Service Manual

MODEL:A16CM4H4R18
A16CM4H4R24
A16CM4H4R30
(Refrigerant R410A)

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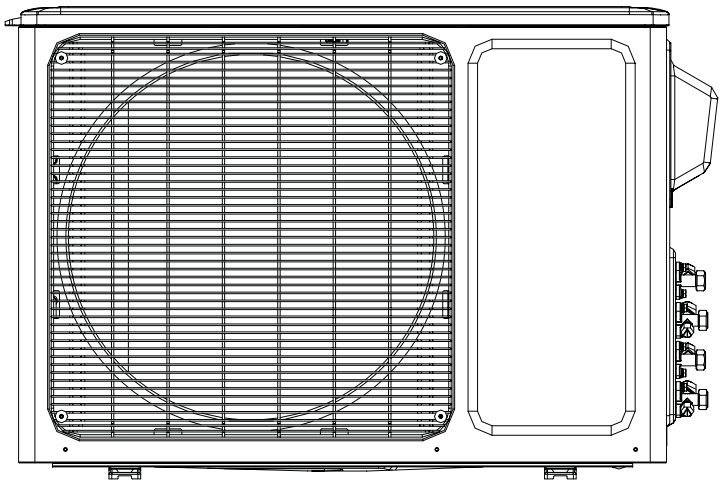
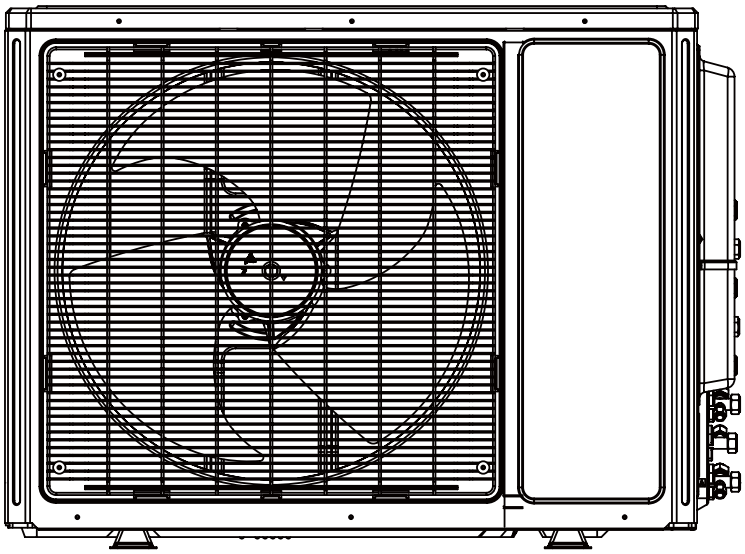
Summary and Features

Outdoor Unit

A16CM4H4R18



A16CM4H4R24
A16CM4H4R30



1. Safety Precautions

Installing, starting up, and servicing air conditioner can be hazardous due to system pressure, electrical components, and equipment location, etc.

Only trained, qualified installers and service personnel are allowed to install, start-up, and service this equipment. Untrained personnel can perform basic maintenance functions such as cleaning coils. All other operations should be performed by trained service personnel.

When handling the equipment, observe precautions in the manual and on tags, stickers, and labels attached to the equipment. Follow all safety codes. Wear safety glasses andwork gloves. Keep quenching cloth and fire extinguisher nearby when brazing.

Read the instructions thoroughly and follow all warnings or cautions in literature and attached to the unit. Consult local building codes and current editions of national as well as local electrical codes.

Recognize the following safety information:

⚠ Warning	Incorrect handling could result in personal injury or death.
⚠ Caution	Incorrect handling may result in minor injury,or damage to product or property.

⚠ Warning

All electric work must be performed by a licensed technician according to local regulations and the instructions given in this manual.

- Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.
- Never supply power to the unit unless all wiring and tubing are completed, reconnected and checked.
- This system adopts highly dangerous electrical voltage. Incorrect connection or inadequate grounding can cause personal injury or death. Stick to the wiring diagram and all the instructions when wiring.
- Have the unit adequately grounded in accordance with local electrical codes.
- Have all wiring connected tightly. Loose connection may lead to overheating and a possible fire hazard.

All installation or repair work shall be performed by your dealer or a specialized subcontractor as there is the risk of fire, electric shock, explosion or injury.

- Make sure the outdoor unit is installed on a stable, level surface with no accumulation of snow, leaves, or trash beside.
- Make sure the ceiling/wall is strong enough to bear the weight of the unit.
- Make sure the noise of the outdoor unit does not disturb neighbors.
- Follow all the installation instructions to minimize the risk of damage from earthquakes, typhoons or strong winds.
- Avoid contact between refrigerant and fire as it generates poisonous gas.
- Apply specified refrigerant only. Never have it mixed with any other refrigerant. Never have air remain in the refrigerant line as it may lead to rupture and other hazards.
- Make sure no refrigerant gas is leaking out when installation is completed.
- Should there be refrigerant leakage, the density of refrigerant in the air shall in no way exceed its limited value, or it may lead to explosion.
- Keep your fingers and clothing away from any moving parts.
- Clear the site after installation. Make sure no foreign objects are left in the unit.
- Always ensure effective grounding for the unit.

⚠ Caution

- Never install the unit in a place where a combustible gas might leak, or it may lead to fire or explosion.
- Make a proper provision against noise when the unit is installed at a telecommunication center or hospital.
- Provide an electric leak breaker when it is installed in a watery place.
- Never wash the unit with water.
- Handle unit transportation with care. The unit should not be carried by only one person if it is more than 20kg.
- Never touch the heat exchanger fins with bare hands.
- Never touch the compressor or refrigerant piping without wearing glove.
- Do not have the unit operate without air filter.
- Should any emergency occur, stop the unit and disconnect the power immediately.
- Properly insulate any tubing running inside the room to prevent the water from damaging the wall.

2. Specifications

Parameter		Unit	Value
Model			A16CM4H4R18
Product Code			CB228W01600
Power Supply	Rated Voltage	V ～	208/230
	Rated Frequency	Hz	60
	Phases		1
Power Supply Mode			Outdoor
Cooling Capacity (Min ～ Max)		Btu/h	18000(7000~21000)
Heating Capacity (Min ～ Max)		Btu/h	19000(8530~22600)
Cooling Power Input (Min ～ Max)		W	1650(680~2800)
Heating Power Input (Min ～ Max)		W	1640(680~2800)
SEER		Btu/w.h	16
HSPF		Btu/w.h	8.5

Outdoor Unit	Compressor Manufacturer/Trademark		MITSUBISHI ELECTRIC (GUANGZHOU)COMPRESSOR CO. LTD
	Compressor Model		SNB130FGYMC
	Compressor Oil		PVE/FV50S
	Compressor Type		Rotary
	L.R.A.	A	27
	Compressor RLA	A	8.4
	Compressor Power Input	W	1245
	Overload Protector		1NT11L-6578
	Throttling Method		Electron expansion valve
	Operation temp	ºC	16~30
	Ambient temp (cooling)	ºC	-5~48
	Ambient temp (heating)	ºC	-15~27
	Condenser Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7.94
	Rows-fin Gap	mm	2-1.4
	Coil Length (LXDXW)	mm	770X38X550
	Fan Motor Speed	rpm	830/670/500
	Output of Fan Motor	W	60
	Fan Motor RLA	A	0.54
	Fan Motor Capacitor	μF	3.5
	Air Flow Volume of Outdoor Unit	m^3/h	2600/2300/1600
	Fan Type		Axial-flow
	Fan Diameter	mm	Φ445
	Defrosting Method		Automatic Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5
	Sound Pressure Level (H/M/L)	dB (A)	56/-/-
	Sound Power Level (H/M/L)	dB (A)	66/-/-
	Dimension (WXHXD)	mm	899X596X378
	Dimension of Carton Box (L/W/H)	mm	945X417X630
	Dimension of Package (L/W/H)	mm	948X420X645
	Net Weight	kg	43
	Gross Weight	kg	48
	Refrigerant		R410A
	Refrigerant Charge	kg	1.35
Connection Pipe	Length	m	7.5
	Gas Additional Charge	g/m	20
	Outer Diameter Liquid Pipe	mm	Φ6
	Outer Diameter Gas Pipe	mm	Φ9.52
	Max Distance Height	m	5
	Max Distance Length	m	20

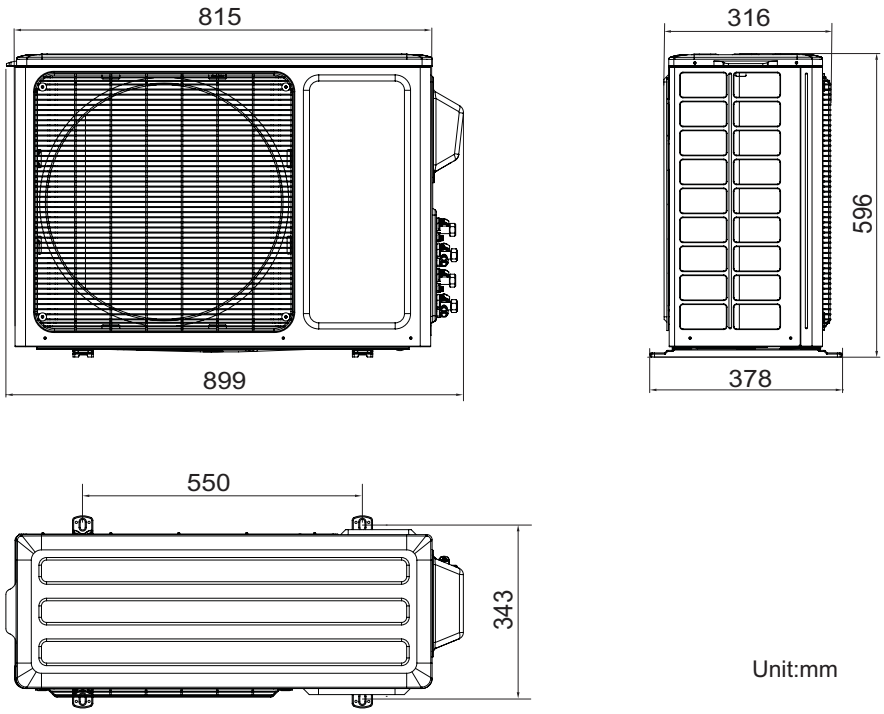
Parameter		Unit	Value	
Model			A16CM4H4R24	A16CM4H4R30
Product Code			CB228W01700	CB228W01800
Power Supply	Rated Voltage	V ～	208/230	208/230
	Rated Frequency	Hz	60	60
	Phases		1	1
Power Supply Mode			Outdoor	Outdoor
Cooling Capacity (Min ～ Max)		Btu/h	26000(7500~33000)	29000(7500~34000)
Heating Capacity (Min ～ Max)		Btu/h	29000(7500~35000)	30500(7500~36000)
Cooling Power Input (Min ～ Max)		W	3050(650~4500)	3450(650~4500)
Heating Power Input (Min ～ Max)		W	2800(980~3950)	2850(980~3950)
Cooling Power Current		A	18.67/18.29	18.76/18.21
Heating Power Current		A	18.12/17.71	18.35/17.91
Rated Input		W	4500	4500
Rated Current		A	20.87	20.87
SEER		Btu/w.h	16	16
HSPF		Btu/w.h	8.5	8.5

Outdoor Unit	Compressor Manufacturer/Trademark		MITSUBISHI ELECTRIC (GUANGZHOU)COMPRESSOR CO. LTD	MITSUBISHI ELECTRIC (GUANGZHOU) COMPRESSOR CO. LTD
	Compressor Model		TNB220FLHMC	TNB220FLHMC
	Compressor Oil		PVE/FV50S	PVE/FV50S
	Compressor Type		Rotary	Rotary
	L.R.A.	A	45	45
	Compressor RLA	A	9.7	9.7
	Compressor Power Input	W	2200	2200
	Overload Protector		CS-7C-1595	CS-7C-1595
	Throttling Method		Electron expansion valve	Electron expansion valve
	Operation temp	ºC	16 ～ 30	16 ～ 30
	Ambient temp (cooling)	ºC	-5 ～ 48	-5 ～ 48
	Ambient temp (heating)	ºC	-15 ～ 27	-15 ～ 27
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ9.52	Φ9.52
	Rows-fin Gap	mm	2-1.4	2-1.4
	Coil Length (LXDXW)	mm	890X44X660	890X44X660
	Fan Motor Speed	rpm	690/600/500	690/600/500
	Output of Fan Motor	W	60	60
	Fan Motor RLA	A	0.59	0.59
	Fan Motor Capacitor	μF	3.5	3.5
	Air Flow Volume of Outdoor Unit	m^3/h	3300/2900/2400	3300/2900/2400
	Fan Type		Axial-flow	Axial-flow
	Fan Diameter	mm	Φ520	Φ520
	Defrosting Method		Automatic Defrosting	Automatic Defrosting
	Climate Type		T1	T1
	Isolation		I	I
	Moisture Protection		IP24	IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5	2.5
	Dimension (WXHXD)	mm	946X700X396	946X700X396
	Dimension of Carton Box (L/W/H)	mm	1029X458X750	1029X458X750
	Dimension of Package (L/W/H)	mm	1032X461X765	1032X461X765
	Net Weight	kg	61	62
	Gross Weight	kg	66	67
	Refrigerant		R410A	R410A
	Refrigerant Charge	kg	2.2	2.2
Connection Pipe	Length	m	7.5	7.5
	Gas Additional Charge	g/m	20	20
	Outer Diameter Liquid Pipe	mm	Φ6	Φ6
	Outer Diameter Gas Pipe	mm	Φ9.52	Φ9.52
	Max Distance Height	m	10	10
	Max Distance Length	m	70	70

The above data is subject to change without notice. Please refer to the nameplate of the unit.

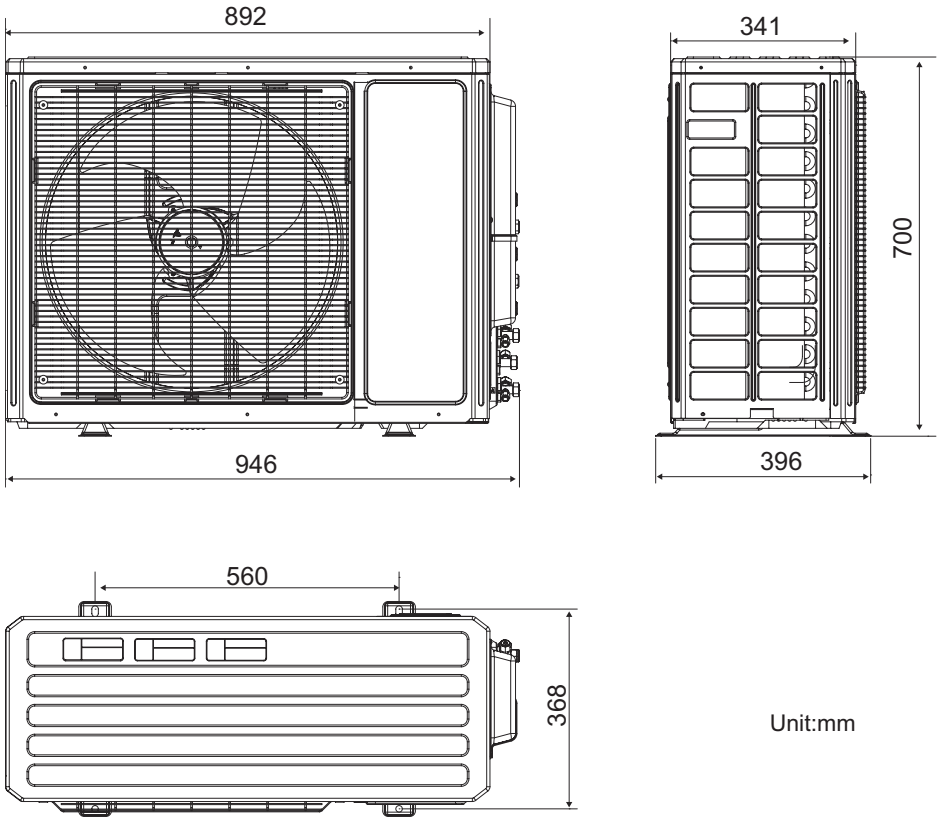
3. Construction Views

(1)A16CM4H4R18



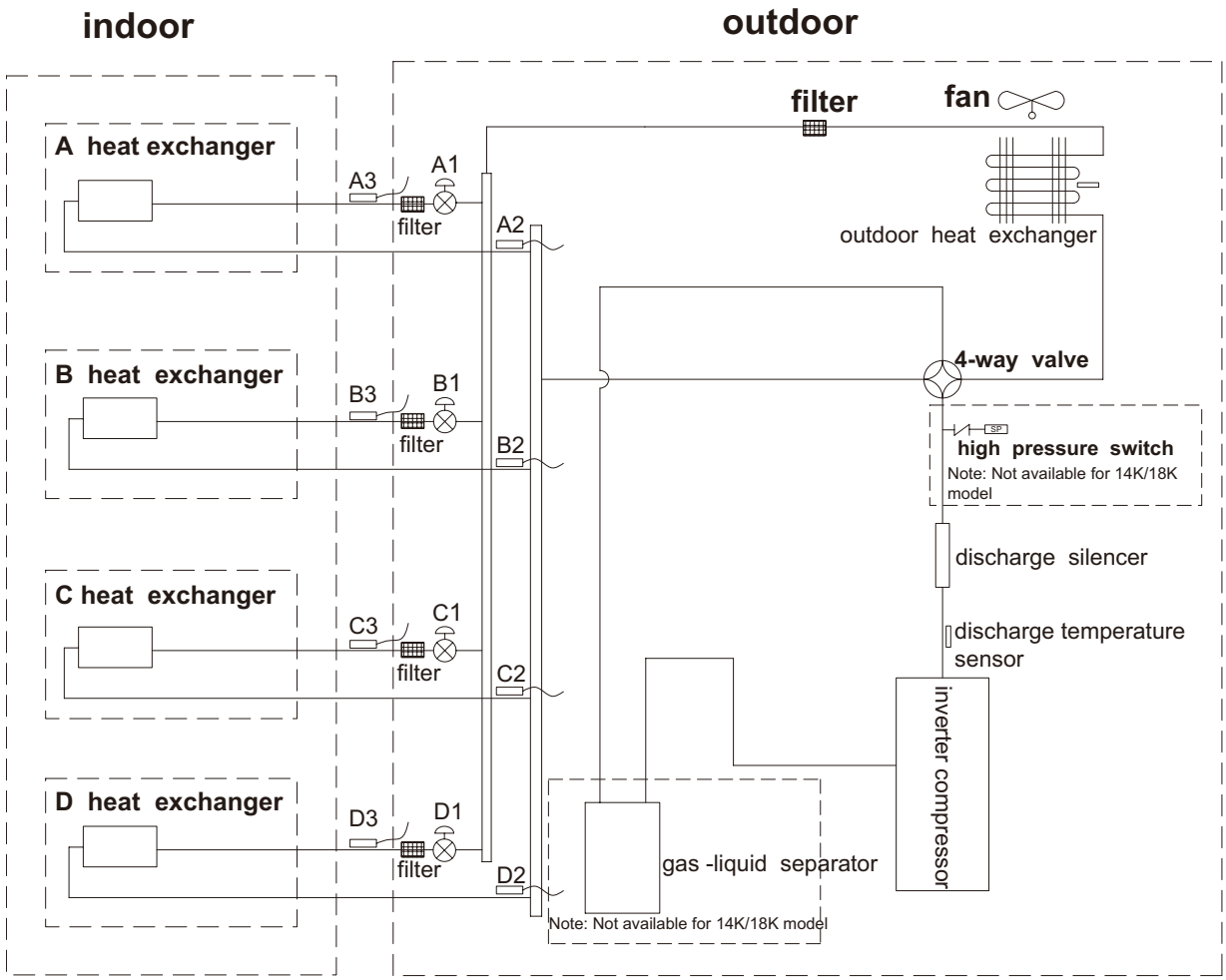
Unit:mm

(2)A16CM4H4R24 A16CM4H4R30



Unit:mm

4. Refrigerant System Diagram



A1:A-unit electronic expansion valve B1:B-unit electronic expansion valve
C1:C-unit electronic expansion valve D1:D-unit electronic expansion valve
A2:A-unit gas pipe temperature sensor B2:B-unit gas pipe temperature sensor
C2:C-unit gas pipe temperature sensor D2:D-unit gas pipe temperature sensor
A3:A-unit liquid pipe temperature sensor B3:B-unit liquid pipe temperature sensor
C3:C-unit liquid pipe temperature sensor D3:D-unit liquid pipe temperature sensor

5. Schematic Diagram

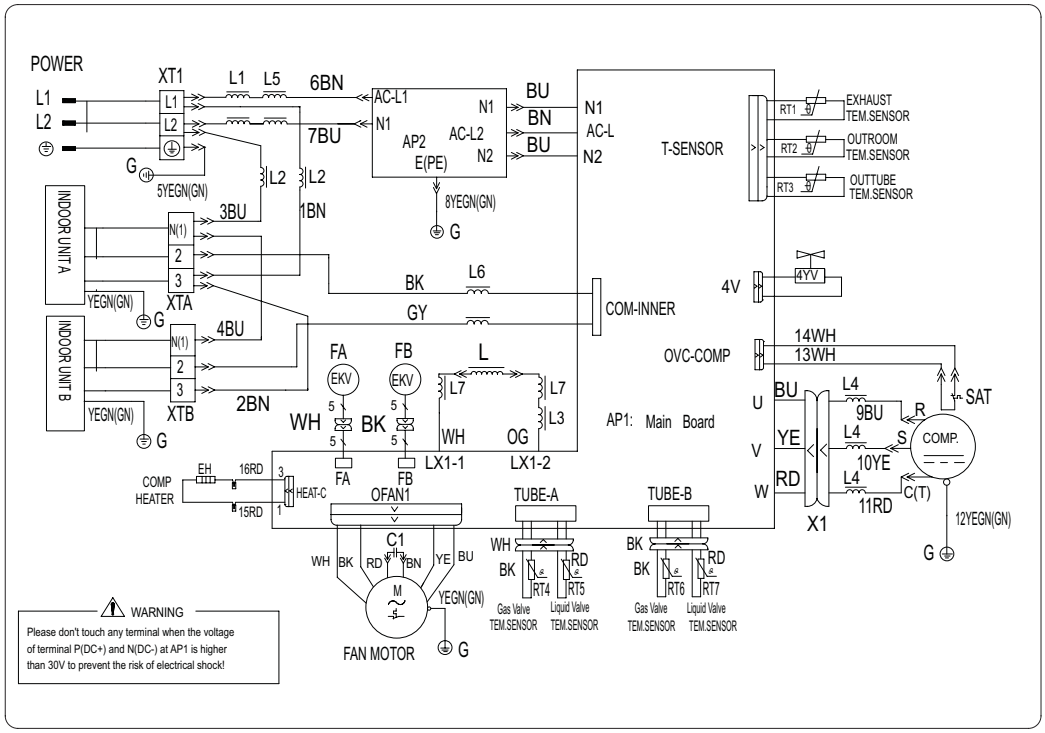
5.1 Electrical Data

Meaning of marks

Symbol	Color symbol	Symbol	Color symbol	Symbol	Parts name
WH	WHITE	**GN**	GREEN	**SAT**	OVERLOAD
YE	YELLOW	**BN**	BROWN	**COMP**	COMPRESSOR
RD	RED	**BU**	BLUE	⏚	PROTECTIVE EARTH
YEGN	YELLOW GREEN	**BK**	BLACK	/	/
VT	VIOLET	**OG**	ORANGE	/	/

5.2 Electrical Wiring

(1)A16CM4H4R18



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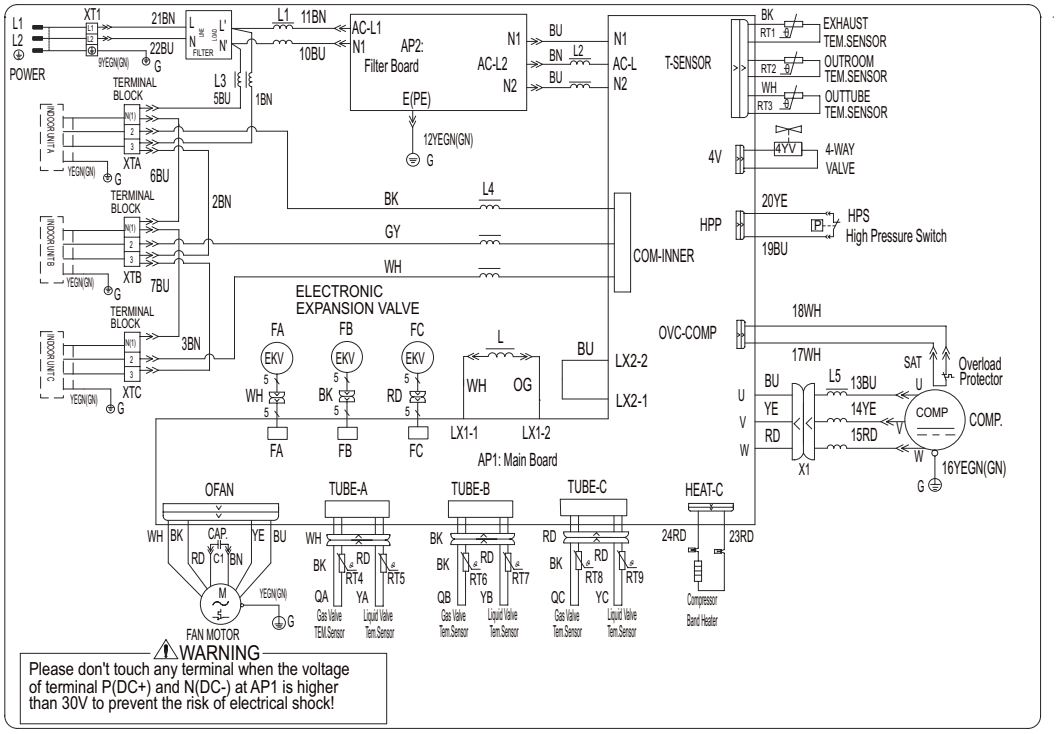

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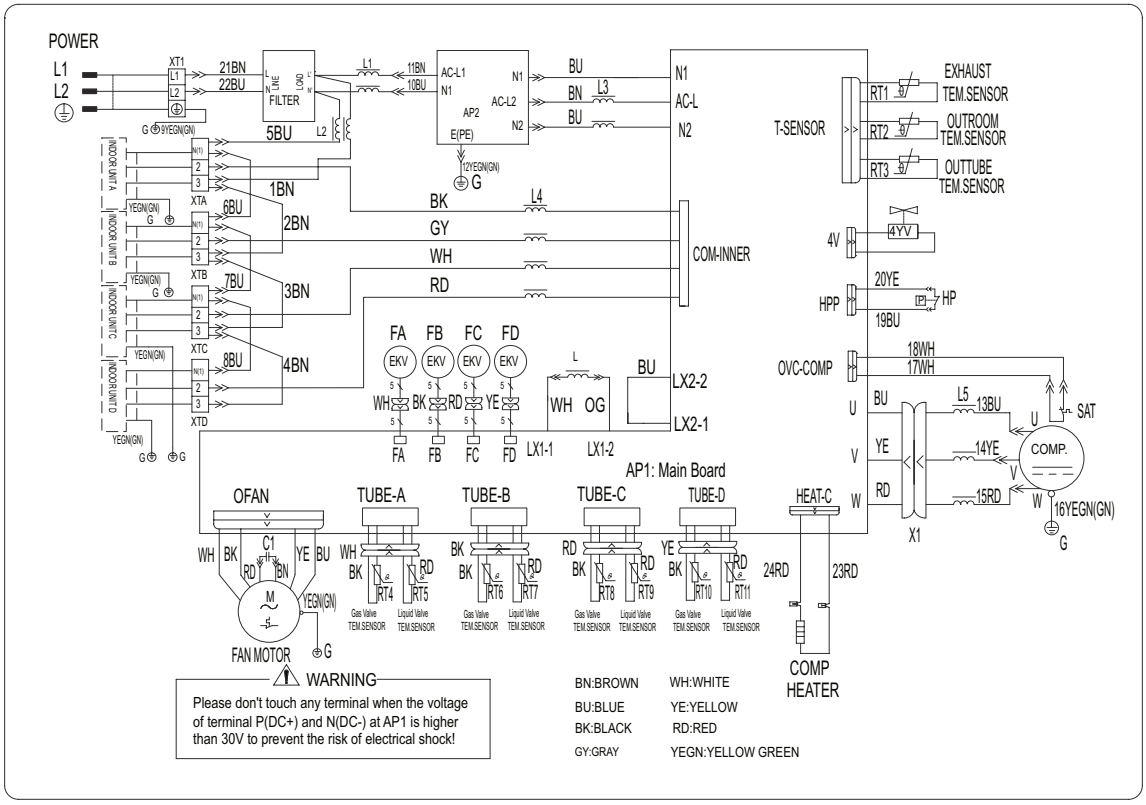
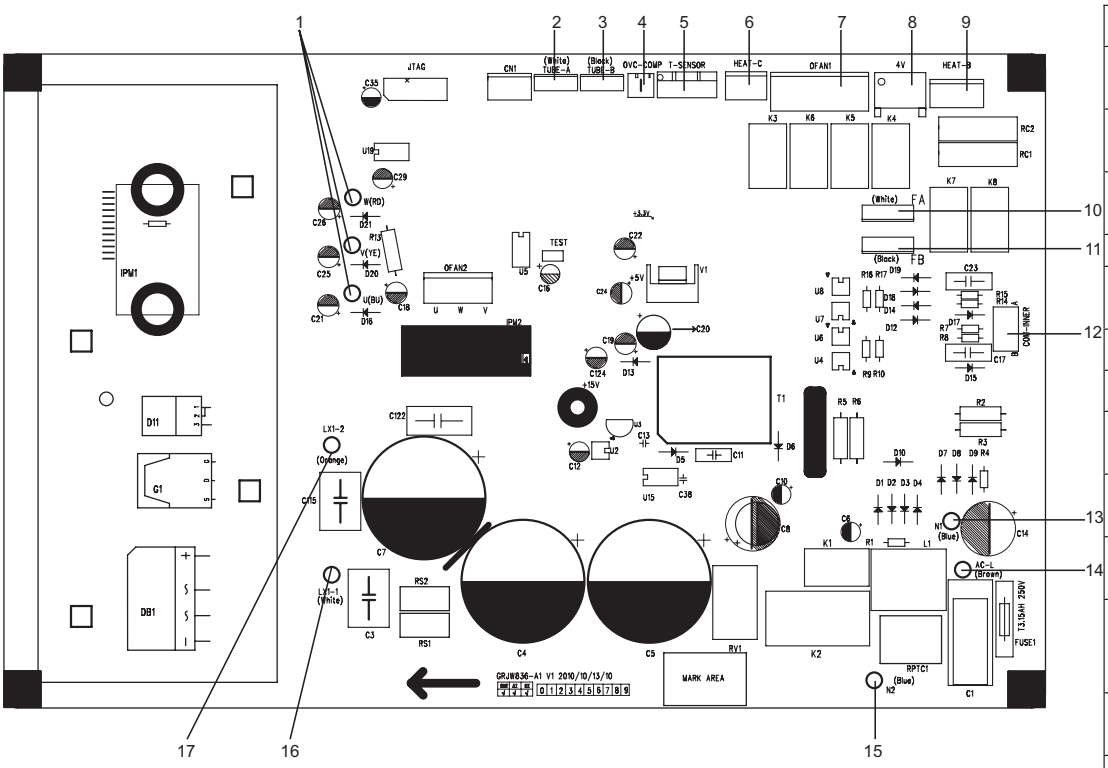


These circuit diagrams are subject to change without notice, please refer to the one supplied with the unit.

5.3 Printed Circuit Board

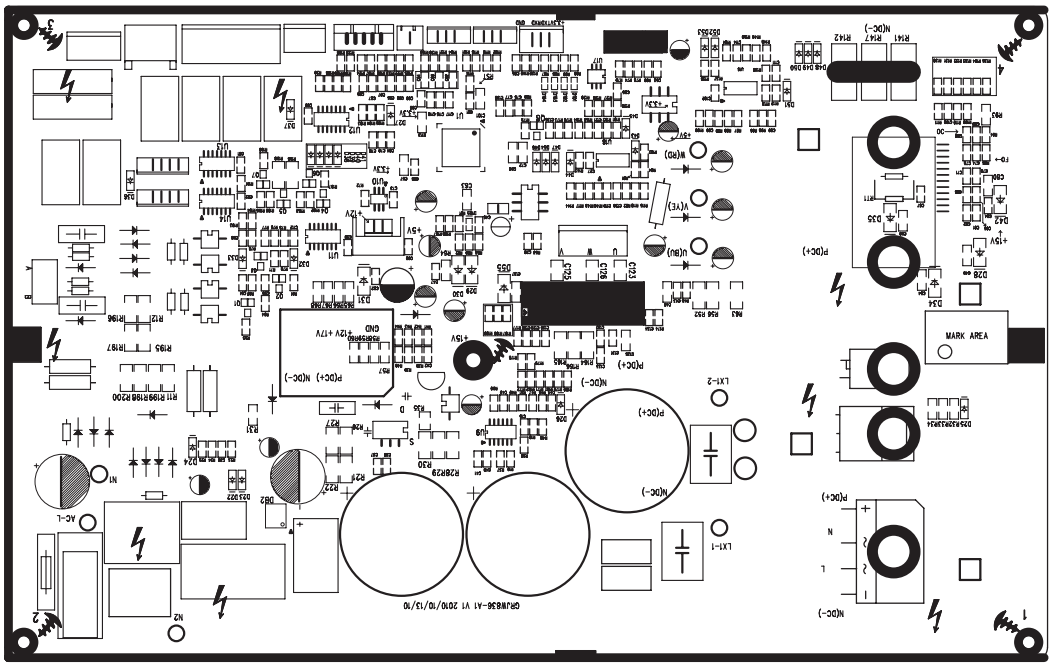
(1)A16CM4H4R18

• TOP VIEW



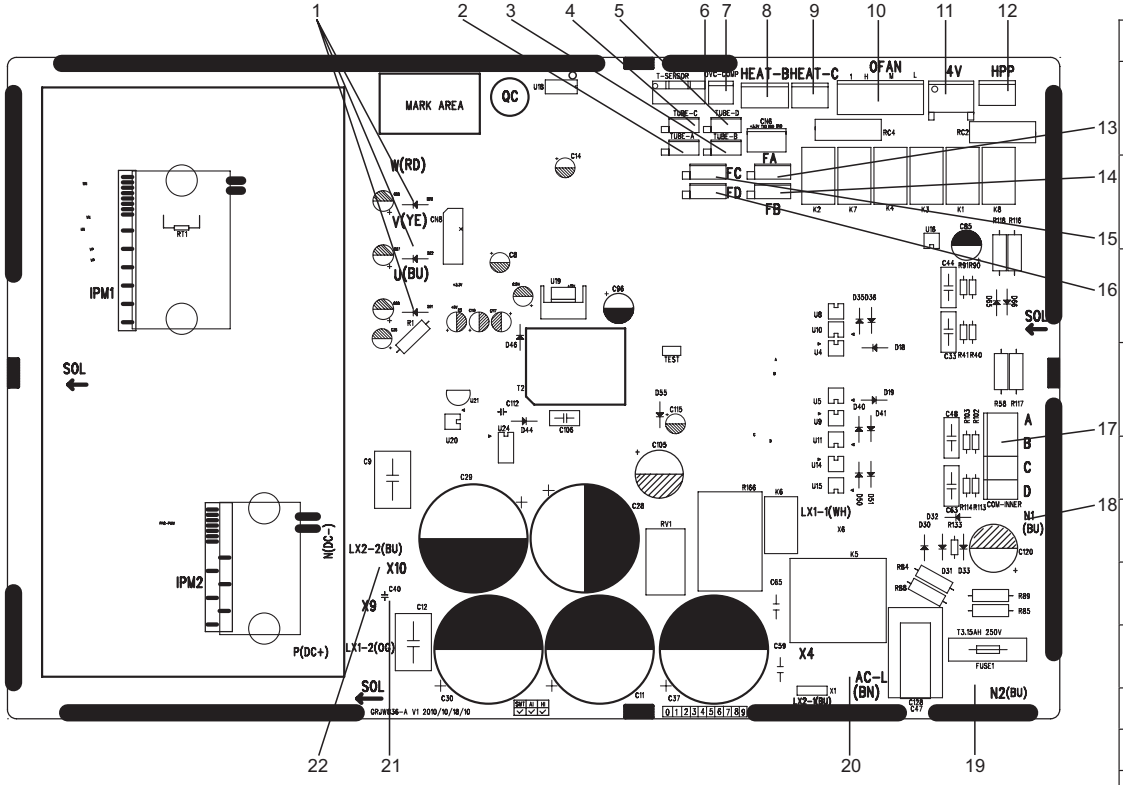
1	Compressor interface
2	Unit A liquid valve and gas valve
3	Unit B liquid valve and gas valve
4	Compressor overload protector
5	Temperature sensor
6	Compressor electric heater
7	Outdoor fan
8	4-way valve
9	Chassis electric heater (reserved)
10	Unit A electronic expansion valve
11	Unit B electronic expansion valve
12	Communication interface with indoor unit
13	Communication neutral wire
14	Live wire of power supply
15	Neutral ire of power supply
16	Reactor interface1
17	Reactor interface2

• BOTTOM VIEW



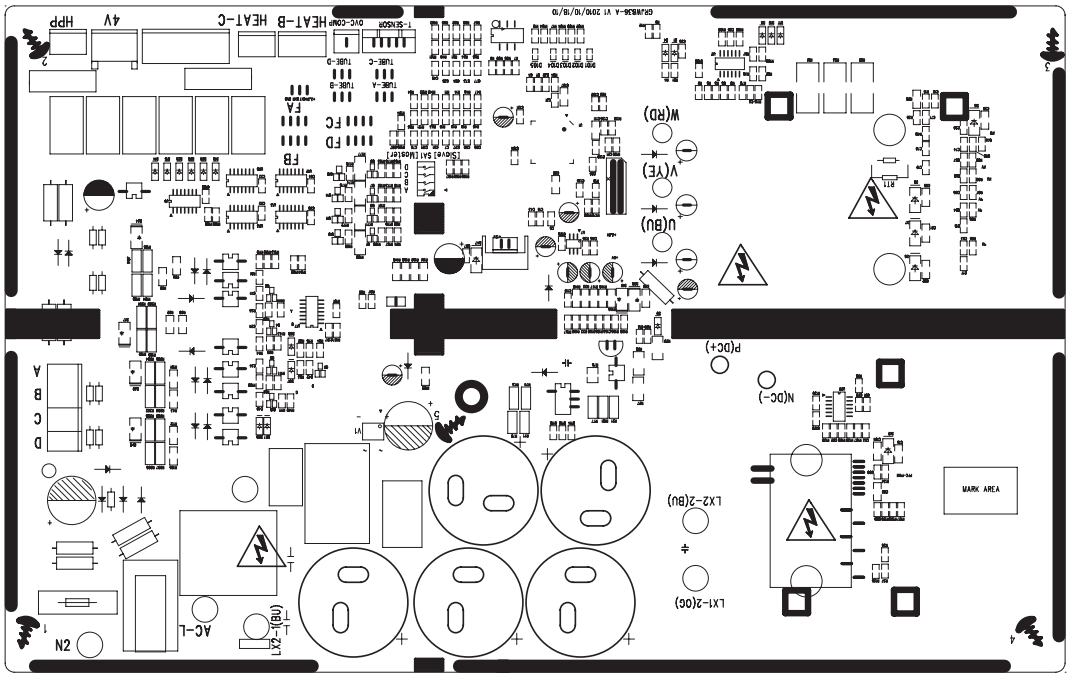
(2)A16CM4H4R24 A16CM4H4R30

● TOP VIEW



1	Compressor interface
2	Temperature sensor interface of unit A liquid valve and gas valve
3	Temperature sensor interface of unit B liquid valve and gas valve
4	Temperature sensor interface of unit C liquid valve and gas valve
5	Temperature sensor interface of unit D liquid valve and gas valve
6	Temperature sensor interface
7	Interface of compressor overload protector
8	Interface of chassis electric heater
9	Interface of compressor electric heater belt
10	Outdoor fan interface
11	4-way valve interface
12	High voltage protection interface
13	Interface of electronic expansion valve A
14	Interface of electronic expansion valve B
15	Interface of electronic expansion valve C
16	Interface of electronic expansion valve D
17	Communication wire interface
18	Communication neutral wire interface
19	Input neutral wire interface
20	Input live wire interface
21	PFC input live wire interface
22	PFC input neutral wire interface

● BOTTOM VIEW



6. Function and Control

1 Basic functions of the system

1.1 Cooling Mode

1.1.1 Cooling conditions and process:

If the compressor is in stop status and start the unit for cooling operation, when one of the indoor units reaches the cooling operation condition, the unit start cooling operation; in this case, the electronic expansion valve, the outdoor fan and the compressor start operation.

1.1.2 Stop in cooling operation

1.1.2.1 Compressor stops

The compressor stops immediately, the outdoor fan stops after 1min.

1.1.2.2 Some of the indoor units reach the stop condition (the compressor does not stop)

The compressor operates immediately according to the required frequency. For the indoor unit with no requirement, the corresponding electronic expansion valve is closed to OP.

1.1.3 Cooling mode transfers to heating mode

When the unit transfers to heating mode, the 4-way valve is energized after the compressor stops for 2min. The other disposals are the same as stopping in cooling mode.

1.1.4 4-way valve: in this mode, the 4-way valve is closed.

1.1.5 Outdoor fan control in cooling mode

The outdoor fan starts before 5s of the starting of compressor. The outdoor fan will run in high speed for 3min after starting and then it will run in set speed. The fan shall run at every speed for at least 80s. (When the quantity of running indoor unit is changed, the unit will enter the control described in 1.3.5.1 and 1.3.5.2);

When the compressor stops, the outdoor fan runs at present speed and stops after 1min.

1.2 Dry Mode

1.2.1 The dry conditions and process are the same as those in cooling mode;

1.2.2 The status of 4-way valve: closed;

1.2.3 The temperature setting range: 16 ~ 30℃;

1.2.4 Protection function: the same as those in cooling mode;

1.2.5 In dry mode, the maximum value A of the capacity requirement percentage of single unit is 90% of that in cooling mode.

The open condition of the electronic expansion valve, outdoor fan and compressor is the same as those in cooling mode.

1.3 Heating Mode

1.3.1 Cooling conditions and process:

When one of the indoor units reaches the heating operation condition, the unit starts heating operation.

1.3.2 Stop in heating operation:

1.3.2.1 When all the indoor units reach the stop condition, the compressor stops and the outdoor fan stops after 1min;

1.3.2.2 Some of the indoor units reach the stop condition

The compressor reduces the frequency immediately and operates according to the required frequency;

1.3.2.3 Heating mode transfers to cooling mode(dry mode), fan mode

a. The compressor stops; b. the power of 4-way valve is cut off after 2min; c. the outdoor fan stops after 1min; d. the status of 4-way valve: energized;

1.3.3 Outdoor fan control in heating mode

The outdoor fan starts before 5s of the starting of compressor and then it will run in high speed for 40s;

The fan shall run at every speed for at least 80s;

When the compressor stops, the outdoor fan stops after 1min.

1.3.4 Defrosting function

When the defrosting condition is met, the compressor stops; the electronic expansion valve of all indoor units open in big angle; the outdoor fan stops after 40s of the stop of compressor, meanwhile, the 4-way valve reverses the direction; after the 4-way valve reverses the direction, the compressor starts; then begin to calculate the time of defrosting, the frequency of the compressor rises to reach the defrosting frequency.

1.3.5 Oil-returned control in heating mode

1.3.5.1 Oil-returned condition

The whole unit is operating in low frequency for a long time

1.3.5.2 Oil-returned process in heating mode

The indoor unit displays “H1”

1.3.5.3 Oil-returned finished condition in heating mode

The duration reaches 5min

1.4 Fan Mode

The compressor, the outdoor fan and the 4-way valve are closed; temperature setting range is 16～30℃.

2. Protection Function

2.1 Mode Conflict Protection of indoor unit

When the setting mode is different of different indoor unit, the unit runs in below status:

a. The mode of the first operating indoor unit is the basic mode, then compare the mode of the other indoor units to see if there is a conflict. Cooling mode (dry mode) is in conflict with heating mode.

b. Fan mode is in conflict with heating mode and the heating mode is the basic mode. No matter which indoor unit operates first, the unit will run in heating mode.

2.2 Overload protection function

When the tube temperature is a little low, the compressor raises the operation frequency; when the tube temperature is a little high, the compressor frequency is restricted or lows down the operation frequency; when the tube temperature is too high, the compressor protection stops running.

If the discharge temperature protection continuously appears for 6 times, the compressor can’t resume running. The compressor can resume running after cutting off the power and then putting through the power. (if the running time of the compressor is longer than 7min, the protection times record will be cleared)

2.3 Discharge Protection Function

When the discharge temperature is a little low, the compressor raises the operation frequency; when the discharge temperature is a little high, the compressor frequency is restricted or lows down the operation frequency; when the discharge temperature is too high, the compressor protection stops running.

If the discharge temperature protection continuously appears for 6 times, the compressor can’t resume running. The compressor can resume running after cutting off the power and then putting through the power. (if the running time of the compressor is longer than 7min, the protection times record will be cleared)

2.4 Communication malfunction

Detection of the quantity of installed indoor units:

After 3min of energizing, if the outdoor unit does not receive the communication data of certain indoor unit, the outdoor unit will judge that indoor unit is not installed and will treat it as it is not installed. If the outdoor unit receives the communication data of that indoor unit later, the outdoor unit will treat that unit as it is installed.

2.5 Overcurrent Protection

a. Overcurrent protection of complete unit; b. phase wire current protection; c. compressor phase current protection

2.6 Compressor high-pressure protection

2.6.1 When the high-pressure switch is detected cut off for 3s continuously, the compressor will enter high-pressure protection as it stops when reaching set temperature. Meanwhile, the outdoor unit will send the signal of “high-pressure protection” to the indoor units;

2.6.2 After the appearance of high-pressure protection, when the high-pressure switch is detected closed for 6s continuously, the compressor can resume running only after cutting off the power and then putting through the power.

2.7 Compressor overload protection

If the compressor overload switch is detected having movement, the indoor unit will display the corresponding malfunction as it stops when the indoor temperature reaching set temperature. When the compressor stops for more than 3min and the compressor overload switch is reset, the unit will resume operation status automatically. If the protection appears for more than 6 times (if the running time of the compressor is longer than 30min, the protection times record will be cleared), the unit can not resume operation status automatically, but can resume running only after cutting off the power and then putting through the power.

2.8 Compressor Phase-lacking Protection

When the compressor starts, if one of the three phases is detected open, the compressor will enter phase-lacking protection. The malfunction will be cleared after 1min, the unit will restart and then detect if there is still has phase-lacking protection. If the phase-lacking protection is detected for 6 times continuously, the compressor will not restart but can resume running only after cutting off the power and then putting through the power. If the running time of the compressor is longer than 7min, the protection times record will be cleared.

2.9 IPM Protection

2.9.1 When the IMP module protection is detected, the unit will stop as the indoor temperature reaching set temperature, PFC is closed, display IMP protection malfunction. After the compressor stops for 3min, the unit will resume operation status automatically; if the IMP protection is detected for more than 6 times continuously (If the running time of the compressor is longer than 7min, the protection times record will be cleared), the system will stop and send the signal of module protection to indoor unit. The unit can not resume operation status automatically, but can resume running only after cutting off the power and then putting through the power.

2.9.2 IMP module overheating protection

2.9.2.1 When $T_{IMP} > 85℃$, prohibit to raise frequency;

2.9.2.2 When $T_{IMP} \geq 90℃$, the operation frequency of compressor lows down by 15% every 90s according to the present capacity requirement of the complete unit. It will keep 90s after lowing down the frequency. After lowing down the frequency, if $T_{IMP} \geq 90℃$, the unit will circulate the above movement until reaching the minimum frequency; if $85℃ < T_{IMP} < 90℃$, the unit will run at this frequency; when $T_{IMP} \leq 85℃$, the unit will run at the frequency according to the capacity requirement;

2.9.2.3 When $T_{IMP} \geq 95℃$, the compressor stops. After the compressor stops for 3min, if $T_{IMP} < 85℃$, the compressor and the outdoor fan will resume operation.

7. Installation Manual

7.1 Installation Dimension Diagram

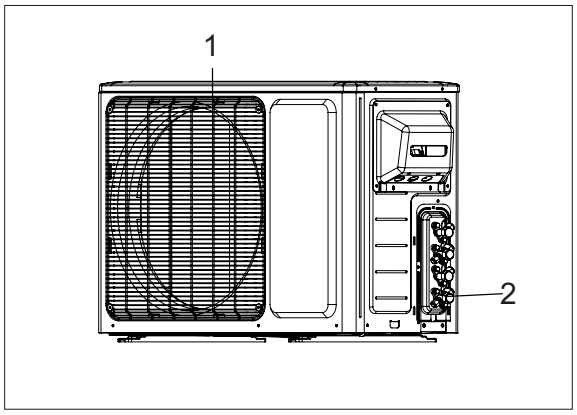
A16CM4H4R18

Warning

- Be sure to cut off the power supply before cleaning the air conditioner; otherwise electric shock might happen.
- Wetting of air conditioner may cause the risk of electric shock. Make sure not to wash your air conditioner in any case.
- Volatile liquids such as thinner or gasoline will cause damage to the appearance of air conditioner. (Only use soft dry cloth moist cloth clean the air conditionercabinet).
- This product must not be disposed together with the domestic waste.This product has to be disposed at an authorized place for recycling of electrical and electronic appliances.
- The temperature of refrigerant circuit will be high,please keep the interconnection cable away from the copper tube.

OUTDOOR UNIT	
No.	Description
1	Air outlet grille
2	Valve

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



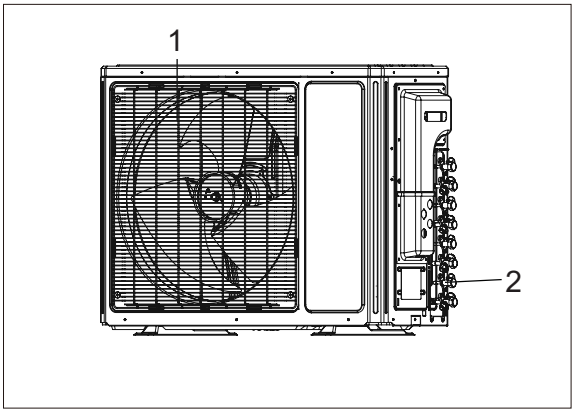
A16CM4H4R24,A16CM4H4R30

Warning

- If the supply cable is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.
- Be sure to cut off the power supply before cleaning the air conditioner;otherwise electric shock might happen.
- Wetting of air conditioner may cause the risk of electric shock. Make sure not to wash your air conditioner in any case.
- Volatile liquids such as thinner or gasoline will cause damage to the appearance of air conditioner. (Only use soft dry cloth moist cloth clean the air conditioner cabinet).
- Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.
- The temperature of refrigerant circuit will be high,please keep the interconnection cable away from the copper tube.

OUTDOOR UNIT	
No.	Description
1	Air outlet grille
2	Valve

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



7.2 Installing The Outdoor Unit

Location

⚠ Use bolts to secure the unit to a flat, solid floor. When mounting the unit on a wall or the roof, make sure the support is firmly secured so that it cannot move in the event of intense vibrations or a strong wind.

● Do not install the outdoor unit in pits or air vents

Installing the pipes

⚠ Use suitable connecting pipes and equipment for the refrigerant R410A.

⚠ The refrigerant pipes must not exceed the maximum lengths .

Models(m)	18K	24K/30K
Max.connection pipe length	20	70
Max.connection pipe length (Simple one indoor unit)	10	20

The refrigerant pipes must not exceed the maximum heights 5m(18K) 10m(24K/30K).

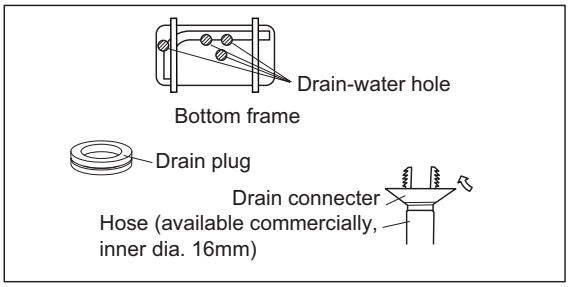
⚠ Wrap all the refrigerant pipes and joints.

⚠ Tighten the connections using two wrenches working in opposite directions.

Caution: Installation Must be Performed in Accordance with the NEC/CEC by Authorized Personnel Only.

Install the drain fitting and the drain hose (for model with heat pump only)

Condensation is produced and flows from the outdoor unit when the appliance is operating in the heating mode. In order not to disturb neighbours and to respect the environment, install a drain fitting and a drain hose to channel the condensate water. Install the drain fitting and rubber washer on the outdoor unit chassis and connect a drain hose to it as shown in the figure.

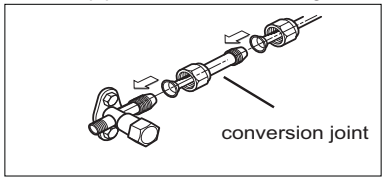


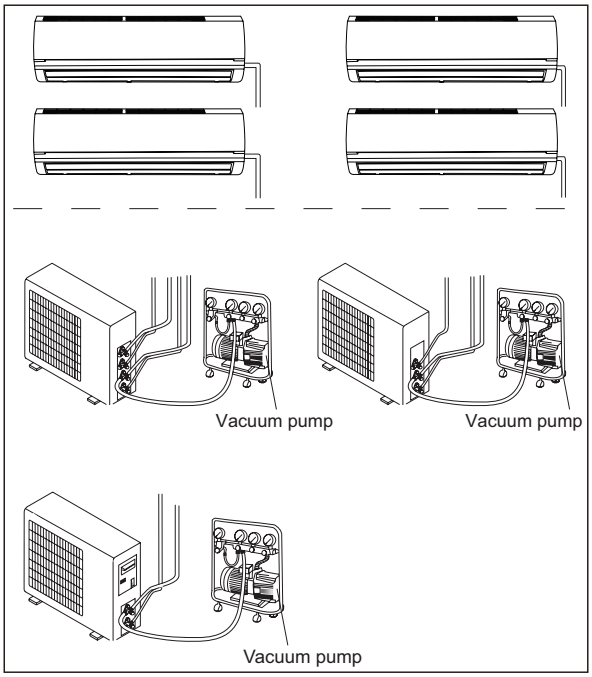
Humid air left inside the refrigerant circuit can cause compressor malfunction. After having connected the indoor and outdoor units, bleed the air and humidity from the refrigerant circuit using a vacuum pump.

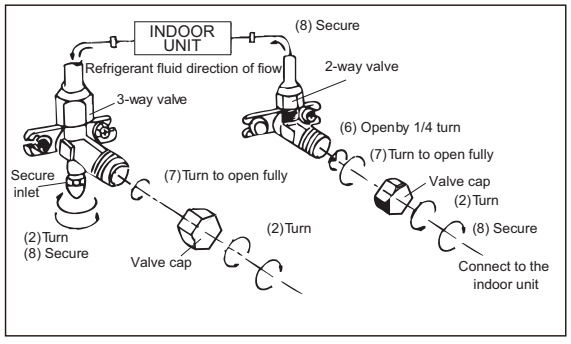
(1) Unscrew and remove the caps from the 2-way and 3-way valves.
(2) Unscrew and remove the cap from the service valve.
(3) Connect the vacuum pump hose to the service valve.
(4) Operate the vacuum pump for 10-15 minutes until an absolute vacuum of 10 mm Hg has been reached.
(5) With the vacuum pump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

Diameter (mm)	Twisting moment (N.m)
Φ6	15-20
Φ9.52	35-40
Φ16	60-65
Φ12	45-50
Φ19	70-75

(9) If the specification of outdoor unit gas valve is 3/8 '' , but curstomer needs to install 1/2 '' indoor unit so that it is need to use a “pipe joint subassembly” (Code 06643008) to make a conversion joint with outdoor unit gas valve and connection pipe, as show in following.



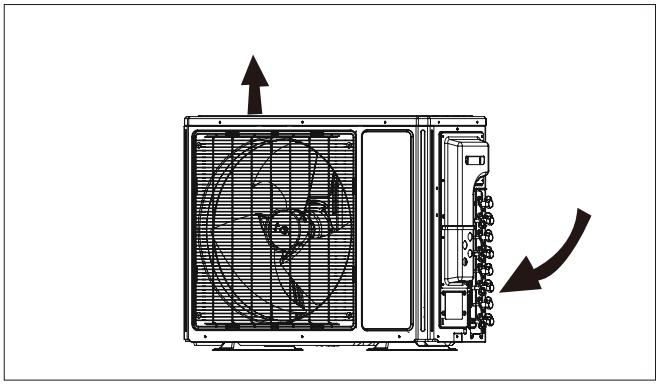




⚠ Use suitable instruments for the refrigerant R410A.

● Do not use any other refrigerant than R410A.

⚠ Do not use mineral oils to clean the unit.



INSTALLATION DIMENSION DIAGRAM

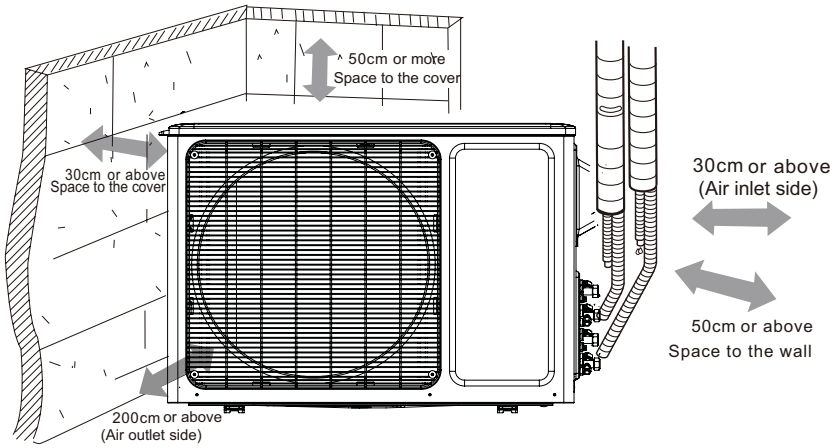
⚠ The installation must be done by trained and qualified service personnel with reliability according to this manual.

⚠ Contact service center before installation to avoid the malfunction due to unprofessional installation.

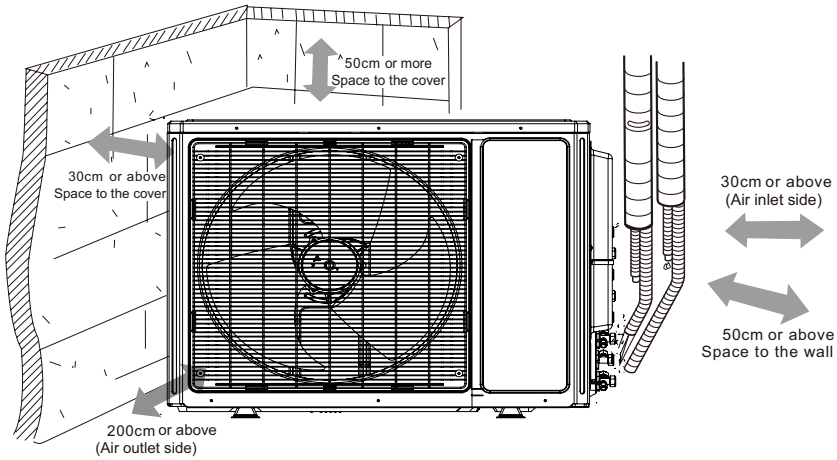
⚠ When picking up and moving the units, you must be guided by trained and qualified person.

⚠ Ensure that the recommended space is left around the a ppliance .

A16CM4H4R18



A16CM4H4R24, A16CM4H4R30

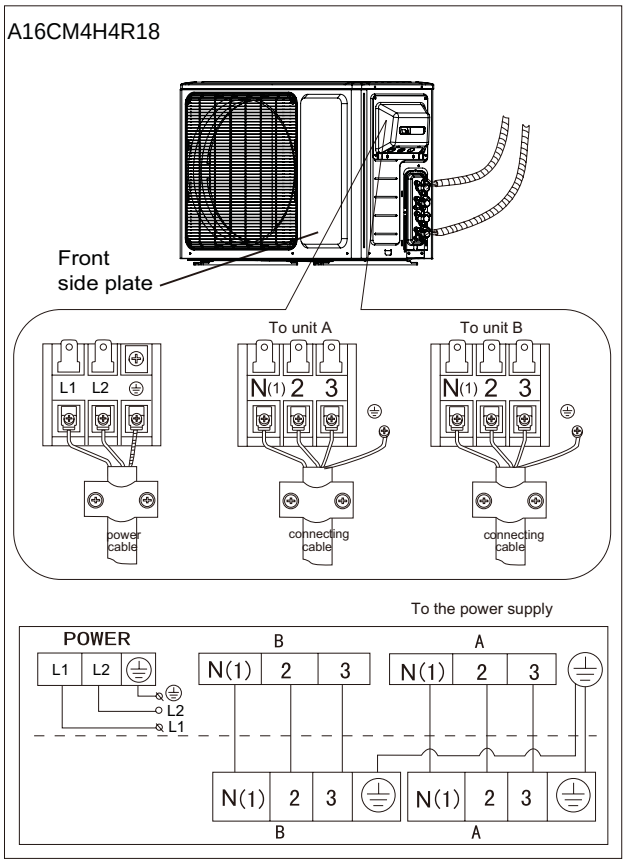


This is just the schematic plan, please refer to the actual product.

7.3 Electrical Connections

A16CM4H4R18

1. Remove the handle at the right side plate of the outdoor unit (six screw).
2. Remove the cable clamp, connect the connection cable and power cable with the terminal at the row of connection and fix. the connection. The fitting line distributing must be consistent with the indoor unit. terminal of line bank. Wiring should meet that of indoor unit.
3. Fix power connection wire by wire clamp.
4. Ensure wire has been fixed well.
5. Install the handle.



⚠ An all-pole disconnection switch having a contact separation of at least 3mm in all pole should be connected in fixed wiring.

⚠ Wrong wire connection may cause malfunction of some electric components.After fixing cable, ensure that leads between connection to fixed point have some space.

⚠ The connection pipes and the connectiong wirings of the unit A and unit B must be corresponding to each other respective.

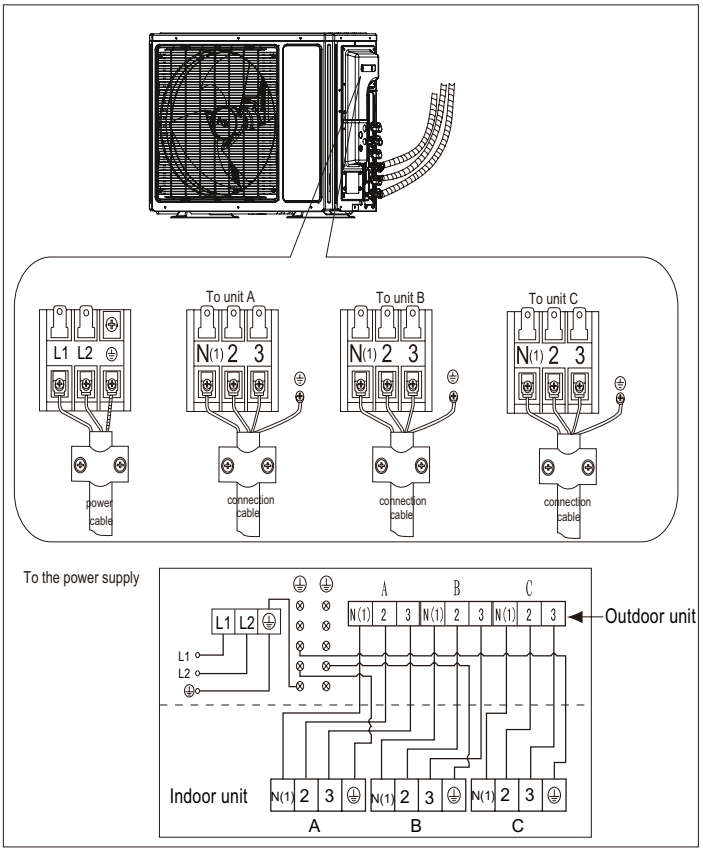
⚠ The appliance shall be installed in accordance with national wiring regulations.

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

All power cables and connection cables must be protected with conduits.

A16CM4H4R24

1. Remove the handle at the right side plate of the outdoor unit (ten screw).
2. Remove the cable clamp, connect the connection cable and power cable with the terminal at the row of connection and fix the connection. The fitting line distributing must be consistent with the indoor unit. terminal of line bank. Wiring should meet that of indoor unit.
3. Fix power connection wire by wire clamp.
4. Ensure wire has been fixed well.
5. Install the handle.



⚠ An all-pole disconnection switch having a contact separation of at least 3mm in all pole should be connected in fixed wiring.

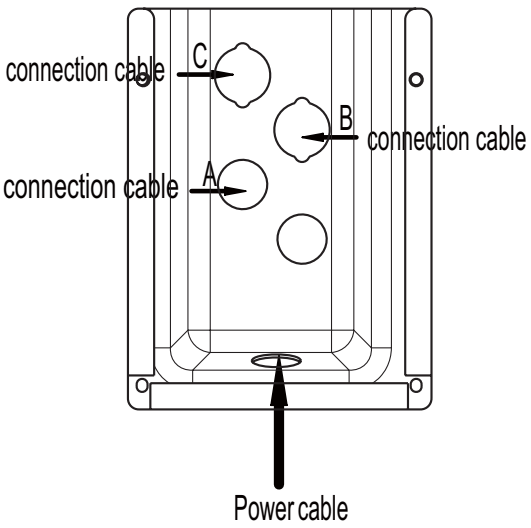
⚠ Wrong wire connection may cause malfunction of some electric components.After fixing cable, ensure that leads between connection to fixed point have some space.

⚠ The connection pipes and the connectiong wirings of the unit A ,unit B and unit C must be corresponding to each other respective.

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

⚠ Do not install the outdoor unit where it is exposed to the sunlight.

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

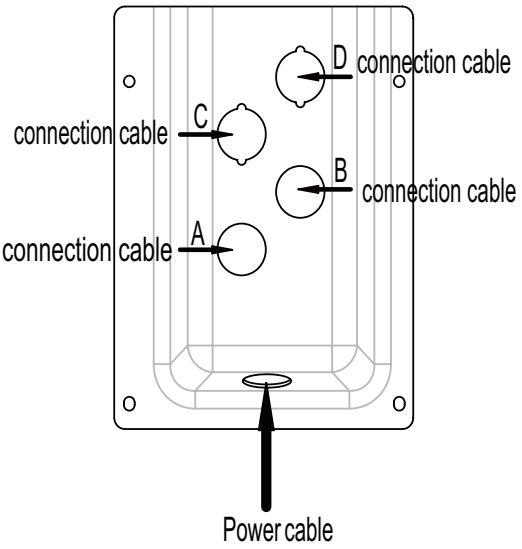


1) The power cable should be put in from the hole under connection cable cover.
2) If connecting with two indoor units, the connection cable should be put in from hole A and hole B.
3) If connecting with three indoor units, the connection cable should be put in from hole A , B and C.
4) If connecting with four indoor units, the connection cable should be put in from hole A, B , C and D.

All power cables and connection cables must be protected with conduits.

A16CM4H4R30

1. Remove the handle at the right side plate of the outdoor unit (ten screw).
2. Remove the cable clamp, connect the connection cable and power cable with the terminal at the row of connection and fix the connection. The fitting line distributing must be consistent with the indoor unit, terminal of line bank.
   Wiring should meet that of indoor unit.
3. Fix power connection wire by wire clamp.
4. Ensure wire has been fixed well.
5. Install the handle.



⚠ An all-pole disconnection switch having a contact separation of at least 3mm in all pole should be connected in fixed wiring.

⚠ Wrong wire connection may cause malfunction of some electric components.After fixing cable, ensure that leads between connection to fixed point have some space.

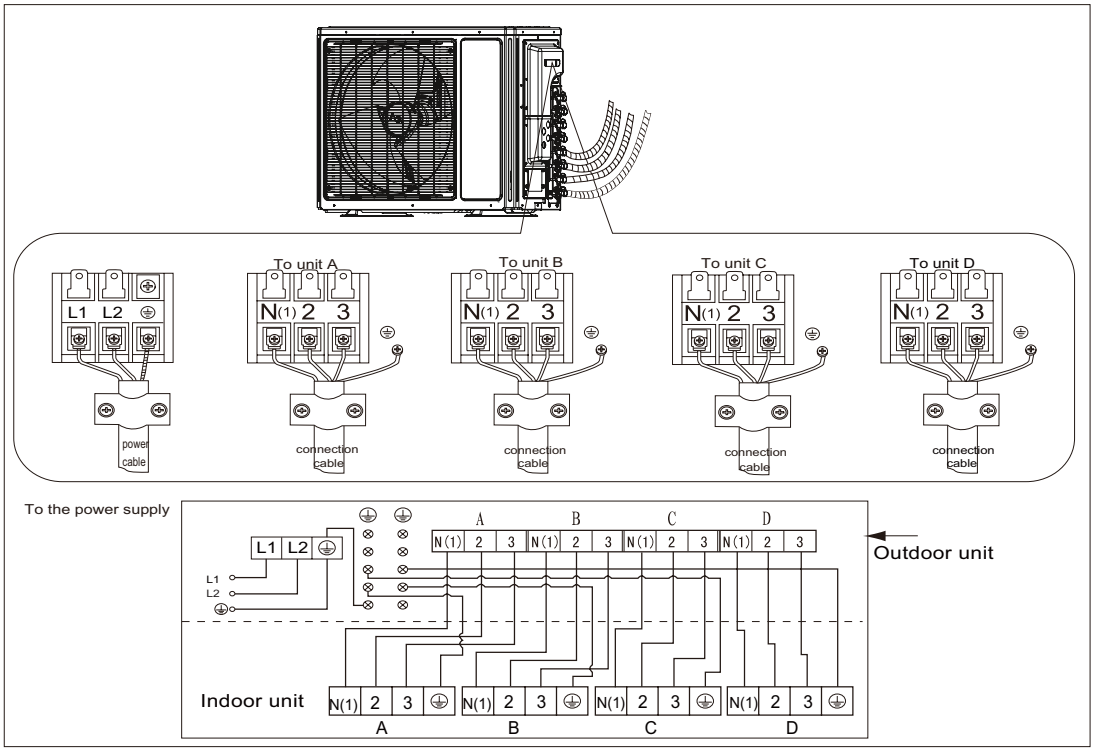
⚠ The connect ion pipes and the connectiong wirings of the unit A ,unit B,unit C and unit D must be corresponding to each other respective.

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

⚠ Do not install the outdoor unit where it is exposed to the sunlight.

1) The power cable should be put in from the hole under connection cable cover.
2) If connecting with two indoor units, the connection cable should be put in from hole A and hole B
3) If connecting with three indoor units, the connection cable should be put in from hole A , B and C
4) If connecting with four indoor units, the connection cable should be put in from hole A, B , C and D.

All power cables and connection cables must be protected with conduits.



HANDLING

⚠ After having removed the packaging, check that the contents are intact and complete.
The outdoor unit must always be kept up right.

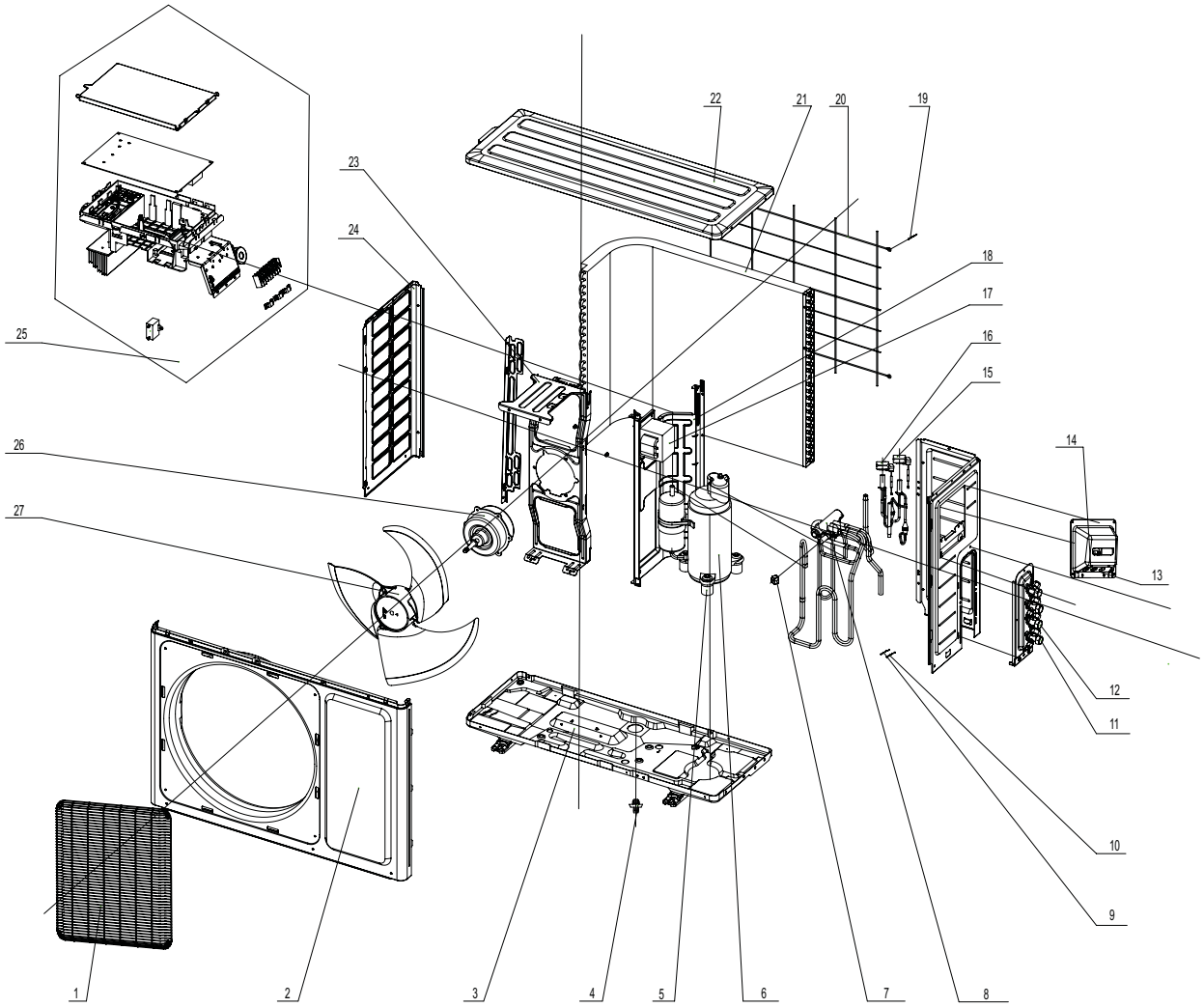
⚠ Handling must be done by suitablye quipped qualified technical personnel using equipment that is suitable for the weight of the appliance.

7.4 Check After Installation

Check Items	Problems Owing to Improper Installation
Is the installation reliable?	The unit may drop, vibrate or make noises
Has the gas leakage been checked?	May cause unsatisfactory cooling (heating) effect
Is the thermal insulation of the unit sufficient?	May cause condensation and water dropping
Is the drainage smooth?	May cause condensation and water dropping
Does the power supply voltage accord with the rated voltage specified on the nameplate?	The unit may bread down or the components may be burned out
Are the lines and pipelines correctly installed?	The unit may bread down or the components may be burned out
Has the unit been safely grounded?	Risk of electrical leakage.
Are the models of lines in conformity with requirements?	The unit may bread down or the components may be burned out
Are there any obstacles near the air inlet and outlet of the indoor and outdoor units?	The unit may bread down or the components may be burned out
Have the length of refrigerating pipe and refrigerant charge amount been recorded?	It is not easy to decide the charge amount of refrigerant.

8. Exploded Views and Parts List

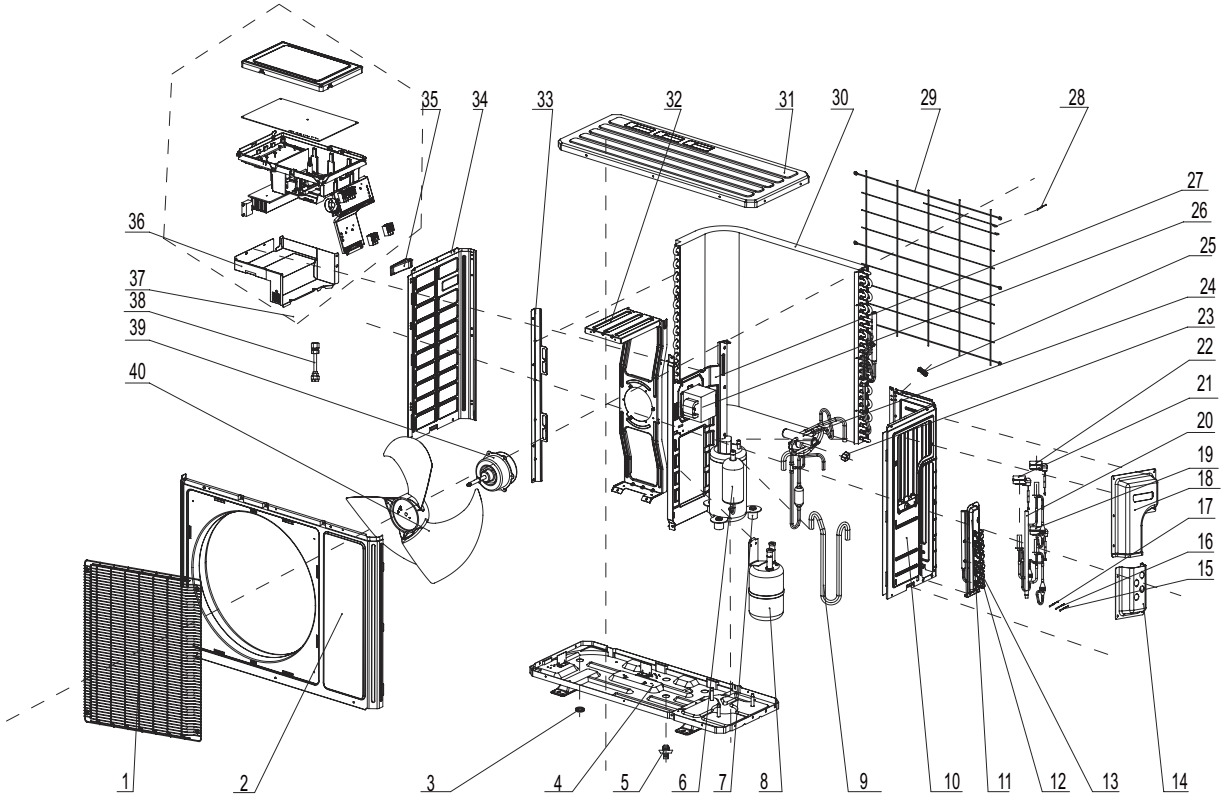
(1)A16CM4H4R18



NO.	Description	Part Code	Qty
		A16CM4H4R18	
	Product code	CB228W01600	
1	Front Grill	01473065	1
2	Cabinet	01433055P	1
3	Chassis Sub-assy	01205168P	1
4	Drainage Joint	26113009	1
5	Compressor Gasket	76815215	3
6	Compressor and fittings	00205262	1
7	Magnet Coil	4300040033	1
8	4-way Valve Assy	03123438	1
9	Temperature Sensor	3900007301	1
10	Temperature Sensor	39000073	1
11	Cut-off Valve	071302391	1
12	Cut-off Valve	07133185	1
13	Block	02113040P	1
14	Handle Assy	02113041	1
15	Electric expand valve fitting	4300008401	1
16	Electric expand valve fitting	43000084	1
17	PFC Inductance	43120130	1
18	Clapboard Sub-Assy	01233117	1
19	Temperature Sensor	3900030901	1
20	Rear Grill	01475019	1
21	Condenser Assy	01163066	1
22	Top Cover	01253034P	1
23	Motor Support Sub-Assy	0170339802	1
24	Left Side Plate	01303169P	1
25	Electric Box Assy	02603707	1
26	Fan Motor	1501316201	1
27	Axial Flow Fan	10333016	1

The data above are subject to change without notice.

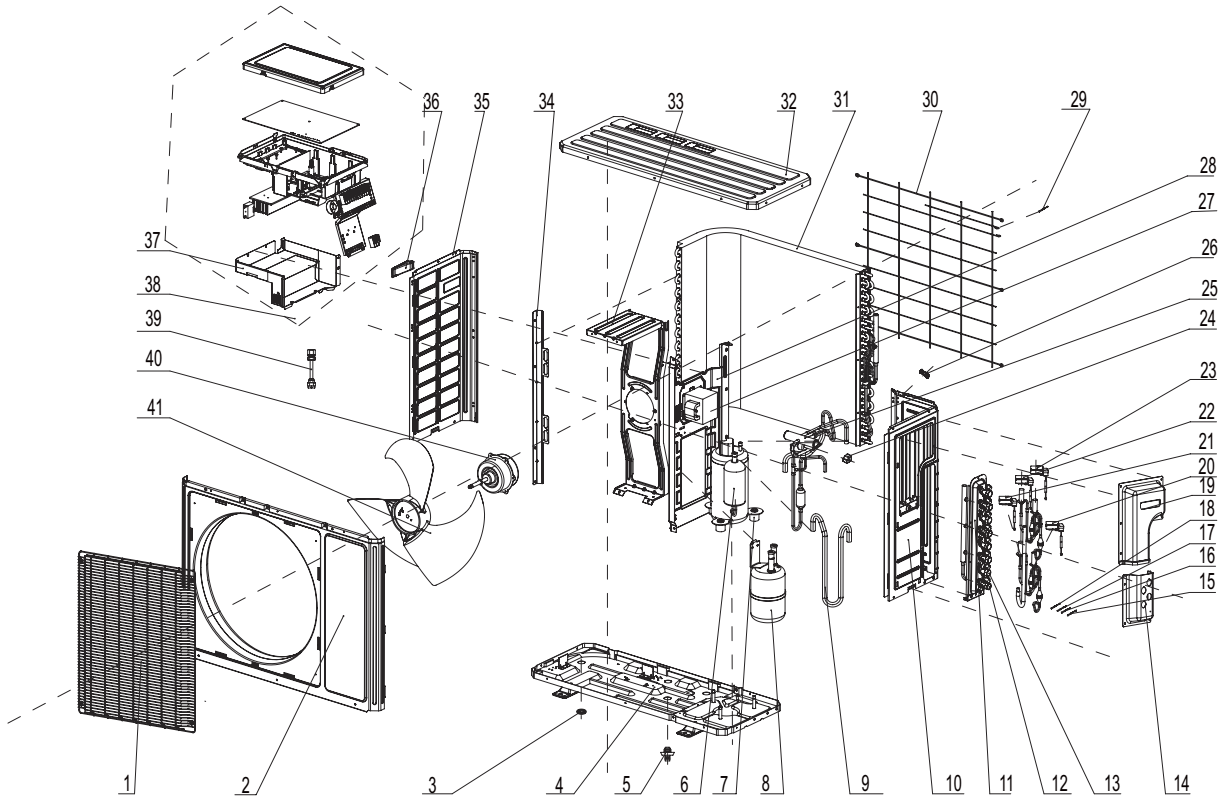
(2)A16CM4H4R24



NO.	Description	Part Code	Qty
		A16CM4H4R24	
	Product code	CB228W01700	
1	Front Grill	01473049	1
2	Cabinet	01433047P	1
3	Drainage Plug	06813401	3
4	Chassis Sub-assy	01203942P	1
5	Drainage Connecter	06123401	1
6	Compressor and Fittings	00105036	1
7	Compressor Gasket	76710207	3
8	Gas-liquid Separator Assy	07225017	1
9	Inhalation Tube	03723455	1
10	Right Side Plate	0130319401P	1
11	Valve Support Assy	0710306603	1
12	Cut off Valve	07130239	1
13	Cut off Valve	07133185	1
14	big handle Assy	02113043	1
15	Terminal cover Sub-Assy	01253057	1
16	Temperature Sensor	39000073	1
17	Temperature Sensor	3900007301	1
18	Temperature Sensor	3900007302	1
19	Electric Expand Valve Fitting	4300008402	1
20	Electronic Expansion Valve assy	07133456	1
21	Electric Expand Valve Fitting	43000084	1
22	Electric Expand Valve Fitting	4300008401	1
23	Magnet Coil	4300040033	1
24	4-Way Valve Assy	03123415	1
25	Wiring clamp	26115004	1
26	PFC 电感	43120129	1
27	Clapboard Assy	01233420	1
28	Temperature Sensor	3900030901	1
29	Rear Grill	01473043	1
30	Condenser Assy	01113710	1
31	Top Cover	01255005P	1
32	Motor Support Sub-Assy	0170512001	1
33	Condenser Support Plate	01173415	1
34	Left Side Plate	01305041P	1
35	Left Handle	26235401	1
36	Electric Box (Fireproofing)	01413148	1
37	Electric Box Assy	0260370301	1
38	Tube Connector Sub-assy	06643008	2
39	Fan Motor	1501506304	1
40	Axial Flow Fan	10335008	1

The data above are subject to change without notice.

(3)A16CM4H4R30



NO.	Description	Part Code	Qty
		A16CM4H4R30	
	Product code	CB228W01800	
1	Front Grill	01473049	1
2	Cabinet	01433047P	1
3	Drainage Plug	06813401	3
4	Chassis Sub-assy	01203942P	1
5	Drainage Connecter	06123401	1
6	Compressor and Fittings	00105036	1
7	Compressor Gasket	76710207	3
8	Gas-liquid Separator Assy	07225017	1
9	Inhalation Tube	03723455	1
10	Right Side Plate	0130319401P	1
11	Valve Support Assy	0710306604	1
12	Cut off Valve	07130239	1
13	Cut off Valve	07133185	1
14	Terminal cover Sub-Assy	01253057	1
15	Temperature Sensor	39000073	1
16	Temperature Sensor	3900007301	1
17	Temperature Sensor	3900007302	1
18	Temperature Sensor	3900007303	1
19	big handle Assy	02113043	1
20	Electric Expand Valve Fitting	43000084	1
21	Electric Expand Valve Fitting	4300008401	1
22	Electric Expand Valve Fitting	4300008402	1
23	Electric Expand Valve Fitting	4300008403	1
24	Magnet Coil	4300040033	1
25	4-Way Valve Assy	03123415	1
26	Wiring clamp	26115004	1
27	PFC 电感	43120129	1
28	Clapboard Assy	01233116	1
29	Temperature Sensor	3900030901	1
30	Rear Grill	01473043	1
31	Condenser Assy	01113710	1
32	Top Cover	01255005P	1
33	Motor Support Sub-Assy	0170512001	1
34	Condenser Support Plate	01173415	1
35	Left Side Plate	01305041P	1
36	Left Handle	26235401	1
37	Electric Box (Fireproofing)	01413148	1
38	Electric Box Assy	02603703	1
39	Tube Connector Sub-assy	06643008	2
40	Fan Motor	1501506304	1
41	Axial Flow Fan	10335008	1

The data above are subject to change without notice.

9. Troubleshooting

9.1 Malfunction Indicator

Note: ○: off ●: on ◎: blink

When several malfunctions occur at the same time, they will be displayed in circulation and every malfunction is displayed for 5s.

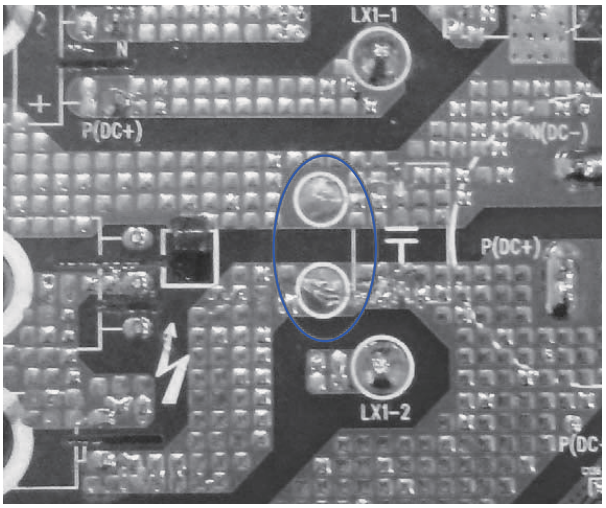
NO	Malfunction description	LED1	LED2	LED3	LED4
0	Normal stop	○	○	○	○
1	Compressor run	●	○	○	○
2	Compressor overload protection	◎	○	○	○
3	Discharge protection	○	●	○	○
4	Outdoor unit overload protection	●	●	○	○
5	High pressure protection	◎	●	○	○
6	Over current protection	○	◎	○	○
7	IMP protection	●	◎	○	○
8	IMP over heating protection	◎	◎	○	○
9	PFC protection (including PFC overheating protection)	○	○	●	○
10	Phase current protection	●	○	●	○
11	Over voltage protection	◎	○	●	○
12	Insufficient voltage protection	○	●	●	○
13	Start failure	●	●	●	○
14	Compressor desynchronizing	◎	●	●	○
15	Compressor phase-lacking protection	○	◎	●	○
16	Compressor phase current detection malfunction	●	◎	●	○
17	Memory chip mistake	◎	◎	●	○
18	DC power supply circuit-short	○	○	◎	○
19	Defrosting	●	○	◎	○
20	Oil return	◎	○	◎	○
21	Complete unit frequency restriction protection	○	●	◎	○
22	Complete unit frequency dropping protection	●	●	◎	○
23	Unit A frequency restriction or frequency dropping protection	◎	●	◎	○
24	Unit B frequency restriction or frequency dropping protection	○	◎	◎	○
25	Unit C frequency restriction or frequency dropping protection	●	◎	◎	○
26	Unit D frequency restriction or frequency dropping protection	◎	◎	◎	○
27	Outdoor ambient temperature sensor protection	○	○	○	●
28	Outdoor tube temperature sensor protection	●	○	○	●
29	Discharge temperature sensor protection	◎	○	○	●
30	IPM thermal resistance malfunction	○	●	○	●
31	Unit A liquid pipe temperature sensor malfunction	●	●	○	●
32	Unit A gas pipe temperature sensor malfunction	◎	●	○	●
33	Unit B liquid pipe temperature sensor malfunction	○	◎	○	●
34	Unit B gas pipe temperature sensor malfunction	●	◎	○	●
35	Unit C liquid pipe temperature sensor malfunction	◎	◎	○	●
36	Unit C gas pipe temperature sensor malfunction	○	○	●	●
37	Unit D liquid pipe temperature sensor malfunction	●	○	●	●
38	Unit D gas pipe temperature sensor malfunction	◎	○	●	●
39	Unit A mode conflict	○	●	●	●
40	Unit B mode conflict	●	●	●	●
41	Unit C mode conflict	◎	●	●	●
42	Unit D mode conflict	○	◎	●	●

43	Communication failure with Unit A	●	◎	●	●
44	Communication failure with Unit B	◎	◎	●	●
45	Communication failure with Unit C	○	○	◎	●
46	Communication failure with Unit D	●	○	◎	●
47	Unit A freeze protection	◎	○	◎	●
48	Unit B freeze protection	○	●	◎	●
49	Unit C freeze protection	●	●	◎	●
50	Unit D freeze protection	◎	●	◎	●
51	Unit A overheating prevention protection	○	◎	◎	●
52	Unit B overheating prevention protection	●	◎	◎	●
53	Unit C overheating prevention protection	◎	◎	◎	●
54	Unit D overheating prevention protection	○	○	○	◎
55	Unit A communication wire misconnection or expansion valve malfunction	●	○	○	◎
56	Unit B communication wire misconnection or expansion valve malfunction	◎	○	○	◎
57	Unit C communication wire misconnection or expansion valve malfunction	○	●	○	◎
58	Unit D communication wire misconnection or expansion valve malfunction	●	●	○	◎

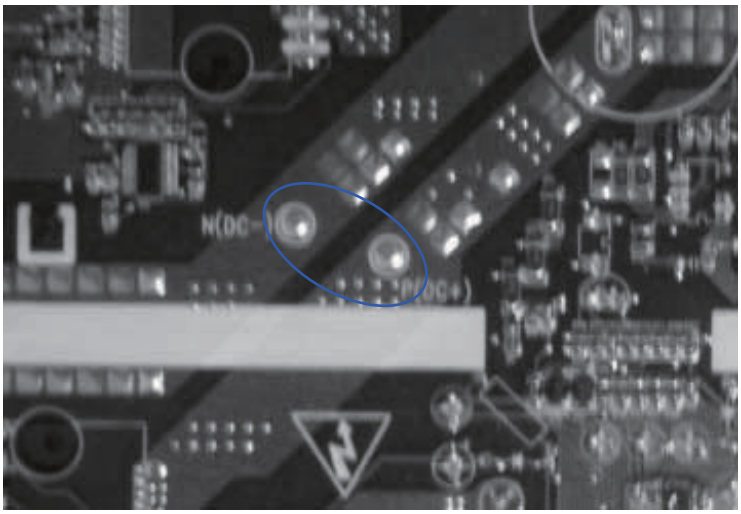
9.2 Malfunction Checking and Elimination

Note: discharge the position in below pictures with discharge resistance after open the top cover and check if the voltage is below 20V with universal meter, then begin to check.

18K:



24/30K:

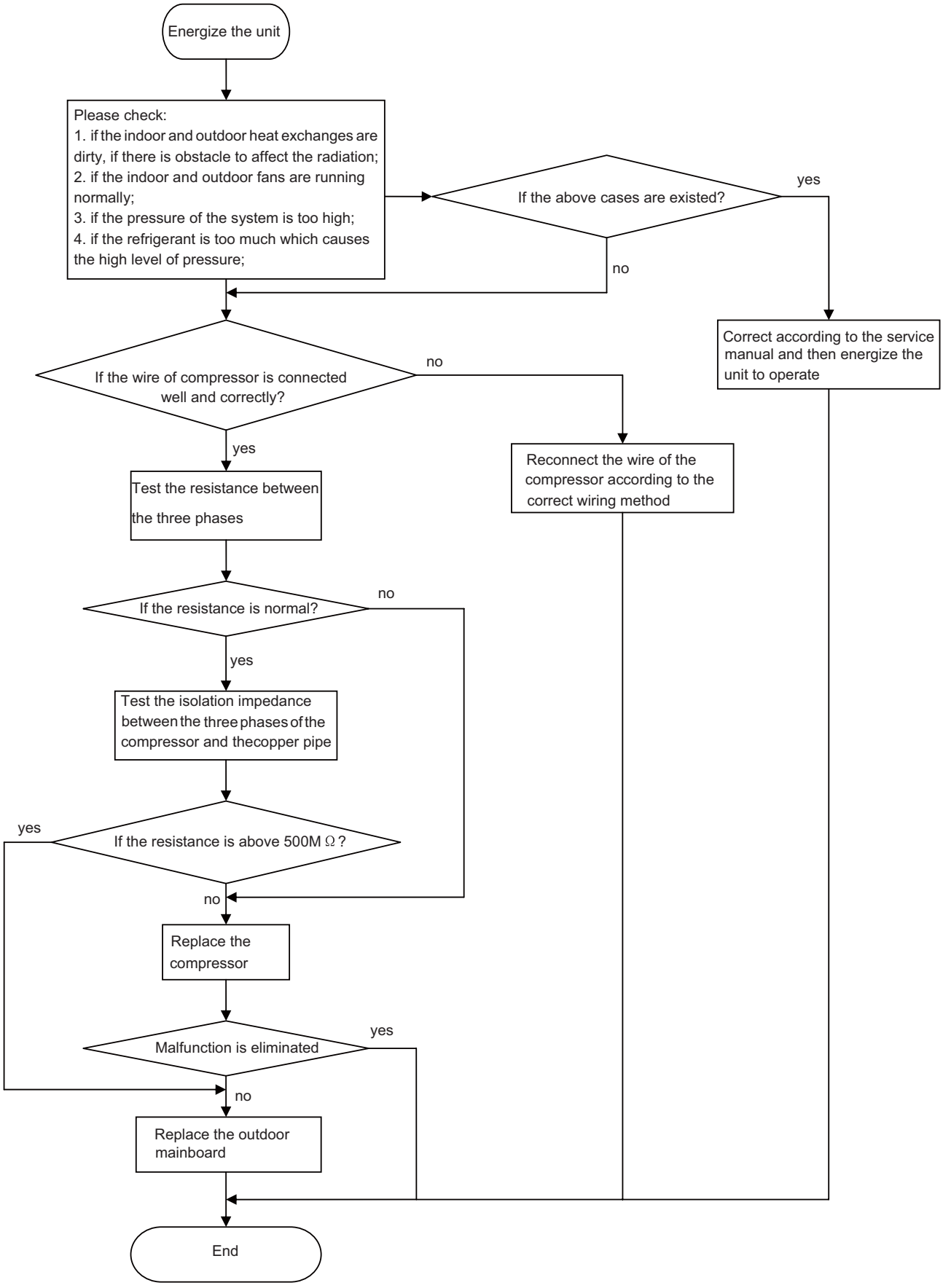


(1) IPM protection malfunction:

Main checking point:

- If the input voltage of the unit is within normal range?
- If the connection wire of compressor is connected well? Is it loose? If the connection sequence is correct?
- If the resistance of compressor coil is normal? If the isolation of compressor coil with copper pipe is good?
- If the unit is overloaded? If the heat radiation of the unit is good?
- If the refrigerant charge is suitable?

Flow chart:

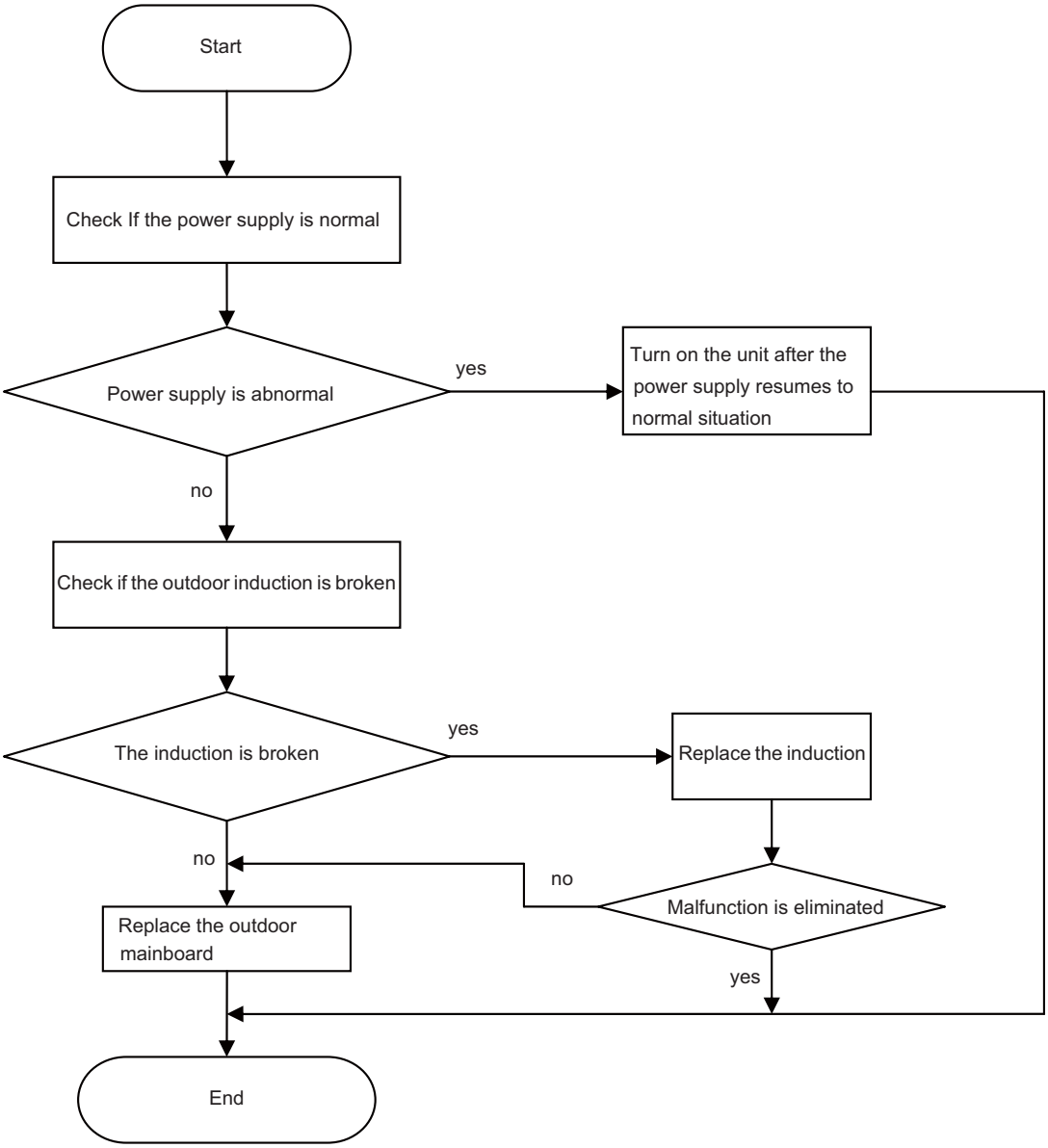

Energize the unit
Please check:
1. if the indoor and outdoor heat exchanges are dirty, if there is obstacle to affect the radiation;
2. if the indoor and outdoor fans are running normally;
3. if the pressure of the system is too high;
4. if the refrigerant is too much which causes the high level of pressure;
If the above cases are existed?
yes
no
Correct according to the service manual and then energize the unit to operate
If the wire of compressor is connected well and correctly?
no
yes
Reconnect the wire of the compressor according to the correct wiring method
Test the resistance between the three phases
If the resistance is normal?
no
yes
Test the isolation impedance between the three phases of the compressor and thecopper pipe
If the resistance is above 500M Ω ?
yes
no
Replace the compressor
Malfunction is eliminated
yes
no
Replace the outdoor mainboard
End

(2) PFC protection malfunction

Main checking points:

- If the power supply is normal;
- Check if the connection wire of induction is connected well and if the induction is broken;

Flow chart:

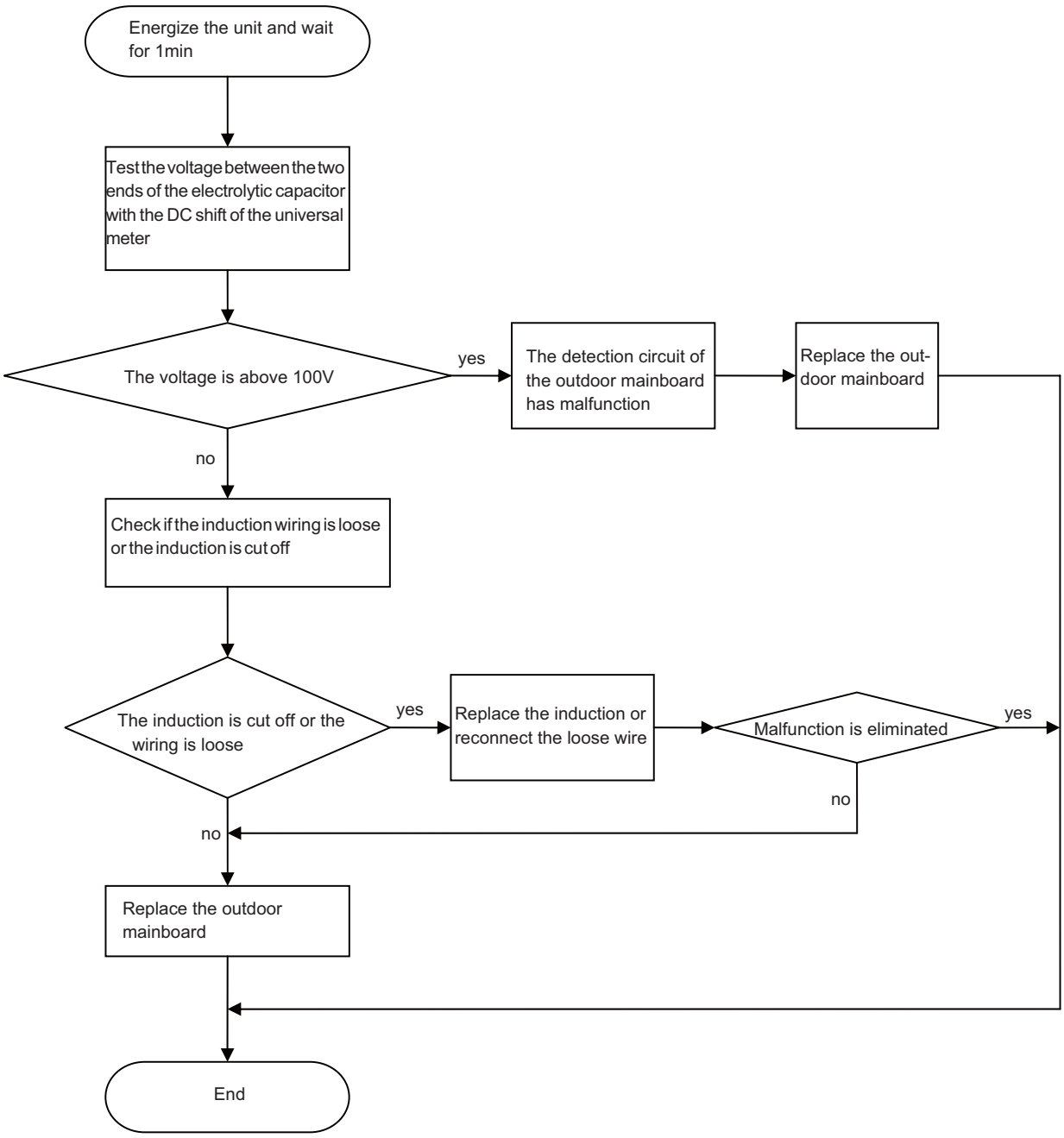


(3) Capacity charging malfunction

Main checking points:

- If the wiring of the induction is connected well and if the induction is broken;
- If the mainboard is broken;

Flow chart:

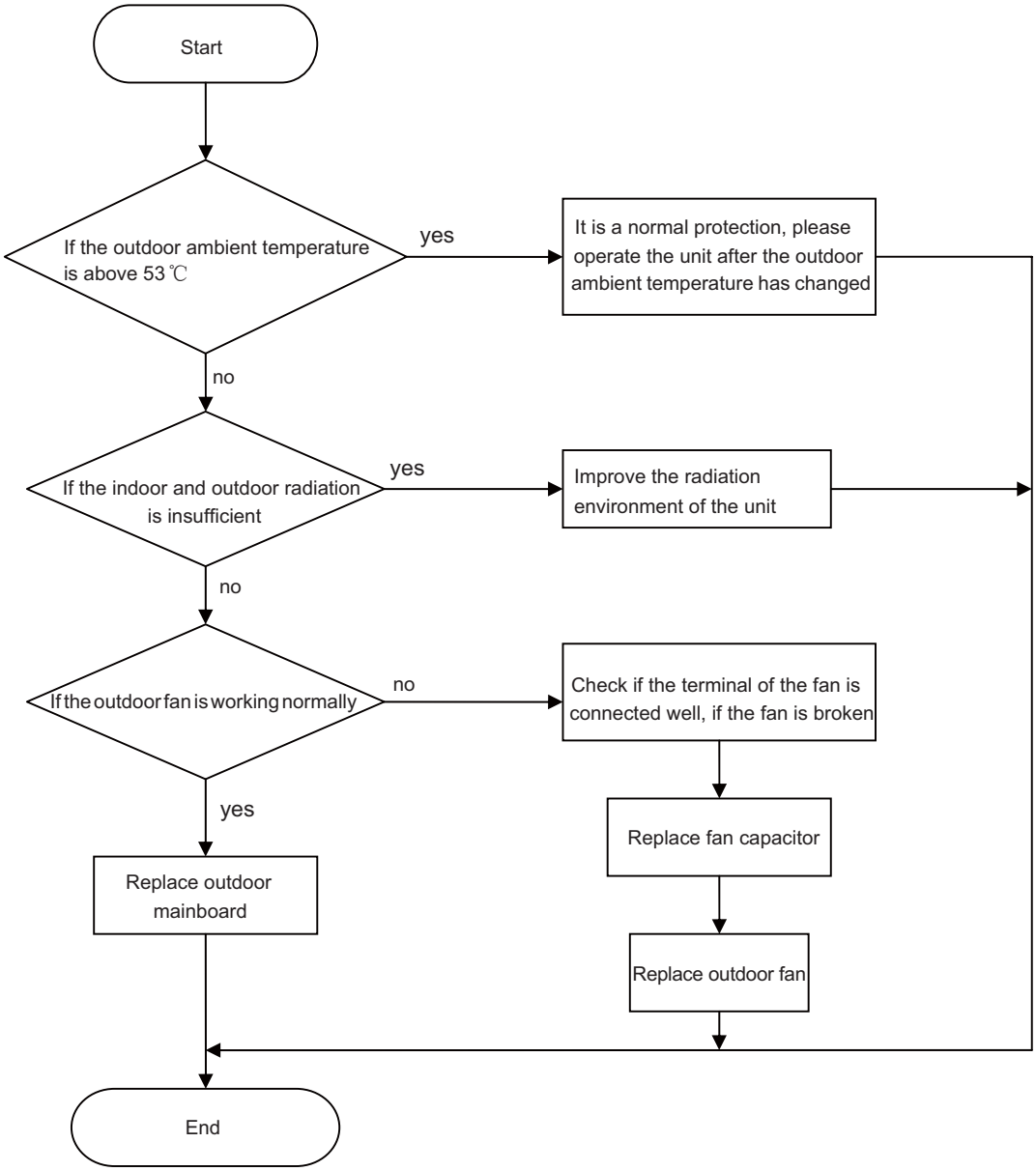


(4) Anti-high temperature and overload malfunction

Main checking points:

- If the outdoor ambient temperature is within the normal range;
- If the outdoor fan is running normally;
- If the indoor and outdoor radiation environment is good;

Flow chart:

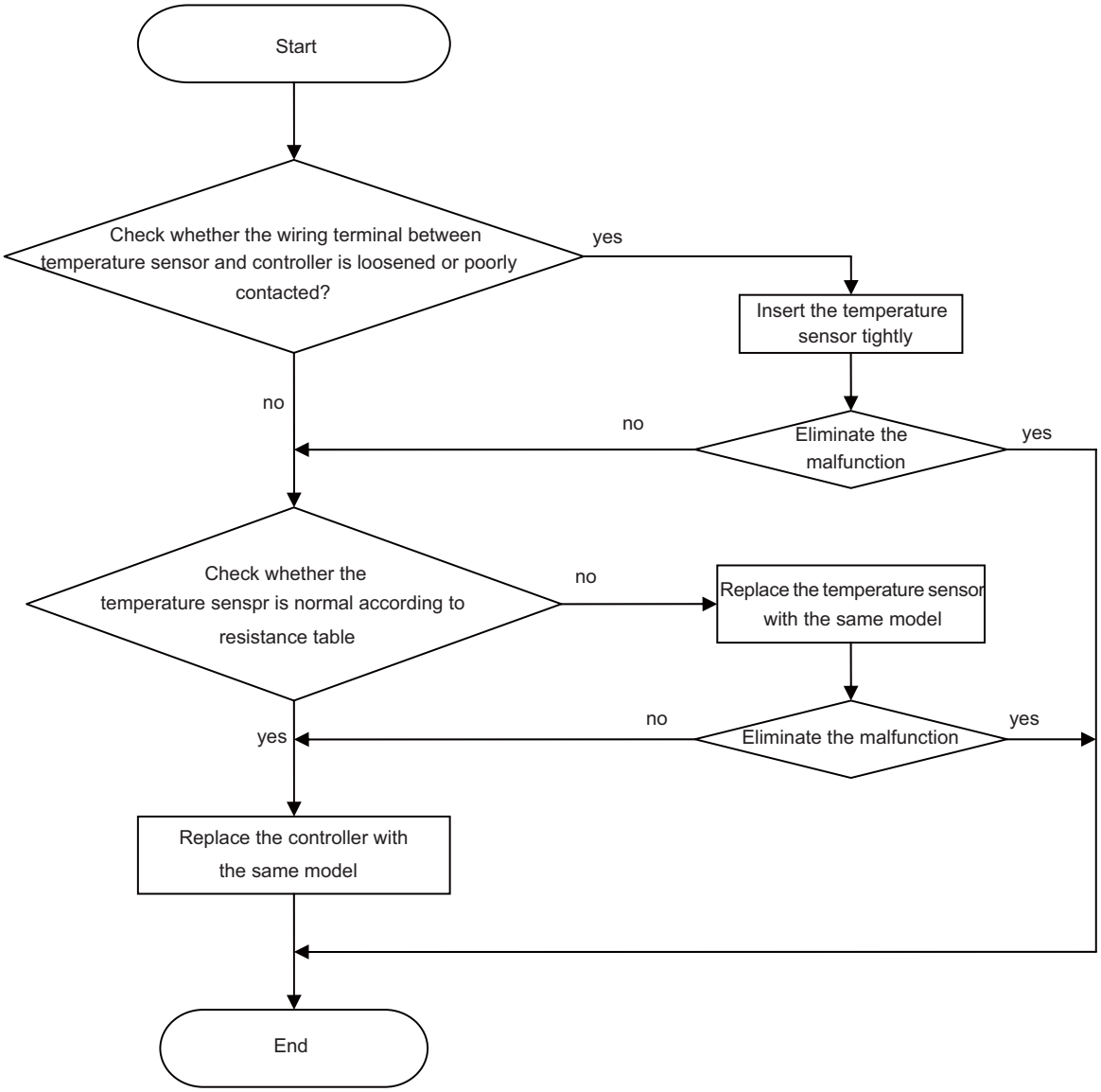


(5) Temperature sensor malfunction

Main checking points:

- If the temperature sensor is damaged or broken
- If the terminal of the temperature sensor is loosended or not connected;
- If the mainboard is broken;

Flow chart:

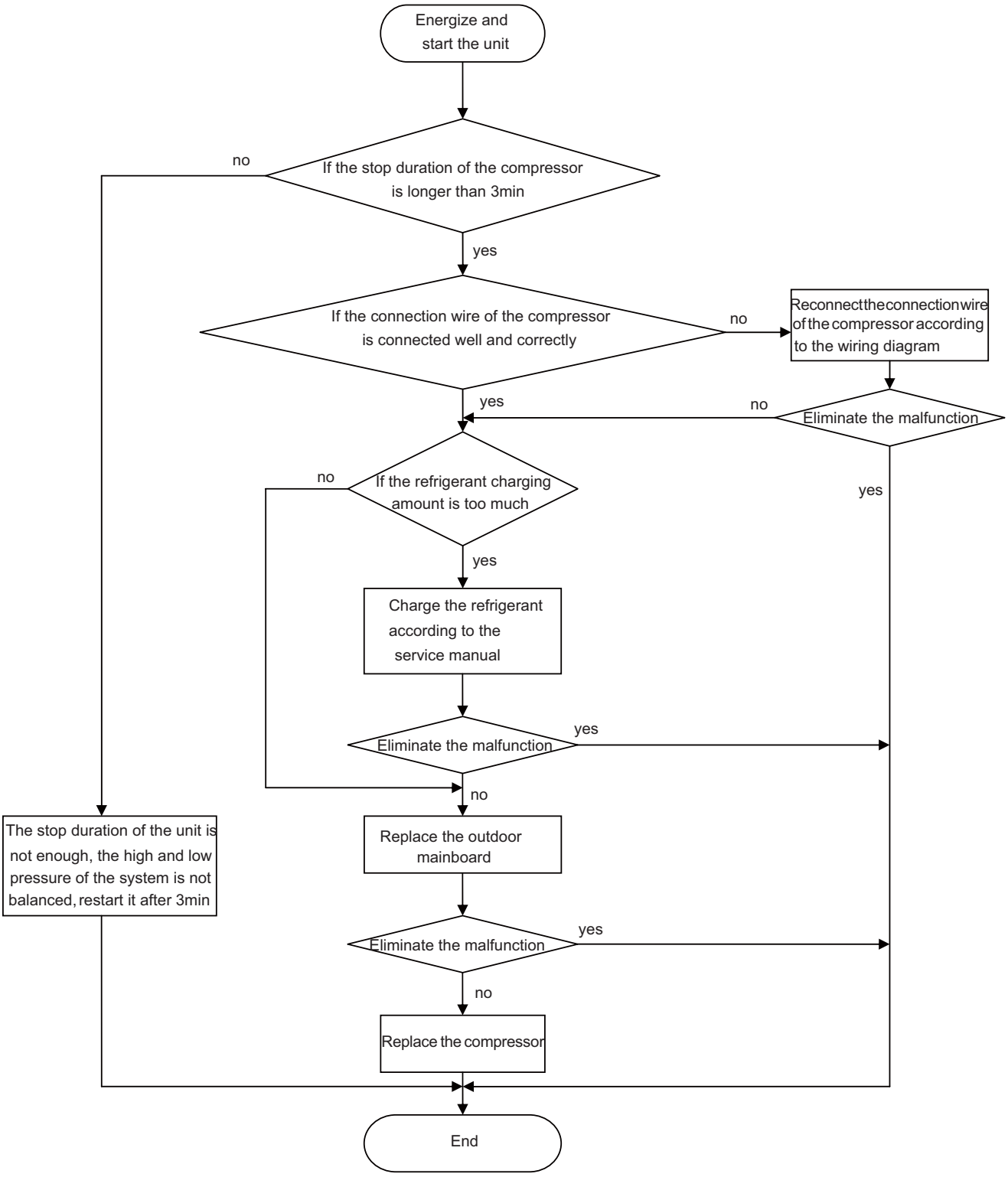


(6) Start failure malfunction

Main checking points:

- If the connection wire of the compressor is connected properly;
- If the stop duration of the compressor is sufficient;
- If the compressor is broken;
- If the refrigerant charging amount is too much;

Flow chart:

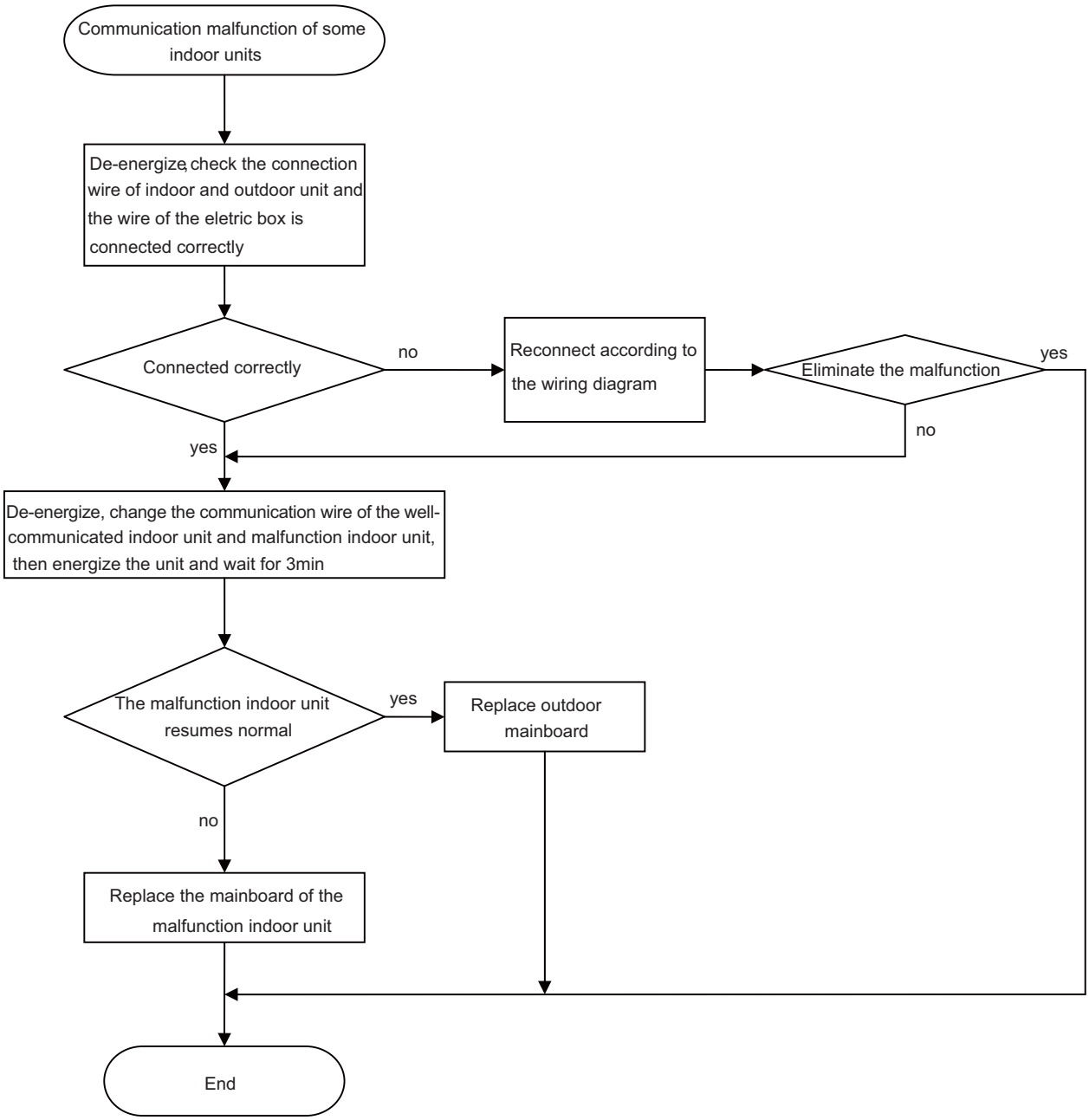


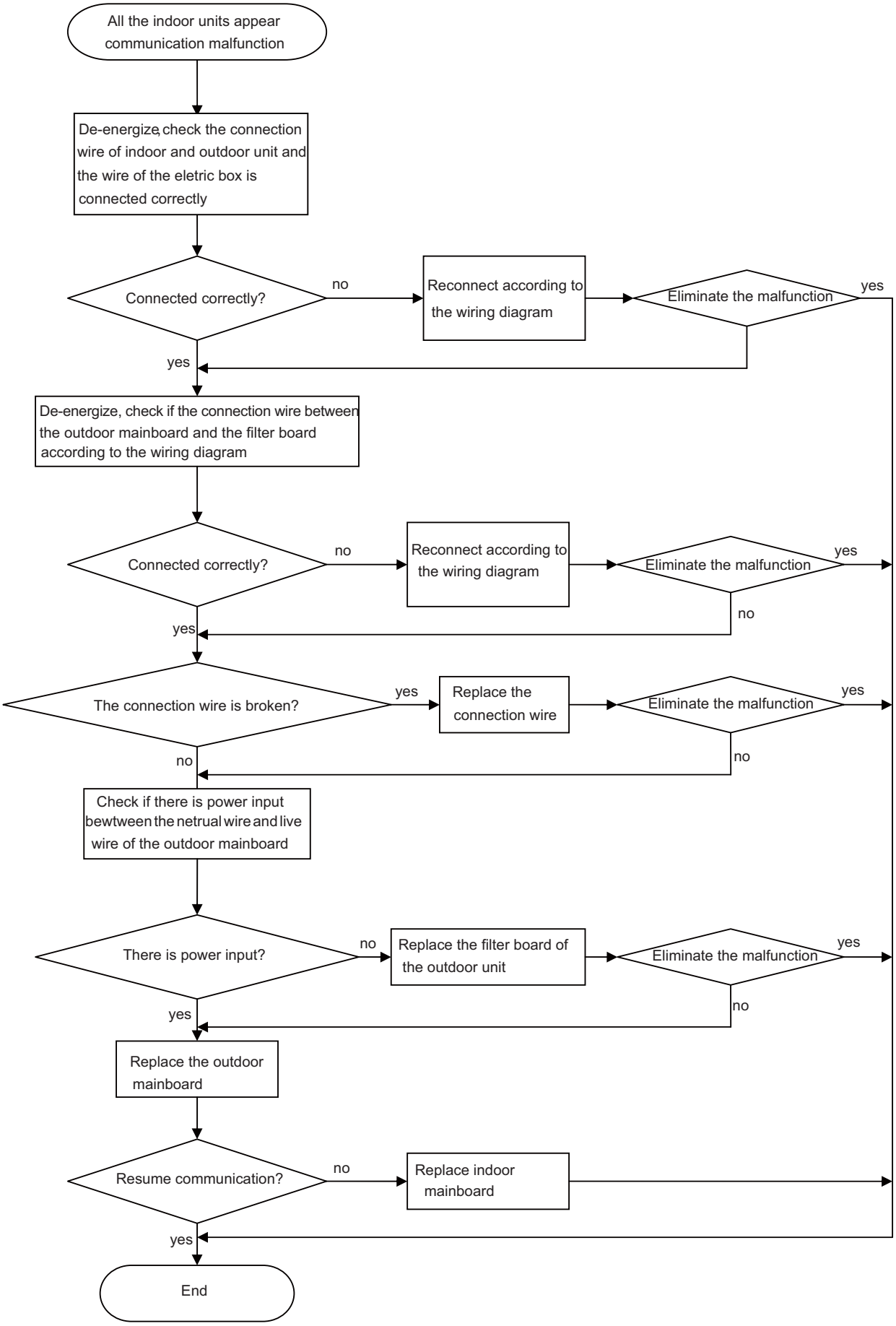
(7) Communication malfunction

Main checking points:

- If the connection wire between the indoor unit and outdoor unit is connected well, if the wires inside the unit is connected well;
- If the indoor mainboard or outdoor main board is broken;

Flow chart:



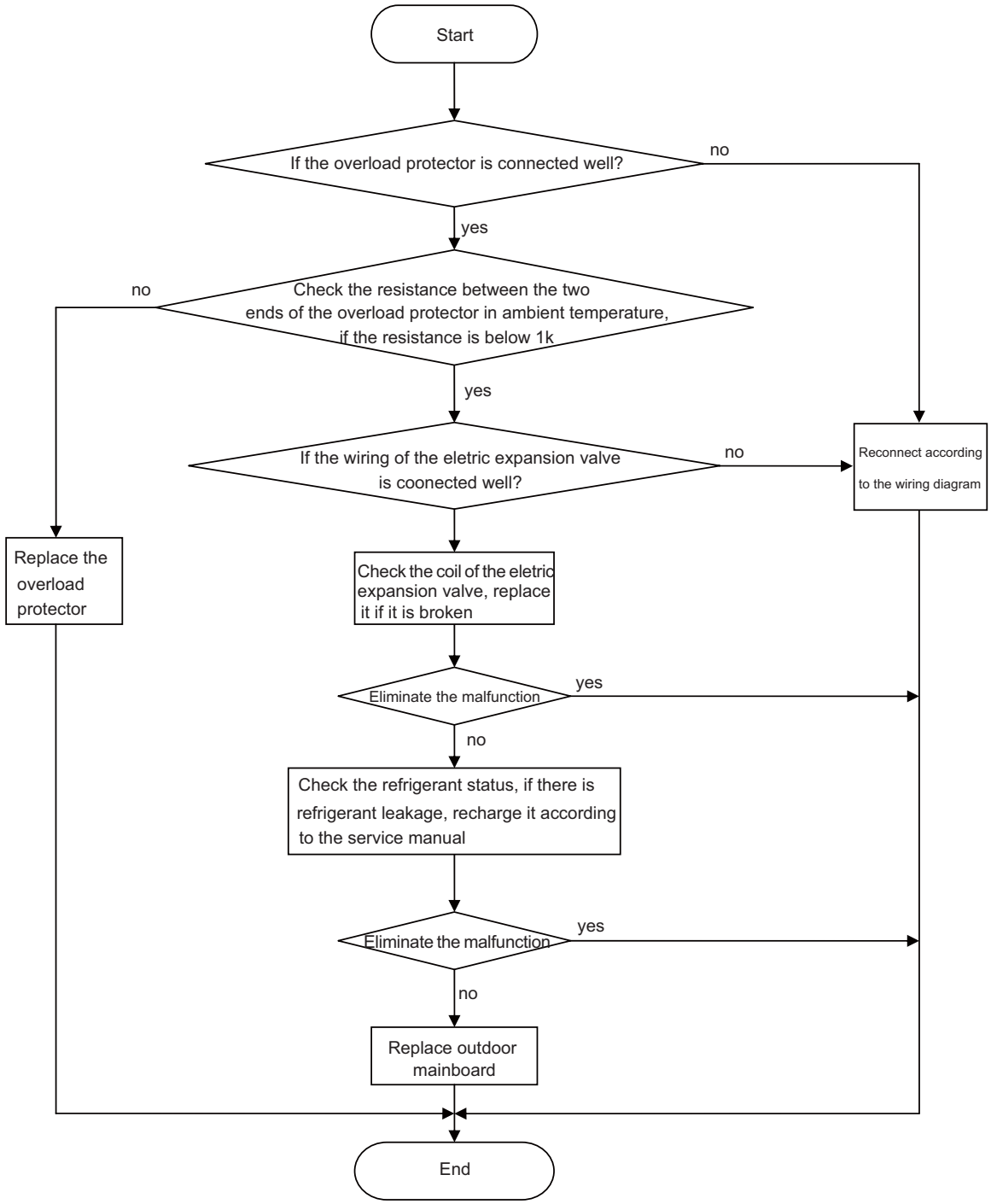

All the indoor units appear communication malfunction
De-energize, check the connection wire of indoor and outdoor unit and the wire of the eletric box is connected correctly
Connected correctly?
no
Reconnect according to the wiring diagram
Eliminate the malfunction
yes
yes
De-energize, check if the connection wire between the outdoor mainboard and the filter board according to the wiring diagram
Connected correctly?
no
Reconnect according to the wiring diagram
Eliminate the malfunction
yes
no
yes
The connection wire is broken?
yes
Replace the connection wire
Eliminate the malfunction
yes
no
no
Check if there is power input bewtween the netrual wire and live wire of the outdoor mainboard
There is power input?
no
Replace the filter board of the outdoor unit
Eliminate the malfunction
yes
no
yes
Replace the outdoor mainboard
Resume communication?
no
Replace indoor mainboard
yes
End

(8) Compressor overload, diacharge protection malfunction

Main checking points:

- If the eletric expansion valve is connected well or it is broken;
- If there is refrigerant leakage;
- If the overload protector is broken;

Flow chart:



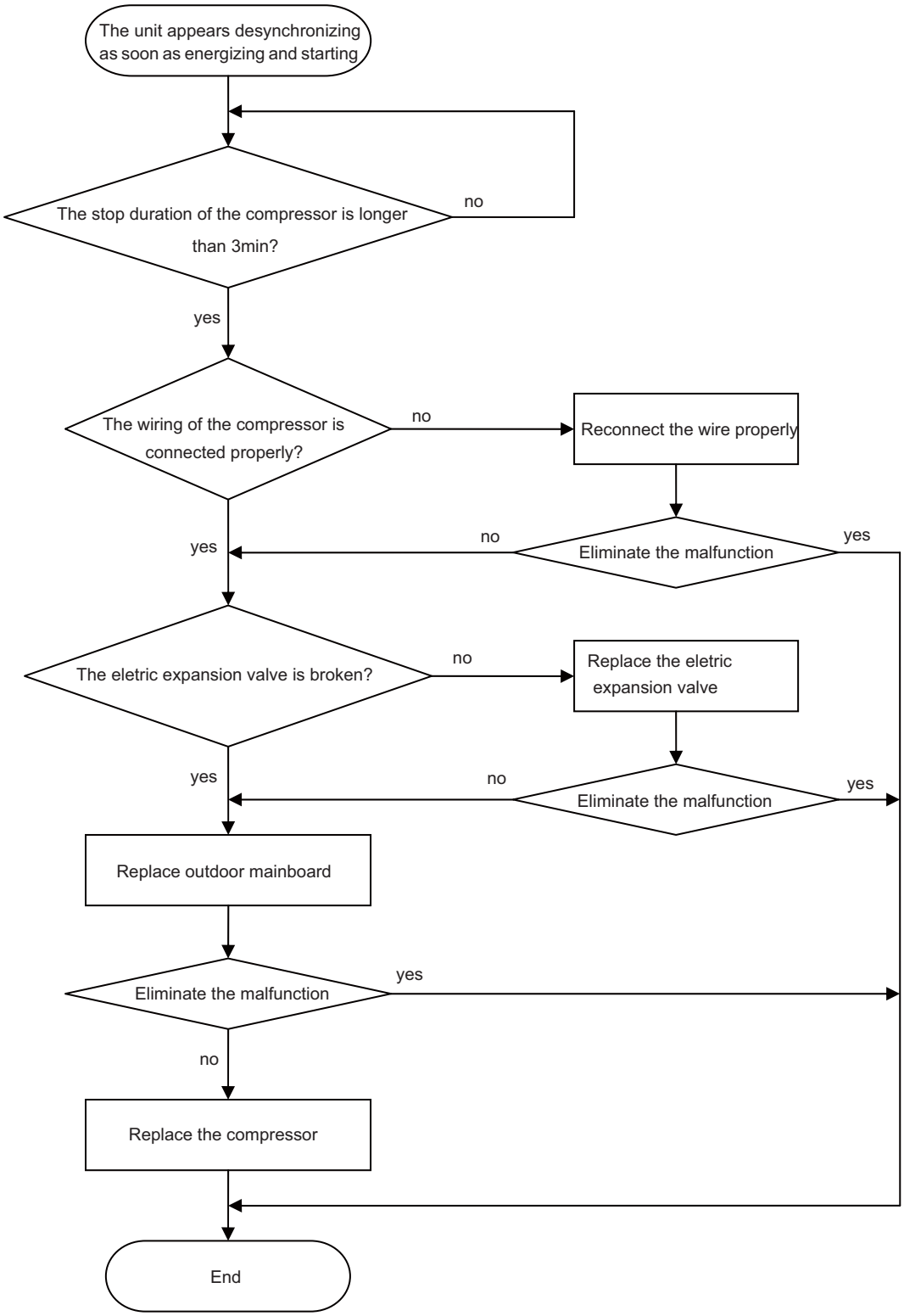
Noted: the detection method of the coil of the eletric expansion valve: there is five pieces of the coil of the eletric expansion valve, the resistance of one of them (the leftmost or the rightmost one) is almost the same as the resistance of other terminal (within 100 Ω). Judge the condition of the electronic expansion valve through detecting these resistance.

(9) Compressor desynchronizing malfunction

Main checking points:

- If the pressure of the system is too high;
- If the eletric expansion valve is working normally or it is broken;
- If the radiation of the unit is good;

Flow chart:



Appendix 1: Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor Units(15K)

Temp(℃)	Resistance(kΩ)		Temp(℃)	Resistance(kΩ)		Temp(℃)	Resistance(kΩ)		Temp(℃)	Resistance(kΩ)
-19	138.1		20	18.75		59	3.848		98	1.071
-18	128.6		21	17.93		60	3.711		99	1.039
-17	121.6		22	17.14		61	3.579		100	1.009
-16	115		23	16.39		62	3.454		101	0.98
-15	108.7		24	15.68		63	3.333		102	0.952
-14	102.9		25	15		64	3.217		103	0.925
-13	97.4		26	14.36		65	3.105		104	0.898
-12	92.22		27	13.74		66	2.998		105	0.873
-11	87.35		28	13.16		67	2.896		106	0.848
-10	82.75		29	12.6		68	2.797		107	0.825
-9	78.43		30	12.07		69	2.702		108	0.802
-8	74.35		31	11.57		70	2.611		109	0.779
-7	70.5		32	11.09		71	2.523		110	0.758
-6	66.88		33	10.63		72	2.439		111	0.737
-5	63.46		34	10.2		73	2.358		112	0.717
-4	60.23		35	9.779		74	2.28		113	0.697
-3	57.18		36	9.382		75	2.206		114	0.678
-2	54.31		37	9.003		76	2.133		115	0.66
-1	51.59		38	8.642		77	2.064		116	0.642
0	49.02		39	8.297		78	1.997		117	0.625
1	46.6		40	7.967		79	1.933		118	0.608
2	44.31		41	7.653		80	1.871		119	0.592
3	42.14		42	7.352		81	1.811		120	0.577
4	40.09		43	7.065		82	1.754		121	0.561
5	38.15		44	6.791		83	1.699		122	0.547
6	36.32		45	6.529		84	1.645		123	0.532
7	34.58		46	6.278		85	1.594		124	0.519
8	32.94		47	6.038		86	1.544		125	0.505
9	31.38		48	5.809		87	1.497		126	0.492
10	29.9		49	5.589		88	1.451		127	0.48
11	28.51		50	5.379		89	1.408		128	0.467
12	27.18		51	5.197		90	1.363		129	0.456
13	25.92		52	4.986		91	1.322		130	0.444
14	24.73		53	4.802		92	1.282		131	0.433
15	23.6		54	4.625		93	1.244		132	0.422
16	22.53		55	4.456		94	1.207		133	0.412
17	21.51		56	4.294		95	1.171		134	0.401
18	20.54		57	4.139		96	1.136		135	0.391
19	19.63		58	3.99		97	1.103		136	0.382

Appendix 2: Resistance Table of Outdoor and Indoor Tube Temperature Sensors(20K)

Temp(℃)	Resistance(kΩ)		Temp(℃)	Resistance(kΩ)		Temp(℃)	Resistance(kΩ)		Temp(℃)	Resistance(kΩ)
-19	181.4		20	25.01		59	5.13		98	1.427
-18	171.4		21	23.9		60	4.948		99	1.386
-17	162.1		22	22.85		61	4.773		100	1.346
-16	153.3		23	21.85		62	4.605		101	1.307
-15	145		24	20.9		63	4.443		102	1.269
-14	137.2		25	20		64	4.289		103	1.233
-13	129.9		26	19.14		65	4.14		104	1.198
-12	123		27	18.13		66	3.998		105	1.164
-11	116.5		28	17.55		67	3.861		106	1.131
-10	110.3		29	16.8		68	3.729		107	1.099
-9	104.6		30	16.1		69	3.603		108	1.069
-8	99.13		31	15.43		70	3.481		109	1.039
-7	94		32	14.79		71	3.364		110	1.01
-6	89.17		33	14.18		72	3.252		111	0.983
-5	84.61		34	13.59		73	3.144		112	0.956
-4	80.31		35	13.04		74	3.04		113	0.93
-3	76.24		36	12.51		75	2.94		114	0.904
-2	72.41		37	12		76	2.844		115	0.88
-1	68.79		38	11.52		77	2.752		116	0.856
0	65.37		39	11.06		78	2.663		117	0.833
1	62.13		40	10.62		79	2.577		118	0.811
2	59.08		41	10.2		80	2.495		119	0.77
3	56.19		42	9.803		81	2.415		120	0.769
4	53.46		43	9.42		82	2.339		121	0.746
5	50.87		44	9.054		83	2.265		122	0.729
6	48.42		45	8.705		84	2.194		123	0.71
7	46.11		46	8.37		85	2.125		124	0.692
8	43.92		47	8.051		86	2.059		125	0.674
9	41.84		48	7.745		87	1.996		126	0.658
10	39.87		49	7.453		88	1.934		127	0.64
11	38.01		50	7.173		89	1.875		128	0.623
12	36.24		51	6.905		90	1.818		129	0.607
13	34.57		52	6.648		91	1.736		130	0.592
14	32.98		53	6.403		92	1.71		131	0.577
15	31.47		54	6.167		93	1.658		132	0.563
16	30.04		55	5.942		94	1.609		133	0.549
17	28.68		56	5.726		95	1.561		134	0.535
18	27.39		57	5.519		96	1.515		135	0.521
19	26.17		58	5.32		97	1.47		136	0.509

Appendix3: Resistance Table for Outdoor Discharge Temperature Sensor (50K)

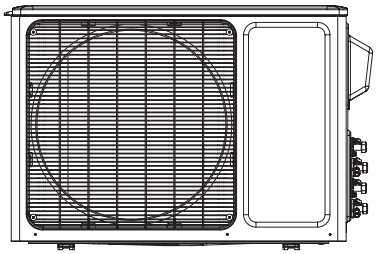
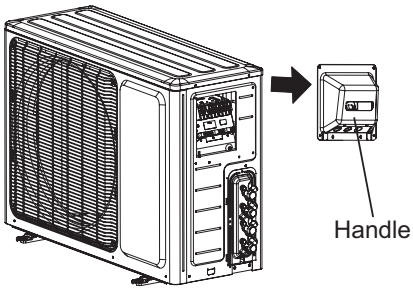
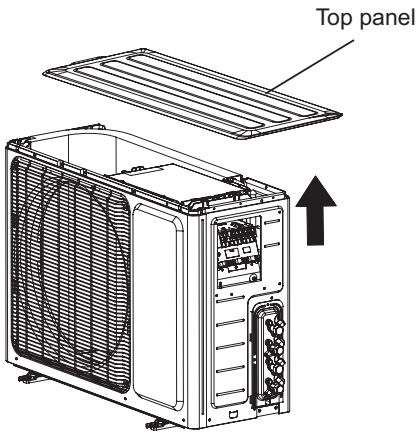
Temp(℃)	Resistance(kΩ)		Temp(℃)	Resistance(kΩ)		Temp(℃)	Resistance(kΩ)		Temp(℃)	Resistance(kΩ)
-29	853.5		10	98		49	18.34		88	4.75
-28	799.8		11	93.42		50	17.65		89	4.61
-27	750		12	89.07		51	16.99		90	4.47
-26	703.8		13	84.95		52	16.36		91	4.33
-25	660.8		14	81.05		53	15.75		92	4.20
-24	620.8		15	77.35		54	15.17		93	4.08
-23	580.6		16	73.83		55	14.62		94	3.96
-22	548.9		17	70.5		56	14.09		95	3.84
-21	516.6		18	67.34		57	13.58		96	3.73
-20	486.5		19	64.33		58	13.09		97	3.62
-19	458.3		20	61.48		59	12.62		98	3.51
-18	432		21	58.77		60	12.17		99	3.41
-17	407.4		22	56.19		61	11.74		100	3.32
-16	384.5		23	53.74		62	11.32		101	3.22
-15	362.9		24	51.41		63	10.93		102	3.13
-14	342.8		25	49.19		64	10.54		103	3.04
-13	323.9		26	47.08		65	10.18		104	2.96
-12	306.2		27	45.07		66	9.83		105	2.87
-11	289.6		28	43.16		67	9.49		106	2.79
-10	274		29	41.34		68	9.17		107	2.72
-9	259.3		30	39.61		69	8.85		108	2.64
-8	245.6		31	37.96		70	8.56		109	2.57
-7	232.6		32	36.38		71	8.27		110	2.50
-6	220.5		33	34.88		72	7.99		111	2.43
-5	209		34	33.45		73	7.73		112	2.37
-4	198.3		35	32.09		74	7.47		113	2.30
-3	199.1		36	30.79		75	7.22		114	2.24
-2	178.5		37	29.54		76	7.00		115	2.18
-1	169.5		38	28.36		77	6.76		116	2.12
0	161		39	27.23		78	6.54		117	2.07
1	153		40	26.15		79	6.33		118	2.02
2	145.4		41	25.11		80	6.13		119	1.96
3	138.3		42	24.13		81	5.93		120	1.91
4	131.5		43	23.19		82	5.75		121	1.86
5	125.1		44	22.29		83	5.57		122	1.82
6	119.1		45	21.43		84	5.39		123	1.77
7	113.4		46	20.6		85	5.22		124	1.73
8	108		47	19.81		86	5.06		125	1.68
9	102.8		48	19.06		87	4.90		126	1.64

Note: The information above is for reference only.

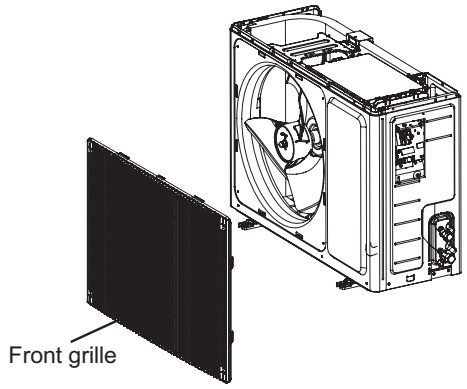
10. Removal Procedure

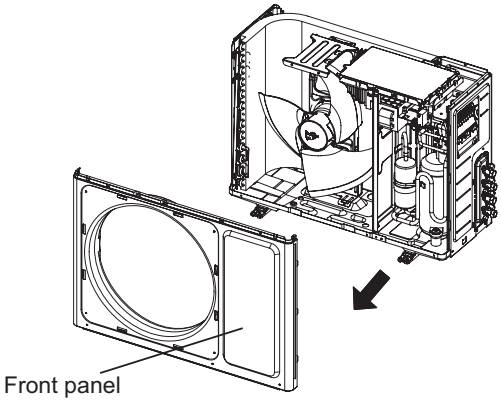
10.1 Removal Procedure(18K)

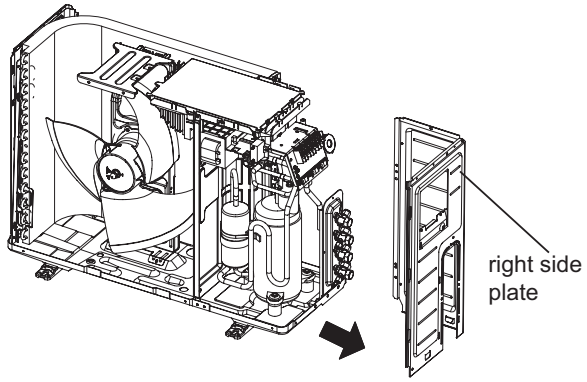
⚠ Warning Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

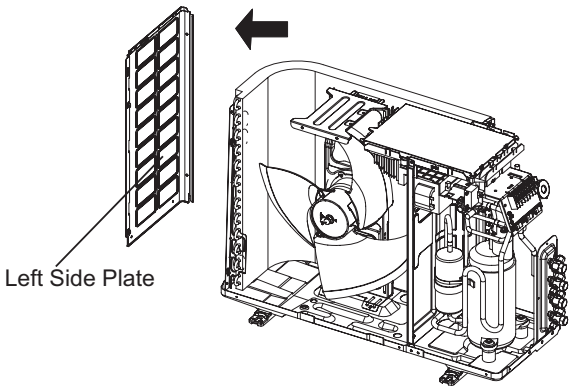
Steps	Procedure	
1. Remove top cover and handle		
1	Before disassembly.	
2	Twist off the screws used for fixing the handle, pull the handle upward to remove it.	
3	Twist off the screws used for fixing the top cover, pull the top cover upward to remove it.	

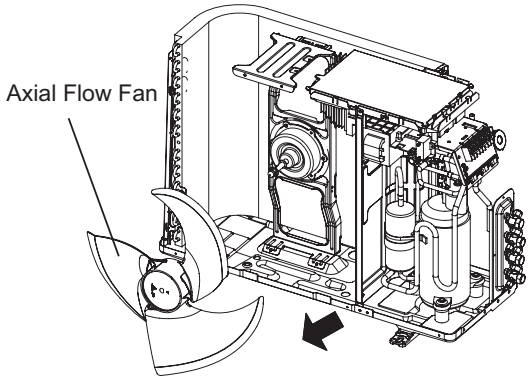
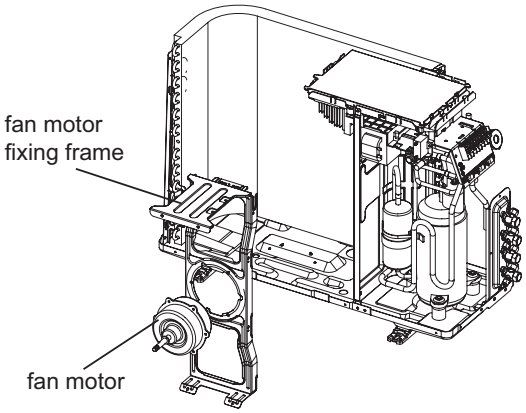
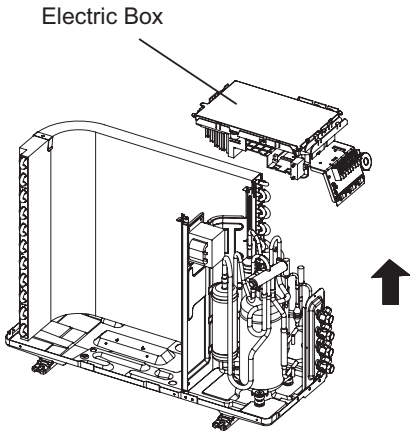
Steps	Procedure
2.Remove front grille and front panel	
1	Remove the screws connecting the front grille and the front panel. Remove the front grille.
2	Twist off the screws fixing the panel, pull it upward,loosen the clasp on the right side, rotate it to the left and then remove the front panel.
3.Remove right side plate	
1	Remove the screws connecting the right side plate with the chassis, the valve support and the electric box, and then remove the right side plate assy.
2	Remove the screws connecting the left side pla-teand the chassis, and then remove the left side plateassy

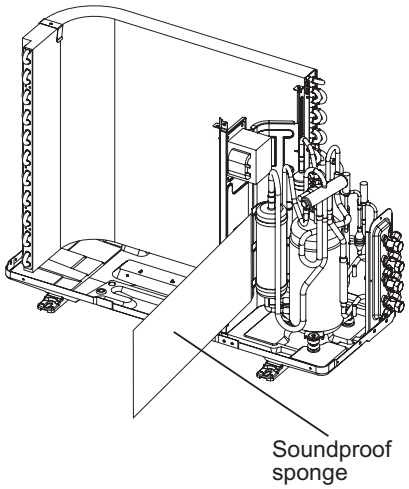
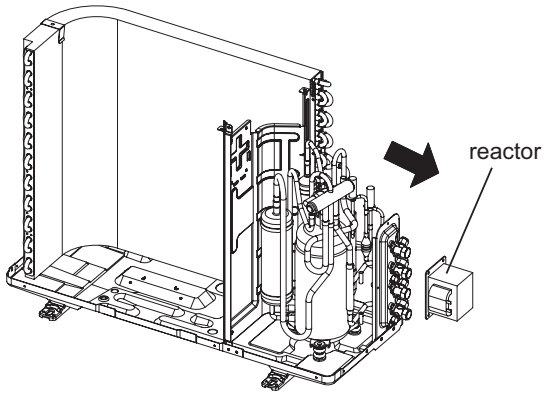
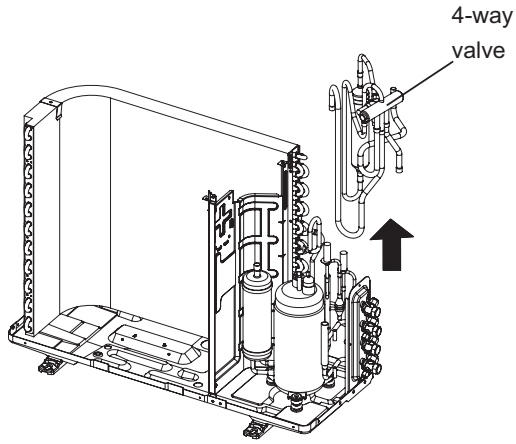








Steps	Procedure	
4.Remove the axial flow fan		
1	Remove the nuts fixing the blade and thenremove the axial flow fan.	
2	Remove the 4 tapping screws fixing the motor; disconnect the leading wire insert of the motor and then remove the motor.Remove the 2 tapping screws fixing the motor support and then pull the motor support upwards to remove it.	
5.Remove Electric Box Assy		
	Remove the screws fixing the electric box sub-assy; loosen the wire bundle; pull out the wiring terminals and then pull the electric box upwards to remove it.	

Steps	Procedure
6. Remove soundproof sponge Tear up the soundproof sponge carefully.	
7. Remove reactor Remove screws connecting reactor and middle isolation sheet, and then remove the reactor.	
8. Remove 4-way valve Discharge the refrigerant completely;unsolder the pipelines connecting the compressor and the condenser assy, and then remove the 4-way valve assy.	

Steps	Procedure
9. Remove electronic expansion valve and cut-off valve	
	Remove electronic expansion valve and cut-off valve Unsolder the spot weld between electronic expansion valve and cut-off valve as well as the spot weld of connection pipe for condenser, and then remove the expansion valve. Meanwhile, rotate out the electronic coil, and then pull it upwards to remove it.
10. Remove valve support sub-assy	
	Remove screws fixing valve support and chassis, and then remove the valve support sub-assy.
11. Remove isolation sheet	
	Remove screws fixing isolation sheet and then remove the isolation sheet.