220	1100×325×244	1100×325×244
	Indoor Unit in	32 7/8x11x8 11/16	32 7/8x11x8 11/16	43 5/16x12 13/16x9 5/8	43 5/16x12 13/16x9 5/8
	Outdoor Unit mm	810x585x280	810x585x280	860x650x310	900x340x750
	Outdoor Unit in	31 7/8x23x11	31 7/8x23x11	33 7/8x25 9/16x12 3/16	35 3/8x13 1/2x29 1/2
Net Weight (Kg)	Indoor Unit	8.5	8.5	14.0	14.0
	Outdoor Unit	32.0	32.0	44.0	51.0
Net Weight (lbs)	Indoor Unit	18.7	18.7	30.8	30.8
	Outdoor Unit	70.5	70.5	97	112
Packing Dimensions WxHxD (mm)(With pipe)	Indoor Unit mm	870×335×265	870×335×265	1170×390×315	1170×390×315
	Indoor Unit in	34 1/4x13 3/16x10 7/16	34 1/4x13 3/16x10 7/16	46 1/16x15 3/8x12 7/16	46 1/16x15 3/8x12 7/16
	Outdoor Unit mm	940x630x385	940x630x385	995x720x420	1060x820x450
	Outdoor Unit in	37x24 3/4x15 3/16	37x24 3/4x15 3/16	39 3/16x28 3/8x16 9/16	41 3/4x32 1/4x17 3/4
Gross Weight (Kg)	Indoor Unit	10.5	10.5	17.0	17.0
	Outdoor Unit	37	37	48	55.0
Gross Weight (lbs)	Indoor Unit	23.1	23.1	37.5	37.5
	Outdoor Unit	81.6	81.6	105.8	121.3
Working Temperature Range - Cooling (°C/°F)		-15°C-48°C; (5°F-118°F)	-15°C-48°C; (5°F-118°F)	-15°C-48°C; (5°F-118°F)	-15°C-48°C; (5°F-118°F)
Working Temperature Range - Heating (°C/°F)		-25°C-24°C; (-13°F-75°F)	-25°C-24°C; (-13°F-75°F)	-25°C-24°C; (-13°F-75°F)	-25°C-24°C; (-13°F-75°F)
Remote Control Adjustable Temperature Range - Cooling		16°C-30°C; (61°F-86°F)	16°C-30°C; (61°F-86°F)	16°C-30°C; (61°F-86°F)	16°C-30°C; (61°F-86°F)
Remote Control Adjustable Temperature Range - Heating		16°C-30°C; (61°F-86°F)	16°C-30°C; (61°F-86°F)	16°C-30°C; (61°F-86°F)	16°C-30°C; (61°F-86°F)

Note: This table just is for reference, when relate parameters is different from actual specification, please use the parameters of the actual specification which you can get from the product manager.

IDU Model		URD09HW15STG1	URD12HW15STG1
ODU Model		URC09CN15STG1	URC12CN15STG1
Type		T1, H/P, INVERTER	T1, H/P, INVERTER
Ratings			
Cooling Capacity	BTU	9000	12000
Heating Capacity	BTU	9500	12000
Rated Input-Cooling	W	640	975
Rated Input-Heating	W	680	960
Moisture Removal	L/H.r	0.9	1.2
Air Circulation	Super m^3/h	680	680
EER for Cooling	W/W	4.12	3.6
COP for Heating	W/W	4.09	3.66
Energy Class	Cooling	SEER2-23	SEER2：22
Energy Class	Heatling	HSPF2-10	HSPF2：9.5
Max power Input	W	1500	1600
Max current	W	12	15
Refrigerant		R454B	R454B
Refrigerant charge volume （7.5M）	g	950	1000
Additional ref. Volume	g	20	20
Indoor Unit Noise Level	High(dB (A))	39	40
Outdoor Unit Noise Level	dB (A)	53	53
Power Supply			
Voltage, Frequency, Phase	V, Hz, ph	115V~,60Hz,1P	115V~,60Hz,1P
Rated Current	Cooling (A)	6	8.8
	Heating (A)	6.4	8.6
System pressures in cooling rated conditions			
Max suction pressure	Mpa	1.33	1.33
Max discharge pressure	Mpa	3.79	3.79
System			
Compressor			
Compressor type		Rotary	Rotary
Compressor Model No.		TSN108D34UEZ3	TSN108D34UEZ3
Compressor MFG		GMCC	GMCC
Connecting Pipe Diameter			
Liquid Pipe	inch	1/4	1/4
Gas Pipe	inch	3/8	3/8
Cooling Setting Temperature Range	℃	16~30	16~30
Heating Setting Temperature Range	℃	16~30	16~30
Cooling Operating Temperature Range	℃	-15~48	-15~46
Heating Operating Temperature Range	℃	-25~24	-25~24
Features			
Display on Front Panel		LED	LED
LCD Wireless Remote Controller		Yes	Yes
Removable and washable Panel		Yes	Yes
Washable PP Filter		Yes	Yes
24 Hours Timer		Yes	Yes
3 Speed and Auto Indoor Fan Control		Yes	Yes
Vertical Auto Swing Louver		Yes	Yes
Horizontal Auto Swing Louver		Yes	Yes
Sleep Operation		Yes	Yes
Smart Function		Yes	Yes
Super Function		Yes	Yes
Auto Restart		Yes	Yes
Dimmer		Yes	Yes
Other			
Net Dimensions WxHxD (mm)	Indoor Unit	850×270×208	815×270×210
	Outdoor Unit	810×585×280	810×585×280
Net Weight (Kg)	Indoor Unit	8.5	8.5
	Outdoor Unit	34	35
Packing Dimensions WxHxD (mm)	Indoor Unit	900×335×260	870×335×265
	Outdoor Unit	940×630×385	940×630×385
Gross Weight (Kg)	Indoor Unit	10.5	10.5
	Outdoor Unit	39	39

Note: This table just is for reference, when relate parameters is different from actual specification, please use the parameters of the actual specification which you can get from the product manager.

3. Installation Instruction

WARNING ***To prevent abnormal heat generation and the possibility of fire, do not place obstacles, enclosures and grilles in front of or surrounding the air conditioner in a way that may clock air flow. And, more than 1 meter away from any antenna or power lines or connecting wires used for TV, radio, telephone, security system, or intercom. Electrical noise from any of these sources may affect operation.***

3-1. Installation Place and Condition

Indoor unit

Avoid:

△ direct sunlight.

△ nearby heat sources that may affect performance of the unit.

△ areas where leakage of flammable gas may be expected.

△ places where large amounts of oil mist exist.

Do:

△ Select an appropriate position from which every corner of the room can be uniformly cooled.

△ Select a location that will hold the weight of the unit.

△ Select a location where tubing and drain hose have the shortest run to the outside. (See a)

△ Allow room for operation and maintenance as well as unrestricted air flow around the unit. (See b)

△ Install the unit within the maximum elevation difference (H) above or below the outdoor unit and within a total tubing length (L) from the outdoor unit as detailed (See table 1 and c)

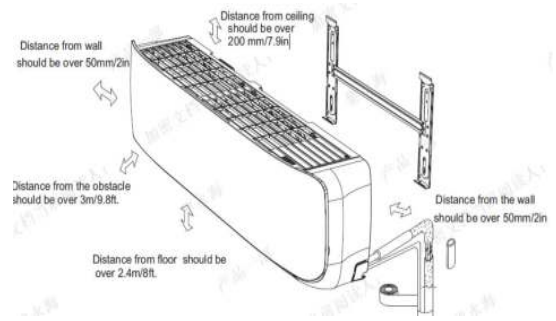
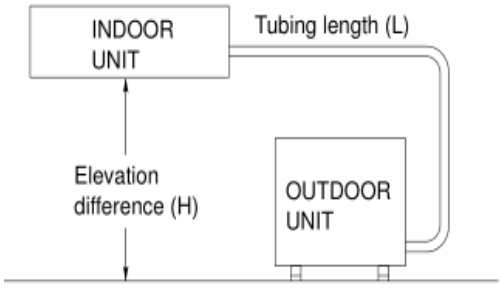
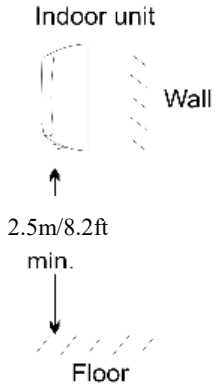
a	b	c
		

table 1

Capacity (Btu/h)	Pipe Size		Standard Length (m / ft)	Max. Elevation B(m / ft)	Max. Length A (m / ft)	Additional Refrigerant (g/m)/(g/3.3ft)
	GAS	LIQUID				
09k	3/8"(Ø9.52)	1/4"(Ø6.35)	7.5/24.6	15/49.2	20/65.6	20
12k	3/8"(Ø9.52)	1/4"(Ø6.35)	7.5/24.6	15/49.2	20/65.6	20
18k	1/2"(Ø12.7)	1/4"(Ø6.35)	7.5/24.6	15/49.2	20/65.6	20
24k	5/8"(Ø15.88)	3/8"(Ø9.52)	7.5/24.6	15/49.2	20/65.6	30

* If total tubing length becomes Standard Length to Max. Length, charge additional refrigerant as the table1 for reference. And no additional compressor oil is necessary.

* If the height or pipe length is different from the specification, please refer to the specification.

* If the height or pipe length is out of the scope of the table, please consult the dealer.

Outdoor unit

Avoid:

△ Heat sources, exhaust fans, etc.

△ Damp, humid or uneven locations.

DO:

△ Choose a place as cool as possible.

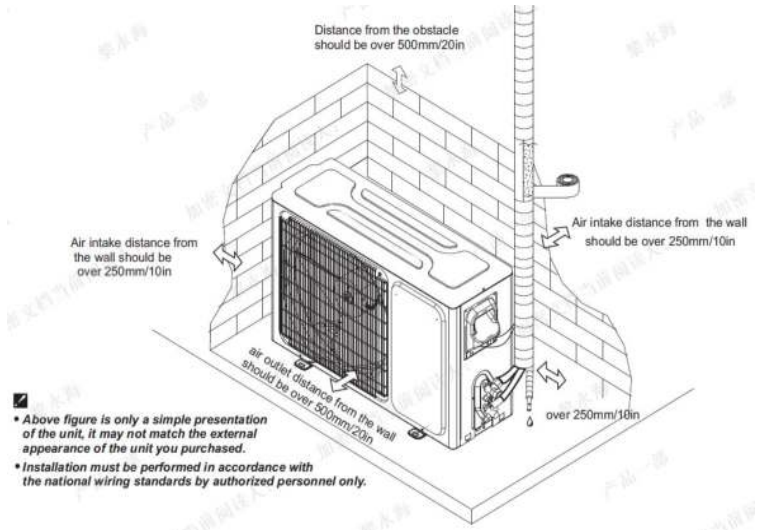
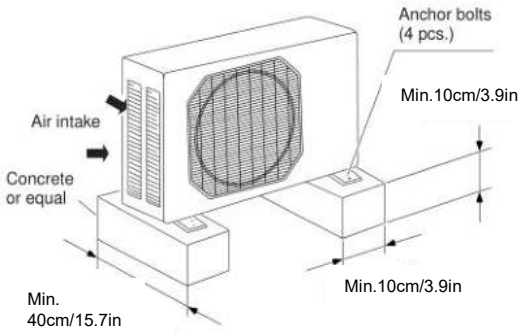
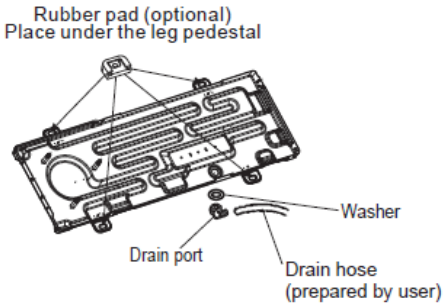
△ Choose a place that is well ventilated.

△ Allow enough room around the unit for air intake or exhaust and possible maintenance. (see a1 & b1)

△ Provide a solid base (level concrete pad, concrete block, 10 × 40 cm beams or equal), a minimum of 10 cm above ground level to reduce humidity and protect the unit against possible water damage and decreased service life.

△ If the installation bag has rubber pads, it is strongly recommended for use to reduce vibration and noise.

△ Use lug bolts or equal to bolt down unit, reducing vibration and noise.

a1	b1
	
	

3-2.1 Electrical Data

Power Supply from Outdoor

	System					Inverter Compressor	Indoor
Model (Indoor / Outdoor)	Frequency [Hz]	Voltage [V]	System MCA [A]	System MOP [A]	Max. Fuse [A]	RLA [A]	Indoor MCA [A]
UNI09HW23STG1 / URC09CN23STG1	60	208/230	9.5	15	15	5.92	3
UNI12HW23STG1 / URC12CN23STG1	60	208/230	10.5	15	15	5.92	3
UNI18HW23STG1 / URC18CN23STG1	60	208/230	20	30	30	8.4	3
UNI24HW23STG1 / URC24CN23STG1	60	208/230	22	35	35	8.4	3
URD09HW15STG1/ URC09CN15STG1	60	115	16	25	15	5.92	3
URD12HW15STG1 / URC12CN15STG1	60	115	16	25	15	5.92	3

	Outdoor Fan Motor		Indoor Fan Motor		Wiring Size		Conduit Tube
Model (Indoor / Outdoor)	Output [kW]	FLA [A]	Output [kW]	FLA [A]	Power Supply Wiring [AWG]	Communication Cable [AWG]	for Power Supply Wiring [in. (mm)]
UNI09HW23STG1 / URC09CN23STG1	36	0.47	25	0.18	3X16 AWG	4X18 AWG	0.2 (5mm)
UNI12HW23STG1 / URC12CN23STG1	36	0.47	25	0.18	3X14 AWG	4X18 AWG	0.2 (5mm)
UNI18HW23STG1 / URC18CN23STG1	60	0.66	35	0.32	3X12 AWG	4X18 AWG	0.2 (5mm)
UNI24HW23STG1 / URC24CN23STG1	105	0.87	35	0.32	3X14 AWG	4X18 AWG	0.2 (5mm)
URD09HW15STG1/ URC09CN15STG1	36	0.47	25	0.4	3X14 AWG	4X18 AWG	0.2 (5mm)
URD12HW15STG1 / URC12CN15STG1	36	0.47	25	0.4	3X14 AWG	4X18 AWG	0.2 (5mm)

MCA: Minimum Circuit Ampacity (A)

MOP: Maximum Overcurrent Protective Device (A)

RLA: Rated Load Ampacity (A)

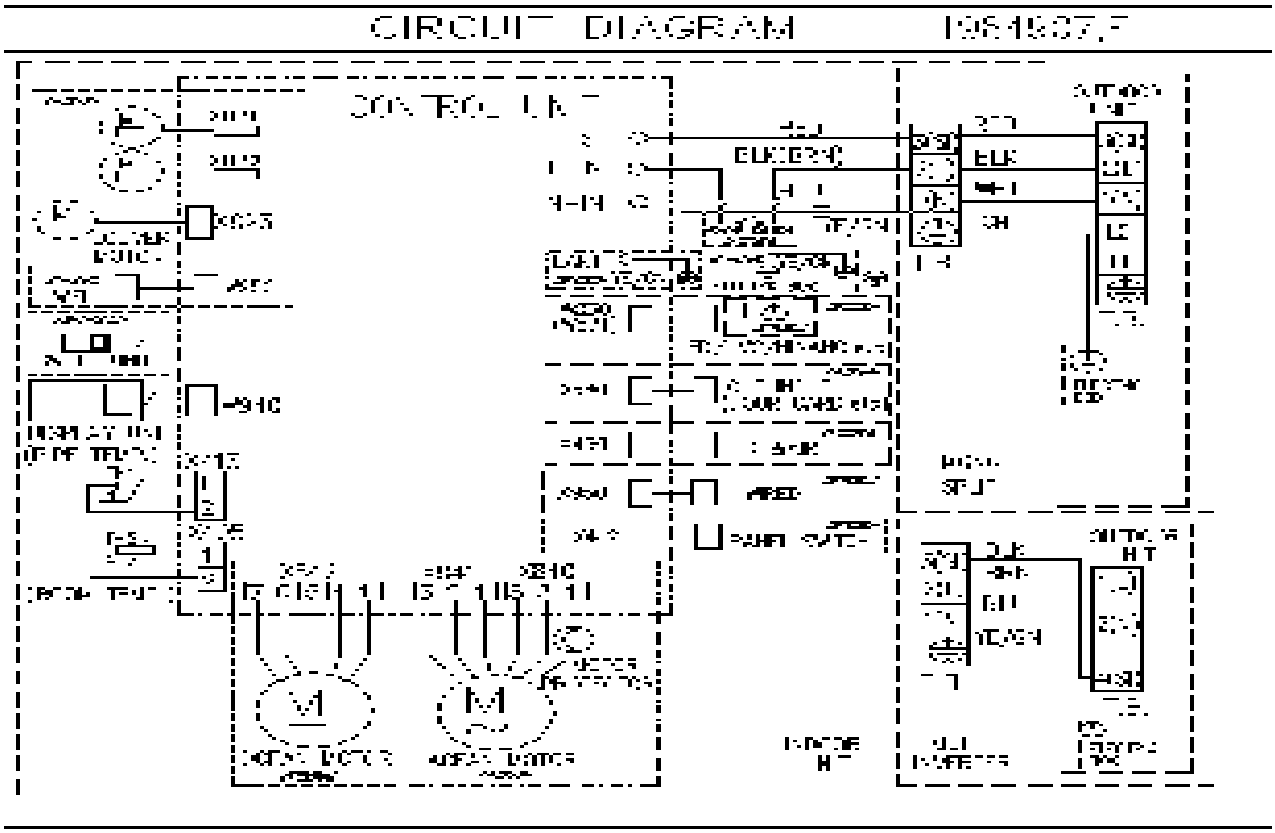
FLA: Full loadAmpacity (A)

3-2.2 Electric Wiring Diagram

Model	Indoor Unit DIAGRAM	Outdoor Unit DIAGRAM
UNI09HW23STG1 / URC09CN23STG1	1984907	1854707
UNI12HW23STG1 / URC12CN23STG1	1984907	1854707
UNI18HW23STG1 / URC18CN23STG1	1984907	1854707
UNI24HW23STG1 / URC24CN23STG1	1984907	1854707
URD09HW15STG1/ URC09CN15STG1	2014258	1912204
URD12HW15STG1 / URC12CN15STG1	2014258	1912204

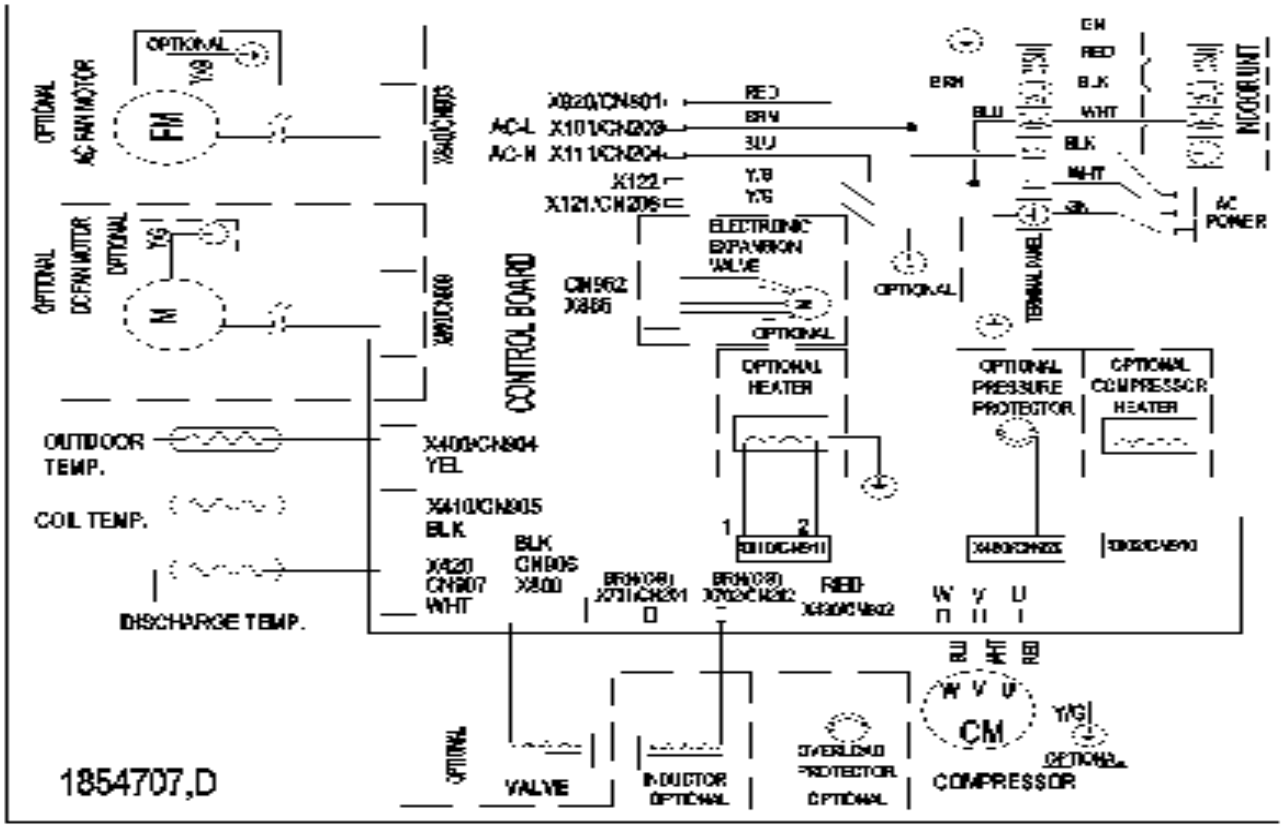
Indoor:

1984907



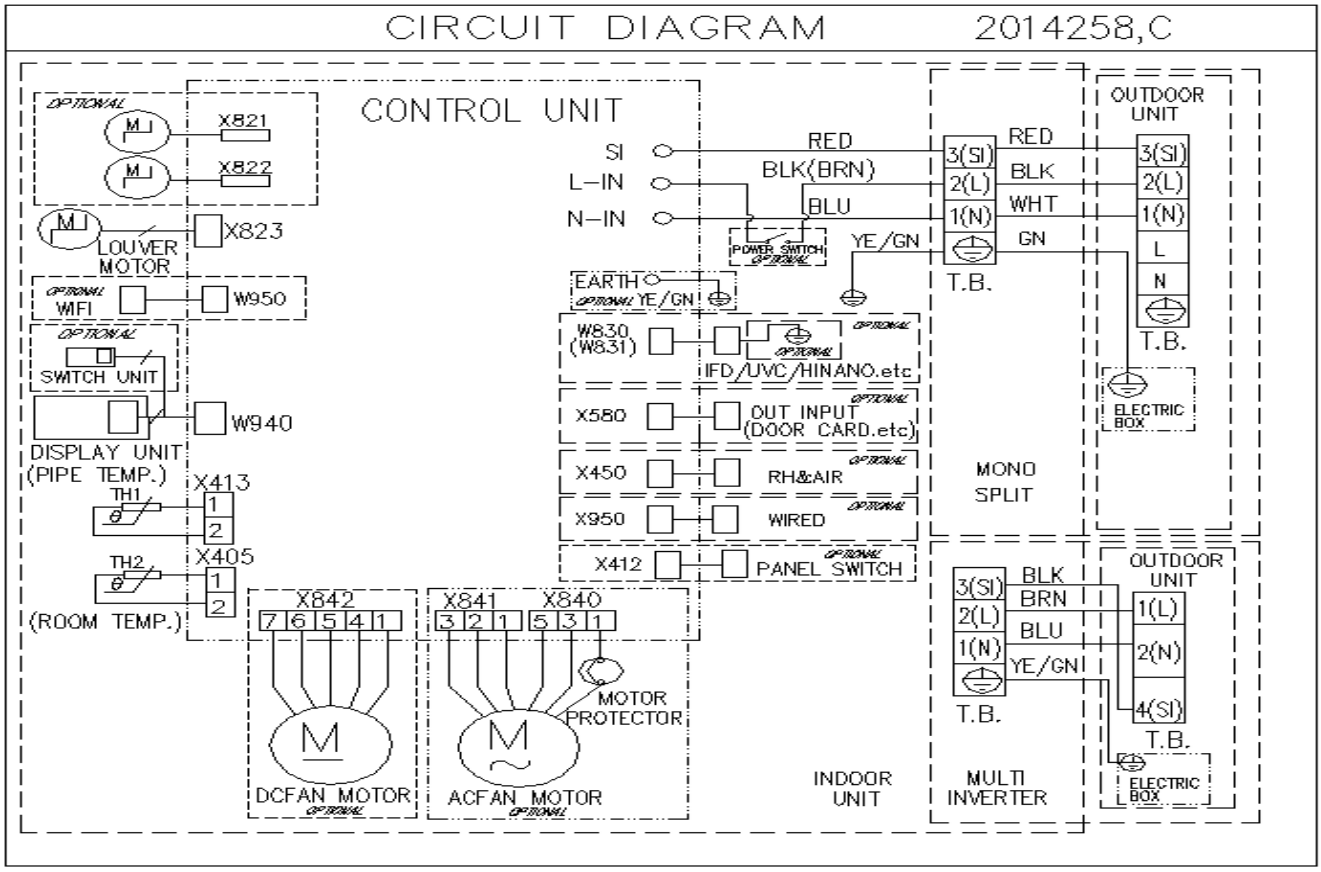
Outdoor:

1854707



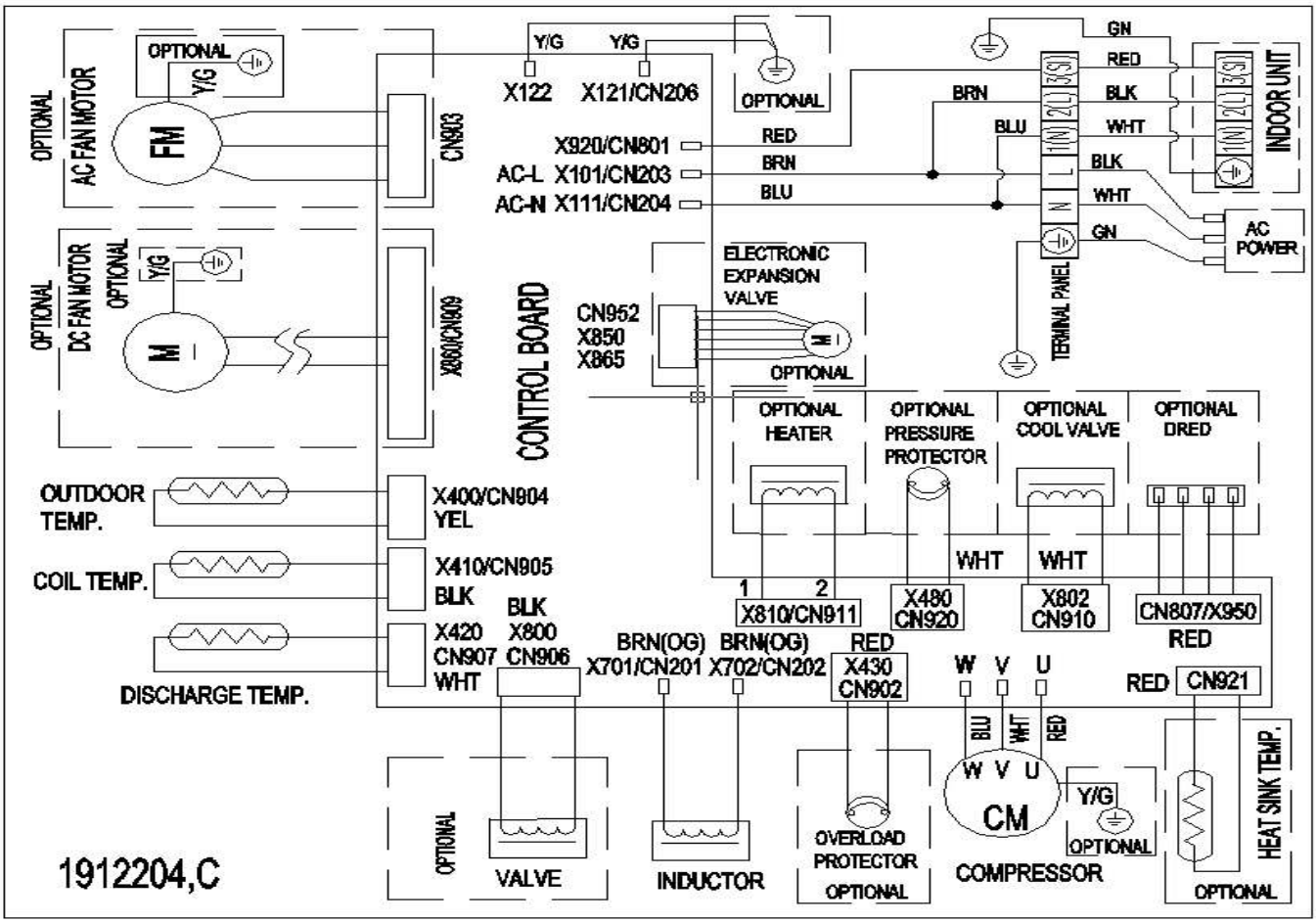
Indoor:

2014258



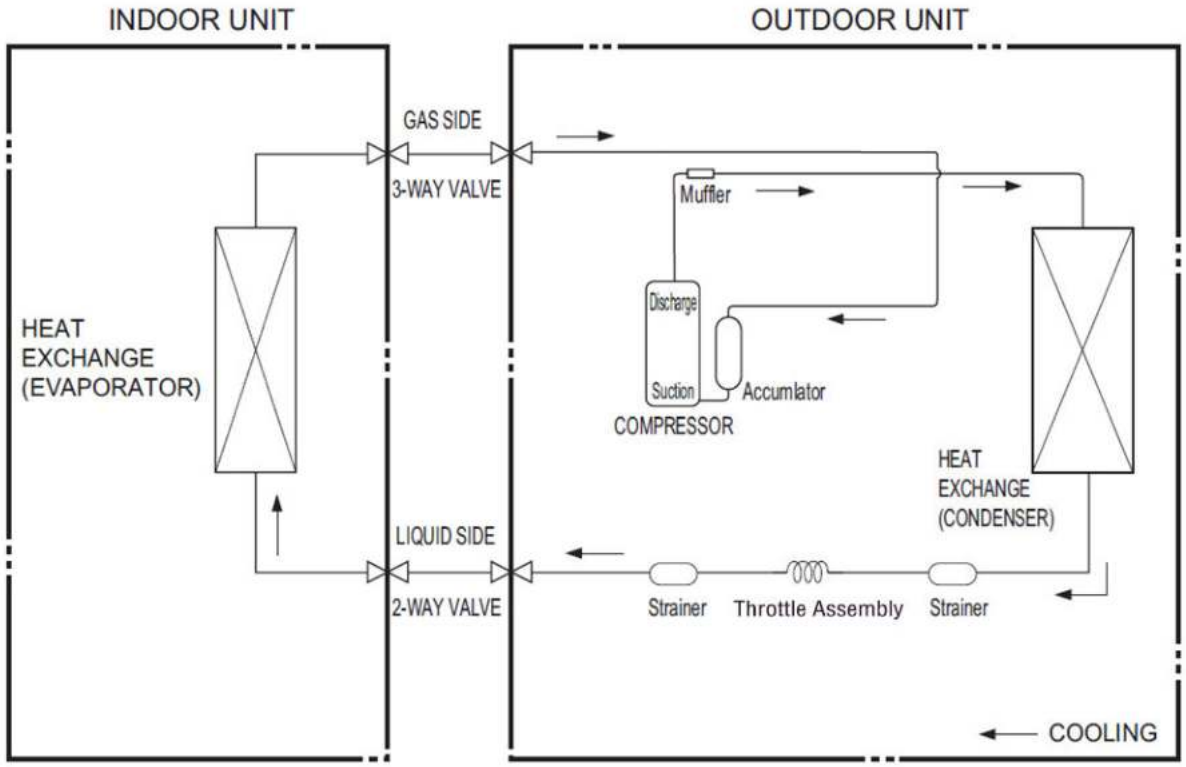
Outdoor:

1912204

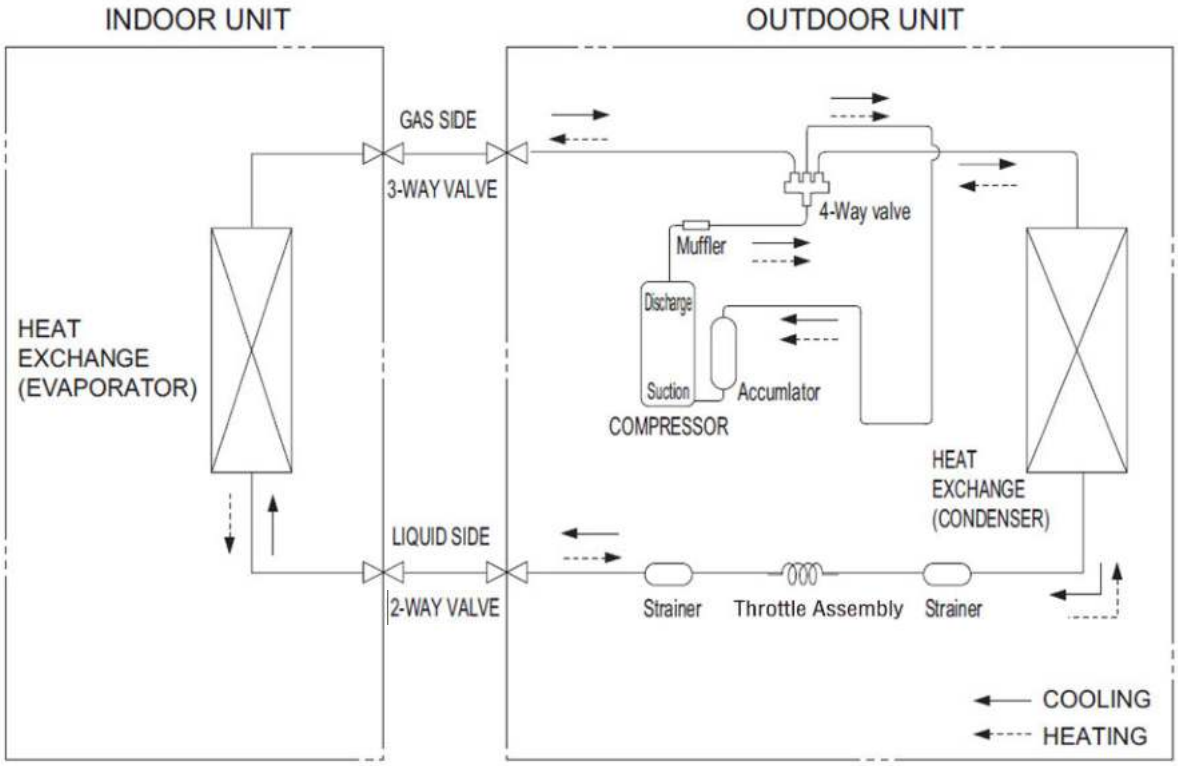


3-3. Refrigerant Flow System

(1)Cooling



(2)Cooling&Heating



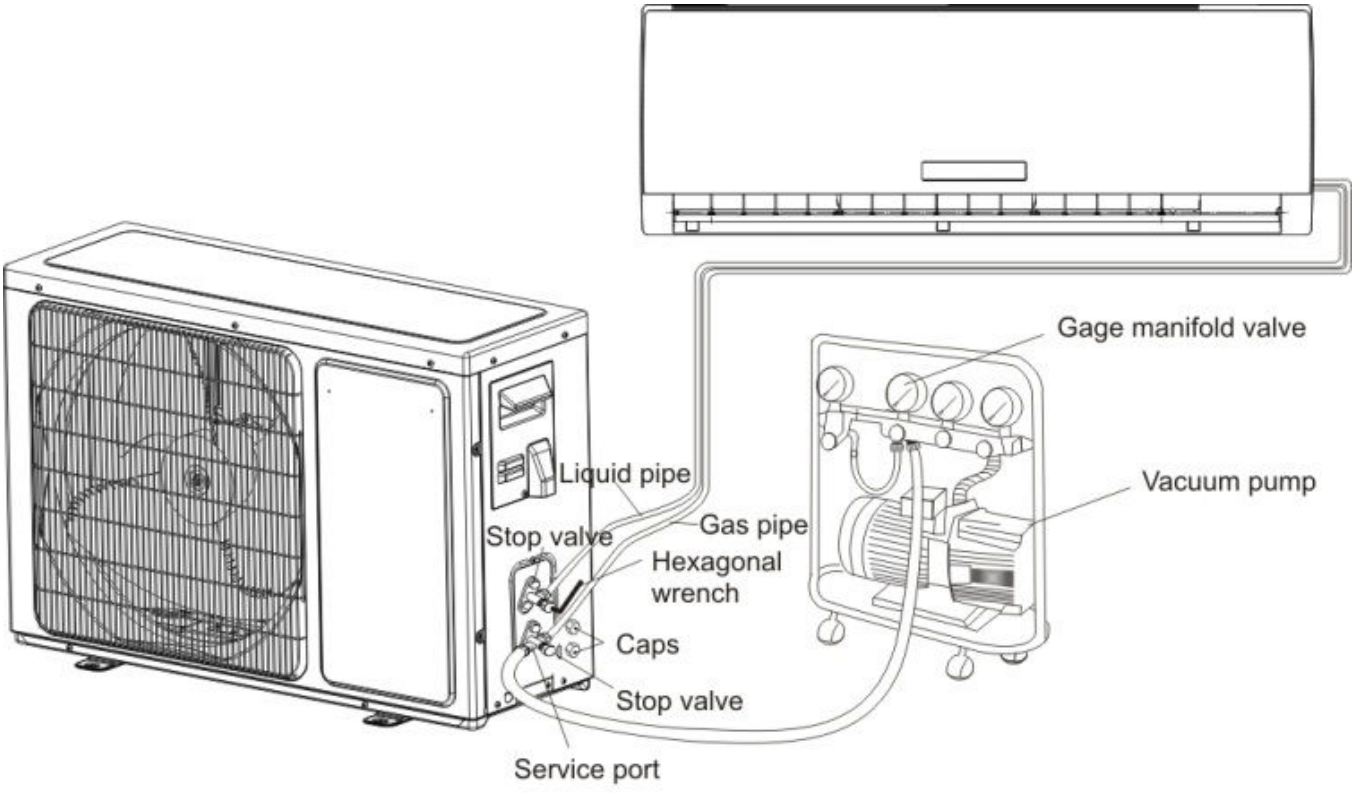
NOTE: In different models, the throttle assembly may be Capillary or Electronic expansion valve.

3-4. Air Purging and Leakage Test

1. Connect charging hose of manifold valve to charge end of low pressure valve (both high/low pressure valves must be tightly shut).
2. Connect joint of charging hose to vacuum pump.
3. Fully open the handle of Lo manifold valve.
4. Open the vacuum pump to evacuate. At the beginning, slightly loosen joint nut of low pressure valve to check if there is air coming inside. (If noise of vacuum pump has been changed, the reading of multimeter is 0) Then tighten the nut.
5. Keep evacuating for more than 15mins and make sure the reading of multi-meter is -1.0 X105 pa (-76cmHg).
6. Check the vacuum with the gage manifold valve, then close the gage manifold valve, and stop the vacuum pump.
7. Leave it for one or two minutes. Make sure the pointer of the gage manifold valve remains in the same position.
8. Remove the gage manifold valve quickly from the service port of the stop valve.

After refrigerant pipes are connected and evacuated, fully open all stop valves on gas and liquid pipe sides.

9. Opening without fully opening lowers the performance and cause dangerous.
10. Tighten the cap to the service port to obtain the initial status.
11. Retighten the cap
12. Leak test



3-5. Test Running

△ Check after Installation

Items to be checked	Possible malfunction
Has it been fixed firmly?	The unit may drop, shake or emit noise.
Have you done the refrigerant leakage test?	It may cause insufficient cooling(heating)capacity
Is heat insulation sufficient?	It may cause condensation and dripping.
Is water drainage satisfactory?	It may cause condensation and dripping.
Is the voltage in accordance with the rated voltage marked on the nameplate?	It may cause electric malfunction or damage the product.
Is the electric wiring and piping connection installed correctly and securely?	It may cause electric malfunction or damage the part.
Has the unit been connected to a secure earth connection?	It may cause electrical leakage.
Is the power cord specified?	It may cause electric malfunction or damage the part.
Are the inlet and outlet openings blocked?	It may cause insufficient cooling(heating)capacity.
Is the length of connection pipes and refrigerant capacity been recorded?	The refrigerant capacity is not accurate.

△Operation Test

1. Before Operation Test
(1)Do not switch on power before installation is finished completely.
(2)Electric wiring must be connected correctly and securely.
(3)Cut-off valves of the connection pipes should be opened.
(4)All the impurities such as scraps and thrums must be cleared from the unit.

2. Operation Test Method
(1)Switch on power and press “ON/OFF” button on the remote controller to start the operation.
(2)Press MODE button to select the COOL, HEAT (Cooling only unit is not available), FAN to check whether the operation is normal or not.

4. Function Operation

4-1. Operation Range (cooling and heating）

Temperature		Cooling operation	Heating operation
Indoor temperature	Max	90℉（32℃）	81℉（27℃）
	Min	70℉（21℃）	45℉（7℃）
outdoor temperature	Max	115℉（46℃）	75℉（24℃)
	Min	*note	-4℉(-20℃）

*Optimum performance will be achieved within these operating temperature. If air conditioner is used outside of the above conditions, the protective device may trip and stop the appliance.

*For Tropical (T3) Climate condition models, the outdoor max temperature is 131℉（55 ℃） instead of 115℉ (46 ℃)

*For some models, can keep cooling at 5℉(-15 ℃) outdoor ambient via unique design. Normally, optimum cooling performance will be achieved above 70℉(21 ℃). Please consult the merchant to get more information.

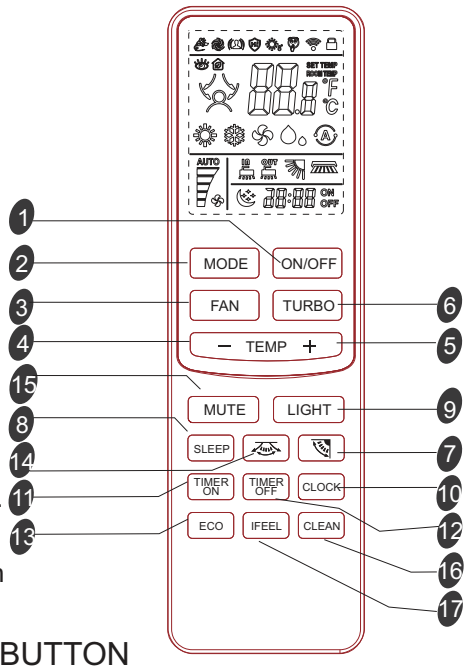
*For R32 refrigerant models, can keep heating at 14℉(-20 ℃) outdoor ambient , For 454B refrigerant models can keep heating at -13℉(-25 ℃) outdoor ambient，even heat at lower outdoor ambient

The temperature of some products is allowed beyond the range. In specific situation, please consult the merchant.

When relative humidity is above 80%, if the air conditioner runs in COOLING or DRY mode with door or window opened for a long time, dew may drip down from the outlet.

4-2. Remote Controller Operation & Function

△Remote Controller Instruction



The remote controller transmits signals to the system.

1 ON/OFF BUTTON
The appliance will be started when it is energized or will be stopped when it is in operation, if you press this button.

2 MODE BUTTON
Press this button to select the operation mode.

3 FAN BUTTON
Used to select fan speed in sequence auto, high, medium or low.

4 **5** ROOM TEMPERATURE SETTING BUTTONS
Used to adjust the room temperature and the timer, also real time.

6 TURBO BUTTON
Used to start or stop the fast cooling.(Fast cooling operates at high fan speed with 61˚F / 16˚C set temp automatically).

7 ▲▼ SWING BUTTON
Used to stop or start vertical adjustment louver swinging and set the desired up/down airflow direction.

8 SLEEP BUTTON
Used to set or cancel Sleep Mode operation.

9 LIGHT BUTTON
When you press this button, all the display of indoor unit will be closed.

10 CLOCK BUTTON
Used to set the current time.

11 **12** TIMER ON/OFF BUTTON
Used to set or cancel the timer operation.

13 ECO BUTTON
Used to set or cancel Economy Mode operation.

16 CLEAN BUTTON
Used to set the CLEAN function.

5+**7** 46˚F / 8 ℃ HEAT
Press them together for 3 seconds to start or stop 46˚F / 8 ℃ HEAT mode

14 ◀▶ SWING BUTTON
Used to stop or start Horizontal adjustment louver swinging and set the desired left/right airflow direction.

15 MUTE BUTTON
Press it once,the MUTE function will be started.
Press it again, the MUTE function will be shut off.

17 IFEEL BUTTON
Used to set IFEEL mode operation. Press it once, the IFEEL function will be started. Press it again, the IFEEL function will be shut off.
If the IFEEL function can't be shut off, please try to press this button about 5 seconds.
Advice to put the remote controller in the place where the indoor unit receive signal easily.
Advice to cancel the IFEEL mode so as to save energy when stopping the air conditioner.

11+**12** LOCK
Press them together for 3 seconds to start or stop LOCK operation .

Indication symbols on LCD:

- Cooling indicator
- Dry indicator
- Fan only indicator
- Heating indicator
- Nanoe indicator
- Turbo indicator
- Airflow left and right indicator
- AUTO Auto / Higher / High / Medium / Low / Lower
- Airflow up and down indicator
- Smart indicator
- Sleep indicator
- 46˚F / 8 ˚C heating indicator
- Economy
- I feel
- Mute indicator
- Signal transmit.
- 88:88 ON OFF Display set timer / Display current time
- 88 ℃ Display temperature
- Lock

Note: Each mode and relevant function will be further specified in following pages.

Operation instructions

Operation modes

Selecting mode

Each time the "MODE" button is pressed, the operation mode is changed in sequence:

COOLING → DRY → FAN ONLY → HEATING → AUTO

1

Heating mode is NOT available for cooling only air conditioner.

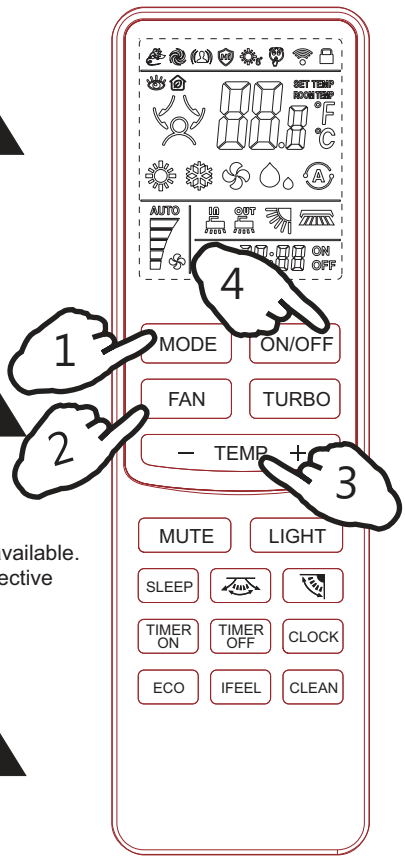
FAN mode

Each time the "FAN" button is pressed, the fan speed is changed in sequence:

Auto → Higher → High → Medium → Low → Lower

2

At "FAN ONLY" mode, only "Higher","High","Medium""Low" and "Lower" are available. At "DRY" mode, Fan speed is set at "Auto" automatically, "FAN" button is ineffective in this case.



Setting temperature

Press " + " once to raise temperature setting by 1˚F / 1˚C

Press " — " once to lower temperature setting by 1˚F / 1˚C

3

Range of available set temperature	
*HEATING, COOLING	61˚F - 86˚F / 16˚C - 30˚C

Note: Heating mode is NOT available for cooling only models.

Note: Press and hold " MODE " button and " — TEMP " button together for 3 seconds will alternate the temperature display between the ℃ and °F scale.

Turning on

Press ON/OFF button, when the appliance receives the signal, the RUN indicator of the indoor unit lights up.

4

SWING, SMART, TIMER ON, TIMER OFF, CLOCK, SLEEP, SUPER and NANOE operation modes will be specified in the following pages.

- Changing modes during operation, sometimes the unit does not response at once. Wait 3 minutes.
- During heating operation, air flow is not discharged at the beginning. After 2—5 minutes, the air flow will be discharged until temperature of indoor heat exchanger rises.
- Wait 3 minutes before restarting the appliance.

Operation instructions

Airflow direction control

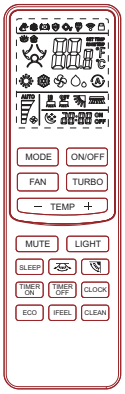
Airflow direction control

Vertical airflow(Horizontal airflow) is automatically adjusted to a certain angle in accordance with the operation mode after turning on the unit.

Operation mode	Direction of airflow
COOLING, DRY	horizontal
*HEATING, FAN ONLY	downward

The direction of airflow can be also adjusted to your own requirement by pressing the "SWING" button of the remote controller.

5



***Heating mode is only available for heat pump models.**

Vertical airflow control (with the remote controller)

Using remote controller to set various angles of flow or specific angle as you like.

Swinging airflow

Pressing button once, the vertical adjustment louver will swing up and down automatically.

Desired direction airflow

Pressing the button again when the louvers swing to a suitable angle as desired.

Horizontal airflow control (with the remote controller)

Using remote controller to set various angles of flow or specific angle as you like.

Swinging airflow

Pressing button once, the horizontal adjustment louver will swing left and right automatically.

Desired direction airflow

Pressing the button again when the louvers swing to a suitable angle as desired.

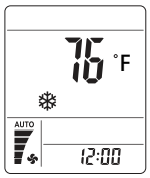
NOTE:If the unit doesn't have four ways airflow function,you can adjust horizontal airflow by yourself.

A **Do not turn the vertical adjustment louvers manually, otherwise malfunction may occur. If that happens, turn off the unit first and cut off the power supply, then restore power supply again.**

B **It is better not to let the vertical adjustment louver tilt downward for a long time at COOLING or DRY mode to prevent condensed water from dripping.**

Operation instructions

CLOCK button



You can adjust the real time by pressing CLOCK button, then using "＋" and "－" buttons to get the correct time, press CLOCK button again the real time is set.

Timer mode

It is convenient to set the timer on with **TIMER ON** button when you go out in the morning to achieve a comfortable room temperature at the time you get home. You can also set timer off at night to enjoy a good sleep.

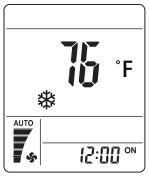
► **How to set TIMER ON**

TIMER ON button can be used to set the timer programming as wished in order to switch on the appliance at your desired time.

i) Press TIMER ON button, "ON 12:00" flashes on the LCD, then you can press the "＋" or "－" buttons to select your desired time for appliance on.

Increase

Decrease



Press the "＋" or "－" button once to increase or decrease the time setting by 1 minute.

Press the "＋" or "－" button 2 seconds to increase or decrease the time setting by 10 minutes.

Press the "＋" or "－" button for a longer time to increase or decrease the time by 1 hour.

Note: If you don't set the time in 10 seconds after you press TIMER ON button, the remote controller will exit the TIMER ON mode automatically.

ii) When your desired time displayed on LCD, press the TIMER ON button and confirm it.

"ON" stops flashing.

The TIMER indicator on the indoor unit lights up.

iii) After the set timer displayed for 5 seconds the clock will be displayed on the LCD of the remote controller instead of set timer.

► **How to cancel TIMER ON**

Press the TIMER ON button again, the indicator disappears, the TIMER ON mode has been canceled.

Note: It is similar to set TIMER OFF, you can make the appliance switch off automatically at your desired time.

Operation instructions

SLEEP mode

SLEEP mode

SLEEP mode can be set in **COOLING, HEATING or DRYING** operation mode.This function gives you a more comfortable environment for sleep.

Press SLEEP button, and the operation mode changes from adult SLEEP, elderly SLEEP, youth SLEEP, and children SLEEP to closed SLEEP mode.

In SLEEP mode

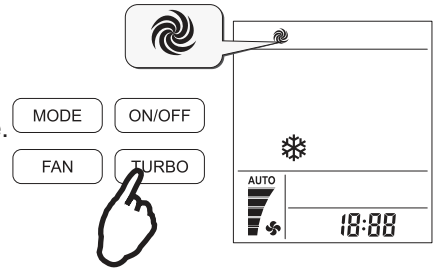
The appliance will stop operation automatically after operating for 8 hours.Fan speed is automatically set at low speed.

Note: Heating is NOT available for cooling only air conditioner.
Note: Press TURBO ,ON/OFF,FAN, MODE,ECO or SLEEP button cancel SLEEP mode.

TURBO mode

TURBO mode

TURBO mode is used to start or stop fast cooling when the unit is on.
TURBO mode can be set when the appliance is in operation or energized.
In TURBO mode, you can set airflow direction or timer.

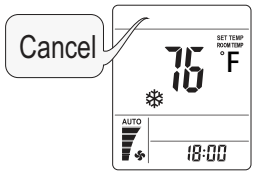


- **How to set TURBO mode?**

Press TURBO button at the cooling,fan only or dry mode.
Result : At high fan speed ,the set temperature automatically to 61˚F / 16 ˚C
Press TURBO button at the heating mode .
Result : At AUTO fan speed ,the set temperature automatically to 86˚F / 30 ˚C

- **How to cancel TURBO mode?**

Press TURBO , MODE, FAN, ON/OFF,SLEEP,TURBO or MUTE button.
Result : The display return to the original mode.
Escape from TURBO mode.



Operation instructions

46˚F / 8˚C HEAT Mode

8℃ HEAT mode

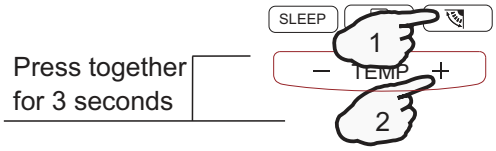
In HEATING mode, Press and TEMP + buttons together for 3 seconds to start 46˚F / 8˚C HEAT Mode

In 46 ℉ / 8 ℃ HEAT Mode, the fan speed is set at "AUTO" automatically. The icon will appear on the LCD.

If pressing any button, other than ON TIMER, OFF TIMER, DIMMER, IFEEL and SWING, 46˚F / 8˚C HEAT Mode function will be turned off. And the icon will disappear.

Note :

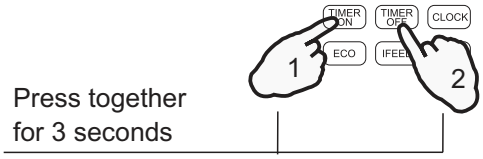
In 46˚F / 8˚C HEAT Mode, the default temperture is set 46˚F / 8˚C.
46˚F / 8˚C HEAT Mode can be set onlly when the air conditioner works in HEATING mode.
Only for models with 46˚F / 8˚C HEAT function.



LOCK function

LOCK function

- Press **TIME ON and TIME OFF** buttons together for 3 seconds to start **LOCK** function.
  The icon will appears on the the LCD
- Press **TIME ON and TIME OFF** buttons together for 3 seconds again to stop **LOCK** function.
  The icon will disappeared from the the LCD

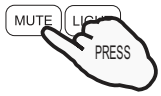


Operation instructions

MUTE mode

MUTE mode

In this mode, the air conditioner will work with low noise performance.
In this mode, you can start the SLEEP mode at the same time.



Note:
*** MUTE button is only available in COOLING, HEATING and FAN ONLY mode.**
*** Press MODE, FAN SPEED, SMART or SUPER button to cancel MUTE mode.**

ECO mode

ECO mode

In this mode, the air conditioner will bring you energy saving performance by lower running currency.

Note:
**** ECO button is ineffective in AUTO and TURBO mode.***
**** AUTO mode and TURBO button are not available in ECO mode.***
**** Press ON/OFF, MODE, TEMP±, FAN SPEED, SLEEP, QUIET or ECO button to cancel ECO mode.***

IFEEL function

IFEEL function

The temperature sensor built in remote controller is activated.It can sense its surrounding temperature, and transmit the signal back the unit,the unit can adjust the temperature so as to provide maximum comfort.

Note:

Advice to put the remote controller in the place where the indoor unit receive signal easily.
Advice to cancel the IFEEL mode so as to save energy when stopping the air conditioner.

CLEAN function

CLEAN function

▪ When the air conditioner is in standby, and the mode of remote controller is in Cooling or Dry, Press CLEAN button to start Clean mode, then the indicator " " will display on LCD. .

- **Clean mode is ineffective in TURBO mode.**
- **Press ON/OFF or MODE button can exit the Clean mode, then the indicator " " will disappear.**
- **After the clean process finish, the air conditioner will return to Cooling or Dry as preset, while the indicator" " on remote controller will display for about 10 mins.**

4-3. Special Function Instruction

Conditions of anti-freezing prohibition of frequency rising:

Condition 1: in the case of anti-freezing frequency decreasing, the temperature of indoor heat exchanger rises to “anti-freezing frequency decreasing temperature”.

Condition 2: in normal operation, the temperature of indoor heat exchanger reaches “anti-freezing prohibition of frequency rising temperature”.

Either of the above two conditions is met, the product will enter anti-freezing prohibition of frequency rising state.

Anti-freezing prohibition of frequency rising operation: the compressor is kept at the current frequency, which may decrease according to situations while cannot rise. The outdoor fan runs.

Condition for the end of anti-freezing prohibition of frequency rising state: when the temperature of indoor heat exchanger rises to “anti-freezing releasing temperature”, the state of anti-freezing prohibition of frequency rising is released.

Conditions for defrosting:

A: When the heating compressor consecutively runs for 40 minutes (EEPROM setting value at the current operating mode);

B:If the ambient temperature minus the temperature of coiled pipe is equal to or higher than six degrees centigrade (EEPROM setting value in the current operating mode);

C:If the temperature of coiled pipe is equal to or lower than minus two degrees centigrade (EEPROM setting value in the current operating mode);

If the above three conditions are met simultaneously, defrosting begins.

Defrosting actions:

The compressor stops, and the outdoor fan stops after delay of 30 seconds; in 50 seconds the four-way valve is power off; and in 10 seconds the compressor starts and runs at “defrosting frequency”.

Conditions for ending defrosting:

Defrosting is over if either of the below conditions is met.

A：The accumulated time of defrosting is longer than 12 minutes (EEPROM setting value in the current operating mode);

B：If the temperature of coiled pipe is equal to or higher than 14 degrees centigrade (EEPROM setting value in the current operating mode);

Actions of exiting the defrosting state:

The compressor stops, and 50 seconds later the four-way valve opens, and another 10 seconds later the compressor and outdoor fan restart and begin normal operation.

5. Electrical Characteristics

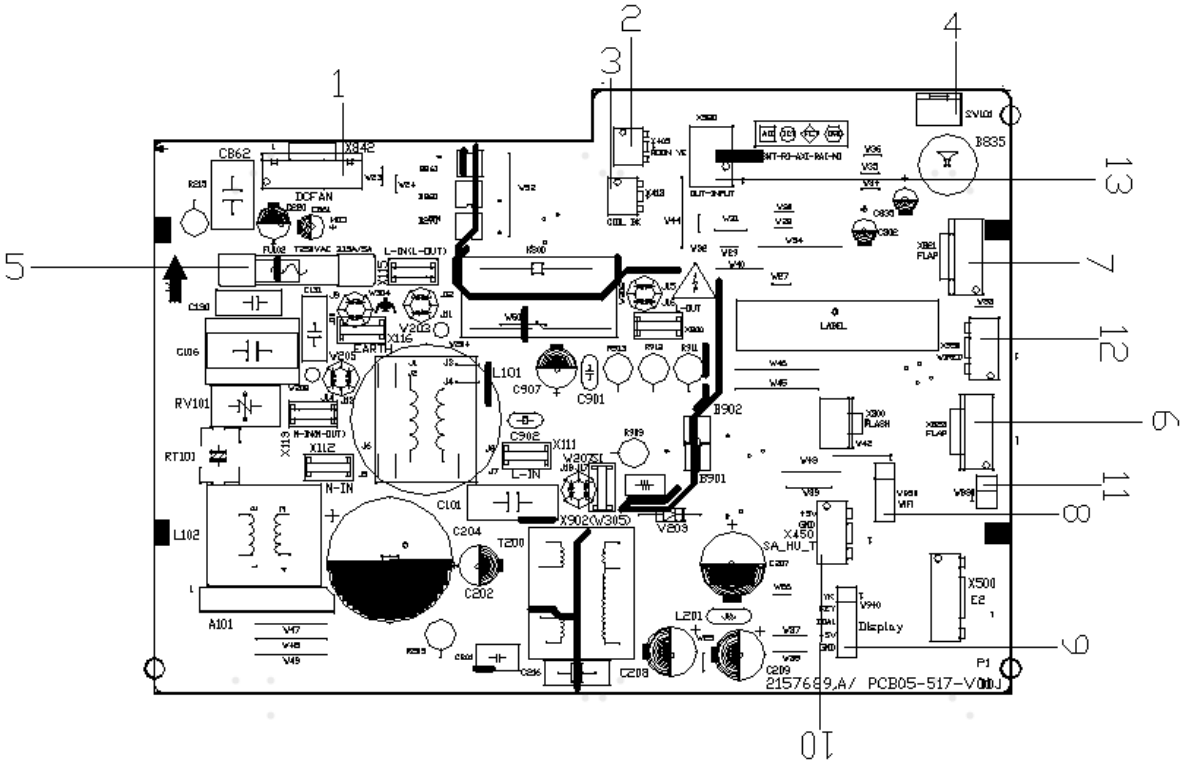
5-1. Print Circuit Board (Indoor & Outdoor)

IDU / ODU	Print Circuit Board of Indoor unit	Print Circuit Board of outdoor unit
UNI09HW23STG1 / URC09CN23STG1	2157689	2127255
UNI12HW23STG1 / URC12CN23STG1	2157689	2127255
UNI18HW23STG1 / URC18CN23STG1	2157689	2127255
UNI24HW23STG1 / URC24CN23STG1	2157689	2127255
URD09HW15STG1/ URC09CN15STG1	2110521	2391301
URD12HW15STG1 / URC12CN15STG1	2110521	2391301

Note:

1 These codes are not spare parts' cold, Please don't use these codes to order spare parts.

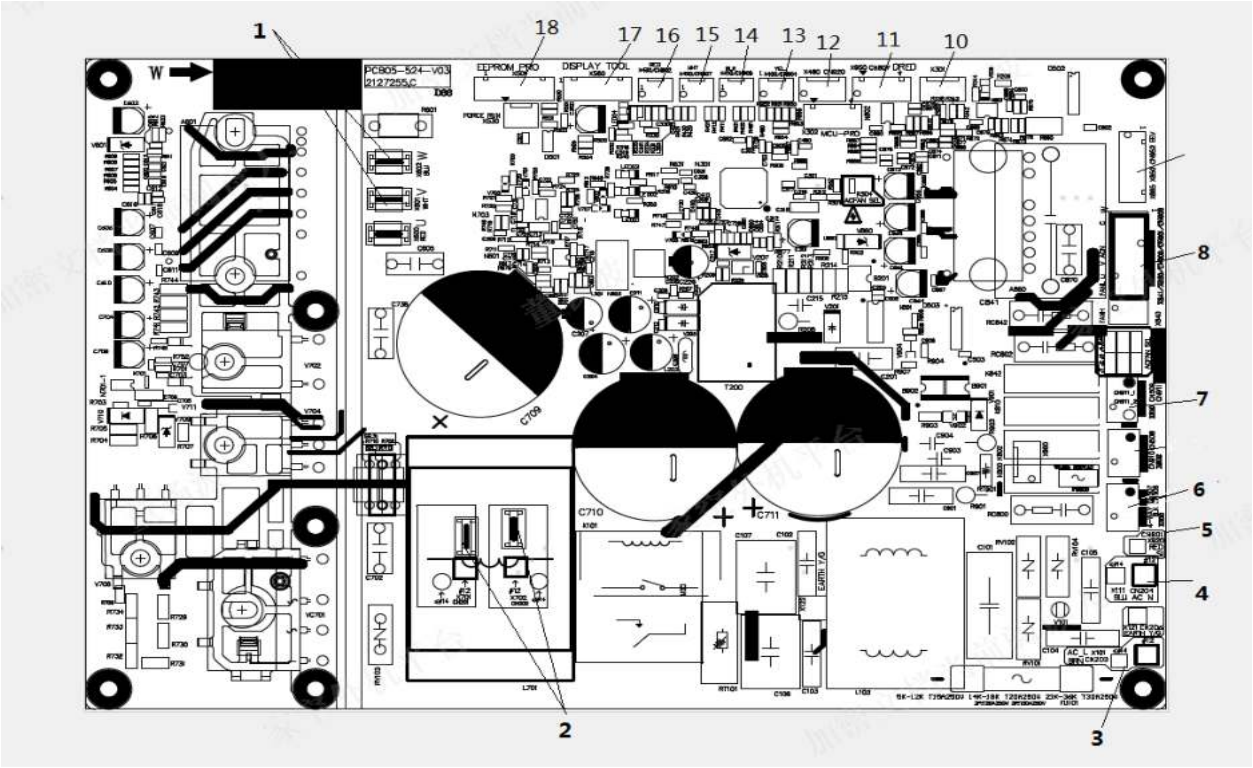
2157689



1	DC Fan ：interface of PG motor		8	Wifi Interface
2	ROOM：Room temperature Sensor		9	Display Interface
3	COIL： Pipe temperature Sensor		10	SA_HU_T：Temperature and Humidity Sensor
4	Switch Button		11	IFD
5	Protective tube		12	wired
6	Up & Down Swing		13	out-input
7	Left & Right Swing			

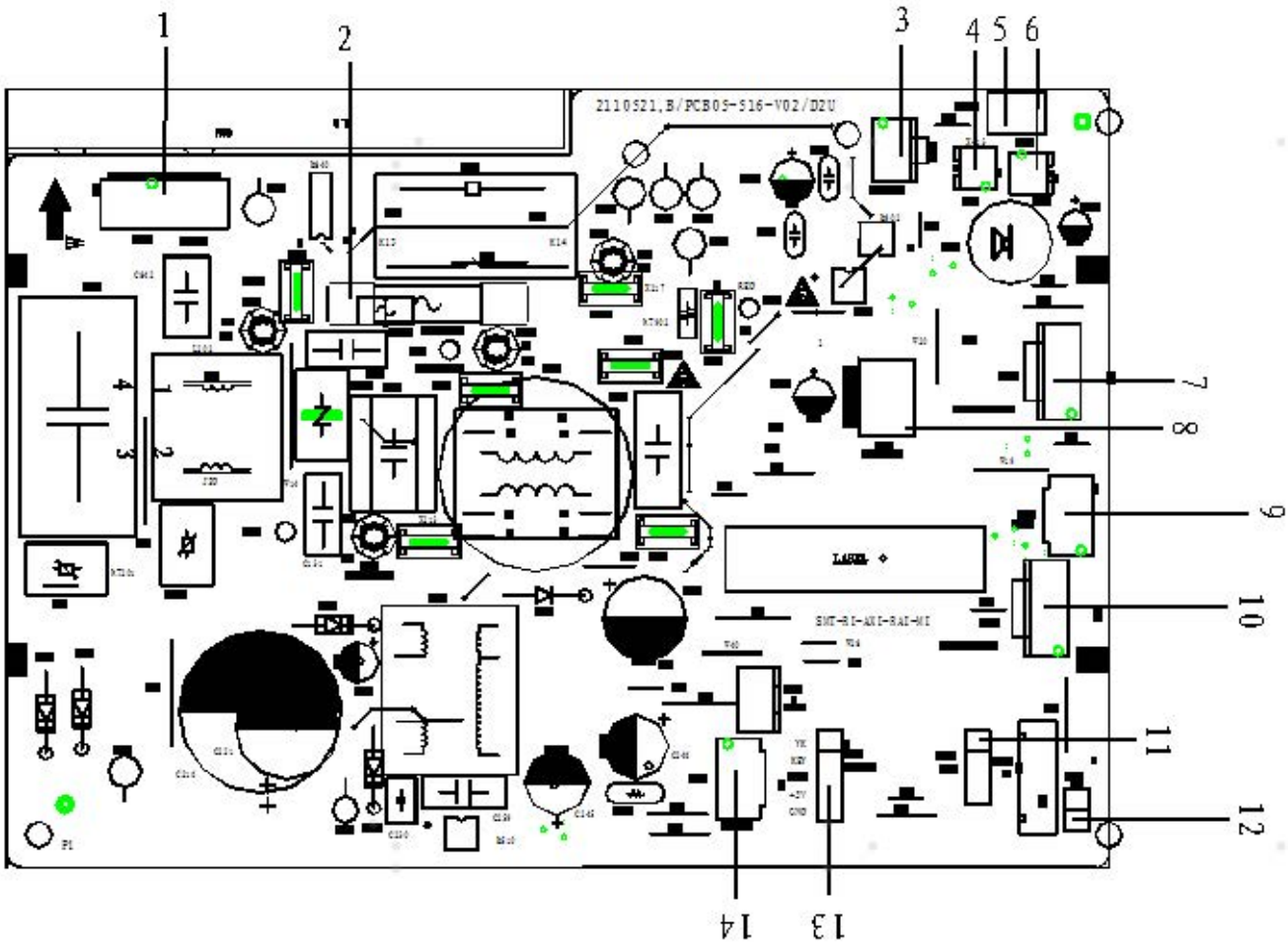
Model of outdoor：

2127255



1	Terminal of compressor U/V/W phase （RED/WHITE/BLUE）	6	4-way valve terminal(BLACK)	11	DRED function （OPTIONAL）	16	Terminal of compressor overload protector(RED)
2	Terminal of reactor wire （BROWN/ORANGE）	7	Heater terminal(RED)	12	Over pressure sensor （OPTIONAL）	17	Display tool terminal （WHITE）
3	Terminal of live wire, connect to the terminal panel "L"	8	Terminal of DC/AC fan （RED/WHITE）	13	Outdoor ambient temperature sensor(YELLOW)	18	EEPROM program （WHITE）
4	Terminal of naught wire, connect to the terminal panel "N)"	9	Terminal of electronic expansion valve （WHITE）	14	Outdoor pipe temperature sensor(BLACK)		
5	Terminal of signal wire, connect to the terminal panel "SI"	10	Selector switch （OPTIONAL）	15	Compressor discharge temperature sensor（WHITE）		

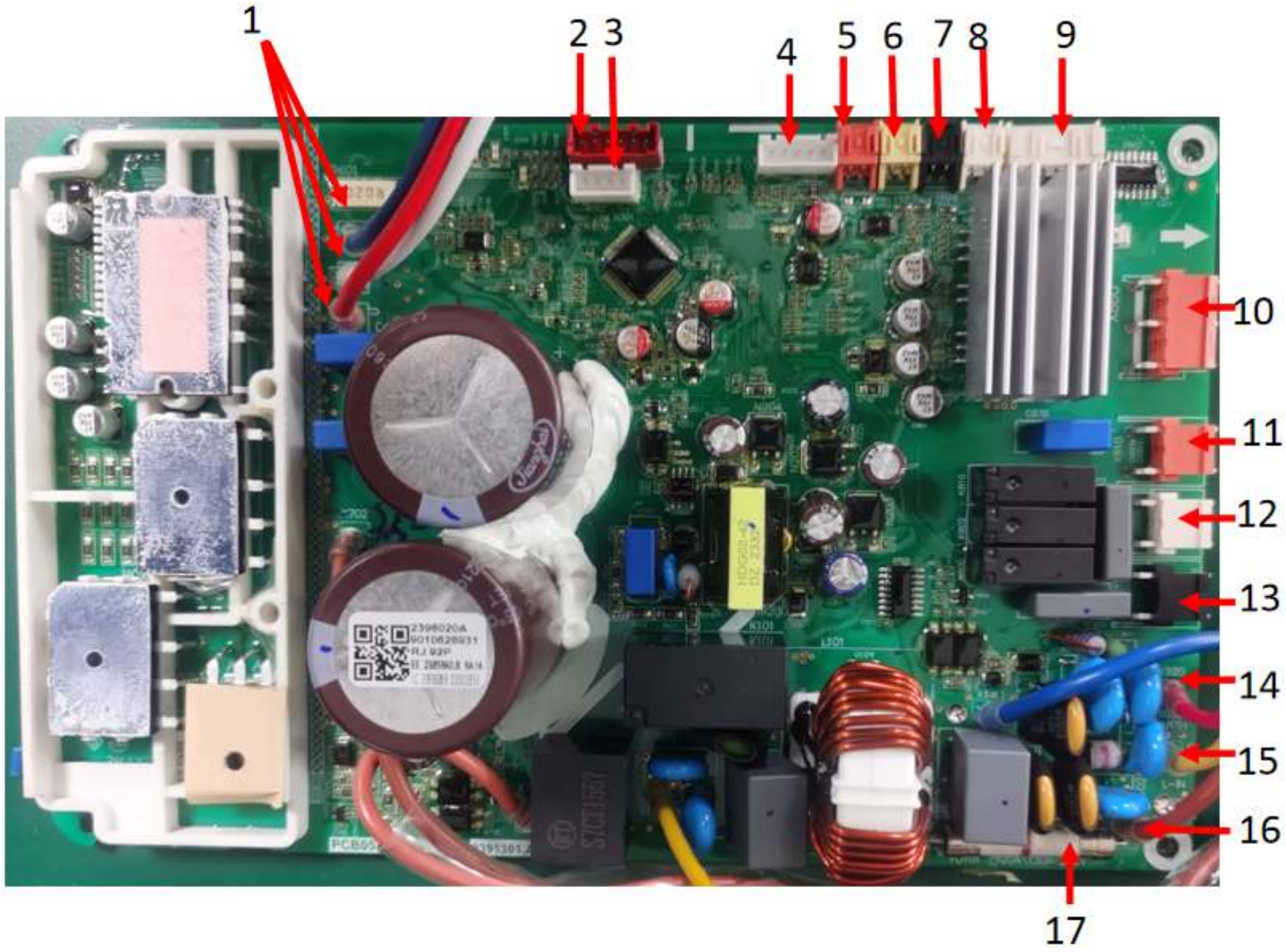
2110521



1	Interface of PG motor(WHITE)		8	Out input interface
2	Protective tube		9	Wiring control interface(WHITE)
3	Feedback from PG motor(WHITE)		10	Up&down swing
4	Pipe temperature sensor		11	Wifi interface
5	Switch button		12	lfd control interface
6	Room temperature sensor		13	Display interface
7	Left&right swing		14	Humidity detection interface

Model of outdoor：

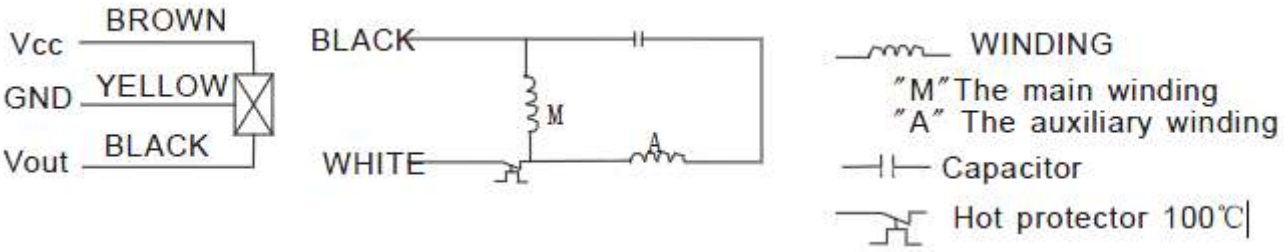
2391301

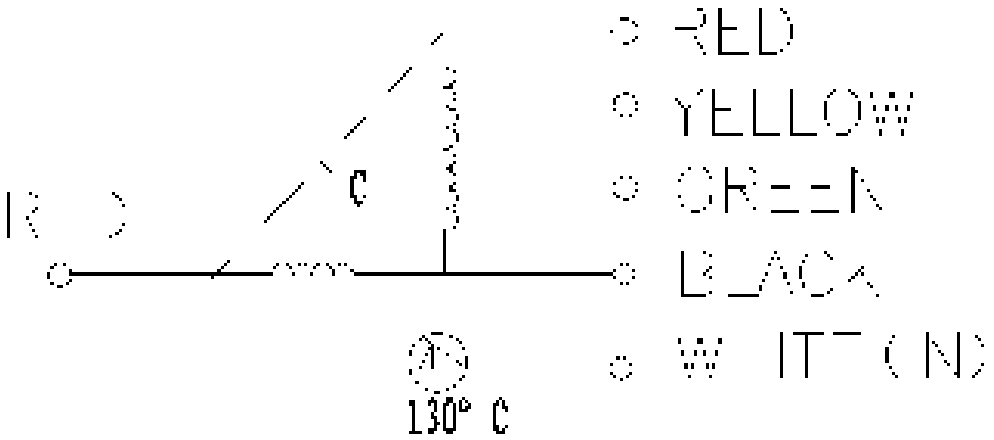


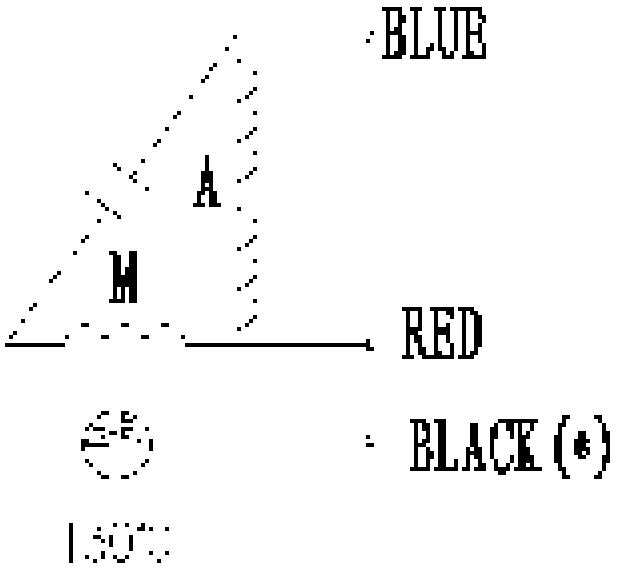
1	Compressor		10	DC-Fan
2	EE		11	4-WAY valve
3	Program writing		12	Electric heater
4	Tooling		13	Compressor heater
5	Compressor shell temperature		14	Signal
6	Outdoor Temperature		15	Earth
7	Coil temperature		16	L-IN
8	Discharge temperature		17	FUSE
9	Electronic expansion value			

5-2. Fan Motor

Drawings attached:







Test in resistance.

TOOL: Multimeter.

Test the resistance of the main winding. The indoor fan motor is fault if the resistance of main winding 0(short circuit)or∞（open circuit）.

Test in voltage

TOOL: Multimeter.

Insert screwdriver into to rotate indoor fan motor slowly for 1 revolution or over, and measure voltage “YELLOW” and “GND” on motor. The voltage repeat 0V DC and 5V DC.

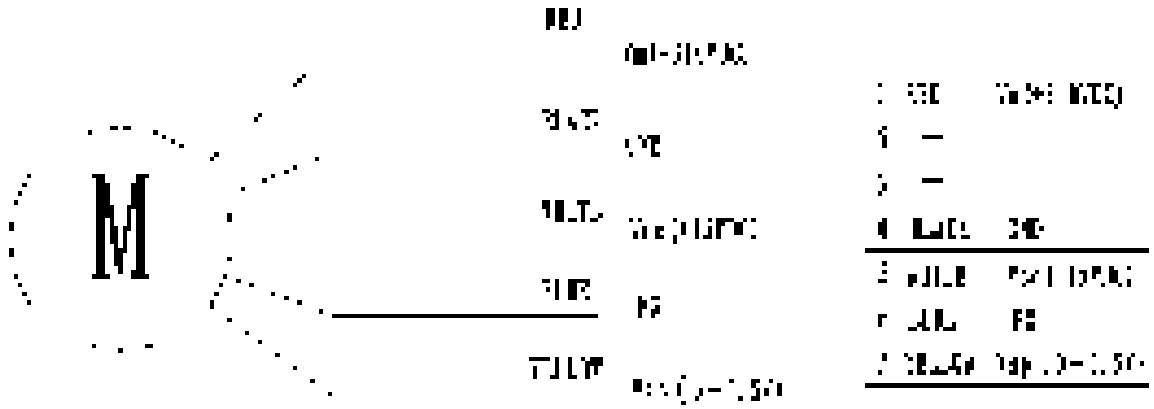
Notes:

1) Please don’t hold motor by lead wires.

2) Please don’t plug IN/OUT the motor connecter while power ON.

3)Please don’t drop hurl or dump motor against hard material. Malfunction may not be observed at early stage after such shock. But it may be found later, this type of mishandling void our warranty.

Indoor DC Fan Motor



Outdoor DC Fan Motor

5-3. Temperature Sensor

Parameter table attached:

1. THE PARAMETER OF THE INDOOR COIL AND INDOOR ROOM SENSOR ,THE PARAMETER OF THE OUTDOOR COIL AND OUTDOOR ENVIRONMENT SENSOR:

（R(0)=15k B(0/100)=3450）

Temperature(℃)	Resistance(k)	Voltage(V)		Temperature(℃)	Resistance(k)	Voltage(V)
-20	38.757	0.58143512		31	4.292	2.715076661
-19	36.844	0.60795346		32	4.137	2.76063657
-18	35.038	0.63530819		33	3.989	2.805589174
-17	33.331	0.66352684		34	3.847	2.850117358
-16	31.719	0.69257720		35	3.711	2.894109636
-15	30.196	0.72246147		36	3.58	2.937788018
-14	28.755	0.75321223		37	3.455	2.980713033
-13	27.392	0.78480857		38	3.335	3.023117961
-12	26.103	0.81722911		39	3.219	3.065272268
-11	24.882	0.85051031		40	3.108	3.106725146
-10	23.727	0.88458737		41	3.001	3.147759536
-9	22.632	0.91951536		42	2.899	3.187898487
-8	21.594	0.95527085		43	2.801	3.227439565
-7	20.611	0.99179340		44	2.706	3.266717909
-6	19.678	1.02913875		45	2.615	3.305249514
-5	18.794	1.06721353		46	2.528	3.342947037
-4	17.954	1.10609872		47	2.444	3.380169671
-3	17.158	1.14565549		48	2.363	3.416856492
-2	16.401	1.18599135		49	2.286	3.45247766
-1	15.683	1.22696435		50	2.211	3.487894953
0	15	1.26865672		51	2.139	3.522585993
1	14.351	1.31098658		52	2.07	3.556485356
2	13.734	1.35393437		53	2.003	3.590032381
3	13.148	1.39741342		54	1.939	3.622673675
4	12.589	1.44157386		55	1.877	3.654865988
5	12.058	1.48618720		56	1.818	3.686036427
6	11.553	1.53125563		57	1.76	3.717201166
7	11.071	1.57689691		58	1.705	3.747244673
8	10.613	1.62286005		59	1.652	3.776658768
9	10.176	1.66928515		60	1.6	3.805970149
10	9.76	1.71601615		61	1.551	3.834009923
11	9.363	1.76311968		62	1.503	3.861880963
12	8.985	1.81043663		63	1.457	3.888973616
13	8.624	1.85805887		64	1.413	3.91524643
14	8.279	1.90597205		65	1.37	3.941267388
15	7.951	1.95387327		66	1.328	3.967019291
16	7.637	2.00204130		67	1.289	3.991234935
17	7.337	2.05033368		68	1.25	4.015748031

18	7.051	2.09859271		69	1.213	4.039284017
19	6.778	2.14682606		70	1.177	4.062450215
20	6.516	2.19524793		71	1.142	4.085229093
21	6.267	2.24333597		72	1.109	4.106941536
22	6.028	2.29151689		73	1.076	4.12888601
23	5.8	2.33944954		74	1.045	4.149715216
24	5.581	2.38741691		75	1.015	4.17007359
25	5.372	2.43506494		76	0.986	4.189944134
26	5.172	2.48247664		77	0.957	4.210004953
27	4.981	2.52951096		78	0.93	4.228855721
28	4.797	2.57653834		79	0.904	4.247168554
29	4.622	2.62291710		80	0.878	4.265640683
30	4.453	2.66931854				
Note: the AD value in the table is calculated on the basis of the pull-down resistor is 5.1K.						

2. THE PARAMETER OF OUTDOOR COMPRESSOR TEMPERATURE SENSOR：

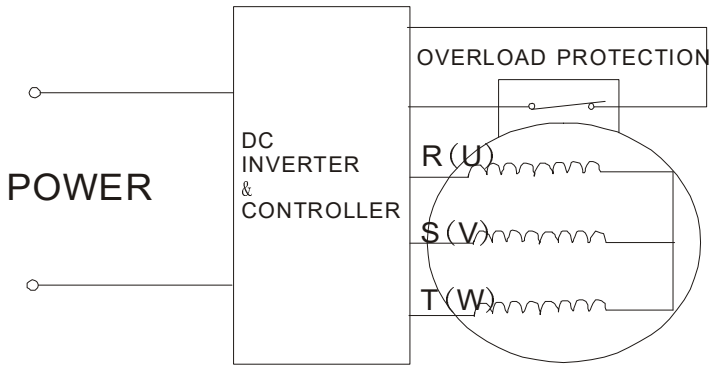
R(0)=187.25k B(0100)=3979)						
Temperature (℃)	Resistance(k)	Voltage(V)		Temperature (℃)	Resistance (k)	Voltage(V)
-20	542.867	0.06185563		51	19.907	1.273074475
-19	512.839	0.06543004		52	19.148	1.310312934
-18	484.672	0.06917993		53	18.422	1.348029498
-17	458.239	0.07311215		54	17.728	1.386170907
-16	433.423	0.07723358		55	17.065	1.424680494
-15	410.115	0.08155140		56	16.43	1.463624623
-14	388.213	0.08607312		57	15.822	1.502961719
-13	367.625	0.09080590		58	15.241	1.542579738
-12	348.264	0.09575738		59	14.684	1.582573078
-11	330.048	0.10093573		60	14.151	1.622834232
-10	312.904	0.10634837		61	13.64	1.663405088
-9	296.761	0.11200385		62	13.151	1.704175229
-8	281.556	0.11790981		63	12.682	1.745200698
-7	267.227	0.12407536		64	12.233	1.78637104
-6	253.72	0.13050821		65	11.802	1.827760456
-5	240.982	0.13721739		66	11.388	1.869364416
-4	228.965	0.14421140		67	10.992	1.910971223
-3	217.624	0.15149895		68	10.611	1.952788467
-2	206.917	0.15908889		69	10.246	1.994602839
-1	196.805	0.16699001		70	9.896	2.036415908
0	187.25	0.17521257		71	9.559	2.078366648
1	177.957	0.18402550		72	9.236	2.120229484
2	169.186	0.19319719		73	8.925	2.162162162
3	160.903	0.20273937		74	8.627	2.203928178
4	153.179	0.21252789		75	8.341	2.245558418
5	145.685	0.22297275		76	8.065	2.287251934
6	138.696	0.23368340		77	7.8	2.328767123

7	132.086	0.24480509		78	7.546	2.369998606
8	125.833	0.25634646		79	7.301	2.411176512
9	119.916	0.26831655		80	7.065	2.452217815
10	114.315	0.28072493		81	6.843	2.492120501
11	109.01	0.29358432		82	6.624	2.532777116
12	103.984	0.30690352		83	6.414	2.573028606
13	99.222	0.32068816		84	6.212	2.612972641
14	94.708	0.33494897		85	6.017	2.652726847
15	90.427	0.34969710		86	5.829	2.692216328
16	86.366	0.36494000		87	5.648	2.731362468
17	82.512	0.38068793		88	5.474	2.770083102
18	78.854	0.39694585		89	5.306	2.808524698
19	75.381	0.41372093		90	5.144	2.846617549
20	72.082	0.43102355		91	4.988	2.884289108
21	68.948	0.44885674		92	4.837	2.921715219
22	65.968	0.46723835		93	4.692	2.958579882
23	63.136	0.48615877		94	4.552	2.995066949
24	60.443	0.50562884		95	4.417	3.031113488
25	57.88	0.52566481		96	4.286	3.066931265
26	55.367	0.54691396		97	4.161	3.10190676
27	52.978	0.56877112		98	4.039	3.13682074
28	50.707	0.59123237		99	3.922	3.171050177
29	48.547	0.61430611		100	3.776	3.214826021
30	46.492	0.63799445		101	3.703	3.237170332
31	44.537	0.66229036		102	3.602	3.268602192
32	42.676	0.68720188		103	3.501	3.300650422
33	40.904	0.71272849		104	3.409	3.33039475
34	39.217	0.73885738		105	3.317	3.360680043
35	37.609	0.76561057		106	3.228	3.390506582
36	36.077	0.79296593		107	3.141	3.420179056
37	34.616	0.82093877		108	3.058	3.448975451
38	33.224	0.84949031		109	2.977	3.477549351
39	31.895	0.87866649		110	2.899	3.505516033
40	30.628	0.90841082		111	2.823	3.533201704
41	29.419	0.93873381		112	2.749	3.56058226
42	28.264	0.96965549		113	2.678	3.587254695
43	27.162	1.00111890		114	2.609	3.613561484
44	26.109	1.03315203		115	2.542	3.639477628
45	25.103	1.06573050		116	2.477	3.664977902
46	24.142	1.09883007		117	2.414	3.6900369
47	23.223	1.13246511		118	2.353	3.714629083
48	22.345	1.16658089		119	2.294	3.738728832
49	21.505	1.20120120		120	2.237	3.762310501
50	20.701	1.23631868				

Note: the AD value in the table is calculated on the basis of the pull-down resistor is 6.8K.

5-4. Compressor

Drawings attached:



Test in resistance.

TOOL: Multimeter.

Test the resistance of the winding. The compressor is fault if the resistance of winding 0(short circuit)or∞（open circuit）

Familiar trouble: 1)Compressor motor lock. 2）Discharge pressure value approaches static pressure value .3)Compressor motor winding abnormality.

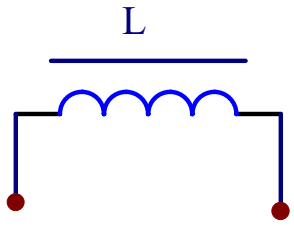
Notes：1）Don’t put a compressor on its side or turn over.

2) Please assembly the compressor in your air conditioner rapidly after removing the plugs. Don’t place the comp. In air for along time.

3) Avoiding compressor running in reverse caused by connecting electrical wire incorrectly.

4) Warning! In case AC voltage is impressed to compressor, the compressor performance will be lower because of its rotor magnetic force decreasing.

5-5. Electric Reactor Drawings attached:



Familiar error:

1）Sound abnormality

2）Insulation resistance disqualification.