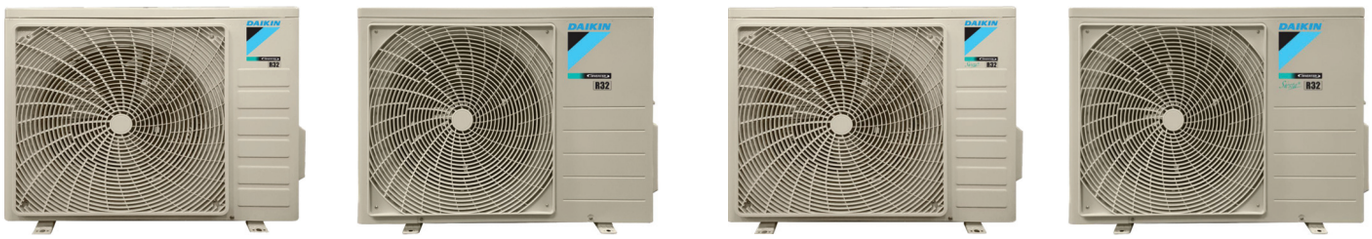
DAIKIN

DAMA-SM-21-002

R-32

Service Manual

Inverter Split
Wall Mounted Type (A)FTXC Series



[Applied Models]
● Inverter Split : Heat Pump Unit

Service Manual / Inverter Split Wall Mounted Type (A)FTXC Series

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1. Safety Cautions

Be sure to read the following safety cautions before conducting repair work.
After the repair work is complete, be sure to conduct a test operation to ensure that the equipment operates normally, and explain the cautions for operating the product to the customer.

	This manual is for the person in charge of maintenance and inspection.		This appliance is filled with R-32.

Caution Items

The caution items are classified into ⚠**Warning** and ⚠**Caution**. The ⚠**Warning** items are especially important since death or serious injury can result if they are not followed closely. The ⚠**Caution** items can also lead to serious accidents under some conditions if they are not followed. Therefore, be sure to observe all the safety caution items described below.

Pictograms

△ This symbol indicates an item for which caution must be exercised.
The pictogram shows the item to which attention must be paid.
◯ This symbol indicates a prohibited action.
The prohibited item or action is shown in the illustration or near the symbol.
● This symbol indicates an action that must be taken, or an instruction.
The instruction is shown in the illustration or near the symbol.

1.1 Warnings and Cautions Regarding Safety of Workers

⚠ **Warning**	
Do not store equipment in a room with fire sources (e.g., naked flames, gas appliances, electric heaters).	
Be sure to disconnect the power cable from the socket before disassembling equipment for repair. Working on equipment that is connected to the power supply may cause an electrical shock. If it is necessary to supply power to the equipment to conduct the repair or inspect the circuits, do not touch any electrically charged sections of the equipment.	
If refrigerant gas is discharged during repair work, do not touch the discharged refrigerant gas. Refrigerant gas may cause frostbite.	
When disconnecting the suction or discharge pipe of the compressor at the welded section, evacuate the refrigerant gas completely at a well-ventilated place first. If there is gas remaining inside the compressor, the refrigerant gas or refrigerating machine oil discharges when the pipe is disconnected, and it may cause injury.	
If refrigerant gas leaks during repair work, ventilate the area. Refrigerant gas may generate toxic gases when it contacts flames.	
Be sure to discharge the capacitor completely before conducting repair work. The step-up capacitor supplies high-voltage electricity to the electrical components of the outdoor unit. A charged capacitor may cause an electrical shock.	

Warning	
Do not turn the air conditioner on or off by plugging in or unplugging the power cable. Plugging in or unplugging the power cable to operate the equipment may cause an electrical shock or fire.	
Be sure to wear a safety helmet, gloves, and a safety belt when working in a high place (more than 2 m). Insufficient safety measures may cause a fall.	
In case of R-32 refrigerant models, be sure to use pipes, flare nuts and tools intended for the exclusive use with the R-32 refrigerant. The use of materials for R-22 refrigerant models may cause a serious accident, such as a damage of refrigerant cycle or equipment failure.	
Do not mix air or gas other than the specified refrigerant (R-32 / R-22) in the refrigerant system. If air enters the refrigerant system, an excessively high pressure results, causing equipment damage and injury.	

Caution	
Do not repair electrical components with wet hands. Working on the equipment with wet hands may cause an electrical shock.	
Do not clean the air conditioner with water. Washing the unit with water may cause an electrical shock.	
Be sure to provide an earth / grounding when repairing the equipment in a humid or wet place, to avoid electrical shocks.	
Be sure to turn off the power switch and unplug the power cable when cleaning the equipment. The internal fan rotates at a high speed, and may cause injury.	
Be sure to conduct repair work with appropriate tools. The use of inappropriate tools may cause injury.	
Be sure to check that the refrigerating cycle section has cooled down enough before conducting repair work. Working on the unit when the refrigerating cycle section is hot may cause burns.	
Conduct welding work in a well-ventilated place. Using the welder in an enclosed room may cause oxygen deficiency.	

Safety Checklist

- **Checking the area**
  Before beginning work, conduct safety checks to minimise the risk of ignition. When repairing the refrigerating system, take the following precautions before work.

- **Work procedure**
  Work shall be conducted under a controlled procedure so as to minimise the risk of working in the presence of R-32 or vapour.

- **General working 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 materials.

- **Checking for presence of refrigerant**
  The working area shall be checked with an appropriate refrigerant detector before 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 R-32, i.e. non-sparking, adequately sealed or intrinsically safe.

- **Fire extinguishing equipment**
  If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be made available at hand. Prepare a dry powder or CO_2 fire extinguisher adjacent to the working area.

- **No ignition sources**
  During work on a refrigeration system which involves exposing any piping work that contains or has contained R-32, any sources of ignition shall not be used in a manner that may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept at a safe distance from the site of installation, repairing, or removing space.
  Before starting work, the area around the equipment shall be examined to make sure that there are no flammable hazard or ignition risks. No Smoking signs shall be displayed.

- **Ventilated area**
  Ensure that the working area is open or that it is adequately ventilated before work.
  Adequate ventilation shall be maintained during the entire period of work.
  The ventilation should disperse any released refrigerant and preferably discharge it into the external atmosphere.

- **Checking the refrigeration equipment**
  Where electrical components are to be changed, the new components shall be fit for the purpose and have the correct specifications.
  The manufacturer's maintenance and service guidelines shall be followed at all times.
  If there are any unclear points, consult the manufacturer's technical department for assistance.
  The following checks shall be applied to any installation work involving R-32:
  - The amount of charge is in accordance with the size of the room where 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 on the equipment is visible and legible. Markings and signs that are illegible shall be corrected;
  - Refrigeration pipes or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, or the refrigerant containing components are constructed of materials which are inherently resistant to corrosion or are suitably protected against corrosion.

Safety Checklist (con't)

- **Checking electrical devices**
  Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. In case there is any fault that could endanger safety, no electrical supply shall be connected to the circuit until the fault is satisfactorily dealt with.
  Initial safety checks shall include:
  - that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
  - that no live electrical components and wiring are exposed while charging, recovering or purging the system;
  - that the equipment is earthed at all times.

- **Repairs to sealed components**
  During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon before the removal of any sealed covers, etc. If it is absolutely necessary to have power supplied to equipment during servicing, continuously operating leak detection shall be installed at the most dangerous point of the system in order to warn of a potentially hazardous situation.
  Particular attention shall be paid to the following: ensure that working on electrical components does not alter the casing in such a way that affects the level of protection including damage to cables, excessive number of connections, terminals different from the original specification, damage to seals, incorrect fitting of glands, etc.
  Ensure that the equipment is mounted securely.
  Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingression of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.
  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 before working on them.

- **Repair to intrinsically safe components**
  Do not apply any permanent inductive or capacitance load to the circuit without ensuring that this will not exceed the permissible voltage and current for the equipment in use.
  Only intrinsically safe components can be worked on in the presence of a flammable atmosphere.
  The test apparatus shall be of correct rating.
  Replace components only with parts specified by the manufacturer. Using other parts may result in ignition of the refrigerant leaked into the atmosphere.

- **Wiring**
  Check that wiring is not 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 ageing or continuous vibration from sources such as compressors or fans.

- **Detecting of R-32**
  Under no circumstances shall potential sources of ignition be used in the search for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

Safety Checklist (con't)

- **Leak detection methods**
  The following leak detection methods can be applied for systems containing R-32. Electronic leak detectors shall be used to detect R-32, 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 that it is suitable for the refrigerant used. Leak detection equipment shall be set to the percentage of the lower flammability limit (LFL) of the refrigerant and calibrated to fit the refrigerant employed. The appropriate percentage of gas (maximum 25%) shall be 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 piping work.
  If a leak is suspected, all naked flames shall be removed or extinguished.
  If a refrigerant leakage which requires brazing is found, 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 point of the leakage. Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

- **Removal and evacuation**
  When breaking the refrigerant circuit to make repairs or any other purpose, conventional procedures may be used. However, flammability must be taken into consideration. The following procedure shall be adhered to:
  - Remove refrigerant;
  - Purge the circuit with inert gas;
  - Evacuate the inert gas;
  - Purge again with inert gas;
  - Carry out cutting or brazing of the circuit.

  The refrigerant shall be recovered into the correct recovery cylinders. The system shall be cleaned with OFN to render the unit safe. (= Flushing) This process may need to be repeated several times. Compressed air or oxygen shall not be used for this task.
  Flushing shall be achieved through breaking the vacuum by filling the system with OFN until the working pressure is achieved, then venting the OFN into the atmosphere, and finally pulling the system down to vacuum again. This process shall be repeated until no refrigerant remains within the system. After the last OFN charge is finished, the system shall be vented down to atmospheric pressure to enable work. This operation is especially important if brazing operations on the piping work are to take place.

  Ensure that the outlet for the vacuum pump is not close to any ignition sources and that there is ventilation available.

- **Charging procedures**
  In addition to conventional charging procedures, the following requirements shall be met. Ensure that the charging equipment to be used is not contaminated by different refrigerants. 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 before 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.

  Before recharging, the system shall be tested for leakage with OFN. On completion of charging, the system shall be tested before commissioning. Follow up leakage test shall be carried out before leaving the site.

Safety Checklist (con't)

- Decommissioning
  Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details. It is recommended to train technicians so that all of the refrigerant is recovered safely. In case analysis is required before re-using the reclaimed refrigerant, an oil and refrigerant sample shall be taken before proceeding with decommissioning. It is essential that electrical power is available before work.
  (1) Comprehend the equipment and its operation.
  (2) Isolate the system electrically.
  (3) Before starting work, ensure that:
    - mechanical handling equipment is available if required, for handling refrigerant cylinders;
    - protective equipment can be used in compliance with specifications;
    - the recovery process is supervised by a competent person at all times;
    - recovery equipment and cylinders conform to the appropriate standards.

  (4) Pump down the refrigerant system, if possible.
  (5) If vacuum can not be ensured, apply a manifold so that refrigerant can be removed from various parts of the system.
  (6) Make sure that the cylinder is situated on the scale before recovery takes place.
  (7) Start the refrigerant recovery device and operate it in accordance with the manufacturer's instructions.
  (8) Do not overfill cylinders. (Do not exceed 80% liquid charge volume).
  (9) Do not exceed the maximum working pressure of the cylinder, even temporarily.
  (10)When the cylinders have been filled correctly and the process is completed, make sure that the cylinders and the equipment are removed from site promptly and all valves on the equipment are closed.
  (11)Recovered refrigerant shall not be charged into another refrigeration system before it has been cleaned and checked.

- **Labelling**
  Equipment shall be labelled stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are labels on the equipment stating the equipment contains R-32.

- Refrigerant recovery
  When removing refrigerant from a system, either for servicing or decommissioning, it is recommended to conduct training so that all refrigerants can be removed safely.
  When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are used.
  Ensure that the correct number of cylinders for holding the total system charge are available. All cylinders to be used must be designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be equipped with a pressure relief valve and associated shut-off valves in good working order. If possible, empty recovery cylinders shall be cooled in a separate place before recovery is conducted.
  The recovery equipment shall be in good working order with instructions concerning the equipment at hand, and shall be suitable for the recovery of R-32. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be equipped with leak-free disconnect couplings and in good condition. Before using the recovery device, check that it has undergone proper maintenance, that it is in satisfactory working order, and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant leakage. Consult manufacturer if in doubt.
  The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, with the relevant Waste Transfer Note attached. Do not mix refrigerants in recovery units and especially not in cylinders.
  If compressors or compressor oil are to be removed, ensure that the refrigerant melted into the oil has been evacuated to an acceptable level to make certain that R-32 does not remain within the oil. The evacuation process shall be carried out before returning the compressor to the supplier. Only electric heating to the compressor body shall be employed to accelerate this process. Oil drained from the system shall be treated safely.

1.2 Warnings and Cautions Regarding Safety of Users

Warning	
Do not store the equipment in a room with fire sources (e.g., naked flames, gas appliances, electric heaters).	
Be sure to use parts listed in the service parts list of the applicable model and appropriate tools to conduct repair work. Never attempt to modify the equipment. The use of inappropriate parts or tools may cause an electrical shock, excessive heat generation or fire.	
If the power cable and lead wires are scratched or have deteriorated, be sure to replace them. Damaged cable and wires may cause an electrical shock, excessive heat generation or fire.	
Do not use a joined power cable or extension cable, or share the same power outlet with other electrical appliances, since it may cause an electrical shock, excessive heat generation or fire.	
Be sure to use an exclusive power circuit for the equipment, and follow the local technical standards related to the electrical equipment, the internal wiring regulations, and the instruction manual for installation when conducting electrical work. Insufficient power circuit capacity and improper electrical work may cause an electrical shock or fire.	
Be sure to use the specified cable for wiring between the indoor and outdoor units. Make the connections securely and route the cable properly so that there is no force pulling the cable at the connection terminals. Improper connections may cause excessive heat generation or fire.	
When wiring between the indoor and outdoor units, make sure that the terminal cover does not lift off or dismount because of the cable. If the cover is not mounted properly, the terminal connection section may cause an electrical shock, excessive heat generation or fire.	
Do not damage or modify the power cable. Damaged or modified power cables may cause an electrical shock or fire. Placing heavy items on the power cable, or heating or pulling the power cable may damage it.	
Do not mix air or gas other than the specified refrigerant (R-32 / R-22) in the refrigerant system. If air enters the refrigerant system, an excessively high pressure results, causing equipment damage and injury.	
If the refrigerant gas leaks, be sure to locate the leaking point and repair it before charging the refrigerant. After charging the refrigerant, make sure that there is no leak. If the leaking point cannot be located and the repair work must be stopped, be sure to pump-down, and close the service valve, to prevent refrigerant gas from leaking into the room. Refrigerant gas itself is harmless, but it may generate toxic gases when it contacts flames, such as those from fan type and other heaters, stoves and ranges.	
When relocating the equipment, make sure that the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength or the installation work is not conducted securely, the equipment may fall and cause injury.	

Warning	
Check to make sure that the power cable plug is not dirty or loose, then insert the plug into a power outlet securely. If the plug is dusty or has a loose connection, it may cause an electrical shock or fire.	
When replacing the coin battery in the remote controller, be sure to dispose of the old battery to prevent children from swallowing it. If a child swallows the coin battery, see a doctor immediately.	

Caution	
Installation of a leakage breaker is necessary in some cases depending on the conditions of the installation site, to prevent electrical shocks.	
Do not install the equipment in a place where there is a possibility of combustible gas leaks. If combustible gas leaks and remains around the unit, it may cause a fire.	
Check to see if parts and wires are mounted and connected properly, and if connections at the soldered or crimped terminals are secure. Improper installation and connections may cause excessive heat generation, fire or an electrical shock.	
If the installation platform or frame has corroded, replace it. A corroded installation platform or frame may cause the unit to fall, resulting in injury.	
Check the earth / grounding, and repair it if the equipment is not properly earthed / grounded. Improper earth / grounding may cause an electrical shock.	
Be sure to measure insulation resistance after the repair, and make sure that the resistance is 1 MΩ or higher. Faulty insulation may cause an electrical shock.	
Be sure to check the drainage of the indoor unit after the repair. Faulty drainage may cause water to enter the room and wet the furniture and floor.	
Do not tilt the unit when removing it. The water inside the unit may spill and wet the furniture and floor.	

2. Icons Used

The following icons are used to attract the attention of the reader to specific information.

Icon	Type of Information	Description
Warning	Warning	**Warning** is used when there is danger of personal injury.
Caution	Caution	**Caution** is used when there is danger that the reader, through incorrect manipulation, may damage equipment, lose data, get an unexpected result or have to restart (part of) a procedure.
Note	Note	**Note** provides information that is not indispensable, but may nevertheless be valuable to the reader, such as tips and tricks.
Reference	Reference	**Reference** guides the reader to other places in this binder or in this manual, where he/she will find additional information on a specific topic.

3. Revision History

Month/Year	Version	Revised contents
04/ 2021	DAMA-SM-21-002	First edition

Part 1
General Information

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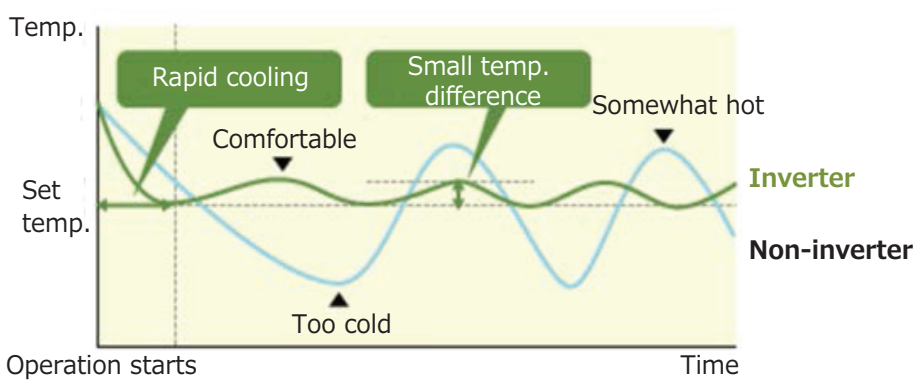
Chapter 1 Basics of Inverter Control

1. What is Inverter?

Maybe you have seen or heard the word “inverter” in various products such as inverter lights, inverter washing machines, or inverter refrigerators.

The inverter is frequency converting equipment, indicating the technology to control voltage, current, and frequency.

Inverter air conditioners can “save energy” since the inverter technology allows precise control of the compressor, which plays a key role to cool or heat air, or the number of revolutions of the motor to drive fans. Non-inverter air conditioners can only provide simple ON/OFF operation for temperature control, in other words, operation stops when the set temperature is reached and starts when the temperature rises (or falls, in the case of heating). Inverter air conditioners enable full-power operation until the set temperature is reached and then switching to low-speed operation once it is reached, resulting in **reduced power consumption** compared to non-inverter air conditioners.



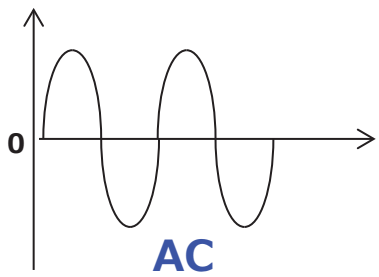
Inverter air conditioners have a large number of components, which makes service diagnosis difficult. Therefore, **the inverter diagnostic technique is crucial**.

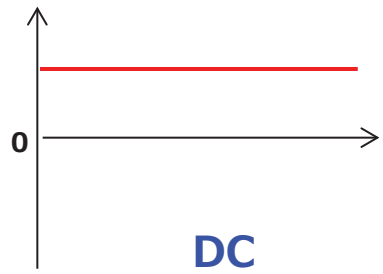
Item	Non-inverter air conditioner	Inverter air conditioner
1. Time until the room temperature reaches the set temperature	1. Relatively takes time due to fixed capacity	1. Takes short time by increasing capacity
2. Changes in temperature after the set temperature is reached	2. Large changes due to operation ON/OFF	2. Small changes due to operating capacity responding to the load (comfortable)
3. Inrush current when compressor starts up	3. 5-6 times of rated current	3. 1.5 times of rated current due to precise current control
4. Heating operation characteristics at low outdoor air temperature	4. Performance decreases	4. Increased rotation speed makes up for decreased performance
5. Defrost operation time	5. Relatively takes time due to fixed capacity	5. Operation at full capacity makes it short
6. Apparatus configuration	6. Relatively simple	
7. Service diagnosis	7. Relatively easy	

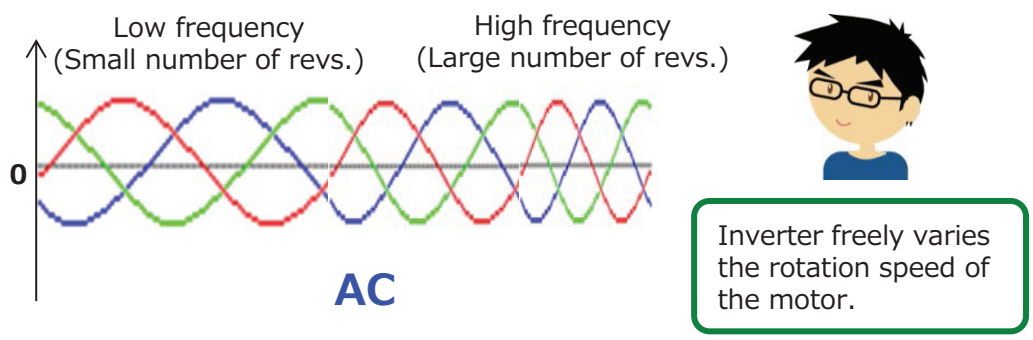
2. Inverter Basics

An inverter is a device to convert DC (direct current) into AC (alternating current).

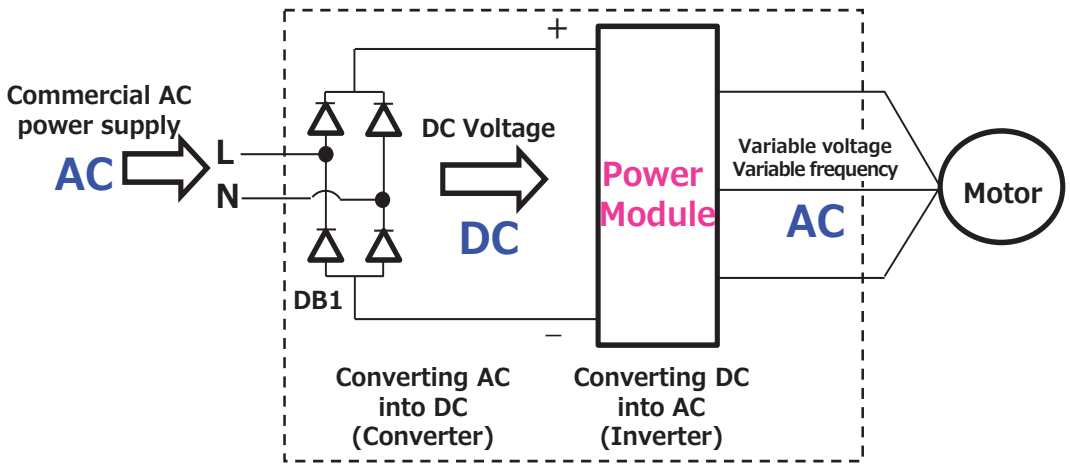
For air conditioners, an inverter is a device to convert current from commercial AC power supply to AC having an arbitrary frequency and voltage, including the converter function to convert AC into DC. The inverter freely varies the rotation speed of the compressor motor.







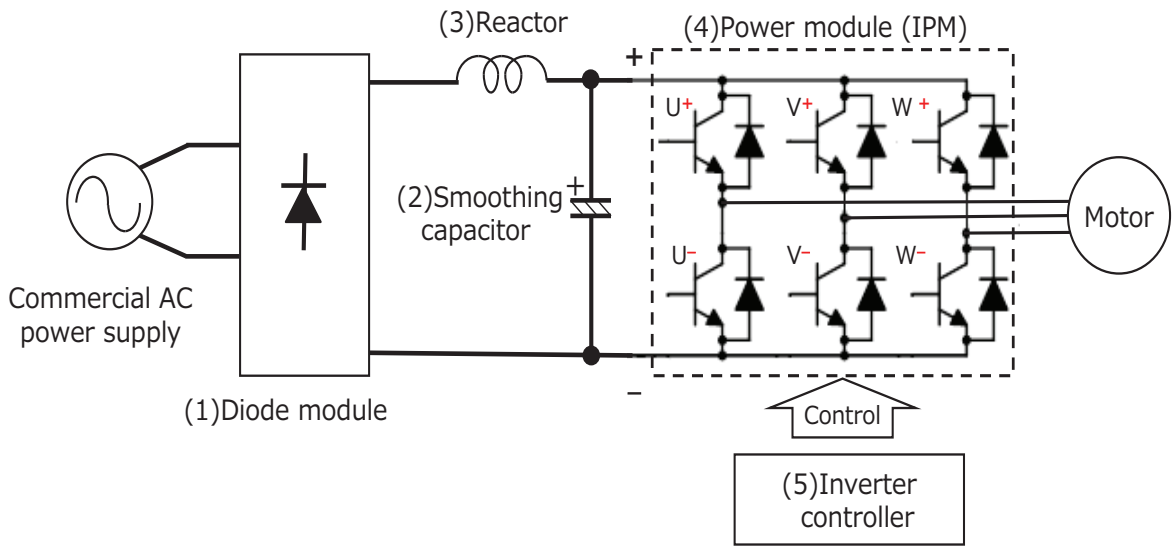
<Block diagram of inverter>

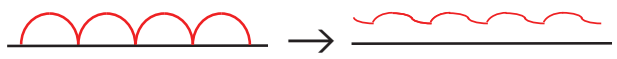
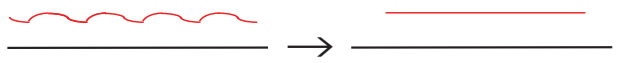
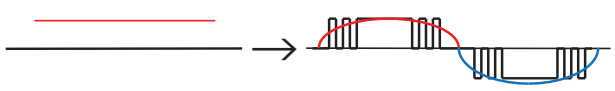
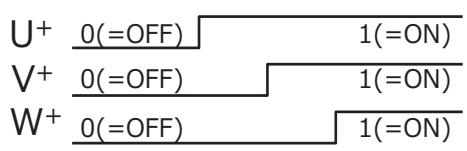


3. Names and Functions of Inverter Components

Names and functions of inverter components are as below.

<Schematic view of inverter main circuit configuration>



Name	Function	
(1)Diode module	Rectifies AC into DC	
(2)Smoothing capacitor	Smooths out pulsating current by charging and discharging into smoothed DC	
(3)Reactor	Reduces pulsating current	
(4)Power module (IPM)	Chops DC at high speed into sine-wave AC	
(5)Inverter controller	Generates 1/0 digital signals for converting DC into AC from operation/ frequency commands and sends them out to IPM	

4. Applicable Models

Model Name and Power Supply

Indoor Unit	Outdoor Unit	Power Supply
FTXC20CV1B	RXC20CV1B	1Phase, 220-240V, 50Hz
FTXC25CV1B	RXC25CV1B	
FTXC35CV1B	RXC35CV1B	
FTXC50CV1B	RXC50CV1B	
FTXC60CV1B	RXC60CV1B	
FTXC71CV1B	RXC71CV1B	
ATXC20CV1B	ARXC20CV1B	
ATXC25CV1B	ARXC25CV1B	
ATXC35CV1B	ARXC35CV1B	
ATXC50CV1B	ARXC50CV1B	
ATXC60CV1B	ARXC60CV1B	
ATXC71CV1B	ARXC71CV1B	

Nomenclature

Indoor Unit

Definition	Description
Unit Category	F : Air-Cooled Split Indoor Unit, DAIKIN Brand A : Air-Cooled Split Indoor Unit, DAIKIN Siesta Brand
Product Type	T : Wall Mounted
System	X : Inverter, Heatpump
Refrigerant & Grade	C : R32 , Standard
Capacity Indication*	20 : 2.0 kW
Major Design Change	C : C Series
Power Supply	V1 : 1Phase / 220V-240V / 50Hz
Country	B : Europe

Outdoor Unit

Definition	Description
Unit Category	R : Air-Cooled Split Outdoor Unit, DAIKIN Brand AR : Air-Cooled Split Outdoor Unit, DAIKIN Siesta Brand
System	X : Inverter, Heatpump
Refrigerant & Grade	C : R32 , Standard
Capacity Indication*	20 : 2.0 kW
Major Design Category	C : C Series
Power Supply	V1 : 1Phase / 220V-240V / 50Hz
Country	B : Europe

Remark:
*Capacity value under Nomenclature is an indication.
Please refer to Engineering and Physical Data for exact capacity value.

Part 2
Specifications

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1. Specification Data

MODEL	INDOOR UNIT		FTXC20C		FTXC25C	
	OUTDOOR UNIT		RXC20C		RXC25C	
			Cooling	Heating	Cooling	Heating
Rated Capacity (Min. ~ Max.)		kW	2.00 (1.30 ~ 3.00)	2.50 (1.30 ~ 4.00)	2.56 (1.30 ~ 3.00)	2.84 (1.30 ~ 4.00)
		Btu/h	6800 (4400 ~ 10200)	8500 (4400 ~ 13600)	8700 (4400 ~ 10200)	9700 (4400 ~ 13600)
Rated Running Current (Min. ~ Max.)		A	3.43 (1.86 ~ 5.13)	3.16 (1.74 ~ 5.95)	3.47 (1.86 ~ 5.13)	3.45 (1.74 ~ 5.95)
Rated Power Consumption (Min. ~ Max.)		W	595 (300 ~ 1150)	670 (275 ~ 1350)	765 (300 ~ 1150)	750 (275 ~ 1350)
EER		W/W	3.36	N/A	3.35	N/A
SEER			6.89	N/A	6.84	N/A
COP		W/W	N/A	3.73	N/A	3.79
SCOP (Average Climate)			N/A	4.40	N/A	4.45
SCOP (Warm Climate)			N/A	5.78	N/A	5.81
Power Factor (Rated)			0.754	0.922	0.959	0.945
Piping Connections	Liquid	mm	6.4			
	Gas	mm	9.5			
Refrigerant	Type		R32			
	Charge	kg	0.55			
Max. Interunit Piping Length		m	20			
Max. Interunit Height Difference		m	15			
INDOOR UNIT			FTXC20C		FTXC25C	
Front Panel Colour			WHITE			
Airflow Rate	Turbo	CFM	410			
	High	CFM	380			
	Medium	CFM	310			
	Low	CFM	230			
	Quiet	CFM	190			
Sound Pressure Level (H/M/L/Q)		dBA	38/33/26/20			
Fan	Type		CROSS FLOW			
	Drive		DIRECT			
Fan Motor	Type		DIRECT CURRENT			
	Motor Output	W	38			
	Running Current (Rated)	A	0.14			
	Power Consumption (Rated)	W	16			
Air Direction Control			UP, DOWN, LEFT, RIGHT			
Air Filter			SARANET			
Dimensions (H X W X D)		mm	288 x 770 x 234			
Packaged Dimensions (H X W X D)		mm	327 X 830 X 363			
Weight		kg	9.0			
Condensate Drain Size		mm	19.05			
OUTDOOR UNIT			RXC20C		RXC25C	
Casing Colour			IVORY WHITE			
Airflow Rate		CFM	930			
Sound Pressure Level		dBA	45			
Fan	Type		PROPELLER			
	Drive		DIRECT			
Fan Motor	Type		DIRECT CURRENT			
	Index of protection (IP)		24			
	Insulation Grade		E			
	Running Current (Rated)	A	0.28			
	Power Consumption (Rated)	W	29			
	Motor Output	W	26			
	Poles		8			
Compressor	Type		HERMETIC SWING			
	Oil type		DAPHNE FW68DA			
	Oil amount	cm^3	375			
	Running Current (Rated)	A	N/A			
	Power Consumption (Rated)	W	N/A			
Heat Exchanger Type			FIN TUBE			
Dimensions (H X W X D)		mm	550 X 658 X 273			
Packaged Dimensions (H X W X D)		mm	610 X 781 X 363			
Weight		kg	24			
Drawing No.			3D129851			

1) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 (NON-DUCTED UNIT) OR ISO 13253 (DUCTED UNIT).
2) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

COOLING	HEATING
INDOOR: 27°CDB / 19°CWB	INDOOR: 20°CDB
OUTDOOR: 35°CDB	OUTDOOR: 7°CDB / 6°CWB

MODEL	INDOOR UNIT		FTXC35C		FTXC50C	
	OUTDOOR UNIT		RXC35C		RXC50C	
			Cooling	Heating	Cooling	Heating
Rated Capacity (Min. ~ Max.)		kW	3.50 (1.30 ~ 4.00)	4.00 (1.30 ~ 4.80)	5.10 (1.37 ~ 6.20)	5.62 (1.36 ~ 6.60)
		Btu/h	11900 (4400 ~ 13600)	13600 (4400 ~ 16400)	17400 (4700 ~ 21200)	19200 (4600 ~ 22500)
Rated Running Current (Min. ~ Max.)		A	4.68 (1.92 ~ 7.64)	4.82 (1.74 ~ 6.88)	6.82 (1.50 ~ 9.24)	6.66 (1.36 ~ 8.10)
Rated Power Consumption (Min. ~ Max.)		W	1045 (315 - 1740)	1070 (275 - 1570)	1550 (295 - 2110)	1515 (270 - 1850)
EER		W/W	3.35	N/A	3.29	N/A
SEER			6.87	N/A	6.45	N/A
COP		W/W	N/A	3.74	N/A	3.71
SCOP (Average Climate)			N/A	4.28	N/A	4.42
SCOP (Warm Climate)			N/A	5.69	N/A	5.32
Power Factor (Rated)			0.971	0.965	0.988	0.989
Piping Connection	Liquid	mm	6.4			
	Gas	mm	9.5		12.7	
Refrigerant	Type		R32			
	Charge	kg	0.75		1.00	
Max. Interunit Piping Length		m	20		30	
Max. Interunit Height Difference		m	15		20	
INDOOR UNIT			FTXC35C		FTXC50C	
Front Panel Colour			WHITE			
Airflow Rate	Turbo	CFM	400		450	
	High	CFM	380		430	
	Medium	CFM	320		360	
	Low	CFM	230		290	
	Quiet	CFM	190		260	
Sound Pressure Level (H/M/L/Q)		dBA	39/34/26/21		45/39/33/29	
Fan	Type		CROSS FLOW			
	Drive		DIRECT			
Fan Motor	Type		DIRECT CURRENT			
	Motor Output	W	38			
	Running Current (Rated)	A	0.15		0.19	
	Power Consumption (Rated)	W	18		24	
Air Direction Control			UP, DOWN, LEFT, RIGHT			
Air Filter			SARANET			
Dimensions (H X W X D)		mm	288 X 770 X 234			
Packaged Dimensions (H X W X D)		mm	327 X 830 X 363			
Weight		kg	9.5			
Condensate Drain Size		mm	19.05			
OUTDOOR UNIT			RXC35C		RXC50C	
Casing Colour			IVORY WHITE			
Airflow Rate		CFM	840		1310	
Sound Pressure Level		dBA	46		51	
Fan	Type		PROPELLER			
	Drive		DIRECT			
Fan Motor	Type		DIRECT CURRENT			
	Index of protection (IP)		24		23	
	Insulation Grade		E			
	Running Current (Rated)	A	0.32		0.38	0.49
	Power Consumption (Rated)	W	33		46	
	Motor Output	W	26		61	
	Poles		8			
Compressor	Type		HERMETIC SWING			
	Oil Type		DAPHNE FW68DA			
	Oil amount	cm^3	375		650	
	Running Current (Rated)	A	N/A			
	Power Consumption (Rated)	W	N/A			
Heat Exchanger Type			FIN TUBE			
Dimensions (H X W X D)		mm	550 X 658 X 273		615 X 845 X 300	
Packaged Dimensions (H X W X D)		mm	610 X 781 X 363		679 X 992 X 414	
Weight		kg	26		39	
Drawing No.			3D129851			

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COOLING	HEATING
INDOOR: 27°CDB / 19°CWB	INDOOR: 20°CDB
OUTDOOR: 35°CDB	OUTDOOR: 7°CDB / 6°CWB

MODEL	INDOOR UNIT		FTXC60C		FTXC71C	
	OUTDOOR UNIT		RXC60C		RXC71C	
			Cooling	Heating	Cooling	Heating
Rated Capacity (Min. ~ Max.)		kW	6.23 (1.80 ~ 7.00)	6.40 (1.48 ~ 8.00)	7.10 (2.30 ~ 7.30)	8.00 (2.30 ~ 9.00)
		Btu/h	21300 (6100 ~ 23900)	21800 (5000 ~ 27300)	24200 (7800 ~ 24900)	27300 (7800 ~ 30700)
Rated Running Current (Min. ~ Max.)		A	8.29 (1.86 ~ 8.96)	7.38 (1.61 ~ 10.27)	10.40 (2.17 ~ 11.10)	10.80 (2.48 ~ 11.50)
Rated Power Consumption (Min. ~ Max.)		W	1890 (380 ~ 2045)	1680 (325 ~ 2350)	2380 (440 ~ 2540)	2460 (500 ~ 2640
EER		W/W	3.30	N/A	2.98	N/A
SEER			6.40	N/A	5.30	N/A
COP		W/W	N/A	3.81	N/A	3.25
SCOP (Average Climate)			N/A	4.24	N/A	3.81
SCOP (Warm Climate)			N/A	5.38	N/A	4.60
Power Factor (Rated)			0.991	0.990	0.995	0.990
Piping Connection	Liquid	mm	6.4			
	Gas	mm	12.7			
Refrigerant	Type		R32			
	Charge	kg	1.10		1.15	
Max. Interunit Piping Length		m	30			
Max. Interunit Height Difference		m	20			
INDOOR UNIT			FTXC60C		FTXC71C	
Front Panel Colour			WHITE			
Airflow Rate	Turbo	CFM	770			
	High	CFM	720			
	Medium	CFM	560			
	Low	CFM	480			
	Quiet	CFM	360			
Sound Pressure Level (H/M/L/Q)		dBA	46/42/38/30			
Fan	Type		CROSS FLOW			
	Drive		DIRECT			
Fan Motor	Type		DIRECT CURRENT			
	Motor Output	W	38			
	Running Current (Rated)	A	0.43			
	Power Consumption (Rated)	W	47			
Air Direction Control			UP, DOWN, LEFT, RIGHT			
Air Filter			SARANET			
Dimensions (H X W X D)		mm	297 X 990 X 273			
Packaged Dimensions (H X W X D)		mm	371 X 1073 X 375			
Weight		kg	13.0			
Condensate Drain Size		mm	19.05			
OUTDOOR UNIT			RXC60C		RXC71C	
Casing Colour			IVORY WHITE			
Airflow Rate		CFM	1630		1930	
Sound Pressure Level		dBA	54			
Fan	Type		PROPELLER			
	Drive		DIRECT			
Fan Motor	Type		DIRECT CURRENT			
	Index of protection (IP)		23			
	Insulation Grade		E			
	Running Current (Rated)	A	0.62		0.97	
	Power Consumption (Rated)	W	81		84	
	Motor Output	W	61		128	
	Poles		8			
Compressor	Type		HERMETIC SWING			
	Oil Type		DAPHNE FW68DA			
	Oil amount	cm^3	650			
	Running Current (Rated)	A	N/A			
	Power Consumption (Rated)	W	N/A			
Heat Exchanger Type			FIN TUBE			
Dimensions (H X W X D)		mm	615 X 845 X 300		695 X 930 X 350	
Packaged Dimensions (H X W X D)		mm	679 X 992 X 414		760 X 1084 X 473	
Weight		kg	39		45	
Drawing No.			3D129851			

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COOLING	HEATING
INDOOR: 27°CDB / 19°CWB	INDOOR: 20°CDB
OUTDOOR: 35°CDB	OUTDOOR: 7°CDB / 6°CWB

MODEL	INDOOR UNIT		ATXC20C		ATXC25C	
	OUTDOOR UNIT		ARXC20C		ARXC25C	
			Cooling	Heating	Cooling	Heating
Rated Capacity (Min. ~ Max.)		kW	2.00 (1.30 ~ 3.00)	2.50 (1.30 ~ 4.00)	2.56 (1.30 ~ 3.00)	2.84 (1.30 ~ 4.00)
		Btu/h	6800 (4400 ~ 10200)	8500 (4400 ~ 13600)	8700 (4400 ~ 10200)	9700 (4400 ~ 13600)
Rated Running Current (Min. ~ Max.)		A	3.46 (1.86 ~ 5.13)	3.16 (1.74 ~ 5.95)	3.52 (1.86 ~ 5.13)	3.47 (1.74 ~ 5.95)
Rated Power Consumption (Min. ~ Max.)		W	600 (300 ~ 1150)	670 (275 ~ 1350)	775 (300 ~ 1150)	755 (275 ~ 1350)
EER		W/W	3.33	N/A	3.30	N/A
SEER			6.81	N/A	6.74	N/A
COP		W/W	N/A	3.73	N/A	3.76
SCOP (Average Climate)			N/A	4.39	N/A	4.41
SCOP (Warm Climate)			N/A	5.76	N/A	5.78
Power Factor (Rated)			0.754	0.922	0.957	0.946
Piping Connection	Liquid	mm	6.4			
	Gas	mm	9.5			
Refrigerant	Type		R32			
	Charge	kg	0.55			
Max. Interunit Piping Length		m	20			
Max. Interunit Height Difference		m	15			
INDOOR UNIT			ATXC20C		ATXC25C	
Front Panel Colour			WHITE			
Airflow Rate	Turbo	CFM	410			
	High	CFM	380			
	Medium	CFM	310			
	Low	CFM	230			
	Quiet	CFM	190			
Sound Pressure Level (H/M/L/Q)		dBA	38/33/26/20			
Fan	Type		CROSS FLOW			
	Drive		DIRECT			
Fan Motor	Type		DIRECT CURRENT			
	Motor Output	W	38			
	Running Current (Rated)	A	0.14			
	Power Consumption (Rated)	W	16			
Air Direction Control			UP, DOWN, LEFT, RIGHT			
Air Filter			SARANET			
Dimensions (H X W X D)		mm	288 X 770 X 234			
Packaged Dimensions (H X W X D)		mm	327 X 830 X 363			
Weight		kg	9.0			
Condensate Drain Size		mm	19.05			
OUTDOOR UNIT			ARXC20C		ARXC25C	
Casing Colour			IVORY WHITE			
Airflow Rate		CFM	930			
Sound Pressure Level		dBA	45			
Fan	Type		PROPELLER			
	Drive		DIRECT			
Fan Motor	Type		DIRECT CURRENT			
	Index of protection (IP)		24			
	Insulation Grade		E			
	Running Current (Rated)	A	0.28			
	Power Consumption (Rated)	W	29			
	Motor Output	W	26			
	Poles		8			
Compressor	Type		HERMETIC SWING			
	Oil Type		DAPHNE FW68DA			
	Oil amount	cm^3	375			
	Running Current (Rated)	A	N/A			
	Power Consumption (Rated)	W	N/A			
Heat Exchanger Type			FIN TUBE			
Dimensions (H X W X D)		mm	550 X 658 X 273			
Packaged Dimensions (H X W X D)		mm	610 X 781 X 363			
Weight		kg	24			
Drawing No.			3D129851			

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COOLING	HEATING
INDOOR: 27°CDB / 19°CWB	INDOOR: 20°CDB
OUTDOOR: 35°CDB	OUTDOOR: 7°CDB / 6°CWB

MODEL	INDOOR UNIT		ATXC35C		ATXC50C	
	OUTDOOR UNIT		ARXC35C		ARXC50C	
			Cooling	Heating	Cooling	Heating
Rated Capacity (Min. ~ Max.)		kW	3.50 (1.30 ~ 4.00)	4.00 (1.30 ~ 4.80)	5.10 (1.37 ~ 6.20)	5.62 (1.36 ~ 6.60)
		Btu/h	11900 (4400 ~ 13600)	13600 (4400 ~ 16400)	17400 (4700 ~ 21200)	19200 (4600 ~ 22500)
Rated Running Current (Min. ~ Max.)		A	4.75 (1.92 ~ 7.64)	4.85 (1.74 ~ 6.88)	6.91 (1.50 ~ 9.24)	6.66 (1.36 ~ 8.10)
Rated Power Consumption (Min. ~ Max.)		W	1060 (315 - 1740)	1075 (275 - 1570)	1570 (295 - 2110)	1515 (270 - 1850)
EER		W/W	3.30	N/A	3.25	N/A
SEER			6.78	N/A	6.40	N/A
COP		W/W	N/A	3.72	N/A	3.71
SCOP (Average Climate)			N/A	4.26	N/A	4.37
SCOP (Warm Climate)			N/A	5.67	N/A	5.28
Power Factor (Rated)			0.970	0.964	0.988	0.989
Piping Connection	Liquid	mm	6.4			
	Gas	mm	9.5		12.7	
Refrigerant	Type		R32			
	Charge	kg	0.75		1.00	
Max. Interunit Piping Length		m	20		30	
Max. Interunit Height Difference		m	15		20	
INDOOR UNIT			ATXC35C		ATXC50C	
Front Panel Colour			WHITE			
Airflow Rate	Turbo	CFM	400		450	
	High	CFM	380		430	
	Medium	CFM	320		360	
	Low	CFM	230		290	
	Quiet	CFM	190		260	
Sound Pressure Level (H/M/L/Q)		dBA	39/34/26/21		45/39/33/29	
Fan	Type		CROSS FLOW			
	Drive		DIRECT			
Fan Motor	Type		DIRECT CURRENT			
	Motor Output	W	38			
	Running Current (Rated)	A	0.15		0.19	
	Power Consumption (Rated)	W	18		24	
Air Direction Control			UP, DOWN, LEFT, RIGHT			
Air Filter			SARANET			
Dimensions (H X W X D)		mm	288 X 770 X 234			
Packaged Dimensions (H X W X D)		mm	327 X 830 X 363			
Weight		kg	9.5			
Condensate Drain Size		mm	19.05			
OUTDOOR UNIT			ARXC35C		ARXC50C	
Casing Colour			IVORY WHITE			
Airflow Rate		CFM	840		1310	
Sound Pressure Level		dBA	46		51	
Fan	Type		PROPELLER			
	Drive		DIRECT			
Fan Motor	Type		DIRECT CURRENT			
	Index of protection (IP)		24		23	
	Insulation Grade		E			
	Running Current (Rated)	A	0.32		0.38	0.49
	Power Consumption (Rated)	W	33		46	
	Motor Output	W	26		61	
	Poles		8			
Compressor	Type		HERMETIC SWING			
	Oil Type		DAPHNE FW68DA			
	Oil amount	cm^3	375		650	
	Running Current (Rated)	A	N/A			
	Power Consumption (Rated)	W	N/A			
Heat Exchanger Type			FIN TUBE			
Dimensions (H X W X D)		mm	550 X 658 X 273		615 X 845 X 300	
Packaged Dimensions (H X W X D)		mm	610 X 781 X 363		679 X 992 X 414	
Weight		kg	26		39	
Drawing No.			3D129851			

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COOLING	HEATING
INDOOR: 27°CDB / 19°CWB	INDOOR: 20°CDB
OUTDOOR: 35°CDB	OUTDOOR: 7°CDB / 6°CWB

MODEL	INDOOR UNIT		ATXC60C		ATXC71C	
	OUTDOOR UNIT		ARXC60C		ARXC71C	
			Cooling	Heating	Cooling	Heating
Rated Capacity (Min. ~ Max.)		kW	6.23 (1.80 ~ 7.00)	6.40 (1.48 ~ 8.00)	7.10 (2.30 ~ 7.30)	8.00 (2.30 ~ 9.00)
		Btu/h	21300 (6100 ~ 23900)	21800 (5000 ~ 27300)	24200 (7800 ~ 24900)	27300 (7800 ~ 30700)
Rated Running Current (Min. ~ Max.)		A	8.40 (1.86 ~ 8.96)	7.58 (1.61 ~ 10.27)	10.60 (2.17 ~ 11.10)	10.90 (2.48 ~ 11.50)
Rated Power Consumption (Min. ~ Max.)		W	1915 (380 ~ 2045)	1725 (325 ~ 2350)	2410 (440 ~ 2540)	2490 (500 ~ 2640)
EER		W/W	3.25	N/A	2.95	N/A
SEER			6.38	N/A	5.25	N/A
COP		W/W	N/A	3.71	N/A	3.21
SCOP (Average Climate)			N/A	4.19	N/A	3.81
SCOP (Warm Climate)			N/A	5.22	N/A	4.58
Power Factor (Rated)			0.991	0.989	0.989	0.993
Piping Connection	Liquid	mm	6.4			
	Gas	mm	12.7			
Refrigerant	Type		R32			
	Charge	kg	1.10		1.15	
Max. Interunit Piping Length		m	30			
Max. Interunit Height Difference		m	20			
INDOOR UNIT			ATXC60C		ATXC71C	
Front Panel Colour			WHITE			
Airflow Rate	Turbo	CFM	770			
	High	CFM	720			
	Medium	CFM	560			
	Low	CFM	480			
	Quiet	CFM	360			
Sound Pressure Level (H/M/L/Q)		dBA	46/42/38/30			
Fan	Type		CROSS FLOW			
	Drive		DIRECT			
Fan Motor	Type		DIRECT CURRENT			
	Motor Output	W	38			
	Running Current (Rated)	A	0.43			
	Power Consumption (Rated)	W	47			
Air Direction Control			UP, DOWN, LEFT, RIGHT			
Air Filter			SARANET			
Dimensions (H X W X D)		mm	297 X 990 X 273			
Packaged Dimensions (H X W X D)		mm	371 X 1073 X 375			
Weight		kg	13.0			
Condensate Drain Size		mm	19.05			
OUTDOOR UNIT			ARXC60C		ARXC71C	
Casing Colour			IVORY WHITE			
Airflow Rate		CFM	1630		1930	
Sound Pressure Level		dBA	54			
Fan	Type		PROPELLER			
	Drive		DIRECT			
Fan Motor	Type		DIRECT CURRENT			
	Index of protection (IP)		23			
	Insulation Grade		E			
	Running Current (Rated)	A	0.62		0.97	
	Power Consumption (Rated)	W	81		84	
	Motor Output	W	61		128	
	Poles		8			
Compressor	Type		HERMETIC SWING			
	Oil Type		DAPHNE FW68DA			
	Oil amount	cm^3	650			
	Running Current (Rated)	A	N/A			
	Power Consumption (Rated)	W	N/A			
Heat Exchanger Type			FIN TUBE			
Dimensions (H X W X D)		mm	615 X 845 X 300		695 X 930 X 350	
Packaged Dimensions (H X W X D)		mm	679 X 992 X 414		760 X 1084 X 473	
Weight		kg	39		45	
Drawing No.			3D129851			

1) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 (NON-DUCTED UNIT) OR ISO 13253 (DUCTED UNIT)
2) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE.

COOLING	HEATING
INDOOR: 27°CDB / 19°CWB	INDOOR: 20°CDB
OUTDOOR: 35°CDB	OUTDOOR: 7°CDB / 6°CWB

2. Functions

Category	Functions	FTXC20/25/35C RXC20/25/35C	FTXC50C RXC50C	FTXC60/71C RXC60/71C
Basic Function	Inverter	●	●	●
	Operation Limit for Cooling (°CDB)(O/D)	10 - 46	-10 - 46	-10 - 46
	Operation Limit for Cooling (°FDB)(O/D)	50 - 114.8	14 - 114.8	14 - 114.8
	Operation Limit for Heating (°CWB)(O/D)	-15 - 18	-15 - 18	-15 - 18
	Operation Limit for Heating (°FWB)(O/D)	5 - 64.4	5 - 64.4	5 - 64.4
Compressor	Scroll Compressor	—	—	—
	Swing Compressor	●	●	●
	Rotary Compressor	—	—	—
Comfortable Airflow	Power-airflow Flap	●	●	—
	Power-airflow Dual Flaps	—	—	●
	Power-airflow Diffuser	—	—	—
	Wide Angle Louvers	●	●	●
	Vertical Auto-Swing (Up and Down)	●	●	●
	Horizontal Auto-Swing (Right and Left)	—	—	—
	3D Airflow	—	—	—
	Breeze Airflow	—	—	—
Comfort Control	Auto Fan Speed	●	●	●
	Indoor Unit Quiet Operation	●	●	●
	Intelligent Eye Operation	—	—	—
	Automatic Defrosting	●	●	●
Operation	Automatic Operation	●	●	●
	Programme Dry Operation	●	●	●
	Fan Only	●	●	●
Lifestyle Convenience	Powerful Operation (Non Inverter)	—	—	—
	Inverter Powerful Operation	●	●	●
	Energy Saving Function	●	●	●
	Sleep Mode	●	●	●
	Indoor Unit ON/OFF button	●	●	●
	R/C with Backlight	—	—	—
	Signal Receiving Sign (R/C)	●	●	●
	Set Temperature Display (R/C)	●	●	●
Health & C lean	Saranet Filter	●	●	●
	Catechin Filter / Green Tea Filter	—	—	—
	Titanium Apatite Air-Purifying Filter	●	●	●
	PM 2.5 Filter	—	—	—
	Streamer	—	—	—
	Plasma	—	—	—
	Wipe Clean Flat Panel	●	●	●
Timer	Weekly Timer Operation (Wired R/C)	—	—	—
	24-hour ON/OFF Timer (R/C)	●	●	●
	Countdown ON/OFF Timer (R/C)	—	—	—
Worry Free (Reliability & Durability)	Auto Restart (after Power Failure)	●	●	●
	Self-Diagnosis	●	●	●
	Anti-corrosion Treatment of Outdoor Heat Exchanger	●	●	●
Flexibility	Pre-charged Piping Length	7.5m	7.5m	7.5m
	Either Side Drain (Right or Left)	●	●	●
Remote Control	BAG Connectivity	—	—	—
	WIFI Connectivity	●	●	●
	DIII-NET Connectivity	—	—	—
Remote Controller	Wireless (ARC486A2)	●	●	●
	Wired	●*	●*	●*

Note: ● : Available
— : Not available
●* : Optional (Refer to DAMA Spare Part team for more details on optional items.)

Category	Functions	ATXC20/25/35C ARXC20/25/35C	ATXC50C ARXC50C	ATXC60/71C ARXC60/71C
Basic Function	Inverter	●	●	●
	Operation Limit for Cooling (°CDB)(O/D)	10 - 46	-10 - 46	-10 - 46
	Operation Limit for Cooling (°FDB)(O/D)	50 - 114.8	14 - 114.8	14 - 114.8
	Operation Limit for Heating (°CWB)(O/D)	-15 - 18	-15 - 18	-15 - 18
	Operation Limit for Heating (°FWB)(O/D)	5 - 64.4	5 - 64.4	5 - 64.4
Compressor	Scroll Compressor	—	—	—
	Swing Compressor	●	●	●
	Rotary Compressor	—	—	—
Comfortable Airflow	Power-airflow Flap	●	●	—
	Power-airflow Dual Flaps	—	—	●
	Power-airflow Diffuser	—	—	—
	Wide Angle Louvers	●	●	●
	Vertical Auto-Swing (Up and Down)	●	●	●
	Horizontal Auto-Swing (Right and Left)	—	—	—
	3D Airflow	—	—	—
	Breeze Airflow	—	—	—
Comfort Control	Auto Fan Speed	●	●	●
	Indoor Unit Quiet Operation	●	●	●
	Intelligent Eye Operation	—	—	—
	Automatic Defrosting	●	●	●
Operation	Automatic Operation	●	●	●
	Programme Dry Operation	●	●	●
	Fan Only	●	●	●
Lifestyle Convenience	Powerful Operation (Non Inverter)	—	—	—
	Inverter Powerful Operation	●	●	●
	Energy Saving Function	●	●	●
	Sleep Mode	●	●	●
	Indoor Unit ON/OFF button	●	●	●
	R/C with Backlight	—	—	—
	Signal Receiving Sign (R/C)	●	●	●
	Set Temperature Display (R/C)	●	●	●
Health & Clean	Saranet Filter	●	●	●
	Catechin Filter / Green Tea Filter	—	—	—
	Titanium Apatite Air-Purifying Filter	●	●	●
	PM 2.5 Filter	—	—	—
	Streamer	—	—	—
	Plasma	—	—	—
	Wipe Clean Flat Panel	●	●	●
Timer	Weekly Timer Operation (Wired R/C)	—	—	—
	24-hour ON/OFF Timer (R/C)	●	●	●
	Countdown ON/OFF Timer (R/C)	—	—	—
Worry Free (Reliability & Durability)	Auto Restart (after Power Failure)	●	●	●
	Self-Diagnosis	●	●	●
	Anti-corrosion Treatment of Outdoor Heat Exchanger	●	●	●
Flexibility	Pre-charged Piping Length	7.5m	7.5m	7.5m
	Either Side Drain (Right or Left)	●	●	●
Remote Control	BAG Connectivity	—	—	—
	WIFI Connectivity	●	●	●
	DIII-NET Connectivity	—	—	—
Remote Controller	Wireless (ARC486A2)	●	●	●
	Wired	●*	●*	●*

Note: ● : Available
— : Not available
●* : Optional (Refer to DAMA Spare Part team for more details on optional items.)

Part 3
Functions and Control

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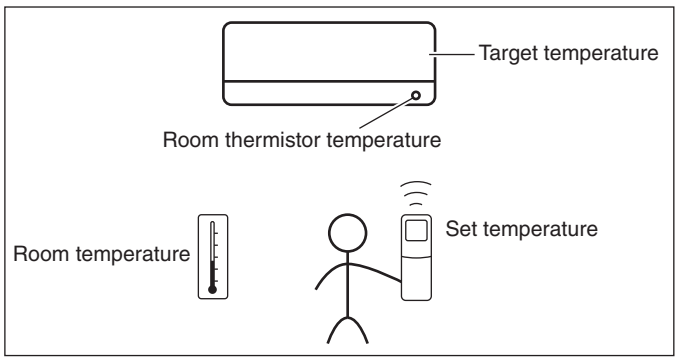
1. Main Functions

1.1 Temperature Control

Definitions of Temperatures

The definitions of temperatures are classified as following.

- Room temperature: temperature of lower part of the room
- Set temperature: temperature set by remote controller
- Room thermistor temperature: temperature detected by room temperature thermistor
- Target temperature: temperature determined by microcomputer



Temperature Control

The temperature of the room is detected by the room temperature thermistor. However, there is a difference between the temperature detected by room temperature thermistor and the temperature of lower part of the room, depending on the type of the indoor unit or installation condition. In practice, the temperature control is done by the target temperature appropriately adjusted for the indoor unit and the temperature detected by room temperature thermistor.

1.2 Frequency Control

Control Parameters

The frequency of the compressor is controlled by the following 2 parameters:

- The load condition of the operating indoor unit
- The difference between the room thermistor temperature and the target temperature

The target frequency is adapted by additional parameters in the following cases:

- Frequency restrictions
- Initial settings
- Forced cooling operation

Inverter Principle

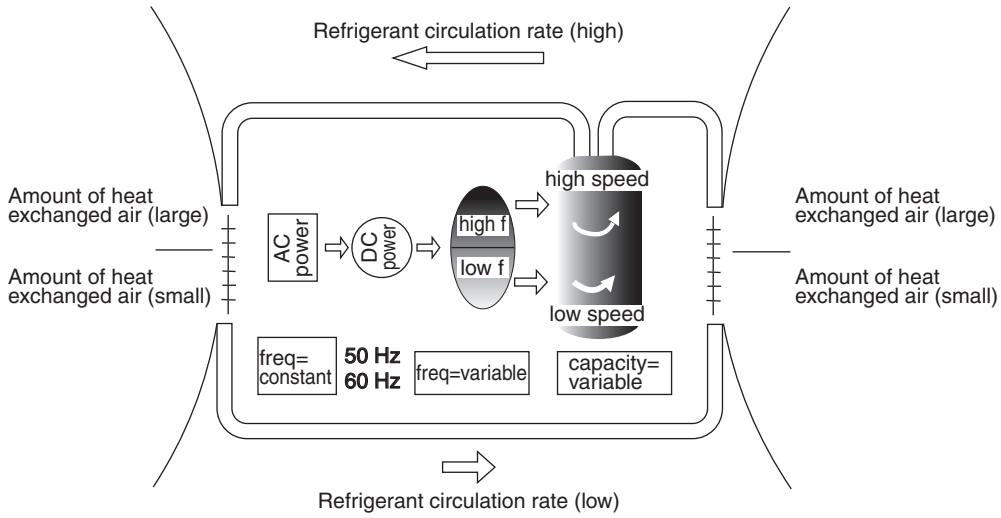
To regulate the capacity, a frequency control is needed. The inverter makes it possible to control the rotation speed of the compressor. The following explain the inverter principle:

Phase 1
The supplied AC power source is converted into the DC power source for the present.

Phase 2
The DC power source is reconverted into the three phase AC power source with variable frequency.

- When the frequency increases, the rotation speed of the compressor increases resulting in an increase of refrigerant circulation. This leads to a larger amount of heat exchange per unit.
- When the frequency decreases, the rotation speed of the compressor decreases resulting in a decrease of refrigerant circulation. This leads to a smaller amount of heat exchange per unit.

The following drawing shows a schematic view of the inverter principle:



Inverter Features

The inverter provides the following features:

- The regulating capacity can be changed according to the changes in the outdoor temperature and cooling load.
- Quick cooling
  The rotation speed of the compressor is increased when starting the cooling.
  This enables to reach the set temperature quickly.
- Comfortable air conditioning
  A fine adjustment is integrated to keep the room temperature constant.
- Energy saving cooling
  Once the set temperature is reached, the energy saving operation enables to maintain the room temperature at low power.

Frequency Limits

The following functions regulate the minimum and maximum frequency:

- Compressor protection function. Refer to page 41.
- Discharge pipe temperature control. Refer to page 43.
- Input current control. Refer to page 44.
- Freeze-up protection control. Refer to page 45.

Forced Cooling Operation

Refer to page 109 for details.

1.3 Airflow Direction Control

Power-Airflow Flap

The large flap sends a large volume of air downward to the floor and provides an optimum control in cooling and dry operation.

Cooling/Dry
During cooling or dry operation, the flap retracts into the indoor unit. Then, cool air can be blown far and distributed all over the room.

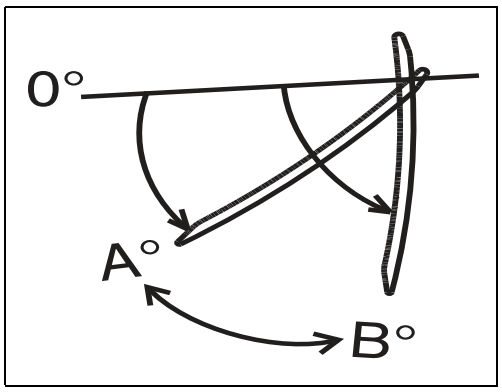
Wide-Angle Louvers

The louvers, made of elastic synthetic resin, provide a wide range of airflow that guarantees comfortable air distribution.

Auto-Swing

The followings explain the auto-swing process for cooling, dry and fan:

Series	Cooling / Dry / Fan (A - B)	Heating (A - B)
(A)FTXC Series	40 - 65	45 - 90



1.4 Fan Speed Control for Indoor Unit

(A)FTXC Outline

Phase control and fan speed control contains 5 steps: SL, L, M, H, SH.
The airflow rate can be automatically controlled depending on the difference between the room thermistor temperature and the set temperature.

(A)FTXC Outline

Phase control and fan speed control contains 5 steps: SL, L, M, H, SH.
On heating mode, the indoor fan speed will be regulated according to the indoor heat exchanger temperature and the difference between the room temperature and the required set temperature.

Automatic Fan Speed Control

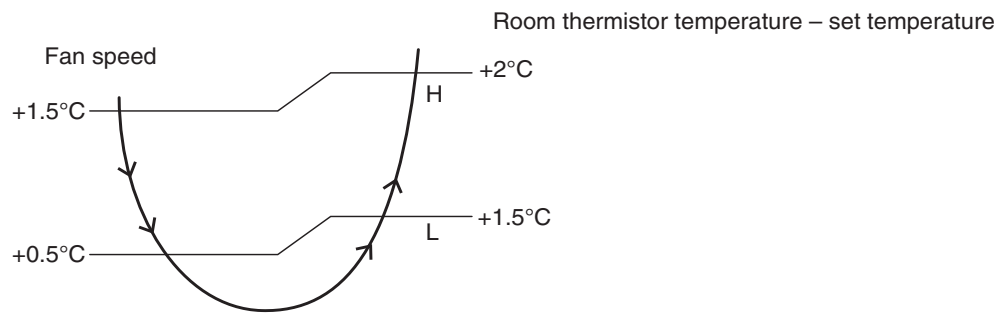
In automatic fan speed operation, the step SL, & SH is not available.

Step	Cooling	Heating
L	⇕	⇕
M		
H		

⇔ = The airflow rate is automatically controlled within this range when **FAN** setting button is set to automatic.

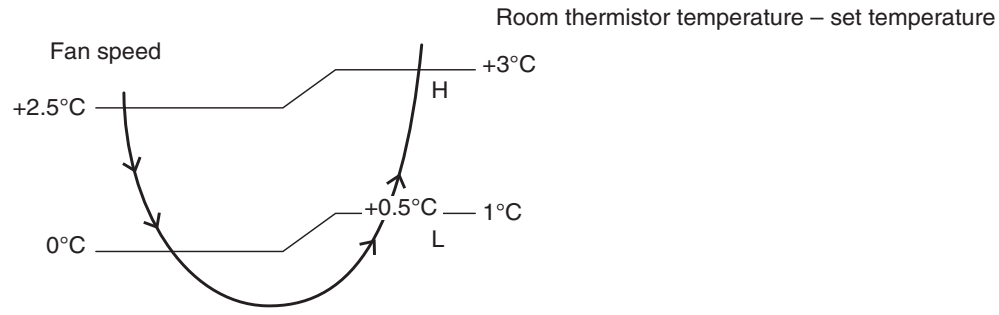
Series	SL	L	M	H	SH
(A)FTXC20/25	190	230	310	380	410
(A)FTXC35	190	230	320	380	400
(A)FTXC50	260	290	360	430	450
(A)FTXC60/71	360	480	560	720	770

Cooling
The following drawings explain the principle of fan speed control for cooling.



Heating
The following drawings explain the principle of fan speed control for heating.

On heating mode, the indoor fan speed will be regulated according to the heat exchanger temperature and the difference between the room temperature and the required target temperature.



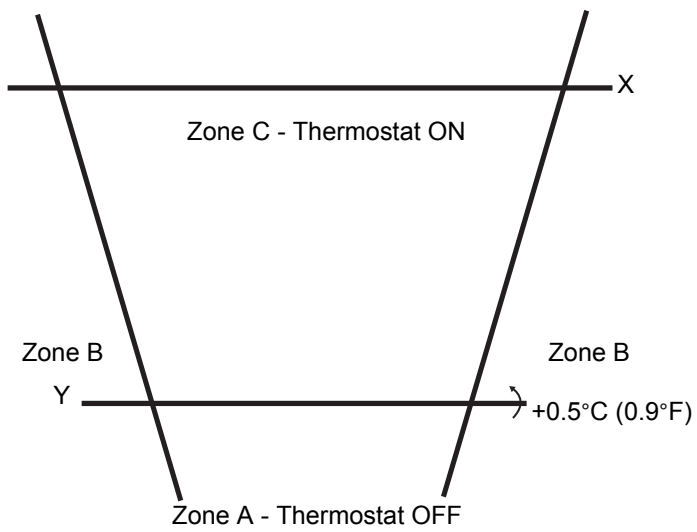
1.5 Dry Mode

Outline

Program dry operation removes humidity. Since the microcomputer controls the airflow rate, the FAN setting buttons are inoperable.

Details

The microcomputer automatically sets the airflow rate. The difference between the room thermister temperature and the set temperature is divided into zones. Then, the unit operates in an appropriate capacity for each zone to maintain the temperature and humidity at a comfortable level.Zone B continues to stay for 120 seconds before the unit will turn to thermostat ON.



Target temperature X	Thermostat OFF point Y	Thermostat ON point Y
Setting temperature	Room thermistor temperature - X = (< -1.5° C) or (< -2.7° F)	Room thermistor temperature - X = (≥ -1.5° C) or (≥ 2.7° F)

1.6 Automatic Operation

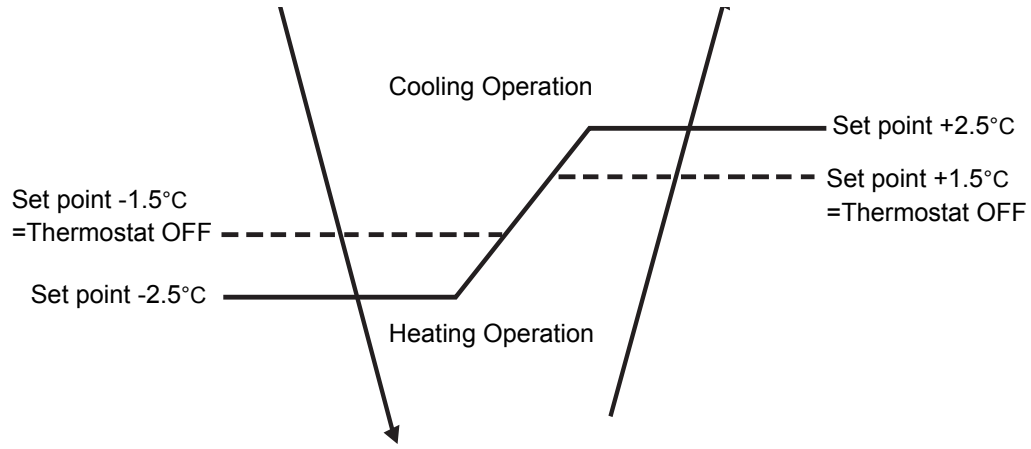
Automatic Cooling / Heating Function (Heat Pump Only)

When the AUTO mode is selected with the remote controller, the microcomputer automatically determines the operation mode from cooling and heating according to the room temperature and setting temperature at the time of the operation startup, and automatically operates in that mode.

The unit automatically switches the operation mode to cooling or heating to maintain the room temperature at the main unit setting temperature.

Details Explanation of the Function

1. Remote controller setting temperature is set as automatic cooling / heating setting temperature 16°C to 30°C.
2. Main unit setting temperature equals remote controller setting temperature.
3. Operation ON / OFF point and mode switching point are as follows.
   ① Heating → Cooling switching point:
   Room temperature ≥ Main unit setting temperature +2.5 deg.
   ② Cooling → Heating switching point:
   Room temperature < Main unit setting temperature -2.5 deg.
   ③ Thermostat ON / OFF point is the same as the ON / OFF point of cooling or heating operation.
4. During initial operation
   Room temperature ≥ Remote controller setting temperature: Cooling operation
   Room temperature < Remote controller setting temperature: Heating operation



Ex : When the set temperature is 25°C,

Scenario 1 Thermostat OFF → 23.5°C. If room temperature continues to drop to 22.5°C :
- Switch from Cooling Operation to Heating Operation

Scenario 2 Room temperature maintains at 25°C :
- No Switch in Operation mode

Scenario 3 Thermostat OFF → 26.5°C. If room temperature continues to increase to 27.5°C
- Switch from Heating Operation to Cooling Operation

1.7 Thermostat Control

Outline

Thermostat control is based on the difference between the room thermistor temperature and the set temperature.

Details

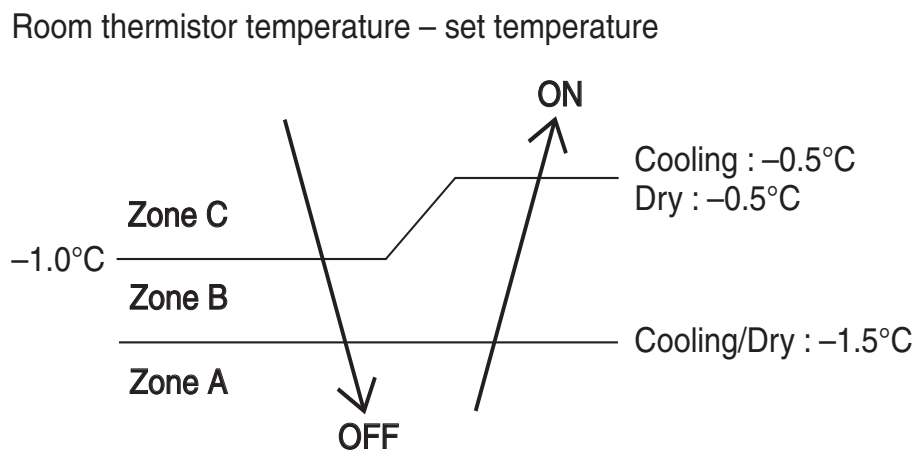
Thermostat OFF Conditions

- The temperature difference is in the zone A.

Thermostat ON Conditions

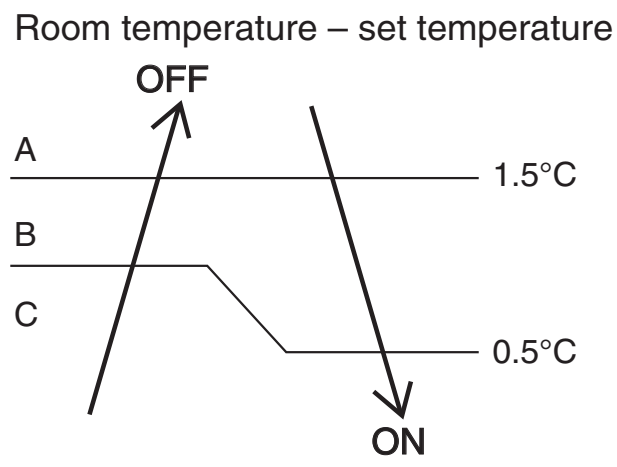
- The temperature difference returns to the zone C after being in the zone A.
- The operation turns on in any zones except A.
- The monitoring time has passed while the temperature difference is in the zone B. (Cooling/Dry/Heating: 2 minutes)

Cooling/Dry



Applicable to (A)FTXC series only.

Heating



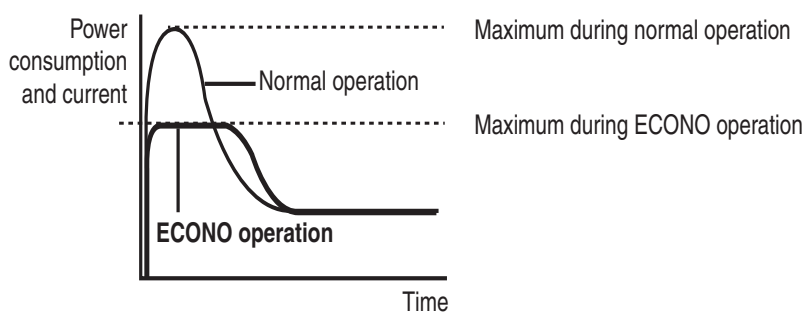
1.8 ECONO Operation

Outline

ECONO operation reduces the maximum operating current and the power consumption. This operation is particularly convenient for energy-saving. It is also a major bonus when breaker capacity does not allow the use of multiple electrical devices and air conditioners. It can be easily activated by pressing **ECONO** button on the wireless remote controller.

Details

- When this function is activated, the maximum capacity also decreases.
- The remote controller can send the ECONO command when the unit is in cooling or dry operation. This function can only be set when the unit is running. Pressing **ON/OFF** button on the remote controller cancel the function.
- The function and POWERFUL operation cannot be used at the same time. The latest command has the priority



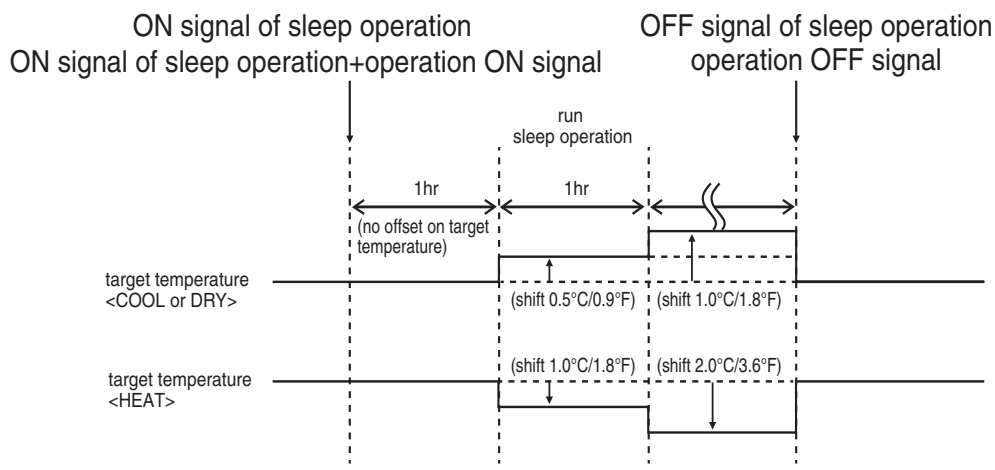
1.9 Sleep Mode

Outline

SLEEP Mode can be activated through the remote controller to keep the thermal comfort while sleeping.

Details

SLEEP Mode continues operation at the target temperature for the first hour, then automatically raises the target temperature slightly in case of cooling, or lowers it slightly in case of heating. This prevents excessive cooling in summer and excessive heating in winter to ensure comfortable sleeping conditions and also saves electricity.



1.10 POWERFUL Operation

Outline

In order to exploit the cooling capacity to full extent, the air conditioner can be operated by increasing the indoor fan rotating speed and the compressor frequency.

Details

When **POWERFUL** button is pressed, the fan speed and target temperature are converted to the following states for 20 minutes.

Operation mode	Fan speed	Target temperature
COOL	H tap + A rpm	18°C
HEAT	H tap + A rpm	30°C
AUTO	Follows Cool / Heat mode	Setting temperature
DRY	H tap + A rpm	Setting temperature +2.5°C
FAN	H tap + A rpm	-

H = high fan
A = refer table below

Mode	Model	20/25	35/50	60/71
ALL	(A)FTXC	70	50	70

Note

POWERFUL operation cannot be used together with ECONO operation.

1.11 Other Functions

1.11.1 Signal Receiving Sign

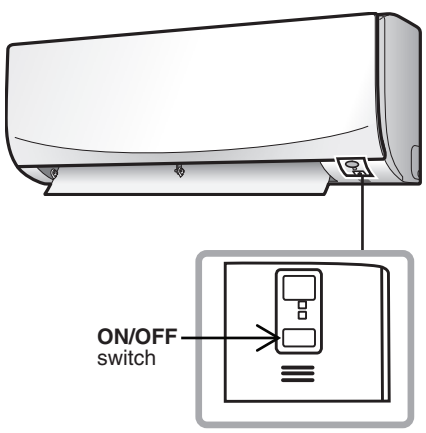
When the indoor unit receives a signal from the remote controller, the unit emits a signal receiving sound.

1.11.2 Indoor Unit ON/OFF Switch

Indoor unit **ON/OFF** switch is provided on the display of the unit.

- Press **ON/OFF** switch once to start operation. Press once again to stop it.
- **ON/OFF** switch is useful when the remote controller is missing or the battery has run out.
- The operation mode refers to the following table.

	Operation mode	Temperature setting	Airflow rate
(A)FTXC series	AUTO	25°C	Automatic



Forced Cooling Operation

Forced cooling operation can be started by pressing **ON/OFF** switch for 5 ~ 9 seconds while the unit is not operating.

Refer to page 109 for details.

Note Forced cooling operation will not be started if the **ON/OFF** switch is pressed for 10 seconds or more.

1.11.3 Auto-restart Function

If a power failure (even a momentary one) occurs during the operation, the operation restarts automatically in the same conditions as before when the power supply is restored to the conditions prior to the power failure.

Note It takes 3 minutes to restart the operation because 3-minute standby function is activated.

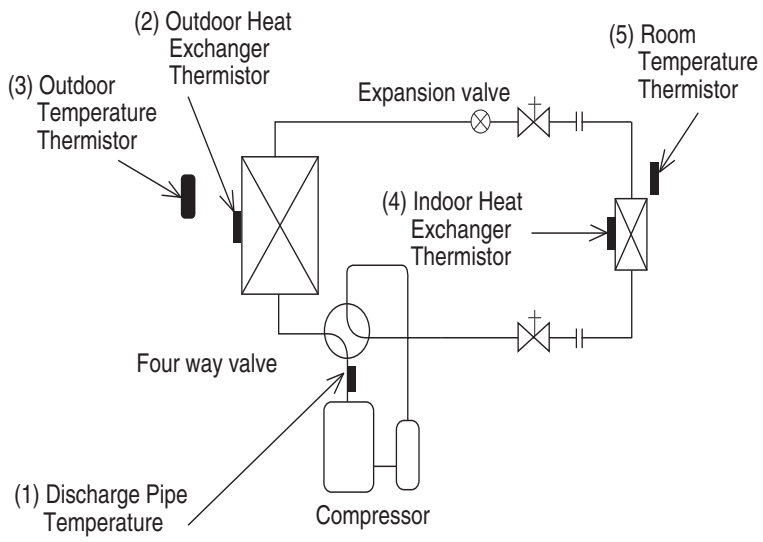
1.11.4 Hot-start function

In order to prevent the cold air blast that normally comes when heating is started, the temperature of the heat exchanger of the indoor is detected, and either the airflow is stopped or is made very weak thereby carrying out comfortable heating of the room.

Note *The cold air blast is also prevented using a similar control when the defrosting operation is started or when the thermostat gets turned ON.

2. Thermistor Functions

(A)FTXC series only



(1) Discharge Pipe Thermistor

- The discharge pipe thermistor is used for controlling discharge pipe temperature. If the discharge pipe temperature (used in place of the inner temperature of the compressor) rises abnormally, the operating frequency becomes lower or the operation halts.
- The discharge pipe thermistor is used for detecting disconnection of the discharge pipe thermistor.

(2) Outdoor Heat Exchanger Thermistor

- The outdoor heat exchanger thermistor is used for controlling the target discharge pipe temperature. The system sets the target discharge pipe temperature according to the outdoor and indoor heat exchanger temperature, and controls the electronic expansion valve opening so that the target discharge pipe temperature can be obtained.
- In cooling operation, the outdoor heat exchanger thermistor is used for detecting the disconnection of the discharge pipe thermistor. When the discharge pipe temperature drops below the outdoor heat exchanger temperature by more than a certain value, the discharge pipe thermistor is judged as disconnected.
- In cooling operation, the outdoor heat exchanger thermistor is used for high pressure protection.

(3) Outdoor Temperature Thermistor

- The outdoor temperature thermistor detects the outdoor air temperature and is used for refrigerant shortage detection, input current control, outdoor fan control, liquid compression protection function, and so on.

(4) Indoor Heat Exchanger Thermistor

- The indoor heat exchanger thermistor is used for controlling the target discharge pipe temperature. The system sets the target discharge pipe temperature according to the outdoor and indoor heat exchanger temperature, and controls the electronic expansion valve opening so that the target discharge pipe temperature can be obtained.
- In cooling operation, the indoor heat exchanger thermistor is used for freeze-up protection control. If the indoor heat exchanger temperature drops abnormally, the operating frequency becomes lower or the operation halts.
- During heating, the indoor heat exchanger thermistor is used for detecting disconnection of the discharge pipe thermistor.
  When the discharge pipe temperature becomes lower than the indoor heat exchanger temperature, the discharge pipe thermistor is judged as disconnected.
  The indoor heat exchanger thermistor is also used for preventing abnormal high pressure.

(5) Room Temperature Thermistor

- The room temperature thermistor detects the room air temperature and is used for controlling the room air temperature.

3. Control Specification

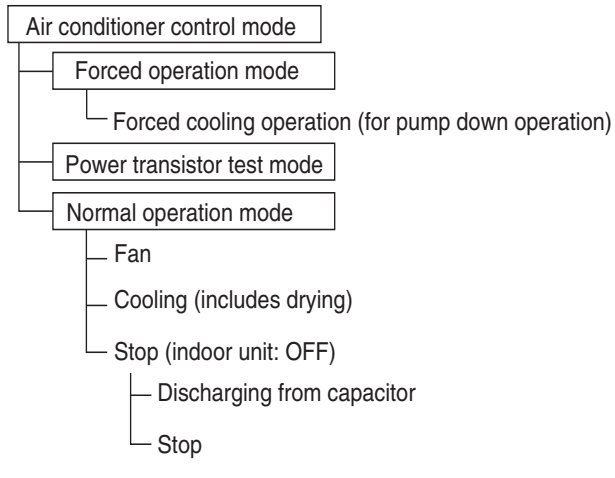
3.1 Mode Hierarchy

Outline

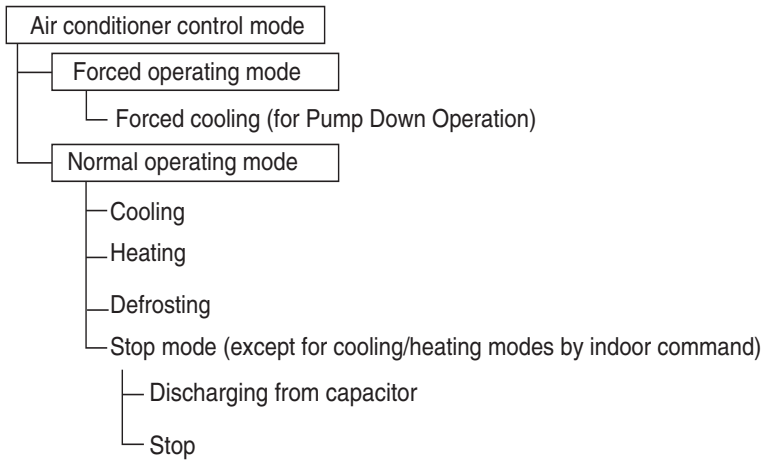
The air conditioner control has normal operation mode, forced operation mode, and power transistor test mode for installation and servicing.

Details

There are following modes; Fan, Cooling (includes drying), Stop.



There are following modes; Cooling (includes drying), Heating (includes defrosting), Stop.

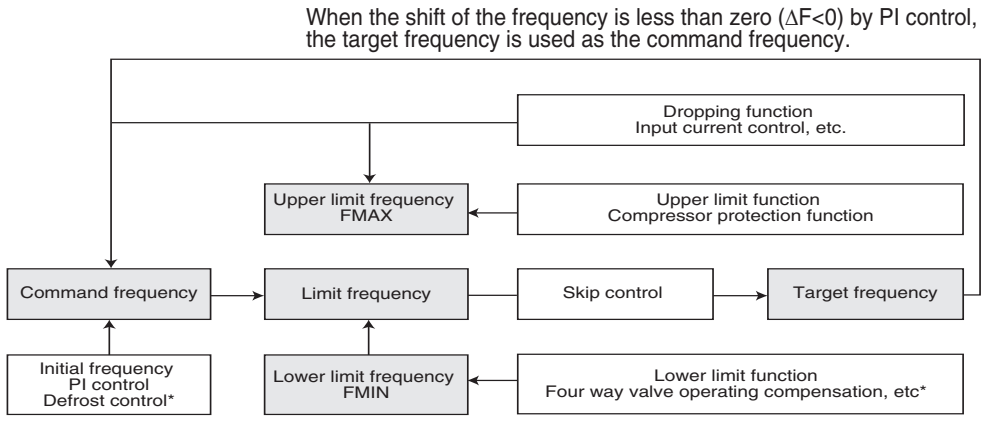


Note Unless specified otherwise, dry operation command is regarded as cooling operation.

3.2 Frequency Control

Outline

The compressor frequency is determined according to the difference between the room thermistor temperature and the target temperature.



*Only applicable for heat-pump model

Details

For Cooling Only model:

1. Determine command frequency

Command frequency is determined in the following order of priority.

(1) Forced cooling

(2) Indoor frequency command

2. Determine upper limit frequency

The minimum value is set as the upper limit frequency among the frequency upper limits of the following functions:

Compressor protection, input current, discharge pipe temperature, freeze-up protection.

3. Determine lower limit frequency

The maximum value is set as the lower limit frequency among the frequency lower limits of the following function:

Pressure difference upkeep.

4. Determine prohibited frequency

There is a certain prohibited frequency such as a power supply frequency.

For Heat-pump model:

1. Determine command frequency

- Command frequency will be determined in the following order of priority.

1.1 Limiting frequency by drooping function

- Input current, discharge pipes, peak cutting, freeze-up protection, dew prevention, fin thermistor temperature.

1.2 Limiting defrost control time

1.3 Forced cooling

1.4 Indoor frequency command

2. Determine upper limit frequency

- Set a minimum value as an upper limit frequency among the frequency upper limits of the following functions:
  Compressor protection, input current, discharge pipes, peak cutting, freeze-up protection, defrost.

3. Determine lower limit frequency

- Set a maximum value as an lower limit frequency among the frequency lower limits of the following functions:
  Four way valve operating compensation, draft prevention, pressure difference upkeep.

4. Determine prohibited frequency

- There is a certain prohibited frequency such as a power supply frequency.

Initial Frequency

When starting the compressor, the frequency is initialized according to the ΔD value of the indoor unit.

ΔD signal: Indoor frequency command
The difference between the room thermistor temperature and the target temperature is taken as the ΔD value and is used for ΔD signal of frequency command.

In Cooling Mode

Temperature difference	ΔD signal
-1.5	0
-1	1
-0.5	2
0	3
0.5	4
1	5
1.5	6
2	7
2.5	8
3	

In Heating Mode

Temperature difference	ΔD signal
-1.5	0
-1.0	1
-0.5	2
0.0	3
0.5	4
1.0	5
1.5	6
2.0	7
2.5	8
3.0	9
3.5	
4.0	

In Dry Mode

Temperature difference	ΔD signal
-1.5	0
-1	1
-0.5	2
0	3
0.5	4
1	5
1.5	6
2	7
2.5	8

PI Control

1. **P control**
   ΔD value is calculated in each sampling time (20 seconds), and the frequency is adjusted according to its difference from the frequency previously calculated.

2. **I control**
   If the operating frequency does not change for more than a certain fixed time, the frequency is adjusted according to ΔD value.
   When ΔD is low, the frequency is lowered.
   When ΔD is high, the frequency is increased.

3. **Frequency control when other controls are functioning**
   - When frequency is dropping:
     Frequency control is carried out only when the frequency drops.
   - For controlling lower limit:
     Frequency control is carried out only when the frequency rises.

4. **Upper and lower limit of frequency by PI control**
   The frequency upper and lower limits are set according to the command of the indoor unit. When the indoor unit quiet operation command comes from the indoor unit, the upper limit frequency is lower than the usual setting.

3.3 Standby Electricity Saving (Suspend Function)

Outline

This function is to save standby electricity consumption while the air conditioner is not in operation by partially separating the electrical circuit of indoor and outdoor units from the power source.

Details

- Standby electricity saving function can be activated/deactivated from the service mode of the remote controller.
- When standby electricity saving is ON, the system enters suspend state if both indoor and outdoor units are not in operation.
- The system will not go into suspend state when some voltage is applied to the outdoor unit for protection purpose even if the indoor unit is not in operation.
- In suspend state, power supply to the outdoor unit is halted and there is no communication between the indoor unit and the outdoor unit.
  Also the service monitor LED (LED A) lights off.
- To return from the suspend state, start fan or other operation to turn on the indoor unit.

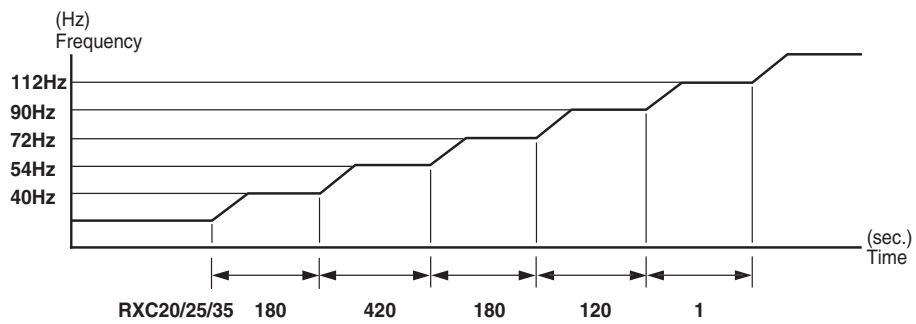
3.4 Controls at Mode Changing/Start-up

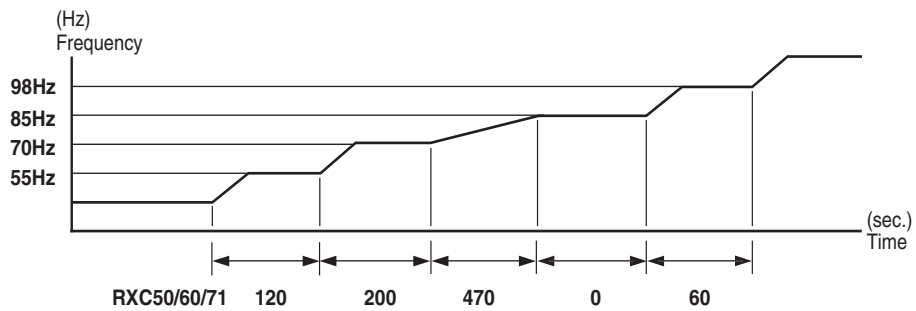
3.4.1 3-Minute Standby

Turning on the compressor is prohibited for 3 minutes after turning off.

3.4.2 Compressor Protection Function

When turning the compressor from OFF to ON, the upper limit of frequency is set as follows.





3.4.3 Four Way Valve Switching

Outline

Heat Pump Only
During the heating operation current must be conducted and during cooling and defrosting current must not be conducted. In order to eliminate the switching sound (as the four way valve coil switches from ON to OFF) when the heating is stopped, the delay switch of the four way valve must be carried out after the operation stopped.

Details

The OFF delay of four way valve
Energize the coil for 160 sec after unit operation is stopped.

3.4.4 Four Way Valve Operation Compensation

Outline

Heat Pump Only
At the beginning of the operation as the four way valve is switched, acquire the differential pressure required for activating the four way valve by having output the operating frequency, which is more than a certain fixed frequency, for a certain fixed time.

Details

Starting Conditions

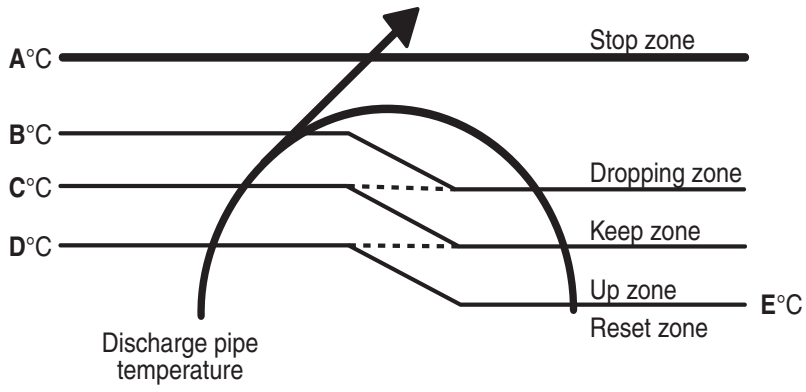
1. When starting compressor for heating.
2. When the operating mode changes to cooling from heating.
3. When starting compressor for rushing defrosting or resetting.
4. When starting compressor for the first time after the reset with the power is ON.
5. When starting compressor for heating next to the suspension of defrosting.
6. When starting compressor next to the fault of switching over cooling/heating.

3.5 Discharge Pipe Temperature Control

Outline

The discharge pipe temperature is used as the internal temperature of the compressor. If the discharge pipe temperature rises above a certain level, the upper limit of frequency is set to keep the discharge pipe temperature from rising further.

Details



Zone	Control
Stop zone	When the temperature reaches the stop zone, the compressor stops.
Dropping zone	The upper limit of frequency decreases.
Keep zone	The upper limit of frequency is kept.
Up zone	The upper limit of frequency increases.
Reset zone	The upper limit of frequency is cancelled

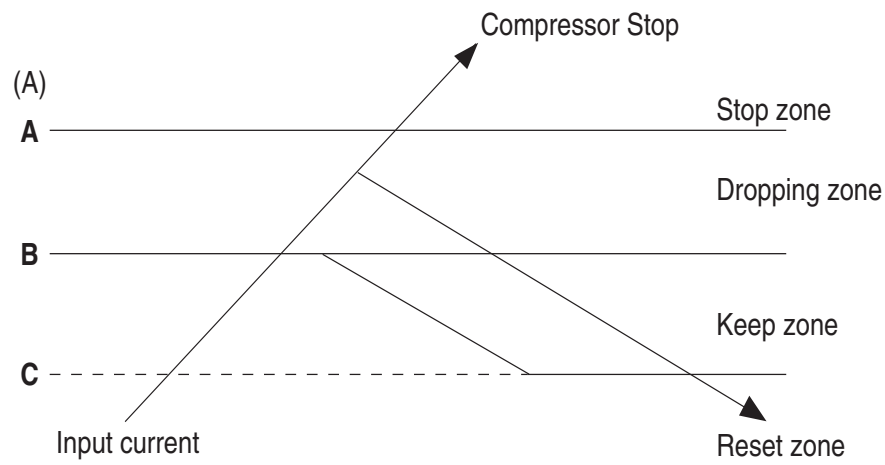
	FTXC* CV1B	
	20/25/35	50/60/71
A (°C)	110	118
B (°C)	103	108
C (°C)	98	103
D (°C)	93	97
E (°C)	88	85

3.6 Input Current Control

Outline

The microcomputer calculates the input current while the compressor is running, and sets the frequency upper limit based on the input current.

Details



■ Frequency control in each zone

Zone	Control
Stop zone	After the input current remains in the stop zone for 2.5 seconds, the compressor is stopped.
Dropping	The upper limit of the compressor frequency is defined as operation frequency – 2 Hz. After this, the output frequency is lowered by 2 Hz every second until it reaches the keep zone.
Keep zone	The present maximum frequency goes on.
Reset zone	Limit of the frequency is cancelled.

Mode		(A)FTXC20/25	(A)FTXC35	(A)FTXC50/60/71
Cooling	A	14.00	14.00	11.50
	B	6.00	6.50	10.00
	C	5.25	5.75	9.00

Mode		(A)FTXC20/25	(A)FTXC35	(A)FTXC50/60/71
Heating	A	14.00	14.00	11.50
	B	6.75	7.75	10.00
	C	6.00	7.00	9.00

■ **Limitation of current dropping and stop value according to the outdoor temperature**

- The current drops when outdoor temperature becomes higher than a certain level (depending on the model).

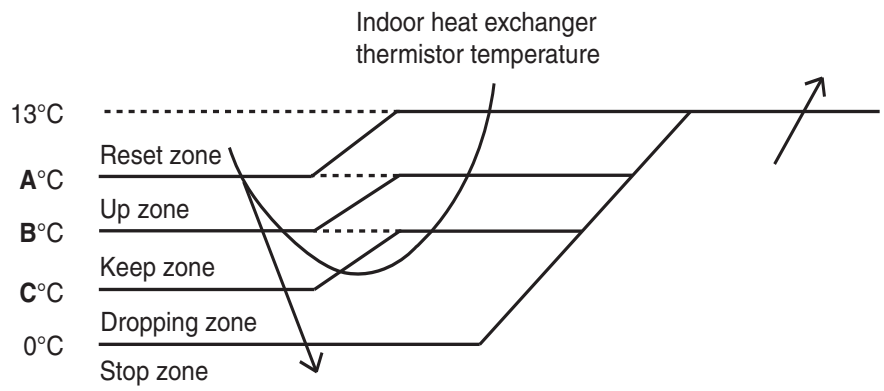
3.7 Freeze-up Protection Control

Outline

During cooling operation, the signals sent from the indoor unit control the operating frequency limitation and prevent freezing of the indoor heat exchanger. The signal from the indoor unit is divided into zones.

Details

The operating frequency limitation is judged with the indoor heat exchanger temperature.



■ Frequency control in each zone

Zone	Control
Reset zone	The upper limit of frequency is cancelled
Up zone	The upper limit of frequency increases
Keep zone	The upper limit of frequency is kept
Dropping zone	The upper limit of frequency decreases
Stop zone	When indoor coil temperature <0°C for >80s, compressor is stopped

	A (°C)	**B** (°C)	**C** (°C)
All outdoor units	7	5	3

3.8 Heating Peak-cut Control

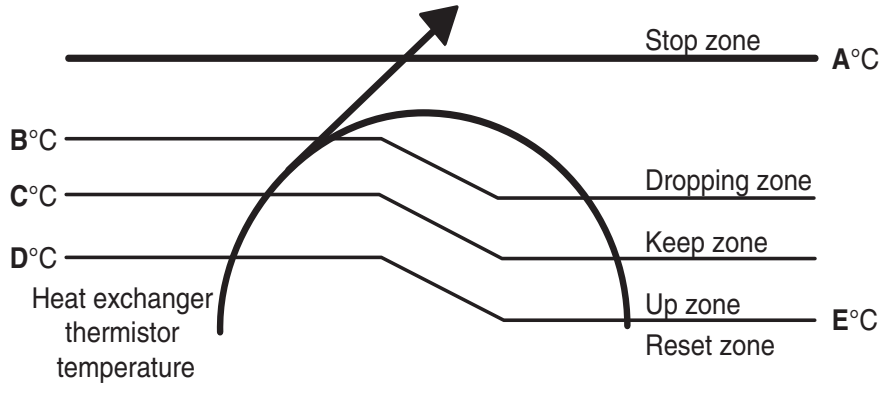
Outline

Heat Pump Only
During heating operation, the signals being sent from the indoor unit allow the operating frequency limitation and prevent abnormal high pressure. (The signal from the indoor unit must be divided as follows.)

Details

Conditions for Start Controlling
Judge the controlling start with the indoor heat exchanger temperature after 2 sec. from operation start.
Control in Each Zone

The heat exchange intermediate temperature of indoor unit controls the following.



■ Frequency control in each zone

Zone	Control
Stop zone	When indoor coil temperature stop zone, the compressor stops
Dropping zone	The upper limit of frequency decreases
Keep zone	The upper limit of frequency is kept
Up zone	The upper limit of frequency increases
Reset zone	The upper limit of frequency is cancelled

	RXC20/25/35CV1B	RXC50/60/71CV1B
A (°C)	65	60
B (°C)	53	53
C (°C)	50	50
D (°C)	48	48
E (°C)	43	43

3.9 Outdoor Fan Control

1. **Fan ON control to cool down the electrical box**
   The outdoor fan is turned ON when the electrical box temperature is high while the compressor is OFF.

2. **Fan OFF delay when stopped**
   The outdoor fan is turned OFF 70 seconds after the compressor stops.

3. **Fan speed control for pressure difference upkeep**
   The rotation speed of the outdoor fan is controlled for keeping the pressure difference during cooling operation with low outdoor temperature.
   - When the pressure difference is low, the rotation speed of the outdoor fan is reduced.
   - When the pressure difference is high, the rotation speed of the outdoor fan is controlled as well as normal operation.

4. **Fan speed control during forced cooling operation**
   The outdoor fan is controlled as well as normal operation during forced cooling operation.

5. **Fan speed control during POWERFUL operation**
   The rotation speed of the outdoor fan is increased during POWERFUL operation.

6. **Fan speed control during indoor unit quiet operation**
   The rotation speed of the outdoor fan is reduced by the command of the indoor unit quiet operation.

7. **Fan ON/OFF control when operation (cooling, dry) starts/stops**
   The outdoor fan is turned ON when the operation starts. The outdoor fan is turned OFF when the operation stops.

8. **Fan control when defrosting**

9. **Fan control when the compressor starts for heating**

3.10 Liquid Compression Protection Function

Outline

In order to increase the dependability of the compressor, the compressor is stopped according to the outdoor temperature.

Details

Operation stops depending on the outdoor temperature.
The compressor turns off under the conditions that the system is in cooling operation and outdoor temperature is below X°C.

X refer to table below based on models

	RXC35CV1B	Others
Temperature	7°C	0°C

3.11 Defrost Control

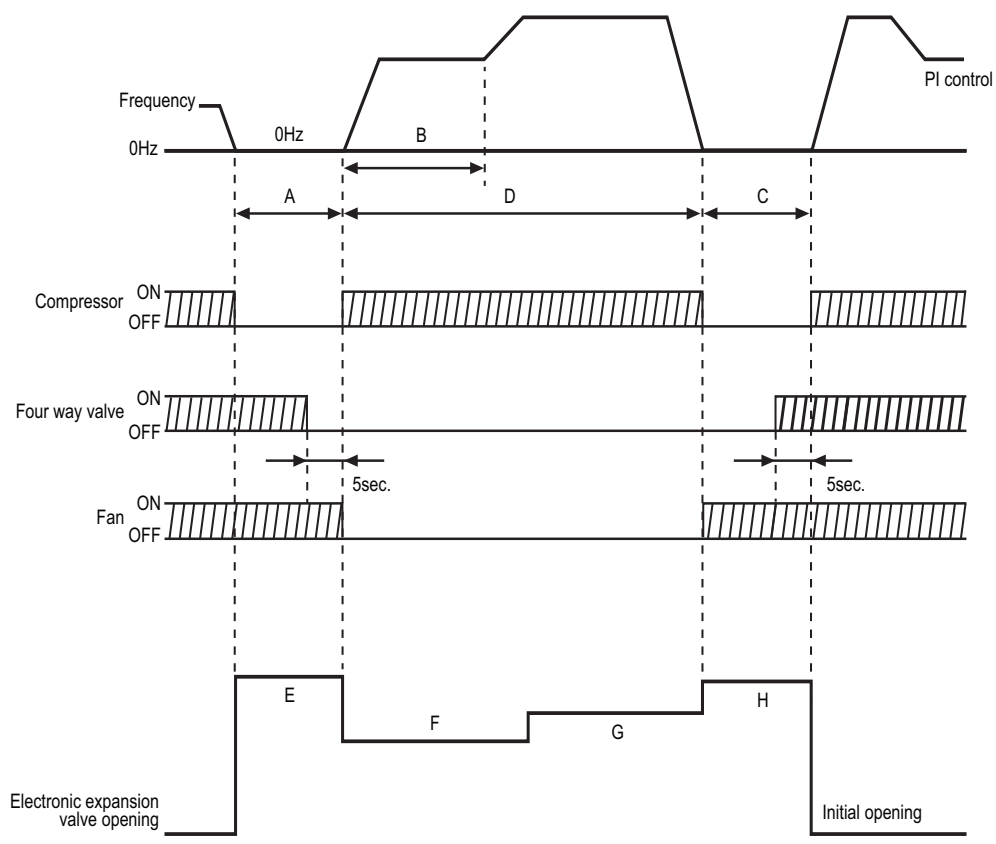
Outline

Heat Pump Only
Defrosting is carried out by the cooling cycle (reverse cycle). The defrosting time or outdoor heat exchanger temperature must be more than its fixed value when finishing.

Details

Conditions for Starting Defrost
The starting conditions must be made with the outdoor air temperature and heat exchanger temperature. Under the conditions that the system is in heating operation, 6 minutes after the compressor is started and more than 28 minutes of accumulated time pass since the start of the operation or ending the defrosting.

Conditions for Canceling Defrost
The judgment must be made with heat exchanger temperature. (4°C-22°C)

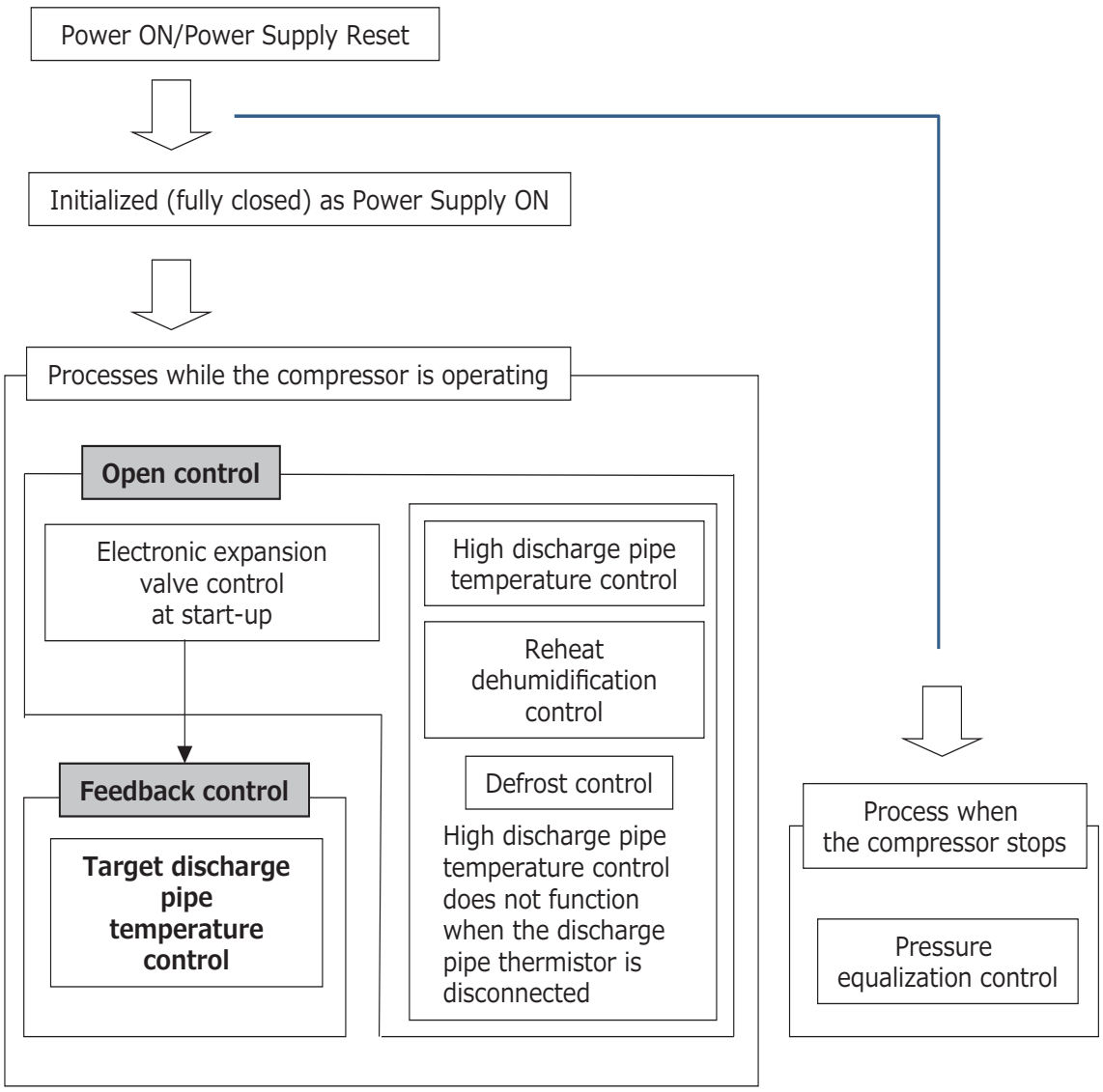


Class	Time (sec)				Pulse			
	A	B	C	D	E	F	G	H
RXC20/25	80	60	100	690	450	380	280	280
RXC35	80	60	70	690	450	300	200	200
RXC50/60/71	50	60	60	690	400	450	450	450

3.12 Electronic Expansion Valve Control

3.12.1 Summary of Electronic Expansion Valve Control

Controlling the electronic expansion valve is to ensure the reliability while optimizing the refrigerating cycle responding to the operation status. The summary of electronic expansion valve control is shown as below.

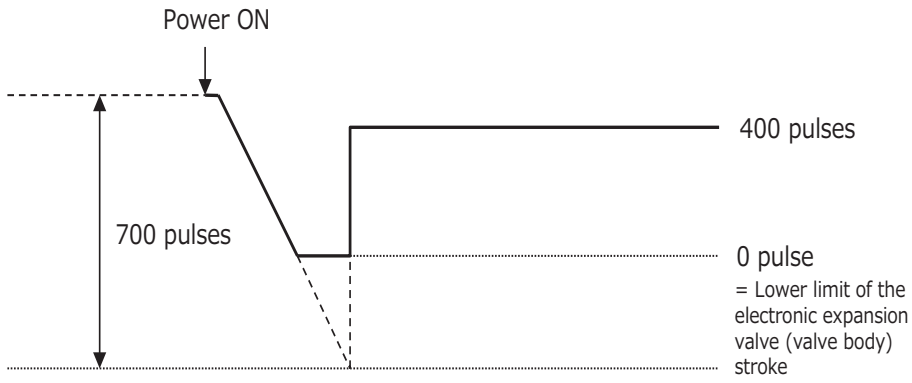


3.12.2 Full Close as Power Supply ON

When the power is turned ON, the electronic expansion valve is initialized to position the valve opening and facilitate pressure equalization. (Prevent the compressor from being locked by start-up with differential pressure)

Processes as power supply ON

•Turn the power ON, close 700 pluses and set the current opening at 0 pulse.
•Open 400 pulses after the full close process completed.



Process after resuming from stand-by electricity saving (suspend) mode

Set the electronic expansion valve opening at 400 pulses after resuming from stand-by electricity saving mode.

3.12.3 Pressure Equalization Control

When the compressor is switched from ON to OFF, open the electronic expansion valve to facilitate pressure equalization while preventing the sound produced from refrigerant flow at pressure equalization.

Summary of operation

Open the electronic expansion valve in a phased manner for 90-120 seconds when operation stop (including abnormal stoppage) or the thermostat is turned OFF.

→Fully closed→open 400 pluses

3.12.4 Initialization as Power Supply On

The electronic expansion valve is initialized (fully closed) when the power is turned on. Then, the valve opening position is set and the pressure is equalized.

3.12.5 Pressure Equalizing Control

When the compressor is stopped, the pressure equalizing control is activated. The electronic expansion valve opens and the pressure is equalized.

3.12.6 Opening Limit Control

The maximum and minimum opening of the electronic expansion valve are limited.

Electronic expansion valve opening (pulse)	RXC20/25/35/50/60/71CV1B
Maximum	470
Minimum	52

3.12.7 Starting Operation Control

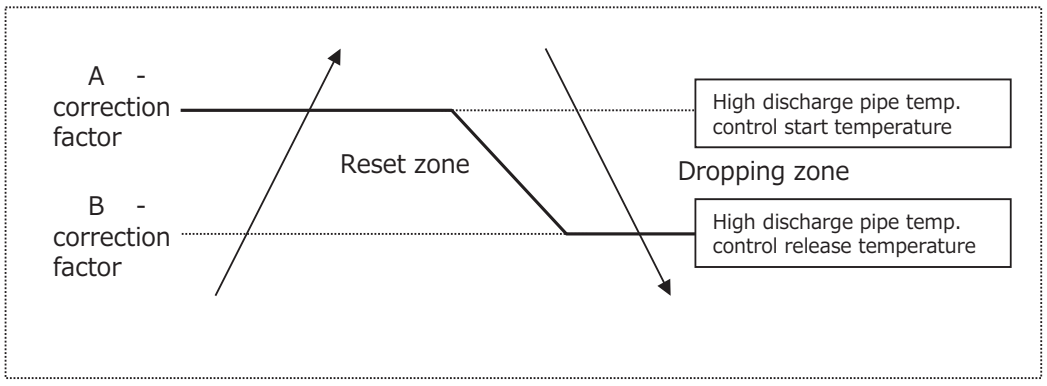
The electronic expansion valve opening is controlled when the operation starts, thus preventing superheating or liquid compression.

3.12.8 Control when the Frequency Changes

When the target discharge pipe temperature control is active, if the target frequency changes to a specified value in a certain period of time, the target discharge pipe temperature control is canceled and the target opening of the electronic expansion valve is changed according to the frequency shift.

3.12.9 High Discharge Pipe Temperature Control

When the compressor is operating, if the discharge pipe temperature exceeds a certain value, the electronic expansion valve opens and the refrigerant runs to the low pressure side. This procedure lowers the discharge pipe temperature by cooling the compressor with refrigerant.



	RXC20/25/35	RXC50/60/71
A	102	105
B	100	100

3.12.9-1 Determine Zones

AND
- ・Compressor is operating
- ・Discharge pipe temp. > 100°C

⇨ **Dropping zone**

OR
- ・Compressor stops
- ・Discharge pipe temp. ≦ 98°C
- ・Disconnection of discharge pipe thermistor

⇨ **Reset zone**

3.12.9-2 Process for Each Zone

Dropping zone: Open the current opening by +20 pulses every 30 seconds
Reset zone: Release control and shift to target discharge pipe temperature control

3.12.10 Discharge Pipe Thermistor Disconnection Control

Outline

The disconnection of the discharge pipe thermistor is detected by comparing the discharge pipe temperature with the condensing temperature. If the discharge pipe thermistor is disconnected, the electronic expansion valve opens according to the outdoor temperature and the operation frequency, operates for a specified time, and then stops.
After 3 minutes, the operation restarts and checks if the discharge pipe thermistor is disconnected. If the discharge pipe thermistor is disconnected, the system stops after operating for a specified time.
If the disconnection is detected repeatedly, the system is shut down. When the compressor runs for 60 minutes without any error, the error counter is reset.

Details

Determining thermistor disconnection
When the starting control (**A** seconds) finishes, the detection timer for disconnection of the discharge pipe thermistor (**B** seconds) starts. When the timer is over, the following adjustment is made.
When the following condition is fulfilled, the discharge pipe thermistor disconnection is ascertained.

For cooling mode:
Discharge pipe temperature + **C**°C < outdoor heat exchanger temperature

	RXC20/25/35/50/60/71
A	10
B	720
C	6

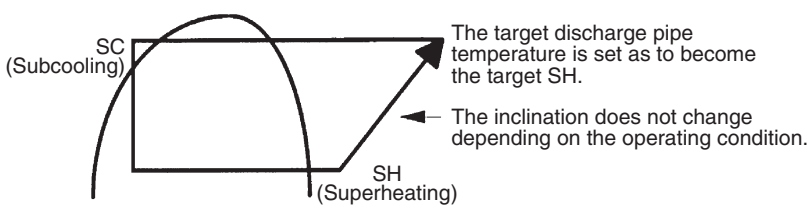
For heating mode:
Discharge pipe temperature + **D**°C < indoor heat exchanger temperature

	RXC20/25/35	RXC50/60/71
D	6	6

When the thermistor is disconnected
When the disconnection is ascertained, the compressor continues operation for 9 minutes and then stops.
If the compressor stops repeatedly, the system is shut down.

3.12.11 Target Discharge Pipe Temperature Control

The target discharge pipe temperature is obtained from the indoor and outdoor heat exchanger temperature, and the electronic expansion valve opening is adjusted so that the actual discharge pipe temperature becomes close to the target discharge pipe temperature. (Indirect SH (superheating) control using the discharge pipe temperature)



The electronic expansion valve opening and the target discharge pipe temperature are adjusted every **A** seconds. The opening degree of the electronic expansion valve is adjusted by the following.

- Target discharge pipe temperature
- Actual discharge pipe temperature
- Previous discharge pipe temperature

A (seconds)	10 ~ 20 (depending on the model)

3.13 Malfunctions

3.13.1 Sensor Malfunction Detection

Sensor malfunction can be detected in the following thermistors in open or short circuit.

1. Outdoor heat exchanger thermistor
2. Discharge pipe thermistor
3. Radiation fin thermistor
4. Outdoor temperature thermistor

3.13.2 Detection of Overcurrent and Overload

Outline

In order to protect the inverter, an excessive output current is detected in wire labelled as No 1 at outdoor terminal block and the OL temperature is observed to protect the compressor.

Details

- If the inverter current exceeds **A** A, the system shuts down the compressor.
- If the OL (compressor head) temperature exceeds **B**°C, the compressor stops.

	RXC20/25/35	RXC50/60/71
A	14.0	11.5
B	120.0	

Part 4
Remote Controller

1. Applicable Remote Controller 55
2. ARC486A2 56

1. Applicable Remote Controller

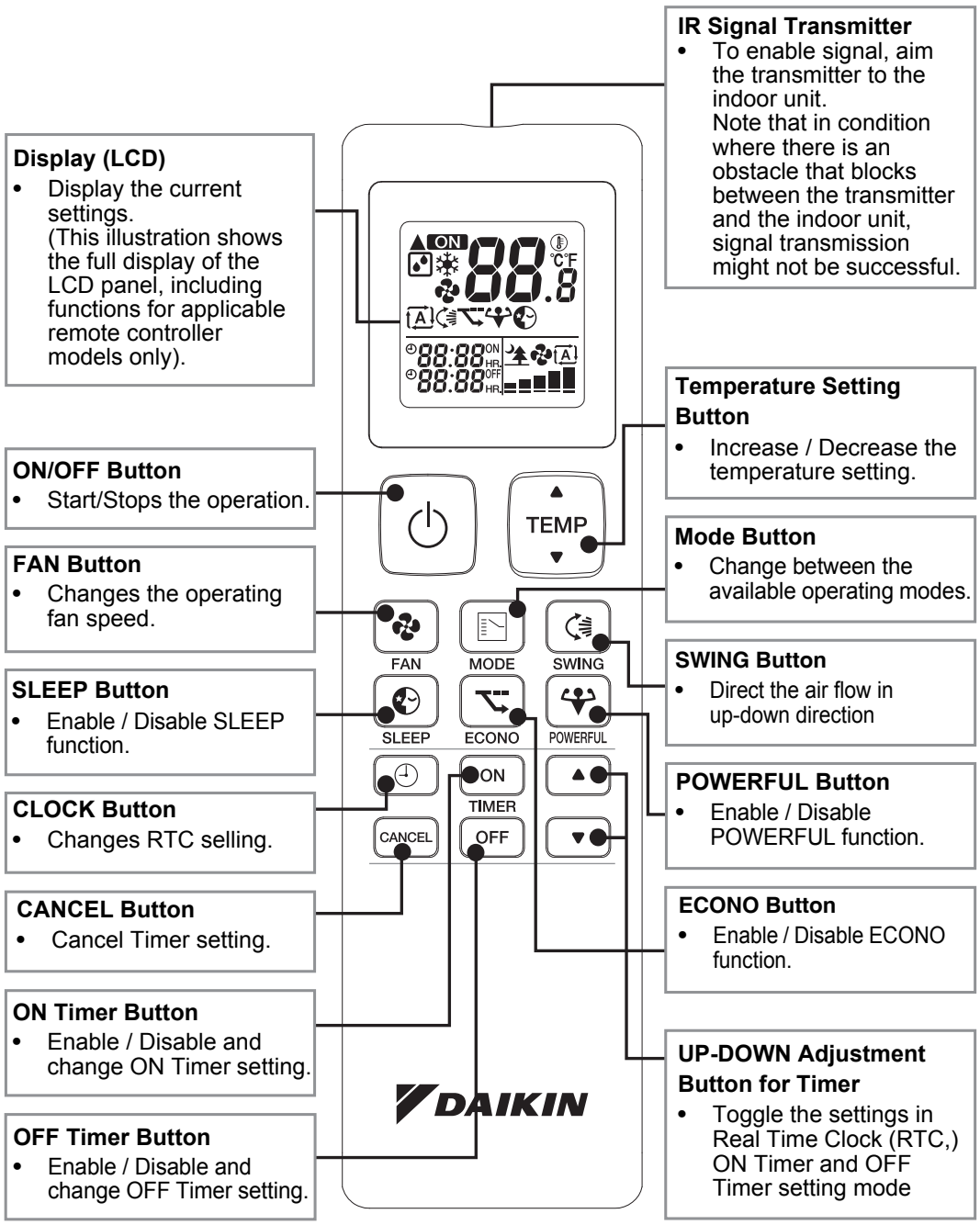
Series	**Model Name**	Remote Controller	Reference Page
FTK(X)A	**(A)FTXC20/25/35CV1B** **(A)FTXC50/60/71CV1B**	ARC486A2	

2. ARC486A2

FTXC20/25/35/50/60/71CV1B

REMOTE CONTROLLER OVERVIEW

For heating model



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1. General Problem Symptoms and Check Items

Symptom	Check Item	Details	Reference Page
The unit does not operates.	Check the power supply.	Check if the rated voltage is supplied.	—
	Check the type of the indoor unit.	Check if the indoor unit type is compatible with the outdoor unit.	—
	Check the outdoor temperature.	Cooling operation is not available when the outdoor temperature is out of the operation limit. Check the reference page for the operation limit.	121
	Diagnose with remote controller indication	—	61
	Check the remote controller addresses.	Check if address settings for the remote controller and indoor unit are correct.	—
Operation sometimes stops.	Check the power supply.	A power failure of 2 to 10 cycles can stop air conditioner operation. (Operation lamp OFF)	—
	Check the outdoor temperature.	Cooling operation is not available when the outdoor temperature is out of the operation limit. Check the reference page for the operation limit.	121
	Diagnose with remote controller indication.	—	61
The unit operates but does not cool.	Check for wiring and piping errors in the connection between the indoor and outdoor units.	—	—
	Check for thermistor detection errors.	Check if the thermistor is mounted securely.	—
	Check for faulty operation of the electronic expansion valve.	Set the unit to cooling operation, and check the temperatures of the liquid pipe to see if the electronic expansion valve works.	—
	Diagnose with remote controller indication.	—	61
	Diagnose by service port pressure and operating current.	Check for refrigerant shortage.	—
Large operating noise and vibrations	Check the output voltage of the power module.	—	106
	Check the power module.	—	—
	Check the installation condition.	Check if the required spaces for installation (specified in the installation manual) are provided.	—

2. Troubleshooting with LED

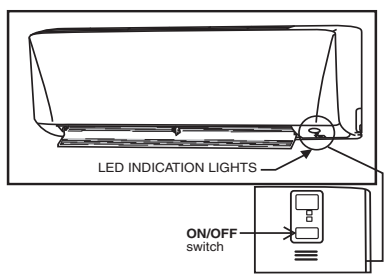
2.1 Indoor Unit

Operation Lamp

The operation lamp blinks when any of the following errors is detected.

1. A protection device of the indoor or outdoor unit is activated, or the thermistor malfunctions.
2. A signal transmission error occurs between the indoor and outdoor units.

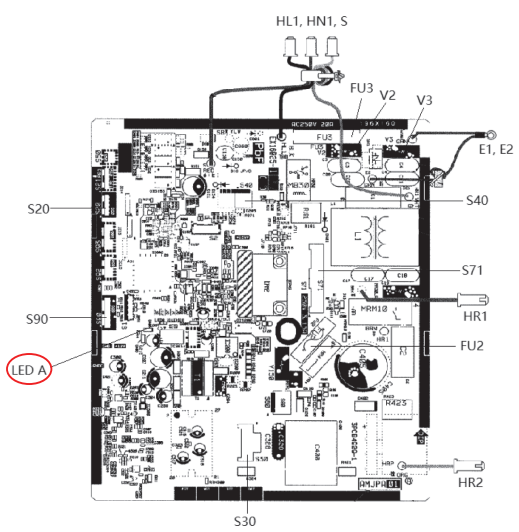
In either case, conduct the diagnostic procedure described in the following pages.

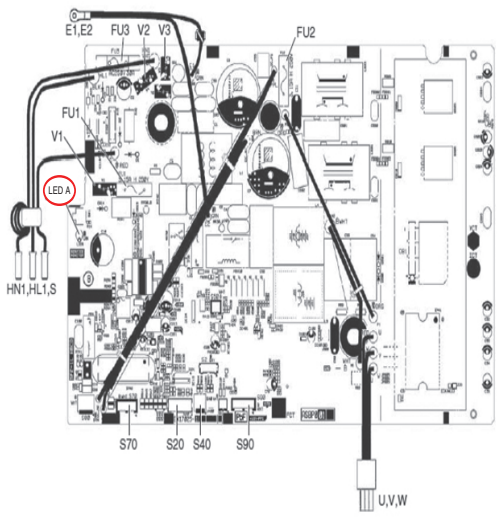


*Changed to relevant image (FTKA or FTXA)

2.2 Outdoor Unit

The outdoor unit has a green LED (LED A) on the PCB.
When the microcomputer works in order, the LED A blinks.
Refer to pages 119, 120 for the location of LED A



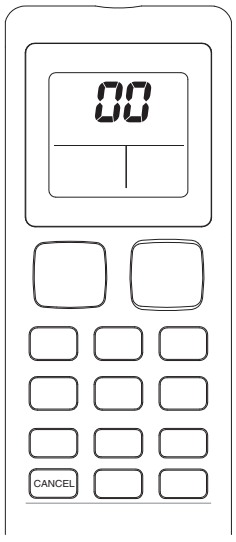


3. Error Diagnosis

3.1 To enter error diagnosis

■ **To perform error code diagnosis**

1. **Press and hold CANCEL button for 5 seconds.**
   - 00 blinks.
2. **Press CANCEL to check on the error code.**
   - Keep pressing on the button until a long “beep” acknowledgement heard from the indoor unit



■ **To exit from error code diagnosis**

3. **Press and hold CANCEL button for 5 seconds.**

Notes

- A short “beep” and two consecutive “beep” acknowledgement from the indoor unit indicates a non-correspondence error code.
- A long “beep” acknowledgment from the indoor unit indicates a correspondence error code.
- User shall not attempt to repair or modify the air conditioner as any incorrect work may result in electric shock or fire.
- Consult the service personnel in case the air conditioner is found to be faulty.

4. Troubleshooting

4.1 Error Codes and Description

	Error Codes	Description	Reference Page
System	00	Normal condition	-
	U2	Low-voltage detection or over-voltage detection	68
	U4	Signal transmission error (between indoor unit and outdoor unit)	69
	UA	Installation error (between indoor unit and outdoor unit)	71
Indoor Unit	A1	Indoor unit PCB abnormality	63
	A5	Freeze-up protection control	64
	A6	Indoor fan motor (DC motor) or related abnormality	65
	C4	Indoor heat exchanger thermistor or related abnormality	66
	C9	Room temperature thermistor or related abnormality	67
Outdoor Unit	E1	Outdoor unit PCB abnormality	72
	E5 ★	OL activation (compressor overload)	73
	E6 ★	Compressor lock	75
	E7 ★	DC fan lock	76
	E8	Input overcurrent detection	77
	F3	Discharge pipe temperature control	78
	F6	High pressure control in cooling	80
	EA	Four way valve abnormality	96
	H0	Compressor sensor system abnormality	82
	H6	Position sensor abnormality	83
	H9	Outdoor temperature thermistor or related abnormality	84
	J3 ★	Discharge pipe thermistor or related abnormality	86
	J6	Outdoor heat exchanger thermistor or related abnormality	88
	L3	Electrical box temperature rise	92
	L4	Radiation fin temperature rise	93
	L5	Output overcurrent detection	94
	P4	Radiation fin thermistor or related abnormality	90

★Displayed only when the system is shut down.

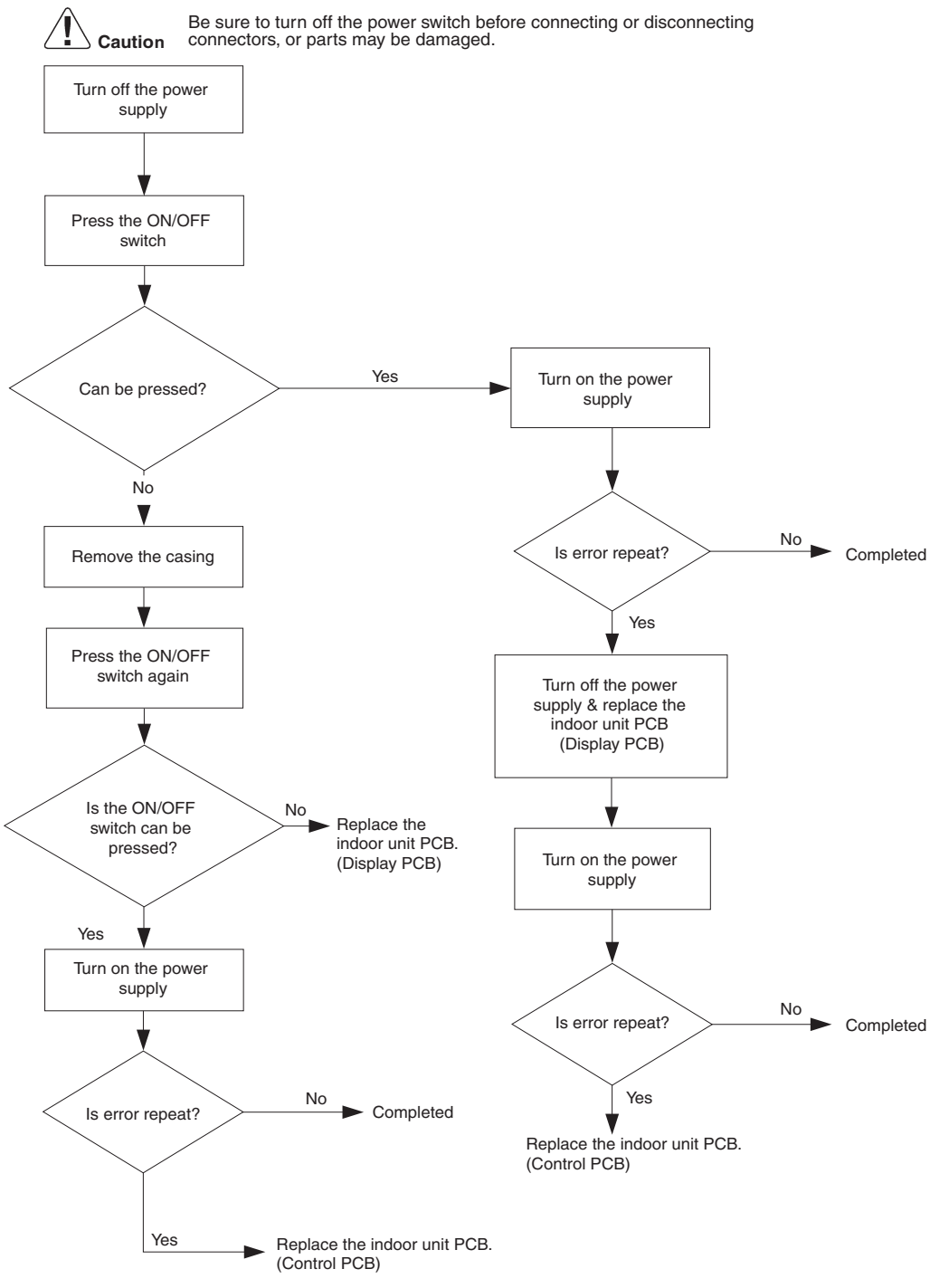
■ Eror Code Definition

Error Code	Checklist	Meaning
00	O	Normal
A1	O	Indoor PCB error
A3		Drain pump abnormal
A5	O	Antifreeze
A6	O	Indoor fan motor abnormal
AH		Electrical air cleaner abnormal
C4	O	Indoor heat exchanger (1) thermistor short / open
C5		Indoor heat exchanger (2) thermistor short / open
C7		Louver limit switch error
C9	O	Indoor room thermistor short / open
E1	O	Outdoor PCB error
E3		High pressure protection
E4		Low pressure protection
E5	O	Compressor motor lock / compressor overload
E6	O	Compressor start-up error
E7	O	Outdoor DC fan motor lock
E8	O	AC input overcurrent
E9		EXV error
EA	O	4 way valve error
F3	O	Discharge pipe overheat
F6	O	Heat exchanger overheat
H0	O	Compressor sensor system error
H3		High pressure switch error
H6	O	Compressor feedback detection error
H7		Fan motor overload / overcurrent / sensor abnormal
H8		AC current sensor error
H9	O	Outdoor air thermistor short / open
J1		Pressure sensor error
J3	O	Compressor discharge pipe thermistor short / open / misplaced
J5		Suction pipe thermistor short / open
J6	O	Outdoor heat exchanger thermistor short / open
J7		Subcooling heat exchanger thermistor short / open
J8		Liquid pipe thermistor short / open
J9		Gas pipe thermistor short / open
L1		Inverter outdoor PCB error
L3	O	Outdoor control box overheat
L4	O	Heat sink overheat
L5	O	IPM error / IGBT error
L8		Inverter compressor overcurrent
L9		Compressor overcurrent prevention
LC		Communication error (outdoor control PCB and inverter PCB)
P1		Open phase or voltage unbalance
P4	O	Heat sink thermistor short / open
PJ		Capacity setting error
U0		Insufficient gas
U2	O	DC voltage out of range
U4	O	Communication error
U7		Communication error (outdoor control PCB and IPM PCB)
UA	O	Installation error (wrong combination of ID and OD units / wrong or defective ID/OD PCB installed)
UF		Piping & wiring installation mismatch / wrong wiring / insufficient gas

4.2 Indoor Unit PCB Abnormality

Error Code	A1
Description	Indoor PCB Abnormality
Method of Error Detection	The system checks if the circuit works properly within the microcomputer of the indoor unit.
Error Decision Conditions	ON/OFF switch malfunction.
Possible root cause	1. Defective indoor unit PCB. 2. Defective ON/OFF switch.

Troubleshooting



4.3 Freeze-up Protection Control

Error Code

A5

Method of Error Detection

During cooling operation, the freeze-up protection control (operation halt) is activated according to the temperature detected by the indoor heat exchanger thermistor.
High pressure control (heat pump model only).
During heating operations, the temperature detected by the indoor heat exchanger.
Thermistor is used for the high pressure control (stop, outdoor fan stop, etc.).

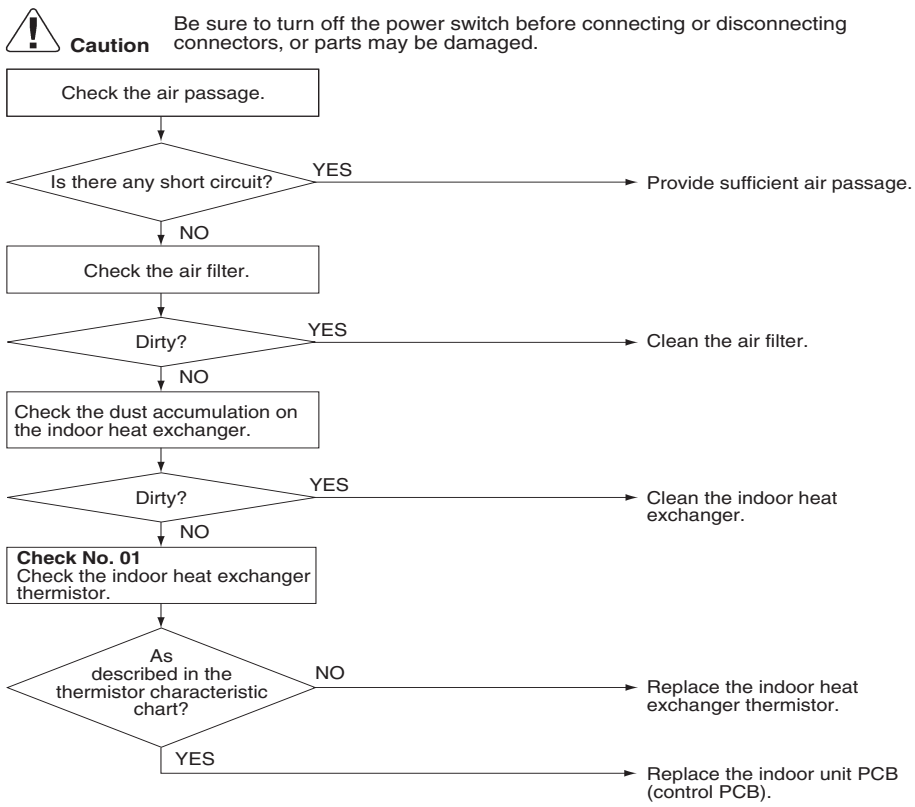
Error Decision Conditions

During cooling operation, the indoor heat exchange temperature is below 0°C.
High pressure control
During heating operations, the temperature detected by the indoor heat exchanger thermistor is above 61°C.

Supposed Causes

- Indoor Short-circuited air
- Clogged air filter of the indoor unit
- Dust accumulation on the indoor heat exchanger
- Defective indoor heat exchanger thermistor
- Defective indoor unit PCB

Troubleshooting



	Error Code		Error Code
Outdoor		Indoor	A5
Mode	COOL	Mode	COOL
COMP	ON	Set Point	16.0°C
Fan Speed	ON	Fan SP-Set	H
		Suct Temp	
		EvaTemp:	CHECK
		Fan1SP	
1145d21h58m16s DEMO\DEMO052.TXT			
2020/06/22	16:45:01		60Hz EN03

Reference **Check No.01** Refer to P.98

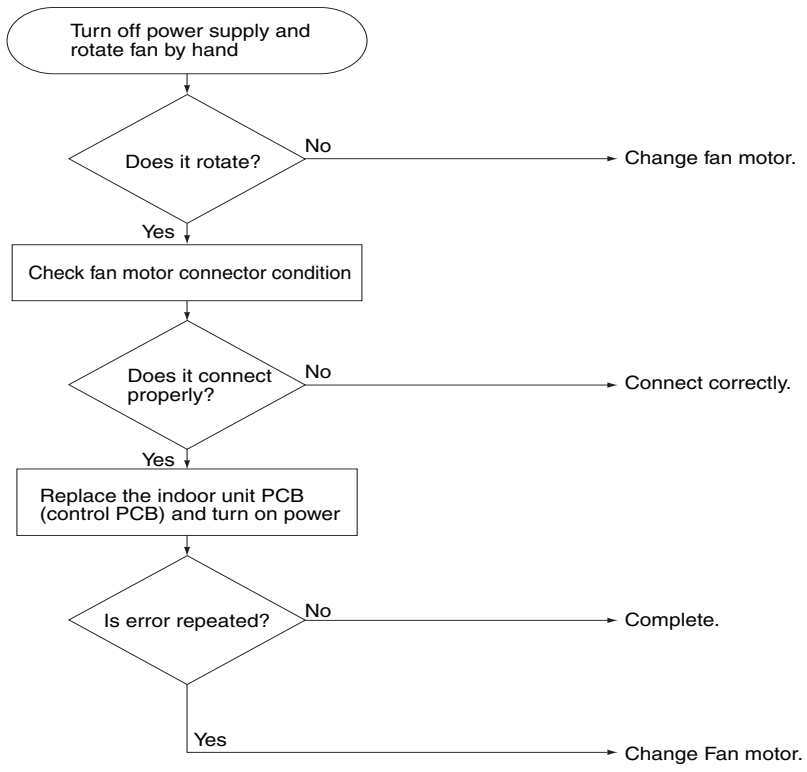
Note When replacing the defective thermistor(s), replace the thermistor as ASSY.
Refer to Appendix when using the transmission monitor to identify the error code.

4.4 Indoor Fan Motor (DC Motor) or Related Abnormality

Error Code	A6
Description	Indoor Fan Motor Abnormality
Method of Error Detection	The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor operation.
Error Decision Conditions	The detected rotation speed does not reach the demanded rotation speed of the target tap, and is less than 50% of the maximum fan motor rotation speed.
Possible Root Causes	1. Indoor fan motor winding short, or the motor lead wire broken. 2. Indoor PCB faulty.

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



	Error Code		Error Code
Outdoor		Indoor	A6
Mode	COOL	Mode	COOL
COMP	ON	Set Point	16.0°C
Fan Speed	ON	Fan SP-Set	H
		Suct Temp	
		EvaTemp1	
		Fan1SP	CHECK
1145d21h58m16s DEMO\DEMO052.TXT			
2020/06/22	16:45:01		60Hz EN03

Note Refer to Appendix when using the transmission monitor to identify the error code.

4.5 Thermistor or Related Abnormality (Indoor Unit)

Error Code C4

Description Indoor Heat Exchange Thermistor Short/Open.

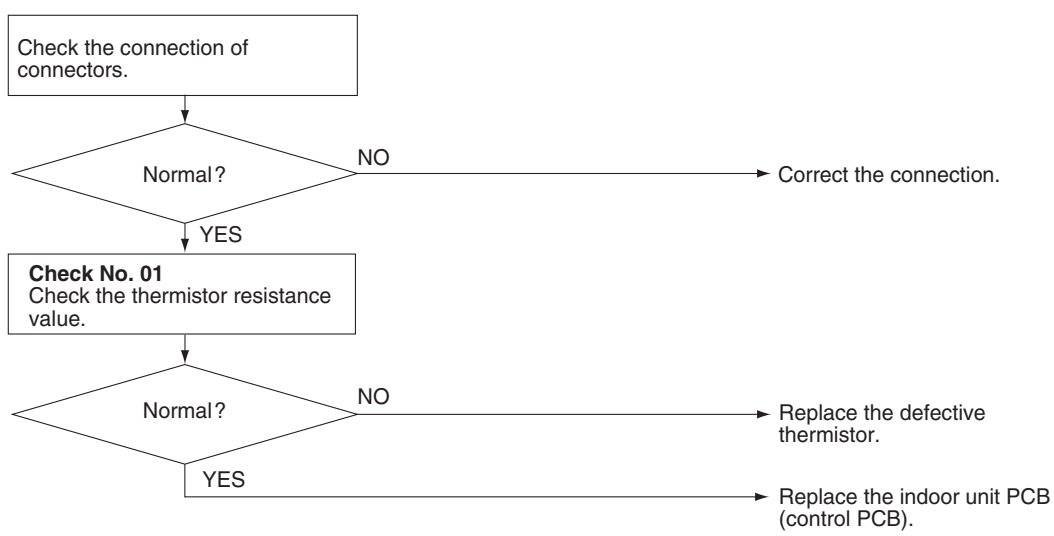
Method of Error Detection The temperature detected by the thermistors determine thermistor errors.

Error Decision Conditions The resistance of the thermistor is out of range (0 Ω or ∞ Ω)

Supposed Causes
- Disconnection of connector
- Defective thermistor(s)
- Defective indoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



C4 : Indoor heat exchanger thermistor

	Error Code		Error Code
Outdoor		Indoor	C4
Mode	COOL	Mode	COOL
COMP	ON	Set Point	16.0°C
Fan Speed	ON	Fan SP-Set	H
		Suct Temp	
		EvaTemp :	CHECK
		Fan1SP	
11145d21h58m16s DEMO\DEMO052.TXT			
2020/06/22	16:45:01		60Hz EN03

Reference **Check No.01** Refer to P.98

Note When replacing the defective thermistor(s), replace the thermistor as ASSY.
Refer to Appendix when using the transmission monitor to identify the error code.

4.6 Thermistor or Related Abnormality (Indoor Unit)

Error Code C9

Description Indoor Heat Exchange Thermistor Short/Open.

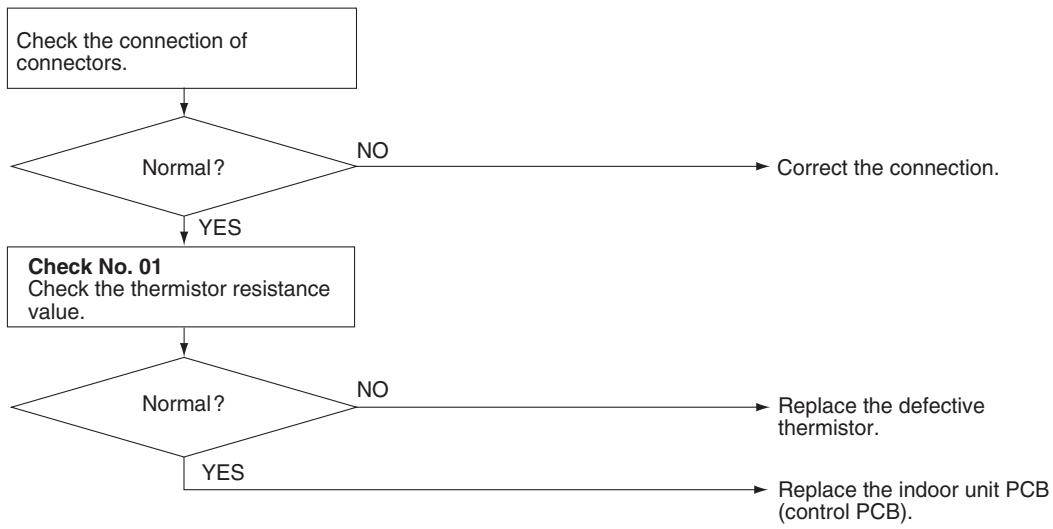
Method of Error Detection The temperature detected by the thermistors determine thermistor errors.

Error Decision Conditions The resistance of the thermistor is out of range (0 Ω or ∞ Ω)

Supposed Causes
- Disconnection of connector
- Defective thermistor(s)
- Defective indoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



C9 : Room temperature thermistor

	Error Code		Error Code
Outdoor		Indoor	C9
Mode	COOL	Mode	COOL
COMP	ON	Set Point	16.0°C
Fan Speed	ON	Fan SP-Set	H
		Suct Temp	CHECK
		EvaTemp1	
		Fan1SP	
1145d21h58m16s DEMO\DEMO052.TXT			
2020/06/22	16:45:01		60Hz EN03

Reference **Check No.01** Refer to P.98

Note When replacing the defective thermistor(s), replace the thermistor as ASSY.
Refer to Appendix when using the transmission monitor to identify the error code.

4.7 Low-voltage Detection or Over-voltage Detection

Error Code

U2

Method of Error Detection

Low-voltage detection:
An abnormal voltage drop is detected by the DC voltage detection circuit.

Over-voltage detection:
An abnormal voltage rise is detected by the DC over-voltage detection circuit.

Error Decision Conditions

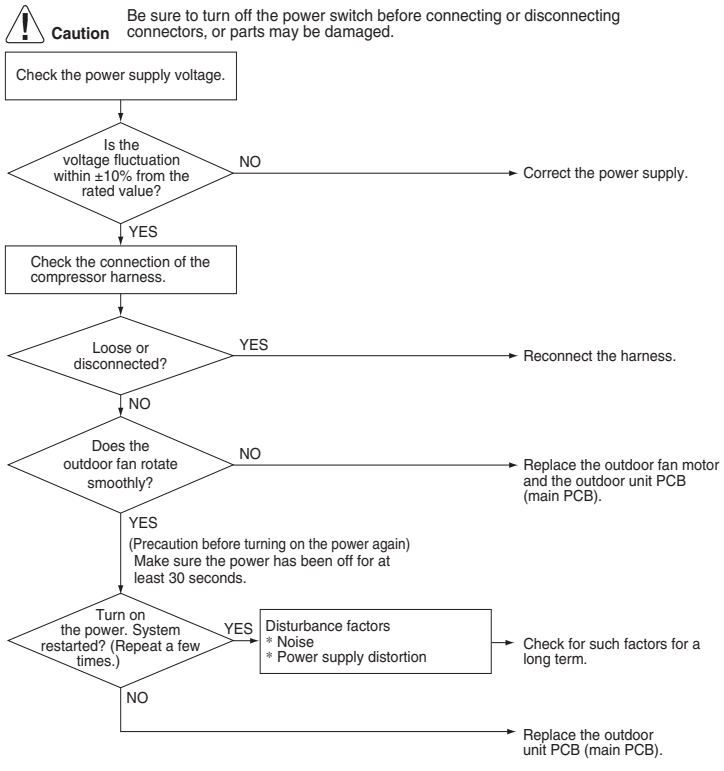
Low-voltage detection:
- The voltage detected by the DC voltage detection circuit is below 180 - 196 V (depending on the model).
- The compressor stops if the error occurs, and restarts automatically after 3-minute standby.

Over-voltage detection:
- An over-voltage signal is fed from the over-voltage detection circuit to the microcomputer.
- The compressor stops if the error occurs, and restarts automatically after 3-minute standby.

Supposed Causes

- Power supply voltage out of specification
- Defective DC voltage detection circuit
- Defective over-voltage detection circuit
- Defective PAM control part
- Disconnection of compressor harness
- Short circuit inside the fan motor winding
- Noise
- Momentary drop of voltage
- Momentary power failure
- Defective outdoor unit PCB

Troubleshooting



	Error Code		Error Code
Outdoor	U2	Indoor	
Mode	COOL	Mode	COOL
COMP	ON	Set Point	16.0°C
Fan Speed	ON	Fan SP-Set	H
1145d21h58m16s DEMO\DEMO052.TXT			
2020/06/22	16:45:01		60Hz EN03

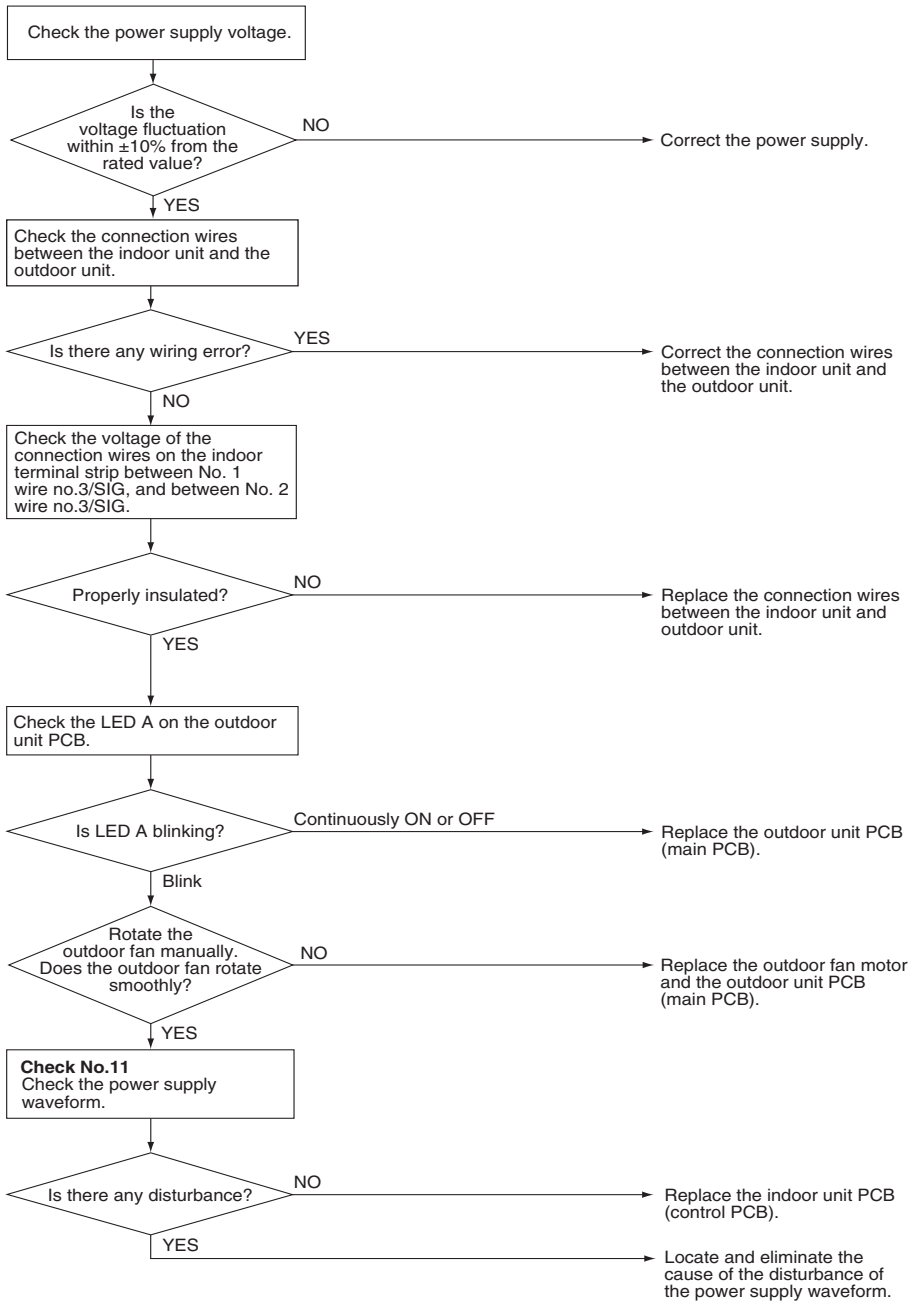
Note Refer to Appendix when using the transmission monitor to identify the error code.

4.8 Signal Transmission Error (Between Indoor Unit and Outdoor Unit)

Error Code	U4
Method of Error Detection	The signal transmission data received from the outdoor unit is checked whether it is normal.
Error Decision Conditions	The data sent from the outdoor unit cannot be received normally, or the content of the data is abnormal.
Supposed Causes	■ Power supply voltage out of specification ■ Reduction of power supply voltage ■ Wiring miss connection ■ Breaking of the connection wires between the indoor and outdoor units wire no.3/SIG. ■ Defective outdoor unit PCB ■ Short circuit inside the fan motor winding ■ Defective indoor unit PCB ■ Disturbed power supply waveform

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Reference **Check No.11** Refer to P.99

4.9 Installation error

Error Code

UA

Method of Error Detection

The supply power is detected for its requirements (pair type is different from multi type) by the indoor/outdoor transmission signal.

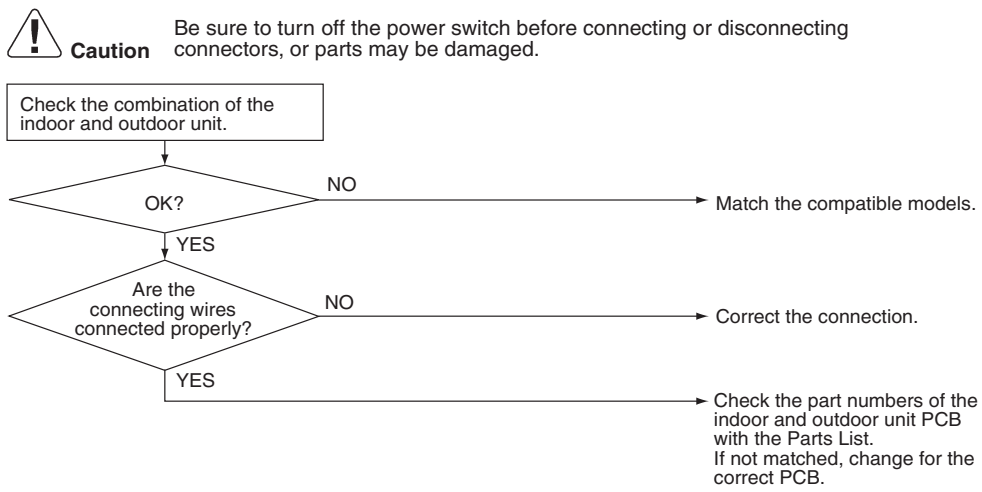
Error Decision Conditions

The pair type and multi type are interconnected.

Supposed Causes

- Wrong models interconnected
- Wrong wiring of connecting wires
- Wrong indoor unit PCB or outdoor unit PCB mounted
- Defective indoor unit PCB
- Defective outdoor unit PCB

Troubleshooting



4.10 Outdoor Unit PCB Abnormality

Error Code

E1

Method of Error Detection

- The system checks if the microcomputer is working in order.
- The system checks if the zero-cross signal comes in properly.

Error Decision Conditions

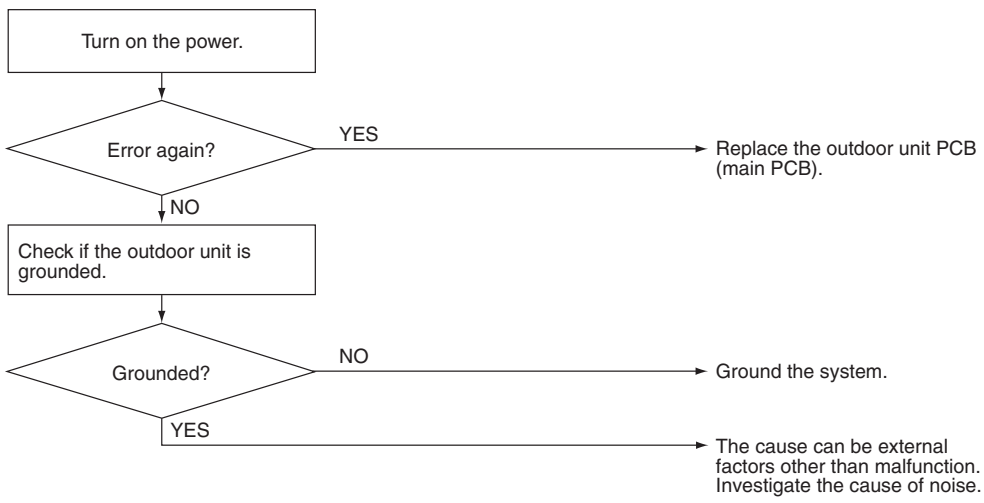
- The microcomputer program runs out of control.
- The zero-cross signal is not detected.

Supposed Causes

- Defective outdoor unit PCB
- Noise
- Momentary drop of voltage
- Momentary power failure

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

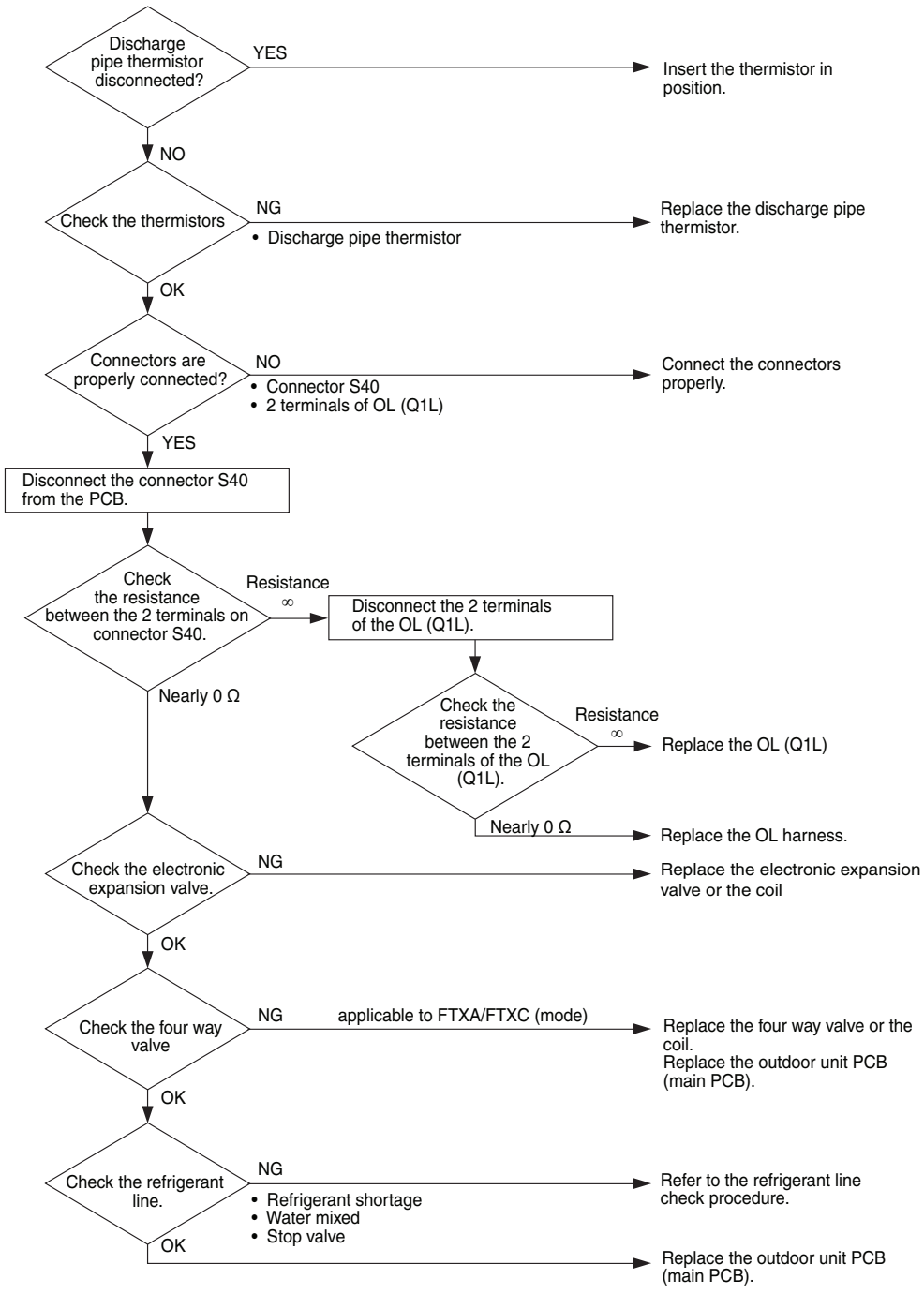


4.11 OL Activation (Compressor Overload)

Error Code	E5
Description	OL activation (compressor overload).
Method of Error Detection	A compressor overload is detected through compressor OL.
Error Decision Conditions	■ If the error repeats, the system is shut down. ■ Reset condition: Continuous run for about 60 minutes without any other error
Possible Root Causes	1. Disconnection of discharge pipe thermistor 2. Defective discharge pipe thermistor 3. Disconnection of connector S40 4. Disconnection of 2 terminals of OL (Q1L) 5. Defective OL (Q1L) 6. Broken OL harness 7. Defective electronic expansion valve or coil 8. Defective four way valve or coil 9. Defective outdoor unit PCB 10. Refrigerant shortage 11. Water mixed in refrigerant 12. Defective stop valve

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Reference **Check No.01** Refer to P.98

Reference **Check No.12** Refer to P.99

Reference **Check No.14** Refer to P.101

Note When replacing the defective thermistor(s), replace the thermistor as ASSY.

4.12 Compressor Lock

Error Code E6

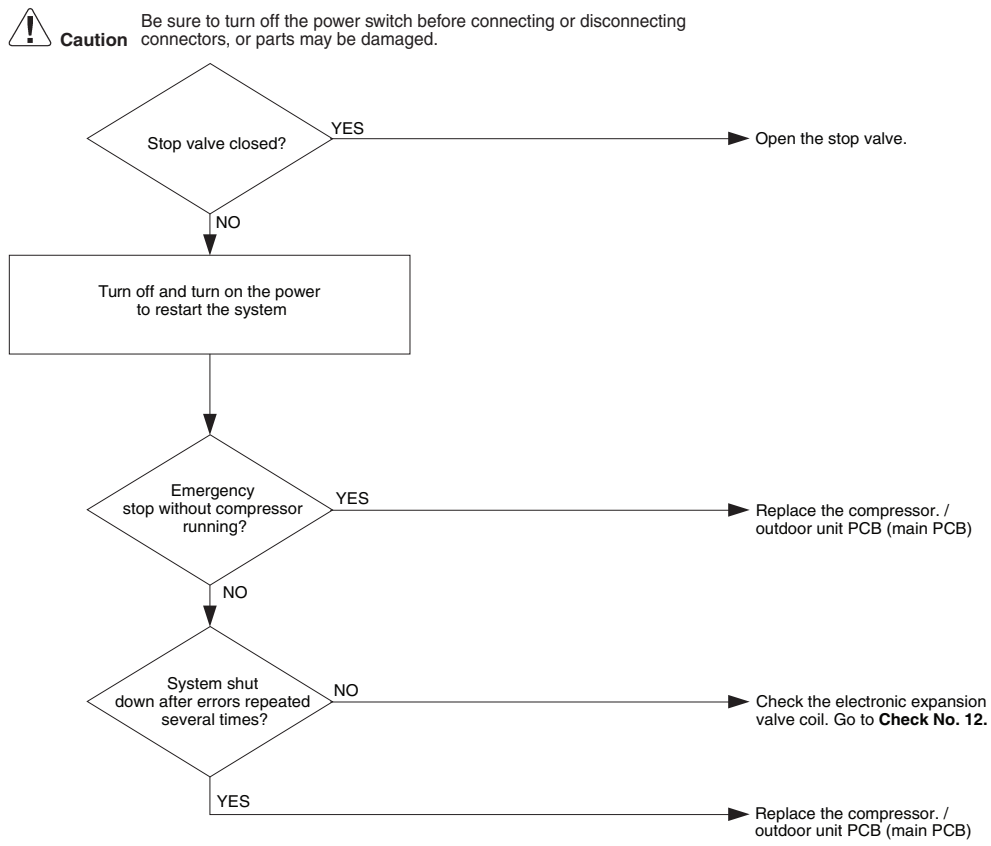
Description Compressor lock.

Method of Error Detection A compressor lock is detected by checking the compressor running condition through the position detection circuit.

Error Decision Conditions
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 11 minutes without any other error.

Supposed Causes
- Closed stop valve
- Compressor locked
- Disconnection of compressor harness

Troubleshooting



Reference **Check No.12** Refer to P.99

4.13 DC Fan Lock

Error Code

E7

Method of Error Detection

An error is determined with the high-voltage fan motor rotation speed detected by the Hall IC.

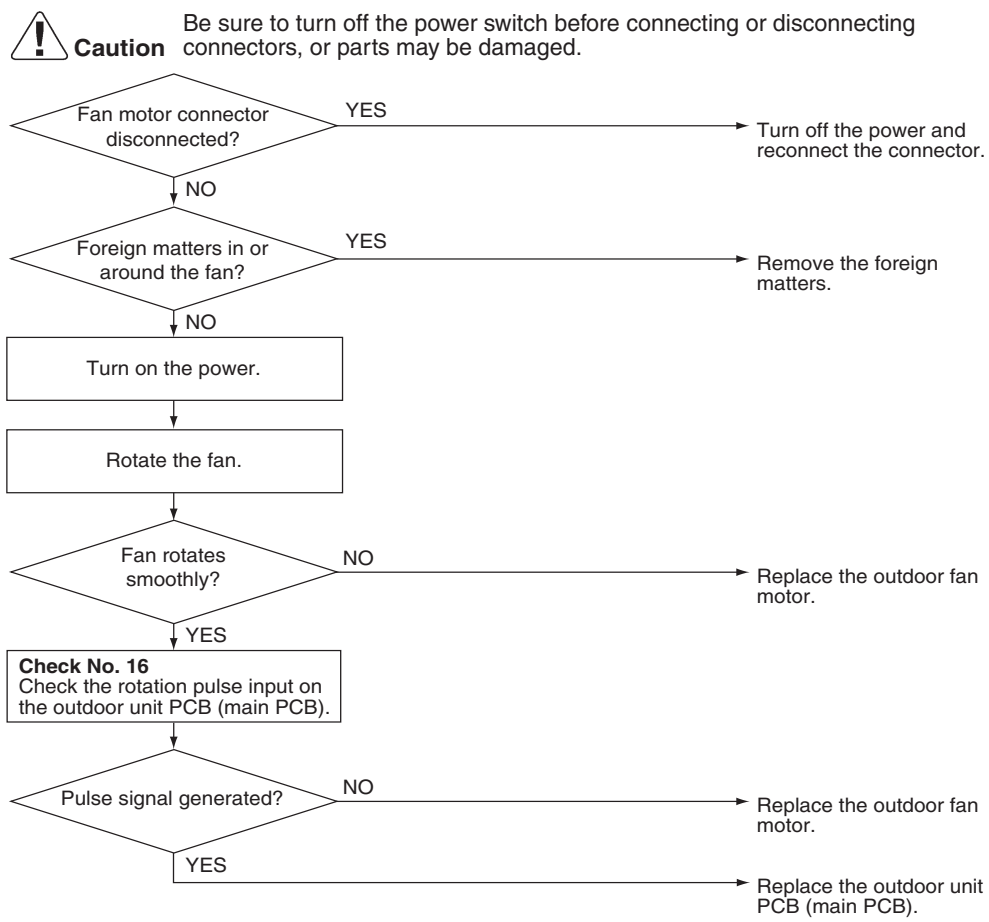
Error Decision Conditions

- The fan does not start in about 30 ~ 60 seconds (depending on the model) even when the fan motor is running.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 11 minutes without any other error

Supposed Causes

- Disconnection of the fan motor
- Foreign matter stuck in the fan
- Defective fan motor
- Defective outdoor unit PCB

Troubleshooting



Reference **Check No.16** Refer to P.101

4.14 Input Overcurrent Detection

Error Code E8

Description Input Overcurrent Detection

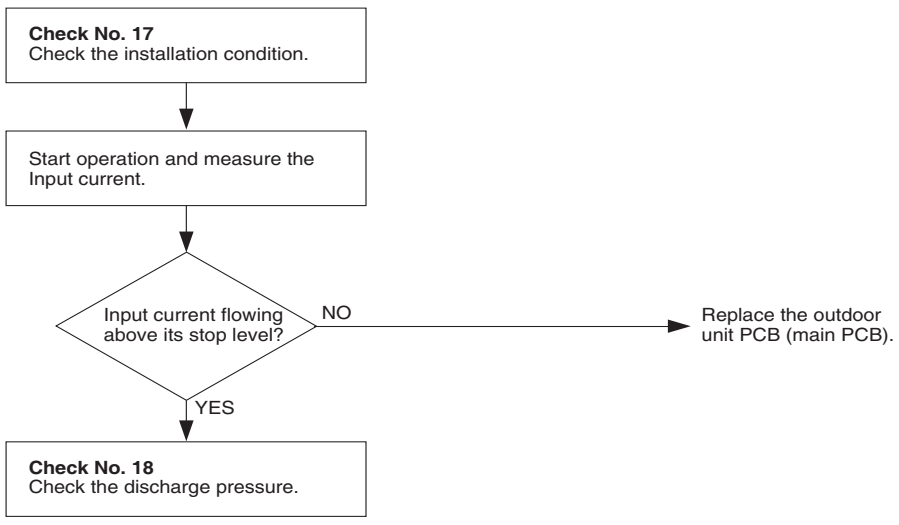
Method of Error Detection An input overcurrent is detected by checking the input current value with the compressor running.

Error Decision Conditions
- The current exceeds 10 ~ 15 A (depending on the model) for 2.5 seconds with the compressor running.
- The upper limit of the current decreases when the outdoor temperature exceeds a certain level.

Supposed Causes
- Outdoor temperature out of operation range
- Defective compressor
- Defective power module
- Defective outdoor unit PCB
- Short circuit

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Cautions:
- Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.
- An input overcurrent may result from wrong internal wiring. If the system is interrupted by an input overcurrent after the wires have been disconnected and reconnected for part displacement, check the wiring again.

	Error Code		Error Code
Outdoor	E8	Indoor	
Mode	COOL	Mode	COOL
COMP	ON	Set Point	16.0°C
Fan Speed	ON	Fan SP-Set	H
Heat Exch			
CT Current	CHECK		
INV-Temp			
1145d21h58m16s DEMO\DEMO052.TXT			
2020/06/22	16:45:01		60Hz EN03

Reference **Check No.17** Refer to P.102

Reference **Check No.18** Refer to P.102

Note Refer to Appendix when using the transmission monitor to identify the error code.

4.15 Discharge Pipe Temperature Control

Error Code

F3

Method of Error Detection

An error is determined with the temperature detected by the discharge pipe thermistor.

Error Decision Conditions

- If the temperature detected by the discharge pipe thermistor rises above **A**°C, the compressor stops.
- The error is cleared when the discharge pipe temperature has dropped below **B**°C.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 60 minutes without any other error

Model	RXC20/25/35	
	A (°C)	**B** (°C)
(1) above 45 Hz	110	85
(2) 20 ~ 45 Hz	95	70
(3) below 20 Hz	90	65

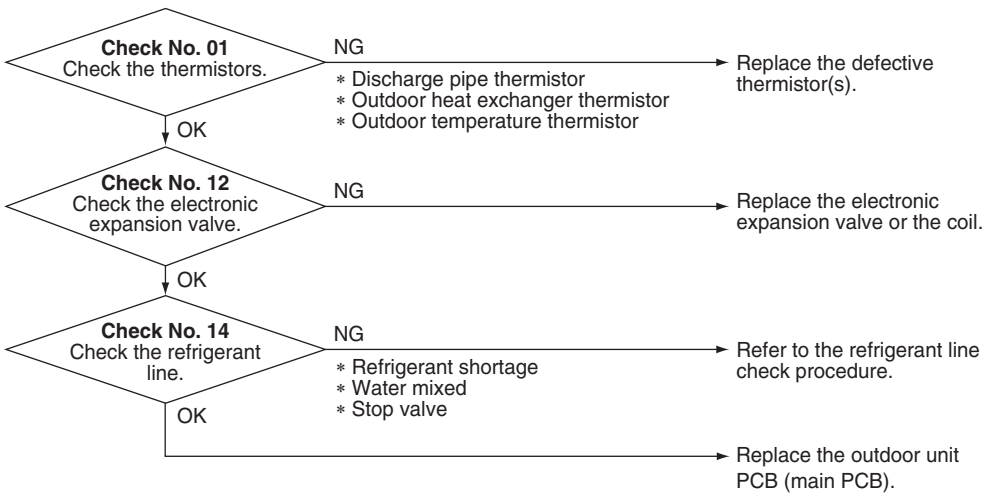
Model	RXC50/60/71	
	A (°C)	**B** (°C)
(1) above 50 Hz (rising), 45 Hz (dropping)	113	80
(2) 21 ~ 50 Hz (rising), 16 ~ 45 Hz (dropping)	101	68
(3) below 21 Hz (rising), 16 Hz (dropping)	93	60

Supposed Causes

- Defective discharge pipe thermistor
  (Defective outdoor heat exchanger thermistor or outdoor temperature thermistor)
- Defective electronic expansion valve or coil
- Refrigerant shortage
- Water mixed in refrigerant
- Defective stop valve
- Defective outdoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



	Error Code		Error Code
Outdoor	F3	Indoor	
Mode	COOL	Mode	COOL
COMP	ON	Set Point	16.0°C
Fan Speed	ON	Fan SP-Set	H
INV			
DiscTemp	CHECK		
EEV			
1145d21h58m16s DEMO\DEMO052.TXT			
2020/06/22	16:45:01		60Hz EN03

Reference **Check No.01** Refer to P.98

Reference **Check No.12** Refer to P.99

Reference **Check No.14** Refer to P.101

Note When replacing the defective thermistor(s), replace the thermistor as ASSY.
Refer to Appendix when using the transmission monitor to identify the error code.

4.16 High Pressure Control in Cooling

Error Code

F6

Method of Error Detection

High-pressure control (operation halt, frequency drop, etc.) is activated in cooling mode if the temperature sensed by the outdoor heat exchanger thermistor exceeds the limit.

Error Decision Conditions

- The temperature sensed by the outdoor heat exchanger thermistor rises above **A**°C.
- The error is cleared when the temperature drops below **B**°C.

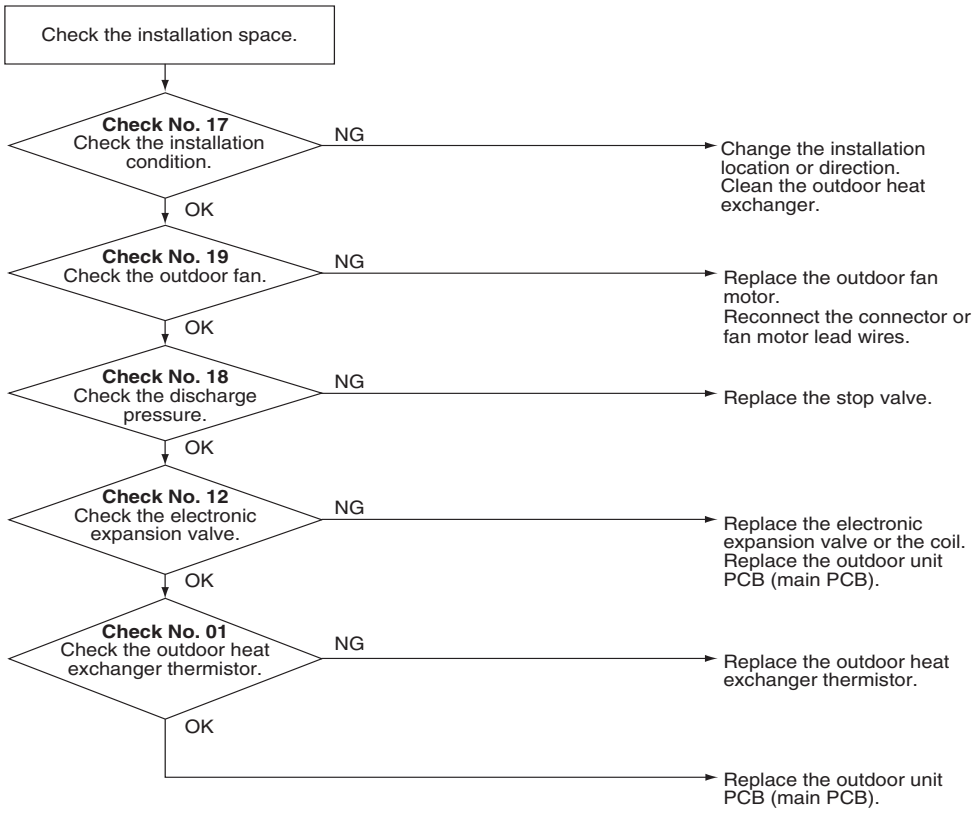
	A (°C)	**B** (°C)
RXC20/25/35	61	55
RXC35	61	53
RXC50	61	55
RXC60	61	54
RXC71	61	55

Supposed Causes

- Installation space not large enough
- Dirty outdoor heat exchanger
- Defective outdoor fan motor
- Defective stop valve
- Defective electronic expansion valve or coil
- Defective outdoor heat exchanger thermistor
- Defective outdoor unit PC

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



	Error Code		Error Code
Outdoor	F6	Indoor	
Mode	COOL	Mode	COOL
COMP	ON	Set Point	16.0°C
Fan Speed	ON	Fan SP-Set	H
HeatExch	CHECK		
CTCurrent			
INV-Temp			
1145d21h58m16s DEMO\DEMO052.TXT			
2020/06/22	16:45:01		60Hz EN03

Reference **Check No.01** Refer to P.98

Reference **Check No.12** Refer to P.99

Reference **Check No.17** Refer to P.102

Reference **Check No.18** Refer to P.102

Reference **Check No.19** Refer to P.103

Note When replacing the defective thermistor(s), replace the thermistor as ASSY.
Refer to Appendix when using the transmission monitor to identify the error code.

4.17 Compressor System Sensor Abnormality

Error Code

H0

Method of Error Detection

The system checks the DC current before the compressor starts.

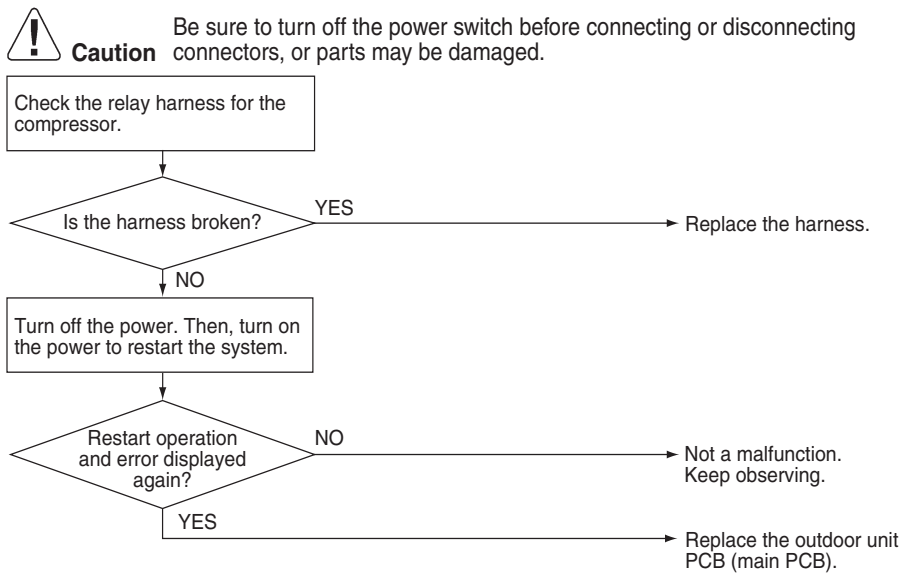
Error Decision Conditions

- The voltage converted from the DC current before compressor start-up is out of the range 0.5 ~ 4.5 V.
- The DC voltage before compressor start-up is below 50 V.

Supposed Causes

- Broken or disconnected harness
- Defective outdoor unit PCB

Troubleshooting



4.18 Position Sensor Abnormality

Error Code

H6

Description

Position Sensor Abnormality

Method of Error Detection

A compressor start-up failure is detected by checking the compressor running condition through the position detection circuit.

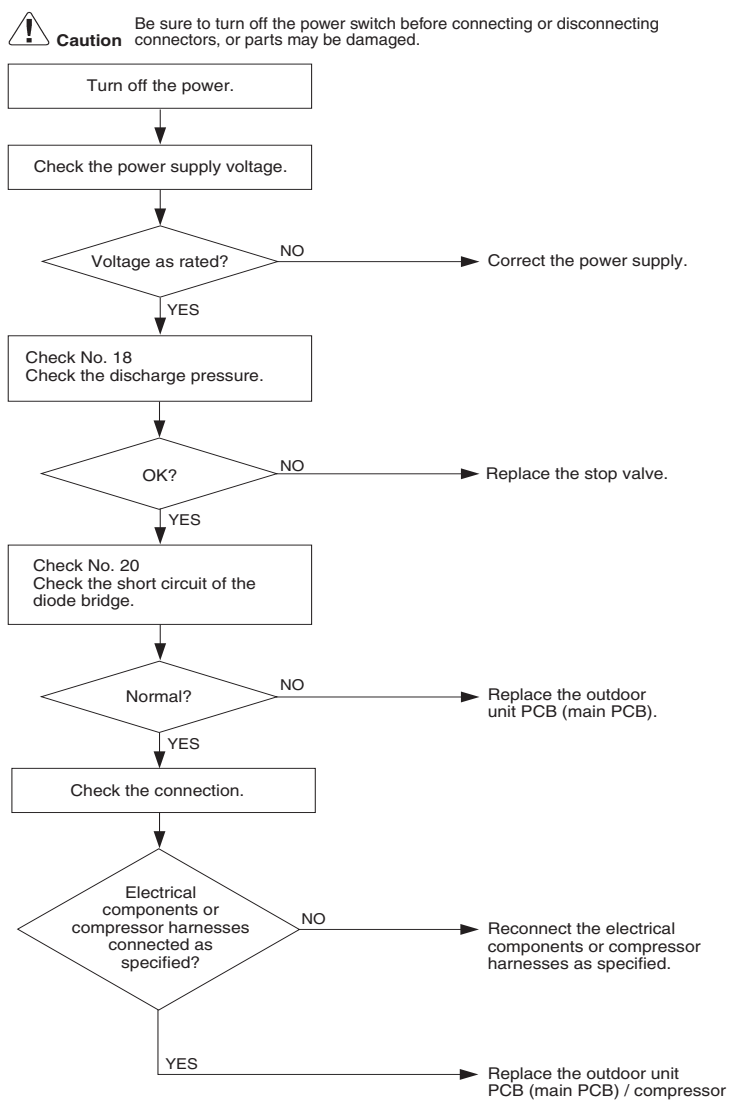
Error Decision Conditions

- The compressor fails to start in about 15 seconds after the compressor run command signal is sent.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 11 minutes without any other error

Supposed Causes

- Power supply voltage out of specification
- Disconnection of the compressor harness
- Defective compressor
- Defective outdoor unit PCB
- Start-up failure caused by the closed stop valve
- Input voltage out of specified range

Troubleshooting



Reference **Check No.18** Refer to P.102

Reference **Check No.20** Refer to P.103

4.19 Thermistor or Related Abnormality (Outdoor Unit)

Error Code

H9

Description

Thermistor or Related Abnormality (Outdoor Unit)

Method of Error Detection

This fault is identified based on the thermistor input voltage to the microcomputer.
A thermistor fault is identified based on the temperature sensed by each thermistor.

Error Decision Conditions

- The voltage between both ends of the thermistor is either 4.96 V or more, or 0.04 V or less with the power on.
- J3 error is judged if the discharge pipe temperature is lower than the heat exchanger temperature.

Possible Root Causes

- Disconnection of the connector for the thermistor
- Defective thermistor(s)
- Defective outdoor heat exchanger thermistor in the case of J3 error
- Defective outdoor unit PCB

Troubleshooting

Caution

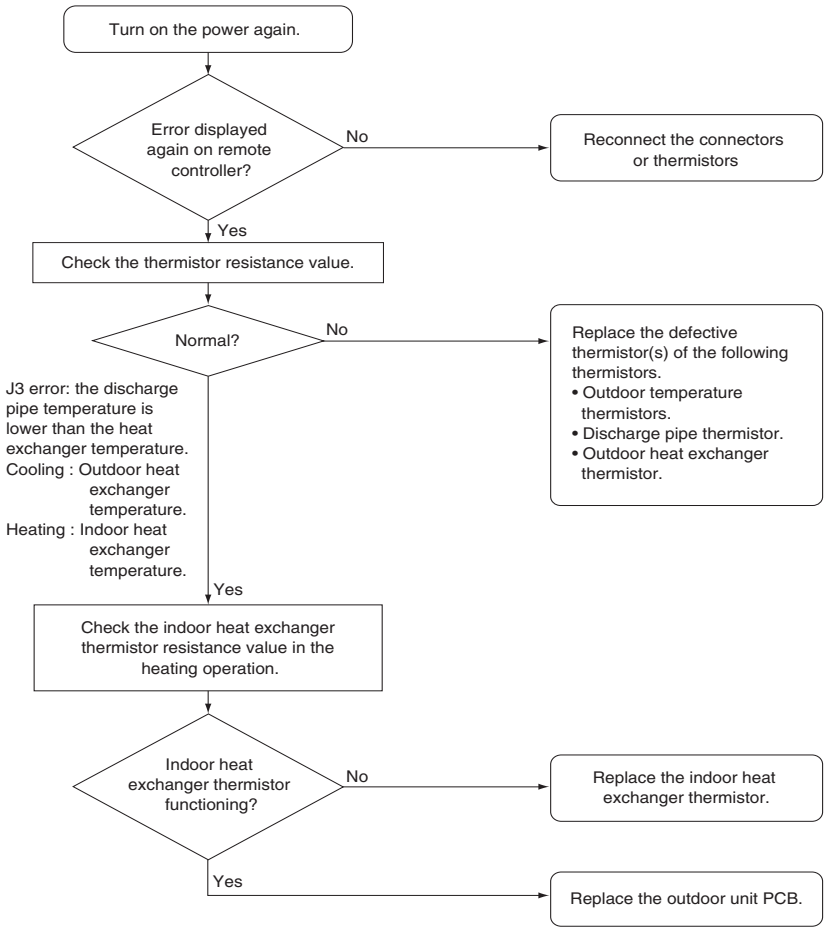
In case of P4 (Radiation fin thermistor)
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.
Replace the outdoor unit PCB (main PCB)

Troubleshooting

Caution

In case of H9
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



H9 : Outdoor temperature thermistor

	Error Code		Error Code
Outdoor	H9	Indoor	
Mode	COOL	Mode	COOL
COMP	ON	Set Point	16.0°C
Fan Speed	ON	Fan SP-Set	H
OutAir	CHECK		
Power			
Fan-SP1			
1145d21h58m16s DEMO\DEMO052.TXT			
2020/06/22	16:45:01		60Hz EN03

Reference

Check No.01 Refer to P.98

Note

When replacing the defective thermistor(s), replace the thermistor as ASSY.
Refer to Appendix when using the transmission monitor to identify the error code.

4.20 Thermistor or Related Abnormality (Outdoor Unit)

Error Code

J3

Description

Thermistor or Related Abnormality (Outdoor Unit)

Method of Error Detection

This fault is identified based on the thermistor input voltage to the microcomputer.
A thermistor fault is identified based on the temperature sensed by each thermistor.

Error Decision Conditions

- The voltage between both ends of the thermistor is either 4.96 V or more, or 0.04 V or less with the power on.
- J3 error is judged if the discharge pipe temperature is lower than the heat exchanger temperature.

Possible Root Causes

- Disconnection of the connector for the thermistor
- Defective thermistor(s)
- Defective outdoor heat exchanger thermistor in the case of J3 error
- Defective outdoor unit PCB

Troubleshooting

Caution

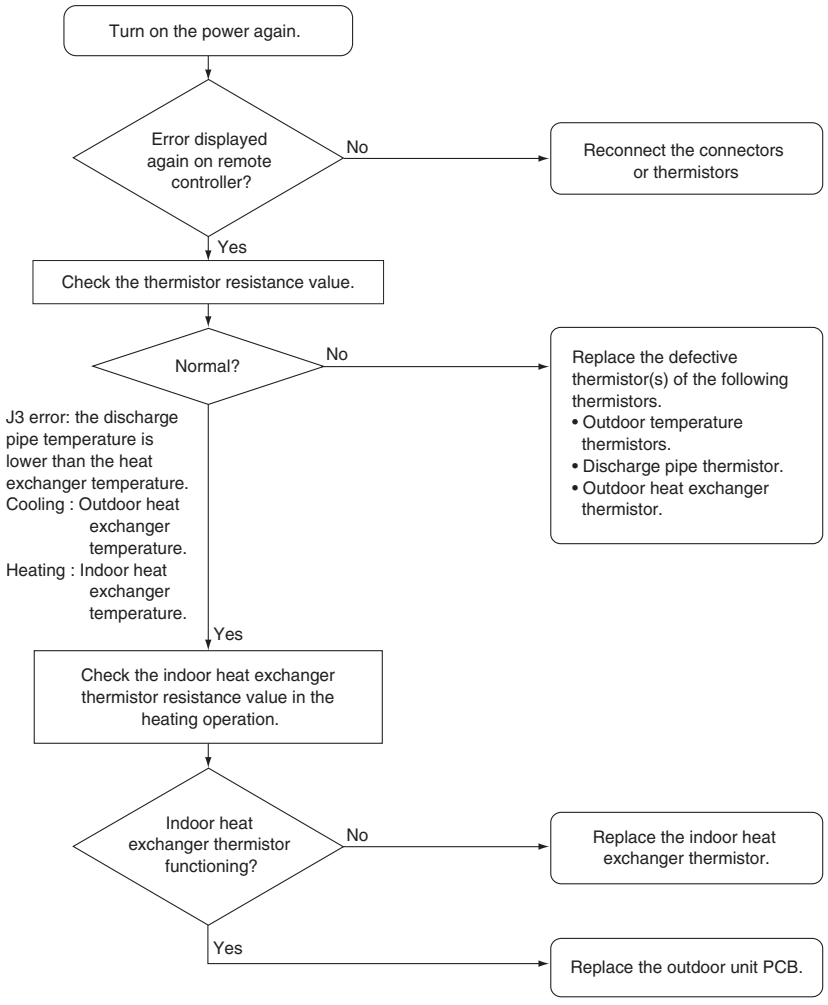
In case of P4 (Radiation fin thermistor)
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.
Replace the outdoor unit PCB (main PCB)

Troubleshooting

Caution

In case of J3
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



J3 : Discharge pipe thermistor

	Error Code		Error Code
Outdoor	J3	Indoor	
Mode	COOL	Mode	COOL
COMP	ON	Set Point	16.0°C
Fan Speed	ON	Fan SP-Set	H
INV			
DiscTemp	CHECK		
EEV			
1145d21h58m16s DEMO\DEMO052.TXT			
2020/06/22	16:45:01		60Hz EN03

Reference

Check No.01 Refer to P.98

Note

When replacing the defective thermistor(s), replace the thermistor as ASSY.
Refer to Appendix when using the transmission monitor to identify the error code.

4.21 Thermistor or Related Abnormality (Outdoor Unit)

Error Code

J6

Description

Thermistor or Related Abnormality (Outdoor Unit)

Method of Error Detection

This fault is identified based on the thermistor input voltage to the microcomputer.
A thermistor fault is identified based on the temperature sensed by each thermistor.

Error Decision Conditions

- The voltage between both ends of the thermistor is either 4.96 V or more, or 0.04 V or less with the power on.
- J3 error is judged if the discharge pipe temperature is lower than the heat exchanger temperature.

Possible Root Causes

- Disconnection of the connector for the thermistor
- Defective thermistor(s)
- Defective outdoor heat exchanger thermistor in the case of J3 error
- Defective outdoor unit PCB

Troubleshooting

Caution

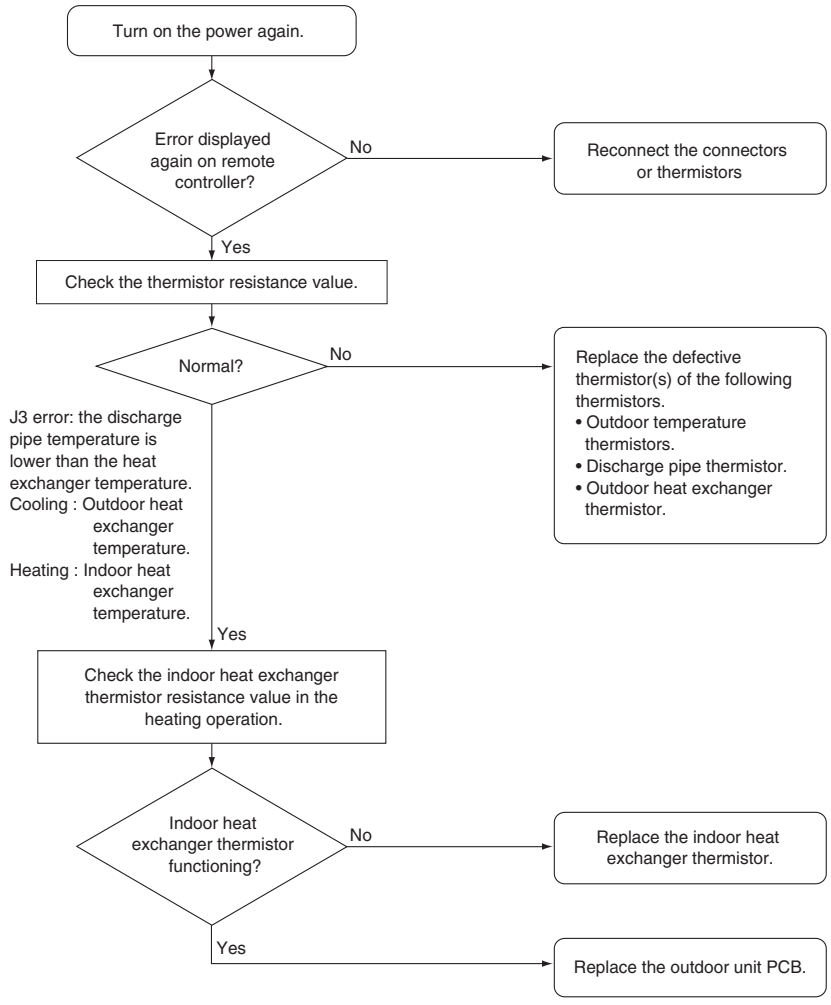
In case of P4 (Radiation fin thermistor)
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.
Replace the outdoor unit PCB (main PCB)

Troubleshooting

Caution

In case of J6
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



J6 : Outdoor heat exchanger thermistor

	Error Code		Error Code
Outdoor	J6	Indoor	
Mode	COOL	Mode	COOL
COMP	ON	Set Point	16.0°C
Fan Speed	ON	Fan SP-Set	H
HeatExch	CHECK		
CTCurrent			
INV-Temp			
1145d21h58m16s DEMO\DEMO052.TXT			
2020/06/22	16:45:01		60Hz EN03

Reference

Check No.01 Refer to P.98

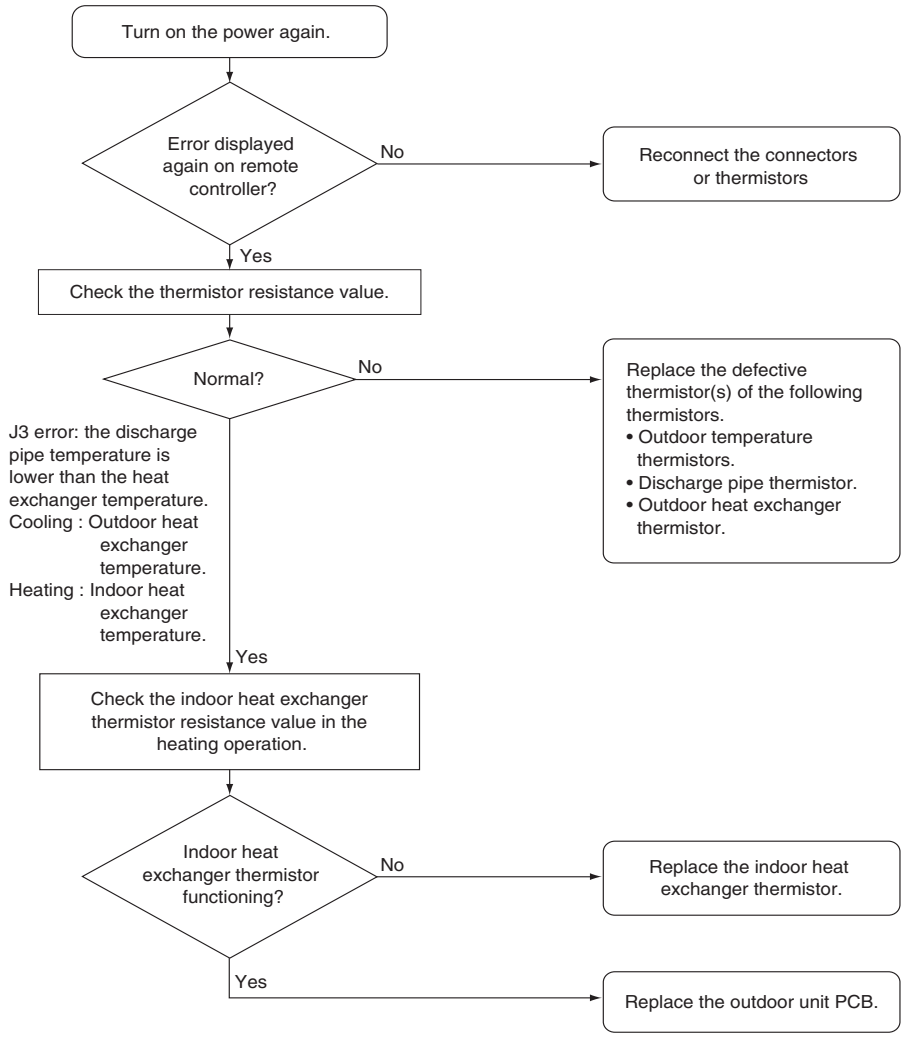
Note

When replacing the defective thermistor(s), replace the thermistor as ASSY.
Refer to Appendix when using the transmission monitor to identify the error code.

4.22 Thermistor or Related Abnormality (Outdoor Unit)

Error Code	P4
Description	Thermistor or Related Abnormality (Outdoor Unit)
Method of Error Detection	This fault is identified based on the thermistor input voltage to the microcomputer. A thermistor fault is identified based on the temperature sensed by each thermistor.
Error Decision Conditions	■ The voltage between both ends of the thermistor is either 4.96 V or more, or 0.04 V or less with the power on. ■ J3 error is judged if the discharge pipe temperature is lower than the heat exchanger temperature.
Possible Root Causes	■ Disconnection of the connector for the thermistor ■ Defective thermistor(s) ■ Defective outdoor heat exchanger thermistor in the case of J3 error ■ Defective outdoor unit PCB
Troubleshooting Caution	In case of P4 (Radiation fin thermistor) Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged. Replace the outdoor unit PCB (main PCB)
Troubleshooting Caution	In case of P4 Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



P4 : Outdoor temperature thermistor

	Error Code		Error Code
Outdoor	P4	Indoor	
Mode	COOL	Mode	COOL
COMP	ON	Set Point	16.0°C
Fan Speed	ON	Fan SP-Set	H
HeatExch			
CTCurrent			
INV-Temp			
1145d21h58m16s DEMO\DEMO052.TXT			
2020/06/22	16:45:01		60Hz EN03

Reference

Check No.01 Refer to P.98

Note

When replacing the defective thermistor(s), replace the thermistor as ASSY.
Refer to Appendix when using the transmission monitor to identify the error code.

4.23 Electrical Box Temperature Rise

Error Code

L3

Method of Error Detection

An electrical box temperature rise is detected by checking the radiation fin thermistor with the compressor off.

Error Decision Conditions

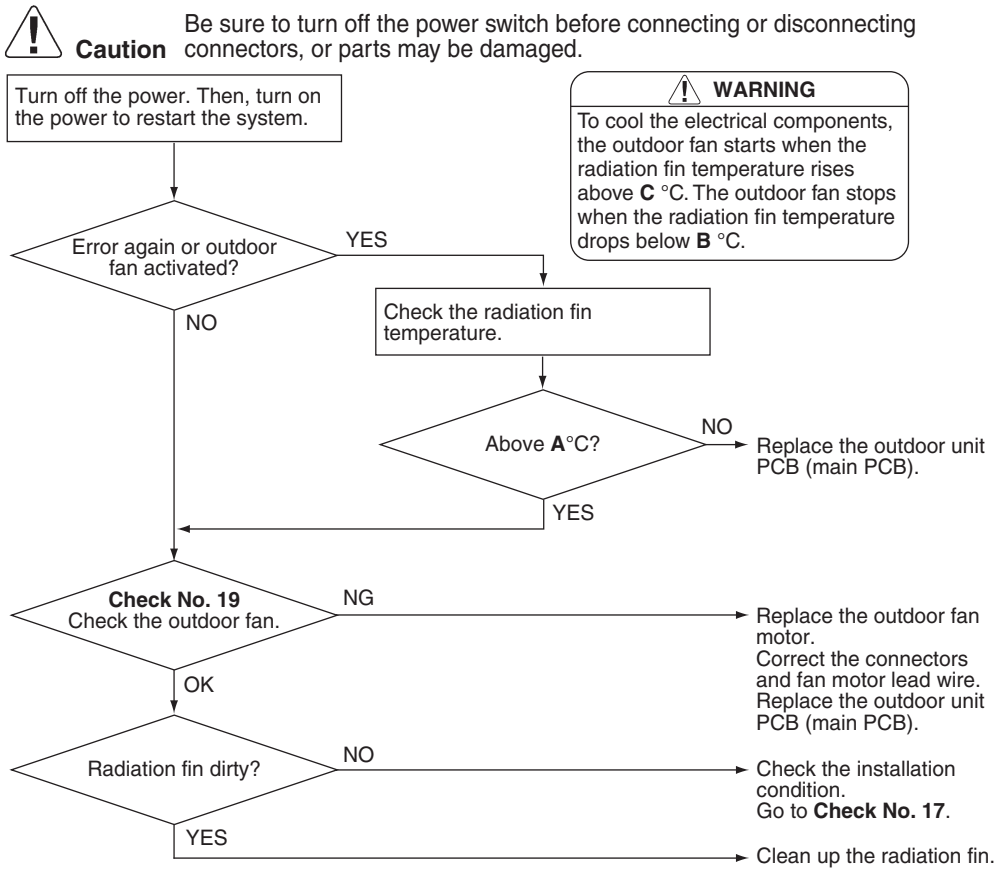
- With the compressor off, the radiation fin temperature is above **A** °C.
- The error is cleared when the radiation fin temperature drops below **B** °C.
- To cool the electrical components, the outdoor fan starts when the radiation fin temperature rises above **C** °C and stops when the radiation fin temperature drops below **B** °C.

Model name	**A** (°C)	**B** (°C)	**C** (°C)
(A)FTXC20/25/35	93	70	78
(A)FTXC50/60/71	100	64	91

Supposed Causes

- Defective outdoor fan motor
- Short circuit
- Defective radiation fin thermistor
- Disconnection of connector
- Defective outdoor unit PCB

Troubleshooting



Reference **Check No.17** Refer to P.102

Reference **Check No.19** Refer to P.103

4.24 Radiation Fin Temperature Rise

Error Code

L4

Method of Error Detection

A radiation fin temperature rise is detected by checking the radiation fin temperature with the compressor on.

Error Decision Conditions

- The radiation fin temperature with the compressor on is above **A** °C.
- The error is cleared when the radiation fin temperature drops below **B** °C.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 60 minutes without any other error

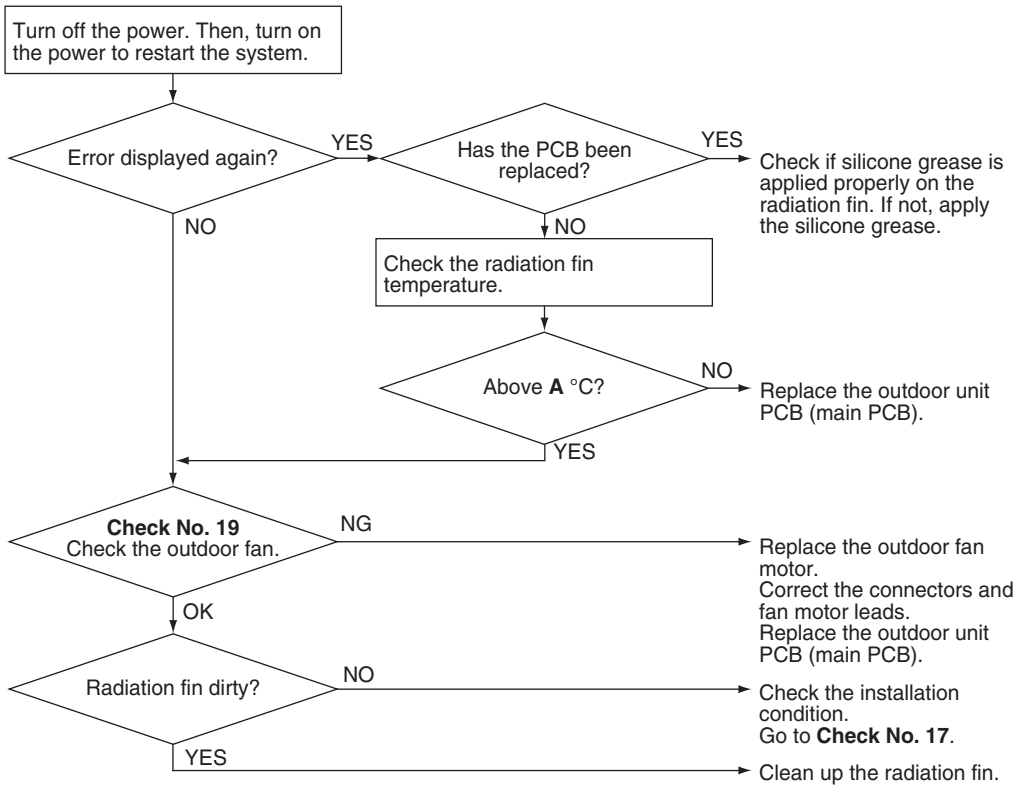
Model name	**A** (°C)	**B** (°C)
(A)FTXC20/25/35	93.0	78.0
(A)FTXC50/60/71	73.5	57.0

Supposed Causes

- Defective outdoor fan motor
- Short circuit
- Defective radiation fin thermistor
- Disconnection of connector
- Defective outdoor unit PCB
- Silicone grease not applied properly on the radiation fin after replacing the outdoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Reference Refer to Silicone Grease on Power Transistor/Diode Bridge on page 110 for details.

Reference **Check No.17** Refer to P.102

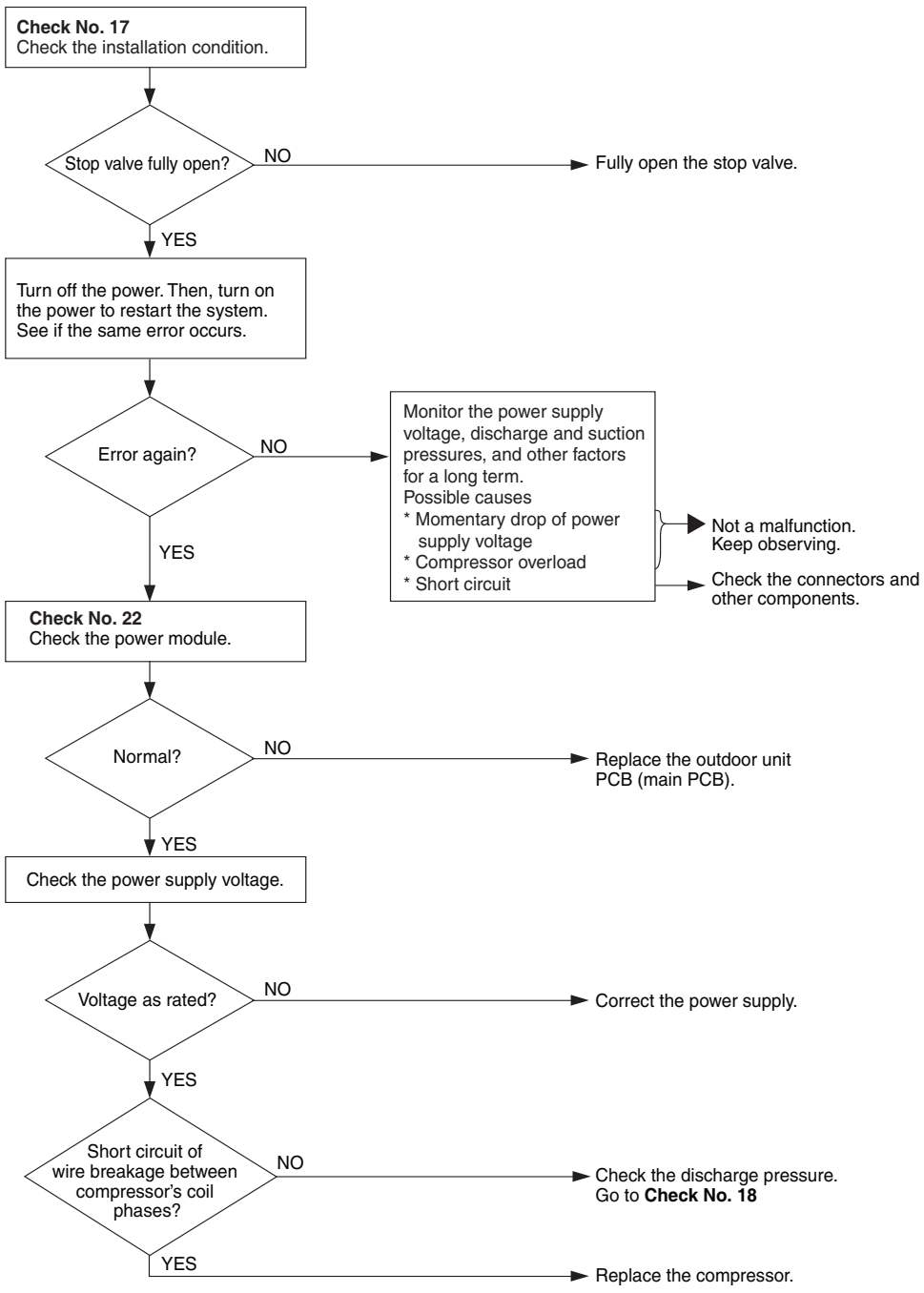
Reference **Check No.19** Refer to P.103

4.25 Output Overcurrent Detection

Error Code	L5
Description	Output Overcurrent Detection
Method of Error Detection	An output overcurrent is detected by checking the current that flows in the inverter DC section.
Error Decision Conditions	■ A position signal error occurs while the compressor is running. ■ A rotation speed error occurs while the compressor is running. ■ An output overcurrent is fed from the output overcurrent detection circuit to the microcomputer. ■ If error repeats, the system is shut down. ■ Reset condition: Continuous run for about 5 minutes without any other error.
Possible root Causes	■ Poor installation condition ■ Closed stop valve ■ Defective power module ■ Wrong internal wiring ■ Abnormal power supply voltage ■ Defective outdoor unit PCB ■ Power supply voltage out of installation ■ Defective compressor

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Reference **Check No.17** Refer to P.102

Reference **Check No.18** Refer to P.102

Reference **Check No.22** Refer to P.105

4.26 Four Way Valve Abnormality

Remote Controller Display

EA

Method of Malfunction Detection

The indoor air temperature thermistor, the indoor unit heat exchanger thermistor, the outdoor temperature thermistor and the outdoor unit heat exchanger thermistor are checked to see if the function within their normal ranges in the operating mode.

Malfunction Decision Conditions

A following condition continues over 10 minute after operating 5 minutes.

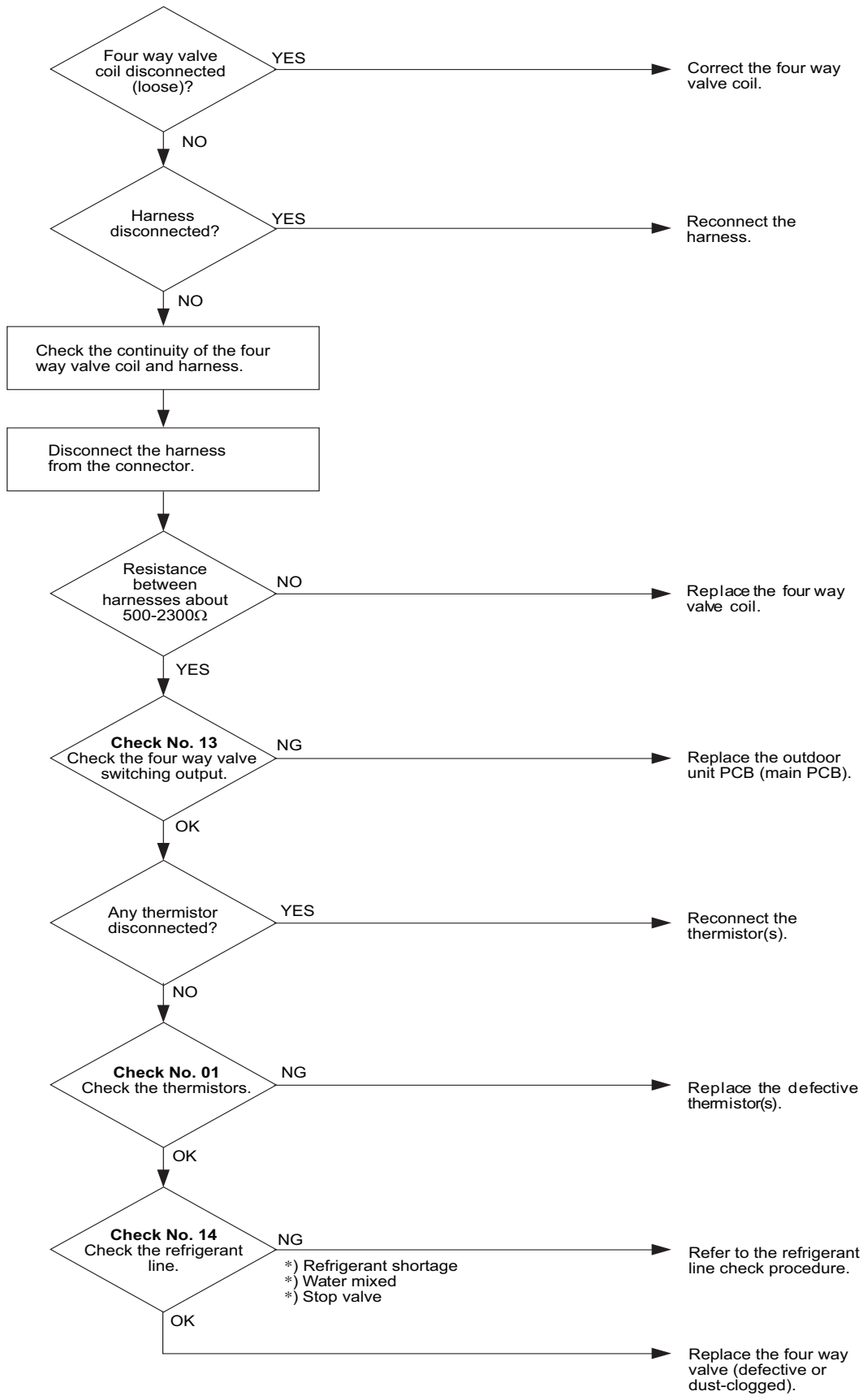
- Cooling / dry operation
  (room temp. – indoor heat exchanger temp.) < −5°C.
- Heating
  (indoor unit heat exchanger temp. – room temp.) < −5°C.

Supposed Causes

- Connector in poor contact
- Thermistor defective
- Outdoor unit PCB defective
- Four way valve coil or harness defective
- Four way valve defective
- Foreign substance mixed in refrigerant
- Insufficient gas

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



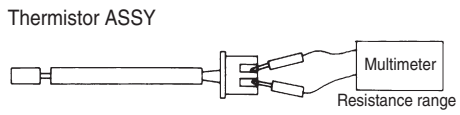
5. Actuator Check

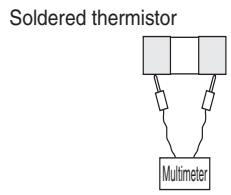
5.1 Thermistor Resistance Check

Check No.01

Measure the resistance of each thermistor using multimeter.
The resistance values are defined by below table.
If the measured resistance value does not match the listed value, the thermistor must be replaced.

- Disconnect the connector of thermistor ASSY from the PCB to measure the resistance between the pins using multimeter.
- To check the thermistor soldered on a PCB, disconnect the PCB from other PCB/parts, and measure the resistance between the both ends of soldered thermistor.





Thermistor temperature (°C)	Type A	Type B
	R(25°C) = 20 kΩ	R(25°C) = 10 kΩ
-20	198	73
-15	149	57
-10	113	45
-5	86	35
0	66	28
5	51	23
10	40	18
15	32	15
20	25	12
25	20	10
30	16	8
35	13	7
40	11	6
45	9	5
50	7	4

Thermistor		Resistance Type	R(25°C)
Indoor Unit	Room temperature thermistor	B	10 kΩ
	Indoor heat exchanger thermistor	B	10 kΩ
Outdoor Unit	Outdoor temperature thermistor	A	20 kΩ
	Outdoor heat exchanger thermistor	A	20 kΩ
	Discharge pipe thermistor	A	20 kΩ

Tolerance resistance type A : ±5%
Tolerance resistance type B : ±2%

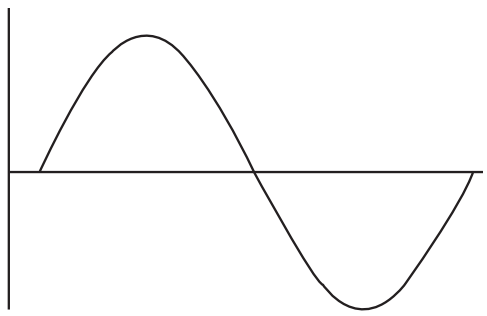
5.2 Power Supply Waveform Check

Check No.11

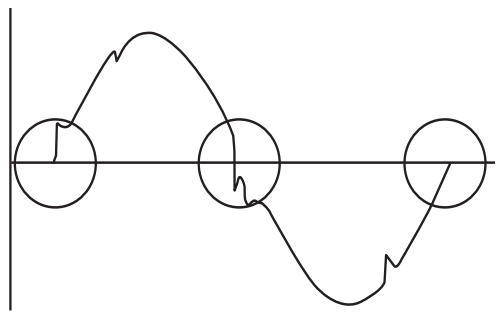
Measure the power supply waveform between No. 1 and No. 2 on the terminal strip, and check the waveform disturbance.

- Check if the power supply waveform is a sine wave (Fig.1).
- Check if there is waveform disturbance near the zero-cross (sections circled in Fig.2).

[Fig.1]



[Fig.2]

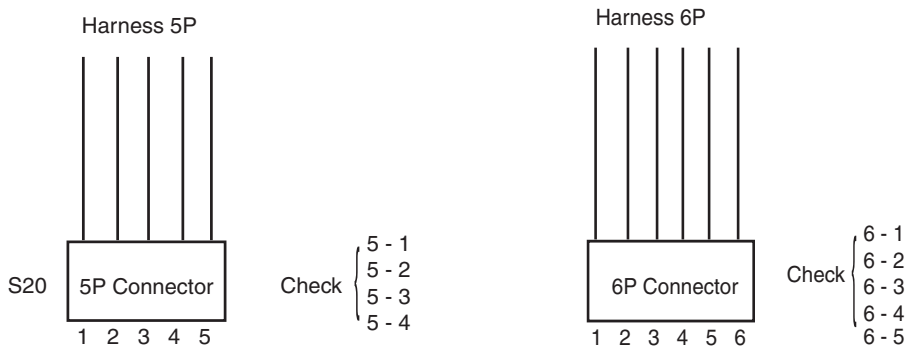


5.3 Electronic Expansion Valve Check

Check No.12

Conduct the followings to check the electronic expansion valve (EV).

1. Check if the EV connector is correctly connected to the PCB.
2. Turn the power off and on again, and check if the EV generates a latching sound.
3. If the EV does not generate a latching sound in the step 2 above, disconnect the connector and check the continuity using a multimeter.
4. Check the continuity between the pins 5 - 1, 5 - 2, 5 - 3, 5 - 4 (for 5P connectors) and 6 - 1, 6 - 2, 6 - 3, 6 - 4, 6 - 5, (for 6P connectors). If there is no continuity between the pins, the EV coil is faulty.
5. If the continuity is confirmed in step 3, the outdoor unit PCB (main PCB) is faulty.



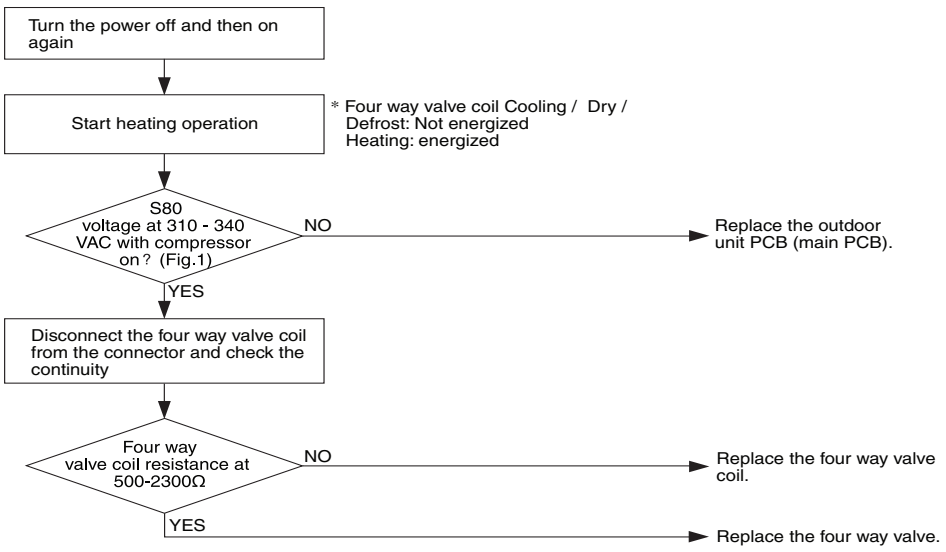
	RXC*CV1B	
Class	20/25/35	50/60/71
	5P 5wires	6P 6wires

5.4 Four Way Valve Performance Check

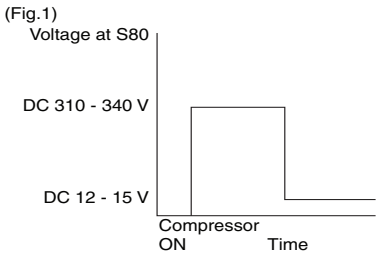
Check No.13

20/25/35 Class

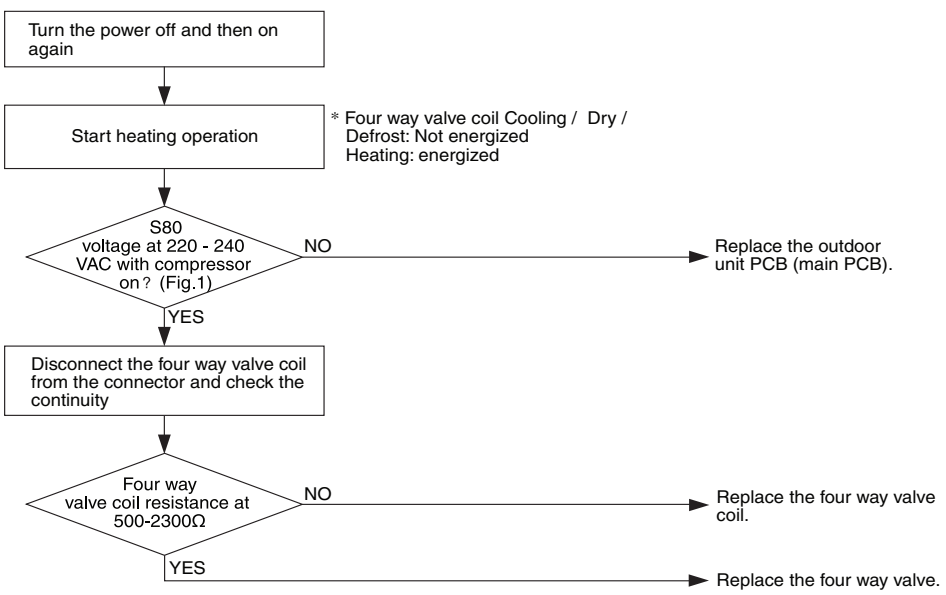
Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



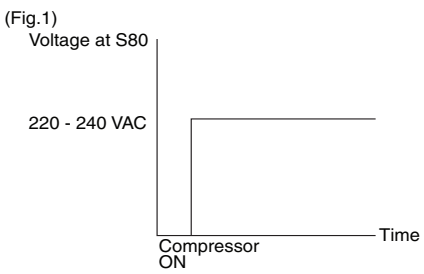
(Fig.1)



50/60/71 Class

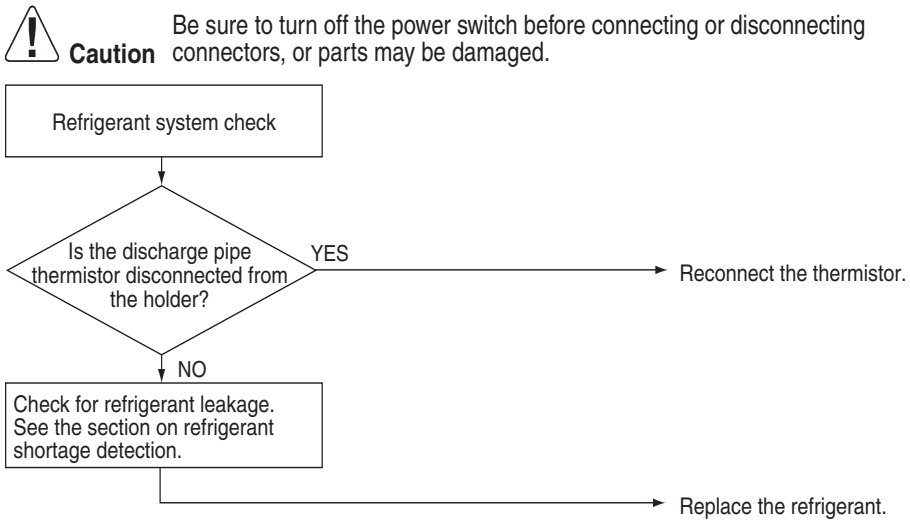


(Fig.1)



5.5 Inverter Unit Refrigerant System Check

Check No.14



5.6 Rotation Pulse Check on the Outdoor Unit PCB

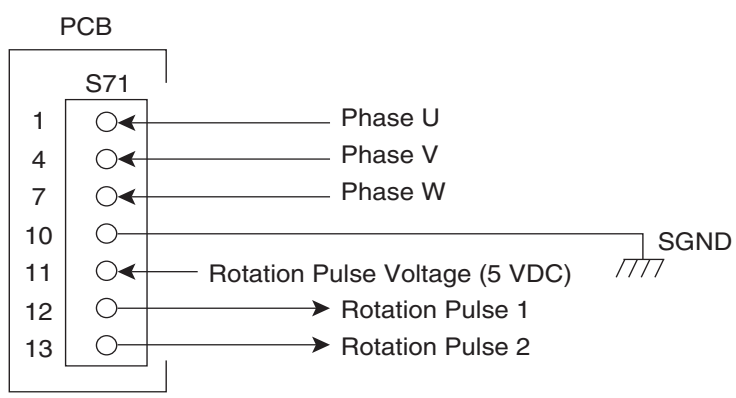
Check No.16

20/25/35 Class

Make sure that voltage supply of 220 - 240 VAC are supplied to the unit.

1. Set operation OFF and power OFF. Disconnect the connector S71 and power ON.
2. Check that the sensor voltage between the pins 11 - 10 is 5 VDC.
3. Ensure operation OFF and power OFF. Connect the connector S71 and power ON.
4. Check whether rotation pulses (0 ~ 5 VDC) are output at the pins 12-10, 13-10 when the fan motor is rotated 1 turn by hand.
5. Ensure operation OFF and power OFF. Check that sinusoidal voltage is generated between pins 1 - 4 and 4 - 7 when the fan motor is manually rotated once.

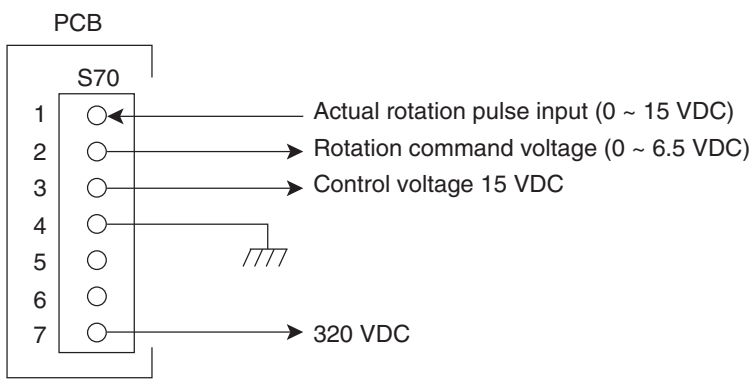
When the fuse is melted, check the outdoor fan motor for proper function.
If NG in step 2 → Defective PCB → Replace the outdoor unit PCB (main PCB).
If NG in step 4 → Defective Hall IC → Replace the outdoor fan motor.
If NG in step 5 → Defective Fan Motor → Replace the outdoor fan motor.
If OK in All steps → Replace the outdoor unit PCB (main PCB).



50/60/71 Class
Make sure that voltage supply of 220 - 240 VAC are supplied to the unit.

1. Set operation OFF and power OFF. Disconnect the connector S70 and power ON.
2. Check that the voltage between the pins 4 - 7 is 320 ± 30 VDC.
3. Check that the control voltage between the pins 3 - 4 is 15 VDC.
4. Check that the rotation command voltage between the pins 2 - 4 is 0 ~ 6.5 VDC.
5. Set operation OFF and power OFF. Connect the connector S70 and power ON.
6. Check whether 4 pulses (0 ~ 15 VDC) are output at the pins 1 - 4 when the fan motor is rotated 1 turn by hand.

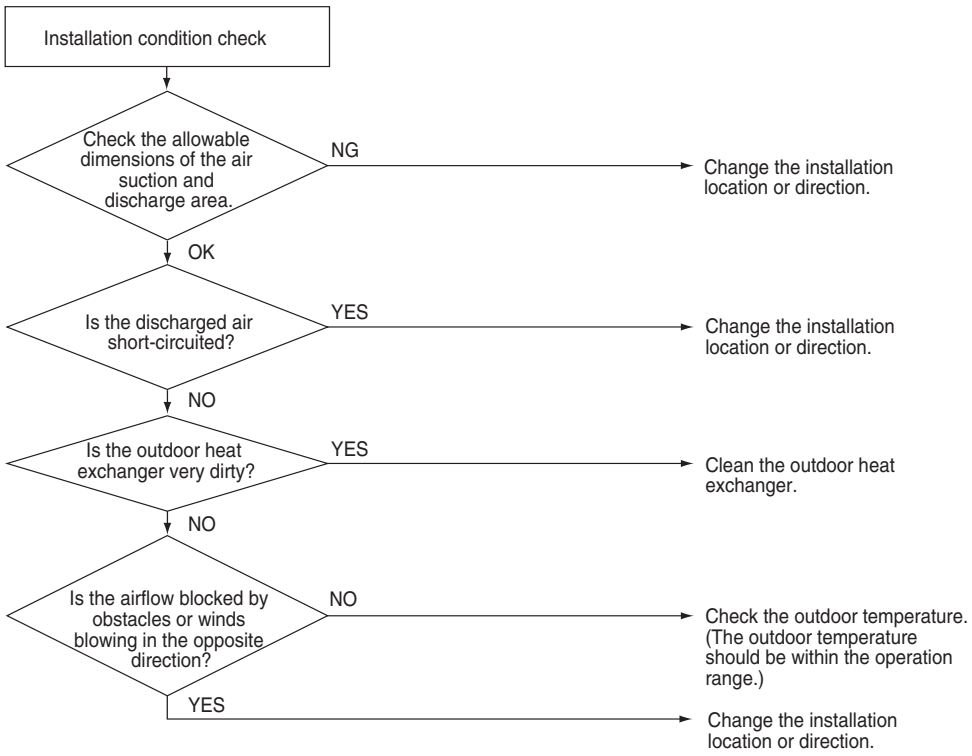
When the fuse is melted, check the outdoor fan motor for proper function.
If NG in step 2 → Defective PCB → Replace the outdoor unit PCB (main PCB).
If NG in step 4 → Defective Hall IC → Replace the outdoor fan motor.
If OK in both steps 2 and 4 → Replace the outdoor unit PCB (main PCB).



5.7 Installation Condition Check

Check No.17

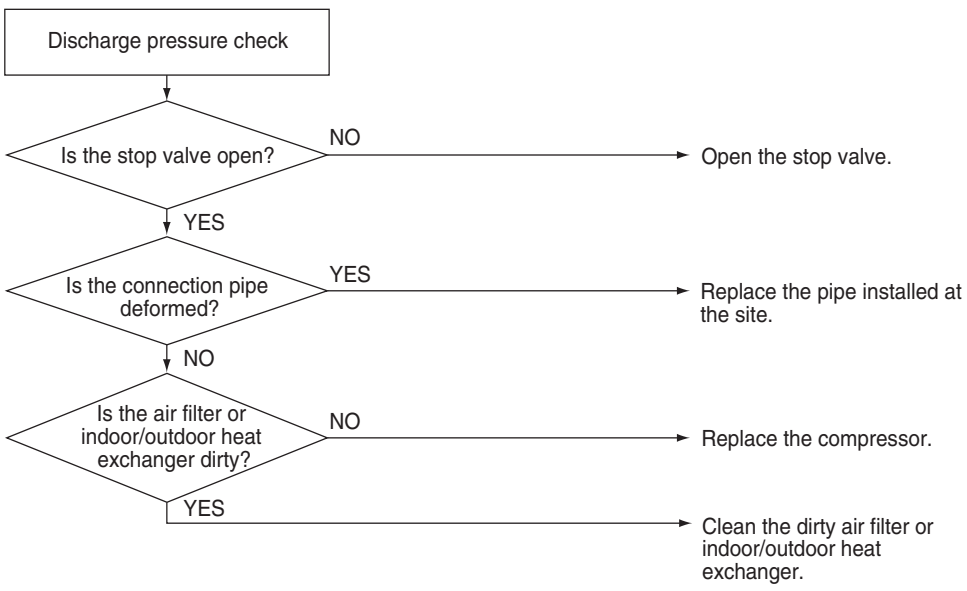
Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



5.8 Discharge Pressure Check

Check No.18

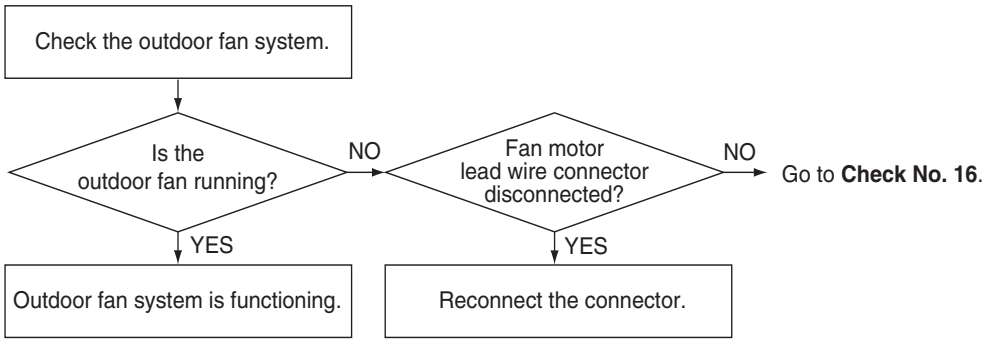
Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



5.9 Outdoor Fan System Check

Check No.19 **DC motor**

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



5.10 Main Circuit Short Check

Check No.20 Check to make sure that the voltage between (+) and (–) of the diode bridge (DB1) is approximately 0 V before checking.

- Measure the resistance between the pins of the DB1 referring to the table below.
- If the resistance is ∞ or less than 1 kΩ, short circuit occurs on the main circuit.

Positive terminal (+) of digital multimeter	~ (2, 3)	+ (4)	~ (2, 3)	– (1)
Negative terminal (–) of digital multimeter	+ (4)	~ (2, 3)	– (1)	~ (2, 3)
Resistance is OK.	several kΩ ~ several MΩ			
Resistance is NG.	0 Ω or ∞			

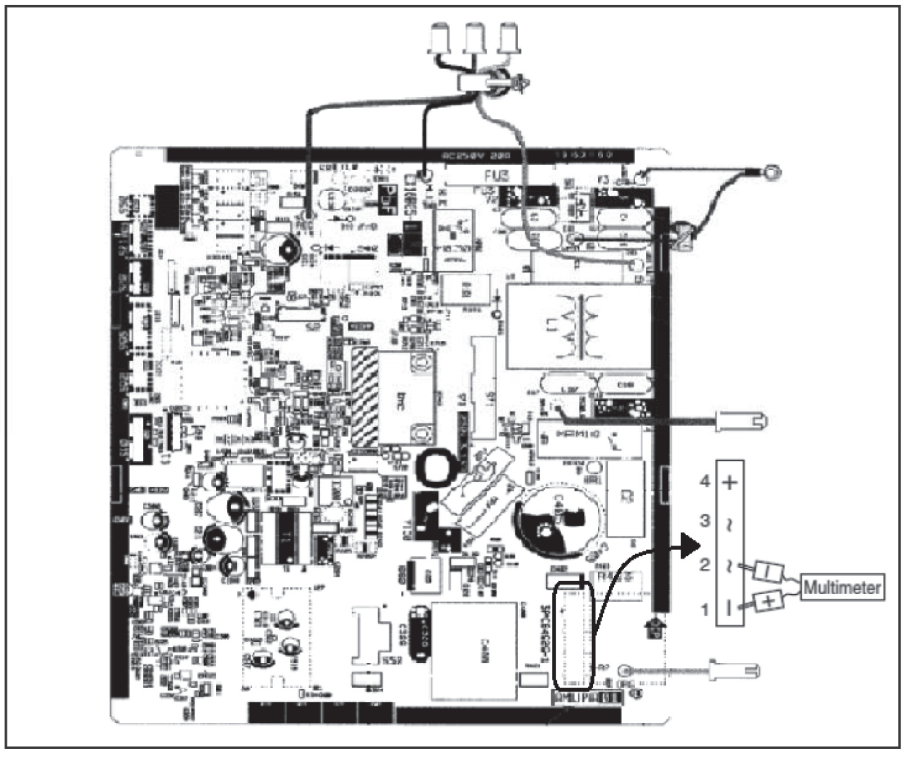


Diagram **Main Circuit Short Check** for (A)FTXC20/25/35

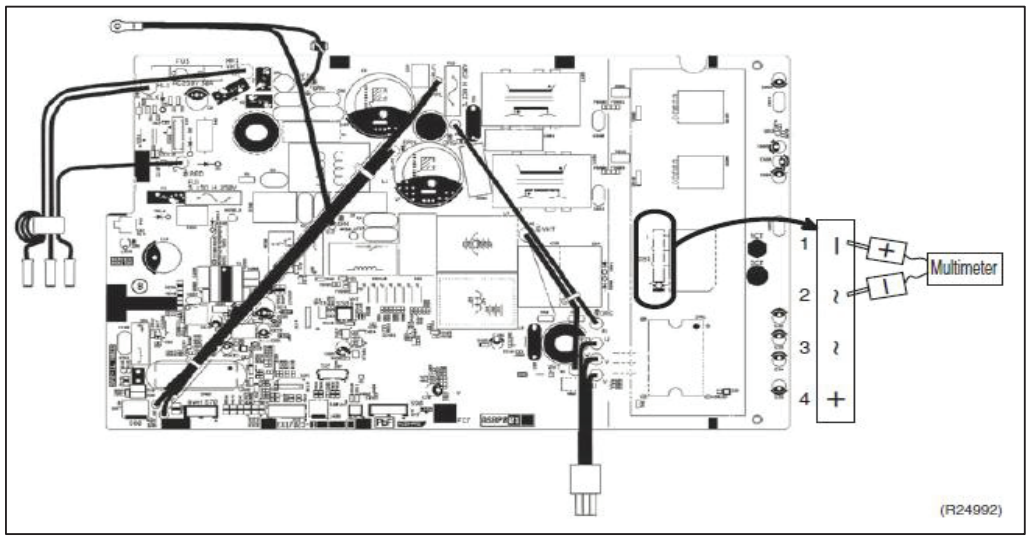


Diagram **Main Circuit Short Check** for (A)FTXC50/60/71

5.11 Power Module Check

Check No.22

Check to make sure that the voltage between (+) and (–) of the power module is approximately 0 V before checking.

- Disconnect the compressor harness connector from the outdoor unit PCB. To disengage the connector, press the protrusion on the connector.
- Follow the procedure below to measure resistance between the (+) or (–) terminal of the power module and the U, V, or W terminal of the compressor with a multimeter. Evaluate the measurement results referring to the following table.

Positive terminal (+) of digital multimeter	Power module (+)	UVW	Power module (–)	UVW
Negative terminal (–) of digital multimeter	UVW	Power module (+)	UVW	Power module (–)
Resistance is OK.	several kΩ ~ several MΩ			
Resistance is NG.	0 Ω or ∞			

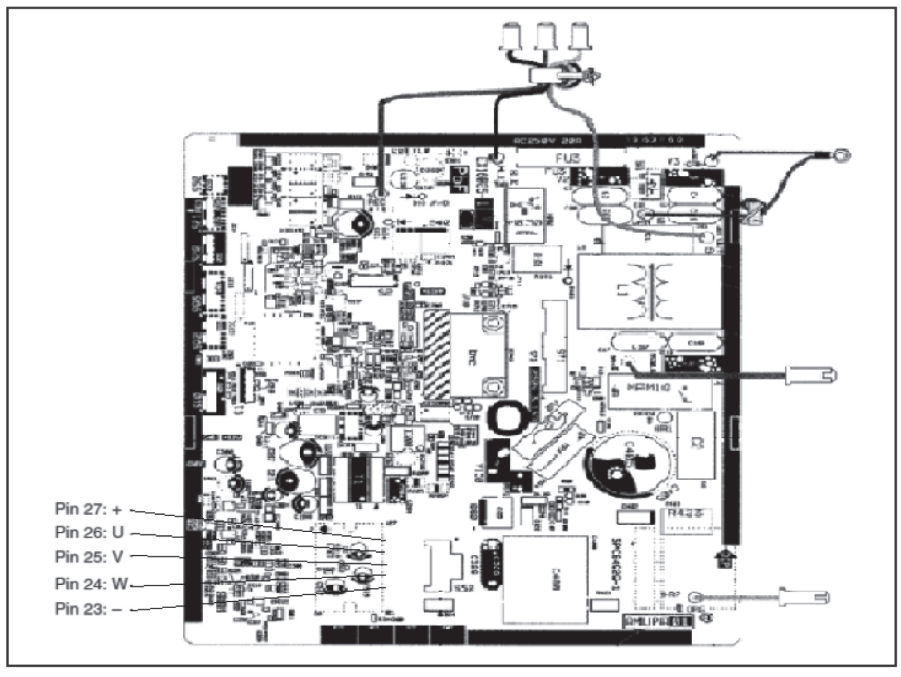


Diagram **Power Module Check** for (A)FTXC20/25/35

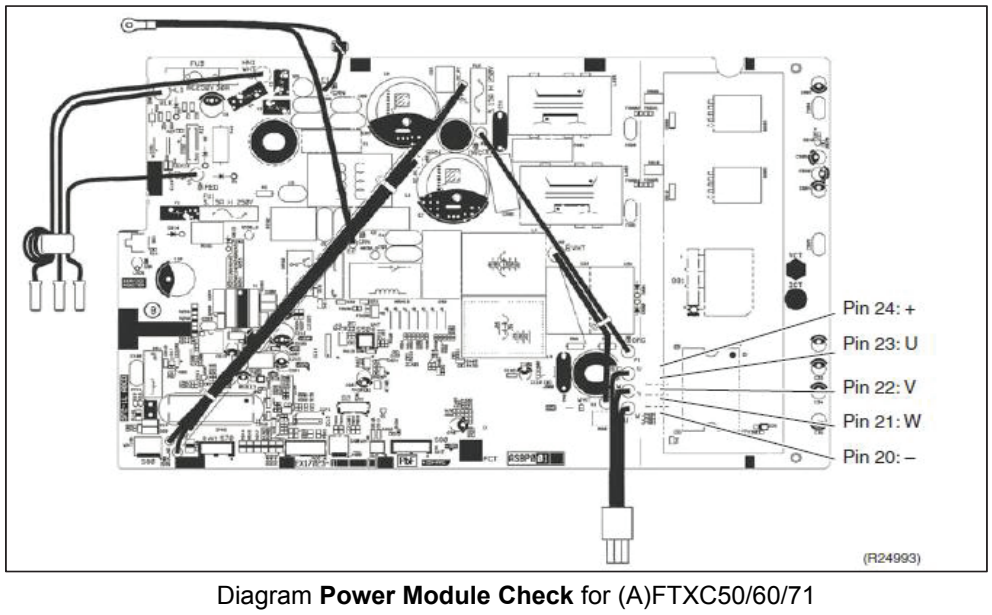


Diagram **Power Module Check** for (A)FTXC50/60/71

Part 6
Trial Operation and Field Settings

1. Pump Down Operation 108
2. Forced Cooling Operation 109
3. Silicone Grease on Power Transistor/Diode Bridge 110

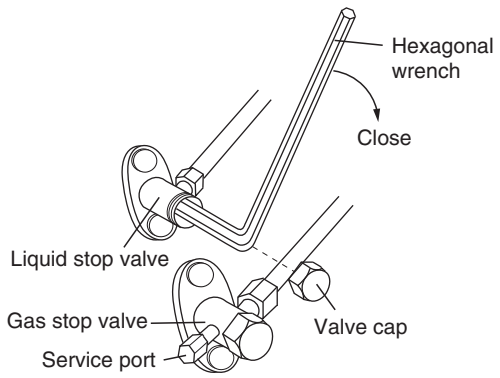
1. Pump Down Operation

Outline

In order to protect the environment, be sure to conduct pump down operation when relocating or disposing of the unit.

Details

1. Remove the valve caps from the liquid stop valve and the gas stop valve.
2. Carry out forced cooling operation.
3. After 5 to 10 minutes, close the liquid stop valve with a hexagonal wrench.
4. After 2 to 3 minutes, close the gas stop valve and stop the forced cooling operation.



Reference Refer to page 109 for forced cooling operation.

2. Forced Cooling Operation

Outline

The forced cooling operation is allowed when both the following conditions are met.

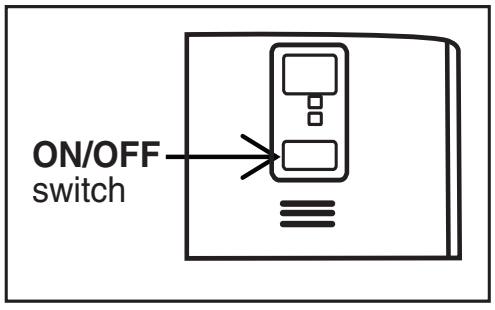
1. The outdoor unit is not abnormal and not in the 3-minute standby mode.
2. The outdoor unit is not operating.

Protection functions have priority over all other functions during forced cooling operation.

Details

■ **With indoor unit ON/OFF switch**

Press indoor unit **ON/OFF** switch (SW1) for at least 5 seconds. The operation will start.
Forced cooling operation will stop automatically after about 15 minutes.
To stop the operation, press indoor unit **ON/OFF** switch.



3. Silicone Grease on Power Transistor/Diode Bridge

Outline

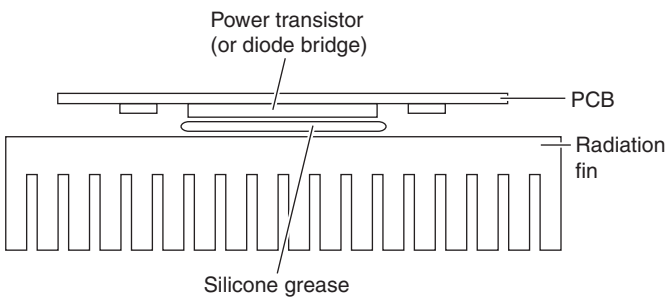
Apply the specified silicone grease to the heat radiation part of a power transistor/diode bridge when you replace an outdoor unit PCB. The silicone grease encourages the heat radiation of a power transistor/diode bridge.

Details

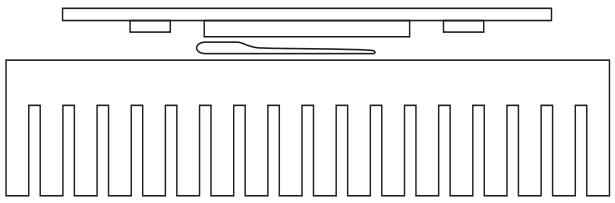
1. Wipe off the old silicone grease completely.
2. Apply the silicone grease evenly. See the illustrations below for examples of application.
3. Tighten the screws of the power transistor/diode bridge.
4. Make sure that the heat radiation parts are firmly contacted to the radiation fin.

Note: Smoke emission may be caused by bad heat radiation when the silicone grease is not appropriately applied.

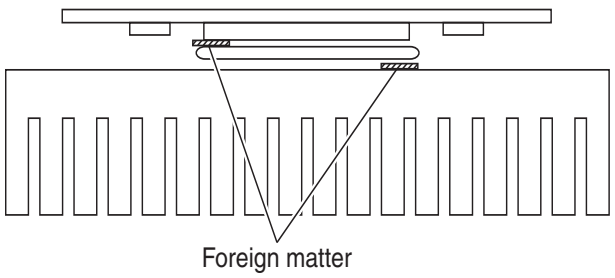
■ OK: Evenly applied



■ NG: Not evenly applied



■ NG: Foreign matter is stuck.



Part 7
Appendix

1. Piping Diagrams 112
   1.1 Indoor Unit 112
   1.2 Outdoor Unit 114
2. Wiring Diagrams 116
   2.1 Indoor Unit 116
   2.2 Outdoor Unit 117
   2.3 Printed Circuit Board Connector Wiring Diagram 118
   2.4 Printed Circuit Board Connector Wiring Diagram 119
3. Operation Limit 121
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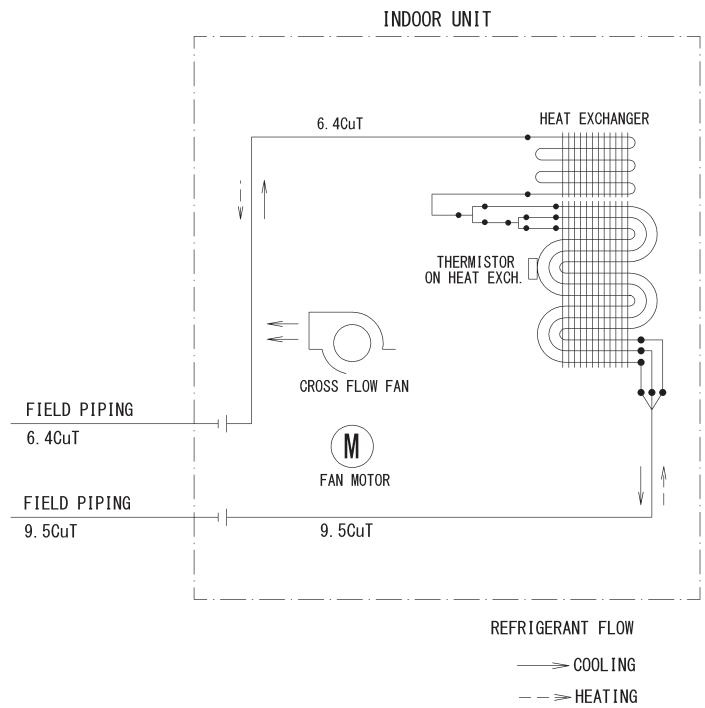
   4.1 Names and Functions of Parts 122
   4.2 Basic Operations and Display 123

1. Piping Diagrams

1.1 Indoor Unit

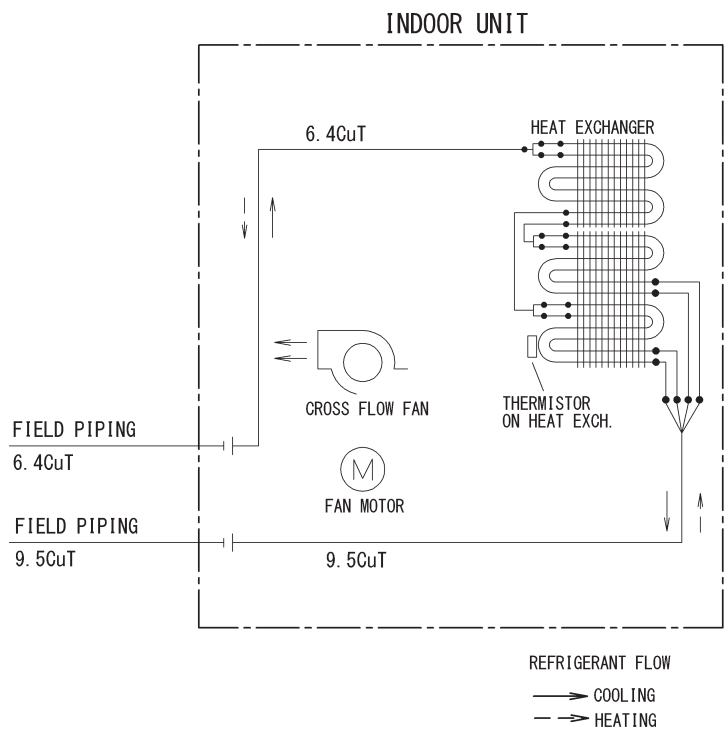
Model: FTXC/ATXC20/25C



3D120821A

Note: Dimension in mm

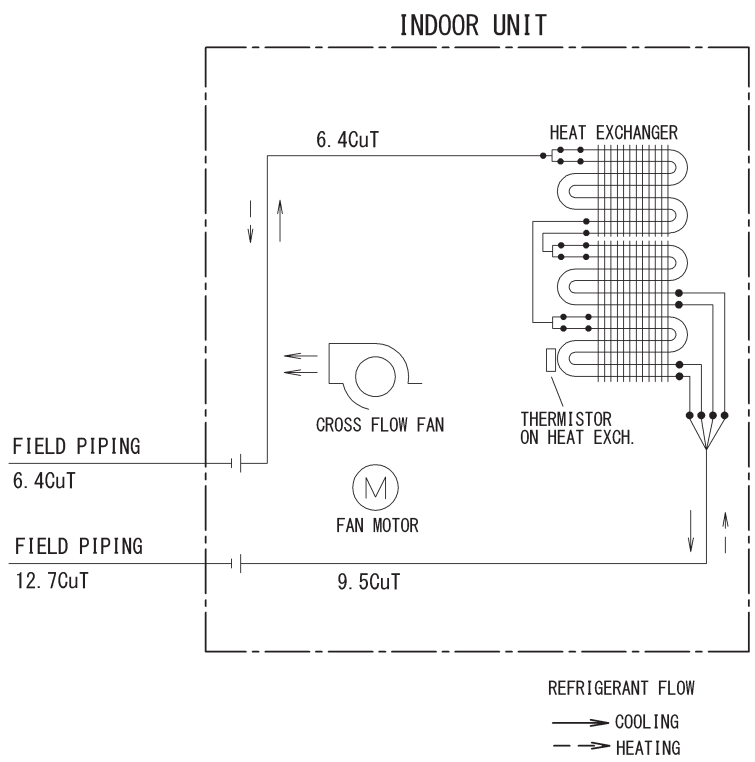
Model: FTXC/ATXC35C



3D120823A

Note: Dimension in mm

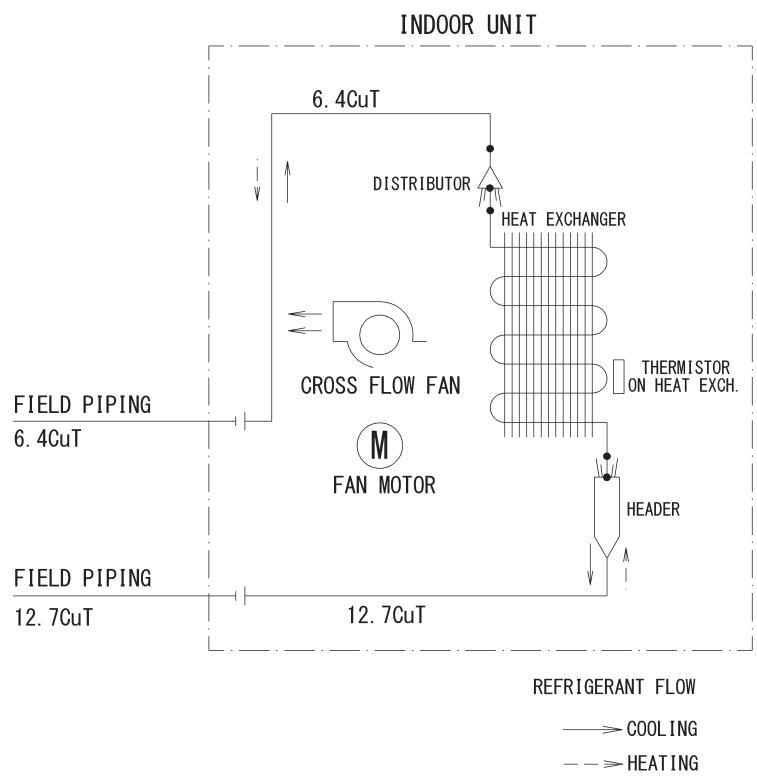
Model: FTXC/ATXC50C



3D120825A

Note: Dimension in mm

Model: FTXC/ATXC60/71C

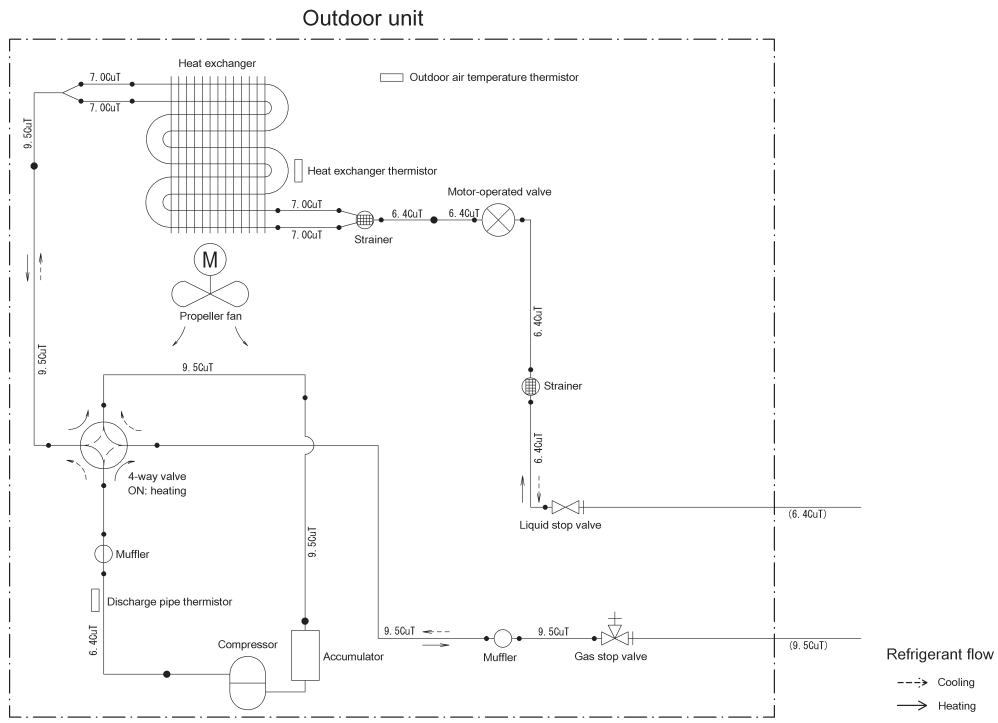


3D120826A

Note: Dimension in mm

1.2 Outdoor Unit

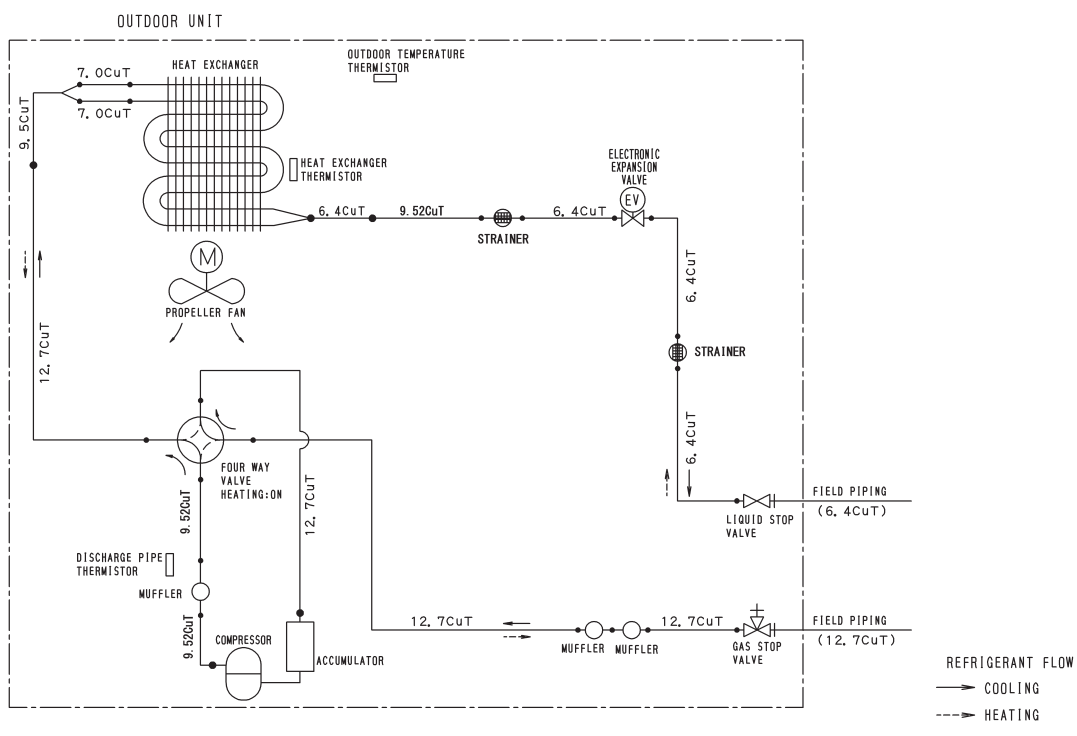
Model: RXC/ARXC20/25/35C



3D120828A

Note: Dimension in mm

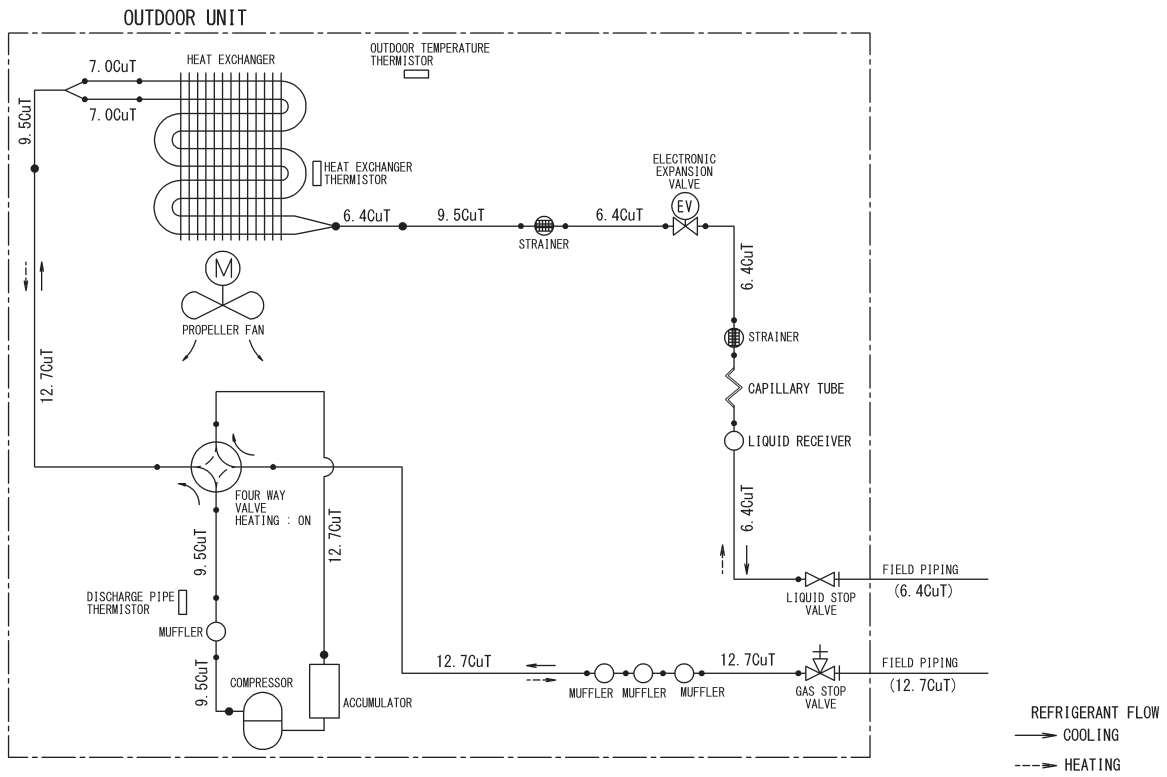
Model: RXC/ARXC50/60C



3D120827A

Note: Dimension in mm

Model: RXC/ARXC71C



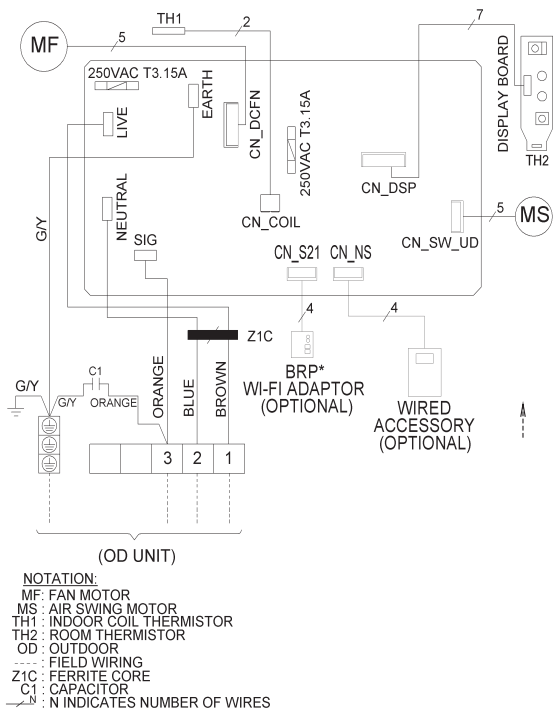
3D121396A

Note: Dimension in mm

2. Wiring Diagrams

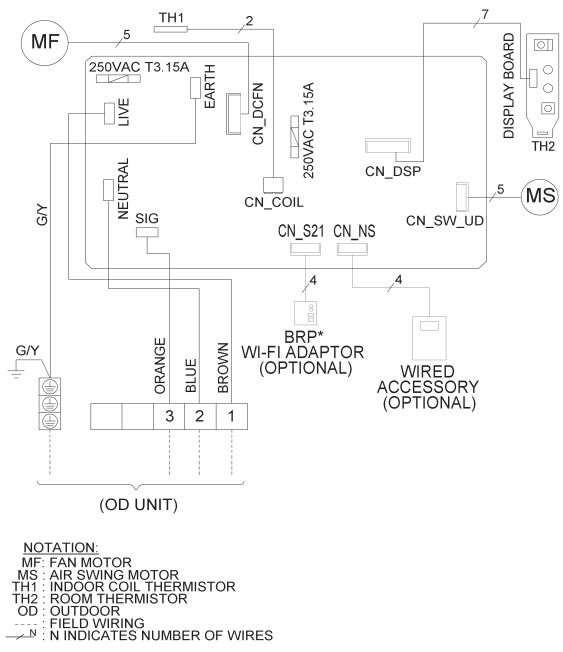
2.1 Indoor Unit

Model: FTXC/ATXC20/25/35C



3P620263-1

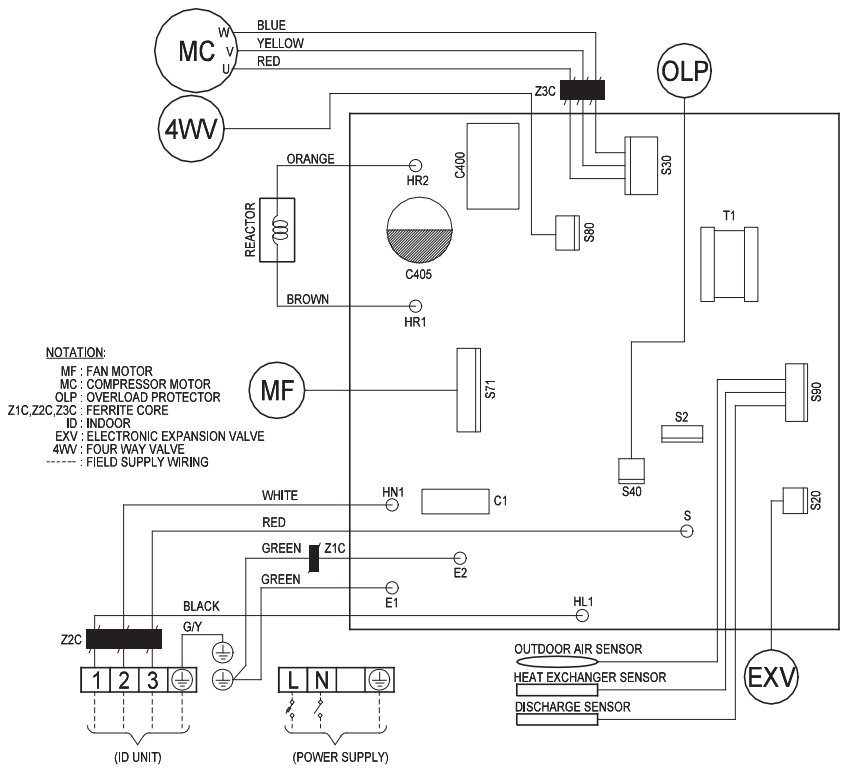
Model: FTXC/ATXC50/60/71C



3PC20313-1

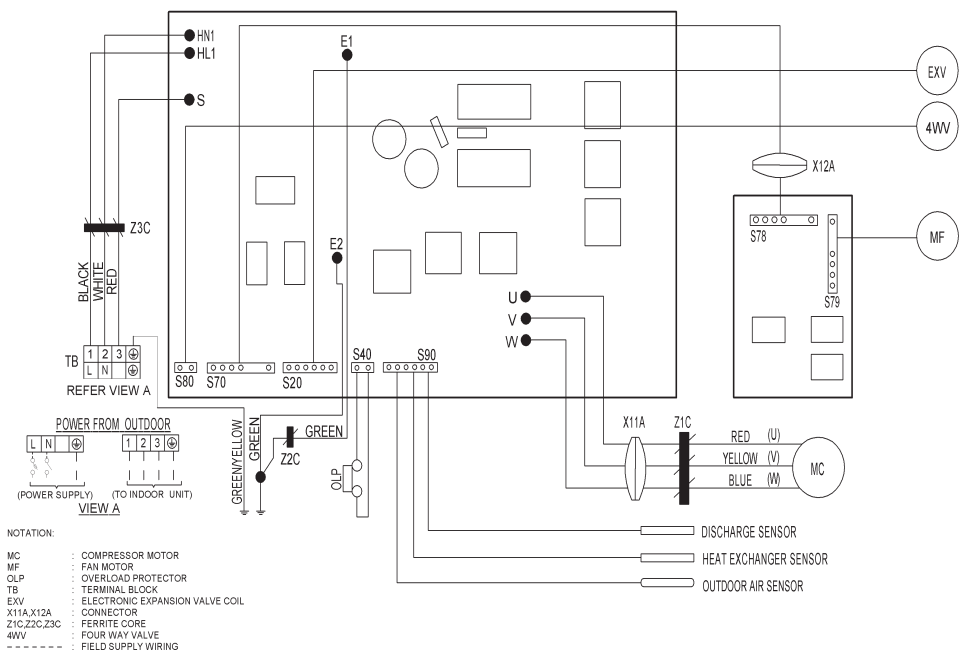
2.2 Outdoor Unit

Model: RXC/ARXC20/25/35C



R08024151718

Model: RXC/ARXC50/60/71C

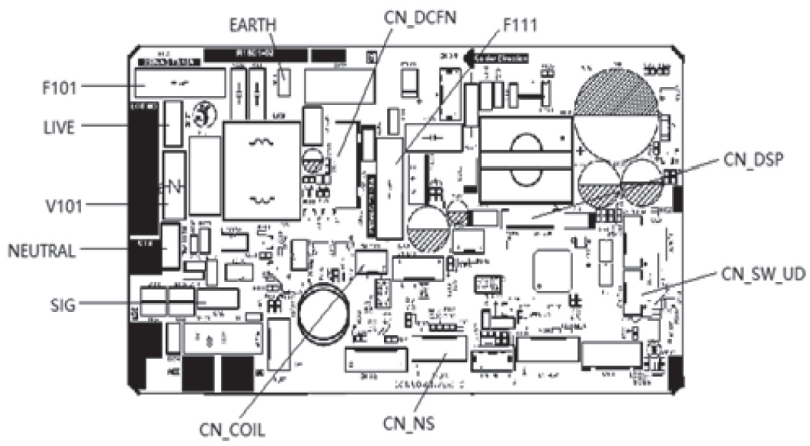


3P552447-1B

2.3 Printed Circuit Board Connector Wiring Diagram

Control PCB

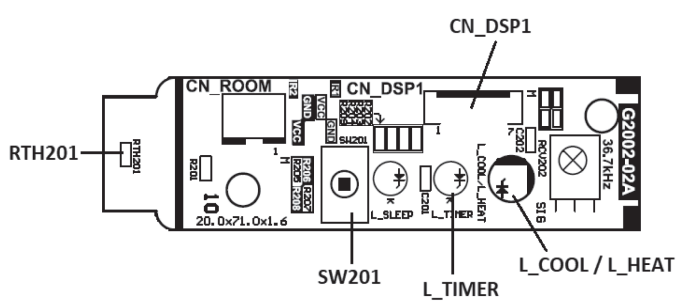
1)	CN_SW_UD	Connector for swing motor (horizontal blade)
2)	CN_DSP	Connector for display/signal receiver PCB
3)	CN_COIL	Connector for indoor heat exchange thermistor
4)	CN_DCFN	Connector for DC fan motor
5	CN_NS	Connector for adaptor PCB (option)
6)	LIVE, NEUTRAL, SIG	Connector for terminal strip
7)	EARTH	Connector for terminal strip (frame ground)
8)	F101,F111	Fuse (3.15 A, 250 V)
9)	V101	Varistor



Note The symbols in the parenthesis are the names on the appropriate wiring diagram.

Display/Signal Receiver PCB

1)	CN_DSP1	Connector for control PCB
2)	SW201	Indoor unit **ON/OFF** switch (Forced cooling operation **ON/OFF** switch) * Refer to page 109 for detail of forced cooling operating.
3)	L_COOL/l_HEAT	LED for operation **(green / red)**
4)	L_TIMER	LED for timer (yellow)
5	RTH201	Room temperature thermistor



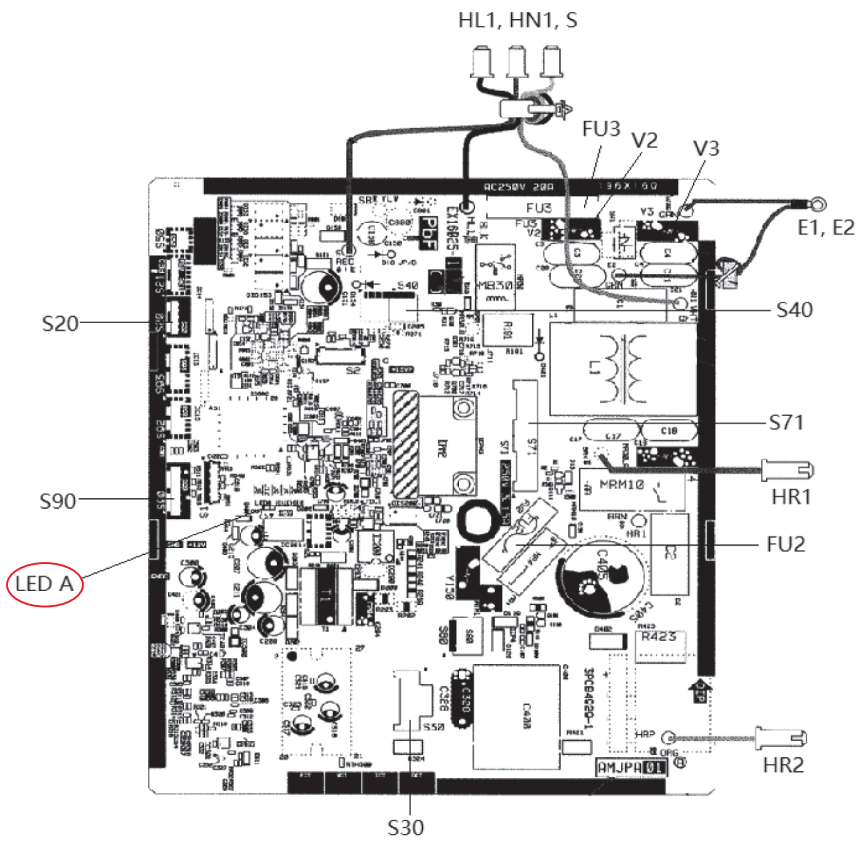
Note The symbols in the parenthesis are the names on the appropriate wiring diagram.

2.4 Printed Circuit Board Connector Wiring Diagram

2.4.1 20/25/35 Class

Main PCB

1)	S20	Connector for electronic expansion valve coil
2)	S30	Connector for compressor
3)	S40	Connector for overload protector
4)	S71	Connector for DC fan motor
5)	S90	Connector for thermistors (outdoor temperature, outdoor heat exchanger, discharge pipe temperature)
6)	HL1, HN1, S	Connector for terminal strip
7)	E1, E2	Terminals for earth wire
8)	HR1, HR2	Connector for reactor
9)	FU2 (F2U)	Fuse (3.15 A, 250 V)
10)	FU3 (F3U)	Fuse (20 A, 250 V)
11)	LED A	LED for service monitor (green)
12)	V2 (R2V), V3 (R3V)	Varistor

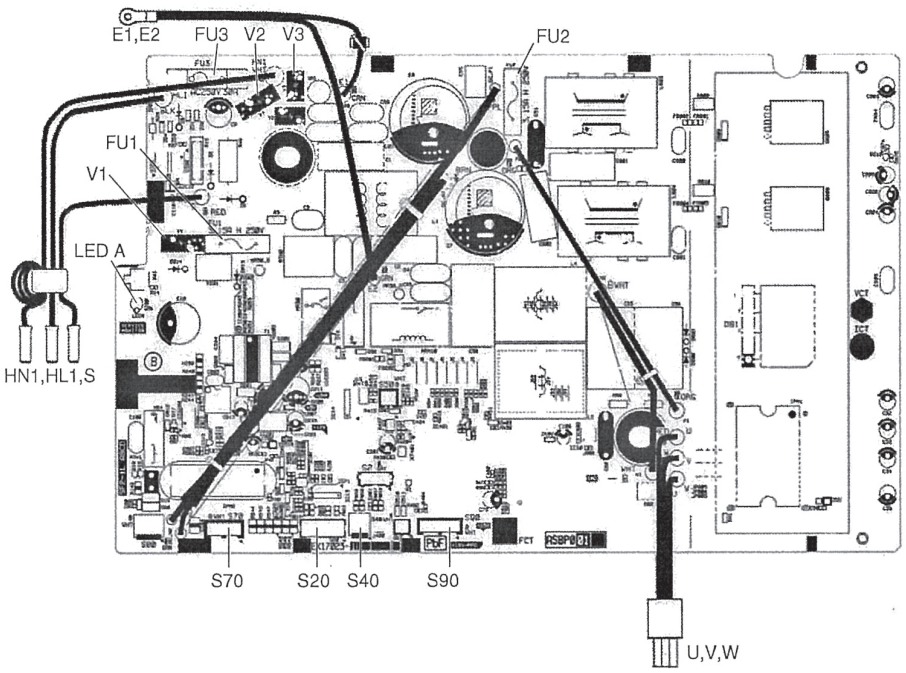


Note The symbols in the parenthesis are the names on the appropriate wiring diagram.

2.4.2 50/60/71 Class

Main PCB

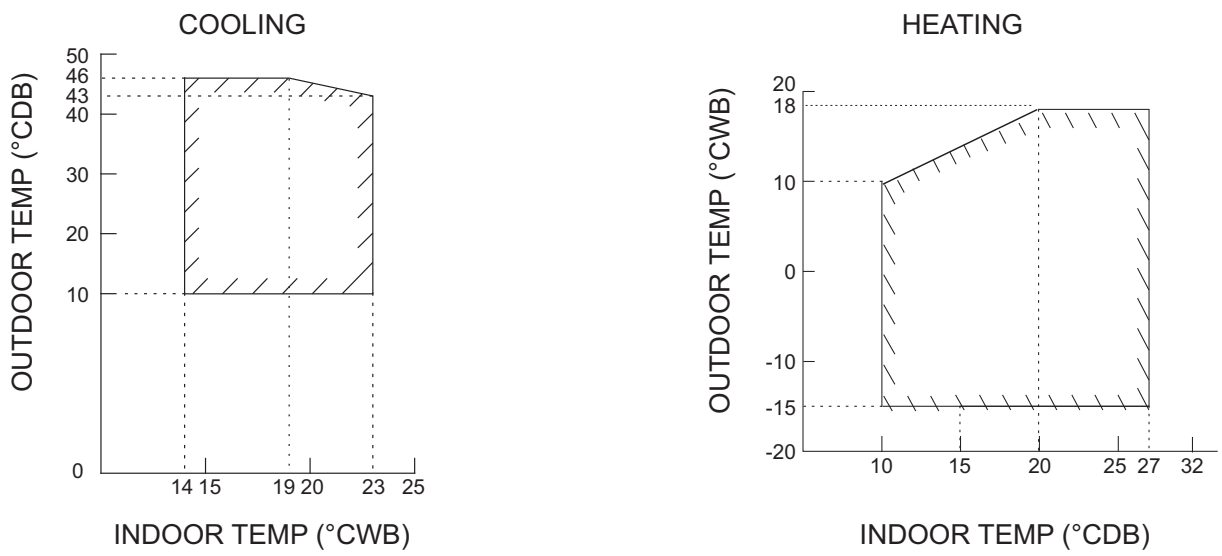
1)	S20	Connector for electronic expansion valve coil
2)	S40	Connector for overload protector
3)	S70	Connector for DC fan motor
4)	S90	Connector for thermistors (outdoor temperature, outdoor heat exchanger, discharge pipe temperature)
5	HL1, HN1, S	Connector for terminal strip
6)	E1, E2	Terminals for earth wire
7)	U, V, W	Connector for compressor
8)	FU1 (F1U), FU2 (F2U)	Fuse (3.15 A, 250 V)
9)	FU3 (F3U)	Fuse (30 A, 250 V)
10)	LED A	LED for service monitor (green)
11)	V1 (R1V), V2 (R2V), V3 (R3V)	Varistor



Note The symbols in the parenthesis are the names on the appropriate wiring diagram.

3. Operation Limit

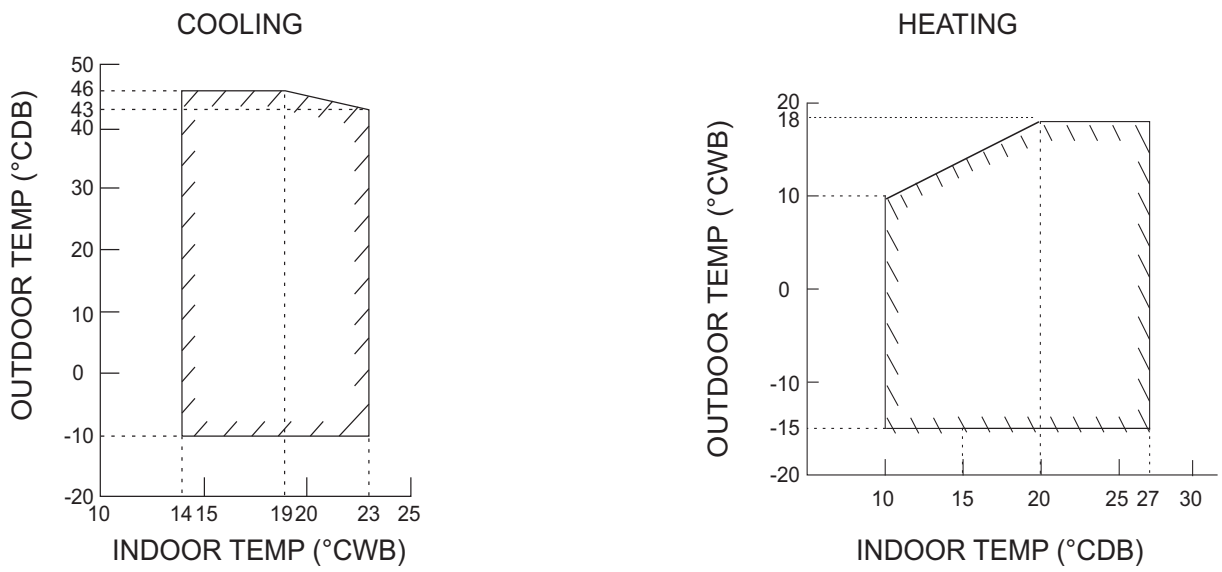
Model: RXC/ARXC20/25/35C



DB: Dry bulb WB: Wet bulb

3P621327-1 / 3P622386-1

Model: RXC/ARXC50/60/71C

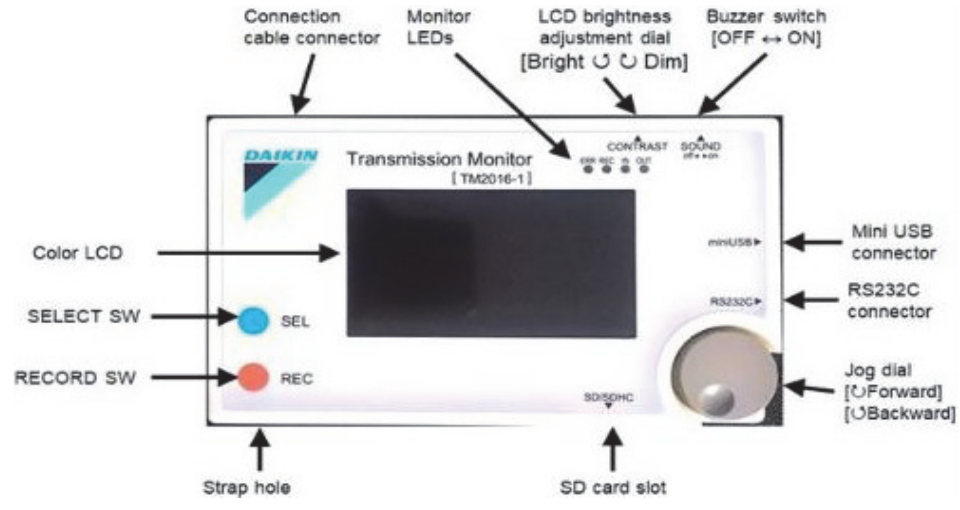


DB: Dry bulb WB: Wet bulb

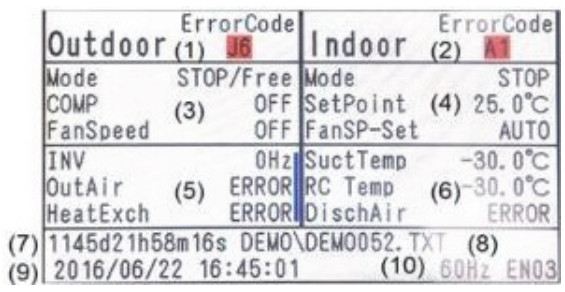
3P621327-1 / 3P622386-1

4. Transmission Monitor [TM2016-1] Operation Instructions

4.1 Names and Functions of Parts



4.1.1 LCD Screen display



(1) Outdoor unit error code display (red, yellow, none)
(2) Indoor unit error code display (red, yellow, none)
(3) Outdoor unit data (fixed display)
(4) Indoor unit data (fixed display)
(5) Outdoor unit data (variable display)
(6) Indoor unit data (variable display)
(7) SD card remaining recording time
(d: day; h: hour; m: minute; s: second)
(8) Name of data recording file on SD card
(9) Current time
(10)Power supply frequency, software version (50Hz/60Hz)
EN**: English
CN**: Chinese
(simplified Chinese characters)
CT**: Chinese
(traditional Chinese characters)
SP**: Spanish
** : Version Number

4.1.2 LED indications

LED		Description	Detail
ERR	Green	Indicates system status	**Lights** in normal condition; **flashes** when transmission error occurs or transmission is unconfirmed
REC	Red	Indicates the status of communication data recording and functions	**Lights** when data is being recorded; **flashes** when accessing SD card
IN	Yellow	Indicates the communication status of indoor unit.	**Flashes** when indoor unit is in transmission operation
OUT	Blue	Indicates the communication status of outdoor unit.	**Flashes** when outdoor unit is in transmission operation

4.2 Basic Operations and Display

4.2.1 Power ON/OFF

When the connection cable is connected to the air conditioner indoor-outdoor unit connection cable (L/N/S) and the air conditioner is turned ON, the transmission monitor turns ON. When the air conditioner is turned OFF, the transmission monitor also turns OFF.

4.2.2 Selection of operation mode

Operation mod is determined according to the statuses of the SEL SW and REC SW at the time of power ON.

SEL SW	REC SW	Operation mode	Description of operation
Release	Release	Normal monitoring mode	Displays communication data on the LCD screen.
Press	Press	Software update mode	Automatically updates the program in the SYSTEM folder on the SD card. (Refer to section 3-7)

4.2.3 Selection of display screen

Each time the SEL SW is pressed, the cursor moves in the following order:
Outdoor unit data ⇒ indoor unit data ⇒ Data recording file ⇒ Current time.
The jog dial is used for the following operations: scrolling of the screen at the cursor position, selection of data recording file, and setting of current date/time.

Page 1 (Outdoor) Page 1 (Indoor)

Page 2 (Outdoor) Page 1 (Indoor)

Page 3 (Outdoor) Page 1 (Indoor)

Page	Outdoor	Indoor
1	INV DiscTemp EEV	SuctTemp EvaTemp1 Fan1SP
2	HeatExch CTCurrent INV-Temp	Not Applicable
3	OutAir Power Fan-SP1	Not Applicable

Warning

- Daikin products are manufactured for export to numerous countries throughout the world. Prior to purchase, please confirm with your local authorized importer, distributor and/or retailer whether this product conforms to the applicable standards, and is suitable for use, in the region where the product will be used. This statement does not purport to exclude, restrict or modify the application of any local legislation.
- Ask a qualified installer or contractor to install this product. Do not try to install the product yourself. Improper installation can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Use only those parts and accessories supplied or specified by Daikin. Ask a qualified installer or contractor to install those parts and accessories. Use of unauthorized parts and accessories or improper installation of parts and accessories can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Read the user's manual carefully before using this product. The user's manual provides important safety instructions and warnings. Be sure to follow these instructions and warnings.

If you have any inquiries, please contact your local importer, distributor and/or retailer.

Cautions on product corrosion

1. Air conditioners should not be installed in areas where corrosive gases, such as acid gas or alkaline gas, are produced.
2. If the outdoor unit is to be installed close to the sea shore, direct exposure to the sea breeze should be avoided. If you need to install the outdoor unit close to the sea shore, contact your local distributor.

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