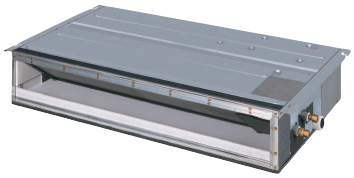
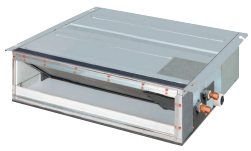
DAIKIN

Si12 - 710

Service Manual

Inverter Multi
F-Series





[Applied Models]

- **Inverter Multi : Cooling Only**
- **Inverter Multi : Heat Pump**

Inverter Multi F-Series

●Cooling Only

Outdoor Unit	Indoor Unit	
2MKS40FV1B	FTKS25DVM	FDKS25CAVMB
	FTKS35DVM	FDKS35CAVMB
		FDKS25EAVMB
		FDKS35EAVMB

●Heat Pump

Outdoor Unit	Indoor Unit	
2MXS50FV1B	FTXS25EVMA	FDXS25CVMA
	FTXS35EVMA	FDXS35CVMA
		CDXS25EAVMA
		CDXS35EAVMA

1. Introduction

1.1 Safety Cautions

Cautions and Warnings

- Be sure to read the following safety cautions before conducting repair work.
- The caution items are classified into "⚠ **Warning**" and "⚠ **Caution**". The "⚠ **Warning**" items are especially important since they can lead to death or serious injury 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.
- About the pictograms

△ This symbol indicates the item for which caution must be exercised.
The pictogram shows the item to which attention must be paid.

◯ This symbol indicates the prohibited action.
The prohibited item or action is shown in the illustration or near the symbol.

● This symbol indicates the action that must be taken, or the instruction.
The instruction is shown in the illustration or near the symbol.

- 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.

1.1.1 Cautions Regarding Safety of Workers

⚠ Warning	
Be sure to disconnect the power cable plug from the plug socket before disassembling the equipment for repair. Working on the equipment that is connected to the power supply may cause an electrical shook. If it is necessary to supply power to the equipment to conduct the repair or inspecting the circuits, do not touch any electrically charged sections of the equipment.	
If the refrigerant gas is discharged during the repair work, do not touch the discharged refrigerant gas. The 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 a gas remaining inside the compressor, the refrigerant gas or refrigerating machine oil discharges when the pipe is disconnected, and it may cause injury.	
If the refrigerant gas leaks during the repair work, ventilate the area. The refrigerant gas may generate toxic gases when it contacts flames.	
The step-up capacitor supplies high-voltage electricity to the electrical components of the outdoor unit. Be sure to discharge the capacitor completely before conducting repair work. A charged capacitor may cause an electrical shock.	
Do not start or stop the air conditioner operation by plugging or unplugging the power cable plug. Plugging or unplugging the power cable plug to operate the equipment may cause an electrical shock or fire.	

Warning	
Be sure to wear a safety helmet, gloves, and a safety belt when working at a high place (more than 2m). Insufficient safety measures may cause a fall accident.	
In case of R410A refrigerant models, be sure to use pipes, flare nuts and tools for the exclusive use of the R410A refrigerant. The use of materials for R22 refrigerant models may cause a serious accident such as a damage of refrigerant cycle as well as an equipment failure.	

Caution	
Do not repair the electrical components with wet hands. Working on the equipment with wet hands may cause an electrical shock.	
Do not clean the air conditioner by splashing water. Washing the unit with water may cause an electrical shock.	
Be sure to provide the 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 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.	
Use the welder in a well-ventilated place. Using the welder in an enclosed room may cause oxygen deficiency.	

1.1.2 Cautions Regarding Safety of Users

Warning	
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 have scratches or 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 cable may cause an electrical shock or fire. Placing heavy items on the power cable, and heating or pulling the power cable may damage the cable.	
Do not mix air or gas other than the specified refrigerant (R410A / R22) in the refrigerant system. If air enters the refrigerating 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 refrigerant, make sure that there is no refrigerant leak. If the leaking point cannot be located and the repair work must be stopped, be sure to perform pump-down and close the service valve, to prevent the refrigerant gas from leaking into the room. The refrigerant gas itself is harmless, but it may generate toxic gases when it contacts flames, such as fan 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 and if 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 has dust or loose connection, it may cause an electrical shock or fire.	
Be sure to install the product correctly by using the provided standard installation frame. Incorrect use of the installation frame and improper installation may cause the equipment to fall, resulting in injury.	For unitary type only 
Be sure to install the product securely in the installation frame mounted on the window frame. If the unit is not securely mounted, it may fall and cause injury.	For unitary type only 
When replacing the coin battery in the remote controller, be sure to disposed 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 the combustible gas leaks and remains around the unit, it may cause a fire.	
Check to see if the parts and wires are mounted and connected properly, and if the 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. Corroded installation platform or frame may cause the unit to fall, resulting in injury.	
Check the grounding, and repair it if the equipment is not properly grounded. Improper grounding may cause an electrical shock.	

Caution	
Be sure to measure the 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 the 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.	
Be sure to install the packing and seal on the installation frame properly. If the packing and seal are not installed properly, water may enter the room and wet the furniture and floor.	For unitary type only 

1.2 Used Icons

Icons are used to attract the attention of the reader to specific information. The meaning of each icon is described in the table below:

Icon	Type of Information	Description
Note:	Note	A “note” provides information that is not indispensable, but may nevertheless be valuable to the reader, such as tips and tricks.
Caution	Caution	A “caution” is used when there is danger that the reader, through incorrect manipulation, may damage equipment, loose data, get an unexpected result or has to restart (part of) a procedure.
Warning	Warning	A “warning” is used when there is danger of personal injury.
	Reference	A “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.

Part 1
List of Functions

1. Cooling Only

Category	Functions	FTKS25/35DVM	FDKS25/35CAVMB	Category	Functions	FTKS25/35DVM	FDKS25/35CAVMB
Basic Function	Inverter (with Inverter Power Control)	○	○	Health & Clean	Air Purifying Filter	—	—
	Operation Limit for Cooling (°CDB)	—	—		Photocatalytic Deodorizing Filter	—	—
					Air Purifying Filter with Photocatalytic Deodorizing Function	—	—
	Operation Limit for Heating (°CWB)	—	—		Titanium Apatite Photocatalytic Air-Purifying Filter	○	—
	PAM Control	—	—				
Compressor	Oval Scroll Compressor	—	—		Mold Proof Air Filter	○	○
	Swing Compressor	—	—		Wipe-clean Flat Panel	○	—
	Rotary Compressor	—	—		Washable Grille	—	—
	Reluctance DC Motor	—	—		Mold Proof Operation	○	—
Comfortable Airflow	Power-Airflow Flap	—	—		Heating Dry Operation	—	—
	Power-Airflow Dual Flaps	○	—		Good-Sleep Cooling Operation	—	—
	Power-Airflow Diffuser	—	—	Timer	24-Hour On/Off Timer	○	○
	Wide-Angle Louvers	○	—		Night Set Mode	○	○
	Vertical Auto-Swing (Up and Down)	○	—	Worry Free “Reliability & Durability”	Auto-Restart (after Power Failure)	○	○
	Horizontal Auto-Swing (Right and Left)	—	—		Self-Diagnosis (Digital, LED) Display	○	○
	3-D Airflow	—	—		Wiring Error Check	—	—
	Comfort Airflow Mode	—	—		Anticorrosion Treatment of Outdoor Heat Exchanger	—	—
	3-Step Airflow (H/P Only)	—	—				
Comfort Control	Auto Fan Speed	○	○	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	○	○
	Indoor Unit Quiet Operation	○	○				
	Night Quiet Mode (Automatic)	—	—		Flexible Voltage Correspondence	○	○
	Outdoor Unit Quiet Operation (Manual)	—	—		High Ceiling Application	—	—
	Intelligent Eye	○	—		Chargeless	—	—
	Quick Warming Function	—	—		Either Side Drain (Right or Left)	○	—
	Hot-Start Function	—	—		Power Selection	—	—
	Automatic Defrosting	—	—	Remote Control	5-Rooms Centralized Controller (Option)	○	○
Operation	Automatic Operation	—	—				
	Programme Dry Function	○	○		Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	○	○
	Fan Only	○	○				
Lifestyle Convenience	New Powerful Operation (Non-Inverter)	—	—		Remote Control Adaptor (Normal Open Contact) (Option)	○	○
	Inverter Powerful Operation	○	○				
	Priority-Room Setting	—	—		DIII-NET Compatible (Adaptor) (Option)	○	○
	Cooling / Heating Mode Lock	—	—	Remote Controller	Wireless	○	○
	Home Leave Operation	—	○		Wired	—	—
	ECONO Mode	○	—				
	Indoor Unit On/Off Switch	○	○				
	Signal Reception Indicator	○	○				
	Temperature Display	—	—				
	Another Room Operation	—	—				

Note: ○ : Holding Functions
— : No Functions

Category	Functions	FDKS25/35EAVMB	2MKS40FV1B	Category	Functions	FDKS25/35EAVMB	2MKS40FV1B
Basic Function	Inverter (with Inverter Power Control)	○	○	Health & Clean	Air Purifying Filter	—	—
	Operation Limit for Cooling (°CDB)	—	10 ~46				
	Operation Limit for Heating (°CWB)	—	—		Photocatalytic Deodorizing Filter	—	—
	PAM Control	—	○		Air Purifying Filter with Photocatalytic Deodorizing Function	—	—
Compressor	Oval Scroll Compressor	—	—		Titanium Apatite Photocatalytic Air-Purifying Filter	—	—
	Swing Compressor	—	○				
	Rotary Compressor	—	—		Mold Proof Air Filter	○	—
	Reluctance DC Motor	—	○		Wipe-clean Flat Panel	—	—
Comfortable Airflow	Power-Airflow Flap	—	—		Washable Grille	—	—
	Power-Airflow Dual Flaps	—	—		Mold Proof Operation	—	—
	Power-Airflow Diffuser	—	—		Heating Dry Operation	—	—
	Wide-Angle Louvers	—	—		Good-Sleep Cooling Operation	—	—
	Vertical Auto-Swing (Up and Down)	—	—	Timer	24-Hour On/Off Timer	○	—
	Horizontal Auto-Swing (Right and Left)	—	—		Night Set Mode	○	—
	3-D Airflow	—	—	Worry Free “Reliability & Durability”	Auto-Restart (after Power Failure)	○	—
	Comfort Airflow Mode	—	—		Self-Diagnosis (Digital, LED) Display	○	○ ★
	3-Step Airflow (H/P Only)	—	—		Wiring Error Check	—	—
Comfort Control	Auto Fan Speed	○	—		Anticorrosion Treatment of Outdoor Heat Exchanger	—	○
	Indoor Unit Quiet Operation	○	—				
	Night Quiet Mode (Automatic)	—	—	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	○	—
	Outdoor Unit Quiet Operation (Manual)	—	○				
	Intelligent Eye	—	—		Flexible Voltage Correspondence	○	—
	Quick Warming Function	—	—		High Ceiling Application	—	—
	Hot-Start Function	—	—		Chargeless	—	20m
	Automatic Defrosting	—	—		Either Side Drain (Right or Left)	—	—
Operation	Automatic Operation	—	—		Power Selection	—	○
	Programme Dry Function	○	—	Remote Control	5-Rooms Centralized Controller (Option)	○	—
	Fan Only	○	—		Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	○	—
Lifestyle Convenience	New Powerful Operation (Non-Inverter)	—	—				
	Inverter Powerful Operation	○	—		Remote Control Adaptor (Normal Open Contact) (Option)	○	—
	Priority-Room Setting	—	—				
	Cooling / Heating Mode Lock	—	—		DIII-NET Compatible (Adaptor) (Option)	○	—
	Home Leave Operation	○	—	Remote Controller	Wireless	○	—
	ECONO Mode	—	○		Wired	—	—
	Indoor Unit On/Off Switch	○	—				
	Signal Reception Indicator	○	—				
	Temperature Display	—	—				
	Another Room Operation	—	—				

Note: ○ : Holding Functions
— : No Functions

★ : Displayed on remote controller of Indoor Unit

2. Heat Pump

Category	Functions	FTXS25/35EVMA	FDXS25/35CVMA	Category	Functions	FTXS25/35EVMA	FDXS25/35CVMA
Basic Function	Inverter (with Inverter Power Control)	○	○	Health & Clean	Air Purifying Filter	—	—
	Operation Limit for Cooling (°CDB)	—	—		Photocatalytic Deodorizing Filter	—	—
					Air Purifying Filter with Photocatalytic Deodorizing Function	—	—
	Operation Limit for Heating (°CWB)	—	—		Titanium Apatite Photocatalytic Air-Purifying Filter	○	—
	PAM Control	—	—				
Compressor	Oval Scroll Compressor	—	—		Mold Proof Air Filter	○	○
	Swing Compressor	—	—		Wipe-clean Flat Panel	○	—
	Rotary Compressor	—	—		Washable Grille	—	—
	Reluctance DC Motor	—	—		Mold Proof Operation	○	—
Comfortable Airflow	Power-Airflow Flap	—	—		Heating Dry Operation	—	—
	Power-Airflow Dual Flaps	○	—		Good-Sleep Cooling Operation	—	—
	Power-Airflow Diffuser	—	—	Timer	24-Hour On/Off Timer	○	○
	Wide-Angle Louvers	○	—		Night Set Mode	○	○
	Vertical Auto-Swing (Up and Down)	○	—	Worry Free “Reliability & Durability”	Auto-Restart (after Power Failure)	○	○
	Horizontal Auto-Swing (Right and Left)	—	—		Self-Diagnosis (Digital, LED) Display	○	○
	3-D Airflow	—	—		Wiring Error Check	—	—
	Comfort Airflow Mode	—	—		Anticorrosion Treatment of Outdoor Heat Exchanger	—	—
	3-Step Airflow (H/P Only)	—	—				
Comfort Control	Auto Fan Speed	○	○	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	○	○
	Indoor Unit Quiet Operation	○	○				
	Night Quiet Mode (Automatic)	—	—		Flexible Voltage Correspondence	○	○
	Outdoor Unit Quiet Operation (Manual)	—	—		High Ceiling Application	—	—
	Intelligent Eye	○	—		Chargeless	—	—
	Quick Warming Function	—	—		Either Side Drain (Right or Left)	○	—
	Hot-Start Function	—	—		Power Selection	—	—
	Automatic Defrosting	—	—	Remote Control	5-Rooms Centralized Controller (Option)	○	○
Operation	Automatic Operation	—	—				
	Programme Dry Function	○	○		Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	○	○
	Fan Only	○	○				
Lifestyle Convenience	New Powerful Operation (Non-Inverter)	—	—		Remote Control Adaptor (Normal Open Contact) (Option)	○	○
	Inverter Powerful Operation	○	○				
	Priority-Room Setting	—	—		DIII-NET Compatible (Adaptor) (Option)	○	○
	Cooling / Heating Mode Lock	—	—	Remote Controller	Wireless	○	○
	Home Leave Operation	—	○		Wired	—	—
	ECONO Mode	○	—				
	Indoor Unit On/Off Switch	○	○				
	Signal Reception Indicator	○	○				
	Temperature Display	—	—				
	Another Room Operation	—	—				

Note: ○ : Holding Functions
— : No Functions

Category	Functions	CDXS25/35EAVMA	2MXS50FV1B	Category	Functions	CDXS25/35EAVMA	2MXS50FV1B
Basic Function	Inverter (with Inverter Power Control)	○	○	Health & Clean	Air Purifying Filter	—	—
	Operation Limit for Cooling (°CDB)	—	10 ~46				
	Operation Limit for Heating (°CWB)	—	–15 ~15.5		Photocatalytic Deodorizing Filter	—	—
	PAM Control	—	○		Air Purifying Filter with Photocatalytic Deodorizing Function	—	—
Compressor	Oval Scroll Compressor	—	—		Titanium Apatite Photocatalytic Air-Purifying Filter	—	—
	Swing Compressor	—	○				
	Rotary Compressor	—	—		Mold Proof Air Filter	○	—
	Reluctance DC Motor	—	○		Wipe-clean Flat Panel	—	—
Comfortable Airflow	Power-Airflow Flap	—	—		Washable Grille	—	—
	Power-Airflow Dual Flaps	—	—		Mold Proof Operation	—	—
	Power-Airflow Diffuser	—	—		Heating Dry Operation	—	—
	Wide-Angle Louvers	—	—		Good-Sleep Cooling Operation	—	—
	Vertical Auto-Swing (Up and Down)	—	—	Timer	24-Hour On/Off Timer	○	—
	Horizontal Auto-Swing (Right and Left)	—	—		Night Set Mode	○	—
	3-D Airflow	—	—	Worry Free “Reliability & Durability”	Auto-Restart (after Power Failure)	○	—
	Comfort Airflow Mode	—	—		Self-Diagnosis (Digital, LED) Display	○	○ ★
	3-Step Airflow (H/P Only)	—	—		Wiring Error Check	—	—
Comfort Control	Auto Fan Speed	○	—		Anticorrosion Treatment of Outdoor Heat Exchanger	—	○
	Indoor Unit Quiet Operation	○	—				
	Night Quiet Mode (Automatic)	—	—	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	—	—
	Outdoor Unit Quiet Operation (Manual)	—	○				
	Intelligent Eye	—	—		Flexible Voltage Correspondence	○	—
	Quick Warming Function	—	○		High Ceiling Application	—	—
	Hot-Start Function	—	—		Chargeless	—	20m
	Automatic Defrosting	—	○		Either Side Drain (Right or Left)	—	—
Operation	Automatic Operation	—	—		Power Selection	—	—
	Programme Dry Function	○	—	Remote Control	5-Rooms Centralized Controller (Option)	○	—
	Fan Only	○	—		Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	○	—
Lifestyle Convenience	New Powerful Operation (Non-Inverter)	—	—				
	Inverter Powerful Operation	○	—		Remote Control Adaptor (Normal Open Contact) (Option)	○	—
	Priority-Room Setting	—	—				
	Cooling / Heating Mode Lock	—	—		DIII-NET Compatible (Adaptor) (Option)	○	—
	Home Leave Operation	○	—	Remote Controller	Wireless	○	—
	ECONO Mode	—	—		Wired	—	—
	Indoor Unit On/Off Switch	○	—				
	Signal Reception Indicator	○	—				
	Temperature Display	—	—				
	Another Room Operation	—	—				

Note: ○ : Holding Functions
— : No Functions
★ : Displayed on remote controller of Indoor Unit

Part 2
Specifications

1. Cooling Only

1.1 Indoor Units

Wall Mounted Type

50Hz 230V

Model				FTKS25DVM	FTKS35DVM
Rated Capacity				2.5kW Class	3.5kW Class
Front Panel Color				White	White
Air Flow Rates		m³/min (cfm)	H	8.7 (307)	8.9 (314)
			M	6.7 (237)	6.9 (242)
			L	4.7 (166)	4.8 (169)
			SL	3.9 (138)	4.0 (141)
Fan	Type			Cross Flow Fan	Cross Flow Fan
	Motor Output		W	40	40
	Speed		Steps	5 Steps, Quiet, Auto	5 Steps, Quiet, Auto
Air Direction Control				Right, Left, Horizontal, Downward	Right, Left, Horizontal, Downward
Air Filter				Removable-Washable-Mildew Proof	Removable-Washable-Mildew Proof
Running Current (Rated)			A	0.16	0.18
Power Consumption (Rated)			W	35	40
Power Factor			%	95.1	96.6
Temperature Control				Microcomputer Control	Microcomputer Control
Dimensions (H×W×D)			mm	283×800×195	283×800×195
Packaged Dimensions (H×W×D)			mm	265×855×340	265×855×340
Weight			kg	9	9
Gross Weight			kg	12	12
Operation Sound	H/L/SL		dBA	37/25/22	39/26/23
Heat Insulation				Both Liquid and Gas Pipes	Both Liquid and Gas Pipes
Piping Connection		Liquid	mm	ϕ 6.4	ϕ 6.4
		Gas	mm	ϕ 9.5	ϕ 9.5
		Drain	mm	ϕ18.0	ϕ18.0
Drawing No.				3D049321	3D049322

Duct Connected Type

50Hz 230V

Model				FDKS25CAVMB	FDKS35CAVMB
Rated Capacity				2.5kW Class	3.5kW Class
Front Panel Color				—	—
Air Flow Rates		m³/min (cfm)	H	9.5 (335)	10.0 (353)
			M	8.8 (311)	9.3 (328)
			L	8.0 (282)	8.5 (300)
			SL	6.7 (237)	7.0 (247)
Fan	Type			Sirocco Fan	Sirocco Fan
	Motor Output		W	62	62
	Speed		Steps	5 Steps, Quiet, Auto	5 Steps, Quiet, Auto
Air Filter				Removable-Washable-Mildew Proof	Removable-Washable-Mildew Proof
Running Current (Rated)			A	0.47	0.47
Power Consumption (Rated)			W	100	100
Power Factor			%	92.5	92.5
Temperature Control				Microcomputer Control	Microcomputer Control
Dimensions (H×W×D)			mm	200×900×620	200×900×620
Packaged Dimensions (H×W×D)			mm	266×1,106×751	266×1,106×751
Weight			kg	25	25
Gross Weight			kg	31	31
Operation Sound	H/M/L/SL		dBA	35/33/31/29	35/33/31/29
External Static Pressure			Pa	40	40
Moisture Removal			L/h	1.2	1.9
Heat Insulation				Both Liquid and Gas Pipes	Both Liquid and Gas Pipes
Piping Connection		Liquid	mm	ϕ 6.4	ϕ 6.4
		Gas	mm	ϕ 9.5	ϕ 9.5
		Drain	mm	VP20 (O.D. ϕ26 / I.D. ϕ20)	VP20 (O.D. ϕ26 / I.D. ϕ20)
Drawing No.				3D048947C	3D048948C

Note: 1. The operating sound is based on the rear side suction inlet and the external static pressure 40 Pa. Operating sound for under side suction inlet: [operating sound for rear side suction inlet]+5 dB. However, when installation to which the external static pressure becomes low is carried out, 5 dB or more may go up.

Conversion Formulae
kcal/h=kW×860
Btu/h=kW×3414
cfm=m³/min×35.3

50Hz 230V

Model				**FDKS25EAVMB**	**FDKS35EAVMB**
Rated Capacity				2.5kW Class	3.5kW Class
Front Panel Color				—	—
Air Flow Rates		m³/min (cfm)	H	8.7 (307)	8.7 (307)
			M	8.0 (282)	8.0 (282)
			L	7.3 (258)	7.3 (258)
			SL	6.2 (219)	6.2 (219)
Fan	Type			Sirocco Fan	Sirocco Fan
	Motor Output		W	62	62
	Speed		Steps	5 Steps, Quiet, Auto	5 Steps, Quiet, Auto
Air Filter				Removable-Washable-Mildew Proof	Removable-Washable-Mildew Proof
Running Current (Rated)			A	0.48	0.48
Power Consumption (Rated)			W	71	71
Power Factor			%	64.3	64.3
Temperature Control				Microcomputer Control	Microcomputer Control
Dimensions (H×W×D)			mm	200×700×620	200×700×620
Packaged Dimensions (H×W×D)			mm	274×906×751	274×906×751
Weight			kg	21	21
Gross Weight			kg	29	29
Operation Sound	H/M/L/SL		dBA	35/33/31/29	35/33/31/29
External Static Pressure			Pa	30	30
Moisture Removal			L/h	1.2	1.9
Heat Insulation				Both Liquid and Gas Pipes	Both Liquid and Gas Pipes
Piping Connection		Liquid	mm	ϕ 6.4	ϕ 6.4
		Gas	mm	ϕ 9.5	ϕ 9.5
		Drain	mm	VP20 (O.D.ϕ 26 / I.D.ϕ 20)	VP20 (O.D.ϕ 26 / I.D.ϕ 20)
Drawing No.				3D051882A	3D051884A

Note:

1. The operating sound is based on the rear side suction inlet and the external static pressure 30 Pa. Operating sound for under side suction inlet: [operating sound for rear side suction inlet]+6 dB. However, when installation to which the external static pressure becomes low is carried out, 6 dB or more may go up.

Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3414 cfm=m³/min×35.3

1.2 Outdoor Units

50Hz 230V

Model				**2MKS40FV1B**
Cooling Capacity			kW	—
Power Consumption			W	—
Running Current			A	—
Casing Color				Ivory White
Compressor	Type			Hermetically Sealed Swing Type
	Model			1YC23ABXD
	Motor Output		W	600
Refrigerant Oil	Model			FVC50K
	Charge		L	0.45
Refrigerant	Type			R-410A
	Charge		kg	1.20
Air Flow Rate		m^3/min	HH	36
			H	33
			L	30
		cfm	HH	1,271
			H	1,165
			L	1,059
Fan	Type			Propeller
	Motor Output		W	50
Starting Current			A	5.9
Dimension (H×W×D)			mm	550×765×285
Packaged Dimension (H×W×D)			mm	612×906×362
Weight			kg	38
Gross Weight			kg	43
Operation Sound	(Sound pressure)		dBA	47
	(Quiet Mode)		dBA	43
Sound Power			dBA	62
Piping Connection	Liquid		mm	ϕ 6.4×2
	Gas		mm	ϕ 9.5×2
	Drain		mm	ϕ18
Heat Insulation				Both Liquid & Gas Pipes
No. of Wiring Connection				3 for Power Supply, 4 for Interunit Wiring
Max. Piping Length			m	30 (for Total of Each Room)
				20 (for One Room)
Min. Piping Length			m	3 (for One Room)
Amount of Additional Charge			g/m	20 (20m or more)
Max. Installation Height Difference			m	15 (between Indoor Unit and Outdoor Unit)
				7.5 (between Indoor Units)
Drawing No.				3D055840

Note: 1. The data are based on the conditions shown in the table below.

Cooling	Piping Length
Indoor ; 27°CDB/19°CWB Outdoor ; 35°CDB	5m

Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3414 cfm=m^3/min×35.3

2. Heat Pump

2.1 Indoor Units

Wall Mounted Type

50Hz 220-230-240V

Model				FTXS25EVMA		FTXS35EVMA	
				Cooling	Heating	Cooling	Heating
Rated Capacity				2.5kW Class		3.5kW Class	
Front Panel Color				White		White	
Air Flow Rates		m³/min (cfm)	H	8.7 (307)	9.4 (332)	8.9 (314)	9.7 (342)
			M	6.7 (237)	7.6 (268)	6.9 (242)	7.9 (297)
			L	4.7 (166)	5.8 (205)	4.8 (169)	6.0 (212)
			SL	3.9 (138)	5.0 (177)	4.0 (141)	5.2 (184)
Fan	Type			Cross Flow Fan		Cross Flow Fan	
	Motor Output		W	40		40	
	Speed		Steps	5 Steps, Quiet, Auto		5 Steps, Quiet, Auto	
Air Direction Control				Right, Left, Horizontal, Downward		Right, Left, Horizontal, Downward	
Air Filter				Removable-Washable-Mildew Proof		Removable-Washable-Mildew Proof	
Running Current (Rated)			A	0.17-0.16-0.15	0.17-0.16-0.15	0.19-0.18-0.17	0.19-0.18-0.17
Power Consumption (Rated)			W	35-35-35	35-35-35	40-40-40	40-40-40
Power Factor			%	93.6-95.1-97.2	93.6-95.1-97.2	95.7-96.6-98.0	95.7-96.6-98.0
Temperature Control				Microcomputer Control		Microcomputer Control	
Dimensions (H×W×D)			mm	283×800×195		283×800×195	
Packaged Dimensions (H×W×D)			mm	265×855×340		265×855×340	
Weight			kg	9		9	
Gross Weight			kg	12		12	
Operation Sound	H/M/L/SL		dBA	37/31/25/22	37/33/28/25	38/32/26/23	38/34/29/26
Heat Insulation				Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Piping Connection		Liquid	mm	ϕ 6.4		ϕ 6.4	
		Gas	mm	ϕ 9.5		ϕ 9.5	
		Drain	mm	ϕ18.0		ϕ18.0	
Drawing No.				3D054406A		3D054407A	

Duct Connected Type

50Hz 220-230-240V

Model				FDXS25CVMA		FDXS35CVMA	
				Cooling	Heating	Cooling	Heating
Rated Capacity				2.5kW Class		3.5kW Class	
Front Panel Color				—		—	
External Static Pressure			Pa	40		40	
Air Flow Rates		m³/min (cfm)	H	9.5 (335)	9.5 (335)	10.0 (353)	10.0 (353)
			M	8.8 (311)	8.8 (311)	9.3 (328)	9.3 (328)
			L	8.0 (282)	8.0 (282)	8.5 (300)	8.5 (300)
			SL	6.7 (237)	6.7 (237)	7.0 (247)	7.0 (247)
Fan	Type			Sirocco Fan		Sirocco Fan	
	Motor Output		W	62		62	
	Speed		Steps	5 Steps, Quiet, Auto		5 Steps, Quiet, Auto	
Air Filter				Removable-Washable-Mildew Proof		Removable-Washable-Mildew Proof	
Running Current (Rated)			A	0.49-0.47-0.45	0.49-0.47-0.45	0.49-0.47-0.45	0.49-0.47-0.45
Power Consumption (Rated)			W	100-100-100	100-100-100	100-100-100	100-100-100
Power Factor			%	92.8-92.5-92.6	92.8-92.5-92.6	92.8-92.5-92.6	92.8-92.5-92.6
Temperature Control				Microcomputer Control		Microcomputer Control	
Dimensions (H×W×D)			mm	200×900×620		200×900×620	
Packaged Dimensions (H×W×D)			mm	266×1,106×751		266×1,106×751	
Weight			kg	25		25	
Gross Weight			kg	31		31	
Operation Sound	H/M/L/SL		dBA	35/33/31/29	35/33/31/29	35/33/31/29	35/33/31/29
Heat Insulation				Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Piping Connection		Liquid	mm	ϕ 6.4		ϕ 6.4	
		Gas	mm	ϕ 9.5		ϕ 9.5	
		Drain	mm	VP20 (O.D. ϕ 26 / I.D. ϕ 20)		VP20 (O.D. ϕ 26 / I.D. ϕ 20)	
Drawing No.				3D055393B		3D055394B	

Note: 1. The operating sound is based on the rear side suction inlet and the external static pressure 40 Pa. Operating sound for under side suction inlet: [operating sound for rear side suction inlet]+5 dB. However, when installation to which the external static pressure becomes low is carried out, 5 dB or more may go up.

Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3414 cfm=m³/min×35.3

50Hz 220-230-240V

Model				CDXS25EAVMA		CDXS35EAVMA	
				Cooling	Heating	Cooling	Heating
Rated Capacity				2.5kW Class		3.5kW Class	
Front Panel Color				—		—	
External Static Pressure			Pa	30		30	
Air Flow Rate	m^3/min (cfm)		H	8.7 (307)	8.7 (307)	8.7 (307)	8.7 (307)
			M	8.0 (282)	8.0 (282)	8.0 (282)	8.0 (282)
			L	7.3 (258)	7.3 (258)	7.3 (258)	7.3 (258)
			SL	6.2 (219)	6.2 (219)	6.2 (219)	6.2 (219)
Fan	Type			Sirocco Fan		Sirocco Fan	
	Motor Output		W	62		62	
	Speed		Steps	5 Steps, Quiet, Auto		5 Steps, Quiet, Auto	
Air Filter				Removable / Washable / Mildew Proof		Removable / Washable / Mildew Proof	
Running Current (Rated)			A	0.47-0.48-0.49	0.47-0.48-0.49	0.47-0.48-0.49	0.47-0.48-0.49
Power Consumption (Rated)			W	70-71-72	70-71-72	70-71-72	70-71-72
Power Factor			%	67.7-64.3-61.2	67.7-64.3-61.2	67.7-64.3-61.2	67.7-64.3-61.2
Temperature Control				Microcomputer Control		Microcomputer Control	
Dimensions (H×W×D)			mm	200×700×620		200×700×620	
Packaged Dimensions (H×W×D)			mm	274×906×751		274×906×751	
Weight			kg	21		21	
Gross Weight			kg	29		29	
Operation Sound	H/M/L/SL		dBA	35/33/31/29	35/33/31/29	35/33/31/29	35/33/31/29
Moisture Removal			L/h	1.2		1.9	
Heat Insulation				Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Piping Connection		Liquid	mm	ϕ 6.4		ϕ 6.4	
		Gas	mm	ϕ 9.5		ϕ 9.5	
		Drain	mm	VP20 (O.D. ϕ 26 / I.D. ϕ 20)		VP20 (O.D. ϕ 26 / I.D. ϕ 20)	
Drawing No.				3D051140		3D051141	

Note: 1. The operating sound is based on the rear side suction inlet and the external static pressure 30 Pa. Operating sound for under side suction inlet: [operating sound for rear side suction inlet]+6 dB. However, when installation to which the external static pressure becomes low is carried out, 6 dB or more may go up.

Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3414 cfm=m^3/min×35.3

2.2 Outdoor Units

50Hz 220-230-240V

Model				2MXS50FV1B	
				Cooling	Heating
Capacity			kW	—	
Power Consumption			W	—	
Running Current			A	—	
Casing Color				Ivory White	
Compressor	Type			Hermetically Sealed Swing Type	
	Model			2YC36BXD	
	Motor Output		W	1,100	
Refrigerant Oil	Model			FVC50K	
	Charge		L	0.65	
Refrigerant	Type			R-410A	
	Charge		kg	1.60	
Air Flow Rates		m^3/min	HH	37	34
			H	34	34
			L	34	34
		cfm	HH	1,303	1,214
			H	1,214	1,214
			L	1,214	1,214
Fan	Type			Propeller	
	Motor Output		W	50	
Starting Current			A	9.8	
Dimensions (H×W×D)			mm	550×765×285	
Packaged Dimensions (H×W×D)			mm	612×906×364	
Weight			kg	42	
Gross Weight			kg	47	
Operation Sound	(Sound Pressure)		dBA	48	50
	(Quiet Mode)		dBA	44	46
Sound Power			dBA	63	—
Piping Connection		Liquid	mm	ϕ 6.4×2	
		Gas	mm	ϕ 9.5×1, ϕ12.7×1	
		Drain	mm	ϕ18.0	
Heat Insulation				Both Liquid and Gas Pipes	
No. of Wiring Connection				3 for Power Supply, 4 for Interunit Wiring	
Max. Interunit Piping Length			m	30 (for Total of Each Room)	
			m	20 (for One Room)	
Min. Interunit Piping Length			m	3 (for One Room)	
Amount of Additional Charge			g/m	20 (20m or more)	
Max. Installation Height Difference			m	15 (between Indoor Unit and Outdoor Unit)	
			m	7.5 (between Indoor Units)	
Drawing No.				3D057667	

Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3414 cfm=m^3/min×35.3

Note: 1. The data are based on the conditions shown in the table below.

Cooling	Heating	Piping Length
Indoor ; 27°CDB/19°CWB Outdoor ; 35°CDB	Indoor ; 20°CDB Outdoor ; 7°CDB/6°CWB	5m

Part 3
Printed Circuit Board Connector Wiring Diagram

1. Printed Circuit Board Connector Wiring Diagram

1.1 Wall Mounted Type

Connectors

PCB(1) (Control PCB)

1)	S1	Connector for fan motor
2)	S6	Connector for swing motor (horizontal blades)
3)	S21	Connector for centralized control (HA)
4)	S26	Connector for display PCB
5)	S28	Connector for signal receiver PCB
6)	S32	Connector for heat exchanger thermistor
7)	S35	Connector for INTELLIGENT EYE sensor PCB

PCB(2) (Signal Receiver PCB)

1)	S29	Connector for control PCB

PCB(3) (Display PCB)

1)	S27	Connector for control PCB

PCB(4) (INTELLIGENT EYE sensor PCB)

1)	S36	Connector for control PCB

Note: Other designations

PCB(1) (Control PCB)

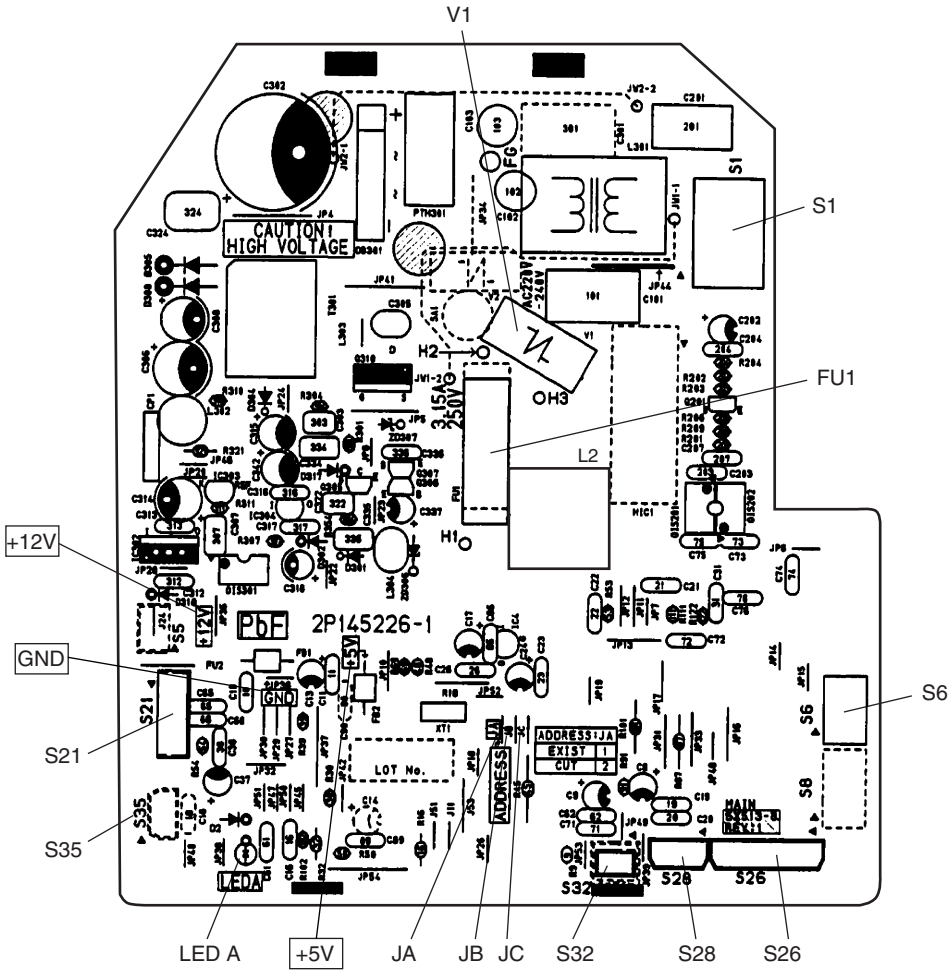
1)	V1	Varistor
2)	JA	Address setting jumper
	JB	Fan speed setting when compressor is OFF on thermostat
	JC	Power failure recovery function (auto-restart)
		∗ Refer to page 157 for detail.
3)	LED A	LED for service monitor (green)
4)	FU1	Fuse (3.15A)

PCB(3) (Display PCB)

1)	SW1 (S1W)	Forced operation ON / OFF switch
2)	LED1	LED for operation (green)
3)	LED2	LED for timer (yellow)
4)	LED3	LED for INTELLIGENT EYE (green)
5)	RTH1 (R1T)	Room temperature thermistor

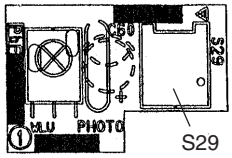
PCB Detail

PCB(1): Control PCB (indoor unit)



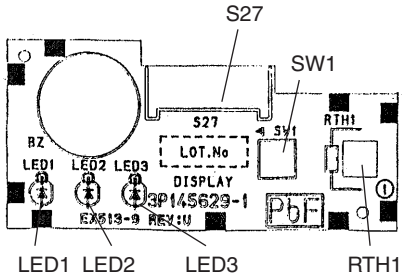
(R6039)

PCB(2): Signal Receiver PCB



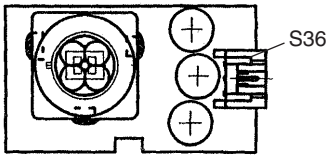
(R5234)

PCB(3): Display PCB



(R4290)

PCB(4): INTELLIGENT EYE sensor PCB



(R4291)

1.2 Duct Connected Type

Connectors

PCB(1) (Control PCB)

1) S1 Connector for AC fan motor
2) S7 Connector for AC fan motor
3) S21 Connector for centralized control to 5 rooms
4) S26 Connector for display PCB
5) S32 Connector for heat exchanger thermistor

PCB(2) (Display PCB)

1) S1 Connector for control PCB

Note: Other designations

PCB(1) (Control PCB)

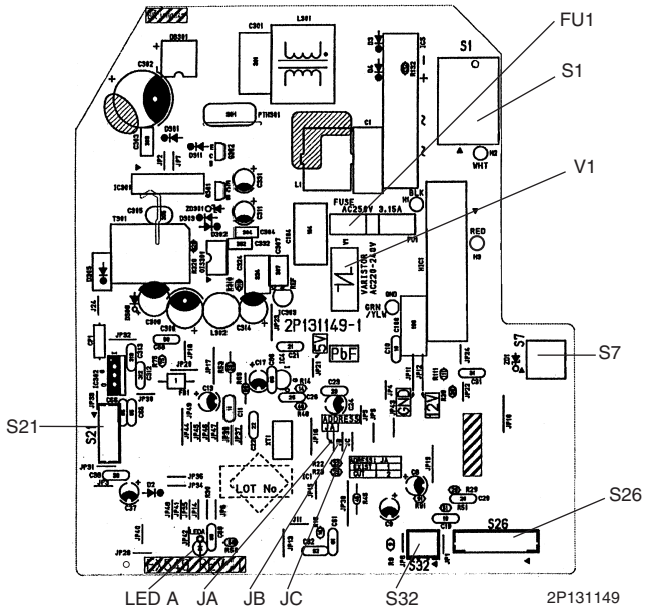
1) V1 Varistor
2) JA Address setting jumper
   JB Fan speed setting when compressor is OFF on thermostat
   JC Power failure recovery function
   * Refer to page 157 for more detail.
3) LED A LED for service monitor (green)
4) FU1 Fuse (3.15A)

PCB(2) (Display PCB)

1) SW1 (S1W) Forced operation ON/OFF switch
2) LED1 LED for operation (green)
3) LED2 LED for timer (yellow)
4) LED3 LED for HOME LEAVE operation (red)
5) RTH1 (R1T) Room temperature thermistor

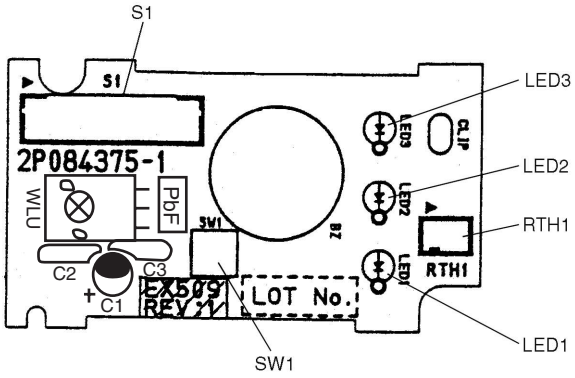
PCB Detail

PCB (1): Control PCB (indoor unit)



PCB Detail

PCB (2): Display PCB



1.3 Outdoor Unit

Connectors

PCB (1) (Control PCB)

1) S20	Connector for electronic expansion valve coil A port
2) S21	Connector for electronic expansion valve coil B port
3) S40	Connector for overload protector
4) S45	Connector for terminal strip
5) S70	Connector for fan motor
6) S80	Connector for four way valve coil
7) S90	Connector for thermistor (outdoor air, condenser, and discharge pipe)
8) S91	Connector for thermistor (gas pipe)
9) S92	Connector for thermistor (liquid pipe)

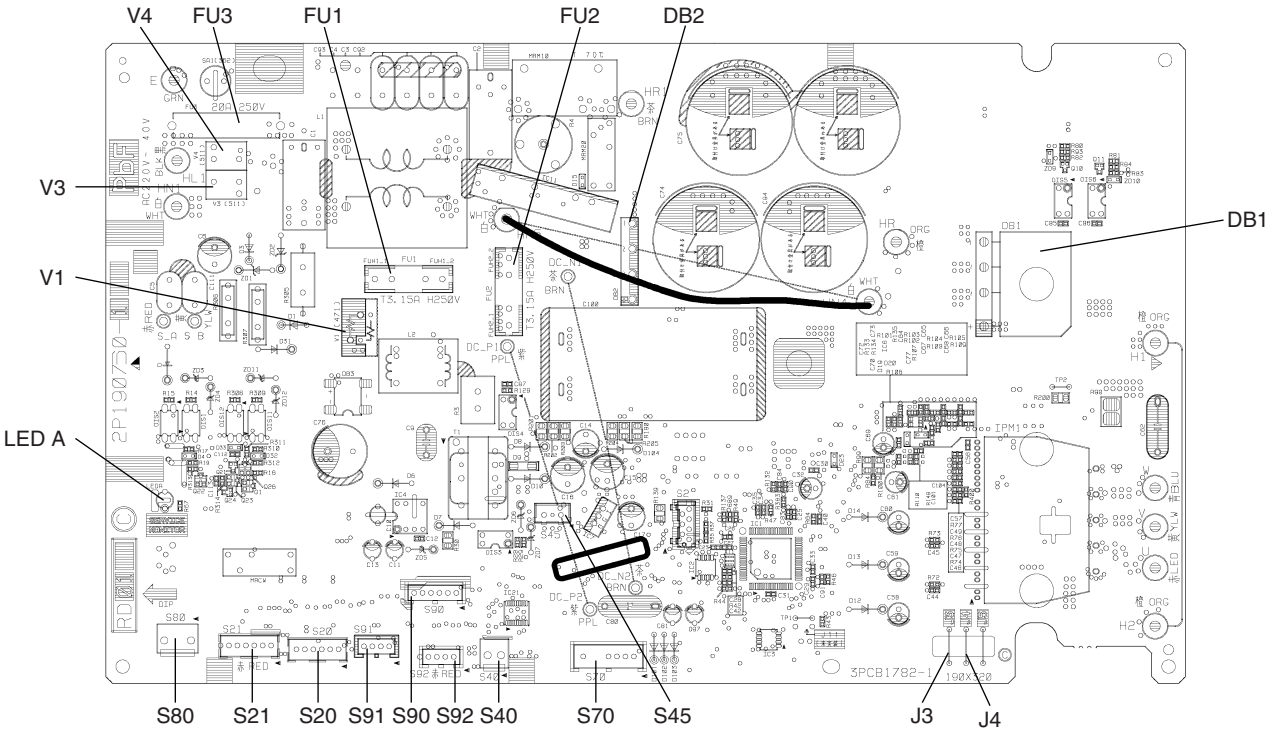
Note: Other Designations

PCB (1) (Control PCB)

1) LED A	Service Monitor LED (Green)
2) FU1, FU2	Fuse (3.15A/250V)
3) FU3	Fuse (20A/250V)
4) DB1, DB2	Diode bridge
5) J3	Jumper for ECONO mode prohibition setting (Refer to installation manual)
6) J4	Jumper for maximum power input limitation (Refer to installation manual)
7) V1, V3, V4	Varistor

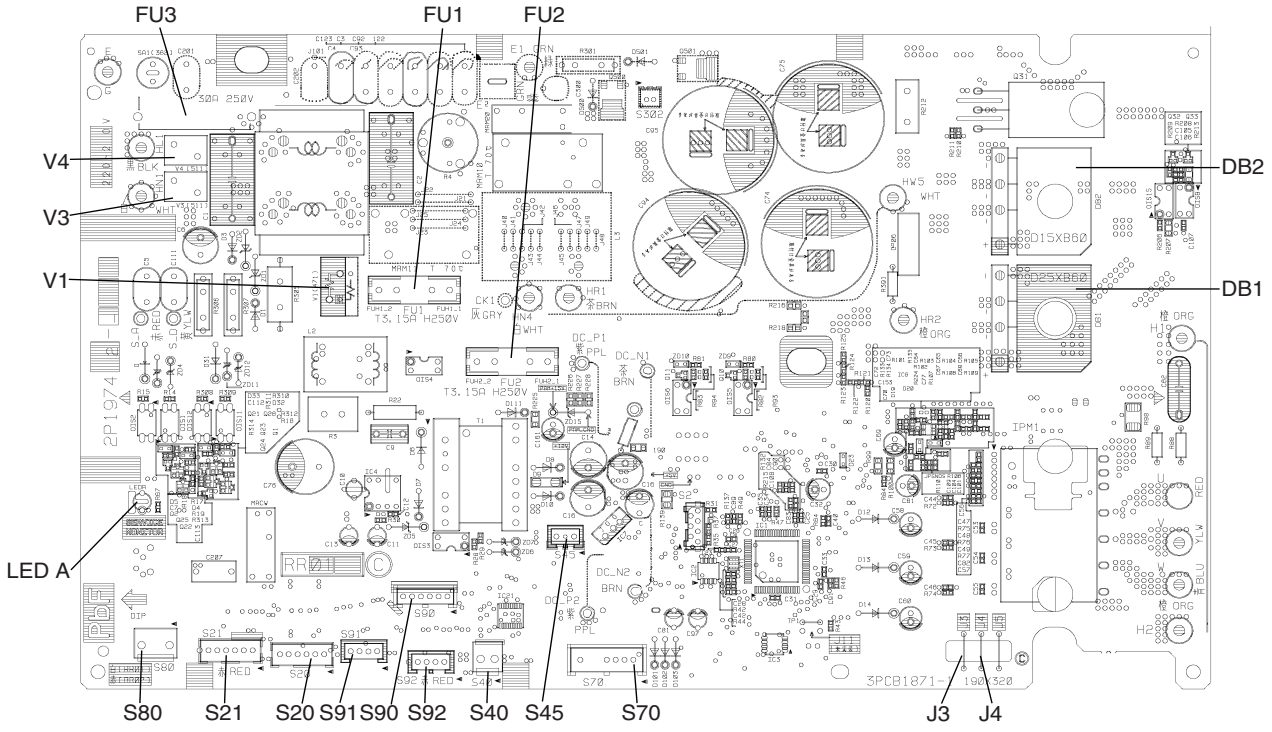
PCB Detail

PCB (1): Control PCB (40 class)



2P190760

PCB (1): Control PCB (50 class)



2P197402

Part 4
Function and Control

1. Main Functions

Note: See the list of functions for the functions applicable to different models.

1.1 Frequency Principle

Main Control Parameters

The compressor is frequency-controlled during normal operation. The target frequency is set by the following 2 parameters coming from the operating indoor unit:

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

Additional Control Parameters

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

- Frequency restrictions
- Initial settings
- Forced cooling operation

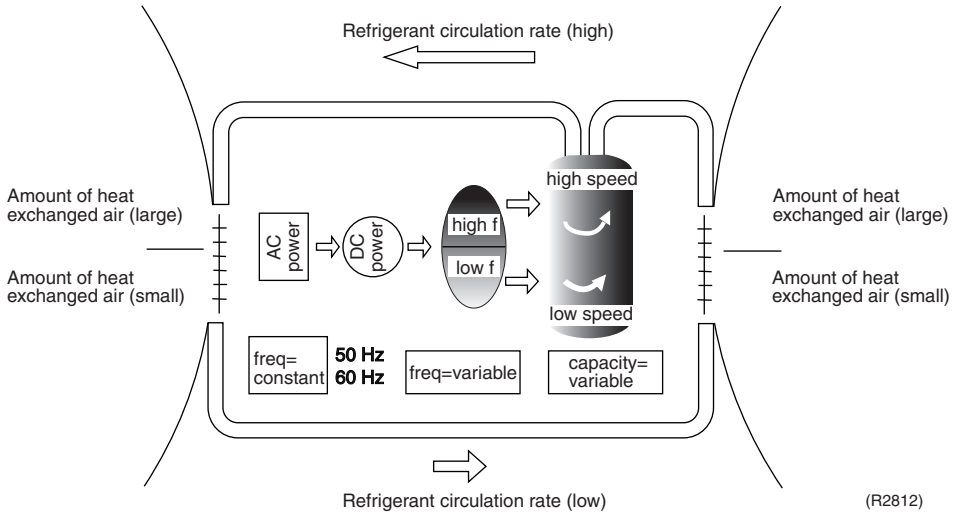
Inverter Principle

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

Phase	Description
1	The supplied AC power source is converted into the DC power source for the present.
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 increased refrigerant circulation. This leads to a higher amount of the heat exchange per unit. ■ When the frequency decreases, the rotation speed of the compressor decreases resulting in a decreased refrigerant circulation. This leads to a lower amount of the heat exchange per unit.

Drawing of Inverter

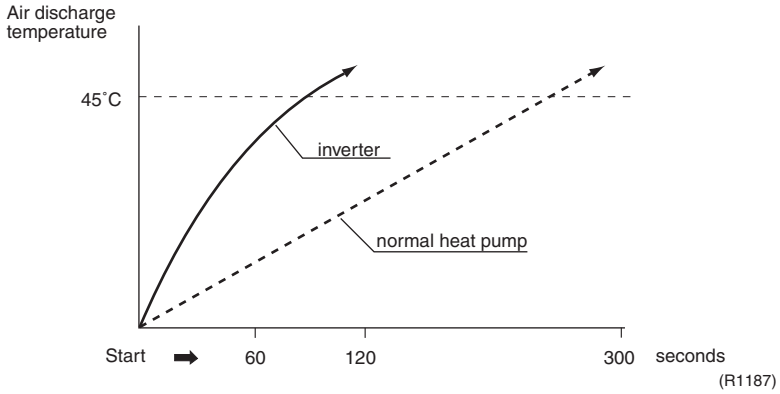
The following drawing shows a schematic view of the inverter principle:



Inverter Features

The inverter provides the following features:

- The regulating capacity can be changed according to the changes in the outdoor air temperature and cooling / heating load.
- Quick heating and quick cooling
  The compressor rotational speed is increased when starting the heating (or cooling). This enables a quick set temperature.



- Even during extreme cold weather, the high capacity is achieved. It is maintained even when the outdoor air temperature is 2°C.
- Comfortable air conditioning
  A detailed adjustment is integrated to ensure a fixed room temperature. It is possible to air condition with a small room temperature variation.
- Energy saving heating and cooling
  Once the set temperature is reached, the energy saving operation enables to maintain the room temperature at low power.

Frequency Limits

The following table shows the functions that define the minimum and maximum frequency:

Frequency limits	Limited during the activation of following functions
Low	■ Four way valve operation compensation. Refer to page 46.
High	■ Input current control. Refer to page 48. ■ Compressor protection function. Refer to page 47. ■ Heating peak-cut control. Refer to page 49. ■ Freeze-up protection control. Refer to page 49. ■ Defrost control. Refer to page 51.

Forced Cooling Operation

For more information, refer to “Forced operation mode” on page 57.

1.2 Power-Airflow Dual Flaps, Wide-Angle Louvers and Auto-Swing

Power-airflow Dual Flaps

The large flaps send a large volume of air downwards to the floor. The flap provides an optimum control area in cooling, heating and dry mode.

Heating Mode
During heating mode, the large flap enables direct warm air straight downwards. The flap presses the warm air above the floor to reach the entire room.

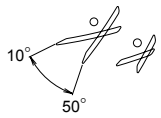
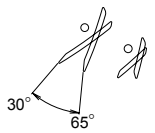
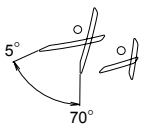
Cooling Mode
During cooling mode, the flap retracts into the indoor unit. Then, cool air can be blown far and pervaded all over the room.

Wide-Angle Louvers

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

Auto-Swing

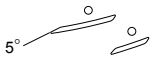
In case of FTKS25/35D, FTXS25/35E
The following table explains the auto swing process for heating, cooling, dry and fan :

Vertical Swing (up and down)			Horizontal Swing (right and left: manual)
Cooling / Dry	Heating	Fan	
 (R4281)	 (R4282)	 (R4283)	 (R4284)

COMFORT AIRFLOW Mode

FTKS25/35D, FTXS25/35E
The vertical swing flap is controlled not to blow the air directly on the person in the room.

- The airflow rate is controlled automatically within the following steps.
  Cooling: L tap – MH tap (same as AUTOMATIC)
  Heating: ML tap – M tap
- The latest command has the priority between POWERFUL and COMFORT AIRFLOW.

Heating	Cooling
 (R4303)	 (R4302)

1.3 Fan Speed Control for Indoor Units

Control Mode

The airflow rate can be automatically controlled depending on the difference between the set temperature and the room temperature. This is done through phase control and Hall IC control.

For more information about Hall IC, refer to the troubleshooting for fan motor on page 112.

Phase Steps

Phase control and fan speed control contains 9 steps: LLL, LL, SL, L, ML, M, MH, H and HH. In automatic operation, the step “SL” is not available.

	FTKS25/35D FTXS25/35E FDKS25/35E FDK(X)S25/35C CDXS25/35E	
Step	**Cooling**	**Heating**
LLL	 (R6037)	 (R6036)
LL		
L		
ML		
M		
MH		
H		
HH (Powerful)	H+50	H+50

= Within this range the airflow rate is automatically controlled when the FAN setting button is set to automatic.

Note:

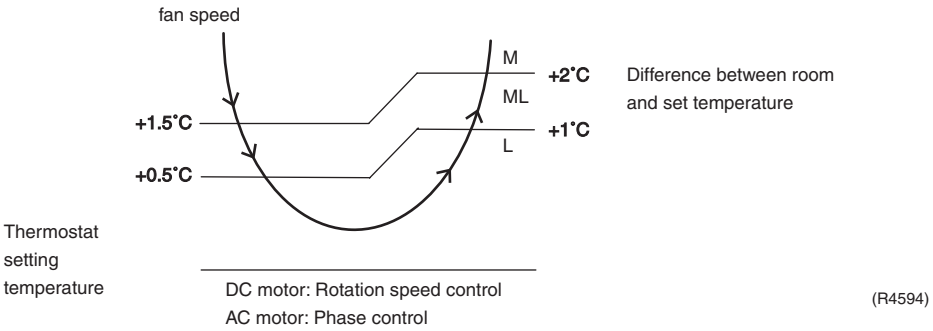
1. Fan stops during defrost operation.
2. In time of thermostat OFF, the fan rotates at the following speed.
   Cooling : The fan keeps rotating at the set tap.
   Heating : The fan stops.

Automatic Air Flow Control for Heating

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 point.

Automatic Air Flow Control for Cooling

The following drawing explains the principle of fan speed control for cooling:



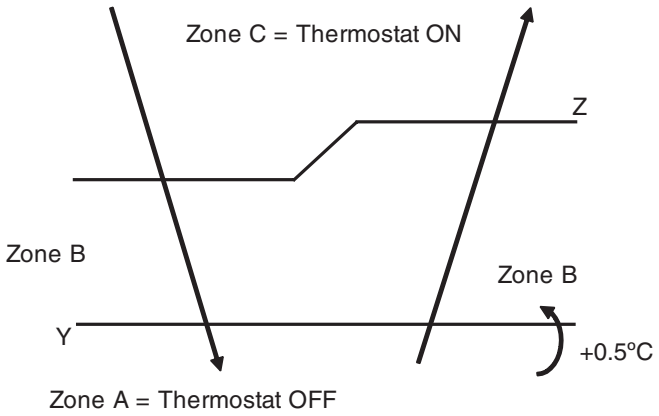
1.4 Programme Dry Function

Programme dry function removes humidity while preventing the room temperature from lowering.
Since the microcomputer controls both the temperature and air flow volume, the temperature adjustment and fan adjustment buttons are inoperable in this mode.

In Case of Inverter Units

The microcomputer automatically sets the temperature and fan settings. The difference between the room temperature at startup and the temperature set by the microcomputer is divided into two zones. Then, the unit operates in the dry mode with an appropriate capacity for each zone to maintain the temperature and humidity at a comfortable level.

Room temperature at startup	Set temperature X	Thermostat OFF point Y	Thermostat ON point Z
24°C or more	Room temperature at startup	X – 2.5°C	X – 0.5°C or Y + 0.5°C (zone B) continues for 10 min.
23.5°C ~ 18°C		X – 2.0°C	X – 0.5°C or Y + 0.5°C (zone B) continues for 10 min.
17.5°C ~	18°C	X – 2.0°C	X – 0.5°C = 17.5°C or Y + 0.5°C (zone B) continues for 10 min.



(R6841)

1.5 Automatic Operation

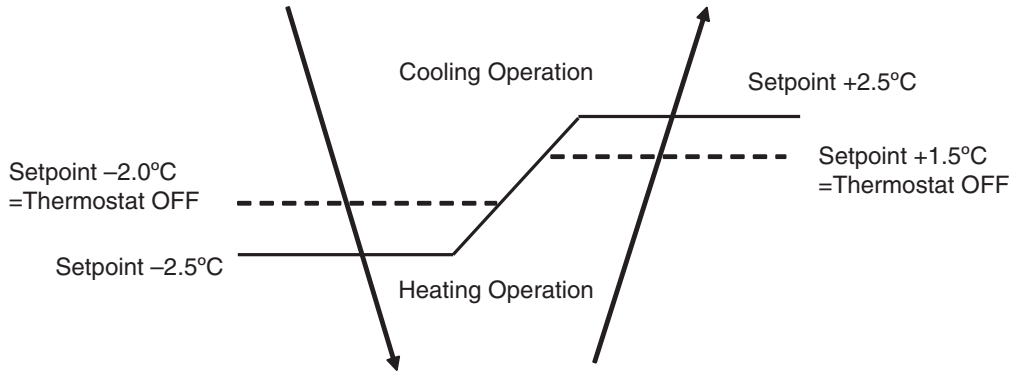
Automatic Cooling / Heating Function (Heat Pump Only)

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.

Detailed Explanation of the Function

1. Remote controller setting temperature is set as automatic cooling / heating setting temperature (18 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



(R6842)

Ex: When the set point is 25°C

Cooling Operation → 23°C: Thermostat OFF → 22°C: Switch to Heating Operation

Heating Operation → 26.5°C: Thermostat OFF → 27.5°C: Switch to Cooling Operation

1.6 Thermostat Control

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

Thermostat OFF Condition

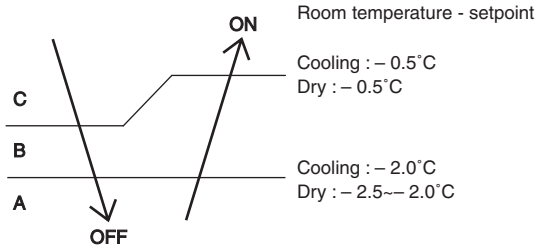
- The temperature difference is in the zone A.

Thermostat ON Condition

- The temperature difference is above the zone C after being in the zone A.
- The system resumes from defrost control in any zones except 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 : 10 minutes, Heating : 10 seconds)

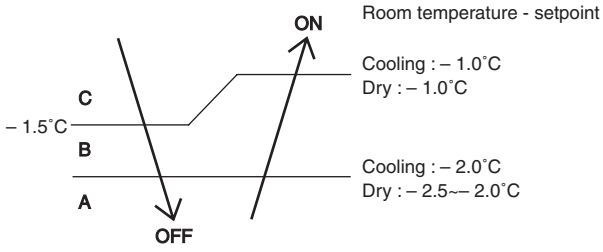
Cooling / Dry

- Wall Mounted Type



(R4668)

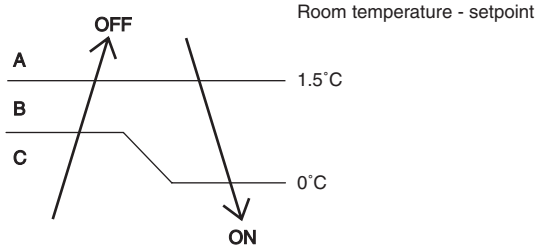
- Duct Connected Type



(R6032)

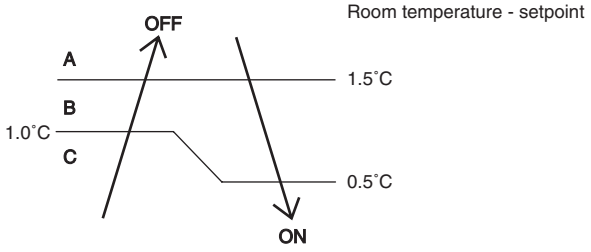
Heating

- Wall Mounted Type



(R4669)

- Duct Connected Type



(R6033)

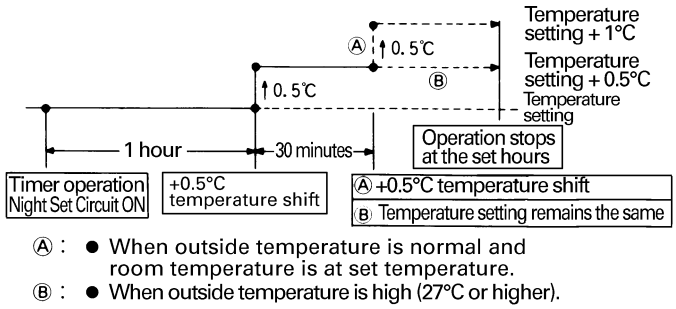
1.7 Night Set Mode

When the OFF timer is set, the Night Set circuit automatically activates.
The Night Set circuit maintains the airflow setting made by users.

The Night Set Circuit

The Night Set circuit continues heating or cooling the room at the set temperature for the first one hour, then automatically raises the temperature setting slightly in the case of cooling, or lowers it slightly in the case of heating, for economical operations. This prevents excessive heating in winter and excessive cooling in summer to ensure comfortable sleeping conditions, and also conserves electricity.

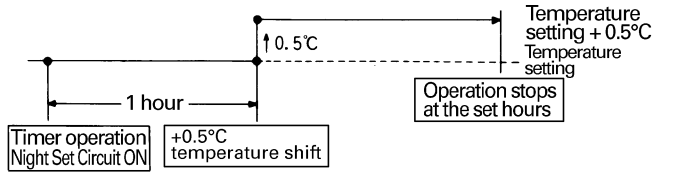
Cooling Operation



Ⓐ : ● When outside temperature is normal and room temperature is at set temperature.
Ⓑ : ● When outside temperature is high (27°C or higher).

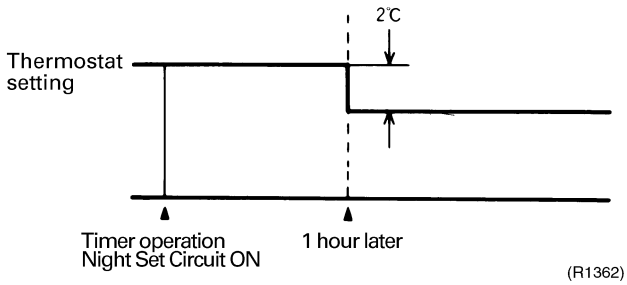
(R1361)

In case of FTKS25/35D, FTXS25/35E the temperature rises once.



(R4421)

Heating Operation



(R1362)

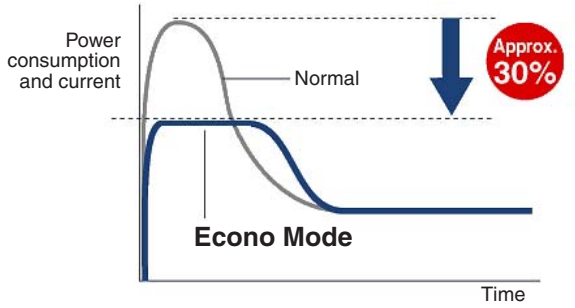
1.8 ECONO Mode

Outline

FTKS25/35D, FTXS25/35E

The "ECONO mode" reduces the maximum operating current and power consumption by approx. 30% during start up etc..
This mode is particularly convenient for energy-saving-oriented users. It is also a major bonus for those whose breaker capacities do not allow the use of multiple electrical devices and air conditioners.
It is easily activated from the wireless remote controller by pushing the ECONO button.

- When this function is ON, the maximum capacity is also down. (Approx. 20%)
- This function can only be set when the unit is running. Pressing the operation stop button causes the settings to be canceled.
- This function and POWERFUL operation cannot be used at the same time. The latest command has the priority.



(R4607)

Details

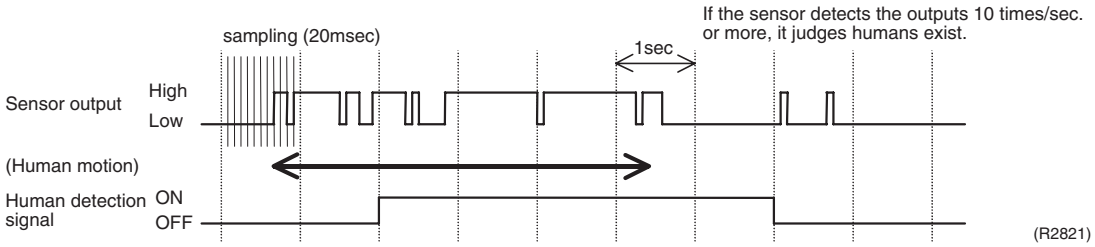
- ECONO mode can be activated while the unit is running. The remote controller can send the ECONO command when the unit is in COOL, HEAT, DRY, or AUTO operation.
- When the ECONO command is valid, the upper limit of frequency is restricted.

1.9 INTELLIGENT EYE

This is the function that detects existence of humans in the room by a human motion sensor (INTELLIGENT EYE) and reduces the capacity when there is no human in the room in order to save electricity.

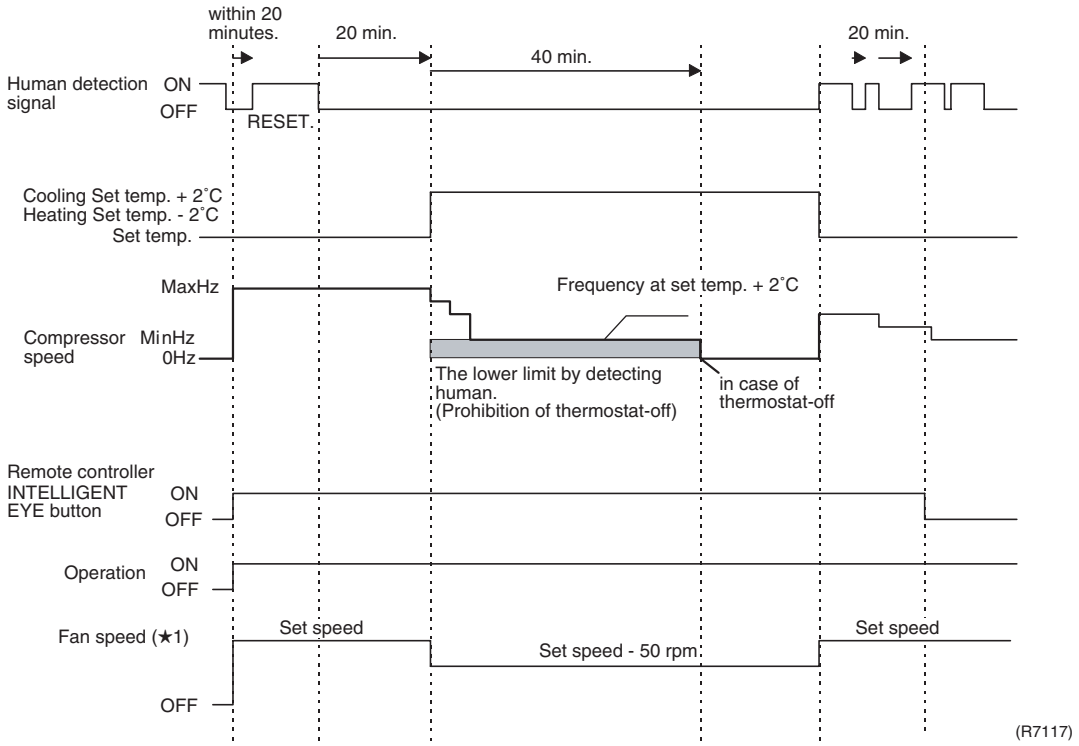
Processing

1. Detection method by INTELLIGENT EYE



- This sensor detects human motion by receiving infrared rays and displays the pulse wave output.
- A microcomputer in an indoor unit carries out a sampling every 20 msec. and if it detects 10 cycles of the wave in one second in total (corresponding to 20msec.× 10 = 100msec.), it judges human is in the room as the motion signal is ON.

2. The motions (for example: in cooling)



- When a microcomputer doesn't have a signal from the sensor in 20 minutes, it judges that nobody is in the room and operating the unit in temperature shifted 2°C from the set temperature. (Cooling/Dry : 2°C higher, Heating : 2°C lower and Auto : according to the operation mode at that time.)

★1 In case of Fan mode, the fan speed reduces by 50 rpm.

- Since the set temperature is shifted by 2°C higher for 40 minutes, compressor speed becomes low and can realize energy saving operation. But as thermostat is prone to be off by the fact that the set temperature has been shifted, the thermostat-off action is prohibited in 40 minutes so as to prevent this phenomena.
  After this 40 minutes, the prohibition of the thermostat-off is cancelled and it can realize the conditions to conduct thermostat-off depending on the room temperature. In or after this 40 minutes, if the sensor detects human motion detection signal, it let the set temperature and the fan speed return to the original set point, keeping a normal operation.

Others

- The dry operation can't command the setting temperature with a remote controller, but internally the set temperature is shifted by 1°C.

1.10 HOME LEAVE Operation

Outline

In order to respond to the customer's need for immediate heating and cooling of the room after returning home or for house care, a measure to switch the temperature and air volume from that for normal time over to outing time by one touch is provided. (This function responds also to the need for keeping up with weak cooling or heating.)
This time, we seek for simplicity of operation by providing the special temperature and air volume control for outing to be set by the exclusive button.

Detail of the Control

1. Start of Function

The function starts when the [HOME LEAVE] button is pressed in cooling mode or heating mode (including stopping and powerful operation). If this button is pressed while the operation is stopped, the function becomes effective when the operation is started. If this button is pressed in powerful operation, the powerful operation is reset and this function becomes effective.

- The [HOME LEAVE] button is ineffective in dry mode and fan mode.

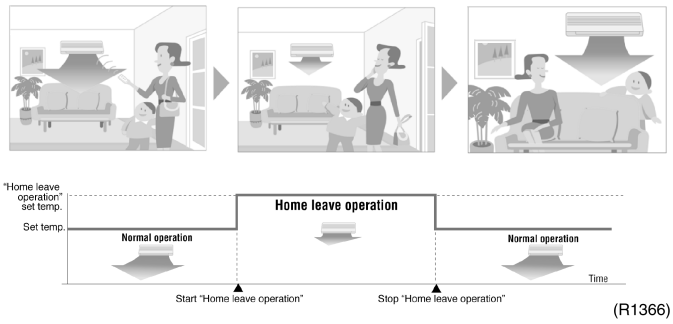
2. Details of Function

A mark representing [HOME LEAVE] is indicated on the liquid crystal display of the remote controller. The indoor unit is operated according to the set temperature and air volume for HOME LEAVE which were pre-set in the memory of the remote controller.
The LED (Red) of indoor unit representing [HOME LEAVE] lights up. (It goes out when the operation is stopped.)

3. End of Function

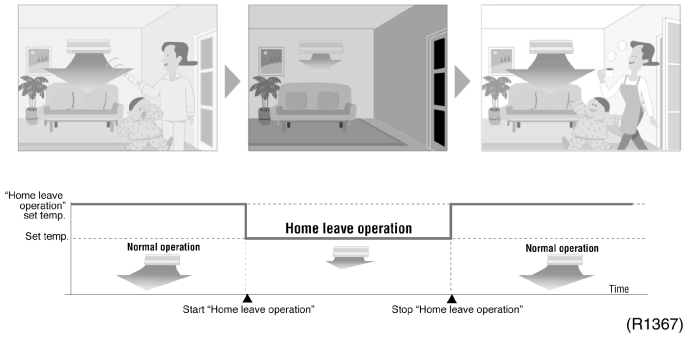
The function ends when the [HOME LEAVE] button is pressed again during [HOME LEAVE] operation or when the powerful operation button is pressed.

Scene <cooling>



(R1366)

Scene <Heating>



(R1367)

Others

The set temperature and set air volume are memorized in the remote controller. When the remote controller is reset due to replacement of battery, it is necessary to set the temperature and air volume again for [HOME LEAVE].

1.11 Inverter POWERFUL Operation

Outline

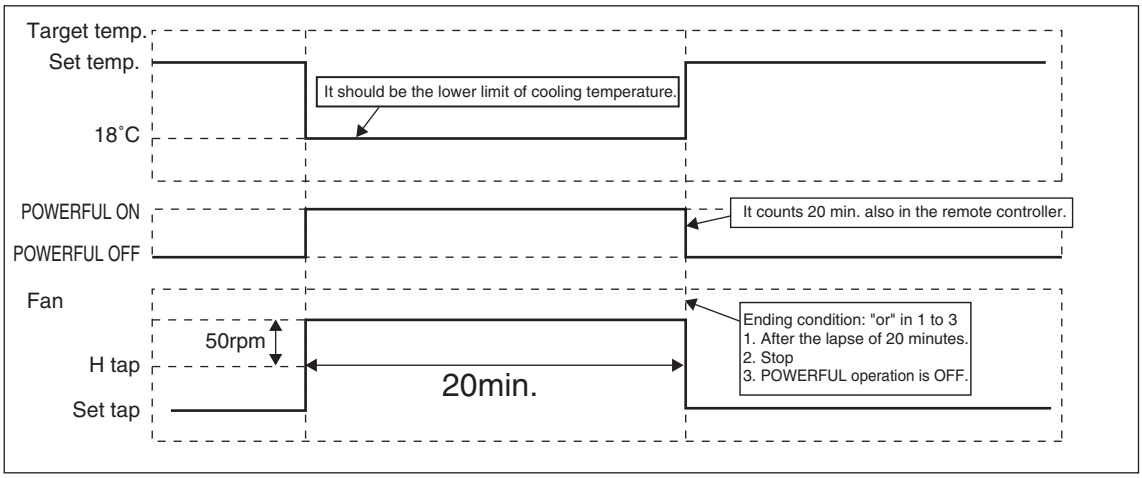
In order to exploit the cooling and heating capacity to full extent, operate the air conditioner by increasing the indoor fan rotating speed and the compressor frequency.

Details of the Control

When POWERFUL button is pushed in each operation mode, the fan speed / setting temperature will be converted to the following states in a period of 20 minutes.

Operation mode	Fan speed	Target set temperature
COOL	H tap + 50 rpm	18°C
DRY	Dry rotating speed + 50 rpm	Normally targeted temperature in dry operation; Approx. –2°C
HEAT	H tap + 50 rpm	30°C
FAN	H tap + 50 rpm	—
AUTO	Same as cooling / heating in POWERFUL operation	The target is kept unchanged

Ex.) : POWERFUL operation in cooling mode.



(R7118)

Refer to “Fan Speed control” on page 27 for detail.

1.12 Other Functions

1.12.1 Hot-Start Function

Heat Pump Only

In order to prevent the cold air blast that normally comes when heating is started, the temperature of the heat exchanger of the indoor unit is detected, and either the air flow is stopped or is made very weak thereby carrying out comfortable heating of the room.
*The cold air blast is also prevented using a similar control when the defrosting operation is started or when the thermostat gets turned ON.

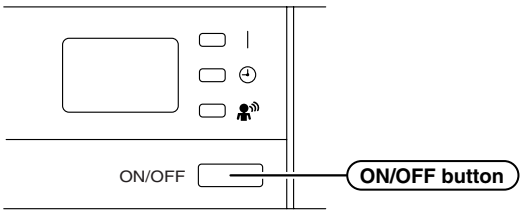
1.12.2 Signal Receiving Sign

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

1.12.3 ON/OFF Button on Indoor Unit

An ON/OFF button is provided on the front panel of the unit. Use this button when the remote controller is missing or if its battery has run out.
Every press of the button switches from ON to OFF or from OFF to ON.

For FTKS25/35D, FTXS25/35E



- Push this button once to start operation. Push once again to stop it.
- This button is useful when the remote controller is missing.
- The operation mode refers to the following table.

	Mode	Temperature setting	Air flow rate
Cooling Only	COOL	22°C	AUTO
Heat Pump	AUTO	25°C	AUTO

- In the case of multi system operation, there are times when the unit does not activate with this button.

<Forced operation mode>

Forced operation mode will be set by pressing the ON/OFF button for between 5 to 9 sec. while the unit is not operating.

Note: When the ON/OFF button is pressed for 10 sec. or more, the operation will be stopped.
See page 57 for the detail of "Forced Operation Mode".

1.12.4 Titanium Apatite Photocatalytic Air-Purifying Filter

For FTKS25/35D, FTXS25/35E

This filter combines the Air Purifying Filter and Titanium Apatite Photocatalytic Deodorizing Filter in a single highly effective unit. The filter traps microscopic particles, decompose odours and even deactivates bacteria and viruses. It lasts for three years without replacement if washed about once every six months.

1.12.5 Mold Proof Air Filter (Prefilter)

For all indoor units

The filter net is treated with mold resisting agent TBZ (harmless, colorless, and odorless). Due to this treatment, the amount of mold growth is much smaller than that of normal filters.

1.12.6 Self-Diagnosis Digital Display

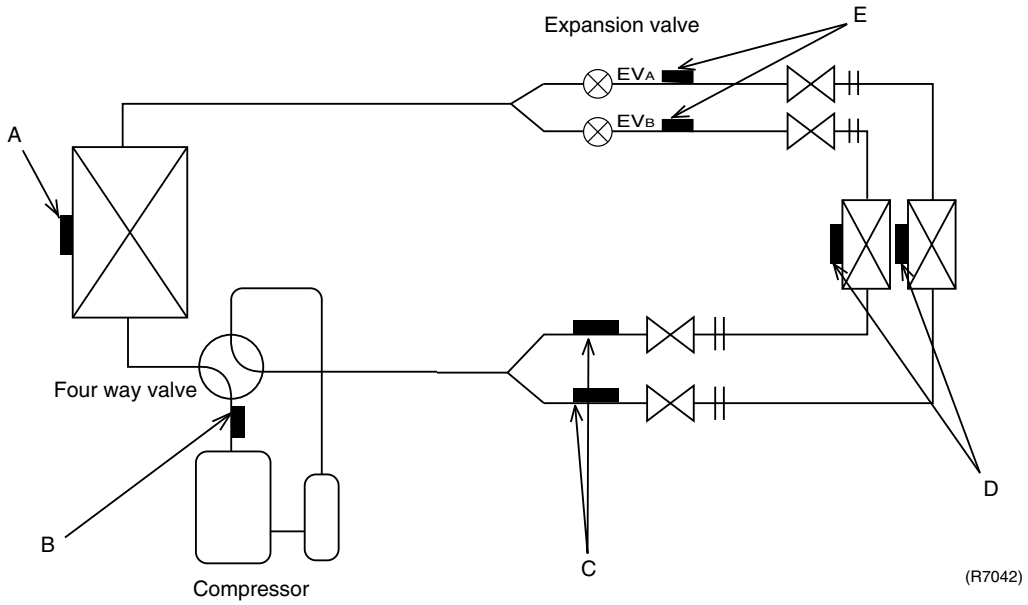
The microcomputer continuously monitors main operating conditions of the indoor unit, outdoor unit and the entire system. When an abnormality occur, the LCD remote controller displays error code. These indications allow prompt maintenance operations.

1.12.7 Auto-restart Function

Even if a power failure (including one for just a moment) occurs during the operation, the operation restarts in the condition before power failure automatically when power is restored. (Note) It takes 3 minutes to restart the operation because the 3-minute stand-by function is activated.

1.13 Function of Thermistor

1.13.1 Heat Pump Model



A Outdoor Heat Exchanger Thermistor

1. The outdoor heat exchanger thermistor is used for controlling target discharge temperature. The system sets a target discharge temperature according to the outdoor and indoor heat exchanger temperature, and controls the electronic expansion valve opening so that the target discharge temperature can be obtained.
2. The outdoor heat exchanger thermistor is used for detecting disconnection of the discharge thermistor when cooling.
   When the discharge pipe temperature becomes lower than the outdoor heat exchanger temperature, the discharge pipe thermistor is judged as disconnected.
3. The outdoor heat exchanger thermistor is used for high pressure protection during cooling operation.

B Discharge Pipe Thermistor

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

C Gas Pipe Thermistor

1. In cooling, the gas pipe thermistors are used for gas pipe isothermal control.
   The system controls electronic expansion valve opening so that gas pipe temperature in each room becomes equal.

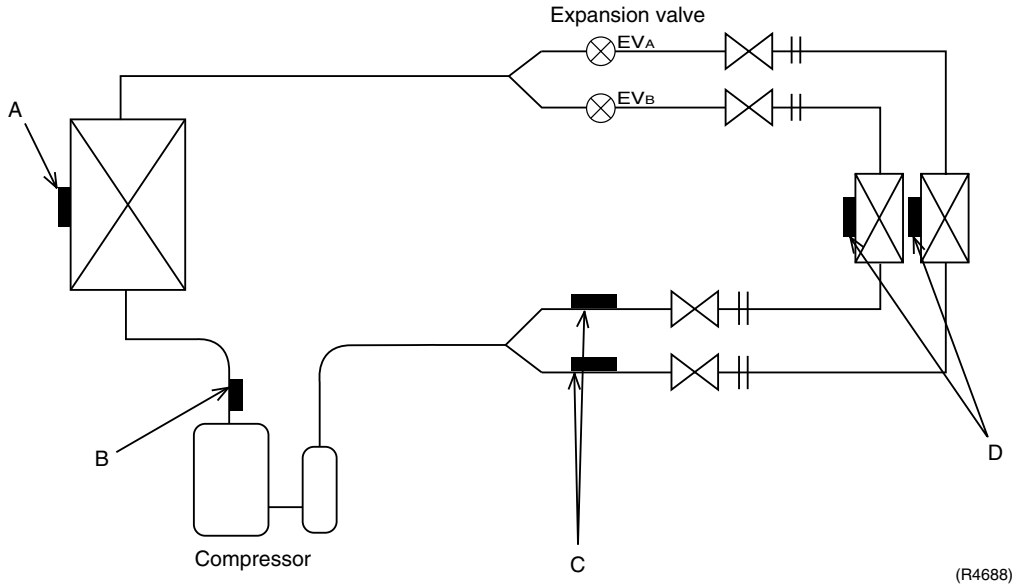
D Indoor Heat Exchanger Thermistor

1. The indoor heat exchanger thermistors are used for controlling target discharge temperature.
   The system sets a 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 temperature can be obtained.
2. The indoor heat exchanger thermistor is used to prevent freezing.
   During the cooling operation, if the temperature drops abnormally, the operating frequency becomes lower, then the operation halts.
3. The indoor heat exchanger thermistor is used for anti-icing control.
   During the cooling operation, if the heat exchanger temperature in the room where operation is halted becomes -1°C, or if the room temperature - heat exchanger temperature in the room where operation is halted becomes ≥10°C, it is assumed as icing.
4. During heating: the indoor heat exchanger thermistors are used for detecting disconnection of the discharge pipe thermistor.
   When the discharge pipe temperature become lower than an indoor heat exchanger temperature, a disconnected discharge pipe thermistor can be detected.
   The indoor heat exchanger thermistors are also used for preventing abnormal high pressure.
5. When only one indoor unit is operating, the indoor heat exchanger thermistor is used for sub-cooling control.
   The actual sub-cooling is calculated from the liquid pipe temperature and the heat exchanger temperature. The system controls the electronic expansion valve opening to reach the target sub-cooling.

E Liquid Pipe Thermistor

1. When only one indoor unit is heating, the indoor liquid pipe thermistor is used for a sub-cooling control.
   The system calculates the actual sub-cooling with the liquid pipe temperature and the maximum heat exchanger temperature between rooms, and controls the opening of the electronic expansion valve to reach the target sub-cooling.
2. When all indoor units are heating, the liquid pipe thermistor is used for liquid pipes isothermal control.
   The system controls electronic expansion valves to make liquid pipe temperatures the average of present temperature of each room.

1.13.2 Cooling Only Model



A Outdoor Heat Exchanger Thermistor

1. The outdoor heat exchanger thermistor is used for controlling target discharge temperature.
   The system sets a target discharge temperature according to the outdoor and indoor heat exchanger temperature, and controls the electronic expansion valve opening so that the target discharge temperature can be obtained.
2. The outdoor heat exchanger thermistor is used for detecting disconnection of the discharge thermistor when cooling.
   When the discharge pipe temperature becomes lower than the outdoor heat exchanger temperature, the discharge pipe thermistor is judged as disconnected.
3. The outdoor heat exchanger thermistor is used for high pressure protection during cooling operation.

B Discharge Pipe Thermistor

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

C Gas Pipe Thermistor

1. In cooling, the gas pipe thermistors are used for gas pipe isothermal control.
   The system controls electronic expansion valve opening so that gas pipe temperature in each room becomes equal.

D Indoor Heat Exchanger Thermistor

1. The indoor heat exchanger thermistor is used for controlling target discharge temperature.
   The system sets a 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 temperature can be obtained.
2. The indoor heat exchanger thermistors are used to prevent freezing.
   During the cooling operation, if the temperature drops abnormally, the operating frequency becomes lower, then the operation halts.
3. The indoor heat exchanger thermistor is used for anti-icing control.
   During the cooling operation, if the heat exchanger temperature in the room where operation is halted becomes -1°C, or if the room temperature - heat exchanger in the room where operation is halted becomes ≥10°C, it is assumed as icing.

2. Control Specification

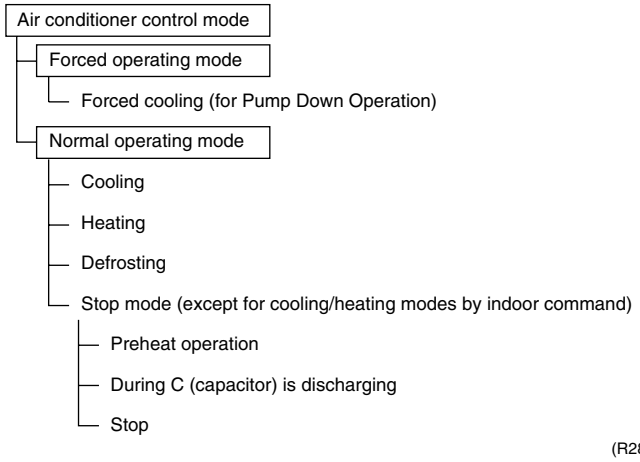
2.1 Mode Hierarchy

Outline

There are two modes; the mode selected in user's place (normal air conditioning mode) and forced operation mode for installation and providing service.

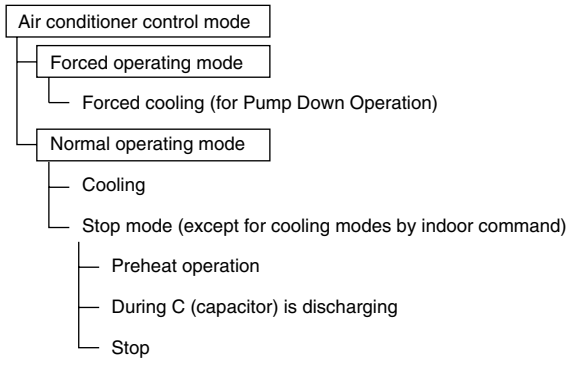
Detail

1. For heat pump model
   There are following modes; stop, cooling (includes drying), heating (include defrosting)



(R2829)

2. For cooling only model
   There are following models; stop and cooling (including drying).



(R2830)

Note: Unless specified otherwise, an indoor dry operation command must be regarded as cooling operation.

Determine Operating Mode

Judge the operating mode command set by each room in accordance with the instructing procedure, and determine the operating mode of the system.

The following procedure will be taken as the modes conflict with each other.

- The system will follow the mode determined first. (First-push, first-set)
- For the rooms set with different mode, select stand-by mode. (Operation lamp flashes)

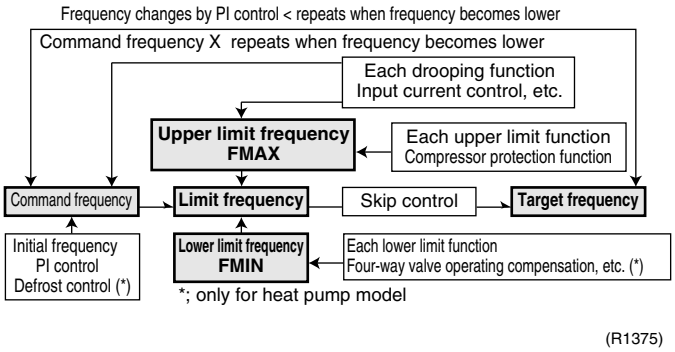
Command of the first set room	Command of the second set room	Operation of the first set room	Operation of the second set room
Cooling	Heating	Cooling	Stand-by
Cooling	Fan	Cooling	Fan
Heating	Cooling	Heating	Stand-by
Heating	Fan	Heating	Stand-by
Fan	Cooling	Fan	Cooling
Fan	Heating	Stand-by	Heating

2.2 Frequency Control

Outline

Frequency that corresponds to each room's capacity will be determined according to the difference in the temperature of each room and the temperature that is set by the remote controller.
The function is explained as follows.

1. How to determine frequency.
2. Frequency command from an indoor unit. (The difference between a room temperature and the temperature set by the remote controller.)
3. Frequency command from an indoor unit. (The ranked capacity of the operating room).
4. Frequency initial setting.
5. PI control.



(R1375)

Detail

How to Determine Frequency
The compressor's frequency will finally be determined by taking the following steps.

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, low Hz high pressure limit, peak cutting, freeze prevention, 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, Low Hz high pressure, peak cutting, freeze prevention, 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.

For Cooling Only 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, freeze prevention, dew prevention, fin thermistor temperature.

1.2 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, freeze prevention, dew prevention, fin thermistor temperature.

3. Determine lower limit frequency

- Set a maximum value as an lower limit frequency among the frequency lower limits of the following functions:
  Pressure difference upkeep.

4. Determine prohibited frequency

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

Indoor Frequency Command (ΔD signal)

The difference between a room temperature and the temperature set by the remote controller will be taken as the "ΔD signal" and is used for frequency command.

Temperature difference	ΔD signal	Temperature difference	ΔD signal	Temperature difference	ΔD signal	Temperature difference	ΔD signal
0	∗Th OFF	2.0	4	4.0	8	6.0	C
0.5	1	2.5	5	4.5	9	6.5	D
1.0	2	3.0	6	5.0	A	7.0	E
1.5	3	3.5	7	5.5	B	7.5	F

∗Th OFF = Thermostat OFF

Indoor Unit Capacity (S value)

The capacity of the indoor unit is a "S" value and is used for frequency command.

ex.)

Capacity	S value
2.5 kW	25
3.5 kW	35

Frequency Initial Setting

< Outline >

When starting the compressor, or when conditions are varied due to the change of the operating room, the frequency must be initialized according to the total of a maximum ΔD value of each room and a total value of Q (ΣQ) of the operating room (the room in which the thermostat is set to ON).

Q value: Indoor unit output determined from indoor unit volume, air flow rate and other factors.

PI Control (Determine Frequency Up/Down by ΔD Signal)

1. P control

Calculate a total of the ΔD value in each sampling time (20 seconds), and adjust the frequency according to its difference from the frequency previously calculated.

2. I control

If the operating frequency is not change more than a certain fixed time, adjust the frequency up and down according to the ΣΔD value, obtaining the fixed ΣΔD value.
When the ΣΔD value is small...lower the frequency.
When the ΣΔD value is large...increase the frequency.

3. Limit of frequency variation width

When the difference between input current and input current drooping value is less than 1 A, the frequency increase width must be limited.

4. Frequency management when other controls are functioning

- When each frequency is drooping;
  Frequency management is carried out only when the frequency droops.
- For limiting lower limit
  Frequency management is carried out only when the frequency rises.

5. Upper and lower limit of frequency by PI control

The frequency upper and lower limits are set depending on the total of S values of operating room. When low noise commands come from the indoor unit more than one room or when outdoor unit low noise or quiet commands come from all the rooms, the upper limit frequency must be lowered than the usual setting.

2.3 Controls at Mode Changing / Start-up

2.3.1 Preheating Operation

Outline

Operate the inverter in the open phase operation with the conditions including the preheating command from the indoor, the outdoor air temperature and discharge pipe temperature.

Detail

Preheating ON Condition

- When outdoor air temperature is below 10.5ºC and discharge pipe temperature is below 10.5ºC, inverter in open phase operation starts. (The power consumption of compressor during preheat operation is 25 W.)

OFF Condition

- When outdoor air temperature is higher than 12ºC or discharge pipe temperature is higher than 12ºC, inverter in open phase operation stops.

2.3.2 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.

Detail

The OFF delay of four way valve
Energize the coil for 150 sec after unit operation is stopped.

2.3.3 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.

Detail

Staring Conditions

1. When starting compressor for heating.
2. When the operating mode changes from the previous time.
3. When starting compressor for starting defrosting or resetting.
4. When starting compressor for the first time after the reset with the power is ON.
5. When starting compressor after operation stop by the cooling / heating mode change-over malfunction.

Set the lower limit frequency to 𝔸 Hz for 60 seconds with any conditions with 1 through 5 above.

		40 class	50 class
𝔸	Cooling	56Hz	40Hz
	Heating	68Hz	54Hz

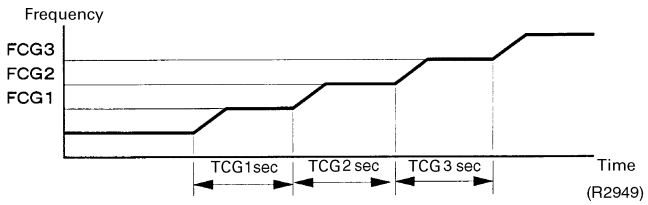
2.3.4 3-Minute Stand-by

Prohibit to turn ON the compressor for 3 minutes after turning it off.
(Except when defrosting. (Only for Heat Pump Model).)

2.3.5 Compressor Protection Function

When turning the compressor from OFF to ON, the upper limit of frequency must be set as follows. (The function must not be used when defrosting (only for heat pump model).)

	40 class	50 class
FCG 3	90	85
FCG 2	72	70
FCG 1	62	55
TCG 1	140	150
TCG 2	180	180
TCG 3	300	300



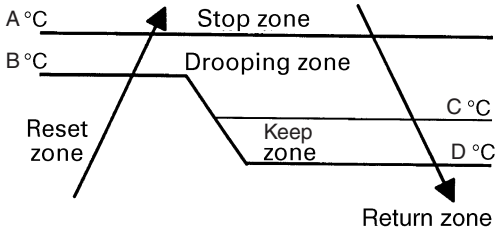
2.4 Discharge Pipe Temperature Control

Outline

The discharge pipe temperature is used as the compressor's internal temperature. If the discharge pipe temperature rises above a certain level, the operating frequency upper limit is set to keep this temperature from going up further.

Detail

Divide the Zone



(R2836)

A	110
B	103
C	102
D	101

Management within the Zones

Zone	Control contents
Stop zone	When the temperature reaches the stop zone, stop the compressor and correct abnormality.
Drooping zone	Start the timer, and the frequency will be drooping.
Keep zone	Keep the upper limit of frequency.
Return / Reset zone	Cancel the upper limit of frequency.

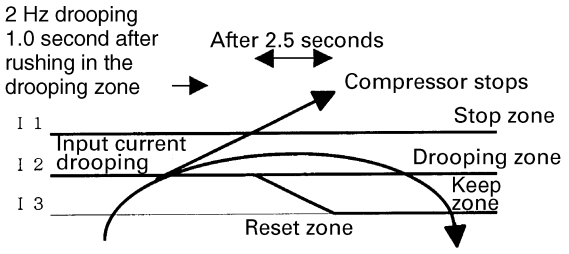
2.5 Input Current Control

Outline

Detect an input current by the CT during the compressor is running, and set the frequency upper limit from such input current.
In case of heat pump model, this control is the upper limit control function of the frequency which takes priority of the lower limit of four way valve activating compensation.

Detail

The frequency control will be made within the following zones.



(R1378)

When a “stop current” continues for 2.5 seconds after rushing on the stop zone, the compressor operation stops.
If a “drooping current” is continues for 1.0 second after rushing on the drooping zone, the frequency will be 2 Hz drooping.
Repeating the above drooping continues until the current rushes on the drooping zone without change.
In the keep zone, the frequency limit will remain.
In the return / reset zone, the frequency limit will be cancelled.

Limitation of current drooping and stop value according to the outdoor air temperature

1. In case the operation mode is cooling
- The current droops when outdoor air temperature becomes higher than a certain level (model by model).

2. In case the operation mode is heating (only for heat pump model)
- The current droops when outdoor air temperature becomes higher than a certain level (model by model).

2.6 Freeze-up Protection Control

Outline

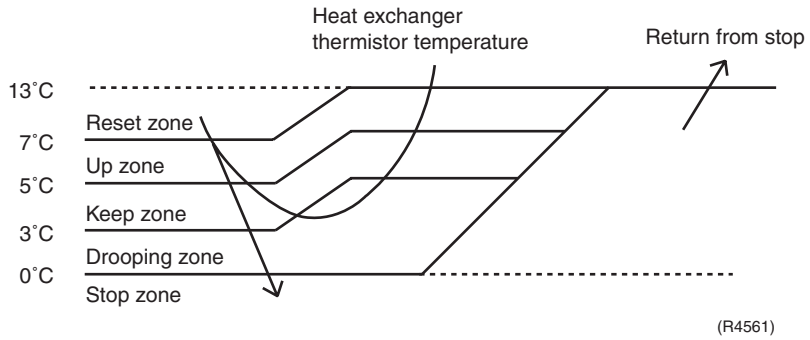
During cooling operation, the signals being sent from the indoor unit allow the operating frequency limitation and then prevent freezing of the indoor heat exchanger. (The signal from the indoor unit must be divided into the zones as the followings.

Detail

Conditions for Start Controlling

Judge the controlling start with the indoor heat exchanger temperature after 2 sec from operation start and after 30 sec from changing number of operation room.

Control in Each Zone



2.7 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.)

Detail

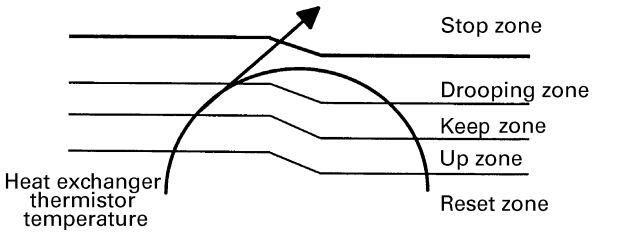
Conditions for Start Controlling

Judge the controlling start with the indoor heat exchanger temperature after 2 min from operation start and △ sec from changing number of operation room.

Control in Each Zone

The maximum value of heat exchange intermediate temperature of each indoor unit controls the following (excluding stopped rooms).

	△
When increase	30
When decrease	2



2.8 Fan Control

Outline

Fan control is carried out according to the following conditions.

1. Fan ON control for electric component cooling fan
2. Fan control when defrosting
3. Fan OFF delay when stopped
4. ON/OFF control when cooling operation
5. Fan control when the number of heating rooms decreases
6. Fan control when forced operation
7. Fan control in indoor / outdoor unit quiet operation
8. Fan control during heating operation
9. Fan control in the powerful mode
10. Fan control for pressure difference upkeep

Detail

Fan OFF Control when Stopped

■ Fan OFF delay for 60 seconds must be made when the compressor is stopped.

Tap Control in Indoor / Outdoor Unit Quiet Operation

1. When Cooling Operation
   When the outdoor air temperature is higher than 37°C, the fan tap must be set to H.
   When the outdoor air temperature is 18 ~ 37°C, the fan tap must be set to M.
   When the outdoor air temperature is lower than 18°C, the fan tap must be set to L.
2. When Heating Operation (Only for heat pump model)
   When the outdoor air temperature is lower than 4°C, the fan tap must be set to H.
   When the outdoor air temperature is 4 ~ 12°C, the fan tap must be set to M.
   When the outdoor air temperature is higher than 12°C, the fan tap must be set to L.

2.9 Liquid Compression Protection Function 2

Outline

In order to obtain the dependability of the compressor, the compressor must be stopped according to the conditions of the temperature of the outdoor air and outdoor heat exchanger.

Detail

Heat Pump Model

■ Operation stops depending on the outdoor air temperature.

Compressor operation turns OFF under the conditions that the system is in cooling operation and outdoor air temperature is below 10°C.

Cooling Only Model

■ Operation stops depending on the outdoor air temperature.

Compressor operation turns OFF under the condition that outdoor air temperature is below 10°C.

2.10 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.

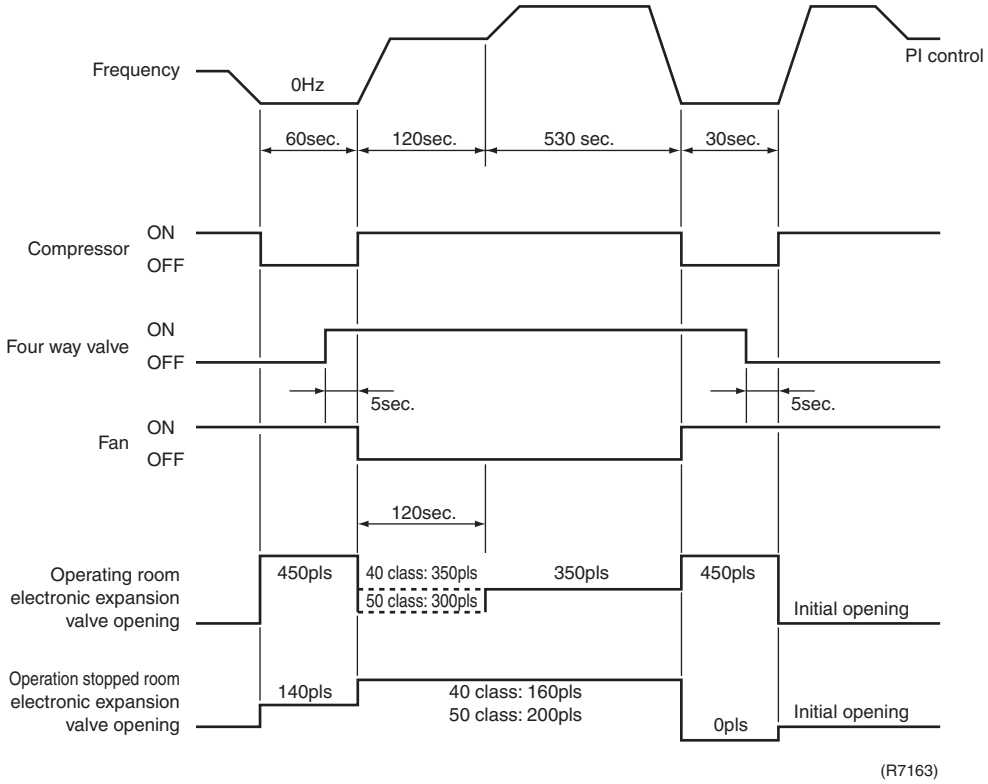
Detail

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 30 minutes of accumulated fine pass since the start of the operation or ending the defrosting.

Conditions for Canceling Defrost

The judgment must be made with heat exchanger temperature. (40 class : 4°C~12°C, 50 class : 4°C~15°C)



2.11 Electronic Expansion Valve Control

Outline

The following items are included in the electronic expansion valve control.

Electronic expansion valve is fully closed

1. Electronic expansion valve is fully closed when turning on the power.
2. Pressure equalizing control

Room Distribution Control

1. Gas pipe isothermal control
2. SC control (Only for Heat Pump Model)

Open Control

1. Electronic expansion valve control when starting operation
2. Control when frequency changed
3. Control for defrosting (only for heat pump model)
4. Oil recover control
5. Control when a discharge pipe temperature is abnormally high
6. Control when the discharge pipe thermistor is disconnected
7. Control for indoor unit freeze-up protection

Feedback Control

1. Discharge pipe temperature control

Distribution control for each room

1. Liquid pipe temperature control (with all ports connected and all rooms being air-conditioned)
2. Dew prevention function for indoor rotor

Detail

The followings are the examples of control which function in each mode by the electronic expansion valve control.

Operation pattern	○ : function × : not function	Gas pipe isothermal control	SC control (only for heat pump model)	Control when frequency changed	Control for abnormally high discharge pipe temperature	Oil recovery control	Indoor freeze prevention control	Liquid pipe temperature control	Dew buildup prevention control for indoor rotor
When power is turned ON	Fully closed when power is turned ON	×	×	×	×	×	×	×	×
Cooling, 1 room operation	Open control when starting	×	×	×	○	×	○	×	○
	(Control of target discharge pipe temperature)	×	×	○	○	○	○	×	○
Cooling, 2 rooms operation	Control when the operating room is changed	×	×	×	○	×	○	×	○
	(Control of target discharge pipe temperature)	○	×	○	○	×	○	×	○
Stop	Pressure equalizing control	×	×	×	×	×	×	×	×
Heating, 1 room operation	Open control when starting	×	×	×	○	×	×	×	×
(only for heat pump model)	(Control of target discharge pipe temperature)	×	○	○	○	×	×	×	×
Heating, 2 rooms operation	Control when the operating room is changed	×	×	×	○	×	×	×	×
(only for heat pump model)	(Control of target discharge pipe temperature)	×	×	○	○	×	×	○	×
	(Defrost control FD=1) (only for heat pump model)	×	×	×	×	×	×	×	×
Stop	Pressure equalizing control	×	×	×	×	×	×	×	×
Heating, 1 room operation	Open control when starting	×	×	×	○	×	×	×	×
(only for heat pump model)	Continue	×	○	○	×	×	×	○	×
Control of discharge pipe thermistor disconnection									
Stop	Pressure equalizing control	×	×	×	×	×	×	×	×

(R7045)

2.11.1 Fully Closing with Power On

Initialize the electronic expansion valve when turning on the power, set the opening position and develop pressure equalizing.

2.11.2 Pressure Equalization Control

When the compressor is stopped, open and close the electronic expansion valve and develop pressure equalization.

2.11.3 Opening Limit

Outline

Limit a maximum and minimum opening of the electronic expansion valve in the operating room.

Detail

- A maximum electronic expansion valve opening in the operating room : 450 pulses
- A minimum electronic expansion valve opening in the operating room : 60 pulses

The electronic expansion valve is fully closed in the room where cooling is stopped and is opened with fixed opening during defrosting.

2.11.4 Gas Pipe Isothermal Control During Cooling

When the units are operating in multiple rooms, detect the gas piping temperature and correct the electronic expansion valve opening so that the temperature of the gas pipe in each room becomes identical.

- When the gas pipe temperature > the average gas pipe temperature → open the electronic expansion valve in that room
- When the gas pipe temperature < the average gas pipe temperature → close the electronic expansion valve in that room

2.11.5 SC Control

Outline

Heat Pump Only

Detect the temperature of liquid pipe and heat exchanger of the rooms and compensate the electronic expansion valve opening so that the SC of each room becomes the target SC.

- When the actual SC is > target SC, open the electronic expansion valve of the room.
- When the actual SC is < target SC, close the electronic expansion valve of the room.

Detail

Start Functioning Conditions

After finishing the open control (810 seconds after the beginning of the operation), control all the electronic expansion valve in the operating room.

Determine Electronic Expansion Valve Opening

Adjust the electronic expansion valve so that the temperature difference between the maximum heat exchanger temperature of connected room and the temperature of liquid pipe thermistor becomes constant.

2.11.6 Starting Operation / Changing Operating Room Control

Control the electronic expansion valve opening when the system is starting or the operating room is changed, and prevent the system to be super heated or moistened.

2.11.7 Disconnection of the Discharge Pipe Thermistor

Outline

Detect a disconnected discharge pipe thermistor by comparing the discharge pipe temperature with the condensation temperature. If any is disconnected, open the electronic expansion valve according to the outdoor air temperature and the operating frequency, and operate for a specified time, and then stop.

After 3 minutes of waiting, restart the unit and check if any is disconnected. If any is disconnected stop the system after operating for a specified time. If the disconnection is detected 4 times in succession, then the system will be down.

Detail

Detect Disconnection

If a 780-second timer for open control becomes over, the following adjustment must be made.

1. When the operation mode is cooling
   When the discharge pipe temperature is lower than the outdoor heat exchanger temperature, the discharge pipe thermistor disconnection must be ascertained.
2. When the operation mode is heating (only for heat pump model)
   When the discharge pipe temperature is lower than the max temperature of operating room heat exchanger, the discharge pipe thermistor disconnection must be ascertained.

When the condition of the above 1 or 2 is decided, the system will stop after operating for continuous 9 minutes.

Adjustment when the thermistor is disconnected

When compressor stop repeats specified time, the system should be down.

2.11.8 Control when frequency is changed

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

2.11.9 High Temperature of the Discharge Pipe

When the compressor is operating, if the discharge pipe temperature exceeds a certain value, open the electronic expansion valve and remove the refrigerant to the low pressure side and lower discharge temperature.

2.11.10 Oil Recovery Function

Outline

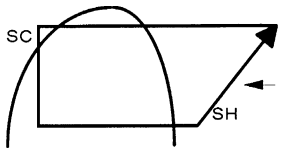
The electronic expansion valve opening in the cooling stopped room must be set as to open for a certain time at a specified interval so that the oil in the cooling stopped room may not be accumulated.

Detail

During cooling operation, every 1 hour continuous operation, the electronic expansion valves in the operation stopped room must be opened by 80 pulses for specified time.

2.11.11 Target Discharge Pipe Temperature Control

Obtain the target discharge pipe temperature from the indoor and outdoor heat exchange temperature, and adjust the electronic expansion valve opening so that the actual discharge pipe temperature become close to that temperature. (Indirect SH control using the discharge pipe temperature)



Set the target discharge pipe temperature as to become an aiming SH.
Regard that the inclination cannot be changed due to the operating condition.

(R1389)

Determine a correction value of the electronic expansion valve compensation and drive it according to the deflection of the target discharge temperature and actual discharge temperature, and the discharge temperature variation by the 20 sec.

2.12 Malfunctions

2.12.1 Sensor Malfunction Detection

Sensor malfunction may occur either in the thermistor or current transformer (CT) system.

Relating to Thermistor Malfunction

1. Outdoor heat exchanger thermistor
2. Discharge pipe thermistor
3. Fin thermistor
4. Gas pipe thermistor
5. Outdoor air thermistor
6. Liquid pipe thermistor

Relating to CT Malfunction

When the output frequency is more than 52 Hz and the input current is less than 1.25A, carry out abnormal adjustment.

2.12.2 Detection of Overload and Over Current

Outline

In order to protect the inverter, detect an excessive output current, and for protecting compressor, monitor the OL operation.

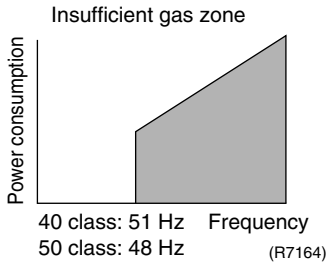
Detail

- **If the OL (compressor head) temperature exceeds 120~130°C (depending on the model), the compressor gets interrupted.**
- **If the inverter current exceeds 22 A, the compressor gets interrupted too.**

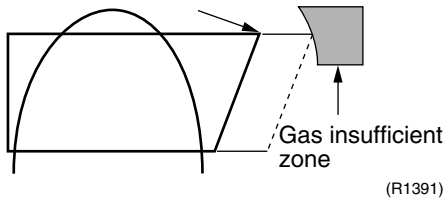
2.12.3 Insufficient Gas Control

Outline

If a power consumption is below the specified value in which the frequency is higher than the specified frequency, it must be regarded as gas insufficient.
In addition to such conventional function, if the discharge temperature is higher than the target discharge pipe temperature, and the electronic expansion valve is fully open (450 pulses) more than the specified time, it is considered as an insufficient gas.



With the conventional function, a power consumption is weak comparing with that in the normal operation when gas is insufficient, and gas insufficiency is detected by checking a power consumption.



When operating with insufficient gas, although the rise of discharge pipe temperature is great and the electronic expansion valve is open, it is presumed as an insufficient gas if the discharge pipe temperature is higher than the target discharge pipe temperature.

Refer to “Insufficient Gas” on page 139 for detail.

Detail

Judgment by Input Current

When an output frequency is exceeds 51 Hz (40 class) or 48 Hz (50 class) and the input current is less than specified value, the adjustment is made for insufficient gas.

Judgment by Discharge Pipe Temperature

When discharge pipe temperature is higher than 101°C, the electronic expansion value opening is 450 plus (max.) and the adjustment is made for insufficient gas.

2.12.4 Preventing Indoor Freezing

During cooling, if the heat exchanger temperature in the operation stopped room becomes below the specified temperature for the specified time, open the electronic expansion valve in the operation stopped room as specified, and carry out the fully closed operation. After this, if freezing abnormality occurs more than specified time, the system shall be down as the system abnormality.

2.13 Forced Operation Mode

Outline

Forced operating mode includes only forced cooling.

Detail

Forced Cooling

Item	Forced Cooling
Forced operation allowing conditions	1) The indoor unit is not abnormal, but the indoor unit which is not in the freezing prohibiting zone is present in more than 1 room.
	2) The outdoor unit is not abnormal and not in the 3-minute stand-by mode.
	The forced operation is allowed when the above “and” conditions are met.
Starting/adjustment	When the indoor unit on/off button is pressed for continuous 5 second as the above conditions are met.
1) Determine operating room	All rooms must operate.
2) Command frequency	70Hz (40 class), 47Hz (50 class)
3) Electronic expansion valve opening	It depends on the capacity of the operating indoor unit.
4) Outdoor unit adjustment	Compressor is in operation.
5) Indoor unit adjustment	The command of forced cooling operation is transmitted to all indoor units.
End	1) When the indoor units on/off button (of the unit which sent the command) is pressed again.
	2) The operation is to end automatically after 15 min.
Others	The protect functions are prior to all others in the forced operation.

2.14 Additional Function

2.14.1 POWERFUL Operation Mode

Compressor operating frequency and outdoor unit airflow rate are increased.

2.14.2 Voltage Detection Function

Power supply voltage is detected each time equipment operation starts.

Part 5
Operation Manual

1. System Configuration

1.1 Operation Instructions

After the installation and test operation of the room air conditioner have been completed, it should be operated and handled as described below. Every user would like to know the correct method of operation of the room air conditioner, to check if it is capable of cooling (or heating) well, and to know a clever method of using it.
In order to meet this expectation of the users, giving sufficient explanations taking enough time can be said to reduce about 80% of the requests for servicing. However good the installation work is and however good the functions are, the customer may blame either the room air conditioner or its installation work because of improper handling. The installation work and handing over of the unit can only be considered to have been completed when its handling has been explained to the user without using technical terms but giving full knowledge of the equipment.

2. Instruction

2.1 Manual Contents and Reference Page

Model Series	Wall Mounted Type	
	FTKS25/35D	FTXS25/35E
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Names of Parts	64	64
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ECONO Operation	79	79
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INTELLIGENT EYE Operation	83	83
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Care		
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Trouble Shooting	96	96
Drawing No.	3P194550-4	3P194539-3

Model Series	Duct Connected Type		
	FDKS25/35C, FDKS25/35E	FDXS25/35C	CDXS25/35E
Read Before Operation			
Safety Precautions	62	62	62
Names of Parts	67	67	67
Preparation Before Operation ★	70	70	70
Operation			
AUTO, DRY, COOL, HEAT, FAN Operation ★	73	73	73
Adjusting the Air Flow Direction	—	—	—
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★ : Illustrations are for wall mounted type FTXS25/35E as representative.

2.2 Safety Precautions

Safety precautions

- Keep this manual where the operator can easily find them.
- Read this manual attentively before starting up the unit.
- For safety reason the operator must read the following cautions carefully.
- This manual classifies precautions into WARNINGS and CAUTIONS. Be sure to follow all precautions below: they are all important for ensuring safety.

⚠ WARNING	⚠ CAUTION
If you do not follow these instructions exactly, the unit may cause property damage, personal injury or loss of life.	If you do not follow these instructions exactly, the unit may cause minor or moderate property damage or personal injury.

Never do.

Be sure to earth the air conditioner.

Never touch the air conditioner (including the remote controller) with a wet hand.

Be sure to follow the instructions.

Never cause the air conditioner (including the remote controller) to get wet.

⚠ WARNING

- In order to avoid fire, explosion or injury, do not operate the unit when harmful, among which flammable or corrosive gases, are detected near the unit.
- It is not good for health to expose your body to the air flow for a long time.
- Do not put a finger, a rod or other objects into the air outlet or inlet. As the fan is rotating at a high speed, it will cause injury.
- Do not attempt to repair, relocate, modify or reinstall the air conditioner by yourself. Incorrect work will cause electric shocks, fire etc.
  For repairs and reinstallation, consult your Daikin dealer for advice and information.

- The refrigerant used in the air conditioner is safe. Although leaks should not occur, if for some reason any refrigerant happens to leak into the room, make sure it does not come in contact with any flame as of gas heaters, kerosene heaters or gas range.
- If the air conditioner is not cooling (heating) properly, the refrigerant may be leaking, so call your dealer.
  When carrying out repairs accompanying adding refrigerant, check the content of the repairs with our service staff.
- Do not attempt to install the air conditioner by your self. Incorrect work will result in water leakage, electric shocks or fire. For installation, consult the dealer or a qualified technician.
- In order to avoid electric shock, fire or injury, if you detect any abnormally such as smell of fire, stop the operation and turn off the breaker. And call your dealer for instructions.
- Depending on the environment, an earth leakage breaker must be installed. Lack of an earth leakage breaker may result in electric shocks or fire.

- The air conditioner must be earthed. Incomplete earthing may result in electric shocks. Do not connect the earth line to a gas pipe, water pipe, lightning rod, or a telephone earth line.

⚠ CAUTION

- In order to avoid any quality deterioration, do not use the unit for cooling precision instruments, food, plants, animals or works of art.
- Never expose little children, plants or animals directly to the air flow.

- Do not place appliances which produce open fire in places exposed to the air flow from the unit or under the indoor unit. It may cause incomplete combustion or deformation of the unit due to the heat.
- Do not block air inlets nor outlets. Impaired air flow may result in insufficient performance or trouble.
- Do not stand or sit on the outdoor unit. Do not place any object on the unit to avoid injury, do not remove the fan guard.
- Do not place anything under the indoor or outdoor unit that must be kept away from moisture. In certain conditions, moisture in the air may condense and drip.
- After a long use, check the unit stand and fittings for damage.
- Do not touch the air inlet and aluminum fins of outdoor unit. It may cause injury.
- The appliance is not intended for use by young children or infirm persons without supervision.
- Young children should be supervised to ensure that they do not play with the appliance.

- To avoid oxygen deficiency, ventilate the room sufficiently if equipment with burner is used together with the air conditioner.
- Before cleaning, be sure to stop the operation, turn the breaker off or pull out the supply cord.
- Do not connect the air conditioner to a power supply different from the one as specified. It may cause trouble or fire.
- Arrange the drain hose to ensure smooth drainage. Incomplete draining may cause wetting of the building, furniture etc.
- Do not place objects in direct proximity of the outdoor unit and do not let leaves and other debris accumulate around the unit.
  Leaves are a hotbed for small animals which can enter the unit. Once in the unit, such animals can cause malfunctions, smoke or fire when making contact with electrical parts.

- Do not operate the air conditioner with wet hands.

- Do not wash the indoor unit with excessive water, only use a slightly wet cloth.
- Do not place things such as vessels containing water or anything else on top of the unit. Water may penetrate into the unit and degrade electrical insulations, resulting in an electric shock.

Installation site.

■ To install the air conditioner in the following types of environments, consult the dealer.
- Places with an oily ambient or where steam or soot occurs.
- Salty environment such as coastal areas.
- Places where sulfide gas occurs such as hot springs.
- Places where snow may block the outdoor unit.

The drain from the outdoor unit must be discharged to a place of good drainage.

Consider nuisance to your neighbours from noises.

■ For installation, choose a place as described below.
- A place solid enough to bear the weight of the unit which does not amplify the operation noise or vibration.
- A place from where the air discharged from the outdoor unit or the operation noise will not annoy your neighbours.

Electrical work.

- For power supply, be sure to use a separate power circuit dedicated to the air conditioner.

System relocation.

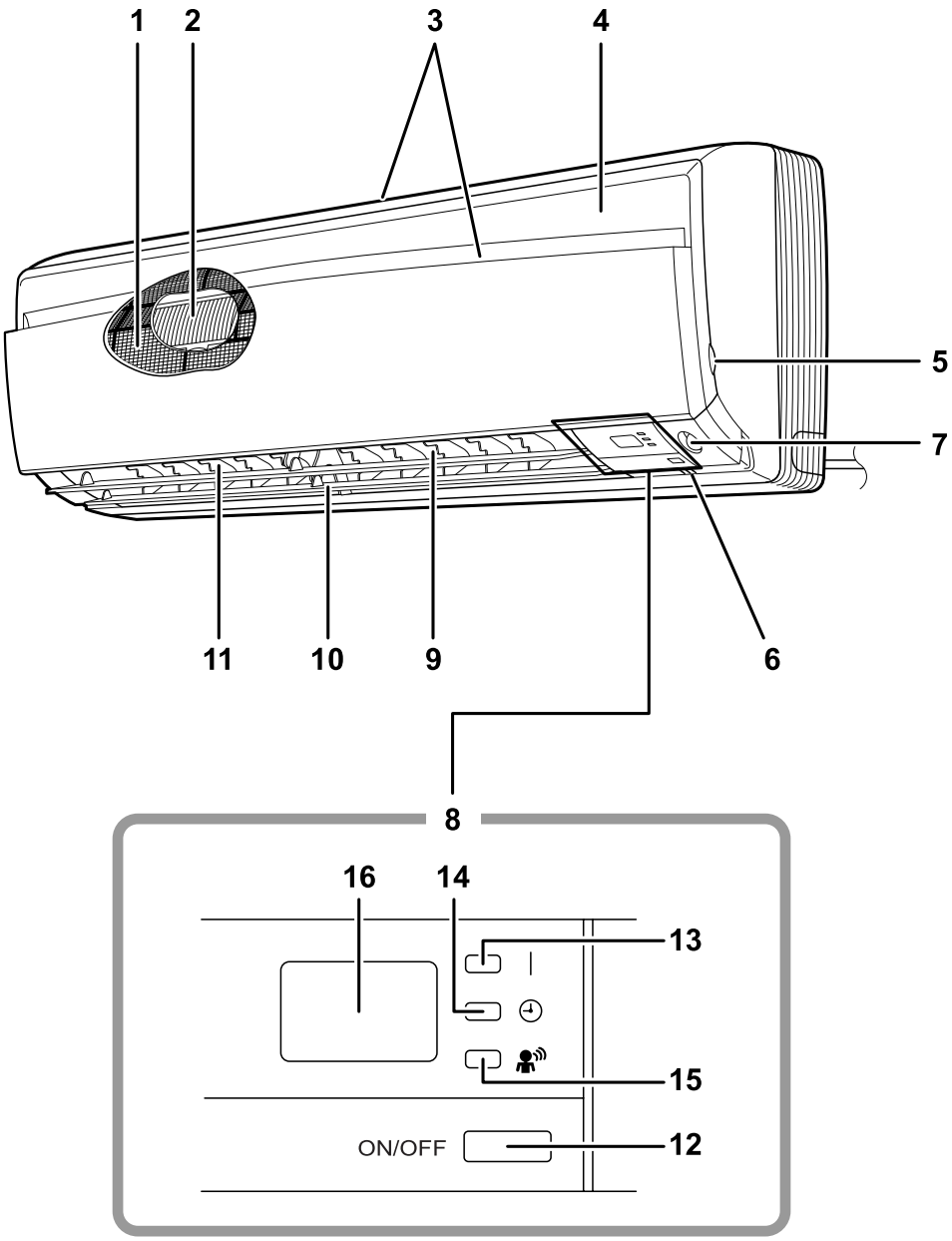
- Relocating the air conditioner requires specialized knowledge and skills. Please consult the dealer if relocation is necessary for moving or remodeling.

2.3 Names of Parts

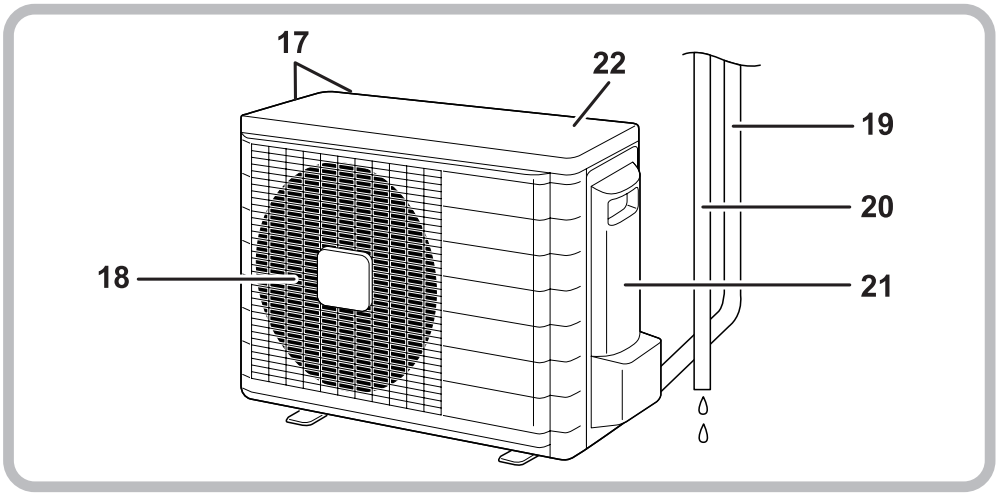
FTKS 25/35 D, FTXS 25/35 E

Names of parts

■ Indoor Unit



■ Outdoor Unit



■ Indoor Unit

1. **Air filter**
2. **Titanium Apatite Photocatalytic Air-Purifying Filter:**
   - These filters are attached to the inside of the air filters.
3. **Air inlet**
4. **Front panel**
5. **Panel tab**
6. **Room temperature sensor:**
   - It senses the air temperature around the unit.
7. **INTELLIGENT EYE sensor:**
   - It detects the movements of people and automatically switches between normal operation and energy saving operation.
8. **Display**
9. **Air outlet**
10. **Flaps (horizontal blades)**
11. **Louvres (vertical blades):**
    - The louvres are inside of the air outlet.
12. **Indoor Unit ON/OFF switch:**
    - Push this switch once to start operation. Push once again to stop it.
    - The operation mode refers to the following table.

	Mode	Temperature setting	Air flow rate
FTK	COOL	22°C	AUTO
FTX	AUTO	25°C	AUTO

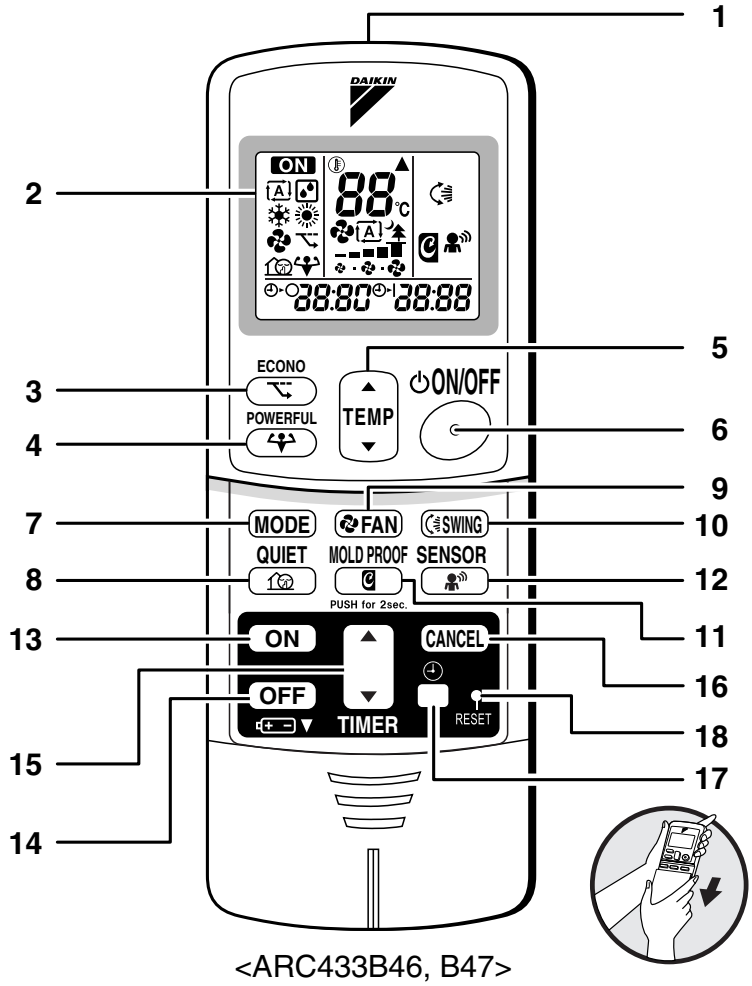
    - This switch is useful when the remote controller is missing.
13. **Operation lamp (green)**
14. **TIMER lamp (Yellow)**
15. **INTELLIGENT EYE lamp (green)**
16. **Signal receiver:**
    - It receives signals from the remote controller.
    - When the unit receives a signal, you will hear a short beep.
      - Operation start .....beep-beep
      - Settings changed.....beep
      - Operation stop .....beeeeep

■ Outdoor Unit

17. **Air inlet:** (Back and side)
18. **Air outlet**
19. **Refrigerant piping and inter-unit cable**
20. **Drain hose**
21. **Earth terminal:**
    - It is inside of this cover.
22. **Outside air temperature sensor:**
    - It senses the ambient temperature around the unit.

Appearance of the outdoor unit may differ from some models.

■ Remote Controller



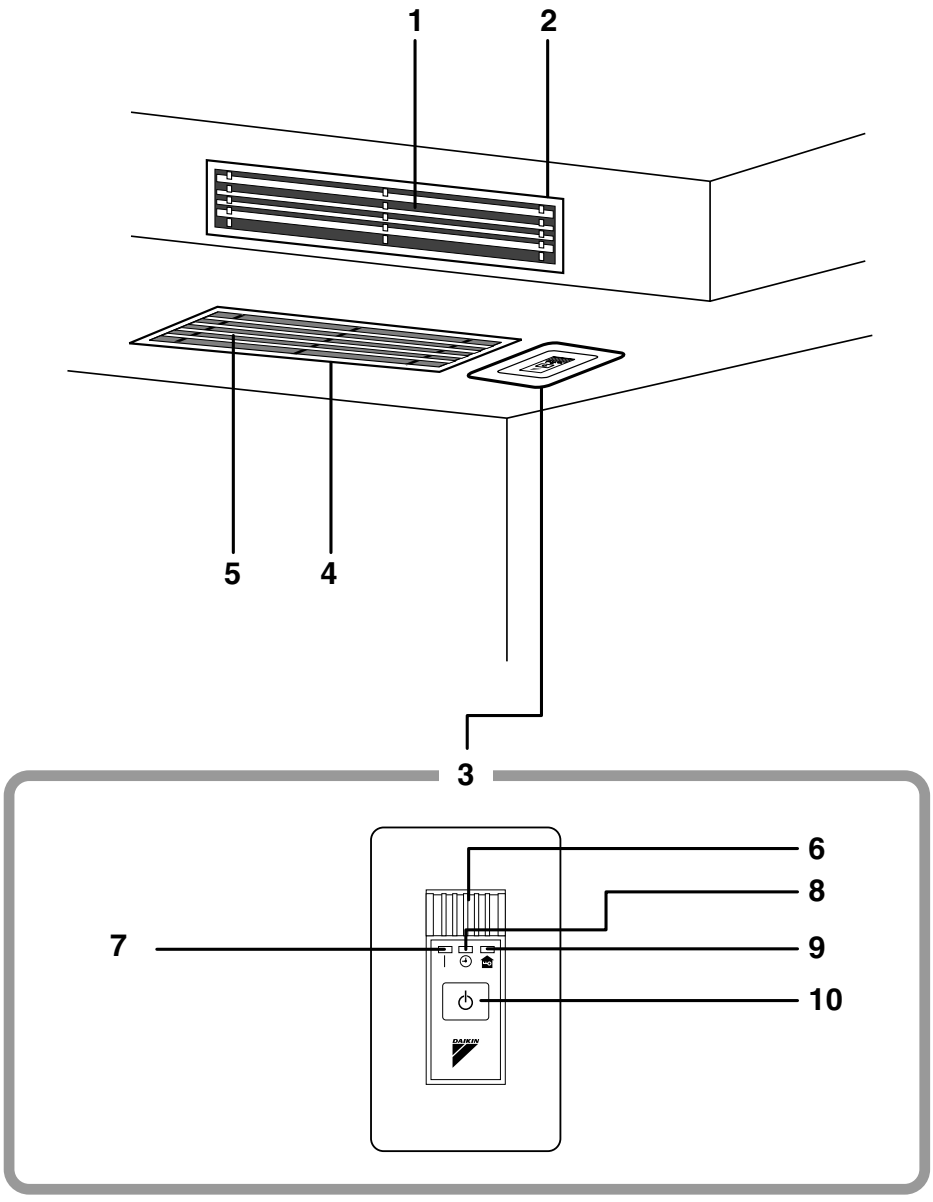
<ARC433B46, B47>

1. **Signal transmitter:**
   - It sends signals to the indoor unit.
2. **Display:**
   - It displays the current settings. (In this illustration, each section is shown with all its displays ON for the purpose of explanation.)
3. **ECONO button:** ECONO operation
4. **POWERFUL button:** POWERFUL operation
5. **TEMPERATURE adjustment buttons:**
   - It changes the temperature setting.
6. **ON/OFF button:**
   - Press this button once to start operation. Press once again to stop it.
7. **MODE selector button:**
   - It selects the operation mode. (AUTO/DRY/COOL/HEAT/FAN)
8. **QUIET button:** OUTDOOR UNIT QUIET operation
9. **FAN setting button:**
   - It selects the air flow rate setting.
10. **SWING button**
11. **MOLD PROOF button:**
    - MOLD PROOF operation
12. **SENSOR button:** INTELLIGENT EYE operation
13. **ON TIMER button**
14. **OFF TIMER button**
15. **TIMER Setting button:**
    - It changes the time setting.
16. **TIMER CANCEL button:**
    - It cancels the timer setting.
17. **CLOCK button**
18. **RESET button:**
    - Restart the unit if it freezes.
    - Use a thin object to push.

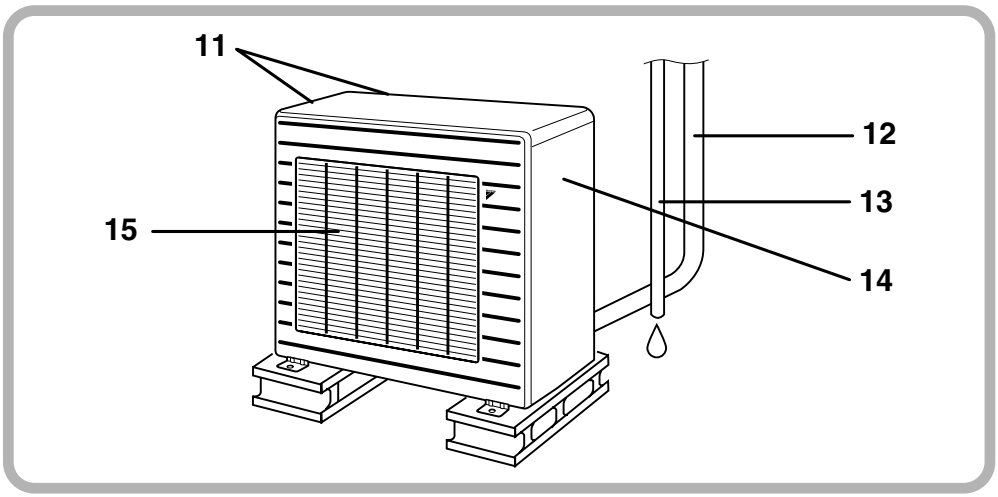
FDK(X)S 25/35 C, FDKS 25/35 E, CDXS 25/35 E

Names of parts

■ Indoor Unit



■ Outdoor Unit



■ Indoor Unit

1. **Air outlet**
2. **Air outlet grille:** (Field supply)
   - Appearance of the Air outlet grille and Air inlet grille may differ with some models.
3. **Display, Control panel**
4. **Suction grille:** (Option)
   - Appearance of the suction grille and Air inlet grille may differ with some models.
5. **Air inlet**
6. **Room temperature sensor:**
   - It senses the air temperature around the unit.
7. **Operation lamp (green)**
8. **TIMER lamp (yellow)**
9. **HOME LEAVE lamp (red):**
   - Lights up when you use HOME LEAVE operation.
10. **Indoor Unit ON/OFF switch:**
    - Push this switch once to start operation. Push once again to stop it.
    - This switch is useful when the remote controller is missing.

- **The operation mode refers to the following table.**

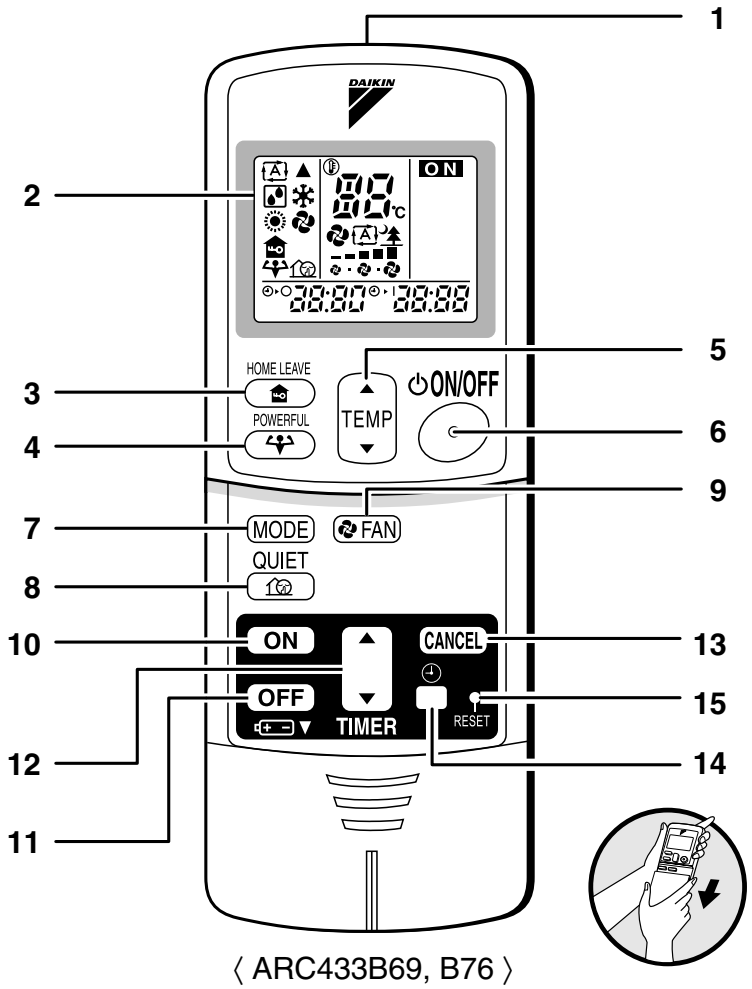
	Mode	Temperature setting	Air flow rate
FDKS	COOL	22°C	AUTO
C(F)DXS	AUTO	25°C	AUTO

■ Outdoor Unit

11. **Air inlet:** (Back and side)
12. **Refrigerant piping and inter-unit cable**
13. **Drain hose**
14. **Earth terminal:**
    - It is inside of this cover.
15. **Air outlet**

Appearance of the outdoor unit may differ from some models.

■ Remote Controller



〈 ARC433B69, B76 〉

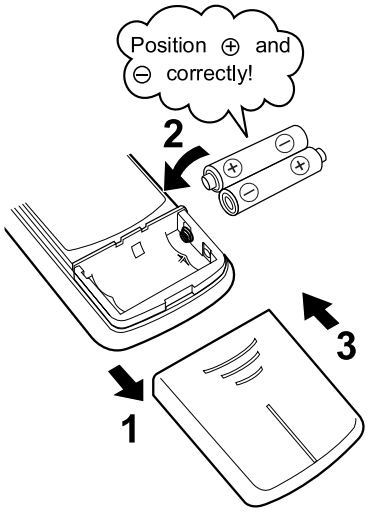
1. **Signal transmitter:**
   - It sends signals to the indoor unit.
2. **Display:**
   - It displays the current settings. (In this illustration, each section is shown with all its displays ON for the purpose of explanation.)
3. **HOME LEAVE button:** HOME LEAVE operation
4. **POWERFUL button:** POWERFUL operation
5. **TEMPERATURE adjustment buttons:**
   - It changes the temperature setting.
6. **ON/OFF button:**
   - Press this button once to start operation. Press once again to stop it.
7. **MODE selector button:**
   - It selects the operation mode. (AUTO/DRY/COOL/HEAT/FAN)
8. **QUIET button:** OUTDOOR UNIT QUIET operation
9. **FAN setting button:**
   - It selects the air flow rate setting.
10. **ON TIMER button**
11. **OFF TIMER button**
12. **TIMER Setting button:**
    - It changes the time setting.
13. **TIMER CANCEL button:**
    - It cancels the timer setting.
14. **CLOCK button**
15. **RESET button:**
    - Restart the unit if it freezes.
    - Use a thin object to push.

2.4 Preparation Before Operation

Preparation Before Operation

■ To set the batteries

1. **Slide the front cover to take it off.**
2. **Set two dry batteries (AAA).**
3. **Set the front cover as before.**



ATTENTION

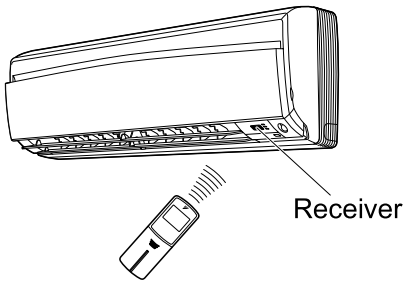
■ **About batteries**

- When replacing the batteries, use batteries of the same type, and replace the two old batteries together.
- When the system is not used for a long time, take the batteries out.
- We recommend replacing once a year, although if the remote controller display begins to fade or if reception deteriorates, please replace with new alkali batteries. Do not use manganese batteries.
- The attached batteries are provided for the initial use of the system.
  The usable period of the batteries may be short depending on the manufactured date of the air conditioner.

Preparation Before Operation

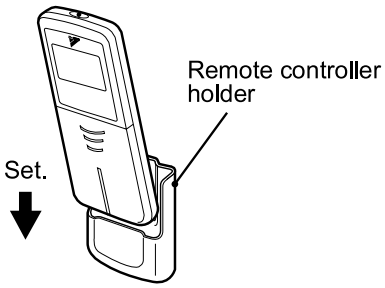
■ To operate the remote controller

- To use the remote controller, aim the transmitter at the indoor unit. If there is anything to block signals between the unit and the remote controller, such as a curtain, the unit will not operate.
- Do not drop the remote controller. Do not get it wet.
- The maximum distance for communication is about 7m.



■ To fix the remote controller holder on the wall

1. **Choose a place from where the signals reach the unit.**
2. **Fix the holder to a wall, a pillar, etc. with the screws supplied with the holder.**
3. **Place the remote controller in the remote controller holder.**



- To remove, pull it upwards.

ATTENTION

■ **About remote controller**

- Never expose the remote controller to direct sunlight.
- Dust on the signal transmitter or receiver will reduce the sensitivity. Wipe off dust with soft cloth.
- Signal communication may be disabled if an electronic-starter-type fluorescent lamp (such as inverter-type lamps) is in the room. Consult the shop if that is the case.
- If the remote control signals happen to operate another appliance, move that appliance to somewhere else, or consult the shop.

■ To set the clock

1. **Press “CLOCK button”.**

   0:00 is displayed.

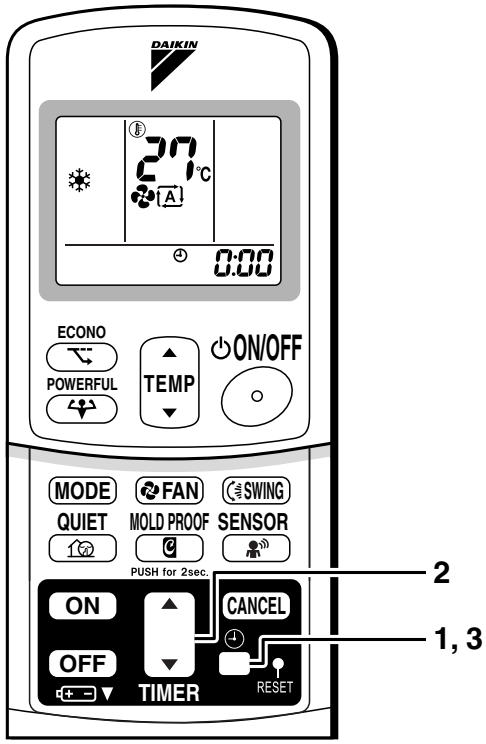
   ◴ blinks.

2. **Press “TIMER setting button” to set the clock to the present time.**

   Holding down “ ▲ ” or “ ▼ ” button rapidly increases or decreases the time display.

3. **Press “CLOCK button”.**

   : blinks.



■ Turn the breaker ON

- Turning ON the breaker opens the flap, then closes it again. (This is a normal procedure.)

NOTE

■ Tips for saving energy

- Be careful not to cool (heat) the room too much.
  Keeping the temperature setting at a moderate level helps save energy.
- Cover windows with a blind or a curtain.
  Blocking sunlight and air from outdoors increases the cooling (heating) effect.
- Clogged air filters cause inefficient operation and waste energy. Clean them once in about every two weeks.

Recommended temperature setting
For cooling:26°C – 28°C For heating:20°C – 24°C

■ Please note

- The air conditioner always consumes 15-35 watts of electricity even while it is not operating.
- If you are not going to use the air conditioner for a long period, for example in spring or autumn, turn the breaker OFF.
- Use the air conditioner in the following conditions.

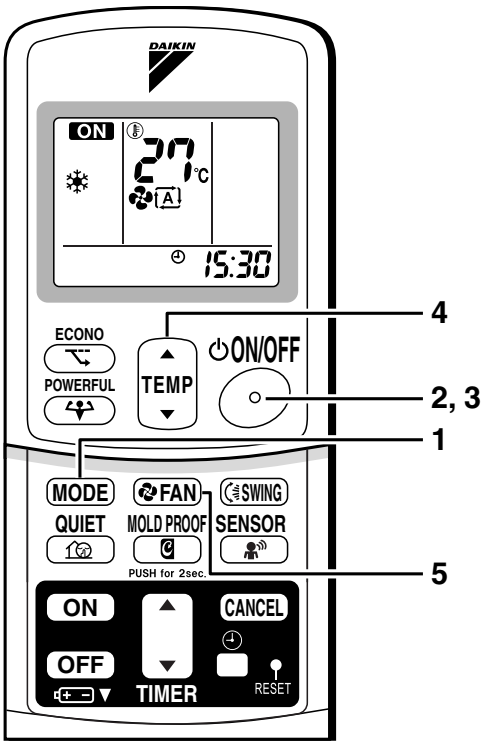
Mode	Operating conditions	If operation is continued out of this range
COOL	Outdoor temperature:10 to 46˚C Indoor temperature: 18 to 32˚C Indoor humidity: 80% max.	• A safety device may work to stop the operation. (In multi system, it may work to stop the operation of the outdoor unit only.) • Condensation may occur on the indoor unit and drip.
HEAT	Outdoor temperature:–10 to 20˚C Indoor temperature: 10 to 30˚C	• A safety device may work to stop the operation.
DRY	Outdoor temperature:10 to 46˚C Indoor temperature: 18 to 32˚C Indoor humidity: 80% max.	• A safety device may work to stop the operation. • Condensation may occur on the indoor unit and drip.

- Operation outside this humidity or temperature range may cause a safety device to disable the system .

2.5 AUTO·DRY·COOL·HEAT·FAN Operation

AUTO · DRY · COOL · HEAT · FAN Operation

The air conditioner operates with the operation mode of your choice.
From the next time on, the air conditioner will operate with the same operation mode.



■ To start operation

1. Press “MODE selector button” and select a operation mode.

- Each pressing of the button advances the mode setting in sequence.

A : AUTO

: DRY

: COOL

: HEAT

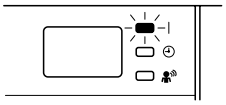
: FAN

<FTK>

<FTX>

2. Press “ON/OFF button” .

- The OPERATION lamp lights up.



■ To stop operation

3. Press “ON/OFF button” again.

- Then OPERATION lamp goes off.

■ To change the temperature setting

4. Press “TEMPERATURE adjustment button”.

DRY or FAN mode	AUTO or COOL or HEAT mode
The temperature setting is not variable.	Press “ ▲ ” to raise the temperature and press “ ▼ ” to lower the temperature.
	Set to the temperature you like. 

■ To change the air flow rate setting

5. Press “FAN setting button”.

DRY mode	AUTO or COOL or HEAT or FAN mode
The air flow rate setting is not variable.	Five levels of air flow rate setting from “ ” to “ ” plus “ ” “ ” are available. 

- Indoor unit quiet operation

  When the air flow is set to “ ”, the noise from the indoor unit will become quieter. Use this when making the noise quieter.

  The unit might lose capacity when the air flow rate is set to a weak level.

NOTE

■ **Note on HEAT operation**
- Since this air conditioner heats the room by taking heat from outdoor air to indoors, the heating capacity becomes smaller in lower outdoor temperatures. If the heating effect is insufficient, it is recommended to use another heating appliance in combination with the air conditioner.
- The heat pump system heats the room by circulating hot air around all parts of the room. After the start of heating operation, it takes some time before the room gets warmer.
- In heating operation, frost may occur on the outdoor unit and lower the heating capacity. In that case, the system switches into defrosting operation to take away the frost.
- During defrosting operation, hot air does not flow out of indoor unit.

■ **Note on COOL operation**
- This air conditioner cools the room by blowing the hot air in the room outside, so if the outside temperature is high, performance drops.

■ **Note on DRY operation**
- The computer chip works to rid the room of humidity while maintaining the temperature as much as possible. It automatically controls temperature and fan strength, so manual adjustment of these functions is unavailable.

■ **Note on AUTO operation**
- In AUTO operation, the system selects an appropriate operation mode (COOL or HEAT) based on the room temperature at the start of the operation.
- The system automatically reselects setting at a regular interval to bring the room temperature to user-setting level.
- If you do not like AUTO operation, you can manually select the operation mode and setting you like.

■ **Note on air flow rate setting**
- At smaller air flow rates, the cooling (heating) effect is also smaller.

2.6 Adjusting the Air Flow Direction

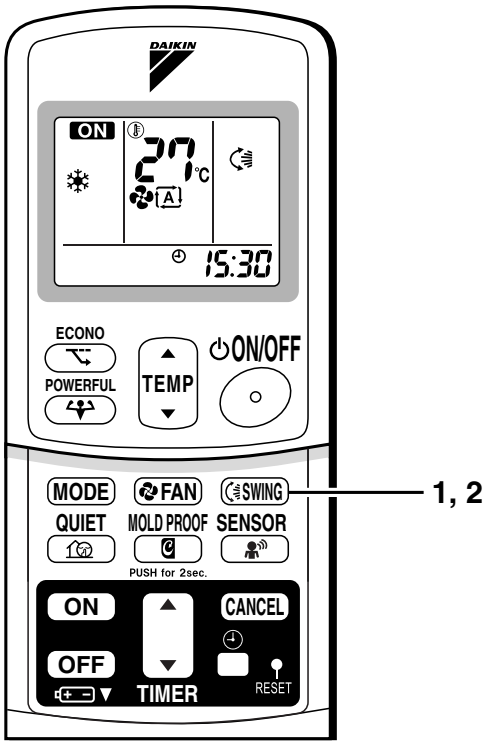
FTKS 25/35 D, FTXS 25/35 E

Adjusting the Air Flow Direction

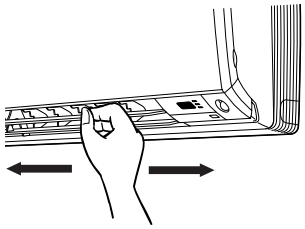
You can adjust the air flow direction to increase your comfort.

■ To adjust the horizontal blades (flaps)

1. **Press “SWING button”.**
   - “ ” is displayed on the LCD and the flaps will begin to swing.
2. **When the flaps have reached the desired position, press “SWING button” once more.**
   - The flaps will stop moving.
   - “ ” disappears from the LCD.



■ To adjust the vertical blades (louvres)



Hold the knob and move the louvres.
(You will find a knob on the left-side and the right-side blades.)

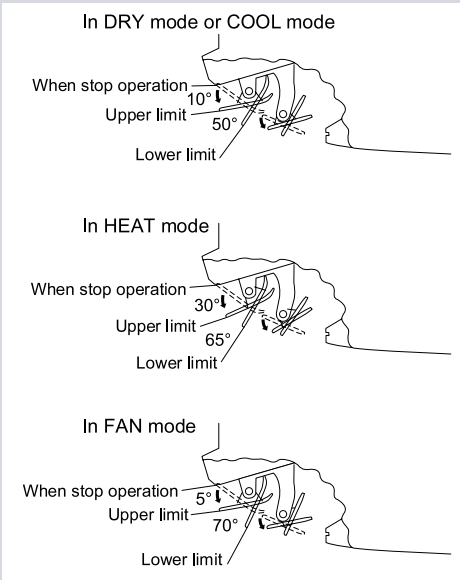
- When the unit is installed in the corner of a room, the direction of the louvers should be facing away from the wall.
  If they face the wall, the wall will block off the wind, causing the cooling (or heating) efficiency to drop.

Notes on flaps and louvres angles

- When " **SWING button** " is selected, the flaps swinging range depends on the operation mode. (See the figure.)
- If the unit is operated after being stopped with the flaps pointed down in cooling or dry operation, the flaps will automatically move to a horizontal position after about one hour to prevent condensation from forming on them.

■ **ATTENTION**

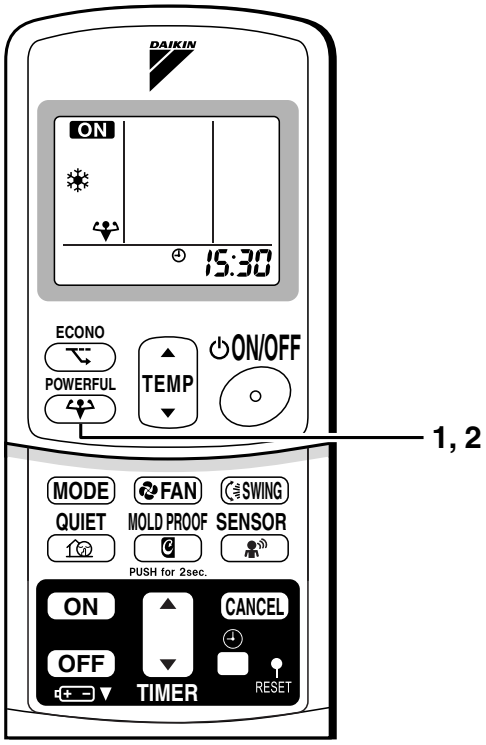
- Always use a remote controller to adjust the flaps angle. If you attempt to move it forcibly with hand when it is swinging, the mechanism may be broken.
- Be careful when adjusting the louvres. Inside the air outlet, a fan is rotating at a high speed.



2.7 POWERFUL Operation

POWERFUL Operation

POWERFUL operation quickly maximizes the cooling (heating) effect in any operation mode. You can get the maximum capacity .



■ To start POWERFUL operation

1. **Press “POWERFUL button”.**
   - POWERFUL operation ends in 20 minutes. Then the system automatically operates again with the settings which were used before POWERFUL operation.
   - When using POWERFUL operation, there are some functions which are not available.
   - “ ” is displayed on the LCD.

■ To cancel POWERFUL operation

2. **Press “POWERFUL button” again.**
   - “ ” disappears from the LCD.

NOTE

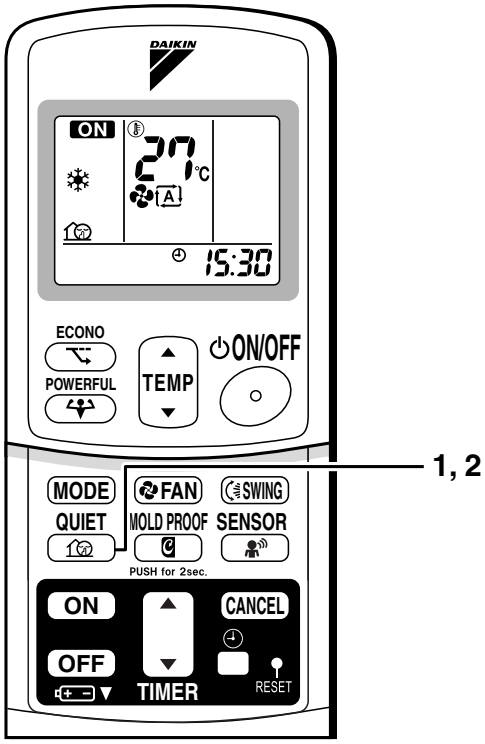
■ **Notes on POWERFUL operation**

- POWERFUL Operation cannot be used together with ECONO or QUIET Operation. Priority is given to the function of whichever button is pressed last.
- POWERFUL Operation can only be set when the unit is running. Pressing the operation stop button causes the settings to be canceled, and the “ ” disappears from the LCD.
- **In COOL and HEAT mode**
  To maximize the cooling (heating) effect, the capacity of outdoor unit must be increased and the air flow rate be fixed to the maximum setting.
  The temperature and air flow settings are not variable.
- **In DRY mode**
  The temperature setting is lowered by 2.5˚C and the air flow rate is slightly increased .
- **In FAN mode**
  The air flow rate is fixed to the maximum setting.
- **When using priority-room setting**
  See “Note for multi system”.

2.8 OUTDOOR UNIT QUIET Operation

OUTDOOR UNIT QUIET Operation

OUTDOOR UNIT QUIET operation lowers the noise level of the outdoor unit by changing the frequency and fan speed on the outdoor unit. This function is convenient during night.



■ To start OUTDOOR UNIT QUIET operation

1. **Press "QUIET button".**
   - " " is displayed on the LCD.

■ To cancel OUTDOOR UNIT QUIET operation

2. **Press "QUIET button" again.**
   - " " disappears from the LCD.

NOTE

■ **Note on OUTDOOR UNIT QUIET operation**

- If using a multi system, this function will work only when the OUTDOOR UNIT QUIET operation is set on all operated indoor units.
- This function is available in COOL, HEAT, and AUTO modes. (This is not available in FAN and DRY mode.)
- POWERFUL operation and OUTDOOR UNIT QUIET operation cannot be used at the same time. Priority is given to the function of whichever button is pressed last.

2.9 ECONO Operation

ECONO Operation

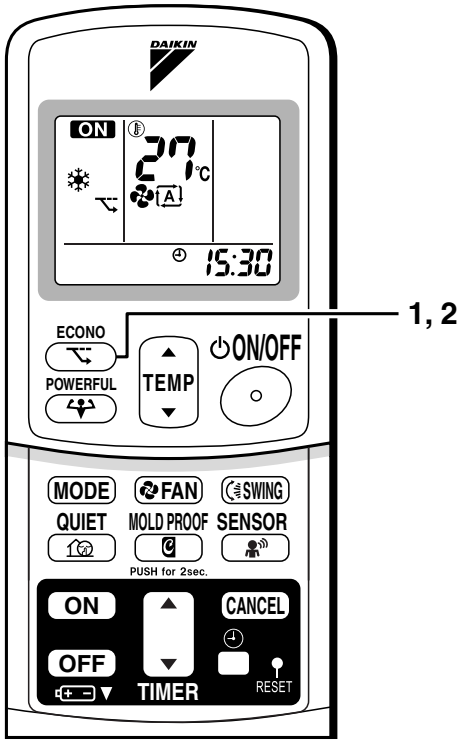
ECONO operation is a function which enables efficient operation by lowering the maximum power consumption value.

■ To start ECONO operation

1. **Press “ECONO button” .**
   - “ ” is displayed on the LCD.

■ To cancel ECONO operation

2. **Press “ECONO button” again.**
   - “ ” disappears from the LCD.



NOTE

- ECONO Operation can only be set when the unit is running. Pressing the operation stop button causes the settings to be canceled, and the “ ” disappears from the LCD.
- ECONO operation is a function which enables efficient operation by limiting the power consumption of the outdoor unit (operating frequency).
- ECONO operation functions in AUTO, COOL, DRY, and HEAT modes.
- POWERFUL operation and ECONO operation cannot be used at the same time. Priority is given to the function of whichever button is pressed last.
- Power consumption may not drop even if ECONO operation is used, when the level of power consumption is already low.

2.10 HOME LEAVE Operation

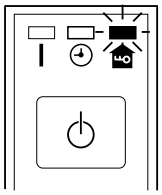
HOME LEAVE Operation

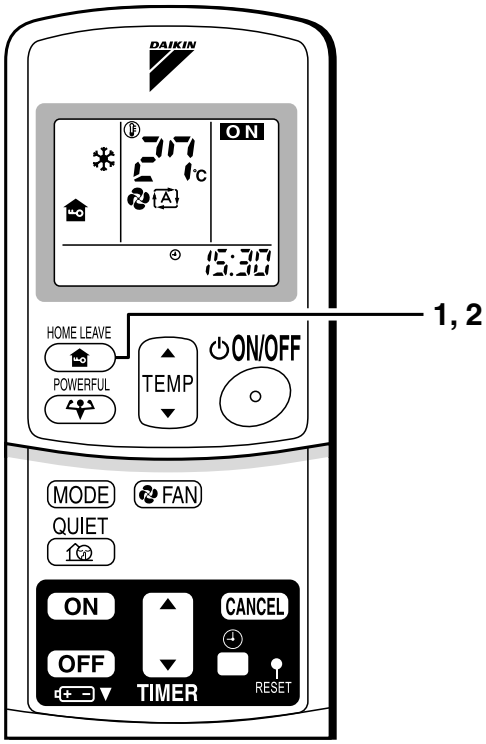
HOME LEAVE operation is a function which allows you to record your preferred temperature and air flow rate settings.

■ To start HOME LEAVE operation

1. Press “HOME LEAVE button”.

- “ ” is displayed on the LCD.
- The HOME LEAVE lamp lights up.





■ To cancel HOME LEAVE operation

2. Press “HOME LEAVE button” again.

- “ ” disappears from the LCD.
- The HOME LEAVE lamp goes off.

Before using HOME LEAVE operation.

■ **To set the temperature and air flow rate for HOME LEAVE operation**

When using HOME LEAVE operation for the first time, please set the temperature and air flow rate for HOME LEAVE operation. Record your preferred temperature and air flow rate.

	Initial setting		Selectable range	
	Temperature	Air flow rate	temperature	Air flow rate
Cooling	25˚C	“A”	18-32˚C	5 step, “A” and “ ”
Heating	25˚C	“A”	10-30˚C	5 step, “A” and “ ”

1. Press “HOME LEAVE button”. Make sure “ ” is displayed in the remote control display.

2. Adjust the set temperature with “ ▲ ” or “ ▼ ” as you like.

3. Adjust the air flow rate with “FAN” setting button as you like.

Home leave operation will run with these settings the next time you use the unit. To change the recorded information, repeat steps 1 – 3.

■ What's the HOME LEAVE operation?

Is there a set temperature and air flow rate which is most comfortable, a set temperature and air flow rate which you use the most? HOME LEAVE operation is a function that allows you to record your favorite set temperature and air flow rate. You can start your favorite operation mode simply by pressing the HOME LEAVE button on the remote control. This function is convenient in the following situations.

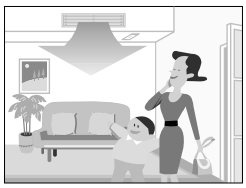
■ Useful in these cases

1.Use as an energy-saving mode.

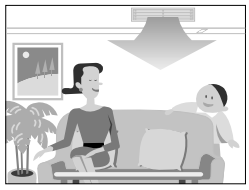
Set the temperature 2-3˚C higher (cooling) or lower (heating) than normal. Setting the fan strength to the lowest setting allows the unit to be used in energy-saving mode. Also convenient for use while you are out or sleeping.

- **Every day before you leave the house...**

When you go out, push the "HOME LEAVE Operation" button, and the air conditioner will adjust capacity to reach the preset temperature for HOME LEAVE Operation.

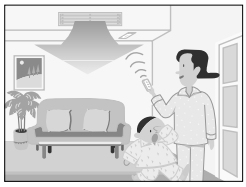


When you return, you will be welcomed by a comfortably air conditioned room.



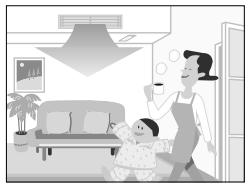
Push the "HOME LEAVE Operation" button again, and the air conditioner will adjust capacity to the set temperature for normal operation.

- **Before bed...**



Set the unit to HOME LEAVE Operation before leaving the living room when going to bed.

The unit will maintain the temperature in the room at a comfortable level while you sleep.



When you enter the living room in the morning, the temperature will be just right.
Disengaging HOME LEAVE Operation will return the temperature to that set for normal operation. Even the coldest winters will pose no problem!

2.Use as a favorite mode.

Once you record the temperature and air flow rate settings you most often use, you can retrieve them by pressing HOME LEAVE button. You do not have to go through troublesome remote control operations.

NOTE

- Once the temperature and air flow rate for HOME LEAVE operation are set, those settings will be used whenever HOME LEAVE operation is used in the future. To change these settings, please refer to the "Before using HOME LEAVE operation" section above.
- HOME LEAVE operation is only available in COOL and HEAT mode. Cannot be used in AUTO, DRY, and FAN mode.
- HOME LEAVE operation runs in accordance with the previous operation mode (COOL or HEAT) before using HOME LEAVE operation.
- HOME LEAVE operation and POWERFUL operation cannot be used at the same time.
  Last button that was pressed has priority.
- The operation mode cannot be changed while HOME LEAVE operation is being used.
- When operation is shut off during HOME LEAVE operation, using the remote controller or the indoor unit ON/OFF switch, " " will remain on the remote controller display.

2.11 MOLD PROOF Operation

MOLD PROOF Operation

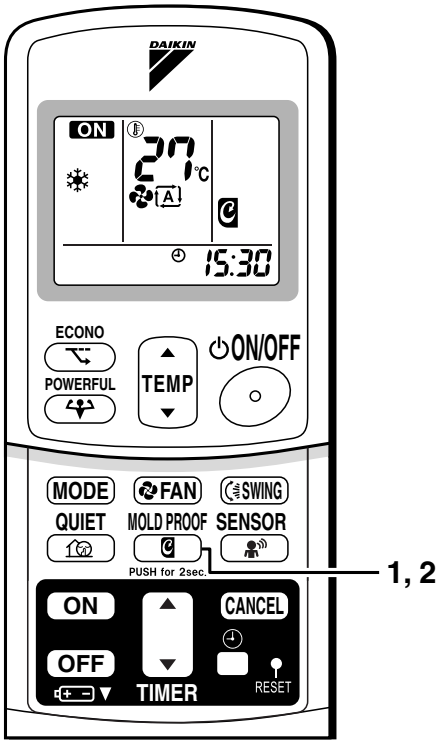
MOLD PROOF operation is a function which reduces the spread of mold by using Fan mode to lower the humidity inside the indoor unit.

■ To set MOLD PROOF operation

1. **Press and hold the MOLD PROOF button for two seconds.**
   - "" is displayed on the LCD.

■ To cancel MOLD PROOF operation

2. **Press and hold the MOLD PROOF button for two seconds one more time.**
   - "" disappears from the LCD.



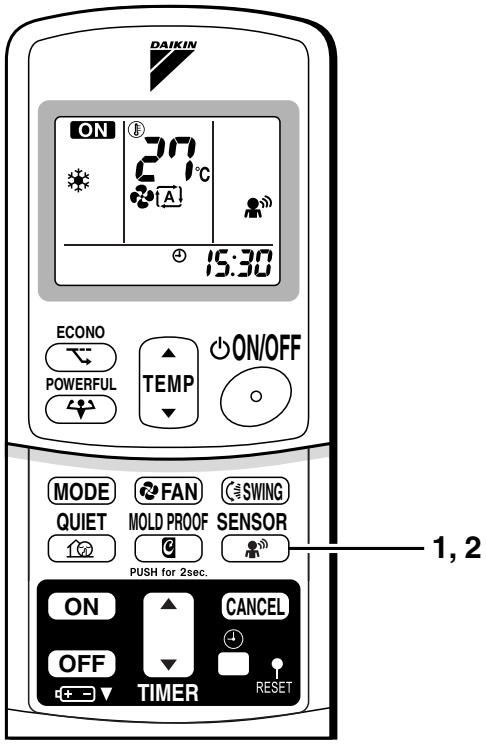
NOTE

- MOLD PROOF operation will operate for approximately one hour after dry or cooling mode is turned off.
- This function is not designed to remove existing dust or mold.
- MOLD PROOF operation is not available when the unit is turned off using the OFF TIMER.

2.12 INTELLIGENT EYE Operation

INTELLIGENT EYE Operation

"INTELLIGENT EYE" is the infrared sensor which detects the human movement.



■ To start INTELLIGENT EYE operation

1. **Press "SENSOR button".**
   - "" is displayed on the LCD.

■ To cancel the INTELLIGENT EYE operation

2. **Press "SENSOR button" again.**
   - "" disappears from the LCD.

[EX.]

When somebody in the room
- **Normal operation**

⇩

When nobody in the room
- **20 min. after, start energy saving operation.**

⇩

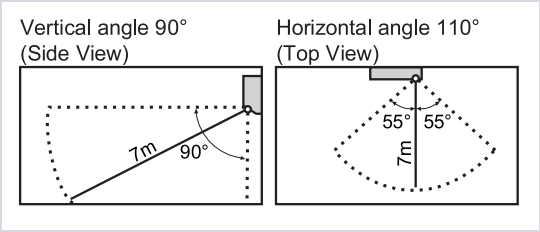
Somebody back in the room
- **Back to normal operation.**

“INTELLIGENT EYE” is useful for Energy Saving

■ **Energy saving operation**
- Change the temperature –2°C in heating / +2°C in cooling / +2°C in dry mode from set temperature.
- Decrease the air flow rate slightly in fan operation. (In FAN mode only)

Notes on “INTELLIGENT EYE”

- Application range is as follows.



- Sensor may not detect moving objects further than 7m away. (Check the application range)
- Sensor detection sensitivity changes according to indoor unit location, the speed of passersby, temperature range, etc.
- The sensor also mistakenly detects pets, sunlight, fluttering curtains and light reflected off of mirrors as passersby.
- INTELLIGENT EYE operation will not go on during powerful operation.
- Night set mode will not go on during you use INTELLIGENT EYE operation.

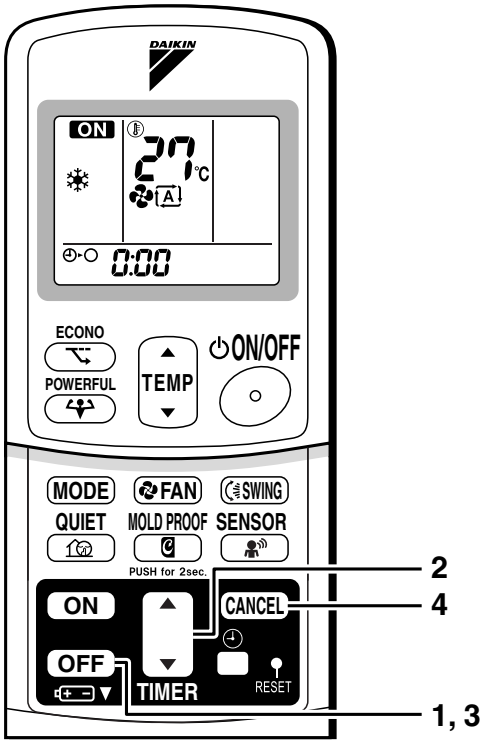
⚠ CAUTION

- Do not place large objects near the sensor.
  Also keep heating units or humidifiers outside the sensor’s detection area. This sensor can detect objects it shouldn’t as well as not detect objects it should.
- Do not hit or violently push the INTELLIGENT EYE sensor. This can lead to damage and malfunction.

2.13 TIMER Operation

TIMER Operation

Timer functions are useful for automatically switching the air conditioner on or off at night or in the morning. You can also use OFF TIMER and ON TIMER in combination.



■ To use OFF TIMER operation

- Check that the clock is correct.
  If not, set the clock to the present time.

1. Press “OFF TIMER button”.

0:00 is displayed.

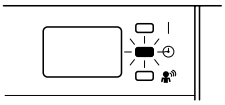
⊙▸○ blinks.

2. Press “TIMER Setting button” until the time setting reaches the point you like.

- Every pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.

3. Press “OFF TIMER button” again.

- The TIMER lamp lights up.



■ To cancel the OFF TIMER operation

4. Press “CANCEL button”.

- The TIMER lamp goes off.

NOTE

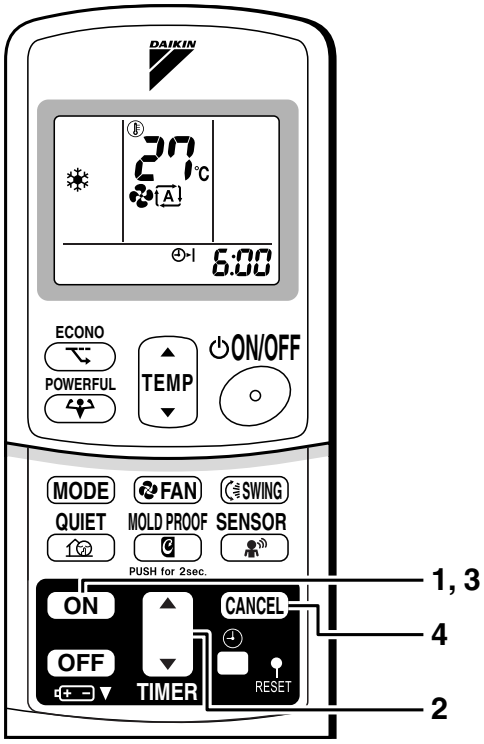
- When TIMER is set, the present time is not displayed.
- Once you set ON, OFF TIMER, the time setting is kept in the memory. (The memory is canceled when remote controller batteries are replaced.)
- When operating the unit via the ON/OFF Timer, the actual length of operation may vary from the time entered by the user. (Maximum approx. 10 minutes)

■ **NIGHT SET MODE**

When the OFF TIMER is set, the air conditioner automatically adjusts the temperature setting (0.5˚C up in COOL, 2.0˚C down in HEAT) to prevent excessive cooling (heating) for your pleasant sleep.

■ To use ON TIMER operation

- Check that the clock is correct. If not, set the clock to the present time



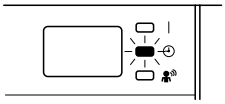
1. **Press "ON TIMER button".**

   6:00 is displayed.

   ⏲▸| blinks.

2. **Press "TIMER Setting button" until the time setting reaches the point you like.**
   - Every pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.

3. **Press "ON TIMER button" again.**
   - The TIMER lamp lights up.



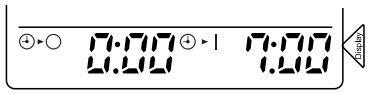
■ To cancel ON TIMER operation

4. **Press "CANCEL button".**
   - The TIMER lamp goes off.

■ To combine ON TIMER and OFF TIMER

- A sample setting for combining the two timers is shown below

(Example)
Present time: 11:00 p.m.
(The unit operating)
OFF TIMER at 0:00 a.m.
ON TIMER at 7:00 a.m.
} Combined



ATTENTION

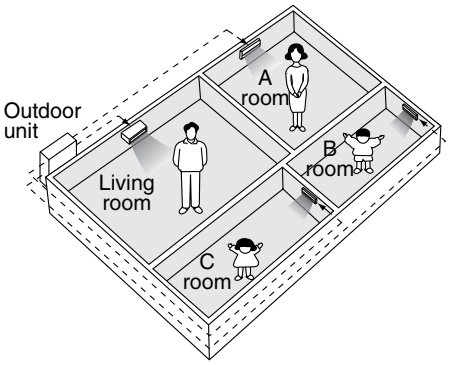
■ **In the following cases, set the timer again.**
- After a breaker has turned OFF.
- After a power failure.
- After replacing batteries in the remote controller.

2.14 Note for Multi System

Note for Multi System

〈〈 **What is a "Multi System"?** 〉〉

This system has one outdoor unit connected to multiple indoor units.



■ Selecting the Operation Mode

1. With the Priority Room Setting present but inactive or not present.

When more than one indoor unit is operating, priority is given to the first unit that was turned on.
In this case, set the units that are turned on later to the same operation mode (*1) as the first unit.
Otherwise, they will enter the Standby Mode, and the operation lamp will flash; this does not indicate malfunction.

(*1)

- COOL, DRY and FAN mode may be used at the same time.
- AUTO mode automatically selects COOL mode or HEAT mode based on the room temperature. Therefore, AUTO mode is available when selecting the same operation mode as that of the room with the first unit to be turned on.

〈**CAUTION**〉

Normally, the operation mode in the room where the unit is first run is given priority, but the following situations are exceptions, so please keep this in mind.
If the operation mode of the first room is **FAN Mode**, then using **Heating Mode** in any room after this will give priority to **heating.** In this situation, the air conditioner running in FAN Mode will go on standby, and the operation lamp will flash.

2. With the Priority Room Setting active.

See "Priority Room Setting" on the next page.

■ NIGHT QUIET Mode (Available only for cooling operation)

NIGHT QUIET Mode requires initial programming during installation. Please consult your retailer or dealer for assistance.
NIGHT QUIET Mode reduces the operation noise of the outdoor unit during the night time hours to prevent annoyance to neighbors.

- The NIGHT QUIET Mode is activated when the temperature drops 5°C or more below the highest temperature recorded that day. Therefore, when the temperature difference is less than 5°C, this function will not be activated.
- NIGHT QUIET Mode reduces slightly the cooling efficiency of the unit.

■ OUTDOOR UNIT QUIET Operation

1. With the Priority Room Setting present but inactive or not present.

When using the OUTDOOR UNIT QUIET operation feature with the Multi system, set all indoor units to OUTDOOR UNIT QUIET operation using their remote controllers.
When clearing OUTDOOR UNIT QUIET operation, clear one of the operating indoor units using their remote controller. However OUTDOOR UNIT QUIET operation display remains on the remote controller for other rooms. We recommend you release all rooms using their remote controllers.

2. With the Priority Room Setting active.

See "Priority Room Setting" on the next page.

■ Cooling / Heating Mode Lock (Available only for heat pump models)

The Cooling / Heating Mode Lock requires initial programming during installation.Please consult your retailer or dealer for assistance. The Cooling / Heating Mode Lock sets the unit forcibly to either Cooling or Heating Mode. This function is convenient when you wish to set all indoor units connected to the Multi system to the same operation mode.

■ Priority Room Setting

The Priority Room Setting requires initial programming during installation. Please consult your retailer or dealer for assistance.

The room designated as the Priority Room takes priority in the following situations;

1. Operation Mode Priority.

As the operation mode of the Priority Room takes precedence, the user can select a different operation mode from other rooms.

〈Example〉

* Room A is the Priority Room in the examples.

When COOL mode is selected in Room A while operating the following modes in Room B,C and D :

Operation mode in Room B, C and D	Status of Room B, C and D when the unit in Room A is in COOL mode
COOL or DRY or FAN	Current operation mode maintained
HEAT	The unit enters Standby Mode. Operation resumes when the Room A unit stops operating.
AUTO	If the unit is set to COOL mode, operation continues. If set to HEAT mode, it enters Standby Mode. Operation resumes when the Room A unit stops operating.

2. Priority when POWERFUL operation is used.

〈Example〉

* Room A is the Priority Room in the examples.

The indoor units in Rooms A,B,C and D are all operating. If the unit in Room A enters POWERFUL operation, operation capacity will be concentrated in Room A. In such a case, the cooling (heating) efficiency of the units in Rooms B,C and D may be slightly reduced.

3. Priority when using OUTDOOR UNIT QUIET operation.

〈Example〉

* Room A is the Priority Room in the examples.

Just by setting the unit in Room A to QUIET operation, the air conditioner starts OUTDOOR UNIT QUIET operation.

You don’t have to set all the operated indoor units to QUIET operation.

2.15 Care and Cleaning

FTKS 25/35 D, FTXS 25/35 E

Care and Cleaning

⚠ CAUTION **Before cleaning, be sure to stop the operation and turn the breaker OFF.**

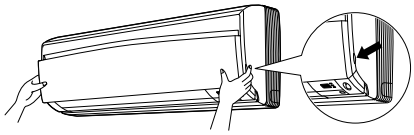
Units

■ Indoor unit, Outdoor unit and Remote controller

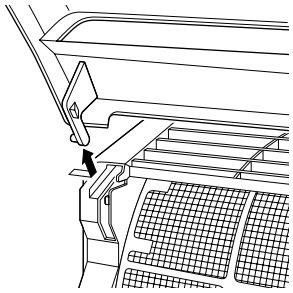
1. Wipe them with dry soft cloth.

■ Front panel

1. Open the front panel.
- Hold the panel by the tabs on the two sides and lift it unitl it stops with a click.

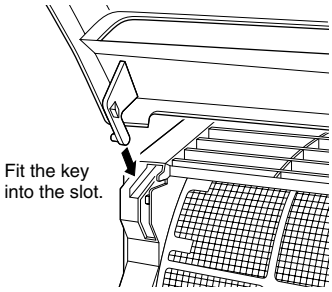


2. Remove the front panel.
- Lift the front panel up, slide it slightly to the right, and remove it from the horizontal axle.



3. Clean the front panel.
- Wipe it with a soft cloth soaked in water.
- Only neutral detergent may be used.
- In case of washing the panel with water, dry it with cloth, dry it up in the shade after washing.

4. Attach the front panel.
- Set the 2 keys of the front panel into the slots and push them in all the way.
- Close the front panel slowly and push the panel at the 3 points.
  (1 on each side and 1 in the middle.)

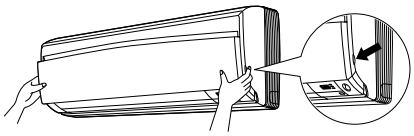


⚠ CAUTION

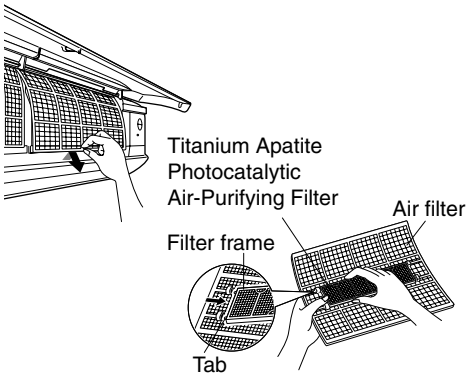
- Don't touch the metal parts of the indoor unit. If you touch those parts, this may cause an injury.
- When removing or attaching the front panel, use a robust and stable stool and watch your steps carefully.
- When removing or attaching the front panel, support the panel securely with hand to prevent it from falling.
- For cleaning, do not use hot water above 40°C, benzine, gasoline, thinner, nor other volatile oils, polishing compound, scrubbing brushes, nor other hand stuff.
- After cleaning, make sure that the front panel is securely fixed.

Filters

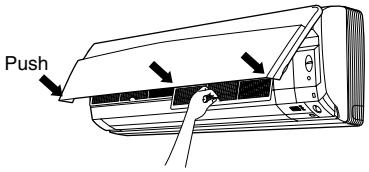
1. **Open the front panel.**



2. **Pull out the air filters.**
   - Push a little upwards the tab at the center of each air filter, then pull it down.
3. **Take off the Titanium Apatite Photocatalytic Air-Purifying Filter.**
   - Hold the recessed parts of the frame and unhook the four claws.
4. **Clean or replace each filter.**
   See figure.

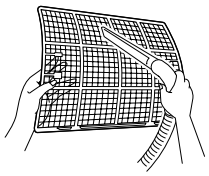


5. **Set the air filter and Titanium Apatite Photocatalytic Air-Purifying Filter as they were and close the front panel.**
   - Insert claws of the filters into slots of the front panel. Close the front panel slowly and push the panel at the 3 points. (1 on each side and 1 in the middle.)

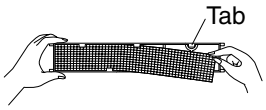


■ Air Filter

1. **Wash the air filters with water or clean them with vacuum cleaner.**
   - If the dust does not come off easily, wash them with neutral detergent thinned with lukewarm water, then dry them up in the shade.
   - It is recommended to clean the air filters every two weeks.



■ Titanium Apatite Photocatalytic Air-Purifying Filter.



The Titanium Apatite Photocatalytic Air-Purifying Filter can be renewed by washing it with water once every 6 months. We recommend replacing it once every 3 years.

[Maintenance]

1. **Remove dust with a vacuum cleaner and wash lightly with water.**
2. **If it is very dirty, soak it for 10 to 15 minutes in water mixed with a neutral cleaning agent.**
3. **Do not remove filter from frame when washing with water.**
4. **After washing, shake off remaining water and dry in the shade.**
5. **Since the material is made out of paper, do not wring out the filter when removing water from it.**

[Replacement]

1. **Remove the tabs on the filter frame and replace with a new filter.**
   - Dispose of the old filter as flammable waste.

NOTE

- Operation with dirty filters:
  (1) cannot deodorize the air. (2) cannot clean the air.
  (3) results in poor heating or cooling. (4) may cause odour.
- To order Titanium Apatite Photocatalytic Air-Purifying Filter contact to the service shop there you bought the air conditioner.
- Dispose of old filters as burnable waste.

Item	Part No.
Titanium Apatite Photocatalytic Air-Purifying Filter. (without frame) 1 set	KAF970A46

Check

Check that the base, stand and other fittings of the outdoor unit are not decayed or corroded.
Check that nothing blocks the air inlets and the outlets of the indoor unit and the outdoor unit.
Check that the drain comes smoothly out of the drain hose during COOL or DRY operation. • If no drain water is seen, water may be leaking from the indoor unit. Stop operation and consult the service shop if this is the case.

■ Before a long idle period

1. **Operate the “FAN only” for several hours on a fine day to dry out the inside.**
   - Press “MODE selector button” and select “FAN” operation.
   - Press “ON/OFF button” and start operation.
2. **After operation stops, turn off the breaker for the room air conditioner.**
3. **Clean the air filters and set them again.**
4. **Take out batteries from the remote controller.**
   - When a multi outdoor unit is connected, make sure the heating operation is not used at the other room before you use the fan operation.

FDK(X)S 25/35 C, FDKS 25/35 E

Care and Cleaning

⚠ CAUTION

- **Only a qualified service person is allowed to perform maintenance.**
- **Before cleaning, be sure to stop the operation and turn the breaker OFF.**

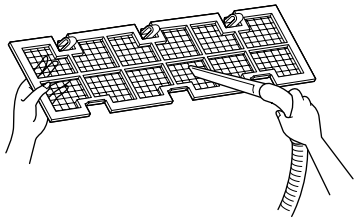
■ Cleaning the air filter

1.Removing the air filter.

- Rear suction
  Pull the bottom side of the air filter backwards, over the 3 bends.
- Bottom suction
  Pull the filter over the 3 bends situated at the backside of the unit.

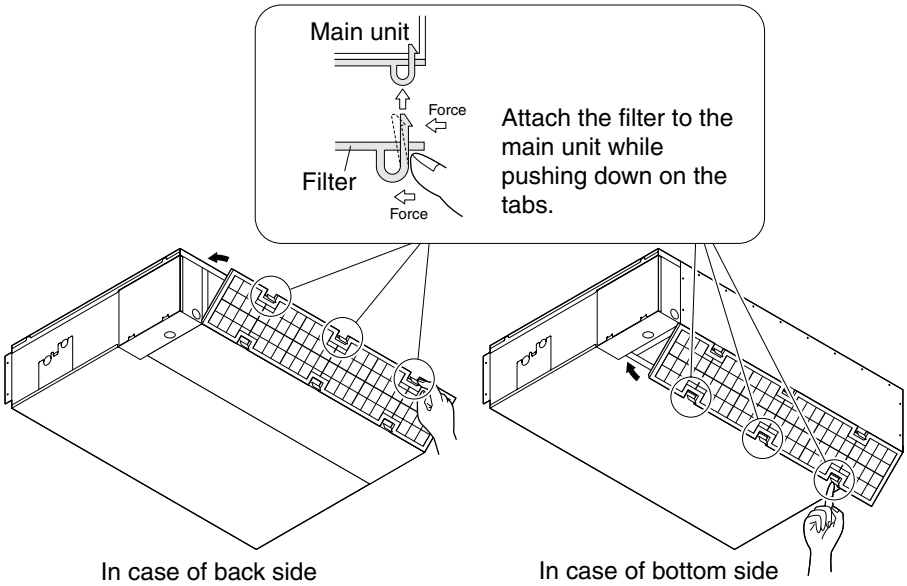
2.Cleaning the air filter.

Remove dust from the air filter using a vacuum cleaner and gently rinse them in cool water. Do not use detergent or hot water to avoid filter shrinking or deformation. After cleaning dry them in the shade.



3.Replacing the air filter.

- Rear suction
  Hook the filter behind the flap situated at the top of the unit and push the other side gently over the 3 bends.
- Bottom suction
  Hook the filter behind the flap situated at the middle of the unit and push the other side gently over the 3 bends.



■ Cleaning the drain pan

- Clean the drain pan periodically, or drain piping may be clogged with dust and may result in water leakage. Ask your DAIKIN dealer to clean them.
- Prepare a cover locally to prevent any dust in the air around the indoor unit from getting in the drain pan, if there is a great deal of dust present.

CAUTION

- Do not operate the air conditioner without filters, this to avoid dust accummulation inside the unit.
- Do not remove the air filter except when cleaning.
  Unnecessary handling may damage the filter.
- Do not use gasoline, benzene, thinner, polishing powder, liquid insecticide, It may cause discoloring or warping.
- Do not let the indoor unit get wet. It may cause an electric shock or a fire.
- Operation with dusty air filters lowers the cooling and heating capacity and wastes energy.
- The suction grille is option.
- Do not use water or air of 50˚C or higher for cleaning air filters and outside panels.

Check

Check that the base, stand and other fittings of the outdoor unit are not decayed or corroded.
Check that nothing blocks the air inlets and the outlets of the indoor unit and the outdoor unit.
Check that the drain comes smoothly out of the drain hose during COOL or DRY operation. • If no drain water is seen, water may be leaking from the indoor unit. Stop operation and consult the service shop if this is the case.

■ Before a long idle period

1. **Operate the “FAN only” for several hours on a fine day to dry out the inside.**
   - Press “MODE selector button” and select “FAN” operation.
   - Press “ON/OFF button” and start operation.
2. **After operation stops, turn off the breaker for the room air conditioner.**
3. **Clean the air filters and set them again.**
4. **Take out batteries from the remote controller.**
   - When a multi outdoor unit is connected, make sure the heating operation is not used at the other room before you use the fan operation.

CDXS 25/35 E

Care and Cleaning

⚠ CAUTION

- **Only a qualified service person is allowed to perform maintenance.**
- **Before cleaning, be sure to stop the operation and turn the breaker OFF.**

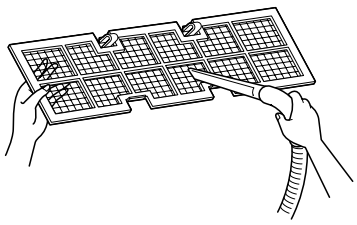
■ Cleaning the air filter

1.Removing the air filter.

- Rear suction
  Pull the bottom side of the air filter backwards, over the bends.
- Bottom suction
  Pull the filter over the bends situated at the backside of the unit.

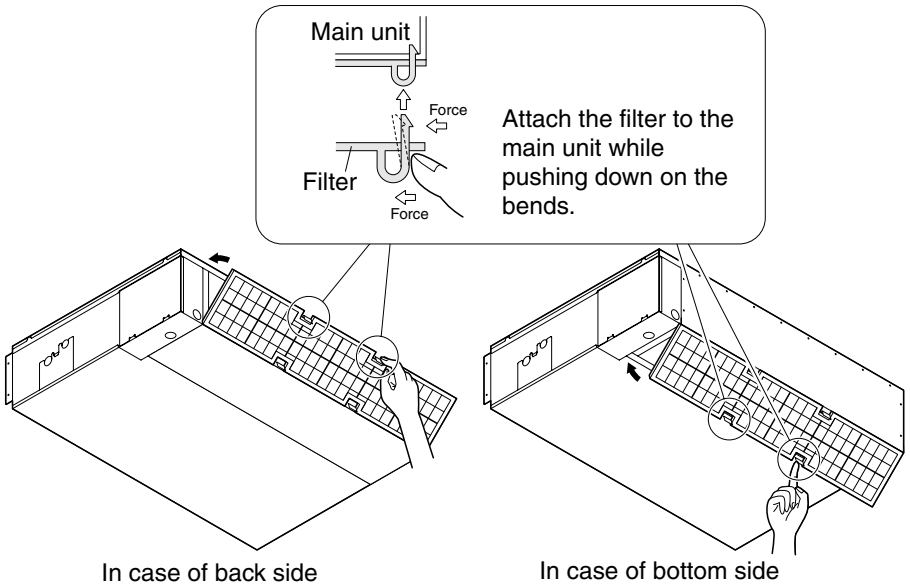
2.Cleaning the air filter.

Remove dust from the air filter using a vacuum cleaner and gently rinse them in cool water. Do not use detergent or hot water to avoid filter shrinking or deformation. After cleaning dry them in the shade.



3.Replacing the air filter.

- Rear suction
  Hook the filter behind the flap situated at the top of the unit and push the other side gently over the bends.
- Bottom suction
  Hook the filter behind the flap situated at the middle of the unit and push the other side gently over the bends.



■ Cleaning the drain pan

- Clean the drain pan periodically, or drain piping may be clogged with dust and may result in water leakage. Ask your DAIKIN dealer to clean them.
- Prepare a cover locally to prevent any dust in the air around the indoor unit from getting in the drain pan, if there is a great deal of dust present.

CAUTION

- Do not operate the air conditioner without filters, this to avoid dust accumulation inside the unit.
- Do not remove the air filter except when cleaning.
  Unnecessary handling may damage the filter.
- Do not use gasoline, benzene, thinner, polishing powder, liquid insecticide, It may cause discoloring or warping.
- Do not let the indoor unit get wet. It may cause an electric shock or a fire.
- Operation with dusty air filters lowers the cooling and heating capacity and wastes energy.
- The suction grille is option.
- Do not use water or air of 50˚C or higher for cleaning air filters and outside panels.
- Ask your DAIKIN dealer how to clean it.

Check

Check that the base, stand and other fittings of the outdoor unit are not decayed or corroded.
Check that nothing blocks the air inlets and the outlets of the indoor unit and the outdoor unit
Check that the drain comes smoothly out of the drain hose during COOL or DRY operation. • If no drain water is seen, water may be leaking from the indoor unit. Stop operation and consult the service shop if this is the case.

■ Before a long idle period

1. **Operate the “FAN only” for several hours on a fine day to dry out the inside.**
   - Press “MODE selector button” and select “FAN” operation.
   - Press “ON/OFF button” and start operation.
2. **After operation stops, turn off the breaker for the room air conditioner.**
3. **Clean the air filters and set them again.**
4. **Take out batteries from the remote controller.**
   - When a multi outdoor unit is connected, make sure the heating operation is not used at the other room before you use the fan operation.

2.16 Troubleshooting

Trouble Shooting

These cases are not troubles.

The following cases are not air conditioner troubles but have some reasons. You may just continue using it.

Case	Explanation
Operation does not start soon. • When ON/OFF button was pressed soon after operation was stopped. • When the mode was reselected.	• This is to protect the air conditioner. You should wait for about 3 minutes.
Hot air does not flow out soon after the start of heating operation.	• The air conditioner is warming up. You should wait for 1 to 4 minutes. (The system is designed to start discharging air only after it has reached a certain temperature.)
The heating operation stops suddenly and a flowing sound is heard.	• The system is taking away the frost on the outdoor unit. You should wait for about 3 to 8 minutes.
The outdoor unit emits water or steam.	■ In HEAT mode • The frost on the outdoor unit melts into water or steam when the air conditioner is in defrost operation. ■ In COOL or DRY mode • Moisture in the air condenses into water on the cool surface of outdoor unit piping and drips.
Mist comes out of the indoor unit.	■ This happens when the air in the room is cooled into mist by the cold air flow during cooling operation.
The indoor unit gives out odour.	■ This happens when smells of the room, furniture, or cigarettes are absorbed into the unit and discharged with the air flow. (If this happens, we recommend you to have the indoor unit washed by a technician. Consult the service shop where you bought the air conditioner.)
The outdoor fan rotates while the air conditioner is not in operation.	■ After operation is stopped: • The outdoor fan continues rotating for another 60 seconds for system protection. ■ While the air conditioner is not in operation: • When the outdoor temperature is very high, the outdoor fan starts rotating for system protection.
The operation stopped suddenly. **(OPERATION lamp is on.)**	■ For system protection, the air conditioner may stop operating on a sudden large voltage fluctuation. It automatically resumes operation in about 3 minutes.

Check again.

Please check again before calling a repair person.

Case	Check
The air conditioner does not operate. (OPERATION lamp is off.)	• Hasn't a breaker turned OFF or a fuse blown? • Isn't it a power failure? • Are batteries set in the remote controller? • Is the timer setting correct?
Cooling (Heating) effect is poor.	• Are the air filters clean? • Is there anything to block the air inlet or the outlet of the indoor and the outdoor units? • Is the temperature setting appropriate? • Are the windows and doors closed? • Are the air flow rate and the air direction set appropriately? • Is the unit set to the INTELLIGENT EYE mode?
Operation stops suddenly. (OPERATION lamp flashes.)	• Are the air filters clean? • Is there anything to block the air inlet or the outlet of the indoor and the outdoor units? Clean the air filters or take all obstacles away and turn the breaker OFF. Then turn it ON again and try operating the air conditioner with the remote controller. If the lamp still flashes, call the service shop where you bought the air conditioner. • Are operation modes all the same for indoor units connected to outdoor units in the **multi system?** If not, set all indoor units to the same operation mode and confirm that the lamps flash. Moreover, when the operation mode is in "AUTO", set all indoor unit operation modes to "COOL" or "HEAT" for a moment and check again that the lamps are normal. If the lamps stop flashing after the above steps, there is no malfunction.
An abnormal functioning happens during operation.	• The air conditioner may malfunction with lightning or radio waves. Turn the breaker OFF, turn it ON again and try operating the air conditioner with the remote controller.

Call the service shop immediately.

⚠ WARNING

- When an abnormality (such as a burning smell) occurs, stop operation and turn the breaker OFF.
  Continued operation in an abnormal condition may result in troubles, electric shocks or fire.
  Consult the service shop where you bought the air conditioner.
- Do not attempt to repair or modify the air conditioner by yourself.
  Incorrect work may result in electric shocks or fire.
  Consult the service shop where you bought the air conditioner.

If one of the following symptoms takes place, call the service shop immediately.

■ **The power cord is abnormally hot or damaged.** ■ **An abnormal sound is heard during operation.** ■ **The safety breaker, a fuse, or the earth leakage breaker cuts off the operation frequently.** ■ **A switch or a button often fails to work properly.** ■ **There is a burning smell.** ■ **Water leaks from the indoor unit.**	▶ Turn the breaker OFF and call the service shop.

■ After a power failure The air conditioner automatically resumes operation in about 3 minutes. You should just wait for a while.	■ Lightning If lightning may strike the neighbouring area, stop operation and turn the breaker OFF for system protection.

Disposal requirements

Your air conditioning product is marked with this symbol. This means that electrical and electronic products shall not be mixed with unsorted household waste.

Do not try to dismantle the system yourself: the dismantling of the air conditioning system, treatment of the refrigerant, of oil and of other parts must be done by a qualified installer in accordance with relevant local and national legislation.

Air conditioners must be treated at a specialized treatment facility for re-use, recycling and recovery. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. Please contact the installer or local authority for more information.

Batteries must be removed from the remote controller and disposed of separately in accordance with relevant local and national legislation.

We recommend periodical maintenance.

In certain operating conditions, the inside of the air conditioner may get foul after several seasons of use, resulting in poor performance. It is recommended to have periodical maintenance by a specialist aside from regular cleaning by the user. For specialist maintenance, contact the service shop where you bought the air conditioner. The maintenance cost must be born by the user.

Important information regarding the refrigerant used.

This product contains fluorinated greenhouse gases covered by the Kyoto Protocol.

Refrigerant type:**R410A**

GWP(1) value:**1975**

(1) GWP = global warming potential

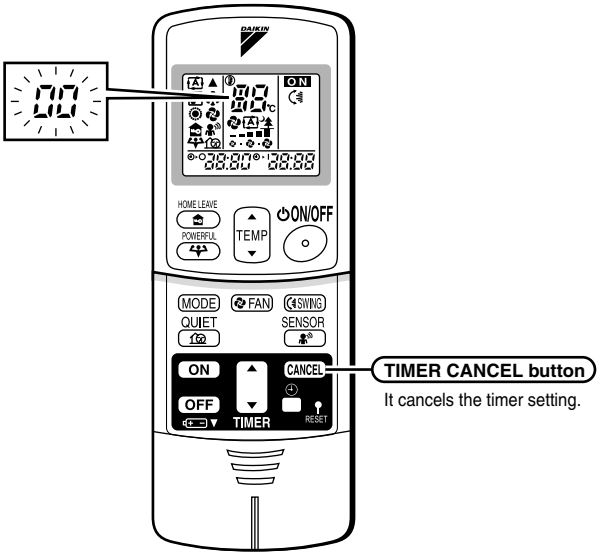
Periodical inspections for refrigerant leaks may be required depending on European or local legislation. Please contact your local dealer for more information.

Fault diagnosis.

FAULT DIAGNOSIS BY REMOTE CONTROLLER

In the ARC433 series, the temperature display sections on the main unit indicate corresponding codes.

1. **When the TIMER CANCEL button is held down for 5 seconds, a"00"indication flashes on the temperature display section.**



2. **Press the TIMER CANCEL button repeatedly until a continuous beep is produced.**
   - The code indication changes as shown below, and notifies with a long beep.

	CODE	MEANING
SYSTEM	00	NORMAL
	U0	REFRIGERANT SHORTAGE
	U2	DROP VOLTAGE OR MAIN CIRCUIT OVERVOLTAGE
	U4	FAILURE OF TRANSMISSION (BETWEEN INDOOR UNIT AND OUTDOOR UNIT)
INDOOR UNIT	A1	INDOOR PCB DEFECTIVENESS
	A5	HIGH PRESSURE CONTROL OR FREEZE-UP PROTECTOR
	A6	FAN MOTOR FAULT
	C4	FAULTY HEAT EXCHANGER TEMPERATURE SENSOR
	C9	FAULTY SUCTION AIR TEMPERATURE SENSOR
OUTDOOR UNIT	EA	COOLING-HEATING SWITCHING ERROR
	E5	OL STARTED
	E6	FAULTY COMPRESSOR START UP
	E7	DC FAN MOTOR FAULT
	E8	OPERATION HALT DUE TO DETECTION OF INPUT OVER CURRENT
	F3	HIGH TEMPERATURE DISCHARGE PIPE CONTROL
	F6	HIGH PRESSURE CONTROL (IN COOLING)
	H6	OPERATION HALT DUE TO FAULTY POSITION DETECTION SENSOR
	H8	CT ABNORMALITY
	H9	FAULTY SUCTION AIR TEMPERATURE SENSOR
	J3	FAULTY DISCHARGE PIPE TEMPERATURE SENSOR
	J6	FAULTY HEAT EXCHANGER TEMPERATURE SENSOR
	L4	HIGH TEMPERATURE AT INVERTER CIRCUIT HEATSINK
	L5	OUTPUT OVERCURRENT
	P4	FAULTY INVERTER CIRCUIT HEATSINK TEMPERATURE SENSOR

NOTE

1. A short beep and two consecutive beeps indicate non-corresponding codes.
2. To cancel the code display, hold the TIMER CANCEL button down for 5 seconds. The code display also cancel itself if the button is not pressed for 1 minute.

Part 6
Service Diagnosis

1. Caution for Diagnosis

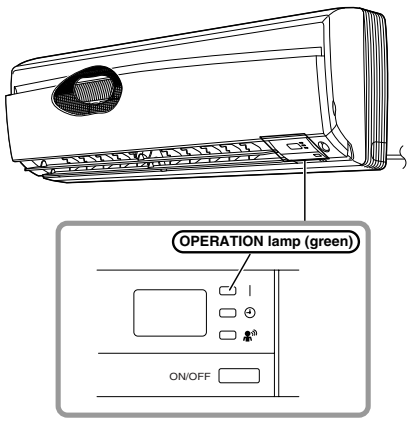
The operation lamp flashes when any of the following errors is detected.

1. When a protection device of the indoor or outdoor unit is activated or when the thermistor malfunctions, disabling equipment operation.
2. When a signal transmission error occurs between the indoor and outdoor units.

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

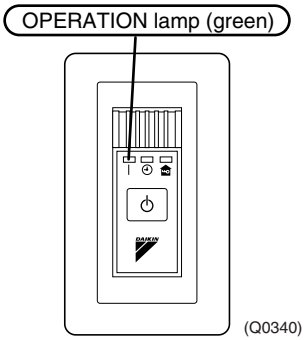
Location of Operation Lamp

In case of
FTKS 25/35 D Series
FTXS 25/35 E Series



(R4298)

In case of
FDKS 25/35 E Series
FDK(X)S 25/35 C Series
CDXS 25/35 E Series



(Q0340)

Caution: Operation stops suddenly. (Operation lamp blinks.)
Cause of above trouble could be "Operation mode butting".
Check followings;
Are the operation modes all the same for indoor units connected to Multi system outdoor unit?
If not set all indoor units to the same operation mode and confirm that the operation lamp is not blinking.
Moreover, when the operation mode is in "Auto", set all indoor unit operation mode to "Cool" or "Heat" and check again if the operation lamp is normal.
If the lamp stops blinking after the above steps, there is no malfunction.

★Operation stops and operation lamp blinks only for indoor unit which the different operation mode is set later. (The first set operation mode has priority.)

Troubleshooting with the LED Indication

Outdoor Unit

There is a green LED on the PCB. The flashing green LED indicates normal equipment condition. (Troubleshooting with the green LED)
The LED A of the outdoor unit indicate microcomputer operation condition.
Even after the error is cancelled and the equipment operates in normal condition, the LED indication remains.

See page 21 for detail of LED A.

2. Problem Symptoms and Measures

Symptom	Check Item	Details of Measure	Reference Page
None of the Units Operates.	Check the power supply.	Check to make sure that the rated voltage is supplied.	—
	Check the type of the indoor units.	Check to make sure that the indoor unit type is compatible with the outdoor unit.	—
	Check the outdoor air temperature.	Heating operation cannot be used when the outdoor air temperature is 15.5°C or higher (only for heat pump model), and cooling operation cannot be used when the outdoor air temperature is below 10°C.	—
	Diagnosis with remote controller indication	—	108
	Check the remote controller addresses.	Check to make sure that 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 air temperature.	Heating operation cannot be used when the outdoor air temperature is 15.5°C or higher (only for heat pump model), and cooling operation cannot be used when the outdoor air temperature is below 10°C.	—
	Diagnosis with remote controller indication	—	108
Equipment operates but does not cool, or does not heat (only for heat pump model).	Check for wiring and piping errors in the indoor and outdoor units connection wires and pipes.	Conduct the wiring/piping error check described on the product diagnosis nameplate.	—
	Check for thermistor detection errors.	Check to make sure that the main unit's thermistor has not dismounted from the pipe holder.	—
	Check for faulty operation of the electronic expansion valve.	Set the units to cooling operation, and compare the temperatures of the liquid side connection pipes of the connection section among rooms to check the opening and closing operation of the electronic expansion valves of the individual units.	—
	Diagnosis with remote controller indication	—	108
	Diagnosis by service port pressure and operating current	Check for insufficient gas.	139
Large Operating Noise and Vibrations	Check the output voltage of the power transistor.	—	153
	Check the power transistor.	—	—
	Check the installation condition.	Check to make sure that the required spaces for installation (specified in the Engineering Data book Guide, etc.) are provided.	—

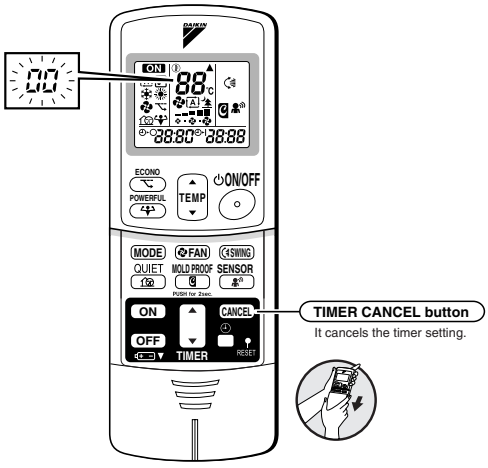
3. Service Check Function

3.1 Check Method 1

The temperature display sections on the main unit indicate corresponding codes.

ARC433 Series

1. When the timer cancel button is held down for 5 seconds, a “00” indication flashes on the temperature display section.



<ARC433B46, B47>

(R7279)

2. Press the timer cancel button repeatedly until a continuous beep is produced.

■ The code indication changes in the sequence shown below, and notifies with a long beep.

No.	Code	No.	Code	No.	Code
1	00	12	C7	23	H0
2	U4	13	H8	24	E1
3	F3	14	J3	25	P4
4	E6	15	A3	26	L3
5	L5	16	A1	27	L4
6	A6	17	C4	28	H6
7	E5	18	C5	29	H7
8	F6	19	H9	30	U2
9	C9	20	J6	31	UH
10	U0	21	UA	32	EA
11	E7	22	A5	33	AH

<In case of ARC433B46, 47>

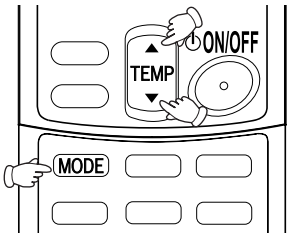
No.	Code	No.	Code	No.	Code
1	00	12	F6	23	A1
2	U4	13	C7	24	E1
3	L5	14	A3	25	UA
4	E6	15	H8	26	UH
5	H6	16	H9	27	P4
6	H0	17	C9	28	L3
7	A6	18	C4	29	L4
8	E7	19	C5	30	H7
9	U0	20	J3	31	U2
10	F3	21	J6	32	EA
11	A5	22	E5	33	AH

Note:

1. A short beep and two consecutive beeps indicate non-corresponding codes.
2. To cancel the code display, hold the timer cancel button down for 5 seconds. The code display also cancels itself if the button is not pressed for 1 minute.

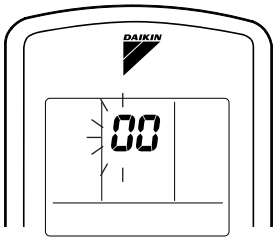
3.2 Check Method 2

1. Enter the diagnosis mode.
   Press the 3 buttons (TEMP▲,TEMP▼, MODE) simultaneously.



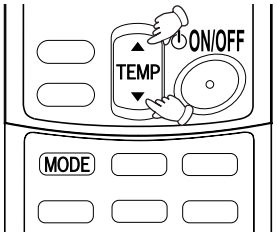
(R4272)

   The digit of the number of tens blinks.
   ★Try again from the start when the digit does not blink.



(R4273)

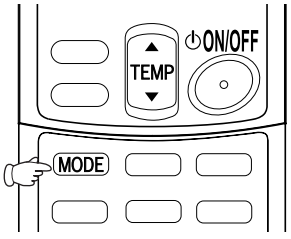
2. Press the TEMP button.
   Press TEMP▲ or TEMP▼ and change the digit until you hear the sound of “beep” or “pi pi”.



(R4274)

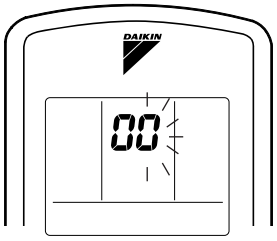
3. Diagnose by the sound.
   ★“pi” : The number of tens does not accord with the error code.
   ★“pi pi” : The number of tens accords with the error code.
   ★“beep” : The both numbers of tens and units accord with the error code. (→See 7.)

4. Enter the diagnosis mode again.
   Press the MODE button.



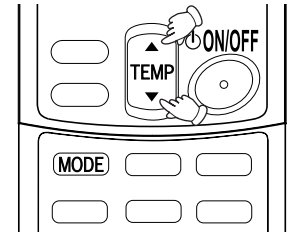
(R4275)

   The digit of the number of units blinks.



(R4276)

5. Press the TEMP button.
   Press TEMP▲ or TEMP▼ and change the digit until you hear the sound of “beep”.

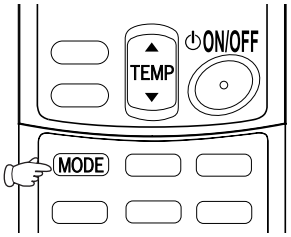


(R4277)

6. Diagnose by the sound.
   ★“pi” : The both numbers of tens and units do not accord with the error code.
   ★“pi pi” : The number of tens accords with the error code.
   ★“beep” : The both numbers of tens and units accord with the error code.

7. Determine the error code.
   The digits indicated when you hear the “beep” sound are error code.
   (Error codes and description → Refer to page 108.)

8. Exit from the diagnosis mode.
   Press the MODE button.



(R4278)

4. Troubleshooting

4.1 Error Codes and Description

	Code Indication	Description		Reference Page
System	00	Normal		—
	U0★	Insufficient gas		139
	U2	Over-voltage detection / low-voltage detection		141
	U4	Outdoor unit PCB abnormality or signal transmission circuit abnormality		143
	UA	Unspecified voltage (between indoor and outdoor units)		142
	UH	Anti-icing function in other rooms		142
Indoor Unit	A1	Indoor unit PCB abnormality		109
	A5	Freeze-up protection control or high pressure control		110
	A6	Fan motor or related abnormality	AC motor (Duct)	112
			DC motor (Wall)	113
	C4	Heat exchanger temperature thermistor abnormality		115
	C7	Front Panel Open / Close Fault		116
	C9	Room temperature thermistor abnormality		115
Outdoor Unit	H5	Anti-icing function		117
	E5★	OL activation (compressor overload)		119
	E6★	Compressor lock		120
	E7	DC fan lock		121
	E8	Input over current detection		122
	F3	Discharge pipe temperature control		124
	F6	High pressure control in cooling		125
	H0	Compressor sensor system abnormality		127
	H6	Position sensor abnormality		128
	H8	DC voltage / DC current sensor abnormality		130
	H9	Outdoor air thermistor or related abnormality		131
	J3	Discharge pipe temperature thermistor or related abnormality		131
	J6	Heat exchanger temperature thermistor or related abnormality		131
	J8	Liquid pipe temperature thermistor or related abnormality		131
	J9	Gas pipe temperature thermistor or related abnormality		131
	L3	Electrical box temperature rise		133
	L4	Radiation fin temperature rise		135
	L5	Output over current detection		137
	P4	Radiation fin thermistor or related abnormality		131

★: Displayed only when system-down occurs.

4.2 Indoor Unit PCB Abnormality

Remote Controller Display

A1

Method of Malfunction Detection

Evaluation of zero-cross detection of power supply by indoor unit.

Malfunction Decision Conditions

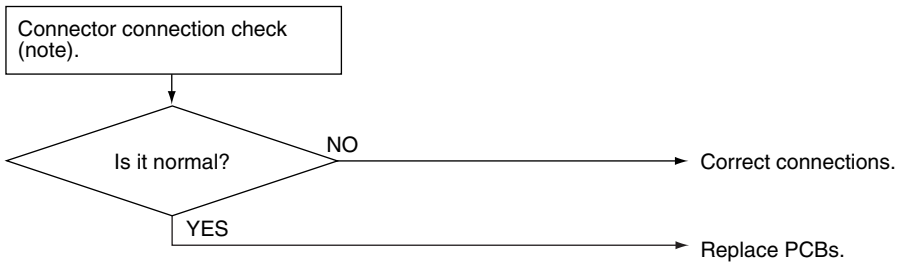
When there is no zero-cross detection in approximately 10 continuous seconds.

Supposed Causes

- Faulty indoor unit PCB
- Faulty connector connection

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



(R7130)

Note: Connector Nos. vary depending on models.

Model Type	Connector No.
Wall Mounted Type	Terminal strip~Control PCB
Duct Connected Type	Terminal strip~Control PCB

4.3 Freeze-up Protection Control or High Pressure Control

Remote Controller Display

Method of Malfunction Detection

- 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.)
- The freeze-up protection control (operation halt) is activated during cooling operation according to the temperature detected by the indoor unit heat exchanger thermistor.

Malfunction Decision Conditions

- High pressure control
  During heating operations, the temperature detected by the indoor heat exchanger thermistor is above 65°C
- Freeze-up protection

When the indoor unit heat exchanger temperature is below 0°C during cooling operation.

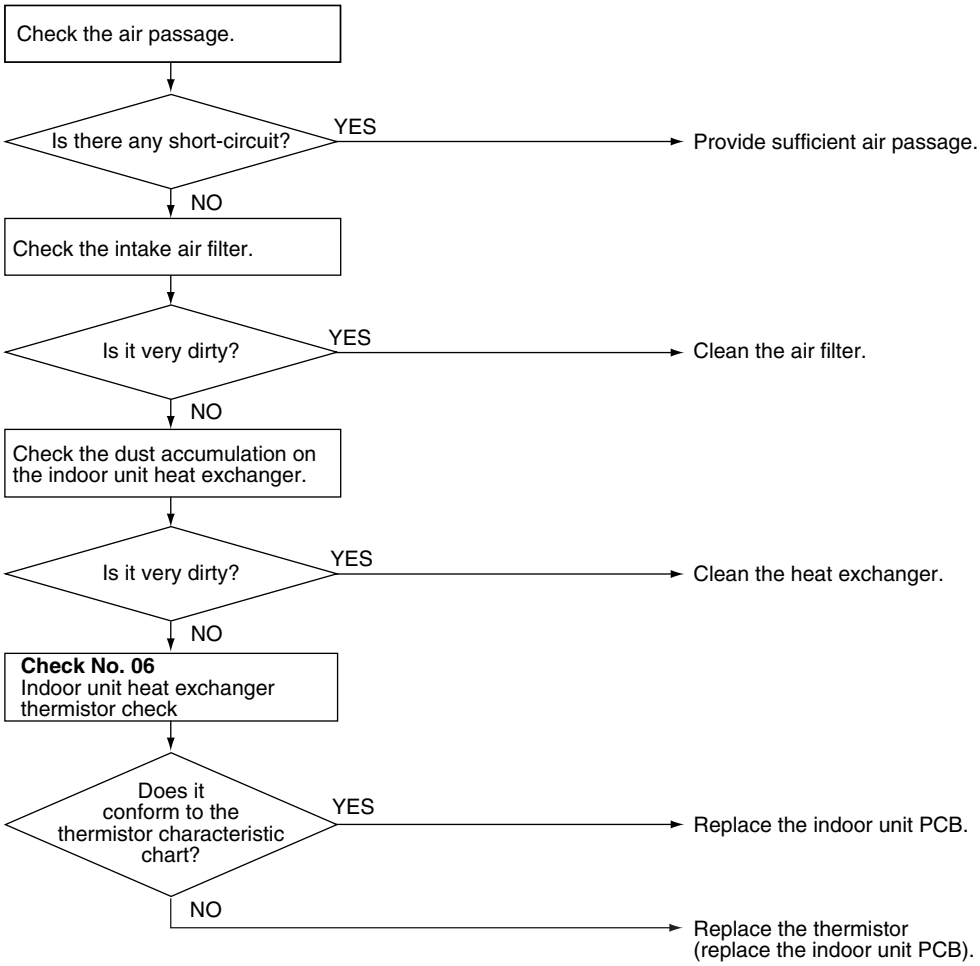
Supposed Causes

- Operation halt due to clogged air filter of the indoor unit.
- Operation halt due to dust accumulation on the indoor unit heat exchanger.
- Operation halt due to short-circuit.
- Detection error due to faulty indoor unit heat exchanger thermistor.
- Detection error due to faulty indoor unit PCB.

Troubleshooting

Check No.06
Refer to P.149

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



(R7131)

4.4 Fan Motor or Related Abnormality

4.4.1 AC Motor

Remote Controller Display

Method of Malfunction Detection

The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor operation.

Malfunction Decision Conditions

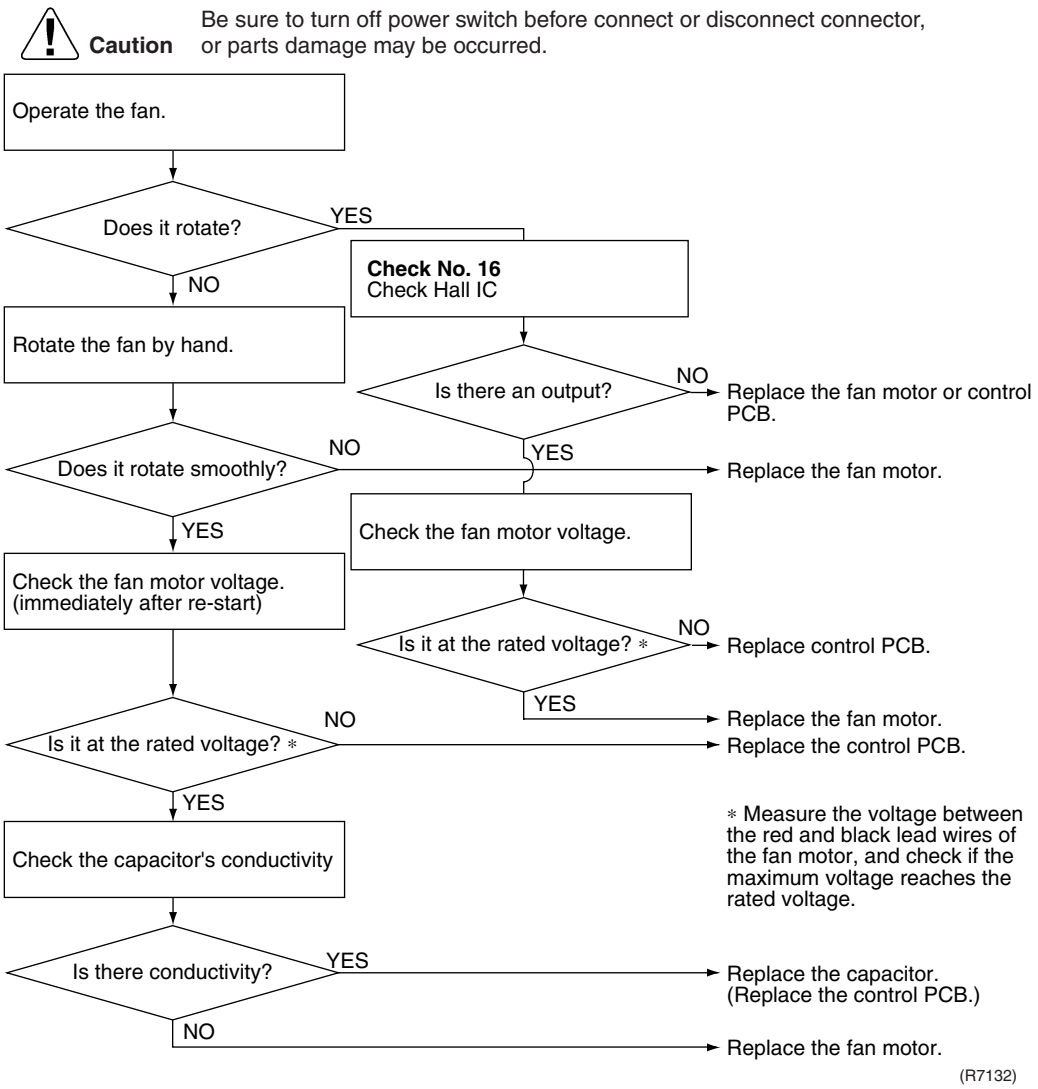
When the detected rotation speed does not reach the demanded rotation speed of the target tap, and is less than 50% of the maximum fan motor rotation speed.

Supposed Causes

- Operation halt due to short circuit inside the fan motor winding.
- Operation halt due to breaking of wire inside the fan motor.
- Operation halt due to breaking of the fan motor lead wires.
- Operation halt due to faulty capacitor of the fan motor.
- Detection error due to faulty control PCB.

Troubleshooting

Check No.16
Refer to P.154



4.4.2 DC Motor

Remote Controller Display

Method of Malfunction Detection

The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor operation.

Malfunction Decision Conditions

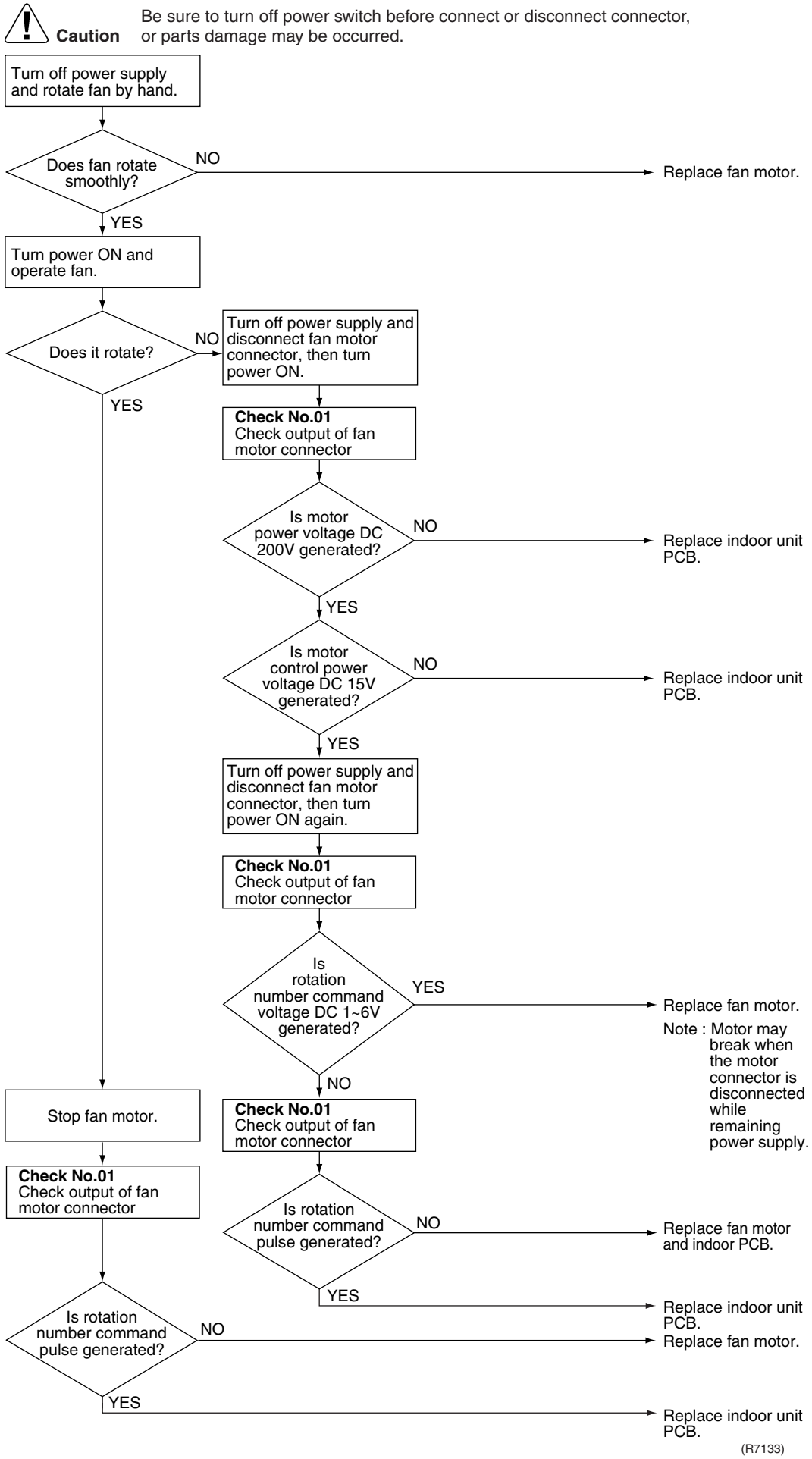
When the detected rotation speed does not reach the demanded rotation speed of the target tap, and is less than 50% of the maximum fan motor rotation speed.

Supposed Causes

- Operation halt due to short circuit inside the fan motor winding.
- Operation halt due to breaking of wire inside the fan motor.
- Operation halt due to breaking of the fan motor lead wires.
- Operation halt due to faulty capacitor of the fan motor.
- Detection error due to faulty indoor unit PCB.

Troubleshooting

Check No.01
Refer to P.146



4.5 Thermistor or Related Abnormality (Indoor Unit)

Remote Controller Display

C4, C9

Method of Malfunction Detection

The temperatures detected by the thermistors are used to determine thermistor errors.

Malfunction Decision Conditions

When the thermistor input is more than 4.96 V or less than 0.04 V during compressor operation∗.
∗ (reference)
When above about 212°C (less than 120 ohms) or below about –50°C (more than 1,860 kohms).

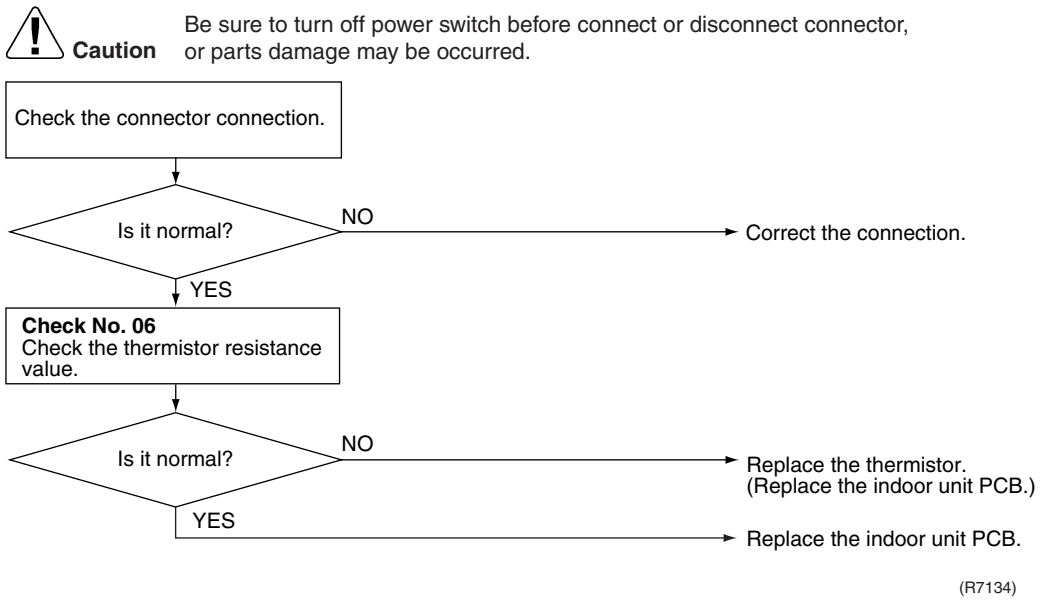
Note: The values vary slightly in some models.

Supposed Causes

- Faulty connector connection
- Faulty thermistor
- Faulty PCB

Troubleshooting

Check No.06
Refer to P.149



C4 : Heat exchanger temperature thermistor
C9 : Room temperature thermistor

4.6 Front Panel Open / Close Fault

Remote Controller Display

C7

Method of Malfunction Detection

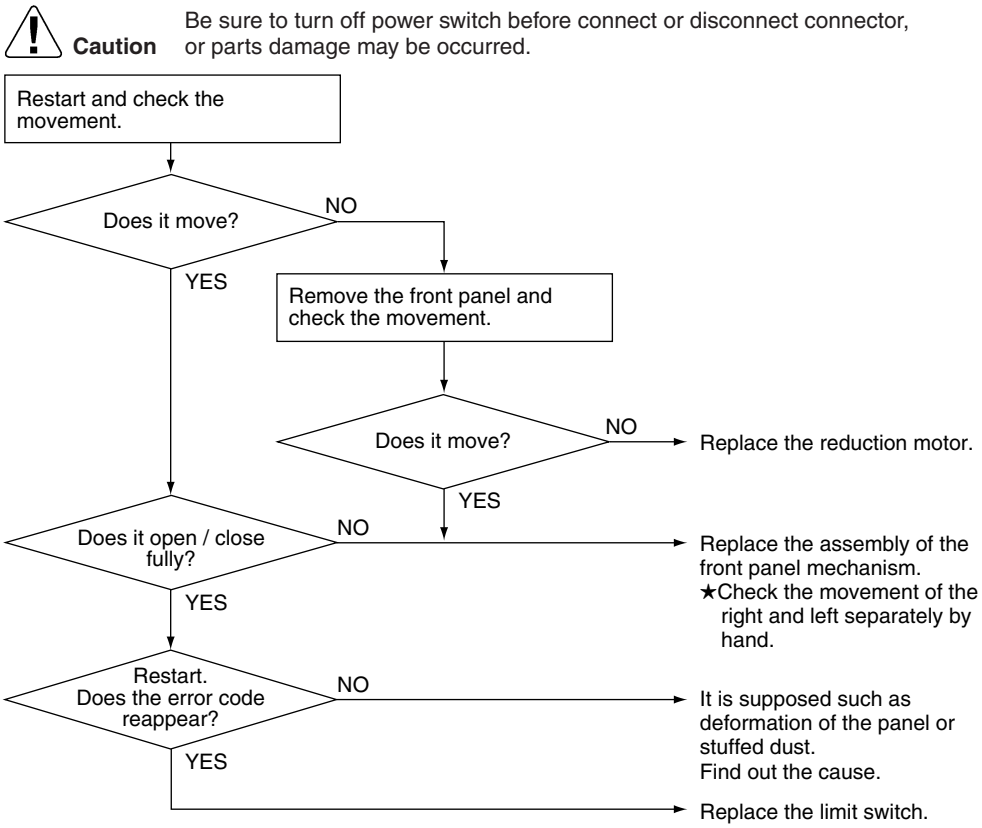
Malfunction Decision Conditions

- The system will be shut down when the error occurs twice.

Supposed Causes

- Malfunction of the reduction motor
- Malfunction or deterioration of the front panel mechanism
- Malfunction of the limit switch

Troubleshooting



(R7135)

Note: You cannot operate the unit by the remote controller when the front panel mechanism breaks down.

<To the dealers: temporary measure before repair>

1. Pull the plug out or turn the breaker off.
2. Remove the decorative plate.
3. Remove the slot-in panel.
4. Put the plug in or turn the breaker on.
   (Wait until the initialization finishes.)
5. Operate the unit by the indoor unit ON/OFF switch.

4.7 Freeze-up Protection Control

Remote Controller Display

P5

Method of Malfunction Detection

Indoor unit icing, during cooling operation, is detected by checking the temperatures sensed by the indoor unit heat exchanger thermistor and room temperature thermistor that are located in a shut-down room.
At another room (the indoor unit is normal), "U4" is displayed on the remote controller.

Malfunction Decision Conditions

In the cooling mode, the following conditions (A) and (B) are kept together for 5 minutes.
(A) Indoor unit heat exchanger temperature ≤ –1°C
(B) Indoor unit heat exchanger temperature ≤ Room temperature –10°C

If the freeze-up protection control is activated 4 times continuously, the system will be shut down.
(The 4-time counter will reset itself if any of the following errors does not occur for 60 minutes.
: OL, radiation fin temperature rise, insufficient gas, and compressor lock.)

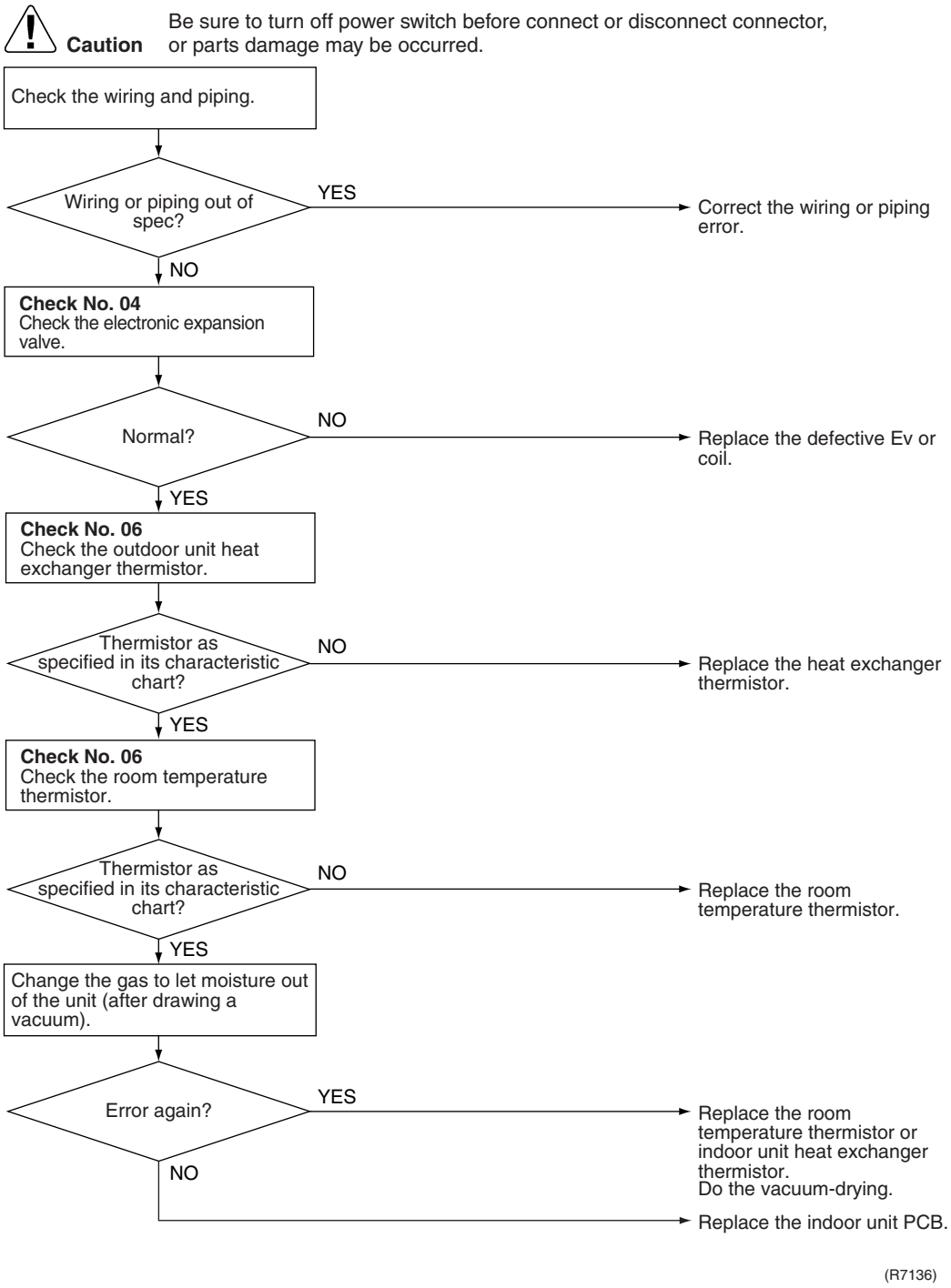
Supposed Causes

- Wrong wiring or piping
- EV malfunctioning in each room
- Short-circuit
- Indoor unit heat exchanger thermistor abnormality
- Room temperature thermistor abnormality

Troubleshooting

Check No.04
Refer to P.146

Check No.06
Refer to P.149



(R7136)

4.8 OL Activation (Compressor Overload)

Remote Controller Display

E5

Method of Malfunction Detection

A compressor overload is detected through compressor OL.

Malfunction Decision Conditions

- If the compressor OL is activated twice, the system will be shut down.
- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

* The operating temperature condition is not specified.

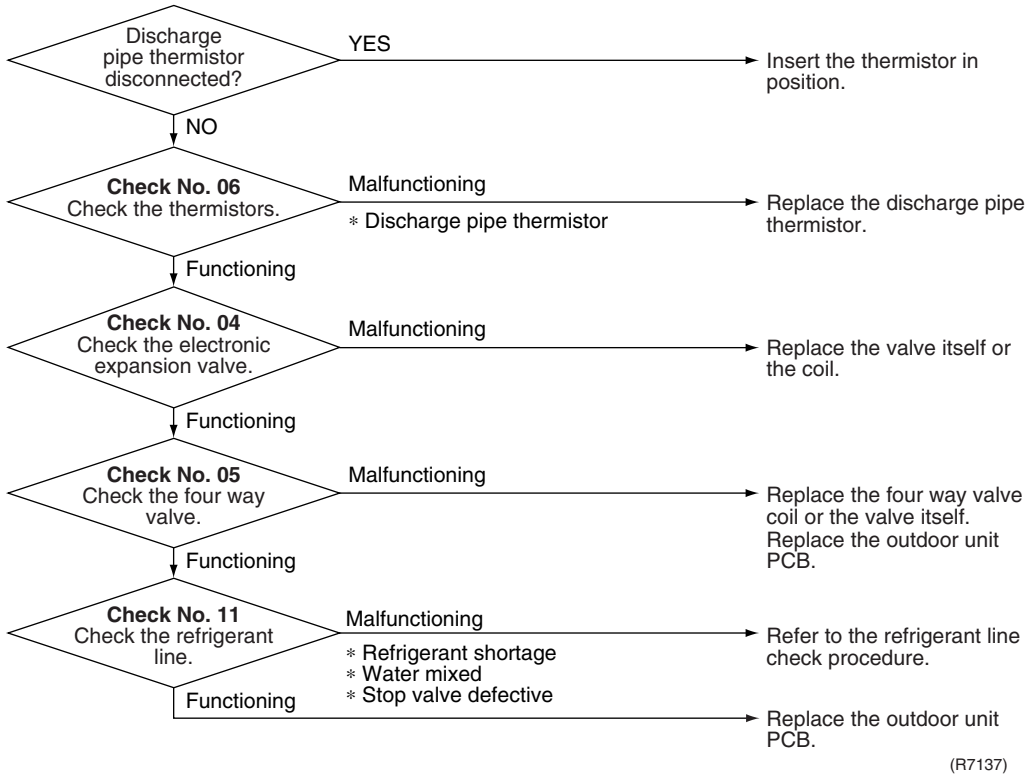
Supposed Causes

- Refrigerant shortage
- Four way valve malfunctioning
- Outdoor unit PCB defective
- Water mixed in the local piping
- Electronic expansion valve defective
- Stop valve defective

Troubleshooting

Check No.04 Refer to P.146
Check No.05 Refer to P.148
Check No.06 Refer to P.149
Check No.11 Refer to P.152

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



(R7137)

4.9 Compressor Lock

Remote Controller Display

E6

Method of Malfunction Detection

Judging from current waveform generated when high-frequency voltage is applied to the compressor.

Malfunction Decision Conditions

- The system will be shut down if the error occurs 16 times.
- Clearing condition: Continuous run for about 11 minutes (normal)

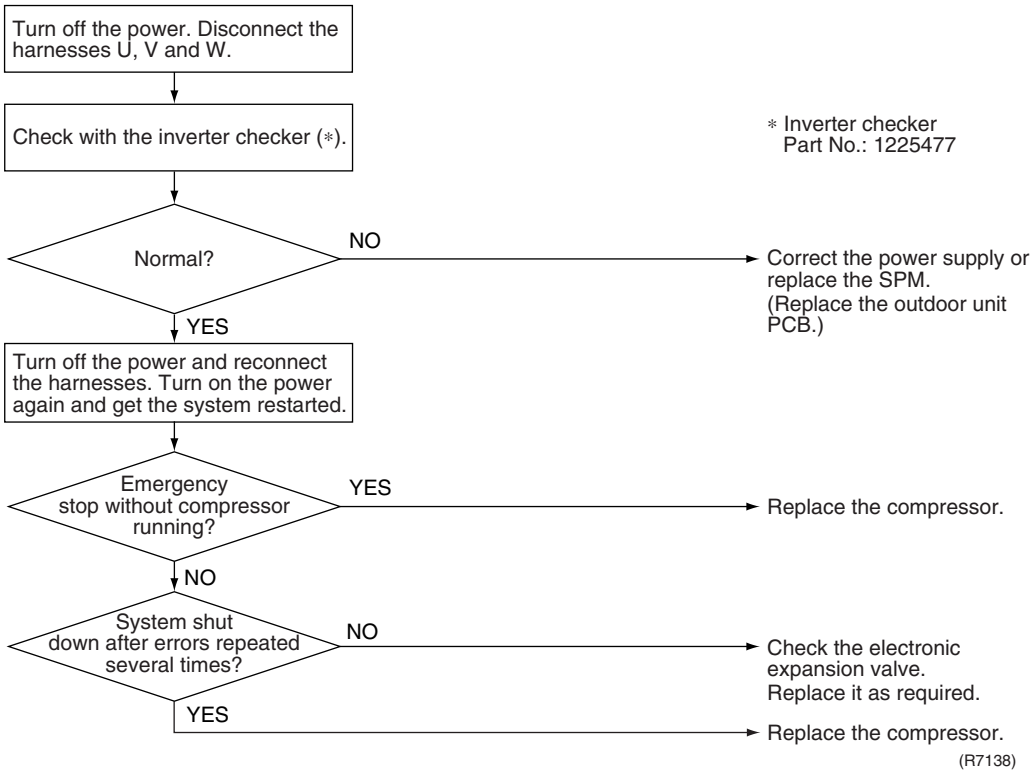
Supposed Causes

- Compressor locked
- Disconnection of compressor harness

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

(Precaution before turning on the power again)
Make sure the power has been off for at least 30 seconds.



Note: If the model does not have SPM, replace the outdoor unit PCB.

4.10 DC Fan Lock

Remote Controller Display

E7

Method of Malfunction Detection

A fan motor or related error is detected by checking the high-voltage fan motor rpm being detected by the Hall IC.

Malfunction Decision Conditions

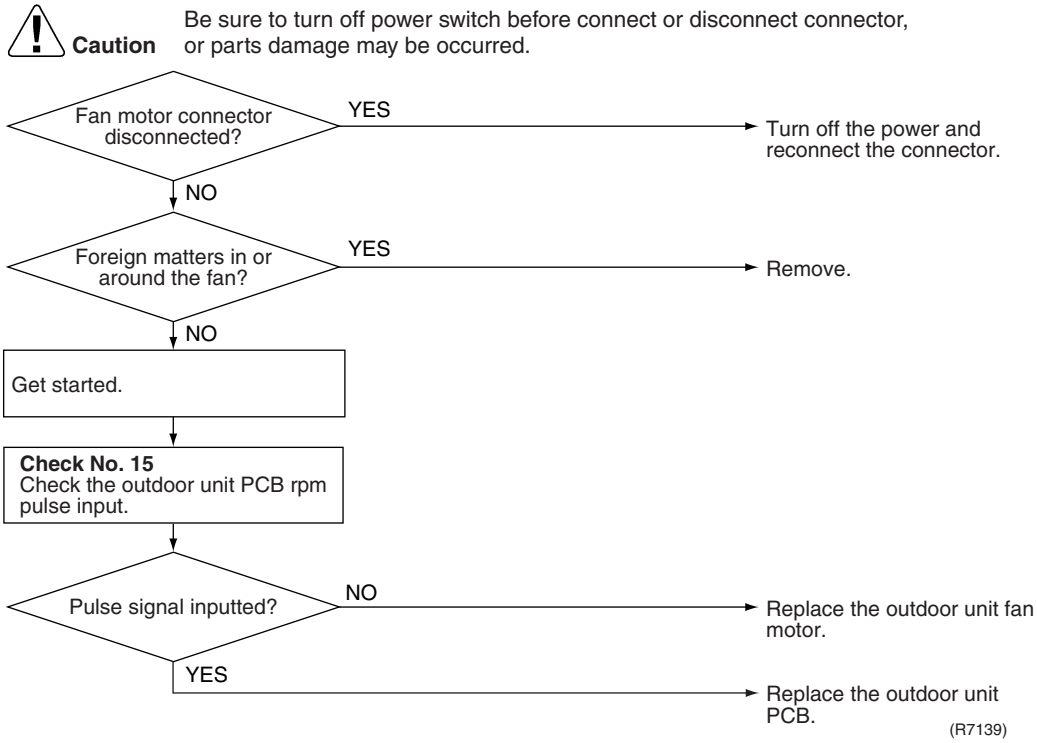
- The fan does not start in 60 seconds even when the fan motor is running.
- The system will be shut down if the error occurs 16 times.
- Clearing condition: Continuous run for about 11 minutes (normal)

Supposed Causes

- Fan motor breakdown
- Harness or connector disconnected between fan motor and PCB or in poor contact
- Foreign matters stuck in the fan

Troubleshooting

Check No.15
Refer to P.154



4.11 Input Over Current Detection

Remote Controller Display

E8

Method of Malfunction Detection

An input over-current is detected by checking the power consumption value of outdoor unit with the compressor running.

Malfunction Decision Conditions

- The following input value (calculated from power consumption of outdoor unit) with the compressor running continues for 2.5 seconds.
  Input value : Above 15 A

Supposed Causes

- Over-current due to compressor failure
- Over-current due to defective power transistor
- Over-current due to defective inverter main circuit electrolytic capacitor
- Over-current due to defective outdoor unit PCB
- Error detection due to outdoor unit PCB
- Over-current due to short-circuit

Troubleshooting

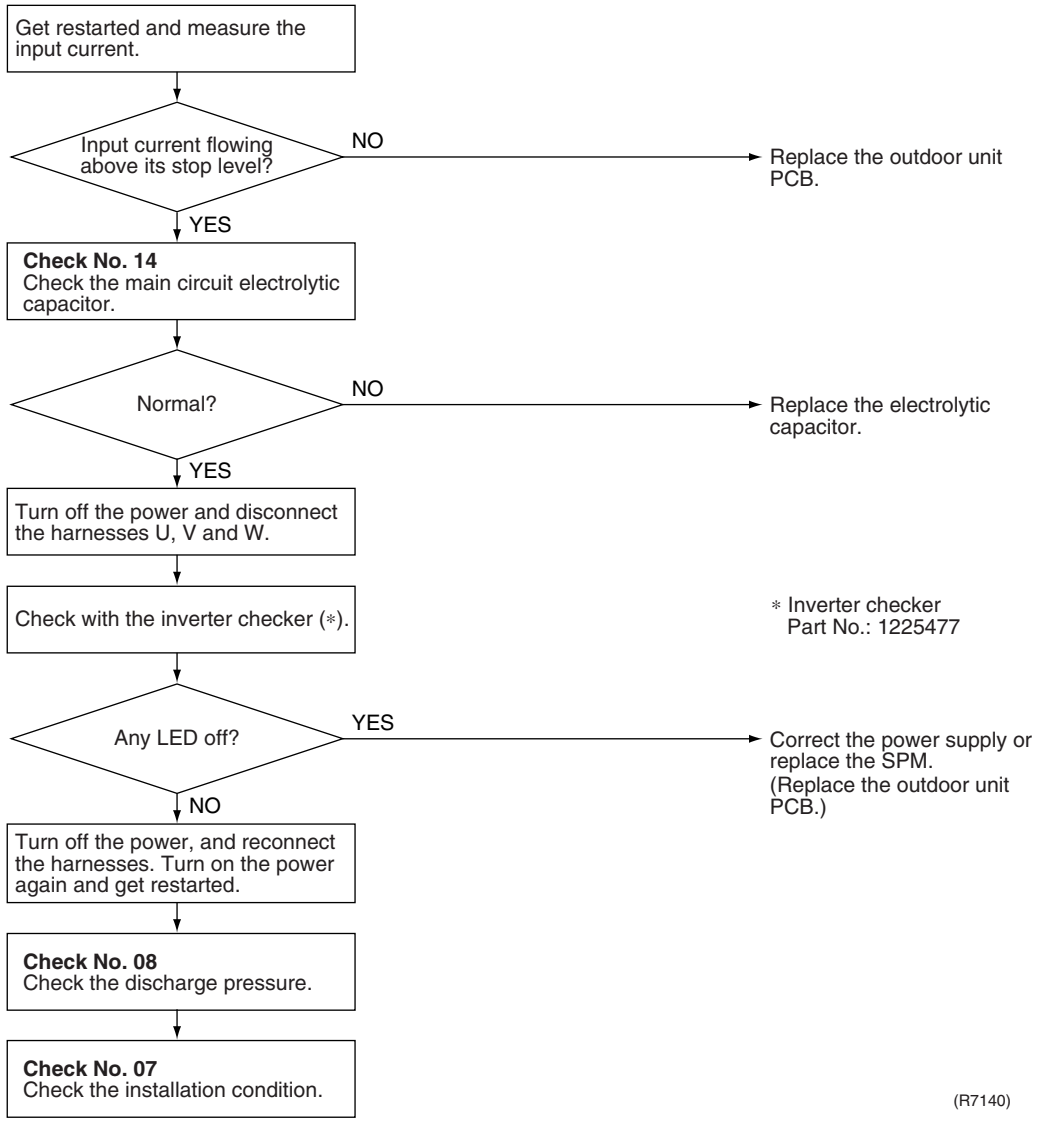
Check No.07
Refer to P.150

Check No.08
Refer to P.151

Check No.14
Refer to P.153

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

* An input over-current may result from wrong internal wiring. If the wires have been disconnected and reconnected for part replacement, for example, and the system is interrupted by an input over-current, check the wires again.



Note: If the model doesn't have SPM, replace the outdoor unit PCB.

4.12 Discharge Pipe Temperature Control

Remote Controller Display

F3

Method of Malfunction Detection

The discharge pipe temperature control (stop, frequency drooping, etc.) is checked with the temperature being detected by the discharge pipe thermistor.

Malfunction Decision Conditions

If the temperature being detected by the discharge pipe thermistor rises, the compressor will stop. The temperature at which the compressor halts varies according to the frequency.
(1) 110°C when the frequency is above 30Hz on ascending or above 25Hz on descending.
(2) 108°C when the frequency is below 30Hz on ascending or below 25Hz on descending.

- The error is cleared when the temperature has dropped below 95°C.
- If the compressor stops 6 times successively due to abnormal discharge pipe temperature, the system will be shut down.
- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

Supposed Causes

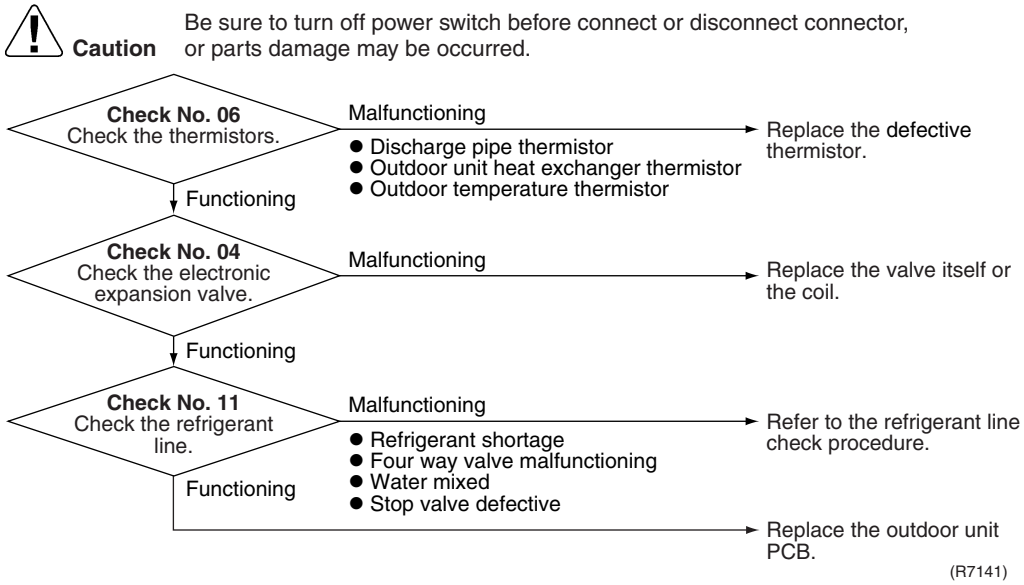
- Refrigerant shortage
- Four way valve malfunctioning
- Discharge pipe thermistor defective
  (heat exchanger or outdoor temperature thermistor defective)
- Outdoor unit PCB defective
- Water mixed in the local piping
- Electronic expansion valve defective
- Stop valve defective

Troubleshooting

Check No.04
Refer to P.146

Check No.06
Refer to P.149

Check No.11
Refer to P.152



4.13 High Pressure Control in Cooling

Remote Controller Display

F6

Method of Malfunction Detection

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

Malfunction Decision Conditions

- Activated when the temperature being sensed by the heat exchanger thermistor rises above 65°C.
- Deactivated when the temperature drops below 53°C.

Supposed Causes

- The installation space is not large enough.
- Faulty outdoor unit fan
- Faulty electronic expansion valve
- Faulty outdoor unit heat exchanger thermistor
- Faulty outdoor unit PCB
- Faulty stop valve
- Dirty heat exchanger

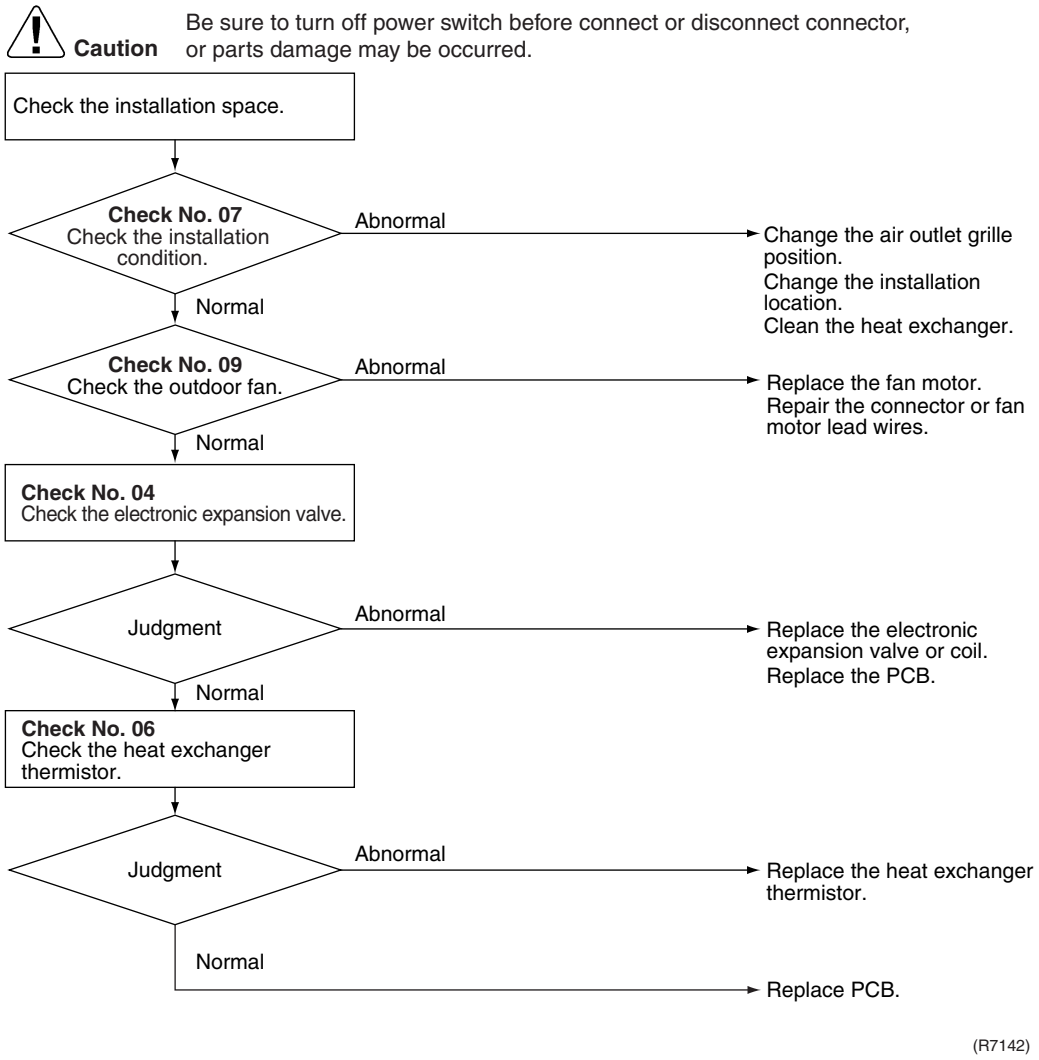
Troubleshooting

Check No.04
Refer to P.146

Check No.06
Refer to P.149

Check No.07
Refer to P.150

Check No.09
Refer to P.151



4.14 Compressor Sensor System Abnormality

Remote Controller Display

H0

Method of Malfunction Detection

Fault condition is identified by DC current which is detected before compressor startup.

Malfunction Decision Conditions

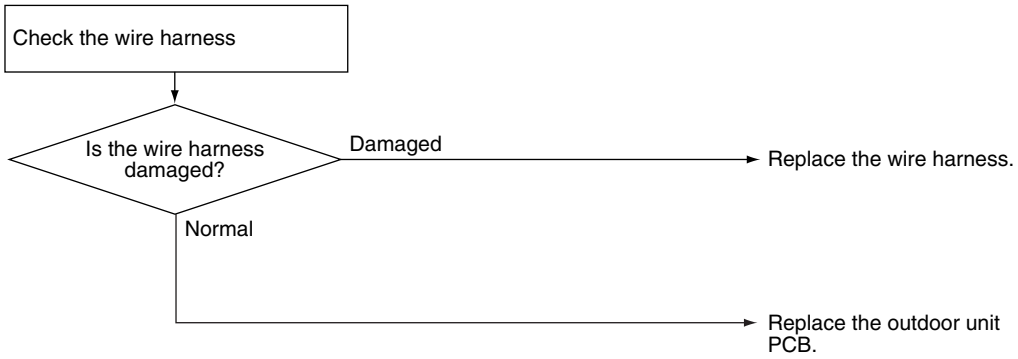
- When the DC current before compressor startup is other than 0.5 to 4.5 V (detected by converting the sensor output to voltage), or the DC voltage is 50 V or less.

Supposed Causes

- Defective PCB
- Harness disconnection / defective connection

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



(R7143)

4.15 Position Sensor Abnormality

Remote Controller Display

H6

Method of Malfunction Detection

A compressor startup failure is detected by checking the compressor running condition through the position detection circuit.

Malfunction Decision Conditions

- The compressor is not running in about 15 seconds after the compressor run command signal is sent.
- Clearing condition: Continuous run for about 11 minutes (normal)
- The system will be shut down if the error occurs 16 times.

Supposed Causes

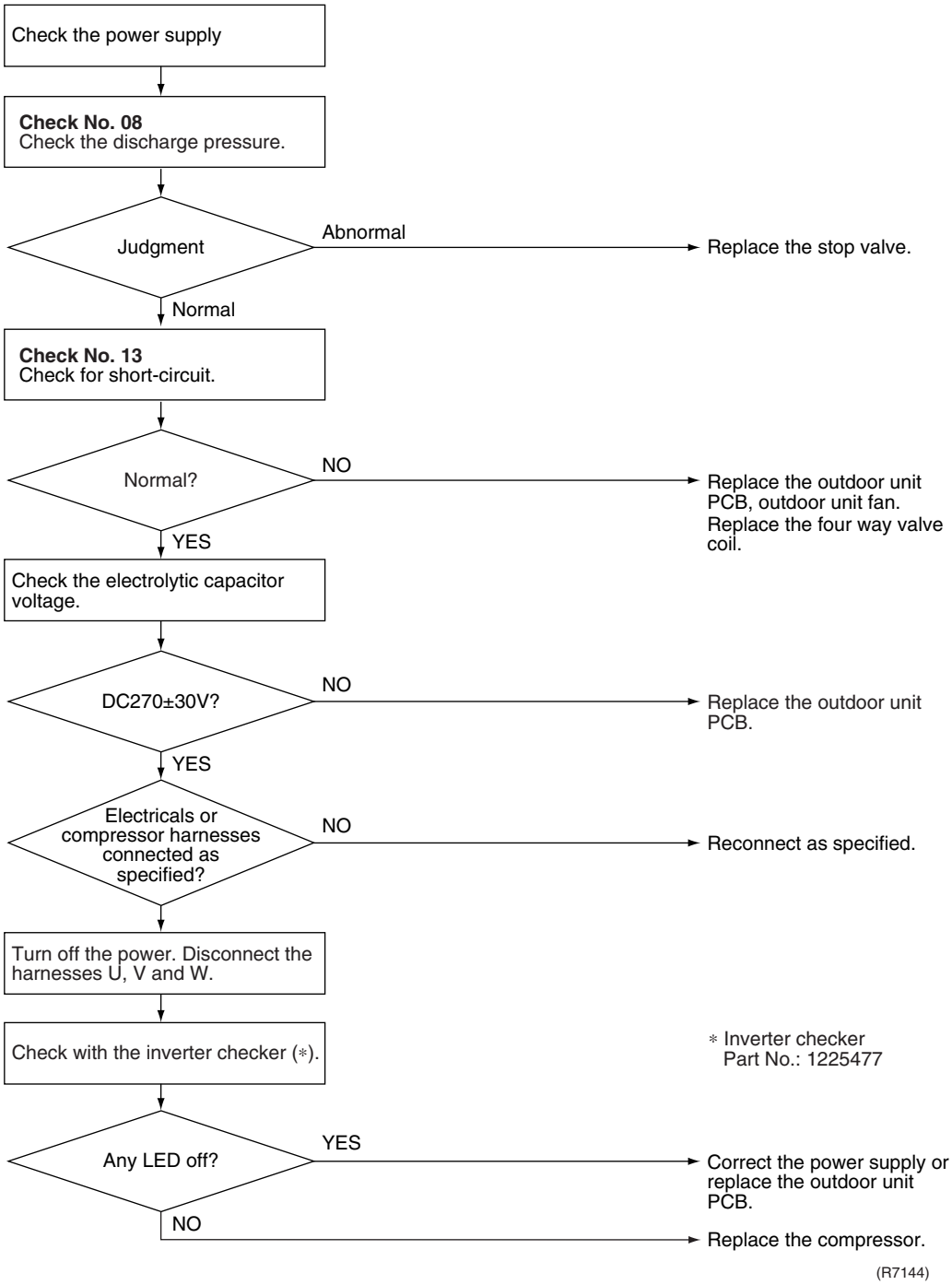
- Compressor relay cable disconnected
- Compressor itself defective
- Outdoor unit PCB defective
- Stop valve closed
- Input voltage out of specification

Troubleshooting

Check No.08
Refer to P.151

Check No.13
Refer to P.153

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



4.16 DC Voltage / DC Current Sensor Abnormality

Remote Controller Display

H8

Method of Malfunction Detection

DC voltage or DC current sensor system fault is identified based on the compressor operation frequency and the input current detected by the product of DC current and DC voltage.

Malfunction Decision Conditions

When the compressor operation frequency is more than 52 Hz
and when the DC current is less than 0.3 A or DC voltage is less than 50V.

- If this error repeats 4 times, the system will be shut down.
- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

Supposed Causes

- Power transistor defective
- Internal wiring broken or in poor contact
- Reactor defective
- Outdoor unit PCB defective
- Refrigerant shortage

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Replace the outdoor unit PCB.

4.17 Thermistor or Related Abnormality (Outdoor Unit)

Remote Controller Display

P4,J3,J6,J8,J9,H9

Method of Malfunction Detection

This type of error is detected by checking the thermistor input voltage to the microcomputer.
[A thermistor error is detected by checking the temperature.]

Malfunction Decision Conditions

The thermistor input is above 4.98 V or below 0.02 V with the power on for 5 seconds.
Error J3 is judged if the discharge pipe thermistor temperature is smaller than the condenser thermistor temperature.
In case of J8 or J9, the system will be shut down when the error is detected at all of operating units.

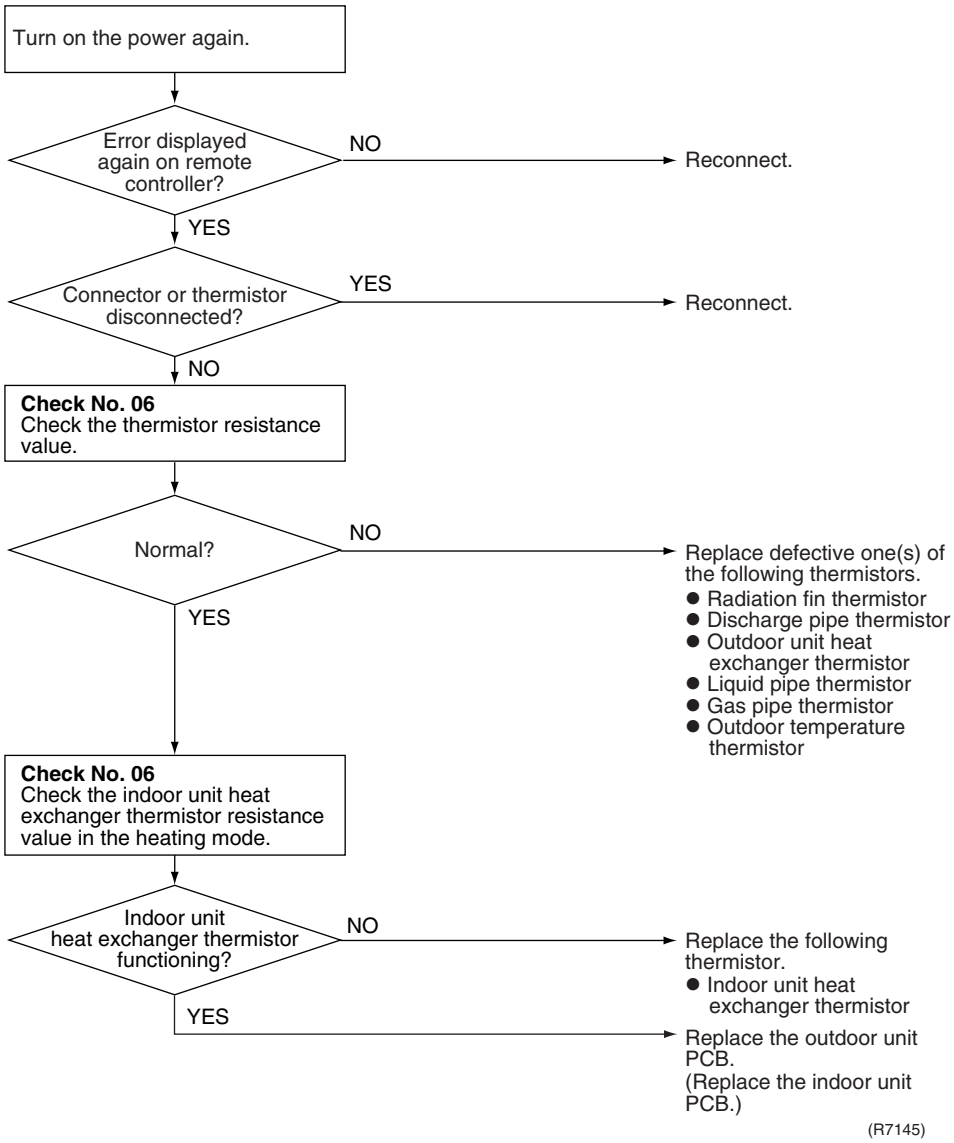
Supposed Causes

- Connector in poor contact
- Thermistor defective
- Outdoor unit PCB defective
- Indoor unit PCB defective
- Condenser thermistor defective in the case of J3 error (outdoor unit heat exchanger thermistor in the cooling mode, or indoor unit heat exchanger thermistor in the heating mode)

Troubleshooting

Check No.06
Refer to P.149

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



P4 : Radiation fin thermistor
J3 : Discharge pipe thermistor
J6 : Outdoor unit heat exchanger thermistor
J8 : Liquid pipe thermistor
J9 : Gas pipe thermistor
H9 : Outdoor temperature thermistor

4.18 Electrical Box Temperature Rise

Remote Controller Display

L3

Method of Malfunction Detection

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

Malfunction Decision Conditions

- With the compressor off, the radiation fin temperature is above 80°C.
- The error is cleared when the temperature drops below 70°C.

Supposed Causes

- Fin temperature rise due to defective outdoor unit fan
- Fin temperature rise due to short-circuit
- Fin thermistor defective
- Connector in poor contact
- Outdoor unit PCB defective

Troubleshooting

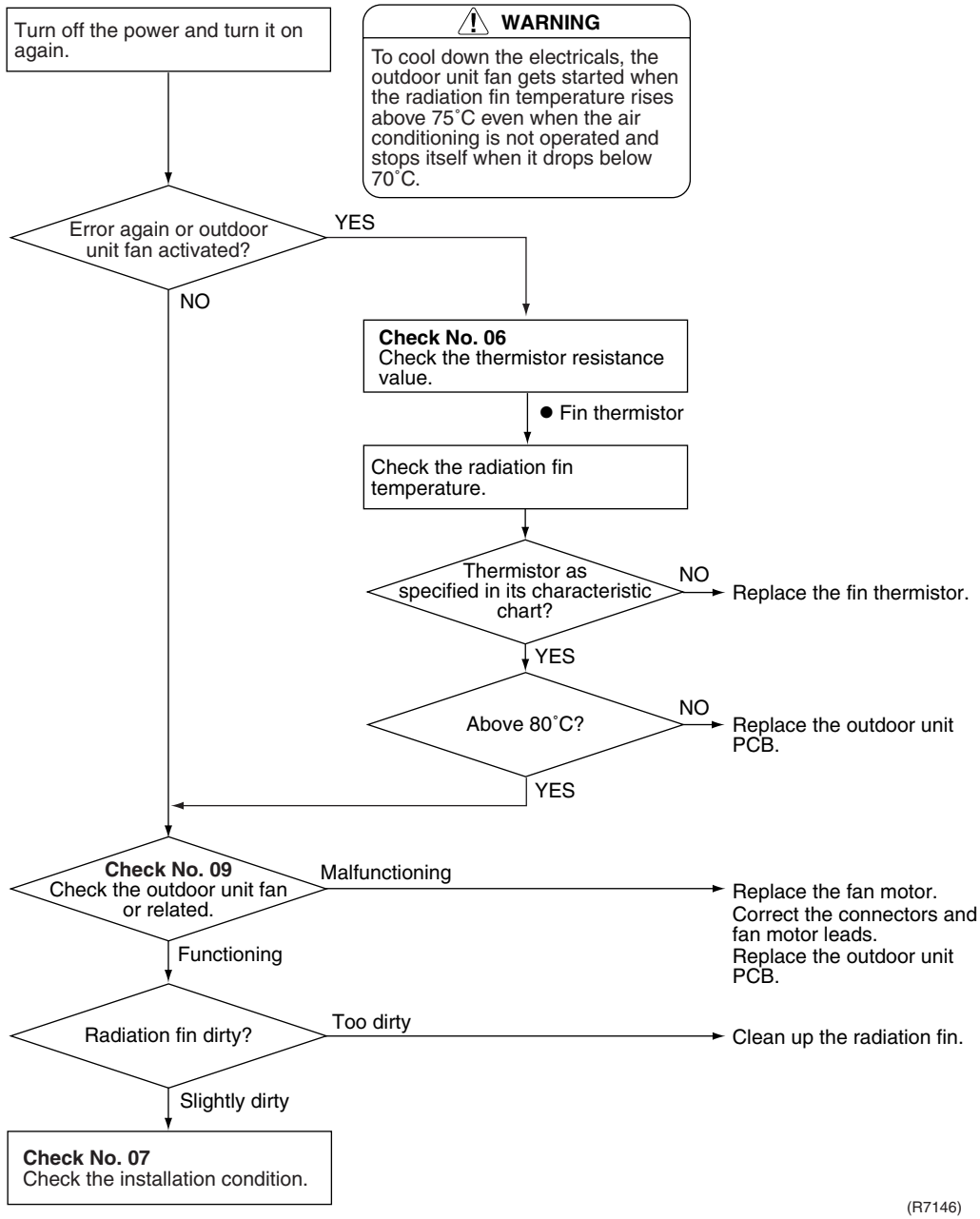
Check No.06
Refer to P.149

Check No.07
Refer to P.150

Check No.09
Refer to P.151

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

(Precaution before turning on the power again)
Make sure the power has been off for at least 30 seconds.



4.19 Radiation Fin Temperature Rise

Remote Controller Display

L4

Method of Malfunction Detection

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

Malfunction Decision Conditions

If the radiation fin temperature with the compressor on is above 93°C,

- If a radiation fin temperature rise takes place 255 times successively, the system will be shut down.
- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

Supposed Causes

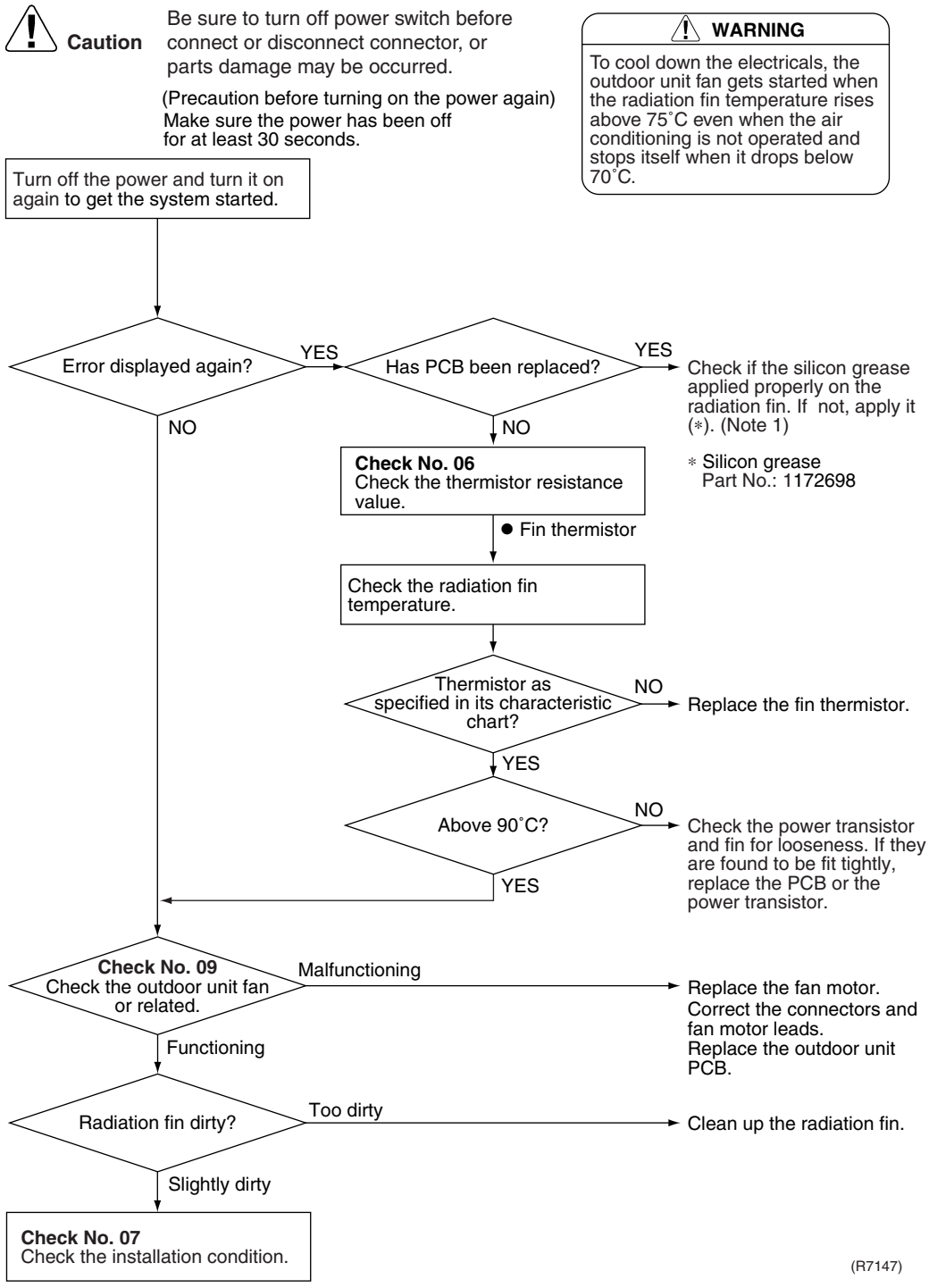
- Fin temperature rise due to defective outdoor unit fan
- Fin temperature rise due to short-circuit
- Fin thermistor defective
- Connector in poor contact
- Outdoor unit PCB defective
- Silicon grease is not applied properly on the heat radiation fin after replacing outdoor unit PCB

Troubleshooting

Check No.06
Refer to P.149

Check No.07
Refer to P.150

Check No.09
Refer to P.151



Note: Refer to “1.3 Application of Silicon grease to a power transistor and a diode bridge” on P 158.

4.20 Output Over Current Detection

Remote Controller Display

L5

Method of Malfunction Detection

An output over-current is detected by checking the current that flows in the inverter DC section.

Malfunction Decision Conditions

- A position signal error occurs while the compressor is running.
- A speed error occurs while the compressor is running.
- An output over-current input is fed from the output over-current detection circuit to the microcomputer.
- The system will be shut down if the error occurs 8 times.
- Clearing condition: Continuous run for about 11 minutes (normal)

Supposed Causes

- Over-current due to defective power transistor
- Over-current due to wrong internal wiring
- Over-current due to abnormal supply voltage
- Over-current due to defective PCB
- Error detection due to defective PCB
- Over-current due to closed stop valve
- Over-current due to compressor failure
- Over-current due to poor installation condition

Troubleshooting

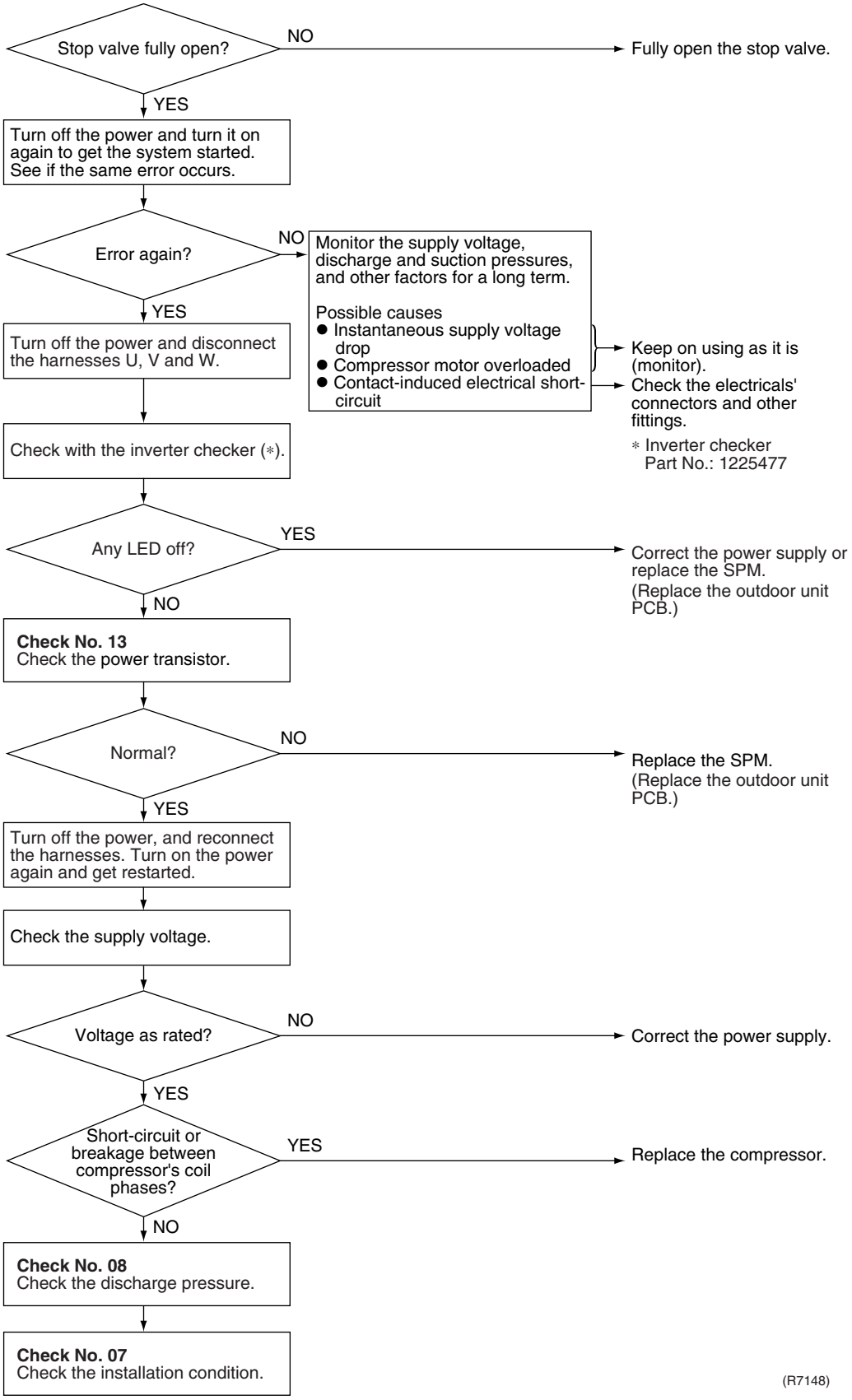
Check No.07
Refer to P.150

Check No.08
Refer to P.151

Check No.13
Refer to P.153

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

* An input over-current may result from wrong internal wiring. If the wires have been disconnected and reconnected for part replacement, for example, and the system is interrupted by an input over-current, check the wires again.



Note: If the model does not have SPM, replace the outdoor unit PCB.

4.21 Insufficient Gas

Remote Controller Display

Method of Malfunction Detection

Gas shortage detection I :
A gas shortage is detected by checking the power consumption value and the compressor running frequency.

Malfunction Decision Conditions

Gas shortage detection I :
Power consumption < 4578 / 256 (W/Hz) × Compressor running frequency – 638 (W)
However, when the status of running frequency > 48 (Hz) is kept on for a certain time.

If a gas shortage error takes place 4 times successively, the system will be shut down. The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

Supposed Causes

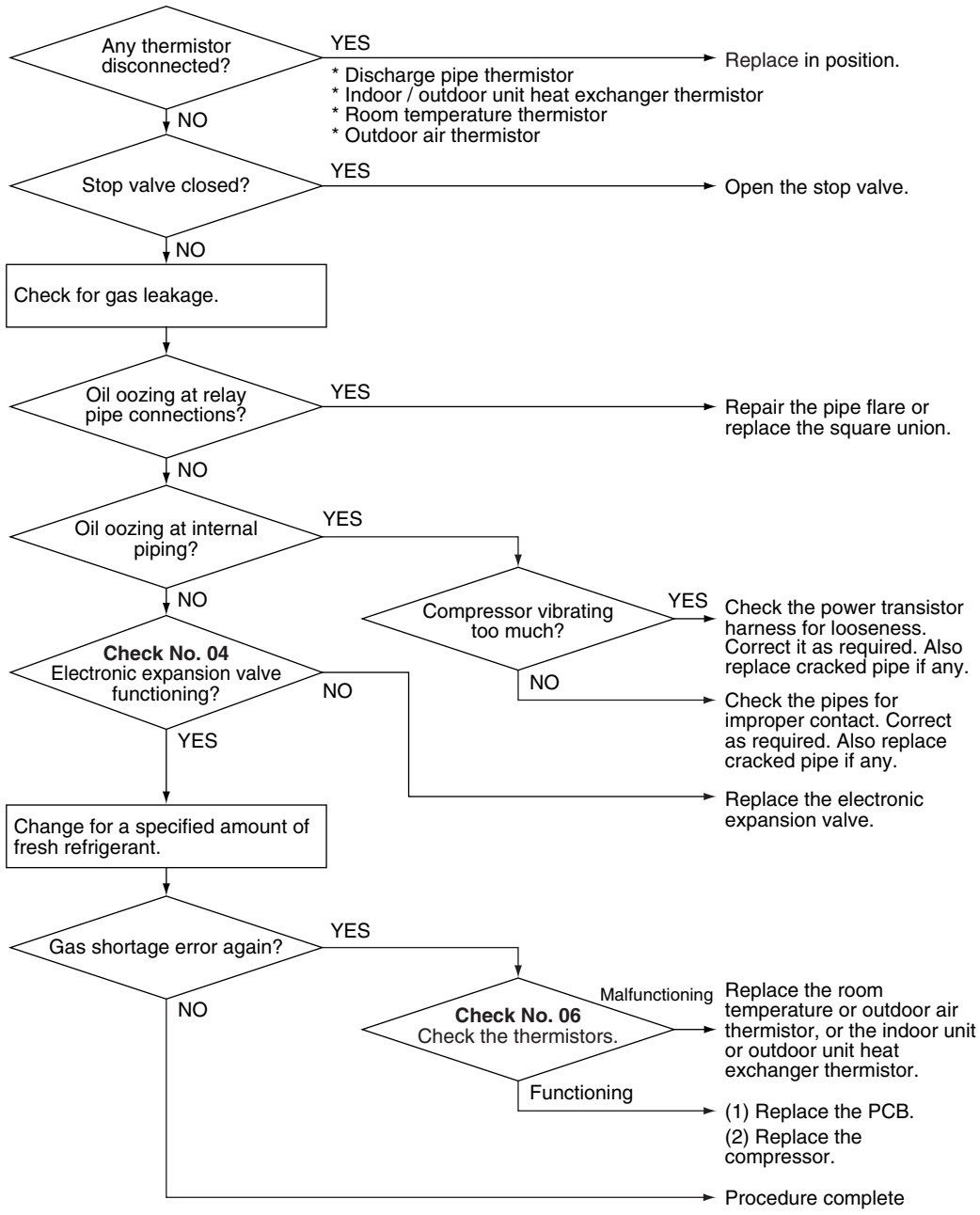
- Refrigerant shortage (refrigerant leakage)
- Poor compression performance of compressor
- Stop valve closed
- Electronic expansion valve defective

Troubleshooting

Check No.04
Refer to P.146

Check No.06
Refer to P.149

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



(R7149)

4.22 Over-voltage Detection / Low-voltage Detection

Remote Controller Display

U2

Method of Malfunction Detection

An abnormal voltage rise (or drop) is detected by checking the detection circuit or DC voltage detection circuit.

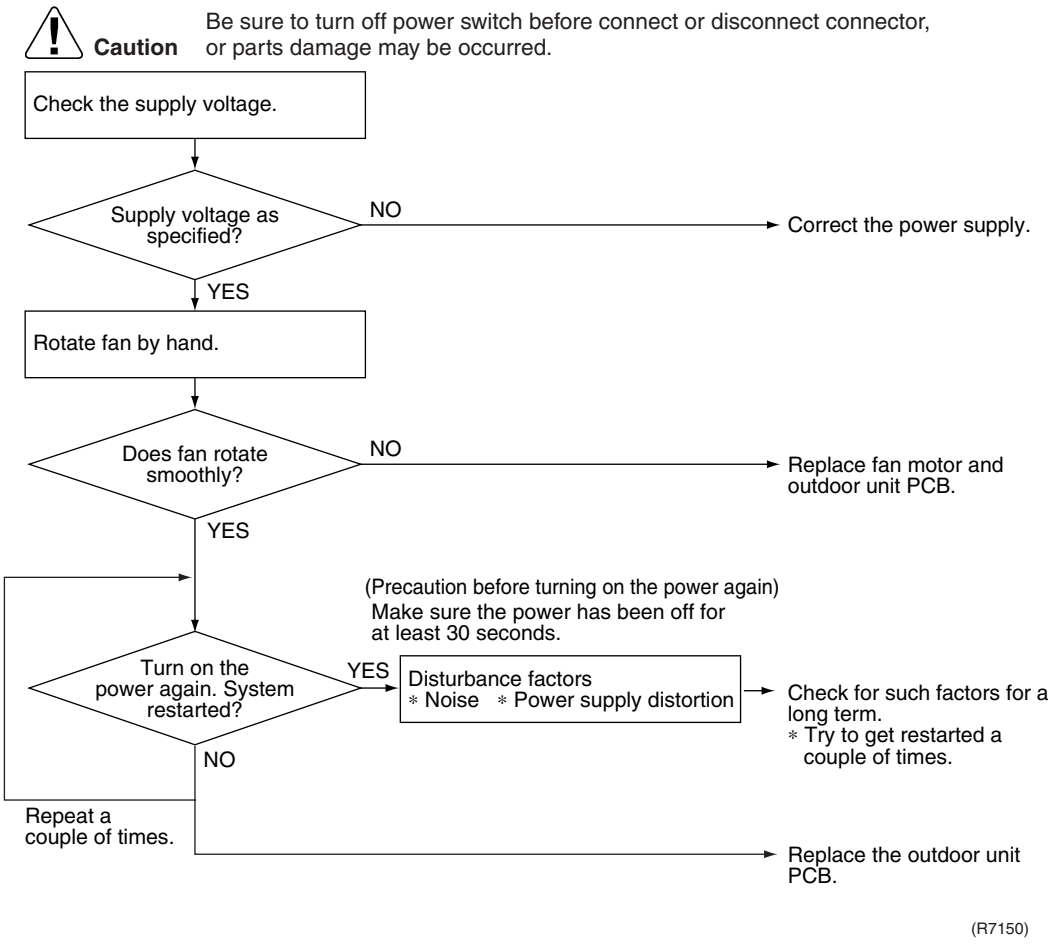
Malfunction Decision Conditions

- An over-voltage signal is fed from the over-voltage detection circuit to the microcomputer, or the voltage being detected by the DC voltage detection circuit is judged to be below 150V for 0.1 second.
- The system will be shut down if the error occurs 255 times.
- Clearing condition: Continuous run for about 60 minutes (normal)

Supposed Causes

- Supply voltage not as specified
- Over-voltage detector or DC voltage detection circuit defective
- PAM control part(s) defective
- Short circuit inside the fan motor winding.

Troubleshooting



(R7150)

4.23 Anti-icing Function in Other Rooms / Unspecified Voltage (between Indoor and Outdoor Units)

Remote Controller Display

U9,U4

Method of Malfunction Detection

A wrong connection is detected by checking the combination of indoor and outdoor units on the microcomputer.

Malfunction Decision Conditions

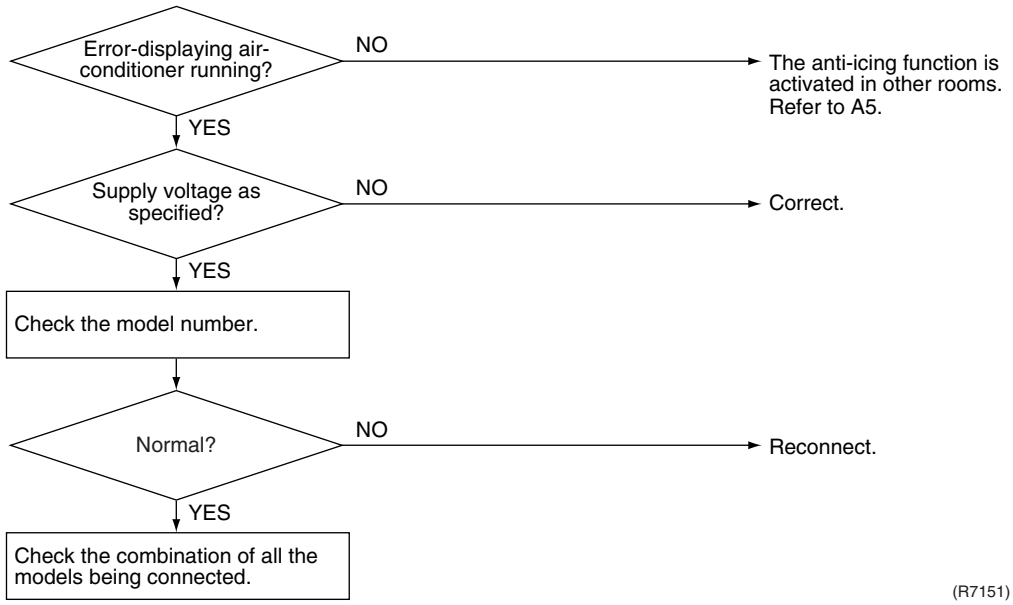
- Operation halt due to the anti-icing function in other rooms
- Operation halt due to unspecified voltage between indoor and outdoor units

Supposed Causes

- Operation halt due to the anti-icing function in other rooms
- Wrong connections at the indoor unit
- PCB wrongly connected

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



(R7151)

4.24 Outdoor Unit PCB Abnormality or Signal Transmission Circuit Abnormality

Remote Controller Display

U4

Method of Malfunction Detection

1. Detect within the programme of the microcomputer that the programme is operating normally.
2. When indoor-outdoor unit signal transmission can not be performed for more than 15 sec.
3. Detection of the presence or absence of zero-cross signal.

Malfunction Decision Conditions

1. When the programme of the microcomputer is in bad running order.
2. When indoor-outdoor unit signal transmission can not be performed for more than 15 sec.
3. When zero-cross signal can not be detected for more than 10 sec.

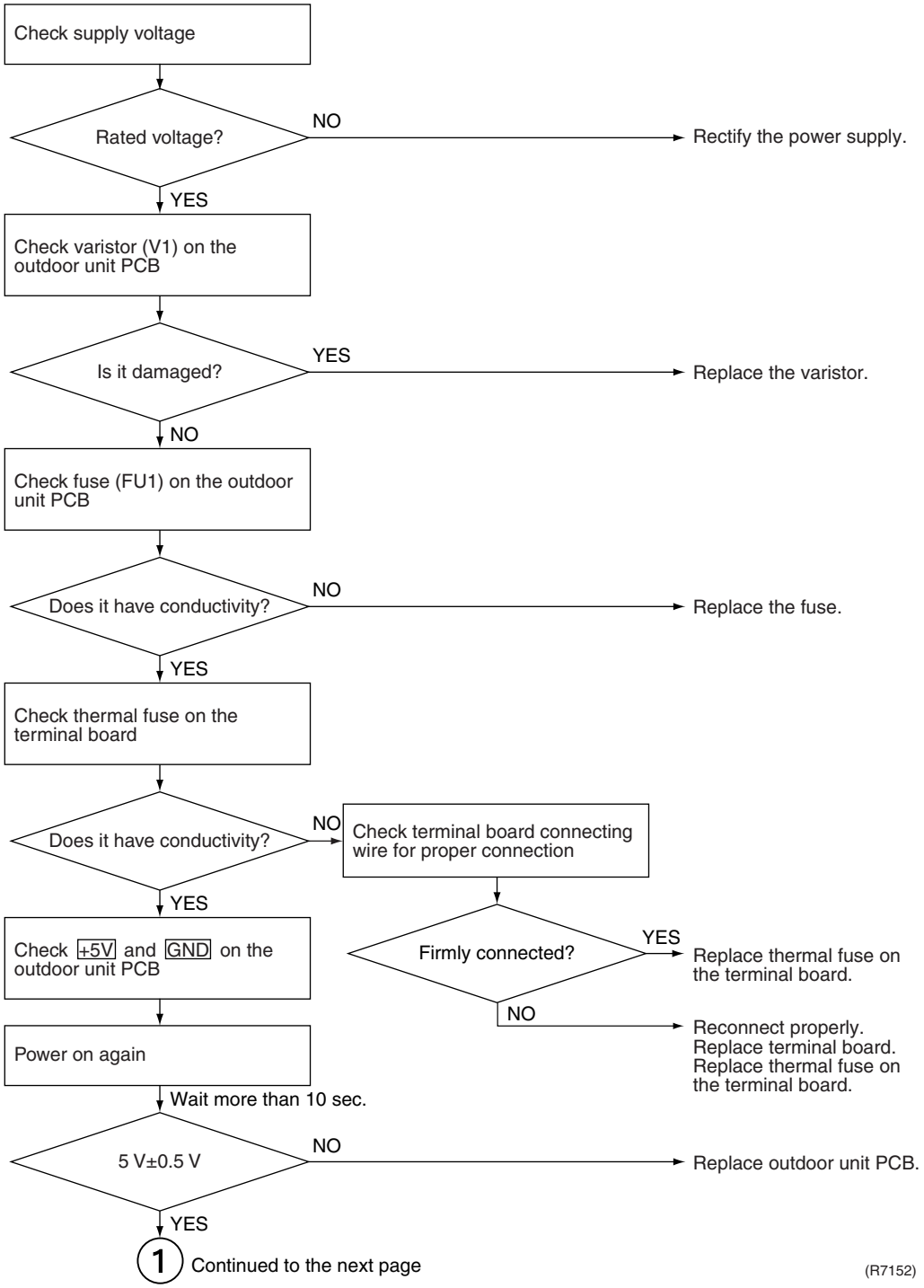
Supposed Causes

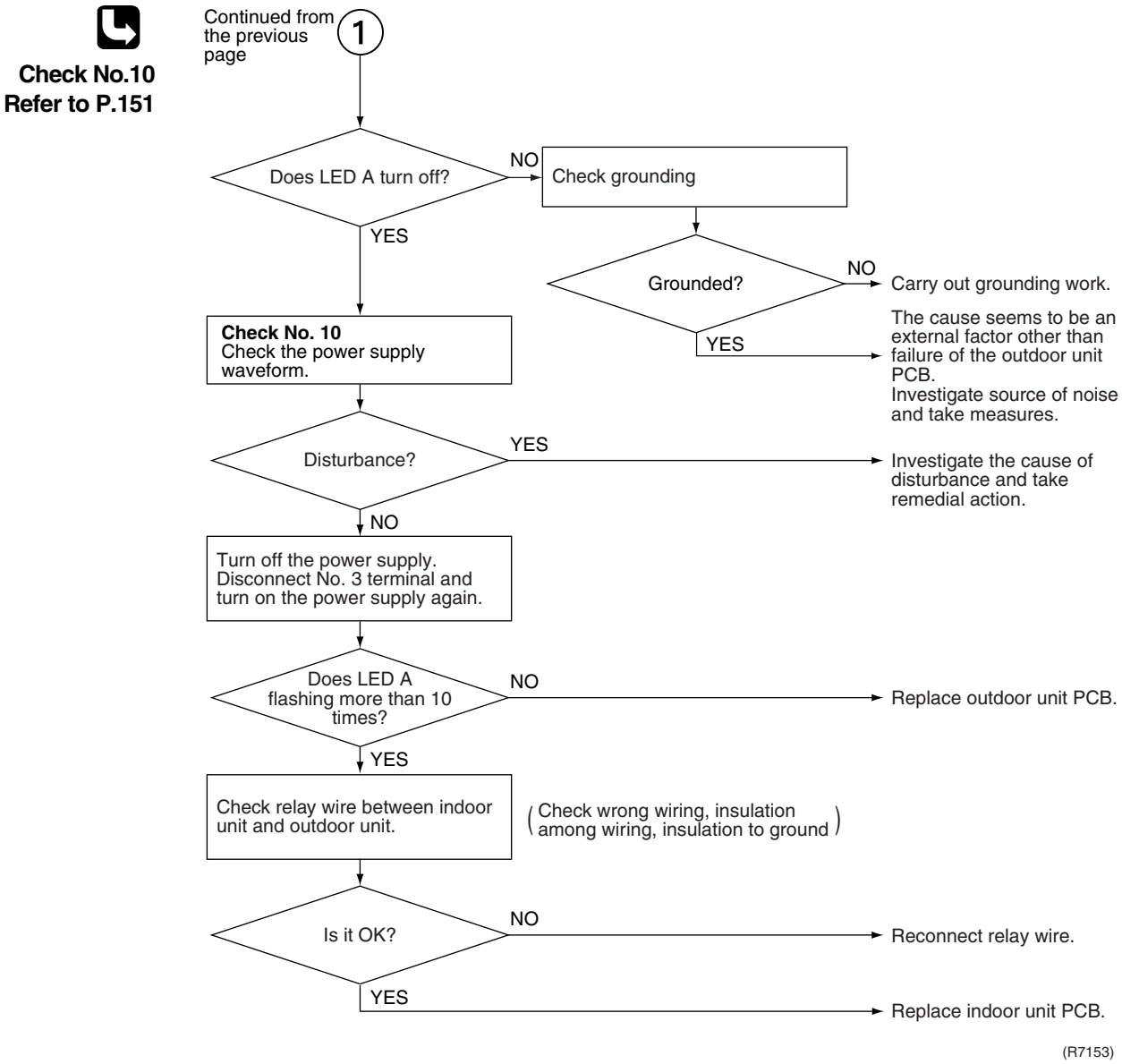
- Display disabled due to power supply fault
- Communication circuit fault in outdoor unit PCB
- Out of control of microcomputer caused by external factors
  - Noise
  - Momentary voltage drop
  - Momentary power loss
- Defective outdoor unit PCB
- Defective thermal fuse in outdoor terminal board

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Check indoor unit also, because a comunication circuit fault may be caused by the problem related to the indoor unit.




Check No.10
Refer to P.151
Continued from the previous page
1
Does LED A turn off?
NO
Check grounding
YES
Grounded?
NO
Carry out grounding work.
YES
The cause seems to be an external factor other than failure of the outdoor unit PCB.
Investigate source of noise and take measures.
Check No. 10
Check the power supply waveform.
Disturbance?
YES
Investigate the cause of disturbance and take remedial action.
NO
Turn off the power supply.
Disconnect No. 3 terminal and turn on the power supply again.
Does LED A flashing more than 10 times?
NO
Replace outdoor unit PCB.
YES
Check relay wire between indoor unit and outdoor unit.
(Check wrong wiring, insulation among wiring, insulation to ground)
Is it OK?
NO
Reconnect relay wire.
YES
Replace indoor unit PCB.
(R7153)

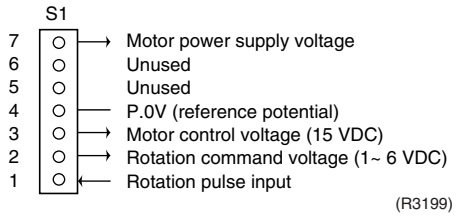
5. Check

5.1 How to Check

5.1.1 Fan Motor Connector Output Check

Check No.01

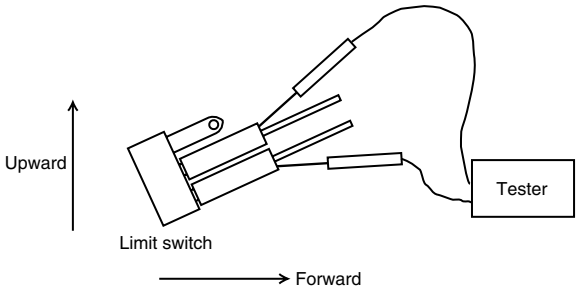
1. Check connector connection.
2. Check motor power supply voltage output (pins 4-7).
3. Check motor control voltage (pins 4-3).
4. Check rotation command voltage output (pins 4-2).
5. Check rotation pulse input (pins 4-1).



5.1.2 Limit Switch Continuity check

Check No.03

Remove the front grille. The limit switch is located at the left side of the drain pan assembly. Check the continuity of the switch connection.



Shutter status	Open	Closed
Continuity	Continuity	No continuity

* The shutter can be opened and closed with hand. Keep the shutter open and closed all the way for each continuity check steps.

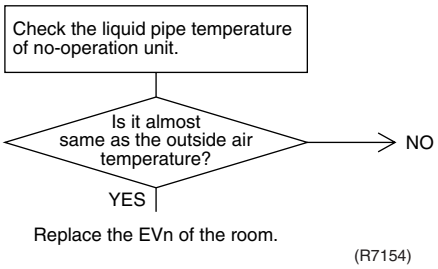
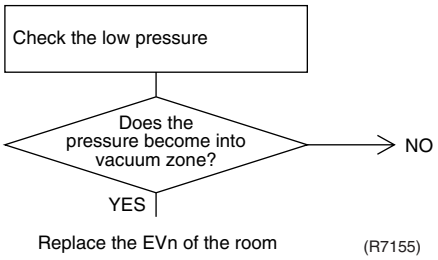
5.1.3 Electronic Expansion Valve Check

Check No.04

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

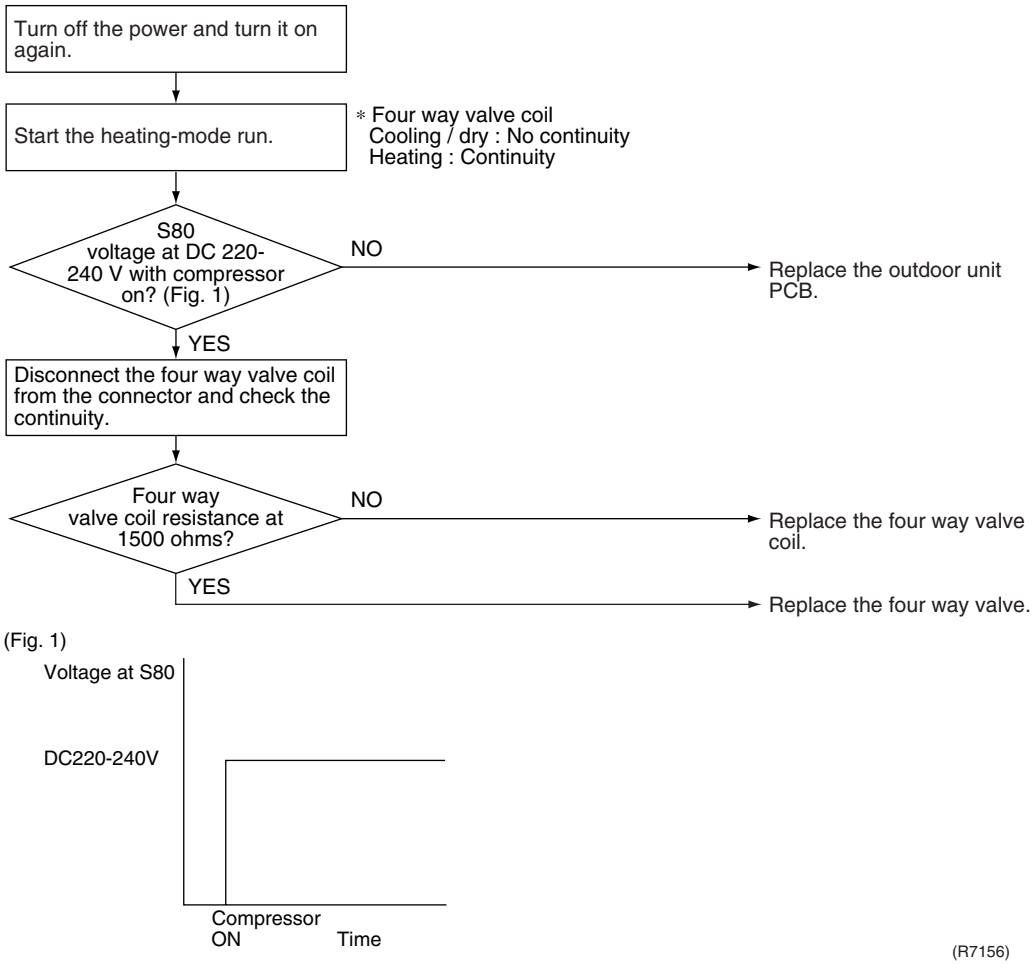
1. Check to see if the EV connector is correctly inserted in the PCB. Compare the EV unit and the connector number.
2. Turn the power off and back on again, and check to see if all the EVs generate latching sound.
3. If any of the EVs does not generate latching noise in the above step 2, disconnect that connector and check the continuity using a tester.
   Check the continuity between pins 1, 3 and 6, and between pins 2, 4 and 5. If there is no conductivity between the pins, the EV coil is faulty.
4. If no EV generates latching sound in the above step 2, the outdoor unit PCB is faulty.
5. If the continuity is confirmed in the above step 3, mount a good coil (which generated latching sound) in the EV unit that did not generate latching sound, and check to see if that EV generates latching sound.
   *If latching sound is generated, the outdoor unit PCB is faulty.
   *If latching sound is not generated, the EV unit is faulty.

Note: Please note that the latching sound varies depending on the valve type.

Valve Body Condition (Symptom)	Check Method / Measure
(1) Valve body catches at fully opened or half opened position. (Symptom) Cooling: ■Water leakage at the no-operation unit ■Flow noise of refrigerant in the no-operation unit ■Operation halt due to anti-icing function Heating: ■The unit does not heat ■Refrigerant flow rate vary by unit (Discharge air temperatures are different by room) ■Peak cut	Reset power supply and conduct cooling operation unit by unit. 
(2) Valve body catches at complete close position. (Symptom) Cooling: ■The only unit having problem does not cool the room . ■When the only faulty unit is in operation, the unit makes pump down. (The low pressure of the unit becomes vacuum) ■IT is activated. ■Abnormal discharge pipe temperature Heating: Insufficient gas due to liquid refrigerant stagnation inside the faulty indoor unit (Only for heat pump model) ■The unit does not heat the room. ■OL is activated. ■Abnormal discharge pipe temperature	Reset power supply and conduct cooling operation unit by unit. 
(3) Valve does not open fully. (Symptom) ■The unit does not cool nor heat (only for heat pump model.) ■OL is actuated. ■Abnormal discharge pipe temperature	Check the number of rotation of shaft if it is 5 and half from full open to complete close using manual coil for electronic expansion valve. When the number of rotation of shaft is less than the above value, the valve may catch anywhere of the body.

5.1.4 Four Way Valve Performance Check

Check No.05



(Fig. 1)

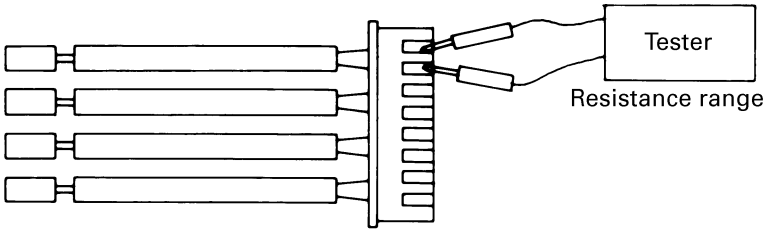
(R7156)

5.1.5 Thermistor Resistance Check

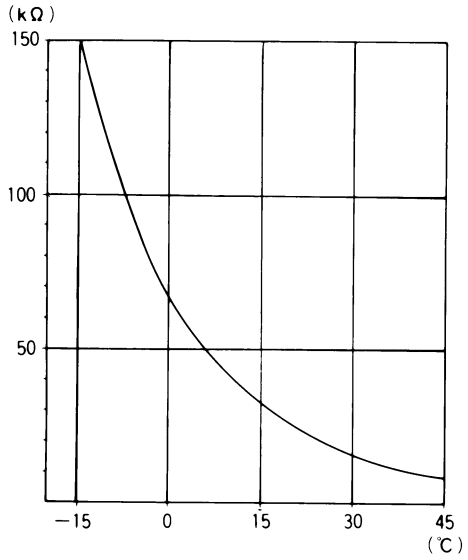
Check No.06

Remove the connectors of the thermistors on the PCB, and measure the resistance of each thermistor using tester.
The relationship between normal temperature and resistance is shown in the graph and the table below.

Thermistor Temperature (°C)	R25°C=20kΩ B=3950
-20	211.0 (kΩ)
-15	150
-10	116.5
-5	88
0	67.2
5	51.9
10	40
15	31.8
20	25
25	20
30	16
35	13
40	10.6
45	8.7
50	7.2



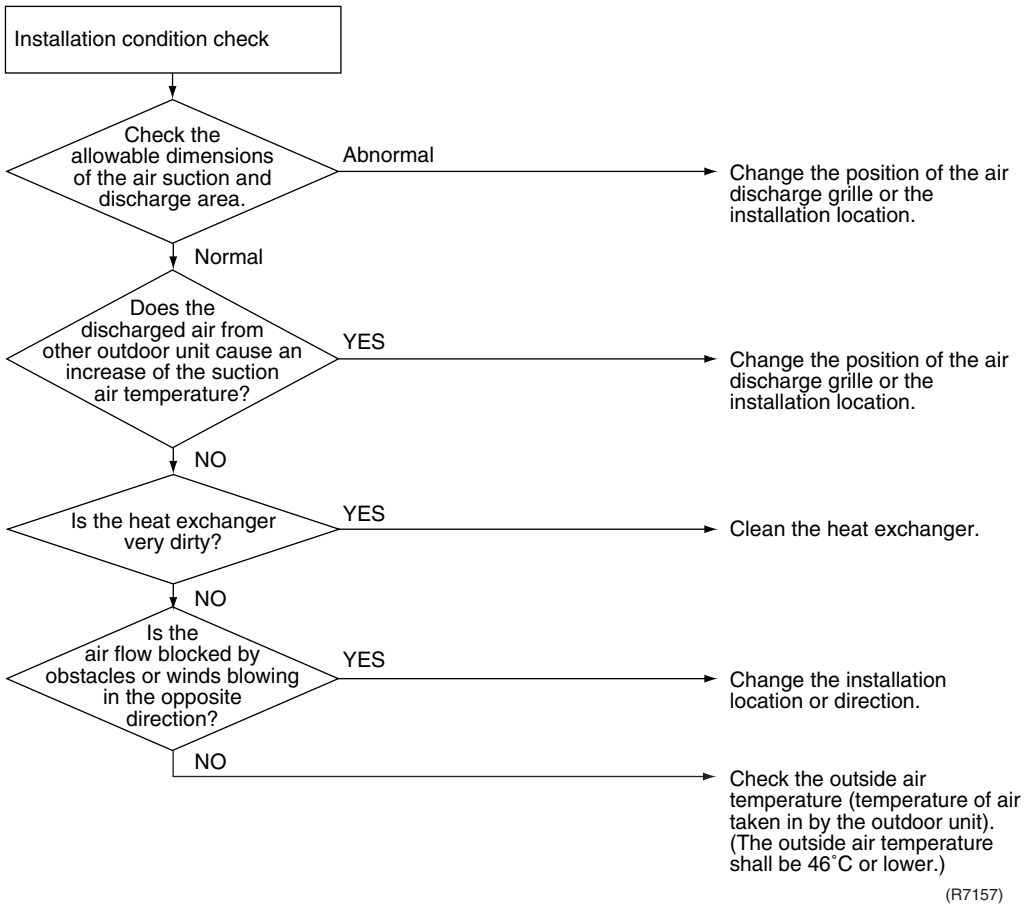
（R25＝20kΩ、B＝3950）



(R1437)

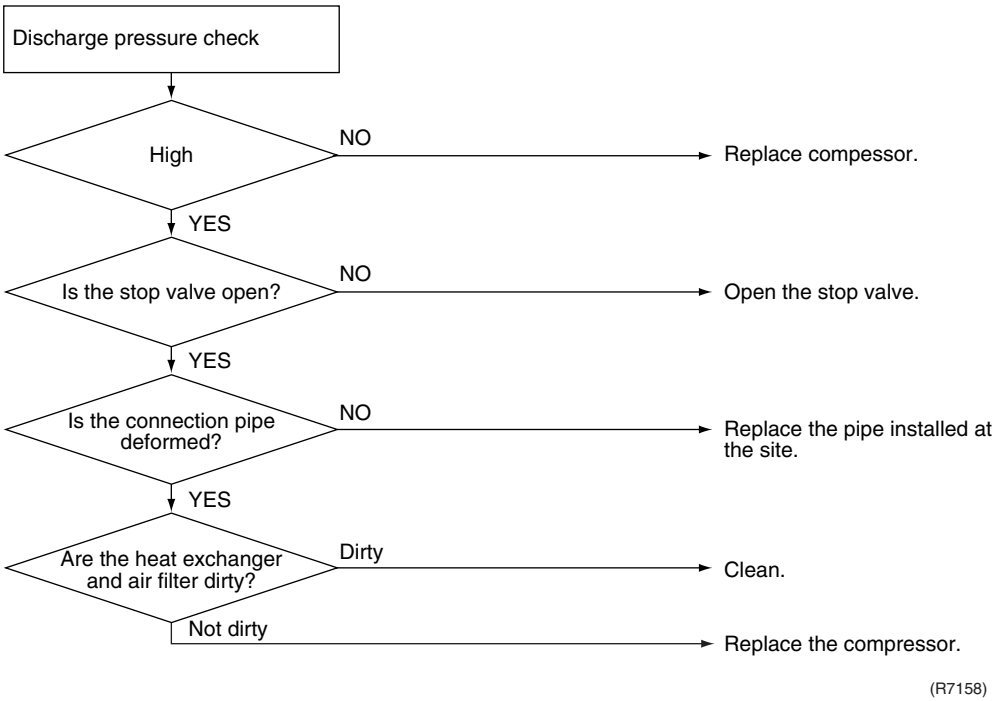
5.1.6 Installation Condition Check

Check No.07



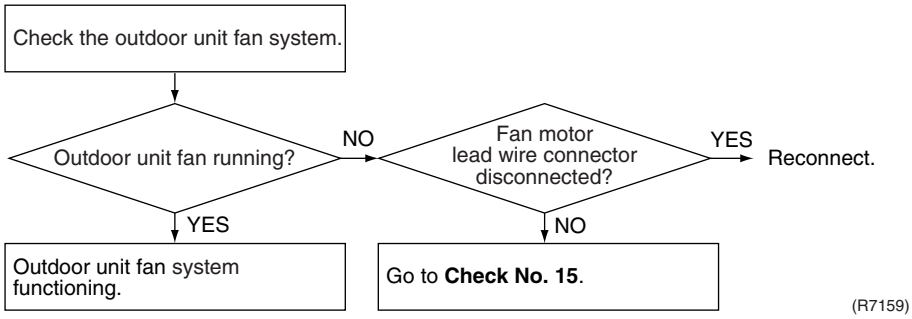
5.1.7 Discharge Pressure Check

Check No.08



5.1.8 Outdoor Unit Fan System Check (With DC Motor)

Check No.09



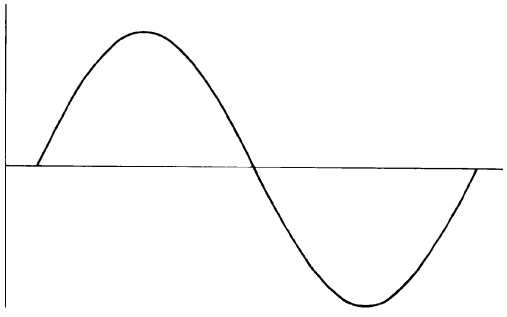
5.1.9 Power Supply Waveforms Check

Check No.10

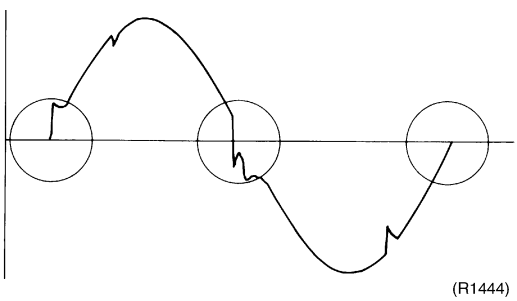
Measure the power supply waveform between pins 1 and 3 on the terminal board, and check the waveform disturbance.

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

[Fig.1]

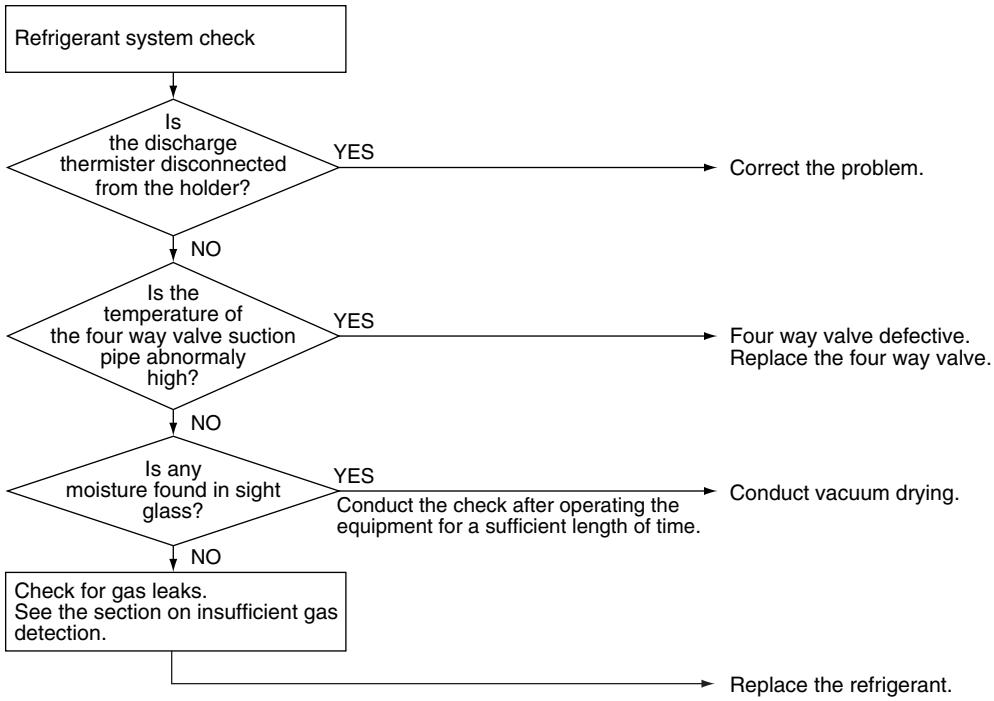


[Fig.2]



5.1.10 Inverter Units Refrigerant System Check

Check No.11



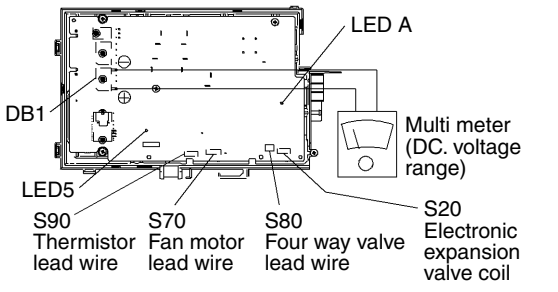
(R7160)

5.1.11 Capacitor Voltage Check

Check No.12

Before this checking, be sure to check the main circuit for short-circuit.

- Checking the capacitor voltage
- With the circuit breaker still on, measure the voltage according to the drawing. Be careful never to touch any live parts.



(R6027)

5.1.12 Power Transistor Check

Check No.13

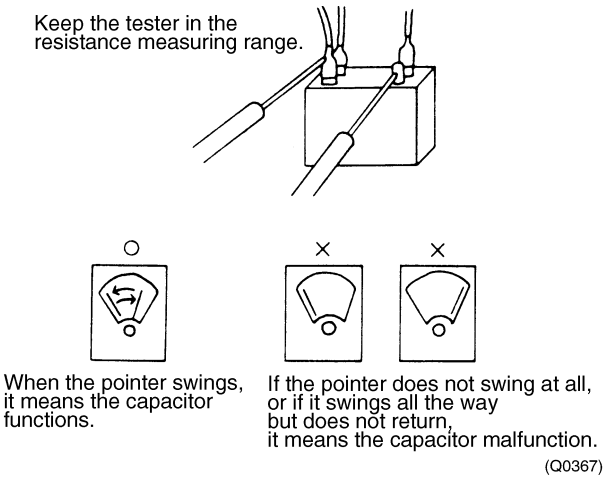
- Checking the power transistor
- Never touch any live parts for at least 10 minutes after turning off the circuit breaker.
- If unavoidably necessary to touch a live part, make sure the power transistor's supply voltage is below 50 V using the tester.
- For the UVW, make measurements at the Faston terminal on the PCB or the relay connector.

Tester's negative terminal	Power transistor (+)	UVW	Power transistor (–)	UVW
Tester's positive terminal	UVW	Power transistor (+)	UVW	Power transistor (–)
Normal resistance	Several kohms to several Mohms			
Abnormal resistance	0 or ∞			

5.1.13 Main Circuit Electrolytic Capacitor Check

Check No.14

- Checking the main circuit electrolytic capacitor
- Never touch any live parts for at least 10 minutes after turning off the circuit breaker.
- If unavoidably necessary to touch a live part, make sure there is no DC voltage using the tester.
- Check the continuity with the tester. Reverse the pins and make sure there is continuity.

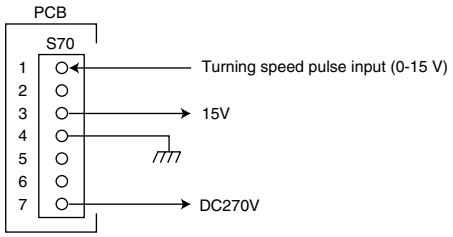


5.1.14 Turning Speed Pulse Input on the Outdoor Unit PCB Check

Check No.15

<Propeller fan motor>
Make sure the voltage of 270±30V is being applied.
(1) Stop the operation first and then the power, and disconnect the connector S70.
(2) Make sure there is about DC 270 V between pins 4 and 7.
(3) With the system and the power still off, reconnect the connector S70.
(4) Make a turn of the fan motor with a hand, and make sure the pulse (0-15 V) appears twice at pins 1 and 4.

If the fan motor protection fuse is blown out, the outdoor-unit fan may also be in trouble. Check the fan too.
If the voltage in Step (2) is not applied, it means the PCB is defective. Replace the PCB.
If the pulse in Step (4) is not available, it means the Hall IC is defective. Replace the DC fan motor.
If there are both the voltage (2) and the pulse (4), replace the PCB.



(R7044)

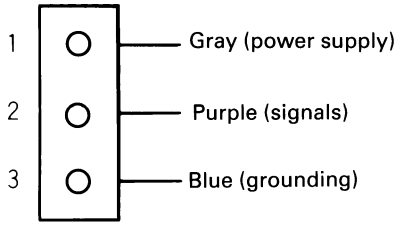
∗ Propeller fan motor : S70

5.1.15 Hall IC Check

Check No.16

1. Check the connector connection.
2. With the power ON, operation OFF, and the connector connected, check the following.
   ∗Output voltage of about 5 V between pins 1 and 3.
   ∗Generation of 3 pulses between pins 2 and 3 when the fan motor is operating.

Failure of (1) → faulty PCB → Replace the PCB.
Failure of (2) → faulty Hall IC → Replace the fan motor.
Both (1) and (2) result → Replace the PCB.



(R1968)

Part 7
Others

1. Others

1.1 Test Run from the Remote Controller

For Heat pump

In cooling mode, select the lowest programmable temperature; in heating mode, select the highest programmable temperature.

- Trial operation may be disabled in either mode depending on the room temperature.
- After trial operation is complete, set the temperature to a normal level. (26°C to 28°C in cooling mode, 20°C to 24°C in heating mode)
- For protection, the system disables restart operation for 3 minutes after it is turned off.

For Cooling Only

Select the lowest programmable temperature.

- Trial operation in cooling mode may be disabled depending on the room temperature. Use the remote control for trial operation as described below.
- After trial operation is complete, set the temperature to a normal level (26°C to 28°C).
- For protection, the machine disables restart operation for 3 minutes after it is turned off.

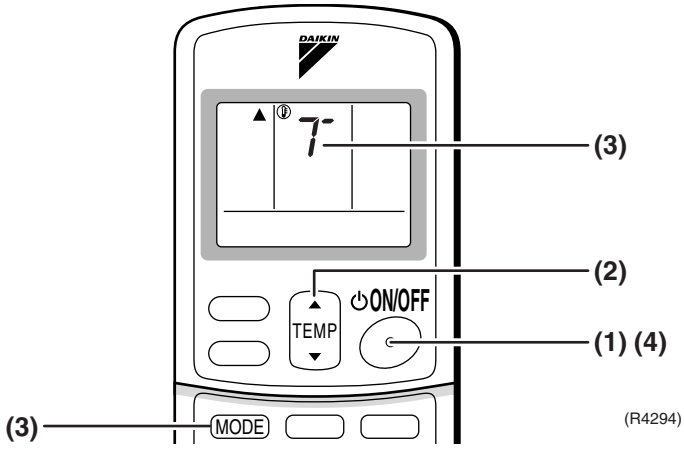
Trial Operation and Testing

1. Measure the supply voltage and make sure that it falls in the specified range.
2. Trial operation should be carried out in either cooling or heating mode.
3. Carry out the test operation in accordance with the Operation Manual to ensure that all functions and parts, such as louver movement, are working properly.

- The air conditioner requires a small amount of power in its standby mode. If the system is not to be used for some time after installation, shut off the circuit breaker to eliminate unnecessary power consumption.
- If the circuit breaker trips to shut off the power to the air conditioner, the system will restore the original operation mode when the circuit breaker is opened again.

Trial operation from Remote Controller

(1) Press ON/OFF button to turn on the system.
(2) Simultaneously press center of TEMP button and MODE buttons.
(3) Press MODE button twice.
("ﾃｽﾄ" will appear on the display to indicate that Trial Operation mode is selected.)
(4) Trial run mode terminates in approx. 30 minutes and switches into normal mode. To quit a trial operation, press ON/OFF button.



1.2 Jumper Settings

1.2.1 When Two Units are Installed in One Room

When two indoor units are installed in one room, the two wireless remote controllers can be set for different addresses.

How to set the different addresses

■ Control PCB of the indoor unit

(1) Remove the front panel.

(2) Remove the sensor parts cover (2-screws), then remove the electric parts box (1-screw).

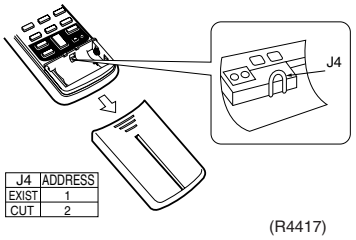
(3) Slide the metallic cover to remove it. (4-claws on the electric parts box)

(4) Cut the jumper JA on PCB.

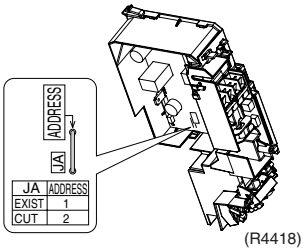
■ Wireless remote controller

(1) Slide the front cover and take it off.

(2) Cut the address jumper J4.



(R4417)



(R4418)

1.2.2 Jumper Setting

Jumper (On indoor control PCB)	Function	When connected (factory set)	When cut
JC	Power failure recovery function	Auto-restart	Unit does not resume operation after recovering from a power failure. Timer ON-OFF settings are cleared.
JB	Fan speed setting when compressor is OFF on thermostat. (effective only at cooling operation)	Fan speed setting ; Remote controller setting	Fan rpm is set to “0” <Fan stop>

1.3 Application of Silicon Grease to a Power Transistor and a Diode Bridge

Applicable Models

All outdoor units using inverter type compressor for room air conditioner.

When the printed circuit board of an outdoor unit is replaced, it is required that silicon grease (*1) is certainly applied to the heat radiation part (the contact point to the heat radiation fin) of the power transistor and diode bridge.

*1: Parts number of the silicon grease – 1172698 (Drawing number 3FB03758-1)

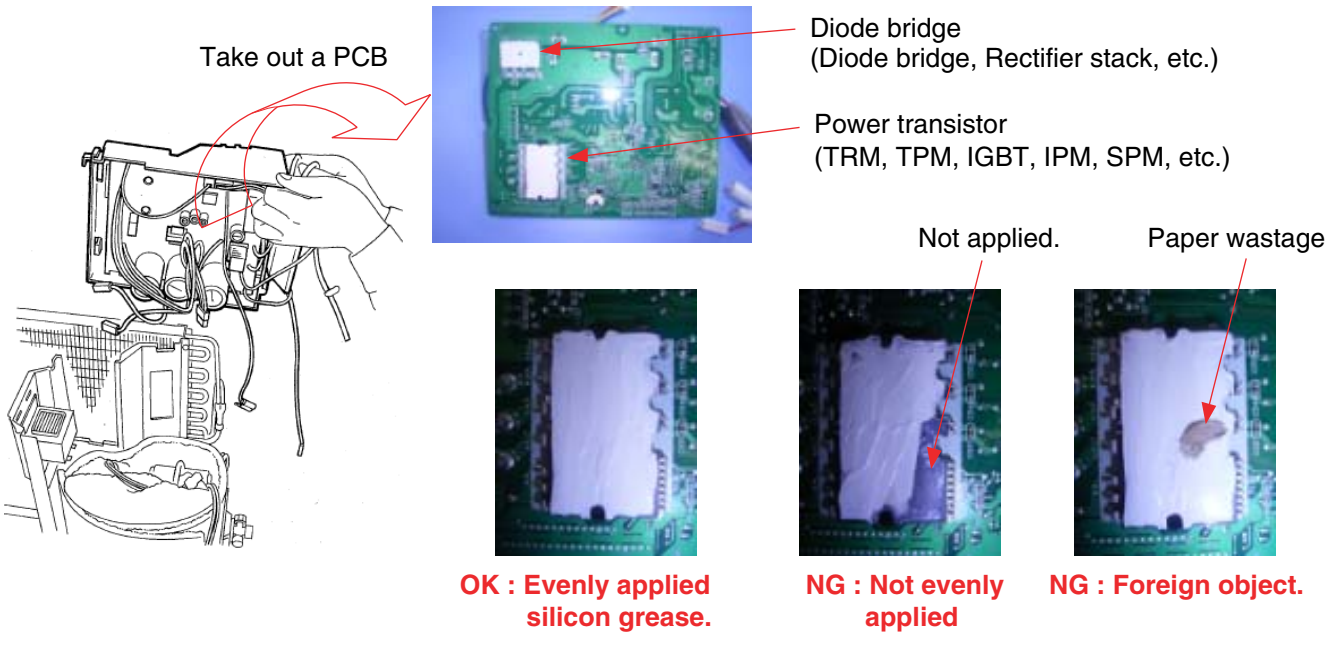
Details

The silicon grease is an essential article for encouraging the heat radiation of the power transistor and the diode bridge. Applying the paste should be implemented in accordance with the following instruction.

Remark: There is the possibility of failure with smoke in case of bad heat radiation.

- To completely wipe off the old silicon grease on a heat radiation fin.
- To evenly apply the silicon grease to the whole.
- Do not have any foreign object such as solder or paper waste between the power transistor, the diode bridge and the heat radiation fin.
- To firmly tighten the screws of the power transistor and the diode bridge, and to surely contact to the heat radiation fin without any gap.

<Example>



(R7100)

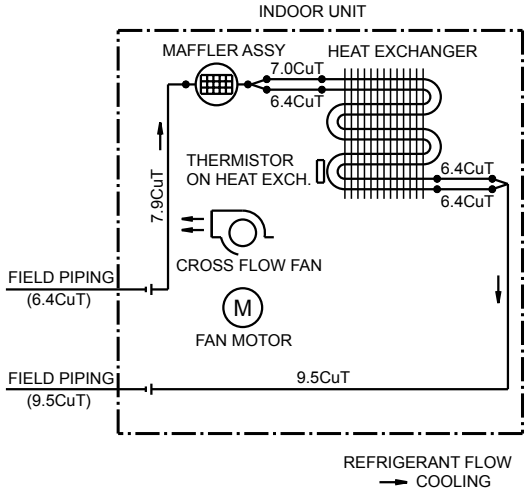
Part 8
Appendix

1. Piping Diagrams

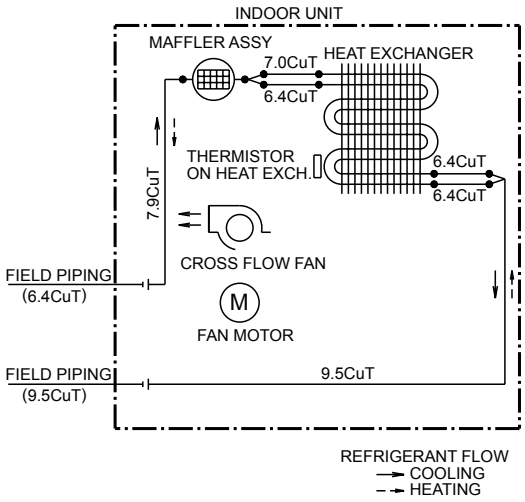
1.1 Indoor Units

1.1.1 Wall Mounted Type

FTKS25/35DVM **FTXS25/35EVMA**



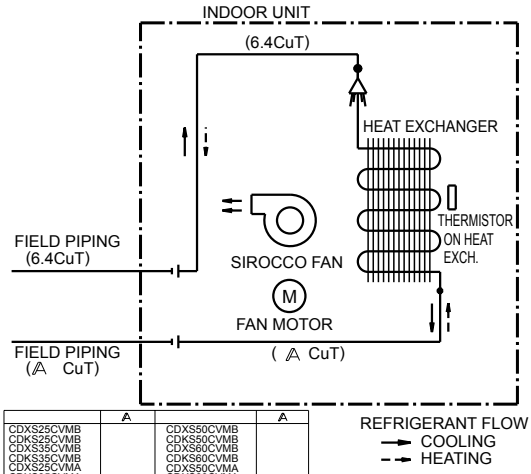
4D050757A



4D047912F

1.1.2 Duct Connected Type

FDKS25/35EAVMB, FDKS25/35CAVMB, FDXS25/35CVMA, CDXS25/35EAVMA



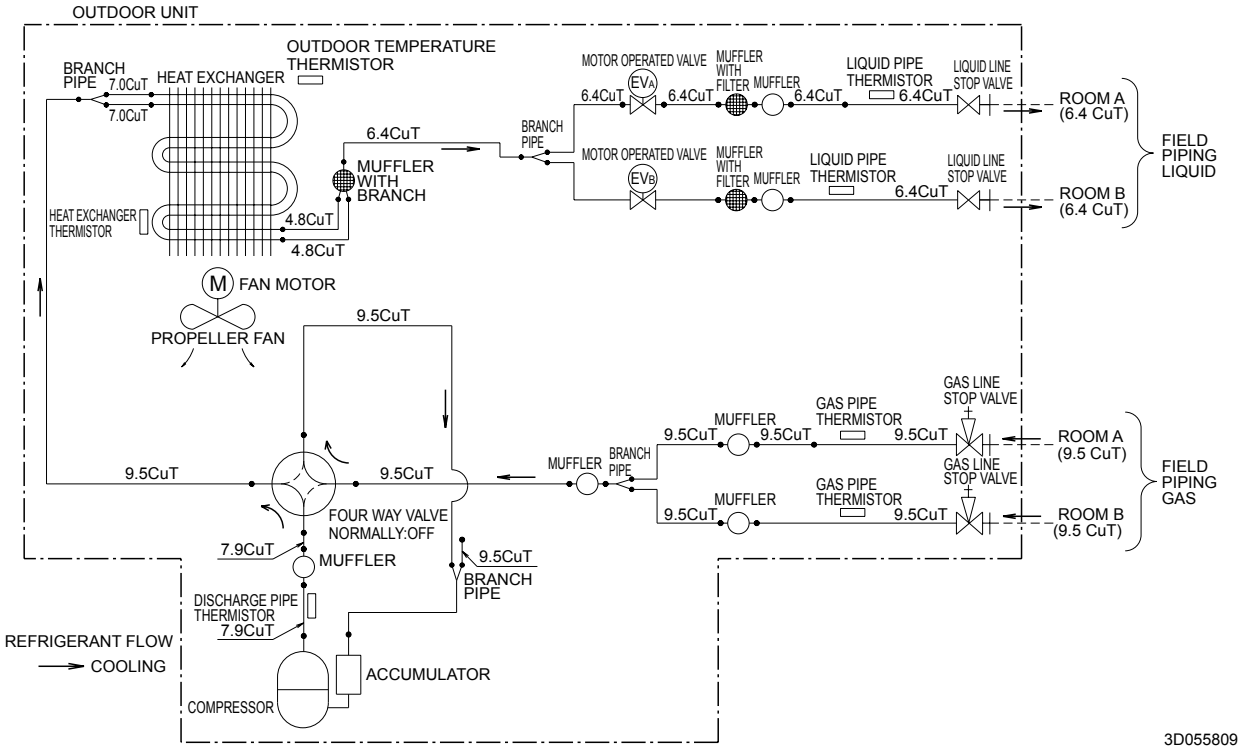
	A
CDXS25CVMB CDKS25CVMB CDXS35CVMB CDKS35CVMB CDXS25CVMA CDXS35CVMA FDXS25CVMB FDXS35CVMB FDXS35CVMA FDXS25EAVMB FDXS35EAVMB FDKS25CVMB FDKS35CVMB FDKS25EAVMB FDKS35EAVMB CDKS25CVMA CDKS35CVMA CDXS25DVMT CDXS35DVMT CDKS25DVMT CDKS35DVMT FDXS25CAVMB FDXS35CAVMB FDKS25CAVMB FDKS35CAVMB CDXS25EAVMA CDXS35EAVMA CDKS25EAVMA CDKS35EAVMA CDXS25EAVMT CDXS35EAVMT CDKS25EAVMT CDKS35EAVMT CDXS25EV2C CDXS35EV2C FDXS25CVMA	9.5

	A
CDXS50CVMB CDKS50CVMB CDXS60CVMB CDKS60CVMB CDXS50CVMA CDXS60CVMA CDKS50CVMA CDKS60CVMA CDXS50DVMT CDXS60DVMT CDKS50DVMT CDKS60DVMT FDXS50CVMB FDXS60CVMB FDKS50CVMB FDKS60CVMB CDXS50EV2C CDXS60EV2C FDXS50CVMA FDXS60CVMA	12.7

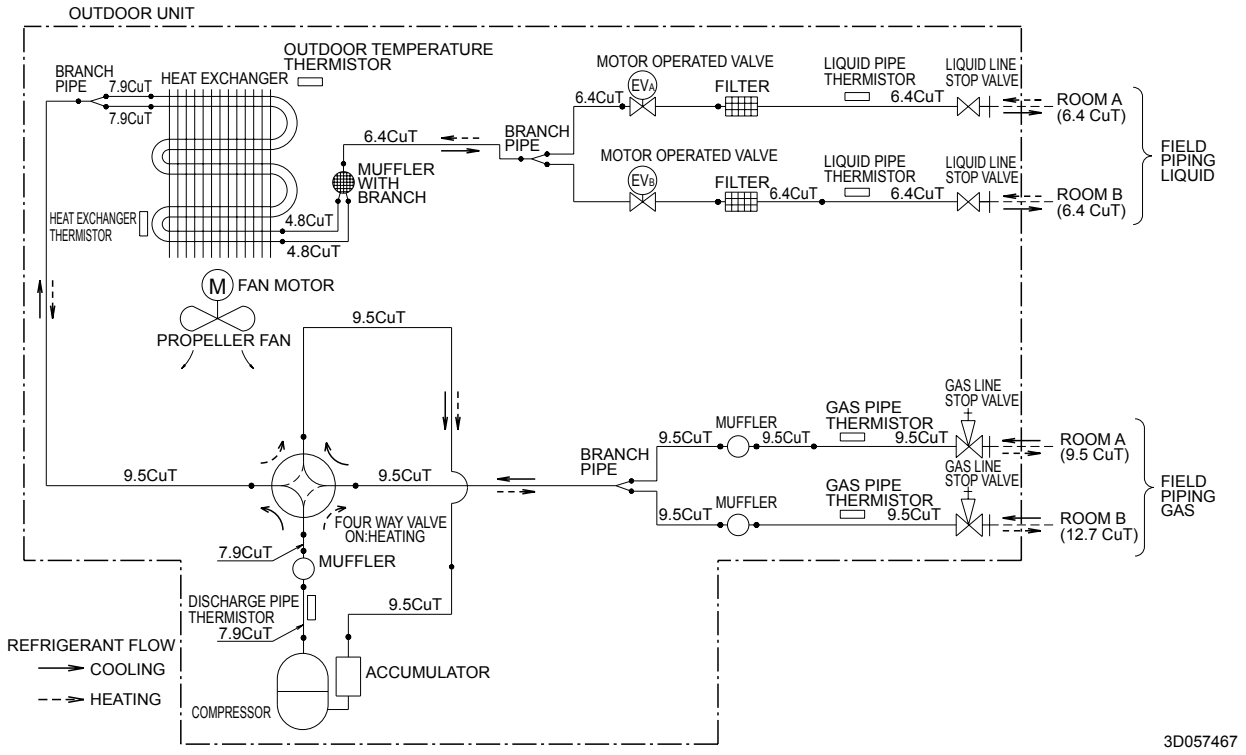
4D045449J

1.2 Outdoor Units

2MKS40FV1B



2MXS50FV1B

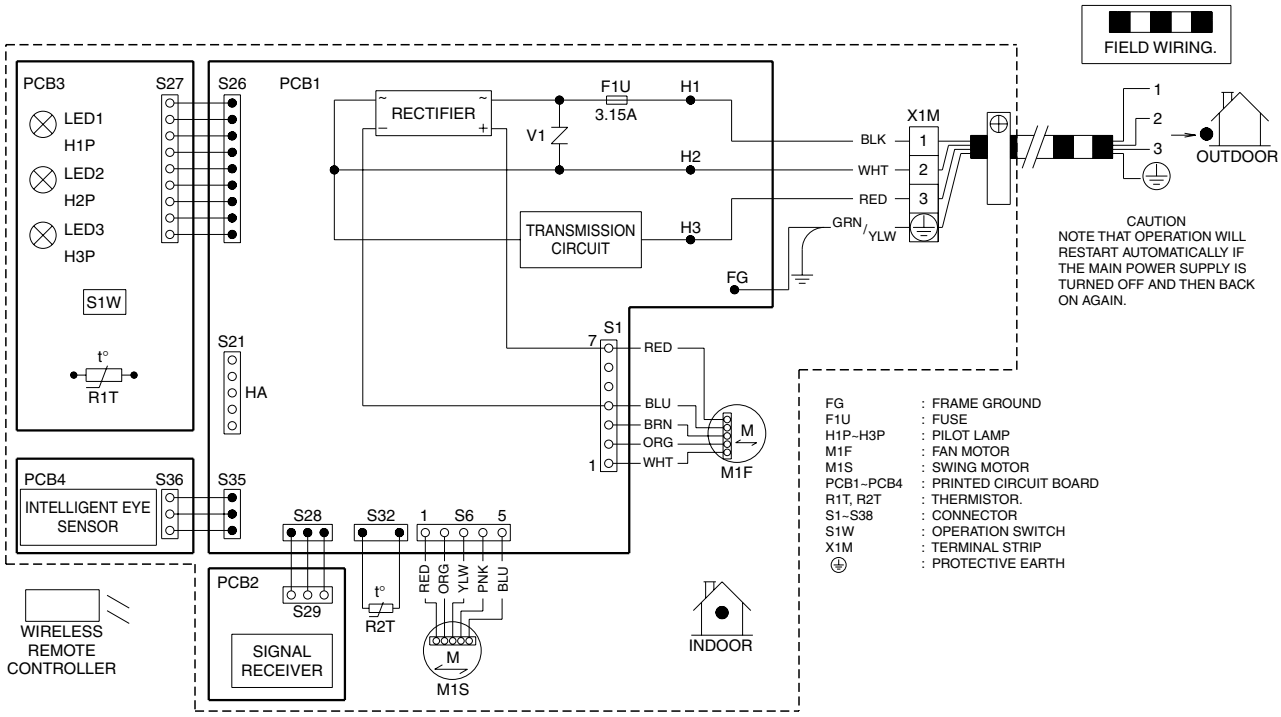


2. Wiring Diagrams

2.1 Indoor Units

2.1.1 Wall Mounted Type

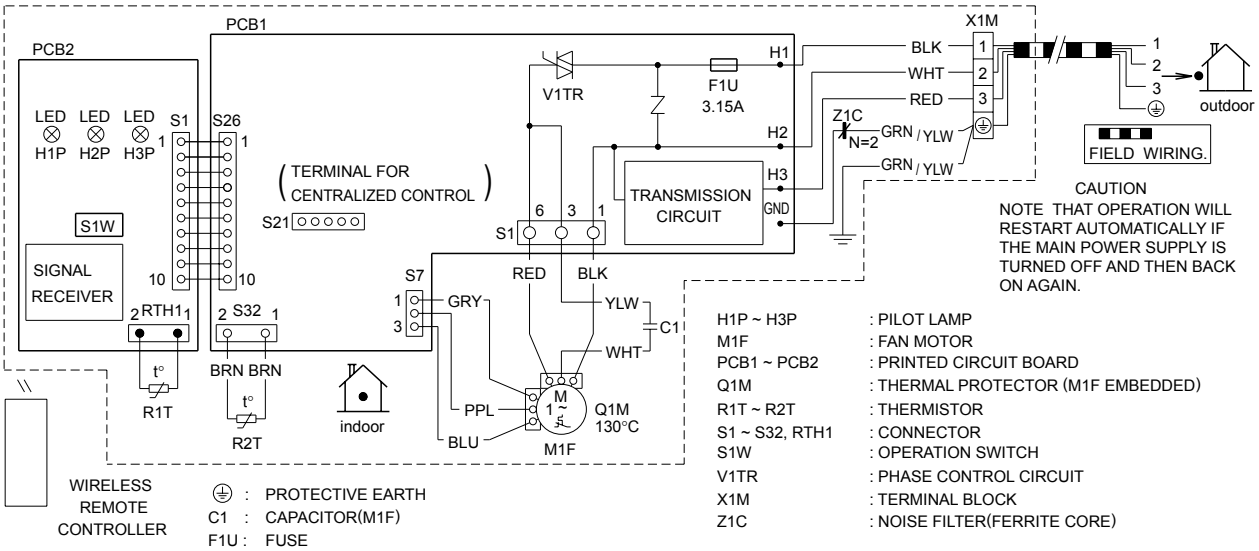
FTKS25/35DVM, FTXS25/35EVMA



3D046453B

2.1.2 Duct Connected Type

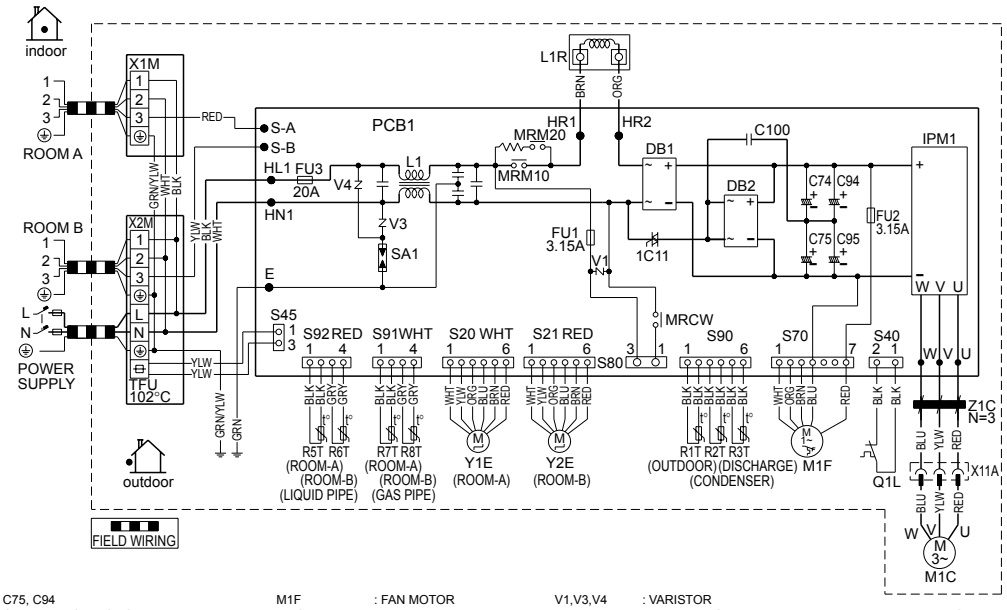
FDKS25/35EAVMB, FDKS25/35CAVMB, FDXS25/35CVMA, CDXS25/35EAVMA



3D045012K

2.2 Outdoor Units

2MKS40FV1B



C74, C75, C94		M1F	: FAN MOTOR	V1,V3,V4	: VARISTOR	BLK	: BLACK
C95, C100	: CAPACITOR	MRCW, MRM10,		X1M, X2M	: TERMINAL STRIP	BLU	: BLUE
DB1, DB2	: DIODE BRIDGE	MRM20	: MAGNETIC RELAY	Y1E, Y2E	: ELECTRONIC EXPANSION VALVE COIL	BRN	: BROWN
FU1, FU2, FU3	: FUSE	N	: NEUTRAL	Z1C	: FERRITE CORE	GRY	: GREY
IC11	: TRIAC	PCB1	: PRINTED CIRCUIT BOARD	⏚	: PROTECTIVE EARTH	ORG	: ORANGE
IPM1	: INTELLIGENT POWER MODULE	Q1L	: OVERLOAD PROTECTOR	S20, S21, S40,		RED	: RED
L	: LIVE	R1T~R8T	: THERMISTOR	S70, S80, S45,		WHT	: WHITE
L1	: COIL	SA1	: SURGE ARRESTER	S90, S91, S92,		YLW	: YELLOW
L1R	: REACTOR	TFU	: THERMAL FUSE	X11A	: CONNECTOR		
M1C	: COMPRESSOR MOTOR						

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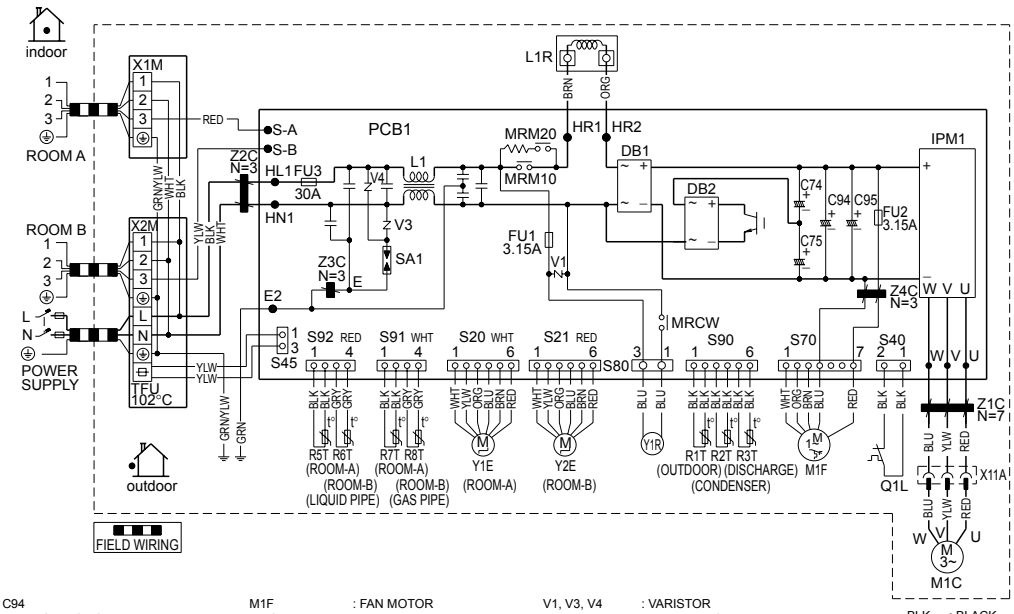

C74, C75, C94		M1F	: FAN MOTOR	V1, V3, V4	: VARISTOR	BLK	: BLACK
C95	: CAPACITOR	MRCW, MRM10,		X1M, X2M	: TERMINAL STRIP	BLU	: BLUE
DB1, DB2	: DIODE BRIDGE	MRM20	: MAGNETIC RELAY	Y1E, Y2E	: ELECTRONIC EXPANSION VALVE COIL	BRN	: BROWN
FU1, FU2, FU3	: FUSE	N	: NEUTRAL	Y1R	: REVERSING SOLENOIDE VALVE COIL	GRY	: GREY
IPM1	: INTELLIGENT POWER MODULE	PCB1	: PRINTED CIRCUIT BOARD	Z1C, Z2C, Z3C		ORG	: ORANGE
L	: LIVE	Q1L	: OVERLOAD PROTECTOR	Z4C	: FERRITE CORE	RED	: RED
L1	: COIL	R1T~R8T	: THERMISTOR	⏚	: PROTECTIVE EARTH	WHT	: WHITE
L1R	: REACTOR	SA1	: SURGE ARRESTER	S20, S21, S40,		YLW	: YELLOW
M1C	: COMPRESSOR MOTOR	TFU	: THERMAL FUSE	S70, S80, S45,			
				S90, S91, S92,			
				X11A	: CONNECTOR		

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Warning

- Daikin Industries, Ltd.'s products are manufactured for export to numerous countries throughout the world. Daikin Industries, Ltd. does not have control over which products are exported to and used in a particular country. Prior to purchase, please therefore confirm with your local authorised 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 unauthorised 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 enquiries, 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.

JMI-0107

JQA-1452

About ISO 9001

ISO 9001 is a plant certification system defined by the International Organization for Standardization (ISO) relating to quality assurance. ISO 9001 certification covers quality assurance aspects related to the "design, development, manufacture, installation, and supplementary service" of products manufactured at the plant.

EC99J2044

About ISO 14001

ISO 14001 is the standard defined by the International Organization for Standardization (ISO) relating to environmental management systems. Our group has been acknowledged by an internationally accredited compliance organisation as having an appropriate programme of environmental protection procedures and activities to meet the requirements of ISO 14001.

Dealer

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●Specifications, designs and other content appearing in this brochure are current as of June 2007 but subject to change without notice.

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