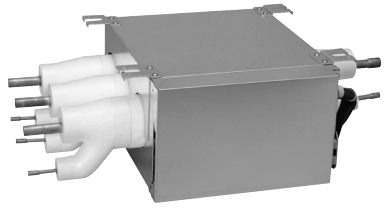
DAIKIN

SiUS181305E

Service Manual

Multi-Split 8-Zone Heat Pump Systems RMXS-L Series



[Applied Models]

● **Inverter Multi : Heat Pump**

Multi-Split 8-Zone Heat Pump Systems RMXS-L Series

●Heat Pump

Outdoor Unit

RMXS48LVJU

Branch Provider (BP) Unit

BPMKS048A2U
BPMKS049A3U

Indoor Unit

CTXS07LVJU
CTXS07JVJU
CTXS09HVJU
CTXS12HVJU
FTXS15LVJU
FTXS18LVJU
FTXS24LVJU

FDXS09LVJU
FDXS12LVJU
CDXS15LVJU
CDXS18LVJU
CDXS24LVJU

FFQ09LVJU
FFQ12LVJU
FFQ15LVJU
FFQ18LVJU

The removal procedure for each model is separately bound. Refer to page 239 for the booklet number of applicable model.

Part 5 Function 39

Legends

Ta	Outdoor temperature
Tb	Outdoor heat exchanger temperature
Tc	High pressure equivalent saturation temperature
Tdi	Discharge pipe temperature
Te	Low pressure equivalent saturation temperature
Tfin	Radiation fin temperature
Tl	Liquid pipe temperature
Tp	Value of compressor port temperature calculated by Tc and Te, and suction superheated degree
Tr	Room thermistor temperature
Ts	Set temperature
Ts1	Suction pipe temperature 1
Ts2	Suction pipe temperature 2
Tsh	Subcooling heat exchanger gas pipe temperature
Tt	Target temperature
HTdi	Value of discharge pipe temperature (Tdi) compensated with outdoor temperature
SC	Difference between the heat exchanger temperature and liquid pipe temperature of each indoor unit
SH	Difference between the heat exchanger temperature and gas pipe temperature of each indoor unit
Pc	High pressure sensor detection value
Pe	Low pressure sensor detection value

1. Safety Considerations

Read these ***SAFETY CONSIDERATIONS*** carefully before repairing air conditioners and heat pumps. After completing repairs, check if the unit operates properly. All electrical repairs and work must be carried out by qualified personnel in accordance local, state, and national regulations. Follow all instructions that are listed under each hazard sign (**DANGER**, **WARNING**, **CAUTION**, **NOTE)** as they are important for ensuring safety.

⚠ **DANGER** ..... Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ **WARNING** ..... Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION** ..... Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

⚠ **NOTE** ..... Indicates situations that may result in equipment or property-damage accidents only.

1.1 During Repairs

⚠ WARNING

- **Disconnect power before disassembling the equipment for repairs. Working on the equipment that is connected to a power supply could cause an electric shock. If it is necessary to supply power to the equipment to conduct repairs or to inspect the circuits, do not touch any electrically charged sections of the equipment.**
- **Prior to disconnecting the suction or discharge pipe of the compressor at welded sections, pump-down the refrigerant gas completely. If there is gas or oil remaining inside the compressor, the refrigerant gas or oil can discharge when the pump is being disconnected and it could cause an injury.**
- **If refrigerant gas is discharges during repair work, do not touch the discharged refrigerant gas. The refrigerant gas could cause frostbites.**
- **If refrigerant gas leaks during repair or service, ventilate the area immediately. Refrigerant gas could produce toxic gas if it comes into contact with flames.**
- **The step-up capacitor supplies high-voltage electricity to the electrical components of the outdoor unit. Discharge the capacitor completely before conducting repair work. A charge capacitor could cause an electrical shock.**
- **Do not start or stop the air conditioner or heat pump operation by plugging or unplugging the power cord. Plugging or unplugging he power cord to operate or disconnect the equipment could cause an electrical shock or fire.**
- **Wear a safety helmet, gloves, and a safety belt when working at an elevated height of more than 6.5ft (2m). Insufficient safety measures could cause a fall resulting in a injury.**
- **Use only pipes, flare nuts, tools, and the other materials designed specifically for R410A refrigerant systems. Never use tools or materials designed for R22 refrigerant systems on an R410A refrigerant system. Doing so could cause a serious accident or an equipment failure.**
- **If the installation platform or frame has corroded, have it replaced. A corroded platform or frame could cause electrical shock or fire.**
- **When relocating 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 could fall and cause injury.**
- **When relocating equipment, keep the refrigerant circuit free from all substances other than the specified refrigerant, such as air. Any presence of air or other foreign substance in the refrigerant circuit could cause an abnormal pressure rise or rupture, resulting in injury.**
- **Check the unit foundation for damage on a continual basis, especially if it has been in use for a long time. If left in a damaged condition, the unit could fall and cause injury.**

⚠ 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 or heat pump by splashing water on it. Washing the unit with water may cause an electrical shock.**
- **Equipment must be grounded when carrying out repairs in a humid or wet place to avoid electrical shocks.**
- **Turn off the power when cleaning the equipment to prevent internal fans (that rotate at high speed) from starting suddenly, as they may cause injury.**
- **Do not tilt the unit when removing it. The condensate water inside the unit may spill and wet furniture and floors.**

- **Do not touch the refrigerant pipes during and immediately after operation for any repair work as the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns**
- **All welding and cutting operations must be done in a well-ventilated place. Welding and cutting operations done in an enclosed room may cause deficiency in oxygen in the enclosed room.**
- **Dismantling of the unit, disposal of refrigerant, oil, and additional parts, should be done in accordance with the relevant local, state, and national regulations.**

1.2 After Repairs

⚠ WARNING

- **Use an exclusive power circuit for the equipment. Insufficient circuit amperage capacity could cause an electrical shock or fire.**
- **Use specified cable to connect indoor and outdoor units. Make the connections securely, and route the cable properly so that there is no force pulling the cable a the connection terminals. Improper connections could cause excessive heat generation or fire.**
- **Securely fasten the outdoor unit terminal cover (panel). If the terminal cover/panel is not fastened properly, dust or water could enter the outdoor unit causing fire or electric shock.**
- **Do not damage or modify the power cable. Damaged or modified power cables could cause an electrical shock or fire. Placing heavy items on the power cable could damage the cable.**
- **Do not charge air or gas other than the specified refrigerant to the refrigerant system. If air enters the refrigerant system, it could cause excessive high pressure resulting in equipment damage and injury.**
- **If refrigerant gas leaks, locate the leaking point and repair it before charging refrigerant. After charging the refrigerant, check for refrigerant leaks. If the leaking pint cannot be located and the repair work must be stopped, perform a pump-down. Close the service valve to prevent the refrigerant gas from leaking into the room. the refrigerant gas itself is harmless, but it could generate toxic gases if it comes into contact with flames.**
- **After replacing the battery in the remote controller, dispose of the old battery to prevent children from swallowing it. If a child swallows the battery, consult with a doctor immediately.**

1.3 Inspections after Repairs

⚠ WARNING

- **If the unit has a power cable plug and it is dirty, clean the plug before securely inserting it into a power outlet. If the plug has a loose connection, tighten it or it could cause electrical shock or fire.**
- **If the power cable and lead wires have scratches or are deteriorated, replace them. Damaged cable and wires could 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 as it could cause an electrical shock, excessive heat generation, or fire.**
- **Check if parts and wires are mounted and connected properly and if the connections at the soldered or crimped terminals are secure. Improper installation and connection could cause and electrical shock, excessive heat generation, or fire.**
- **Measure the insulation resistance after the repair. The resistance must be 1M Ω or higher. Faulty insulation could cause an electrical shock.**

⚠ CAUTION

- **Check the drainage of the indoor unit after the repair. Faulty drainage may cause the water to enter the room resulting in wet floors and furniture.**

1.4 Safety for Users

⚠ DANGER

- **Never attempt to modify the equipment. Doing so will cause electrical shock, excessive heat generation, or fire.**

⚠ WARNING

- **Never remove the fan guard of the unit while the unit is operating. A fan rotating at high speed without the fan guard is very dangerous.**

⚠ CAUTION

- **Before cleaning the unit, stop the operation of the unit by turning the power off or by pulling the power cord out from its socket. Otherwise, an electrical shock or injury may result.**

⚠ NOTE

- **Do note wipe the controller operation panel with benzene, thinner, chemical dust cloths, or similar. The panel may get discolored or the coating can peel off. if it is extremely dirty, soak a cloth in a water-diluted neutral detergent, squeeze it well, and wipe the panel clean. Then wipe it with another dry cloth.**

Part 1
List of Functions

1. Functions

1.1 Outdoor Unit

Category	Functions	RMXS48LVJU	Category	Functions	RMXS48LVJU
Basic Function	Inverter (with inverter power control)	●	Health & Clean	Air-purifying filter	—
	Operation limit for cooling (°CDB)	–5 ~ 46		Photocatalytic deodorizing filter	—
	Operation limit for cooling (°FDB)	23 ~ 115		Air-purifying filter with photocatalytic deodorizing function	—
	Operation limit for heating (°CWB)	–15 ~ 15.5		Titanium apatite photocatalytic air-purifying filter	—
	Operation limit for heating (°FWB)	5 ~ 60		Longlife filter	—
	PAM control	—		Air filter (prefilter)	—
Compressor	Oval scroll compressor	●		Wipe-clean flat panel	—
	Swing compressor	—		Washable grille	—
	Rotary compressor	—		Filter cleaning indicator	—
	Reluctance DC motor	●		Good-sleep cooling operation	—
Comfortable Airflow	Power-airflow louver (horizontal blade)	—	Timer	WEEKLY TIMER operation	—
	Power-airflow dual louvers	—		24-hour ON/OFF timer	—
	Power-airflow diffuser	—		72-hour ON/OFF timer	—
	Wide-angle fins (vertical blades)	—		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 function	●
	COMFORT AIRFLOW operation	—		Automatic test operation	●
Comfort Control	Auto fan speed	—		Memory function	●
	Indoor unit quiet operation	—		Anti-corrosion treatment of outdoor heat exchanger	●
	NIGHT QUIET mode (automatic)	●	Flexibility	Multi-split / split type compatible indoor unit	—
	OUTDOOR UNIT QUIET operation (manual)	●		Flexible power supply correspondence	—
	INTELLIGENT EYE operation	—		High ceiling application	—
	Quick warming function	●		Chargeless	—
	Hot-start function	—		Either side drain (right or left)	—
	Automatic defrosting	●		Power selection	—
Operation	Automatic operation	—		°F/°C changeover R/C temperature display (factory setting: °F)	—
	Program dry function	—	Remote Control	5-room centralized controller (option)	—
	Fan only	—		Remote control adaptor (normal open pulse contact) (option)	—
Lifestyle Convenience	New POWERFUL operation (non-inverter)	—		Remote control adaptor (normal open contact) (option)	—
	Inverter POWERFUL operation	—		DIII-NET compatible (adaptor) (option)	—
	Priority-room setting	—	Remote Controller	Wireless	—
	COOL / HEAT mode lock	—		Wired	—
	HOME LEAVE operation	—			
	ECONO operation	—			
	Indoor unit ON/OFF button	—			
	Signal receiving sign	—			
	R/C with back light	—			
	Temperature display	—			

Note: ● : Available
— : Not Available

1.2 Indoor Unit

Category	Functions	CTXS07LVJU	CTXS07JVJU CTXS09/12HVJU	FTXS15/18/24LVJU	FDXS09/12LVJU	CDXS12/18/24LVJU	FFQ09/12/15/18LVJU
Basic Function	Inverter (with inverter power control)	●	●	●	●	●	●
	Operation limit for cooling (°CDB)	—	—	—	—	—	—
	Operation limit for cooling (°FDB)	—	—	—	—	—	—
	Operation limit for heating (°CWB)	—	—	—	—	—	—
	Operation limit for heating (°FWB)	—	—	—	—	—	—
	PAM control	—	—	—	—	—	—
Compressor	Oval scroll compressor	—	—	—	—	—	
	Swing compressor	—	—	—	—	—	—
	Rotary compressor	—	—	—	—	—	—
	Reluctance DC motor	—	—	—	—	—	—
Comfortable Airflow	Power-airflow louver (horizontal blade)	—	—	—	—	—	—
	Power-airflow dual louvers	●	●	●	—	—	—
	Power-airflow diffuser	—	—	—	—	—	—
	Wide-angle fins (vertical blades)	●	●	●	—	—	—
	Vertical auto-swing (up and down)	●	●	●	—	—	●
	Horizontal auto-swing (right and left)	●	●	●	—	—	—
	3-D airflow	●	●	●	—	—	—
	COMFORT AIRFLOW operation	●	—	●	—	—	—
Comfort Control	Auto fan speed	●	●	●	●	●	—
	Indoor unit quiet operation	●	●	●	●	●	—
	NIGHT QUIET mode (automatic)	—	—	—	—	—	—
	OUTDOOR UNIT QUIET operation (manual)	●	●	●	●	●	—
	INTELLIGENT EYE operation	●	●	●	—	—	—
	Quick warming function	—	—	—	—	—	—
	Hot-start function	●	●	●	●	●	●
	Automatic defrosting	—	—	—	—	—	—
Operation	Automatic operation	●	●	●	●	●	●
	Program dry function	●	●	●	●	●	●
	Fan only	●	●	●	●	●	●
Lifestyle Convenience	New POWERFUL operation (non-inverter)	—	—	—	—	—	—
	Inverter POWERFUL operation	●	●	●	●	●	—
	Priority-room setting	—	—	—	—	—	—
	COOL / HEAT mode lock	—	—	—	—	—	—
	HOME LEAVE operation	—	●	—	—	—	—
	ECONO operation	●	—	●	●	●	—
	Indoor unit ON/OFF button	●	●	●	●	●	●★1
	Signal receiving sign	●	●	●	●	●	●★1
	R/C with back light	●	●	●	●	●	●★2
	Temperature Display	—	—	—	—	—	—

Note: ● : Available
— : Not Available

Category	Functions	CTXS07LVJU	CTXS07JVJU CTXS09/12HVJU	FTXS15/18/24LVJU	FDXS09/12LVJU	CDXS12/18/24LVJU	FFQ09/12/15/18LVJU
Health & Clean	Air-purifying filter	—	—	—	—	—	—
	Photocatalytic deodorizing filter	—	—	—	—	—	—
	Air-purifying filter with photocatalytic deodorizing function	—	●	—	—	—	—
	Titanium apatite photocatalytic air-purifying filter	●	—	●	—	—	—
	Longlife filter (option)	—	—	—	—	—	●
	Air filter (prefilter)	●	●	●	●	●	—
	Wipe-clean flat panel	●	●	●	—	—	—
	Washable grille	—	—	—	—	—	●
	Filter cleaning indicator	—	—	—	—	—	●
	Good-sleep cooling operation	—	—	—	—	—	—
Timer	WEEKLY TIMER operation	●	—	●	—	—	●★2
	24-hour ON/OFF TIMER	●	●	●	●	●	—
	72-hour ON/OFF TIMER	—	—	—	—	—	●★1
	NIGHT SET mode	●	●	●	●	●	—
Worry Free (Reliability & Durability)	Auto-restart (after power failure)	●	●	●	●	●	●
	Self-diagnosis (digital, LED) display	●	●	●	●	●	●
	Wiring error check function	—	—	—	—	—	—
	Automatic test operation	—	—	—	—	—	
	Memory function	—	—	—	—	—	—
	Anticorrosion treatment of outdoor heat exchanger	—	—	—	—	—	—
Flexibility	Multi-split / split type compatible indoor unit	—	—	●	●	—	—
	Flexible power supply correspondence	—	—	—		—	—
	High ceiling application	—	—	—	—	—	—
	Chargeless	—	—	—	—	—	—
	Either side drain (right or left)	●	●	●	—	—	—
	Power selection	—	—	—	—	—	—
	°F/°C changeover R/C temperature display (factory setting: °F)	●	●	●	●	●	●★2
Remote Control	5-room centralized controller (option)	●	●	●	●	●	—
	Remote control adaptor (normal open pulse contact) (option)	●	●	●	●	●	—
	Remote control adaptor (normal open contact) (option)	●	●	●	●	●	—
	DIII-NET compatible (adaptor) (option)	●	●	●	●	●	●
Remote Controller	Wireless	●	●	●	●	●	●
	Wired (option)	●	●	●	●	●	●

Note: ● : Available
— : Not Available

★1: With wireless remote controller
★2: With wired remote controller

Part 2
Specifications

1. Specifications

1.1 Outdoor Unit

60 Hz, 208 - 230 V

Model			RMXS48LVJU
Cooling Capacity ★		Btu/h	48,000
Heating Capacity ★		Btu/h	54,000
Casing Color			Ivory White
Heat Exchanger			Cross Fin Coil
Compressor	Type		Hermetically Sealed Scroll Type
	Piston Displacement	ft³/h	791.5
	Number of Revolutions	r.p.m	6,480
	Motor Output (2.2 kW / 60 rps)	kW	3.0
	Starting Method		Direct on line
Refrigerant Oil	Model		DAPHNE FVC68D
	Charge	L (floz)	1.7 (57.5)
Refrigerant	Type		R-410A
	Charge	Lbs (kg)	8.8 (4.0)
	Control		Electronic Expansion Valve
Fan	Type		Propeller Fan
	Motor Output	kW	0.070 × 2
	Airflow rate	cfm	3,740
	Drive		Direct Drive
Dimensions (H × W × D)		in. (mm)	52-15/16 × 35-7/16 × 12-5/8 (1,345 × 900 × 320)
Weight (Mass)		Lbs (kg)	283 (129)
Piping Connection	Liquid	in. (mm)	ϕ 3/8 (ϕ 9.5) C1220T (Flare Connection)
	Gas	in. (mm)	ϕ 3/4 (ϕ 19.1) C1220T (Brazing Connection)
Defrost Method			Reverse Cycle Defrosting
Drawing No.			4D080735

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

Cooling	Indoor ; 80°FDB (26.7°CDB) / 67°FWB (19.4°CWB) Outdoor ; 95°FDB (35°CDB)
Heating	Indoor ; 70°FDB (21.1°CDB) Outdoor ; 47°FDB (8.3°CDB) / 43°FWB (6.1°CWB)
Piping Length	O.U. – BP : 16.4 ft (5 m), BP – I.U. : 9.8 ft (3 m) Level Difference: 0 ft (0 m)

Conversion Formulae
kcal/h = kW × 860 Btu/h = kW × 3412 cfm = m³/min × 35.3

1.2 Branch Provider (BP) Unit

60 Hz, 208 - 230 V

Model				BPMKS048A2U	BPMKS049A3U
Power Consumption			W	10	10
Running Current			A	0.05	0.05
Refrigerant Type				R-410A	
Dimensions (H × W × D)			in. (mm)	7-1/16 × 11-9/16 [26-11/16]* × 13-3/4 (180 × 294 [678]* × 350)	
Packaged Dimensions (H × W × D)			in. (mm)	10-1/8 × 29-1/16 × 16-13/16 (257 × 738 × 427)	
Weight (Mass)			Lbs (kg)	18 (8)	20 (9)
Gross Weight (Gross Mass)			Lbs (kg)	27 (12)	29 (13)
Number of Wiring Connections	Power Supply			3 (including ground wiring)	
	O.U. – BP			2 (for DIII transmission)	
	BP – I.U.			4 (including ground wiring)	
Piping Connection (Flare)	Liquid	O.U. side	in. (mm)	ϕ 3/8 (ϕ 9.5) × 1	
		I.U. side		ϕ 1/4 (ϕ 6.4) × 2	ϕ 1/4 (ϕ 6.4) × 3
	Gas	O.U. side	in. (mm)	ϕ 5/8 (ϕ 15.9) × 1	
		I.U. side		ϕ 5/8 (ϕ 15.9) × 2	ϕ 5/8 (ϕ 15.9) × 3
	Drain			Drain Processingless	
Heat Insulation				Both Liquid and Gas Pipes	
Min. Combination			Btu/h	7,000	
Max. Combination			Btu/h	48,000	62,000
Drawing No.				4D080441	

Note: [ ]* : including auxiliary piping length

Conversion Formulae
kcal/h = kW × 860 Btu/h = kW × 3412 cfm = m³/min × 35.3

1.3 Indoor Unit

CTXS, FTXS Series

60 Hz, 208 - 230 V

Model			CTXS07LVJU		CTXS07JVJU	
			Cooling	Heating	Cooling	Heating
Rated Capacity			7 kBtu/h Class		7 kBtu/h Class	
Front Panel Color			White		White	
Airflow Rate	H	cfm (m^3/min)	332 (9.4)	350 (9.9)	388 (11.0)	400 (11.3)
	M		261 (7.4)	290 (8.2)	335 (9.5)	357 (10.1)
	L		194 (5.5)	233 (6.6)	283 (8.0)	314 (8.9)
	SL		145 (4.1)	219 (6.2)	–	–
Fan	Type		Cross Flow Fan		Cross Flow Fan	
	Motor Output	W	23		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	0.09 - 0.08	0.11 - 0.10	0.18	0.2
Power Consumption (Rated)		W	18 - 18	21 - 21	40	45
Power Factor (Rated)		%	96.2 - 97.8	91.8 - 91.3	96.6	97.8
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H × W × D)		in. (mm)	11-5/8 × 31-1/2 × 8-7/16 (295 × 800 × 215)		11-7/16 × 31-5/16 × 9-3/8 (290 × 795 × 238)	
Packaged Dimensions (H × W × D)		in. (mm)	14-7/16 × 34-1/4 × 10-13/16 (366 × 870 × 274)		13-5/16 × 33-1/16 × 11 (338× 840 × 280)	
Weight (Mass)		Lbs (kg)	20 (9)		20 (9)	
Gross Weight (Gross Mass)		Lbs (kg)	29 (13)		29 (13)	
Sound Pressure Level	H / M / L / SL	dB(A)	38 / 32 / 25 / 22	38 / 33 / 28 / 25	44 / 40 / 35 / –	44 / 39 / 34 / –
Sound Power Level		dB	54	54	–	–
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Piping Connection	Liquid	in. (mm)	ϕ 1/4 (ϕ 6.4)		ϕ 1/4 (ϕ 6.4)	
	Gas	in. (mm)	ϕ 3/8 (ϕ 9.5)		ϕ 3/8 (ϕ 9.5)	
	Drain	in. (mm)	ϕ 5/8 (ϕ 16.0)		ϕ 11/16 (ϕ 18.0)	
Drawing No.			3D075490		3D066156A	

Model			CTXS09HVJU		CTXS12HVJU	
			Cooling	Heating	Cooling	Heating
Rated Capacity			9 kBtu/h Class		12 kBtu/h Class	
Front Panel Color			White		White	
Airflow Rate	H	cfm (m^3/min)	388 (11.0)	400 (11.3)	388 (11.0)	400 (11.3)
	M		335 (9.5)	357 (10.1)	335 (9.5)	357 (10.1)
	L		283 (8.0)	314 (8.9)	283 (8.0)	314 (8.9)
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	0.18	0.2	0.18	0.2
Power Consumption (Rated)		W	40	45	40	45
Power Factor (Rated)		%	96.6	97.8	96.6	97.8
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H × W × D)		in. (mm)	11-7/16 × 31-5/16 × 9-3/8 (290 × 795 × 238)		11-7/16 × 31-5/16 × 9-3/8 (290 × 795 × 238)	
Packaged Dimensions (H × W × D)		in. (mm)	13-5/16 × 33-1/16 × 11 (338 × 840 × 280)		13-5/16 × 33-1/16 × 11 (338 × 840 × 280)	
Weight (Mass)		Lbs (kg)	20 (9)		20 (9)	
Gross Weight (Gross Mass)		Lbs (kg)	29 (13)		29 (13)	
Sound Pressure Level	H / M / L	dB(A)	44 / 40 / 35	44 / 39 / 34	45 / 41 / 36	45 / 40 / 35
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Piping Connection	Liquid	in. (mm)	ϕ 1/4 (ϕ 6.4)		ϕ 1/4 (ϕ 6.4)	
	Gas	in. (mm)	ϕ 3/8 (ϕ 9.5)		ϕ 3/8 (ϕ 9.5)	
	Drain	in. (mm)	ϕ 11/16 (ϕ 18.0)		ϕ 11/16 (ϕ 18.0)	
Drawing No.			3D062870A		3D062871A	

Conversion Formulae
kcal/h = kW × 860 Btu/h = kW × 3412 cfm = m^3/min × 35.3

60 Hz, 208 - 230 V

Model			FTXS15LVJU		FTXS18LVJU	
			Cooling	Heating	Cooling	Heating
Rated Capacity			15 kBtu/h Class		18 kBtu/h Class	
Front Panel Color			White		White	
Airflow Rate	H	cfm (m^3/min)	568 (16.1)	593 (16.8)	583 (16.5)	625 (17.7)
	M		477 (13.5)	505 (14.3)	484 (13.7)	526 (14.9)
	L		385 (10.9)	417 (11.8)	385 (10.9)	431 (12.2)
	SL		360 (10.2)	371 (10.5)	360 (10.2)	399 (11.3)
Fan	Type		Cross Flow Fan		Cross Flow Fan	
	Motor Output	W	48		48	
	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	0.31 - 0.29	0.31 - 0.29	0.32 - 0.30	0.32 - 0.30
Power Consumption (Rated)		W	38 - 38	38 - 38	38 - 38	38 - 38
Power Factor (Rated)		%	58.9 - 57.0	58.9 - 57.0	57.1 - 55.1	57.1 - 55.1
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H × W × D)		in. (mm)	13-3/8 × 41-5/16 × 9-3/4 (340 × 1,050 × 248)		13-3/8 × 41-5/16 × 9-3/4 (340 × 1,050 × 248)	
Packaged Dimensions (H × W × D)		in. (mm)	16-7/8 × 45-11/16 × 13 (429 × 1,160 × 331)		16-7/8 × 45-11/16 × 13 (429 × 1,160 × 331)	
Weight (Mass)		Lbs (kg)	31 (14)		31 (14)	
Gross Weight (Gross Mass)		Lbs (kg)	44 (20)		44 (20)	
Sound Pressure Level	H / M / L / SL	dB(A)	45 / 40 / 35 / 32	43 / 38 / 33 / 30	46 / 41 / 36 / 33	45 / 40 / 35 / 32
Sound Power Level		dB	61	59	62	61
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Piping Connections	Liquid	in. (mm)	ϕ 1/4 (ϕ 6.4)		ϕ 1/4 (ϕ 6.4)	
	Gas	in. (mm)	ϕ 1/2 (ϕ 12.7)		ϕ 1/2 (ϕ 12.7)	
	Drain	in. (mm)	ϕ 5/8 (ϕ 16.0)		ϕ 5/8 (ϕ 16.0)	
Drawing No.			3D075043		3D075044	

Model			FTXS24LVJU	
			Cooling	Heating
Rated Capacity		Btu/h	24 kBtu/h Class	
Front Panel Color			White	
Airflow Rate	H	cfm (m^3/min)	643 (18.2)	699 (19.8)
	M		494 (14.0)	572 (16.2)
	L		350 (9.9)	445 (12.6)
	SL		328 (9.3)	403 (11.4)
Fan	Type		Cross Flow Fan	
	Motor Output	W	48	
	Speed	Steps	5 Steps, Quiet, Auto	
Air Direction Control			Right, Left, Horizontal, Downward	
Air Filter			Removable / Washable / Mildew Proof	
Running Current (Rated)		A	0.57 - 0.51	0.57 - 0.51
Power Consumption (Rated)		W	69 - 68	69 - 68
Power Factor (Rated)		%	58.2 - 58.0	58.2 - 58.0
Temperature Control			Microcomputer Control	
Dimensions (H × W × D)		in. (mm)	13-3/8 × 41-5/16 × 9-3/4 (340 × 1,050 × 248)	
Packaged Dimensions (H × W × D)		in. (mm)	16-7/8 × 45-11/16 × 13 (429 × 1,160 × 331)	
Weight (Mass)		Lbs (kg)	31 (14)	
Gross Weight (Gross Mass)		Lbs (kg)	46 (21)	
Sound Pressure Level (H / M / L / SL)		dB(A)	51 / 44 / 37 / 34	48 / 42 / 37 / 34
Sound Power Level		dBA	67	64
Heat Insulation			Both Liquid and Gas Pipes	
Piping Connections	Liquid	in. (mm)	ϕ 1/4 (6.4)	
	Gas	in. (mm)	ϕ 5/8 (15.9)	
	Drain	in. (mm)	ϕ 5/8 (16.0)	
Drawing No.			3D075045	

Conversion Formulae
kcal/h = kW × 860 Btu/h = kW × 3412 cfm = m^3/min × 35.3

CDXS, FDXS Series

60 Hz, 208 - 230 V

Model			FDXS09LVJU		FDXS12LVJU	
			Cooling	Heating	Cooling	Heating
Rated Capacity			9 kBtu/h Class		12 kBtu/h Class	
External Static Pressure		inAq (Pa)	0.12 (30)		0.12 (30)	
Airflow Rate	H	cfm (m^3/min)	305 (8.6)	305 (8.6)	305 (8.6)	305 (8.6)
	M		280 (7.9)	280 (7.9)	280 (7.9)	280 (7.9)
	L		260 (7.4)	260 (7.4)	260 (7.4)	260 (7.4)
	SL		235 (6.7)	235 (6.7)	235 (6.7)	235 (6.7)
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	0.58 - 0.52	0.58 - 0.52	0.58 - 0.52	0.58 - 0.52
Power Consumption (Rated)		W	72 - 72	72 - 72	72 - 72	72 - 72
Power Factor (Rated)		%	59.7 - 60.2	59.7 - 60.2	59.7 - 60.2	59.7 - 60.2
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H × W × D)		in. (mm)	7-7/8 × 27-9/16 × 24-7/16 (200 × 700 × 620)		7-7/8 × 27-9/16 × 24-7/16 (200 × 700 × 620)	
Packaged Dimensions (H × W × D)		in. (mm)	10-13/16 × 36-5/16 × 30-1/4 (274 × 923 × 768)		10-13/16 × 36-5/16 × 30-1/4 (274 × 923 × 768)	
Weight (Mass)		Lbs (kg)	47 (21)		47 (21)	
Gross Weight (Gross Mass)		Lbs (kg)	64 (29)		64 (29)	
Sound Pressure Level	H / M / L	dB(A)	35 / 33 / 31	35 / 33 / 31	35 / 33 / 31	35 / 33 / 31
Sound Power Level		dB	51	51	51	51
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Piping Connections	Liquid	in. (mm)	ϕ 1/4 (ϕ 6.4)		ϕ 1/4 (ϕ 6.4)	
	Gas	in. (mm)	ϕ 3/8 (ϕ 9.5)		ϕ 3/8 (ϕ 9.5)	
	Drain	in. (mm)	VP20 (O.D. ϕ 1-1/32 (ϕ 26), I.D. ϕ 25/32 (ϕ 20))		VP20 (O.D. ϕ 1-1/32 (ϕ 26), I.D. ϕ 25/32 (ϕ 20))	
Drawing No.			3D075493		3D075494	

Model			CDXS15LVJU		CDXS18LVJU	
			Cooling	Heating	Cooling	Heating
Rated Capacity			15 kBtu/h Class		18 kBtu/h Class	
External Static Pressure		inAq (Pa)	0.16 (40)		0.16 (40)	
Airflow Rate	H	cfm (m^3/min)	424 (12.0)	424 (12.0)	424 (12.0)	424 (12.0)
	M		388 (11.0)	388 (11.0)	388 (11.0)	388 (11.0)
	L		353 (10.0)	353 (10.0)	353 (10.0)	353 (10.0)
	SL		297 (8.4)	297 (8.4)	297 (8.4)	297 (8.4)
Fan	Type		Sirocco Fan		Sirocco Fan	
	Motor Output	W	130		130	
	Speed	Steps	5 Steps, Quiet, Auto		5 Steps, Quiet, Auto	
Air Filter			Removable / Washable / Mildew Proof		Removable / Washable / Mildew Proof	
Running Current (Rated)		A	0.79	0.79	0.79	0.79
Power Consumption (Rated)		W	172	172	172	172
Power Factor (Rated)		%	94.4	94.4	94.4	94.4
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H × W × D)		in. (mm)	7-7/8 × 35-7/16 × 24-7/16 (200 × 900 × 620)		7-7/8 × 35-7/16 × 24-7/16 (200 × 900 × 620)	
Packaged Dimensions (H × W × D)		in. (mm)	10-1/2 × 43-9/16 × 29-9/16 (266 × 1,106 × 751)		10-1/2 × 43-9/16 × 29-9/16 (266 × 1,106 × 751)	
Weight (Mass)		Lbs (kg)	60 (27)		60 (27)	
Gross Weight (Gross Mass)		Lbs (kg)	75 (34)		75 (34)	
Sound Pressure Level	H / M / L / SL	dB(A)	37 / 35 / 33 / 31	37 / 35 / 33 / 31	37 / 35 / 33 / 31	37 / 35 / 33 / 31
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Piping Connections	Liquid	in. (mm)	ϕ 1/4 (ϕ 6.4)		ϕ 1/4 (ϕ 6.4)	
	Gas	in. (mm)	ϕ 1/2 (ϕ 12.7)		ϕ 1/2 (ϕ 12.7)	
	Drain	in. (mm)	VP20 (O.D. ϕ 1-1/32 (ϕ 26), I.D. ϕ 25/32 (ϕ 20))		VP20 (O.D. ϕ 1-1/32 (ϕ 26), I.D. ϕ 25/32 (ϕ 20))	
Drawing No.			C: 3D075721		C: 3D075722	

Conversion Formulae
kcal/h = kW × 860 Btu/h = kW × 3412 cfm = m^3/min × 35.3

60 Hz, 208 - 230 V

Model			CDXS24LVJU	
			Cooling	Heating
Rated Capacity			24 kBtu/h Class	
External Static Pressure		inAq (Pa)	0.16 (40)	
Airflow Rate	H	cfm (m^3/min)	565 (16.0)	565 (16.0)
	M		523 (14.8)	523 (14.8)
	L		477 (13.5)	477 (13.5)
	SL		395 (11.2)	395 (11.2)
Fan	Type		Sirocco Fan	
	Motor Output	W	130	
	Speed	Steps	5 Steps, Quiet, Auto	
Air Filter			Removable / Washable / Mildew Proof	
Running Current (Rated)		A	0.79	0.79
Power Consumption (Rated)		W	160	160
Power Factor (Rated)		%	90.3	92.8
Temperature Control			Microcomputer Control	
Dimensions (H × W × D)		in. (mm)	7-7/8 × 43-5/16 × 24-7/16 (200 × 1,100 × 620)	
Packaged Dimensions (H × W × D)		in. (mm)	10-1/2 × 52-1/16 × 30-1/4 (266 × 1,323 × 768)	
Weight (Mass)		Lbs (kg)	66 (30)	
Gross Weight (Gross Mass)		Lbs (kg)	84 (38)	
Sound Pressure Level	H / M / L / SL	dB(A)	38 / 36 / 34 / 32	38 / 36 / 34 / 32
Heat Insulation			Both Liquid and Gas Pipes	
Piping Connections	Liquid	in. (mm)	ϕ 1/4 (ϕ 6.4)	
	Gas	in. (mm)	ϕ 5/8 (ϕ 15.9)	
	Drain	in. (mm)	VP20 (O.D. ϕ 1-1/32 (ϕ 26), I.D. ϕ 25/32 (ϕ 20))	
Drawing No.			3D080590	

FFQ Series 60 Hz, 208 - 230 V

Model			FFQ09LVJU		FFQ12LVJU	
			Cooling	Heating	Cooling	Heating
Rated Capacity			9 kBtu/h Class		12 kBtu/h Class	
Remote Controller	Wired		BRC1E72		BRC1E72	
	Wireless		BRC7E830		BRC7E830	
Decoration Panel	Model		BYFQ60B8W1U		BYFQ60B8W1U	
	Color		White		White	
	Dimensions (H × W × D)		2-5/32 × 27-9/16 × 27-9/16 (55 × 700 × 700)		2-5/32 × 27-9/16 × 27-9/16 (55 × 700 × 700)	
	Weight (Mass)	Lbs (kg)	6 (2.7)		6 (2.7)	
Airflow Rate	H	cfm (m^3/min)	318 (9.0)	318 (9.0)	353 (10.0)	353 (10.0)
	L		230 (6.5)	230 (6.5)	230 (6.5)	230 (6.5)
Fan	Type		Turbo Fan		Turbo Fan	
	Motor Output	W	55		55	
	Speed	Steps	2 Steps		2 Steps	
Air Direction Control			Horizontal, Downward		Horizontal, Downward	
Running Current (Rated)		A	0.44	0.38	0.47	0.42
Power Consumption (Rated)		W	87	76	98	89
Power Factor		%	85.8	87.0	91.3	91.8
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H × W × D)		in. (mm)	11-1/4 × 22-5/8 × 22-5/8 (285 × 575 × 575)		11-1/4 × 22-5/8 × 22-5/8 (285 × 575 × 575)	
Packaged Dimensions (H × W × D)		in. (mm)	14-9/16 × 27-1/16 × 26-9/16 (370 × 687 × 674)		14-9/16 × 27-1/16 × 26-9/16 (370 × 687 × 674)	
Weight (Mass)		Lbs (kg)	38.6 (17.5)		38.6 (17.5)	
Gross Weight (Gross Mass)		Lbs (kg)	46 (21)		46 (21)	
Sound Pressure Level	H / L	dB(A)	36.0 / 29.5	36.0 / 29.5	38.5 / 29.0	38.5 / 29.0
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Piping Connections	Liquid	in. (mm)	ϕ 1/4 (ϕ 6.4)		ϕ 1/4 (ϕ 6.4)	
	Gas	in. (mm)	ϕ 3/8 (ϕ 9.5)		ϕ 3/8 (ϕ 9.5)	
	Drain	in. (mm)	VP20 (O.D. ϕ 1-1/32 (ϕ 26) / I.D. ϕ 25/32 (ϕ 20))		VP20 (O.D. ϕ 1-1/32 (ϕ 26) / I.D. ϕ 25/32 (ϕ 20))	
Drawing No.			3D080626		3D080627	

Conversion Formulae
kcal/h = kW × 860 Btu/h = kW × 3412 cfm = m^3/min × 35.3

60 Hz, 208 - 230 V

Model			FFQ15LVJU		FFQ18LVJU	
			Cooling	Heating	Cooling	Heating
Rated Capacity			15 kBtu/h Class		18 kBtu/h Class	
Remote Controller	Wired		BRC1E72		BRC1E72	
	Wireless		BRC7E830		BRC7E830	
Decoration Panel	Model		BYFQ60B8W1U		BYFQ60B8W1U	
	Color		White		White	
	Dimensions (H × W × D)		2-5/32 × 27-9/16 × 27-9/16 (55 × 700 × 700)		2-5/32 × 27-9/16 × 27-9/16 (55 × 700 × 700)	
	Weight (Mass)	Lbs (kg)	6 (2.7)		6 (2.7)	
Airflow Rate	H	cfm (m^3/min)	424 (12.0)	424 (12.0)	530 (15.0)	530 (15.0)
	L		283 (8.0)	283 (8.0)	353 (10.0)	353 (10.0)
Fan	Type		Turbo Fan		Turbo Fan	
	Motor Output	W	55		55	
	Speed	Steps	2 Steps		2 Steps	
Air Direction Control			Horizontal, Downward		Horizontal, Downward	
Running Current (Rated)		A	0.57	0.52	0.71	0.65
Power Consumption (Rated)		W	112	103	140	130
Power Factor		%	86.1	86.0	85.5	86.2
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H × W × D)		in. (mm)	11-1/4 × 22-5/8 × 22-5/8 (285 × 575 × 575)		11-1/4 × 22-5/8 × 22-5/8 (285 × 575 × 575)	
Packaged Dimensions (H × W × D)		in. (mm)	14-9/16 × 27-1/16 × 26-9/16 (370 × 687 × 674)		14-9/16 × 27-1/16 × 26-9/16 (370 × 687 × 674)	
Weight (Mass)		Lbs (kg)	38.6 (17.5)		38.6 (17.5)	
Gross Weight (Gross Mass)		Lbs (kg)	46 (21)		46 (21)	
Sound Pressure Level	H / L	dB(A)	42.5 / 31.5	42.5 / 31.5	46.0 / 37.5	46.0 / 37.5
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Piping Connections	Liquid	in. (mm)	ϕ 1/4 (ϕ 6.4)		ϕ 1/4 (ϕ 6.4)	
	Gas	in. (mm)	ϕ 1/2 (ϕ 12.7)		ϕ 1/2 (ϕ 12.7)	
	Drain	in. (mm)	VP20 (O.D. ϕ 1-1/32 (ϕ 26) / I.D. ϕ 25/32 (ϕ 20))		VP20 (O.D. ϕ 1-1/32 (ϕ 26) / I.D. ϕ 25/32 (ϕ 20))	
Drawing No.			3D080628		3D080629	

Conversion Formulae
kcal/h = kW × 860 Btu/h = kW × 3412 cfm = m^3/min × 35.3

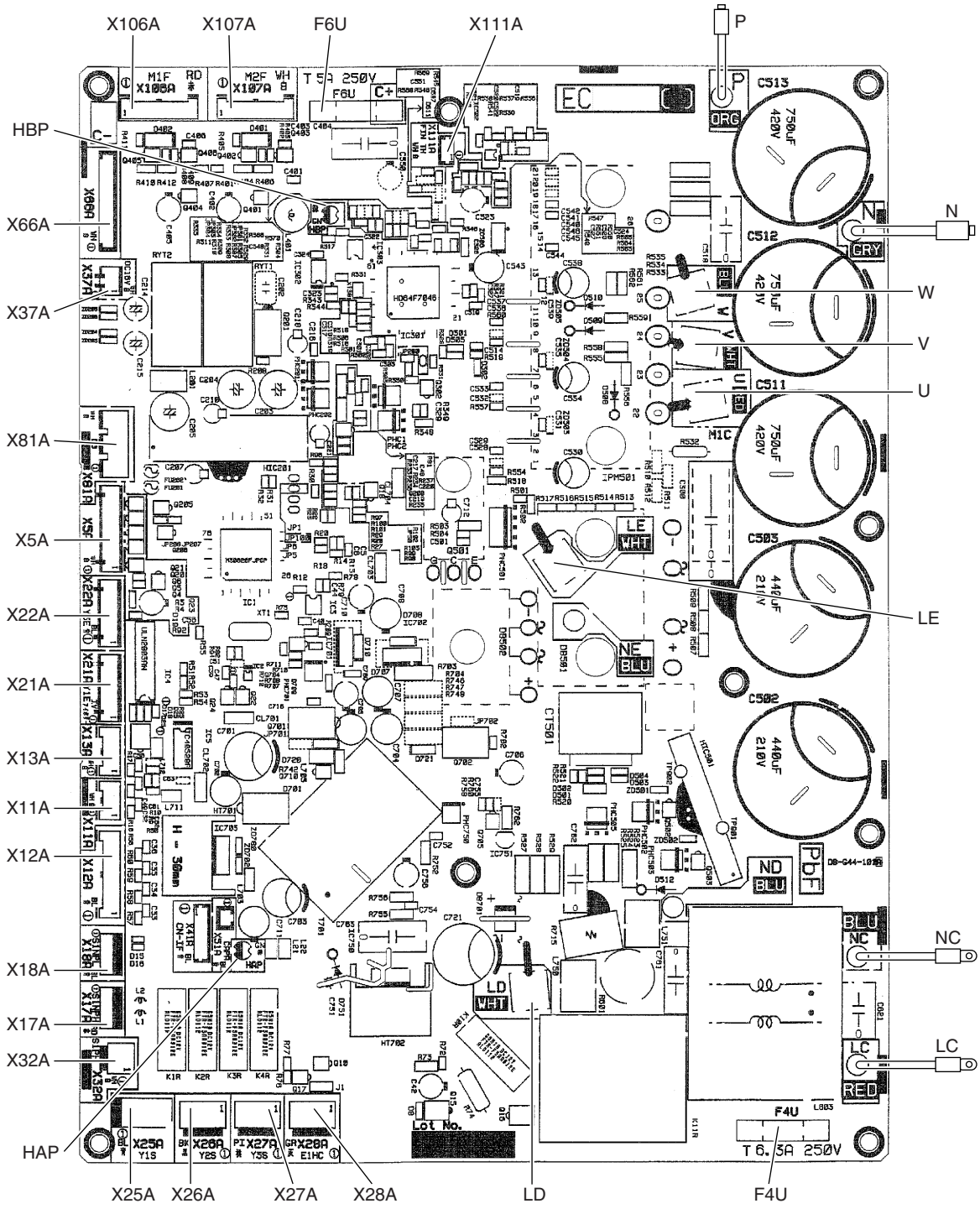
Part 3
Printed Circuit Board Connector Wiring Diagram

1. Outdoor Unit

1.1 RMXS48LVJU

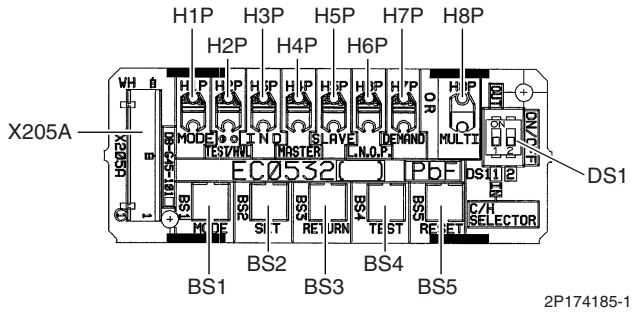
A1P: Main PCB

1)	X5A	Connector to service PCB (A2P)
2)	X11A	Connector for outdoor temperature thermistor
3)	X12A	Connector for thermistors (suction pipe 1, suction pipe 2, outdoor heat exchanger, discharge pipe)
4)	X13A	Connector for thermistors (subcooling outlet, liquid pipe)
5)	X17A	Connector for high pressure sensor
6)	X18A	Connector for low pressure sensor
7)	X21A	Connector for electronic expansion valve coil (main)
8)	X22A	Connector for electronic expansion valve coil (subcooling)
9)	X25A	Connector for solenoid valve coil (four-way valve)
10)	X26A	Connector for solenoid valve coil (hot gas bypass valve)
11)	X27A	Connector for solenoid valve coil (unloading)
12)	X28A	Connector for crankcase heater
13)	X32A	Connector for high pressure switch
14)	X37A	Connector for power supply for optional PCB (16 VDC)
15)	X66A	Connector for cool / heat selector PCB (A4P)
16)	X81A	Connector for terminal board (inter-unit wiring)
17)	X106A	Connector for fan motor (upper)
18)	X107A	Connector for fan motor (lower)
19)	X111A	Connector for radiation fin thermistor
20)	LD, LE	Connector for reactor
21)	LC, NC	Terminal for noise filter PCB (A3P)
22)	P	Connector for capacitor C4 +
23)	N	Connector for capacitor C4 –
24)	U, V, W	Connector for compressor
25)	F4U	Fuse (6.3 A / 250 V)
26)	F6U	Fuse (5.0 A / 250 V)
27)	HAP	Operation pilot lamp (LED for service monitor: green)
28)	HBP	Inverter pilot lamp (LED for service monitor: green)


X106A
X107A
F6U
X111A
P
HBP
X66A
X37A
X81A
X5A
X22A
X21A
X13A
X11A
X12A
X18A
X17A
X32A
HAP
N
W
V
U
LE
NC
LC
X25A
X26A
X27A
X28A
LD
F4U
2P294944-17

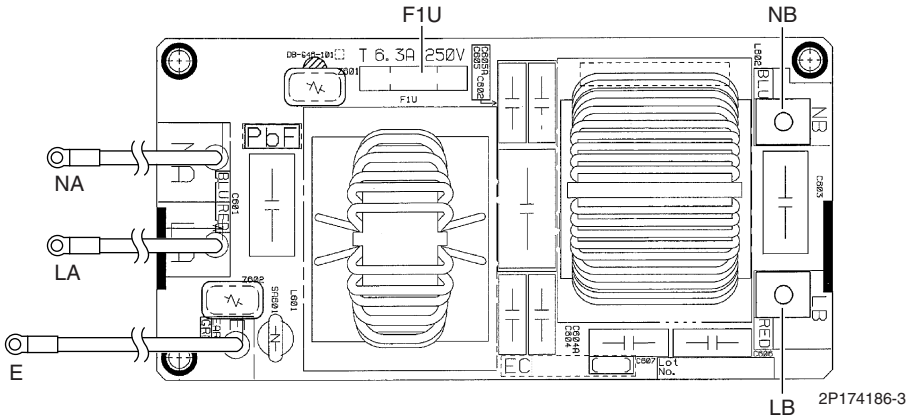
A2P: Service PCB

1) X205A — Connector for main PCB (A1P)
2) H1P - H8P — LED for service monitor (orange)
3) BS1 - BS5 — Push button switch (mode, set, return, test, reset)
4) DS1 — DIP switch for cool / heat selector



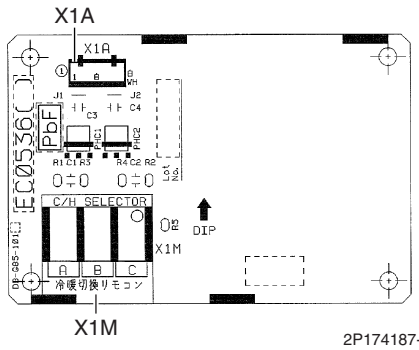
A3P: Noise Filter PCB

1) LA, NA — Terminal for terminal board (power supply)
2) LB, NB — Terminal for main PCB (A1P)
3) E — Terminal for ground
4) F1U — Fuse (6.3 A / 250 V)



A4P: Cool / Heat Selector PCB

1) X1A — Connector for main PCB (A1P)
2) X1M — Terminal for cool / heat selector



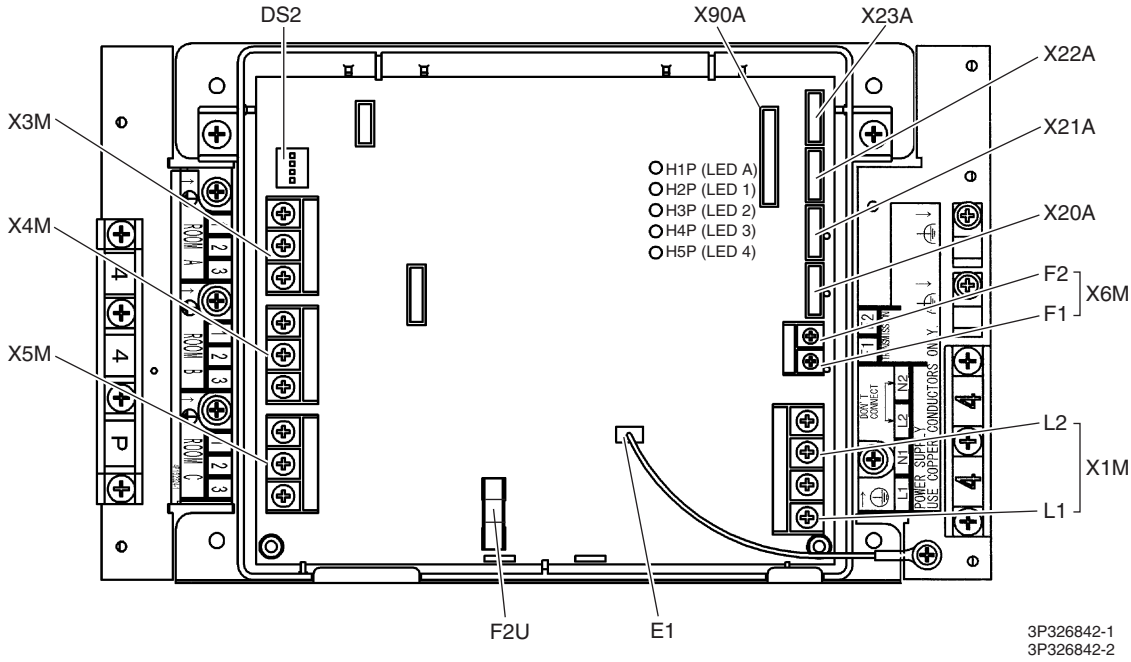
2. Branch Provider (BP) Unit

2.1 BPMKS048A2U, BPMKS049A3U

PCB Detail

1)	X20A	Connector for bypass electronic expansion valve
2)	X21A - X23A	Connector for electronic expansion valve for room A, B, C
3)	X90A	Connector for thermistors
4)	F2U	Fuse (3.15 A / 250 V)
5)	X3M	Terminal for inter-connecting wire to room A
6)	X4M	Terminal for inter-connecting wire to room B
7)	X5M	Terminal for inter-connecting wire to room C
8)	F1, F2 (on X6M)	Terminal for transmission to outdoor unit or other BP units
9)	L1, L2 (on X1M)	Terminal for power supply (60 Hz, 208 ~ 230 V)
10)	E1	Terminal for ground
11)	H1P (LED A)	LED for service monitor (green)
12)	H2P - H5P (LED 1 - 4)	LED for error indication (red)
13)	DS2	Dip switch

Note: X23A and X5M are not used for BPMKS048A2U.

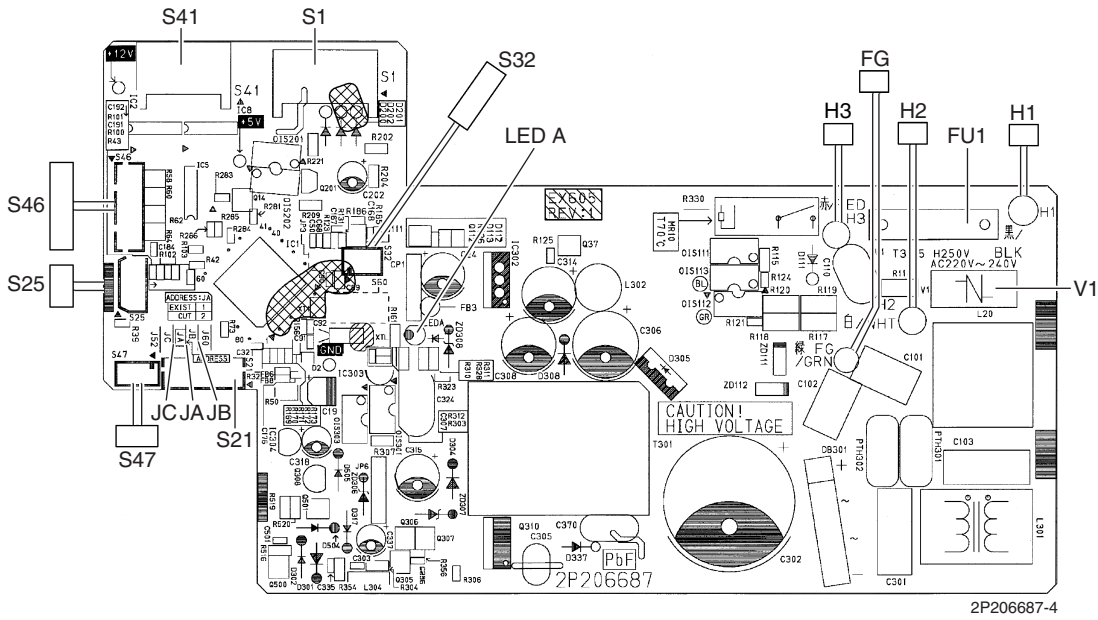


3. Indoor Unit

3.1 CTXS07LVJU

Control PCB

1) S1	Connector for DC fan motor
2) S21	Connector for centralized control (HA)
3) S25	Connector for INTELLIGENT EYE sensor PCB
4) S32	Indoor heat exchanger thermistor
5) S41	Connector for swing motors
6) S46	Connector for display PCB
7) S47	Connector for signal receiver PCB
8) H1, H2, H3, FG	Connector for terminal board
9) JA	Address setting jumper ∗ Refer to page 111 for detail.
10) JB	Fan speed setting when compressor stops for thermostat OFF
JC	Power failure recovery function (auto-restart) ∗ Refer to page 112 for detail.
11) LED A	LED for service monitor (green)
12) FU1 (F1U)	Fuse (3.15 A, 250 V)
13) V1	Varistor

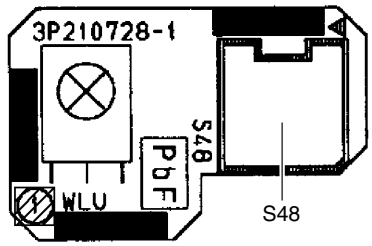


2P206687-4

Caution **Replace the PCB if you accidentally cut the jumpers other than JA, JB, and JC.**
Jumpers are necessary for electronic circuit. Improper operation may occur if you cut any of them.

Signal Receiver PCB

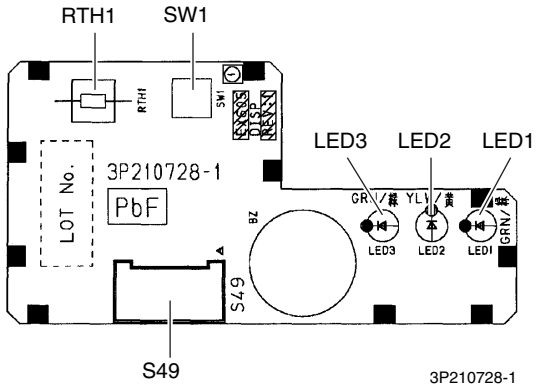
1) S48 Connector for control PCB



3P210728-1

Display PCB

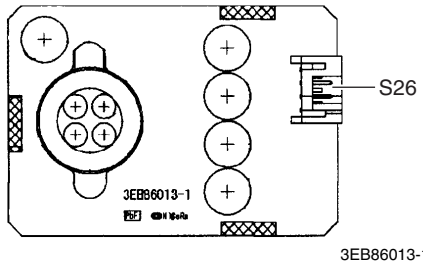
1) S49 Connector for control PCB
2) SW1 Forced operation ON/OFF button
3) LED1 (H1P) LED for operation (green)
4) LED2 (H2P) LED for timer (yellow)
5) LED3 (H3P) LED for INTELLIGENT EYE (green)
6) RTH1 (R1T) Room temperature thermistor



3P210728-1

INTELLIGENT EYE Sensor PCB

1) S26 Connector for control PCB

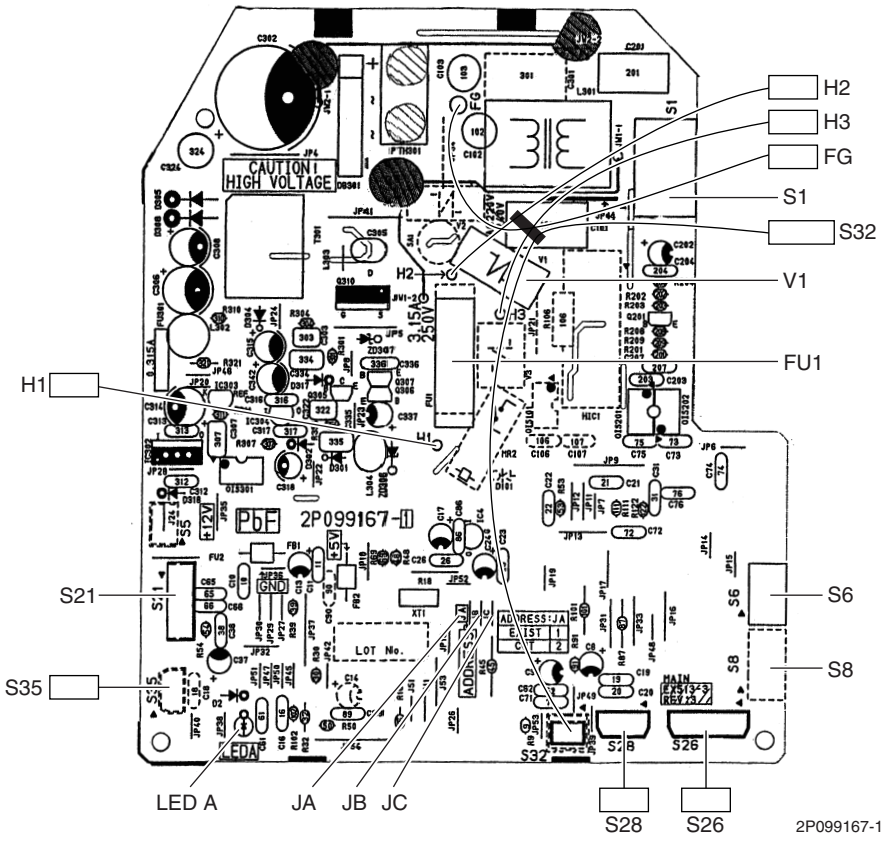


3EB86013-1

3.2 CTXS07JVJU, CTXS09/12HVJU

Control PCB

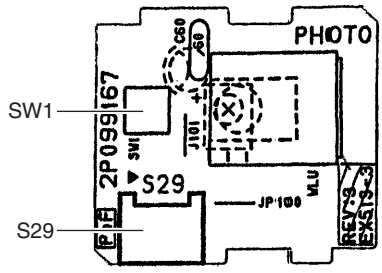
1) S1	Connector for DC fan motor
2) S6	Connector for swing motor (horizontal blades)
3) S8	Connector for swing motor (vertical blades)
4) S21	Connector for centralized control (HA)
5) S26	Connector for buzzer PCB
6) S28	Connector for signal receiver PCB
7) S32	Indoor heat exchanger thermistor
8) S35	Connector for INTELLIGENT EYE sensor PCB
9) H1, H2, H3, FG	Connector for terminal board
10) JA	Address setting jumper
	∗ Refer to page 111 for detail.
11) JB	Fan speed setting when compressor stops for thermostat OFF
JC	Power failure recovery function (auto-restart)
	∗ Refer to page 112 for detail.
12) LED A	LED for service monitor (green)
13) FU1	Fuse (3.15 A, 250 V)
14) V1	Varistor



Caution **Replace the PCB if you accidentally cut the jumpers other than JA, JB, and JC.**
Jumpers are necessary for electronic circuit. Improper operation may occur if you cut any of them.

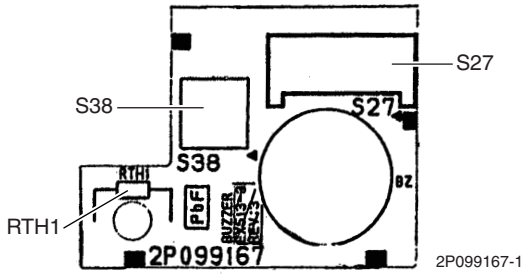
Signal Receiver PCB

1) S29 Connector for control PCB
2) SW1 (S1W) Forced operation ON/OFF button



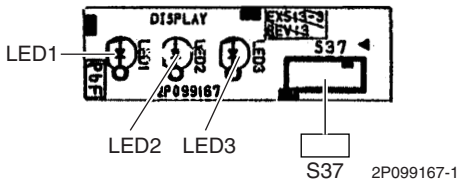
Buzzer PCB

1) S27 Connector for control PCB
2) S38 Connector for display PCB
3) RTH1 (R1T) Room temperature thermistor



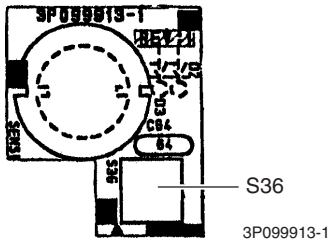
Display PCB

1) S37 Connector for buzzer PCB
2) LED1 (H1P) LED for operation (green)
3) LED2 (H2P) LED for timer (yellow)
4) LED3 (H3P) LED for HOME LEAVE operation (red)



INTELLIGENT EYE Sensor PCB

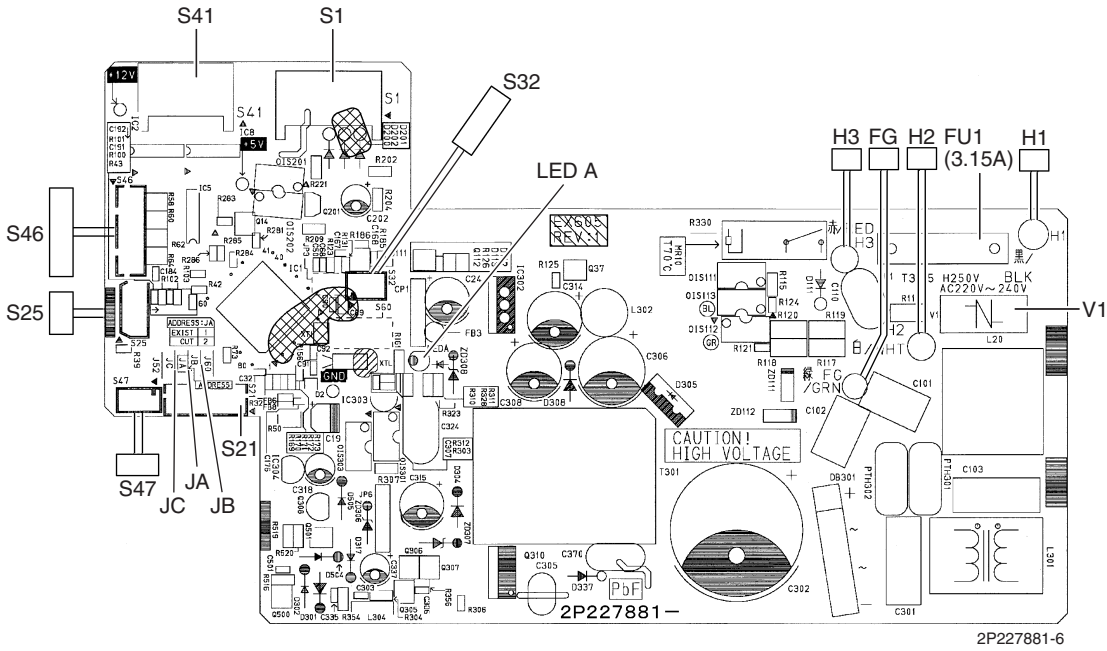
1) S36 Connector for control PCB



3.3 FTXS15/18/24LVJU

Control PCB

1) S1	Connector for DC fan motor
2) S21	Connector for centralized control (HA)
3) S25	Connector for INTELLIGENT EYE sensor PCB
4) S32	Indoor heat exchanger thermistor
5) S41	Connector for swing motors
6) S46	Connector for display PCB
7) S47	Connector for signal receiver PCB
8) H1, H2, H3, FG	Connector for terminal board
9) JA	Address setting jumper ∗ Refer to page 111 for detail.
10) JB	Fan speed setting when compressor stops for thermostat OFF
JC	Power failure recovery function (auto-restart) ∗ Refer to page 112 for detail.
11) LED A	LED for service monitor (green)
12) FU1 (F1U)	Fuse (3.15 A, 250 V)
13) V1	Varistor

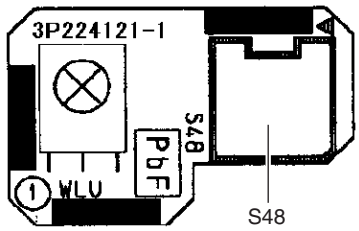


2P227881-6

Caution **Replace the PCB if you accidentally cut the jumpers other than JA, JB, and JC.**
Jumpers are necessary for electronic circuit. Improper operation may occur if you cut any of them.

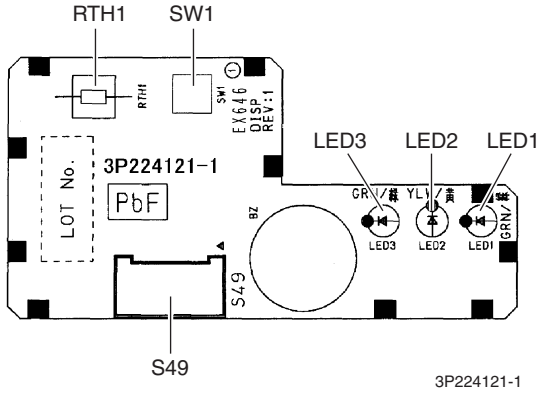
Signal Receiver PCB

1) S48 Connector for control PCB



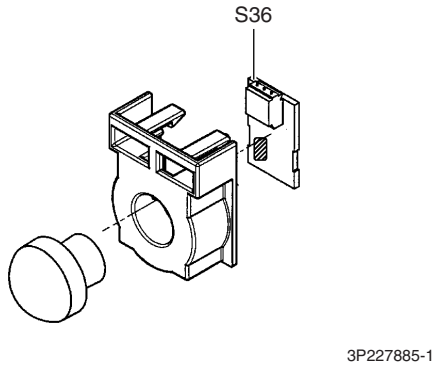
Display PCB

1) S49 Connector for control PCB
2) SW1 Forced operation ON/OFF button
3) LED1 (H1P) LED for operation (green)
4) LED2 (H2P) LED for timer (yellow)
5) LED3 (H3P) LED for INTELLIGENT EYE (green)
6) RTH1 (R1T) Room temperature thermistor



INTELLIGENT EYE Sensor PCB

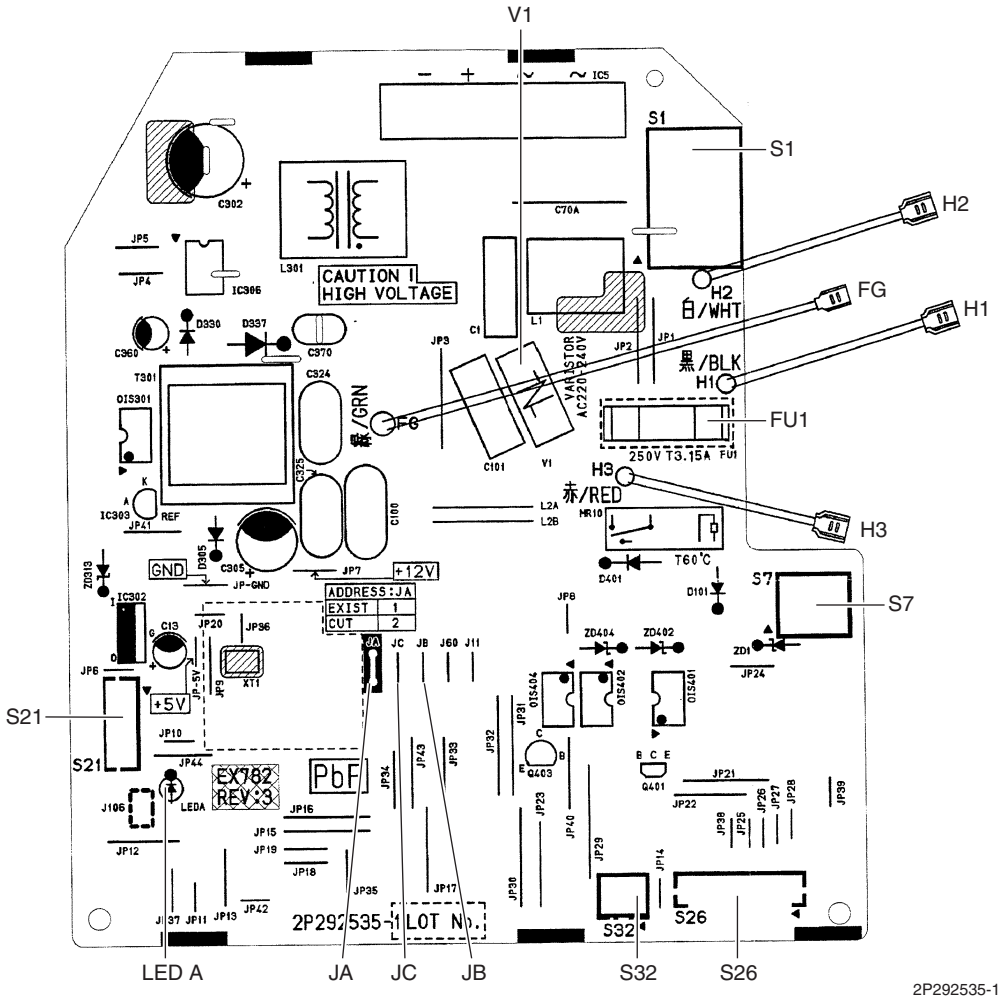
1) S36 Connector for control PCB



3.4 FDXS09/12LVJU, CDXS15/18/24LVJU

Control PCB

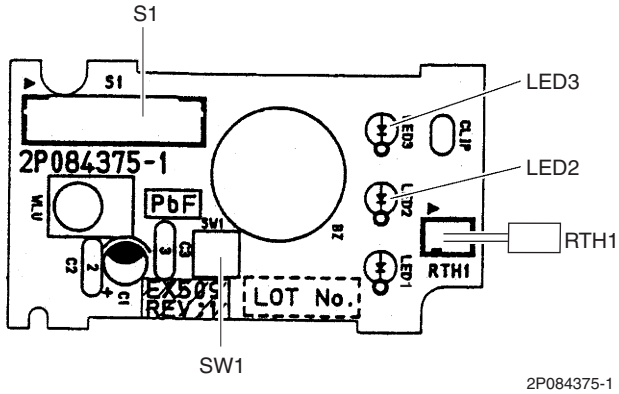
1)	S1	Connector for AC fan motor
2)	S7	Connector for AC fan motor (Hall IC)
3)	S21	Connector for centralized control (HA)
4)	S26	Connector for display PCB
5)	S32	Connector for indoor heat exchanger thermistor
6)	H1, H2, H3	Connector for terminal board
7)	FG (GND)	Connector for terminal board (ground)
8)	JA	Address setting jumper
		∗ Refer to page 111 for detail.
9)	JB	Fan speed setting when compressor stops for thermostat OFF
	JC	Power failure recovery function (auto-restart)
		∗ Refer to page 112 for detail.
10)	LED A	LED for service monitor (green)
11)	FU1 (F1U)	Fuse (3.15 A, 250 V)
12)	V1	Varistor



Caution **Replace the PCB if you accidentally cut the jumpers other than JA, JB, and JC.**
Jumpers are necessary for electronic circuit. Improper operation may occur if you cut any of them.

Display PCB

1) S1 Connector for control PCB
2) SW1 (S1W) Forced operation ON/OFF button
3) LED2 (H2P) LED for timer (yellow)
4) LED3 (H3P) LED for operation (green)
5) RTH1 (R1T) Room temperature thermistor



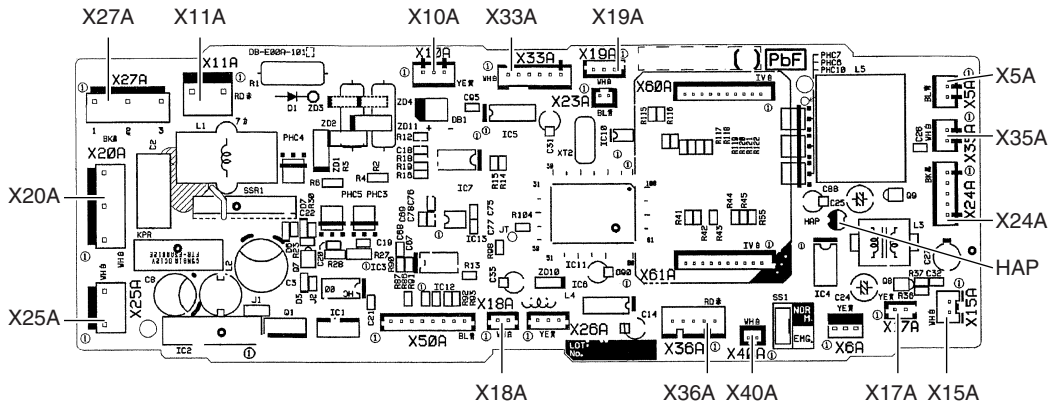
2P084375-1

★LED 1 does not function.

3.5 FFQ09/12/15/18LVJU

PCB ASSY

1)	X5A	Connector for terminal board (for wired remote controller)
2)	X10A, X11A	Connector for transformer
3)	X15A	Connector for float switch
4)	X17A, X18A	Connector for indoor heat exchanger thermistor
5)	X19A	Connector for room temperature thermistor
6)	X20A	Connector for fan motor
7)	X24A	Connector for signal receiver PCB (when the wireless remote controller is used)
8)	X25A	Connector for drain pump motor
9)	X27A	Connector for terminal board (for inter-unit wiring)
10)	X33A	Connector for wiring adaptor PCB (option)
11)	X35A	Connector for group control adaptor (option)
12)	X36A	Connector for swing motor
13)	X40A	Connector for ON/OFF input from outside (option)
14)	HAP	LED for service monitor (green)



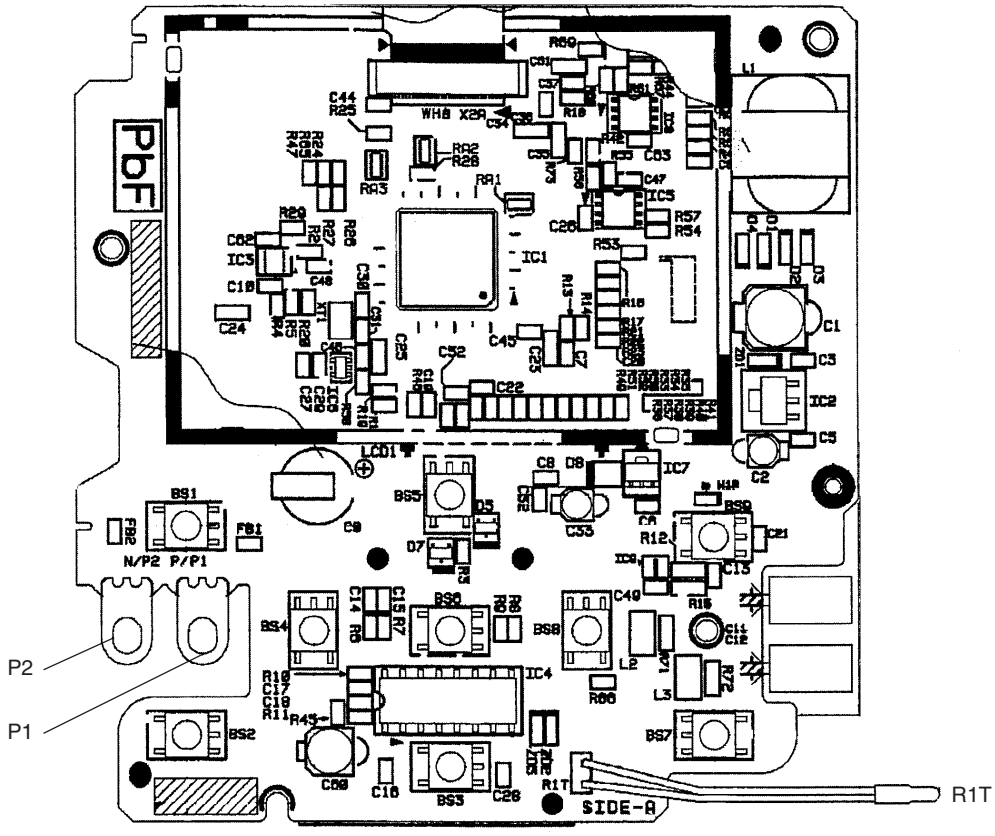
2P095006-8

4. Wired Remote Controller

4.1 BRC1E72

PCB ASSY

1) P1, P2 Terminal for indoor unit
2) R1T Room temperature thermistor



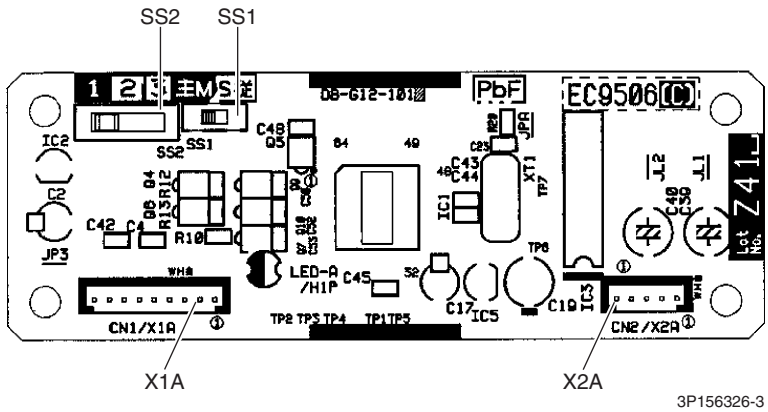
2P298037-3

5. Wireless Remote Controller

5.1 BRC7E830

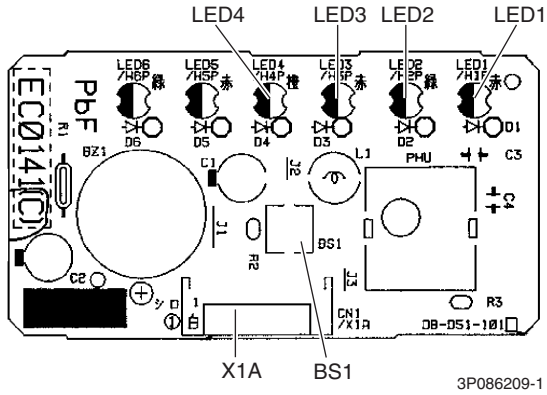
Signal Receiver PCB

1) X1A — Connector for display PCB
2) X2A — Connector for indoor unit PCB
3) SS1 — MAIN / SUB setting switch
   SS2 — Address setting switch
   ∗ Refer to page 117 for detail.



Display PCB

1) X1A — Connector for signal receiver PCB
2) BS1 — Forced operation ON/OFF button
3) LED1 (H1P) — LED for operation (red)
4) LED2 (H2P) — LED for timer (green)
5) LED3 (H3P) — LED for filter cleaning sign (red)
6) LED4 (H4P) — LED for defrost operation (orange)



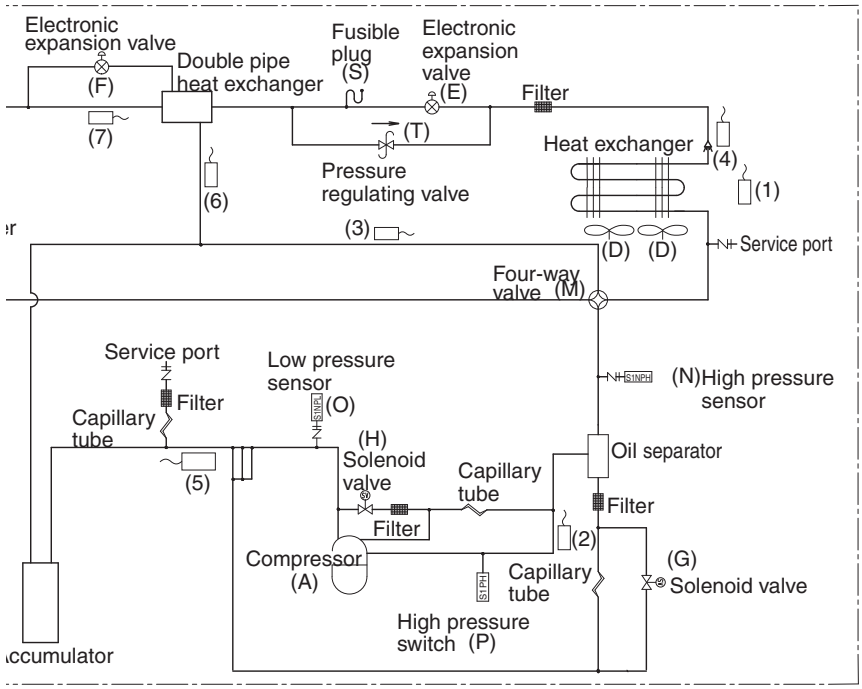
★ LED5 and LED6 do not function.

Part 4
Refrigerant Circuit

1. Refrigerant Circuit

1.1 Outdoor Unit

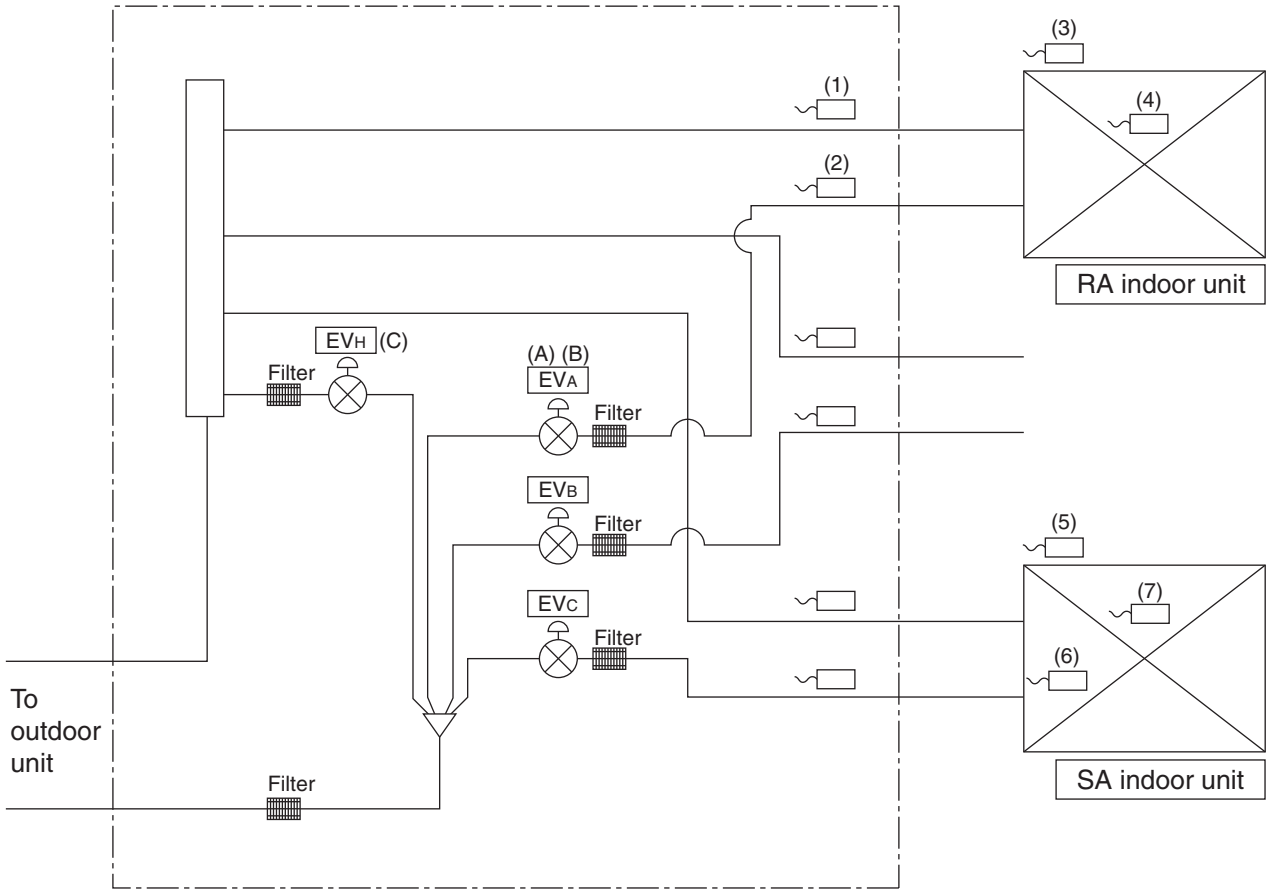
No. in diagram	Symbol	Name	Major Function
A	M1C	Compressor motor	The compressor is operated on frequencies between 36 Hz and 195 Hz by using the inverter. (31 steps)
D	M1F M2F	Fan motor	Since the system is of air heat exchanging type, the fan is operated at 8-step rotation speed by using the inverter.
E	Y1E	Electronic expansion valve (Main)	While in heating operation, PI control is applied to keep the outlet superheated degree of the air heat exchanger constant.
F	Y3E	Electronic expansion valve (Subcooling)	PI control is applied to keep the outlet superheated degree of the subcooling heat exchanger constant.
G	Y2S	Solenoid valve (Hot gas bypass)	Prevents the low pressure from temporary falling.
H	Y3S	Solenoid valve (Unload circuit)	Unloading operation of the compressor.
M	Y1S	Four-way valve	Switches the operation mode between cooling and heating.
N	S1NPH	High pressure sensor	Detects high pressure.
O	S1NPL	Low pressure sensor	Detects low pressure.
P	S1PH	High pressure switch	In order to prevent the increase of high pressure when an error occurs, this switch is activated at high pressure of 4.0 MPa (1338 ftÂq) or more to stop the compressor operation.
S	—	Fusible plug	In order to prevent the increase of pressure when abnormal heating is caused by fire, etc., the fusible part of the plug melts at a temperature of 70 ~ 75°C (158 ~ 167°F) to release the pressure into the atmosphere.
T	—	Pressure regulating valve (Receiver to discharge pipe)	This valve opens at a pressure of 4.0 MPa (1338 ftAq) to prevent pressure increase, thus protecting functional parts from damage due to the increase of pressure in transportation or storage.
1	R1T	Thermistor (Outdoor temperature: Ta)	Detects outdoor temperature, correct discharge pipe temperature, etc.
2	R2T	Thermistor (Discharge pipe: Tdi)	Detects discharge pipe temperature, for temperature protection control of the compressor, etc.
3	R3T	Thermistor (Suction pipe 1: Ts1)	Detects suction pipe temperature, keep the suction superheated degree constant in heating operation, etc.
4	R4T	Thermistor (Outdoor heat exchanger: Tb)	Detects liquid pipe temperature of the outdoor heat exchanger, determine defrosting operation, etc.
5	R5T	Thermistor (Suction pipe 2: Ts2)	Calculates the internal temperature of the compressor etc.
6	R6T	Thermistor (Subcooling heat exchanger gas pipe: Tsh)	Controls the subcooling electronic expansion valve.
7	R7T	Thermistor (Liquid pipe: Tl)	Detects refrigerant overcharge in check operation, etc.



Stop valve (with service port on field piping side ϕ7.9 mm (ϕ5/16 inch) flare connection)

1.2 Branch Provider (BP) Unit

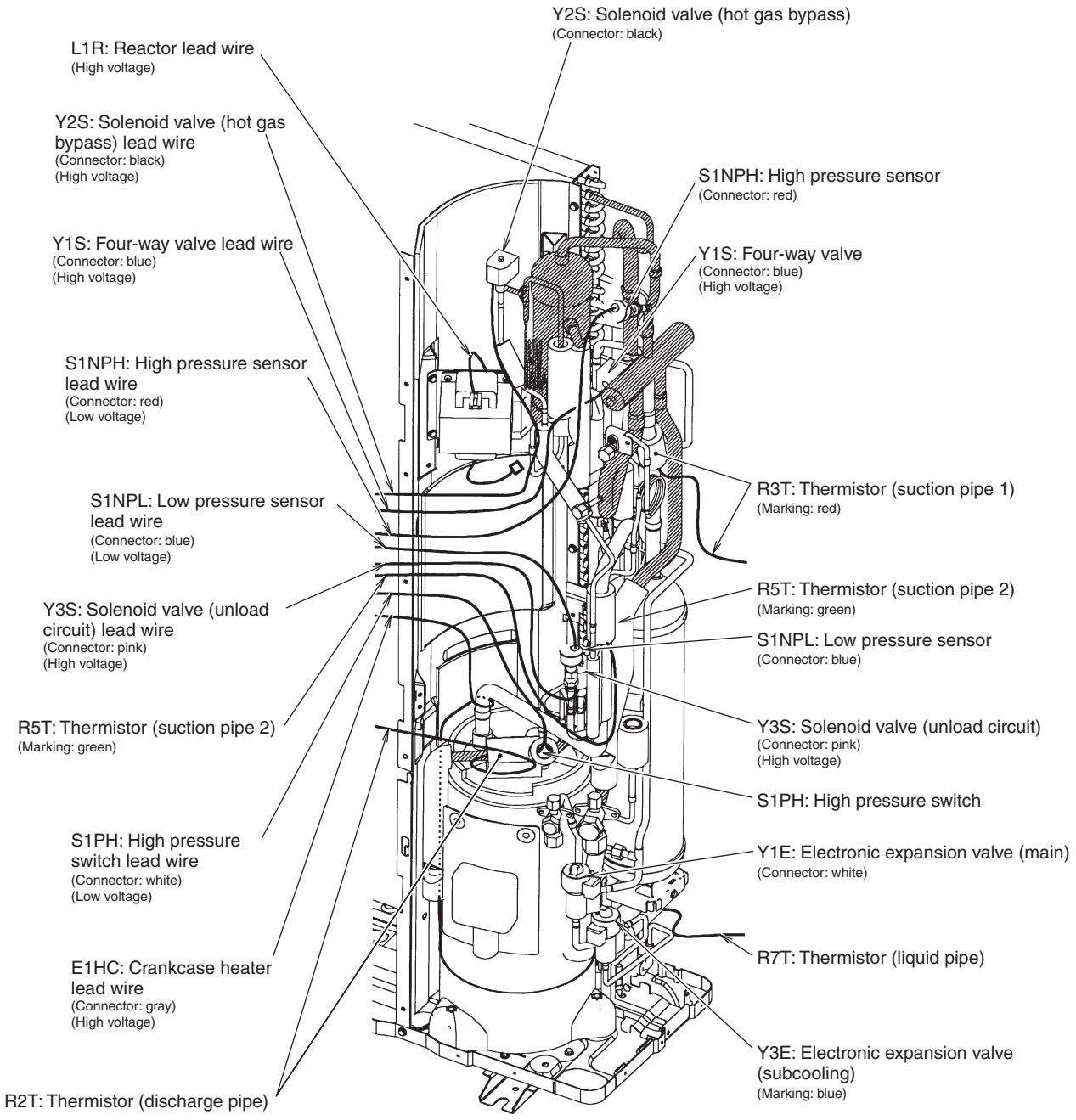
No. in diagram	Symbol	Name	Major Function
A	EVU	Electronic expansion valve (for operating room)	Among EVA, EVB and EVC, the electronic expansion valve of operating room is called EVU.
B	EVT	Electronic expansion valve (for non-operating room)	Among EVA, EVB and EVC, the electronic expansion valve of stopping room is called EVT.
C	EVH	Electronic expansion valve (Bypass)	Adjusts the refrigerant circulating rate of the indoor unit during oil-return operation.
1	DGA ~ DGC	Thermistor (Gas pipe)	During cooling operation, carries out the indoor unit SH control and cooling gas pipe isothermal control.
2	DLA ~ DLC	Thermistor (Liquid pipe)	During heating operation, carries out the indoor unit SC control.
3	R1T	Thermistor (Room temperature)	Detects room air temperature and instruct the capacity supply to the BP unit.
4	R2T	Thermistor (Indoor heat exchanger)	Detects heat exchanger temperature and carry out various protection functions and controls of capacity.
5	R1T	Thermistor (Room temperature)	Detects room air temperature and instruct the capacity supply to the BP unit.
6	R2T	Thermistor (Indoor heat exchanger 1: liquid pipe)	Detects heat exchanger temperature and carry out various protection functions and controls of capacity.
7	R3T	Thermistor (Indoor heat exchanger 2)	Detects heat exchanger temperature and carry out various protection functions and controls of capacity.



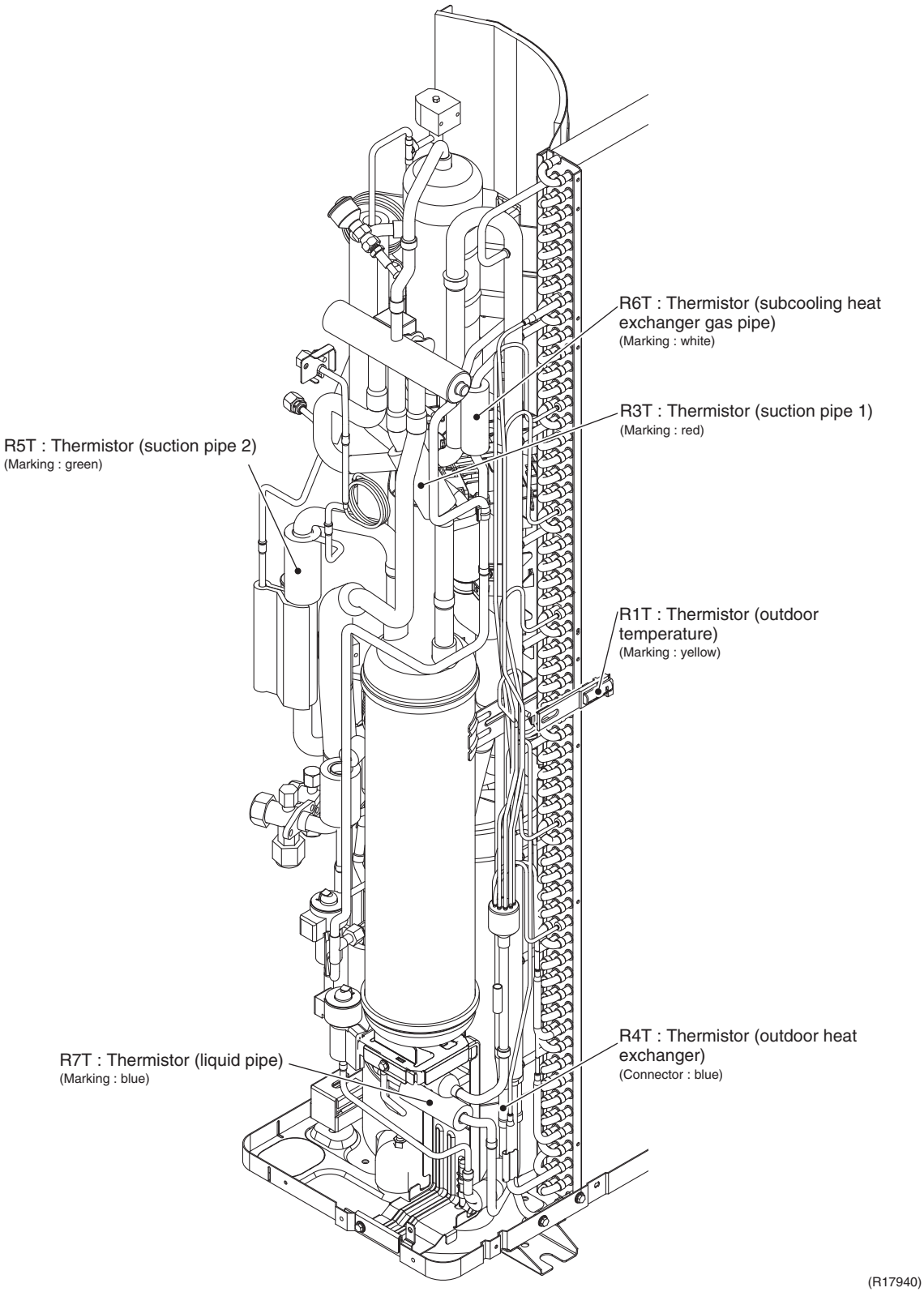
(Q0403)

2. Functional Parts Layout

Front View

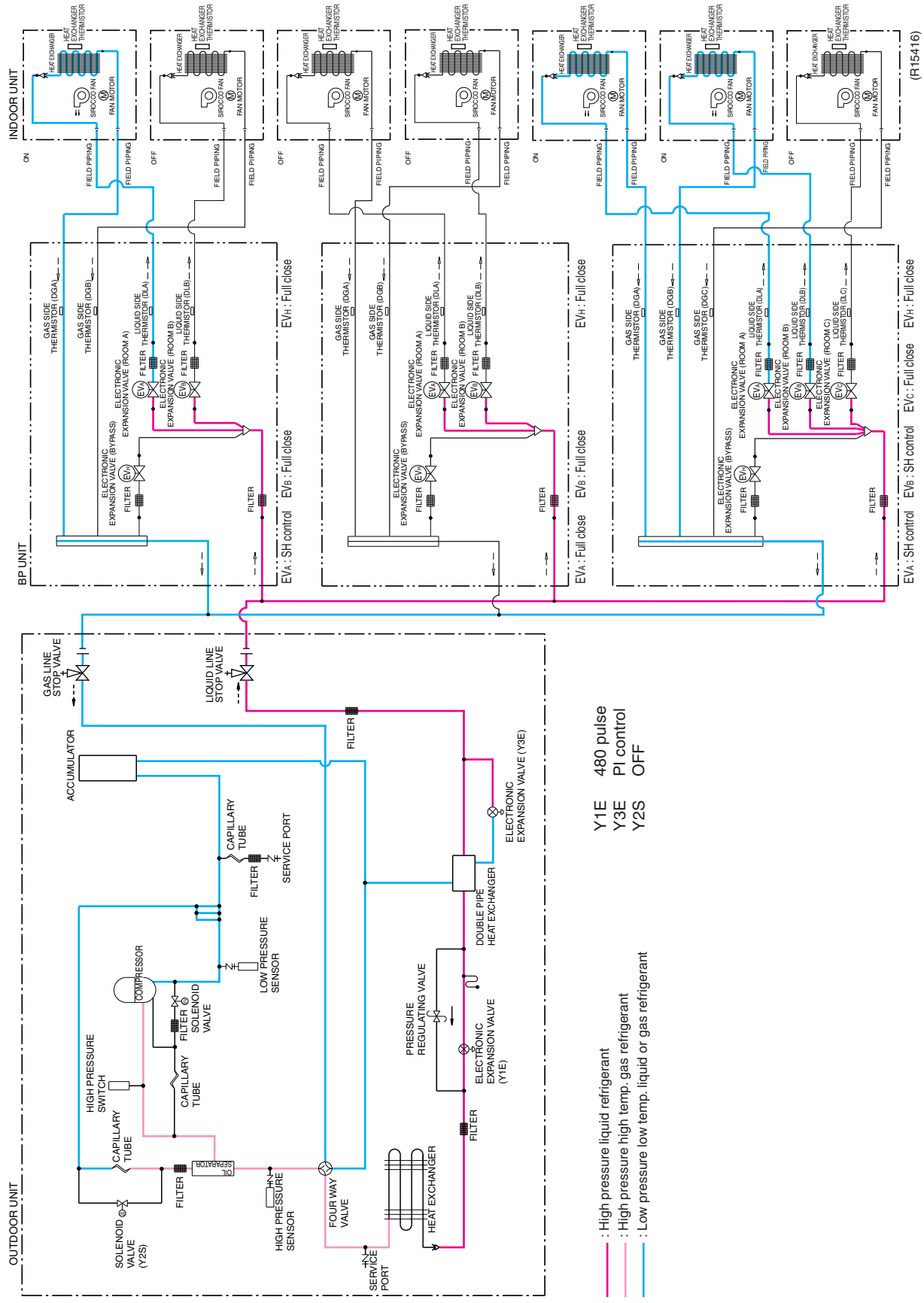


Back View

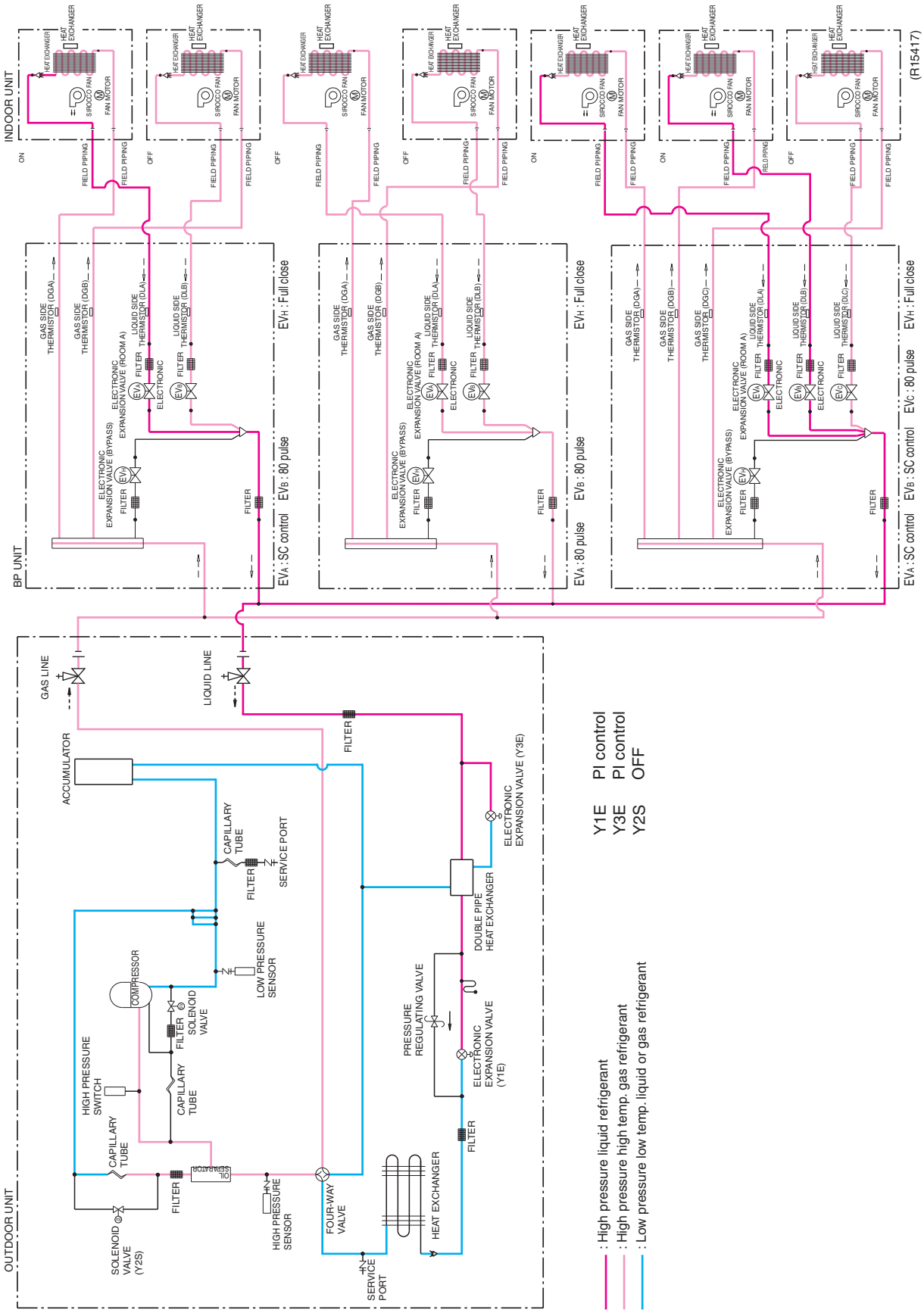

R6T : Thermistor (subcooling heat exchanger gas pipe)
(Marking : white)
R3T : Thermistor (suction pipe 1)
(Marking : red)
R5T : Thermistor (suction pipe 2)
(Marking : green)
R1T : Thermistor (outdoor temperature)
(Marking : yellow)
R4T : Thermistor (outdoor heat exchanger)
(Connector : blue)
R7T : Thermistor (liquid pipe)
(Marking : blue)
(R17940)

3. Refrigerant Flow for Each Operation Mode

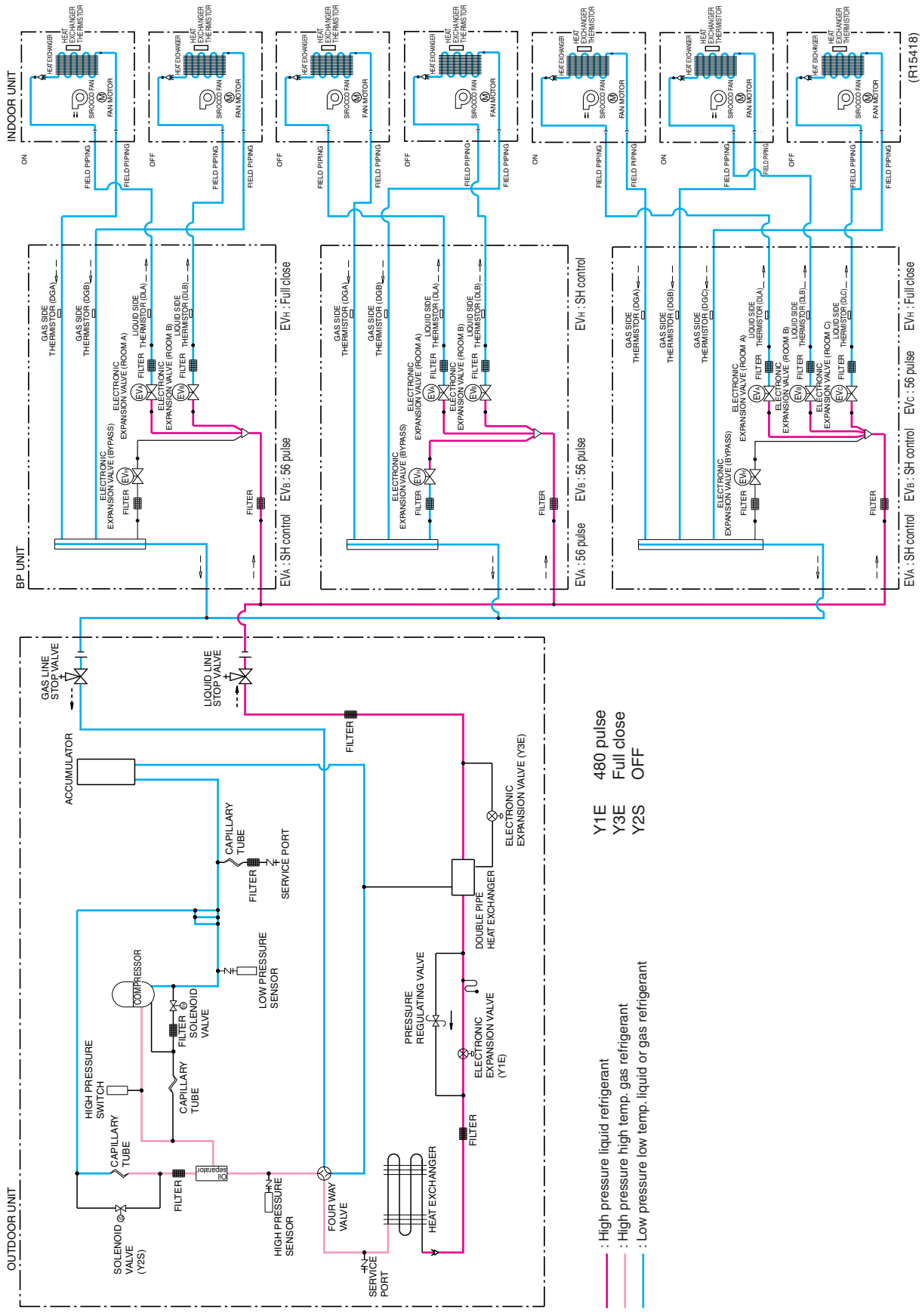
3.1 Cooling Operation



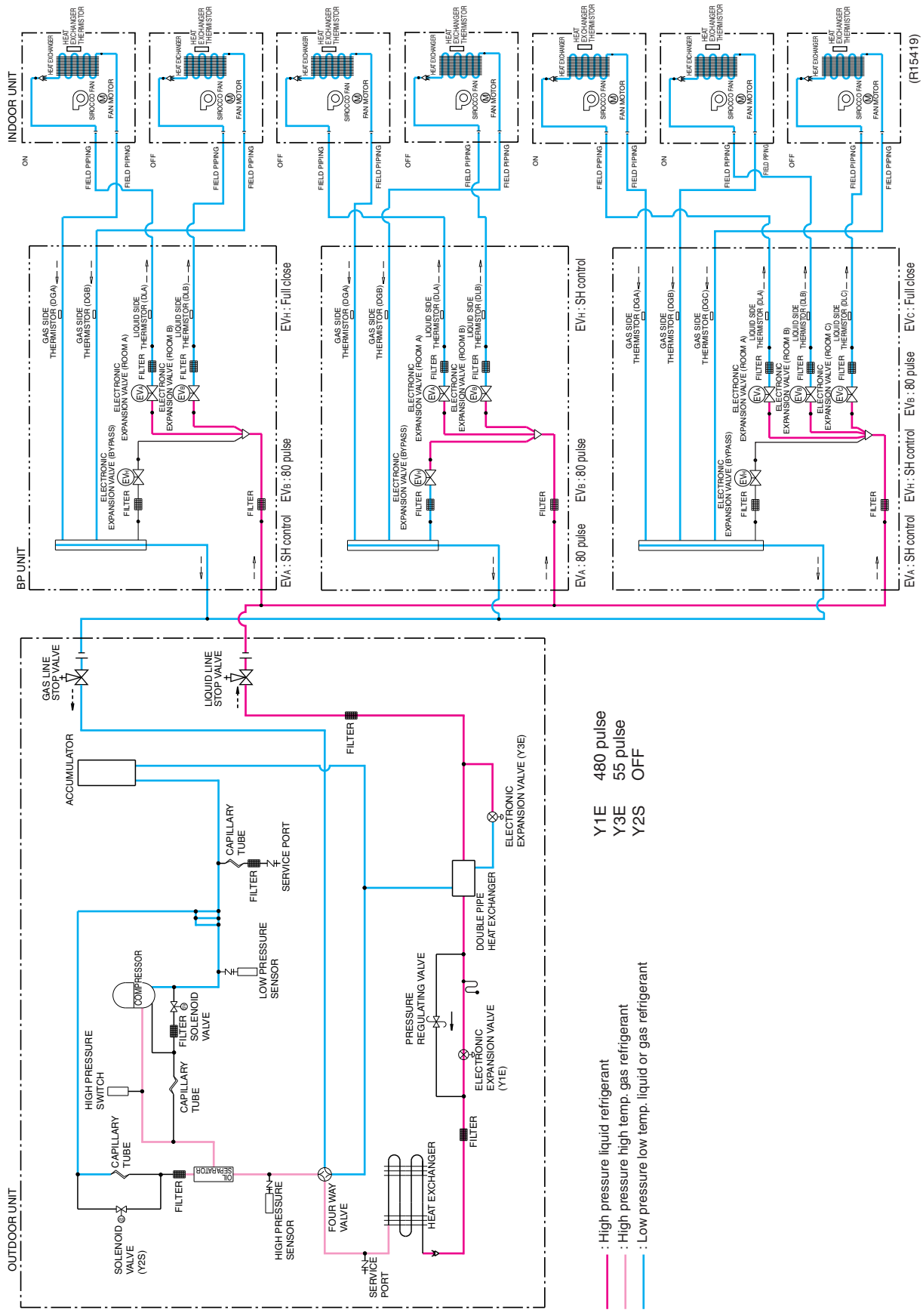
3.2 Heating Operation



3.3 Cooling Oil Return Operation

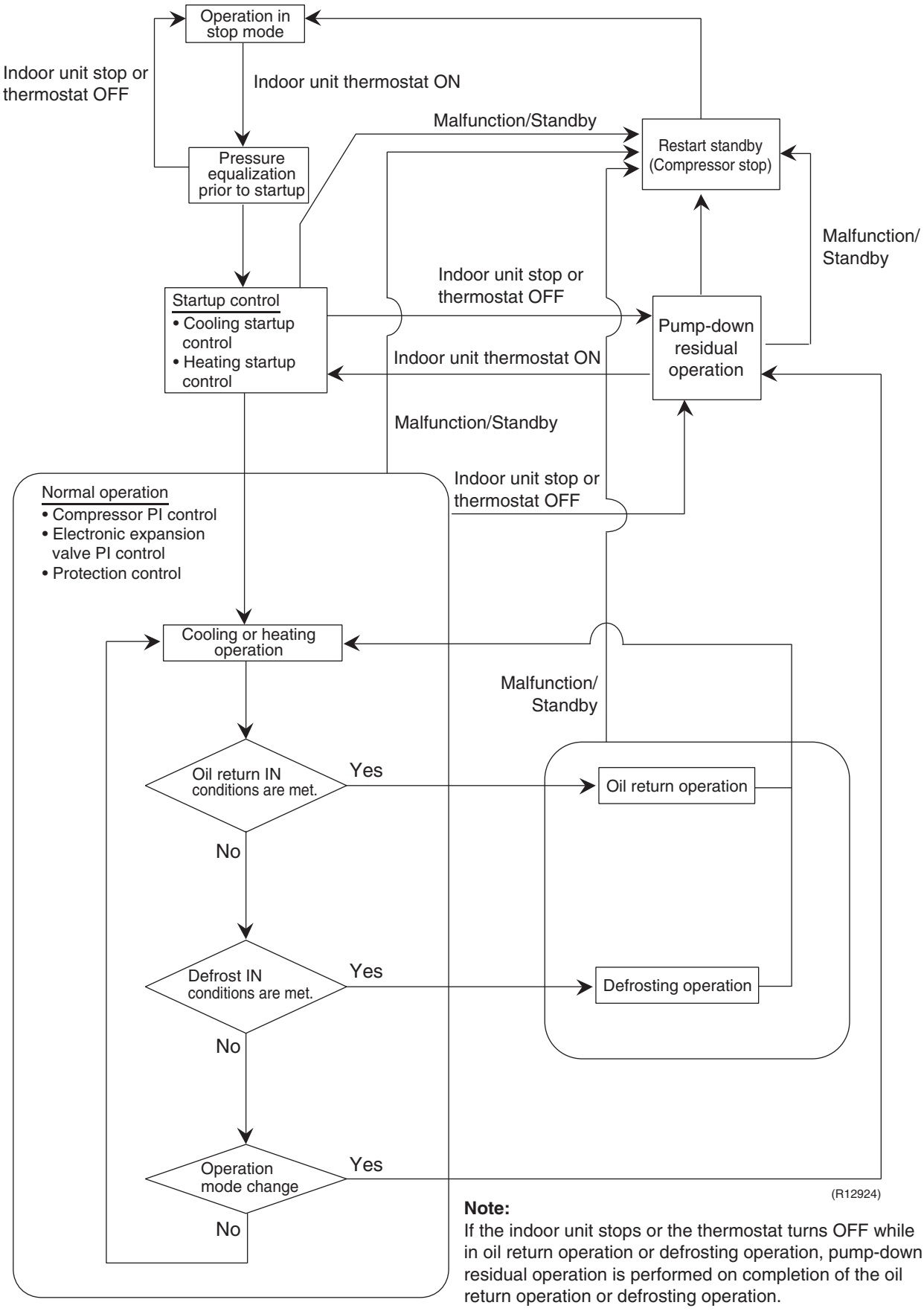


3.4 Heating Oil Return Operation & Defrost Operation



Part 5
Function

1. Operation Mode



Note:
If the indoor unit stops or the thermostat turns OFF while in oil return operation or defrosting operation, pump-down residual operation is performed on completion of the oil return operation or defrosting operation.

2. Basic Control

2.1 Normal Operation

<Cooling Operation>

Actuator	Operation	Remarks
Compressor	Compressor PI control	Used for high pressure protection control, low pressure protection control, discharge pipe temperature protection control, and compressor operating frequency upper limit control with inverter protection control.
Outdoor fan	Cooling fan control	—
Four-way valve (Y1S)	OFF	—
Main electronic expansion valve (Y1E)	480 pulse	—
Subcooling electronic expansion valve (Y3E)	PI control	—
Hot gas bypass solenoid valve (Y2S)	OFF	This valve turns on with low pressure protection control.

<Heating Operation>

Actuator	Operation	Remarks
Compressor	Compressor PI control	Used for high pressure protection control, low pressure protection control, discharge pipe temperature protection control, and compressor operating frequency upper limit control with inverter protection control.
Outdoor fan	STEP 7 or 8	—
Four-way valve (Y1S)	ON	—
Main electronic expansion valve (Y1E)	PI control	—
Subcooling electronic expansion valve (Y3E)	PI control	—
Hot gas bypass solenoid valve (Y2S)	OFF	This valve turns on with low pressure protection control.

★Heating operation does not start when the outdoor temperature is above 24°CDB (75.2°FDB).

2.2 Compressor PI Control

The PI control of the compressor capacity is carried out to keep Te constant during cooling operation and Tc constant during heating operation to ensure stable unit performance.

<Cooling operation>

Controls compressor capacity to adjust Te to achieve target value (TeS).

Te setting (Set in setting mode 2)

L	M (Normal) : factory setting	H
3°C (37.4°F)	6°C (42.8°F)	9°C (48.2°F)

Te: Low pressure equivalent saturation temperature
TeS: Target Te value
(Varies depending on Te setting, operating frequency, etc.)

<Heating operation>

Controls compressor capacity to adjust Tc to achieve target value (TcS).

Tc setting (Set in setting mode 2)

L	M (Normal) : factory setting	H
43°C (109.4°F)	46°C (114.8°F)	49°C (120.2°F)

Tc: High pressure equivalent saturation temperature
TcS: Target Tc value
(Varies depending on Tc setting, operating frequency, etc.)

Step	Full-load	Unload
1		36.0 Hz
2		39.0 Hz
3		43.0 Hz
4		47.0 Hz
5		52.0 Hz
6	52.0 Hz	57.0 Hz
7	57.0 Hz	64.0 Hz
8	62.0 Hz	71.0 Hz
9	68.0 Hz	78.0 Hz
10	74.0 Hz	
11	80.0 Hz	
12	86.0 Hz	
13	92.0 Hz	
14	98.0 Hz	
15	104.0 Hz	

Step	Full-load	Unload
16	110.0 Hz	
17	116.0 Hz	
18	122.0 Hz	
19	128.0 Hz	
20	134.0 Hz	
21	140.0 Hz	
22	146.0 Hz	
23	152.0 Hz	
24	158.0 Hz	
25	164.0 Hz	
26	170.0 Hz	
27	175.0 Hz	
28	180.0 Hz	
29	185.0 Hz	
30	190.0 Hz	
31	195.0 Hz	

∗Compressors may operate in a pattern other than those listed in the above tables subject to the operating conditions. Selection of full load operation to/from unload operation is made with the unload circuit solenoid valve (Y3S). The full load operation is performed with the Y3S set to OFF, while the unload operation is performed with the Y3S set to ON.

2.3 Electronic Expansion Valve PI Control

Main Electronic Expansion Valve

The PI control of the main electronic expansion valve (Y1E) is carried out to keep the evaporator outlet superheated degree (SH) constant during heating operation in order to make maximum use of the outdoor unit heat exchanger (evaporator).

SH = Ts1 – Te

SH: Evaporator outlet superheated degree

Ts1: Suction pipe temperature detected by thermistor R3T

Te: Low pressure equivalent saturation temperature

The optimum initial value of the evaporator outlet superheated degree is 3°C (5.4°F), but varies depending on the discharge pipe superheated degree of the inverter compressor.

Subcooling Electronic Expansion Valve

The PI control of the subcooling electronic expansion valve (Y3E) is carried out to keep the evaporator outlet superheated degree (SH) of the gas pipe in order to make maximum use of the subcooling heat exchanger.

SH = Tsh – Te

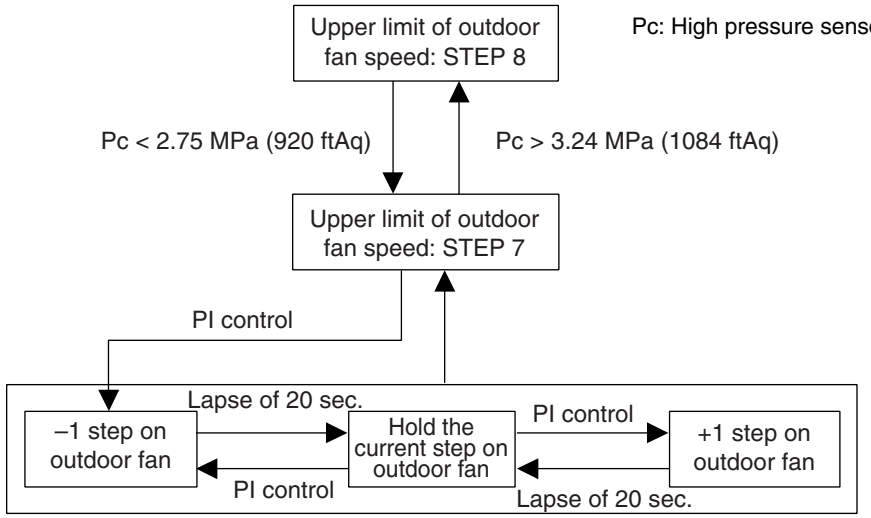
SH: Evaporator outlet superheated degree

Tsh: Subcooling heat exchanger gas pipe temperature detected by thermistor R6T

Te: Low pressure equivalent saturation temperature

2.4 Cooling Operation Fan Control

In cooling operation with low outdoor temperature, cooling operation fan control provides the adequate amount of circulating air with liquid pressure secured by high pressure control using the outdoor fan.
When the outdoor temperature is ≥ 20°C (68°F), the fan operates in STEP 7 or higher.
When the outdoor temperature is ≥ 18°C (64.4°F), it operates in STEP 5 or higher.
When the outdoor temperature is ≥ 12°C (53.6°F), it operates in STEP 1 or higher.



(R19078)

Fan Steps

Cooling	M1F	M2F
STEP 0	0 rpm	0 rpm
STEP 1	250 rpm	0 rpm
STEP 2	400 rpm	0 rpm
STEP 3	285 rpm	250 rpm
STEP 4	360 rpm	325 rpm
STEP 5	445 rpm	410 rpm
STEP 6	580 rpm	545 rpm
STEP 7	715 rpm	680 rpm
STEP 8	850 rpm	815 rpm

3. Special Control

3.1 Startup Control

Startup control equalizes the pressure in the front and back of the compressor before the startup of the compressor, thus reducing startup loads. Furthermore, the inverter is turned ON to charge the capacitor.
To avoid stresses to the compressor due to oil return operation, etc. after startup, the following control is made and the position of the four way valve is also determined. To position the four-way valve, the master and slave units simultaneously start up.

3.1.1 Startup Control in Cooling Operation

Thermostat ON

	Pressure equalization control before startup	Startup control	
		STEP 1	STEP 2
Compressor	0 Hz	57 Hz Unload	57 Hz Unload +2 steps / 20 sec. (until Pc – Pe > 0.39 MPa (130 ftAq))
Outdoor fan	STEP 7	Ta < 20°C: OFF (68°F) Ta ≥ 20°C: STEP 4 (68°F)	+1 step / 15 sec. (when Pc > 2.16 MPa (723 ftAq)) –1 step / 15 sec. (when Pc < 1.77 MPa (592 ftAq))
Four-way valve (Y1S)	Holds	OFF	OFF
Main electronic expansion valve (Y1E)	0 pulse	480 pulse	480 pulse
Subcooling electronic expansion valve (Y3E)	0 pulse	0 pulse	0 pulse
Hot gas bypass solenoid valve (Y2S)	OFF	OFF	OFF
Ending conditions	or • Pc – Pe < 0.3 MPa (100 ftAq) • A lapse of 1 to 5 min.	A lapse of 10 sec.	or • A lapse of 130 sec. • Pc – Pe > 0.39 MPa (130 ftAq)

3.1.2 Startup Control in Heating Operation

Thermostat ON

	Pressure equalization control before startup	Startup control	
		STEP 1	STEP 2
Compressor	0 Hz	57 Hz Unload	57 Hz Unload +2 steps / 20 sec. (until Pc – Pe > 0.39 MPa (130 ftAq))
Outdoor fan	From starting ~ 1 min. : STEP 7 1 ~ 3 min. : STEP 3 3 ~ 5 min. : OFF	STEP 8	STEP 8
Four-way valve (Y1S)	Holds	ON	ON
Main electronic expansion valve (Y1E)	0 pulse	0 pulse	0 pulse
Subcooling electronic expansion valve (Y3E)	0 pulse	0 pulse	0 pulse
Hot gas bypass solenoid valve (Y2S)	OFF	OFF	OFF
Ending conditions	or • Pc – Pe < 0.3 MPa (100 ftAq) • A lapse of 1 to 5 min.	A lapse of 10 sec.	or • A lapse of 130 sec. • Pc > 2.70 MPa (903 ftAq) • Pc – Pe > 0.39 MPa (130 ftAq)

3.2 Oil Return Operation

In order to prevent the compressor from running out of oil, the oil return operation is conducted to recover oil flown out from the compressor to the system side.

3.2.1 Oil Return Operation in Cooling Operation

<Conditions to start>

Oil return operation in cooling operation is started referring to the following conditions:

- Cumulative oil feed rate
- Timer setting (Make this setting so as to start the oil return operation when the initial cumulative operating time reaches 2 hours after power supply is turned ON and then every 8 hours.)

The cumulative oil feed rate is computed from Tc, Te, and compressor loads.

Outdoor unit actuator	Oil return preparation operation	Oil return operation	Post-oil-return operation
Compressor	Take the current step as the upper limit.	52 Hz Full load (→ Low pressure constant control)	Same as in oil return operation mode.
Outdoor fan	Fan control (Normal cooling)	Fan control (Normal cooling)	Fan control (Normal cooling)
Four-way valve (Y1S)	OFF	OFF	OFF
Main electronic expansion valve (Y1E)	480 pulse	480 pulse	480 pulse
Subcooling electronic expansion valve (Y3E)	SH control	0 pulse	0 pulse
Hot gas bypass solenoid valve (Y2S)	OFF	OFF	OFF
Ending conditions	20 sec.	or • 3 min. • Ts1 – Te < 5°C (9°F)	or • 3 min. • Pe < 0.6 MPa (201 ftAq) • HTdi > 110°C (230°F)

Indoor unit actuator		Cooling oil return operation
Indoor fan	Thermostat ON unit	Remote controller setting
	Stopping unit	OFF
	Thermostat OFF unit	Remote controller setting
Electronic expansion valve of BP unit	Thermostat ON unit	SH control
	Stopping unit	77 pulse
	Thermostat OFF unit	SH control

3.2.2 Oil Return Operation in Heating Operation

<Conditions to start>

Oil return operation in heating operation is started referring to the following conditions:

- Integrated amount of displaced oil
- Timer setting (Make this setting so as to start the oil return operation when the initial cumulative operating time reaches 2 hours after power supply is turned ON and then every 8 hours.)

The integrated amount of displaced oil is derived from Tc, Te, and the compressor load.

Outdoor unit actuator	Oil return preparation operation	Oil return operation	Post-oil-return operation
Compressor	Upper limit control	140 Hz Full load	36 Hz Unload +2 steps / 20 sec. (until Pc - Pe > 0.4 MPa (134 ftAq))
Outdoor fan	STEP 8	OFF	STEP 8
Four way valve (Y1S)	ON	OFF	ON
Main electronic expansion valve (Y1E)	SH control	480 pulse	55 pulse
Subcooling electronic expansion valve (Y3E)	0 pulse	0 pulse	0 pulse
Hot gas bypass solenoid valve (Y2S)	OFF	OFF	OFF
Ending conditions	2 min.	or [• 12 min. / & {• Ts1 – Te < 5°C (9°F) / • Tb > 11°C (51.8°F)}]	or [• 160 sec. / • Pc – Pe > 0.4 MPa (134 ftAq)]

∗From the preparation to the oil return operation, and from the oil return operation to the post-oil-return operation, the compressor stops for 1 minute to reduce noise on changing of the four way valve.

Indoor unit actuator		Heating oil return operation
Indoor fan	Thermostat ON unit	OFF
	Stopping unit	OFF
	Thermostat OFF unit	OFF
Electronic expansion valve of BP unit	Thermostat ON unit	SH control
	Stopping unit	80 pulse
	Thermostat OFF unit	SH control

3.3 Defrosting Operation

The defrosting operation is performed to solve frost on the outdoor unit heat exchanger when heating, in order to recover heating capacity.

<Conditions to start>

The defrosting operation is started referring to the following conditions:

- Outdoor heat exchanger heat transfer co-efficiency
- Outdoor heat exchanger temperature (Tb)
- Timer (2 hours at the minimum)

Outdoor heat-exchange co-efficiency is derived from Tc, Te, and the compressor load.

Outdoor unit actuator	Defrost preparation operation	Defrost operation	Post defrost operation
Compressor	Upper limit control	140 Hz Full load	36 Hz Unload +2 steps / 20 sec. (until Pc - Pe > 0.4 MPa (134 ftAq))
Outdoor fan	STEP 8	OFF	STEP 8
Four way valve (Y1S)	ON	OFF	ON
Main electronic expansion valve (Y1E)	SH control	480 pulse	55 pulse
Subcooling electronic expansion valve (Y3E)	0 pulse	0 pulse	0 pulse
Hot gas bypass solenoid valve (Y2S)	OFF	ON	ON
Ending conditions	2 min.	or [• 15 min. / & {• Tb > 11°C (51.8°F) / • Ts1 – Te < 5°C (9°F)}]	or [• 160 sec. / • Pc – Pe > 0.4 MPa (134 ftAq)]

∗From the preparation to the defrost operation, and from the defrost operation to the post defrost operation, the compressor stops for 1 minute to reduce noise on changing of the four-way valve.

Indoor unit actuator		Operation
Indoor fan	Thermostat ON unit	OFF
	Stopping unit	OFF
	Thermostat OFF unit	OFF
Electronic expansion valve of BP unit	Thermostat ON unit	SH control
	Stopping unit	80 pulse
	Thermostat OFF unit	SH control

3.4 Pump-down Residual Operation

Outline

When activating the compressor, if there is liquid refrigerant remaining in the heat exchanger, the liquid refrigerant enters into the compressor and dilutes the oil inside resulting in a decrease of lubricity. Therefore, the pump-down residual operation is performed to collect the refrigerant in the heat exchanger when the compressor is down.

3.4.1 Pump-down Residual Operation in Cooling Operation

Actuator	Pump-down residual operation	
	Step 1	Step 2
Compressor	124 Hz Full load	52 Hz Full load
Outdoor fan	Fan control	Fan control
Four-way valve (Y1S)	OFF	OFF
Main electronic expansion valve (Y1E)	480 pulse	240 pulse
Subcooling electronic expansion valve (Y3E)	0 pulse	0 pulse
Hot gas bypass solenoid valve (Y2S)	OFF	OFF
Ending conditions	2 sec.	2 sec.

3.4.2 Pump-down Residual Operation in Heating Operation

Actuator	Pump-down residual operation
Compressor	124 Hz Full load
Outdoor fan	STEP 7
Four-way valve (Y1S)	ON
Main electronic expansion valve (Y1E)	0 pulse
Subcooling electronic expansion valve (Y3E)	0 pulse
Hot gas bypass solenoid valve (Y2S)	OFF
Ending conditions	4 sec.

3.5 Restart Standby

Restart is prohibited to prevent frequent ON/OFF and to equalize pressure in the refrigerant system.

Actuator	Operation
Compressor	OFF
Outdoor fan	Ta > 30°C (86°F): STEP 4 Ta ≤ 30°C (86°F): OFF
Four-way valve (Y1S)	Former condition remains.
Main electronic expansion valve (Y1E)	0 pulse
Subcooling electronic expansion valve (Y3E)	0 pulse
Hot gas bypass solenoid valve (Y2S)	OFF
Ending conditions	2 min.

3.6 Stopping Operation

Operation of the actuator is cleared up when the system is down.

Actuator	Operation
Compressor	OFF
Outdoor fan	OFF
Four-way valve (Y1S)	Former condition remains.
Main electronic expansion valve (Y1E)	0 pulse
Subcooling electronic expansion valve (Y3E)	0 pulse
Hot gas bypass solenoid valve (Y2S)	OFF
Ending conditions	Indoor unit thermostat is turned ON.

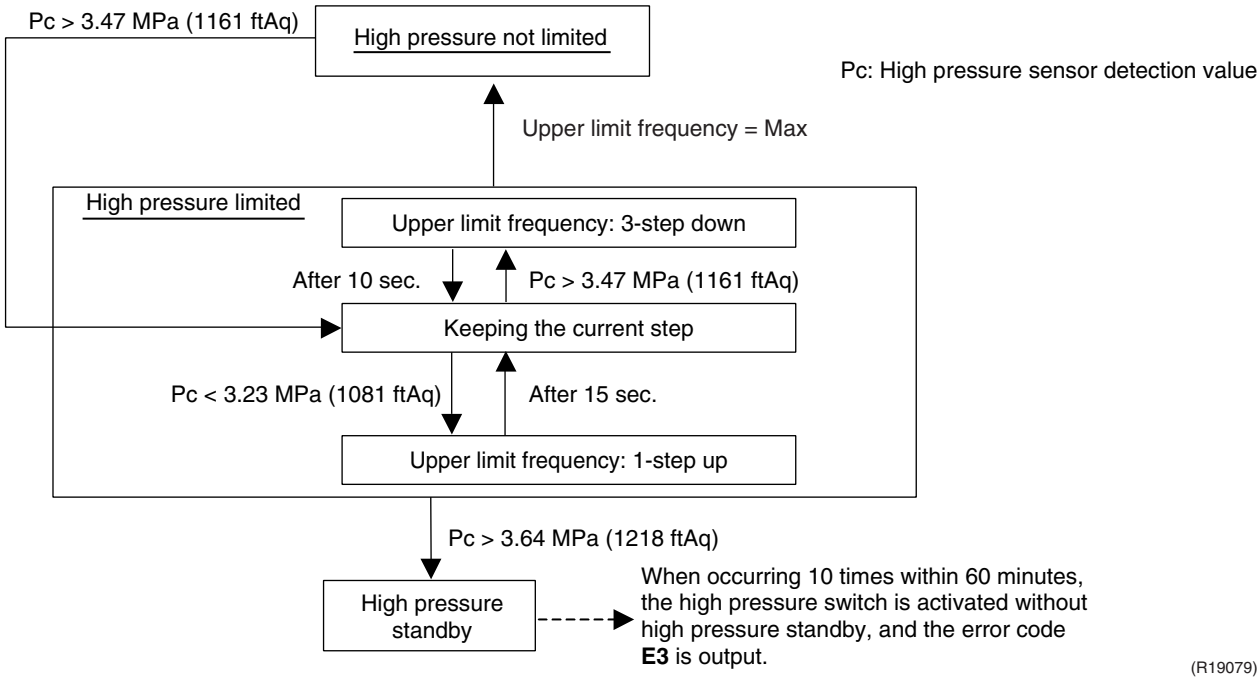
4. Protection Control

4.1 High Pressure Protection Control

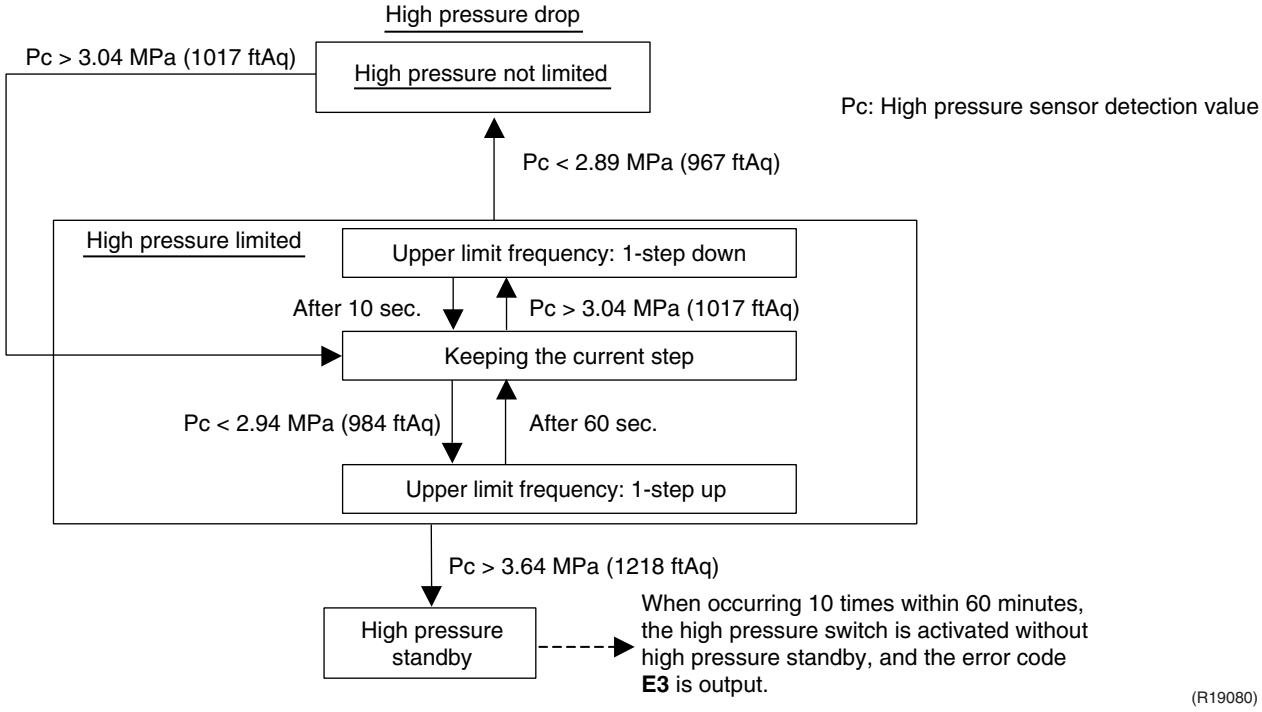
Outline

High pressure protection control is used to prevent the activation of protection devices due to an abnormal increase of high pressure and to protect compressors against the temporary increase of high pressure.

<Cooling Operation>



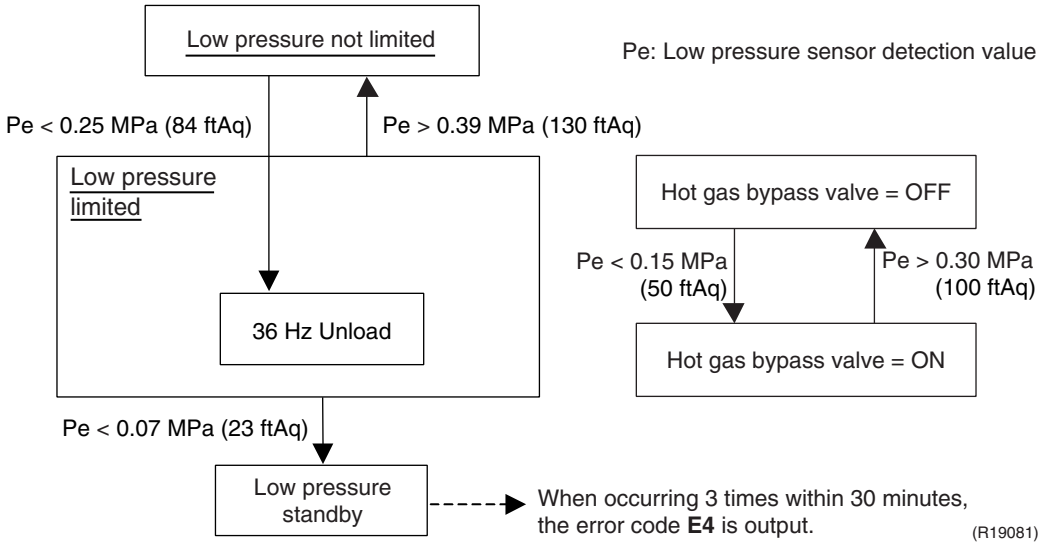
<Heating Operation>



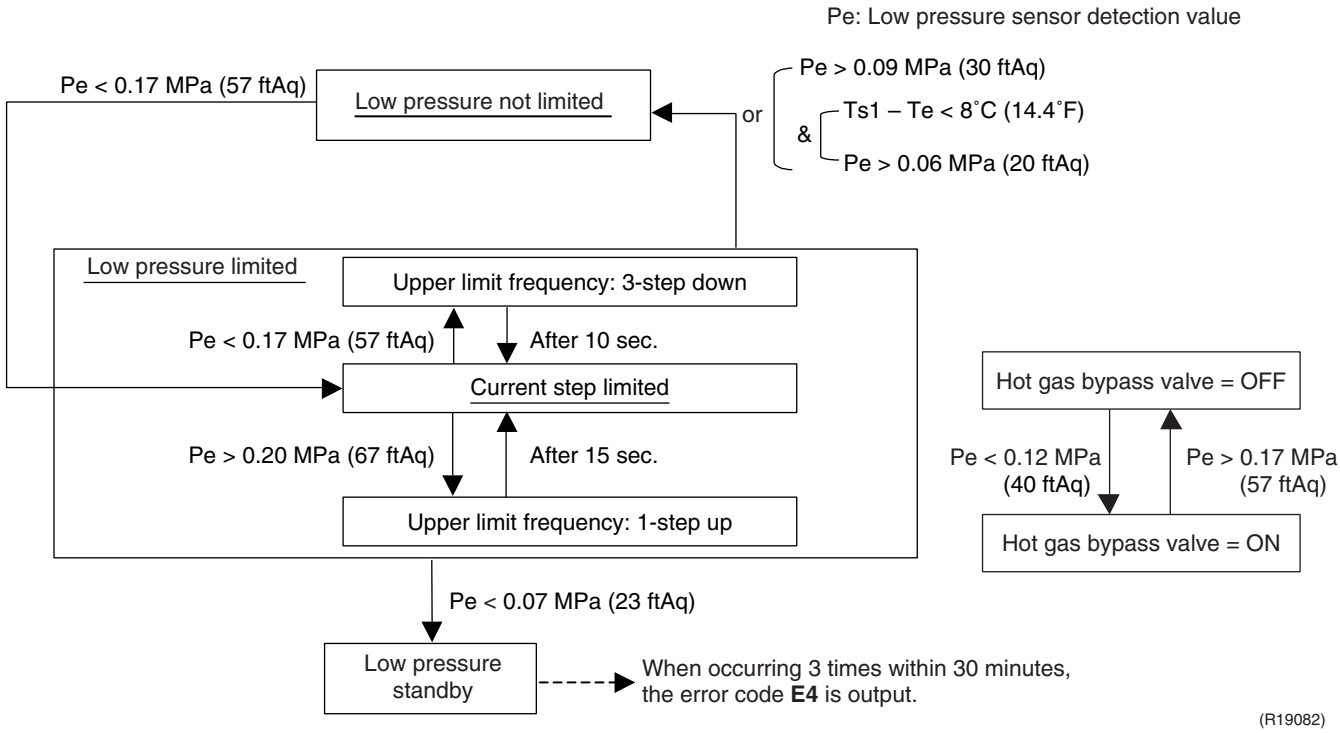
4.2 Low Pressure Protection Control

Outline Low pressure protection control is used to protect compressors against the temporary decrease of low pressure.

<Cooling Operation>



<Heating Operation>

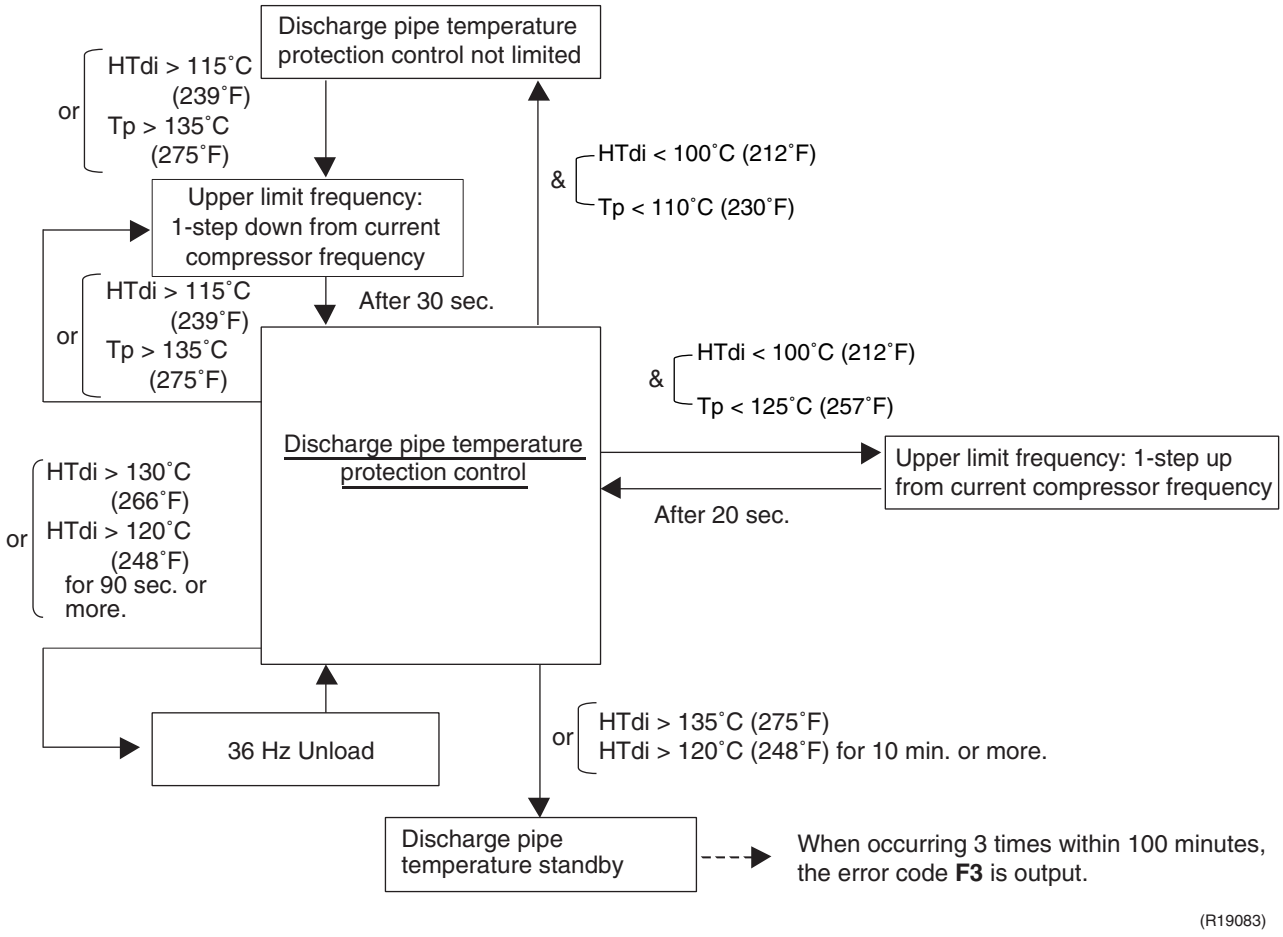


4.3 Discharge Pipe Temperature Protection Control

Outline

Discharge pipe temperature protection control protects the compressor internal temperature against a malfunction or temporary increase of discharge pipe temperature.

<Compressor>



HTdi : Value of discharge pipe temperature (Tdi) compensated with outdoor temperature

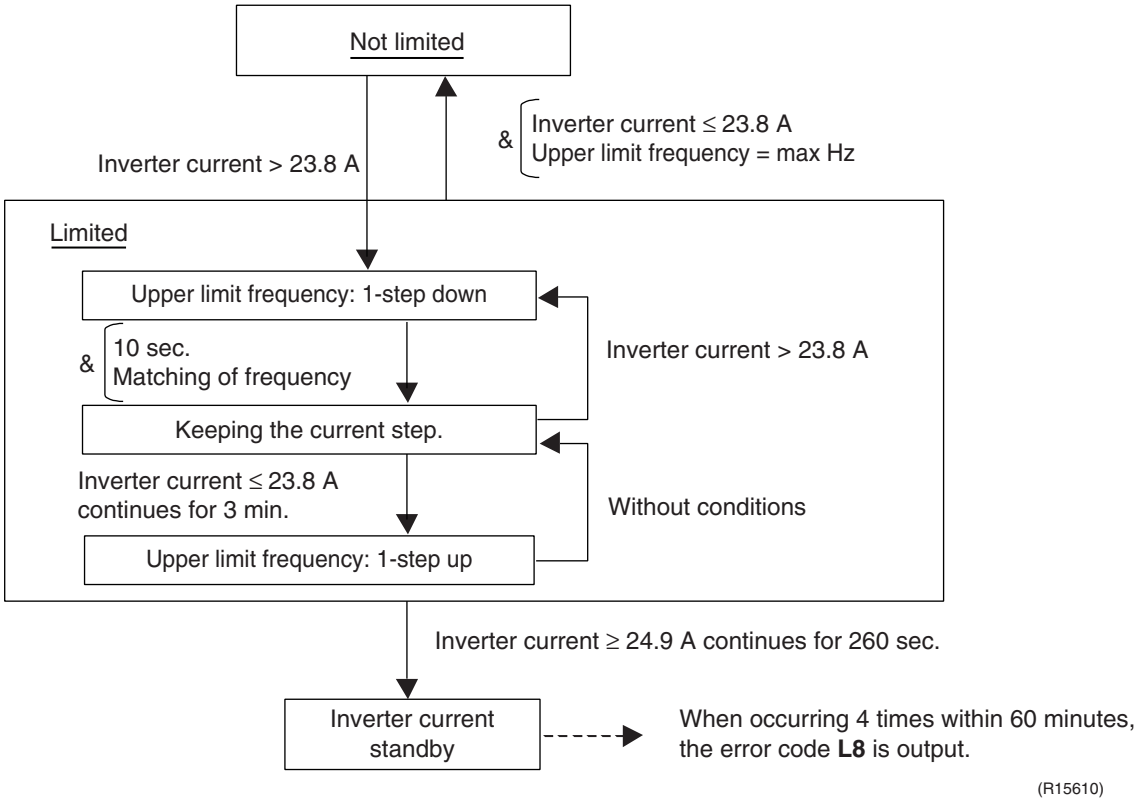
Tp : Value of compressor port temperature calculated by Tc and Te, and suction superheated degree.

4.4 Inverter Protection Control

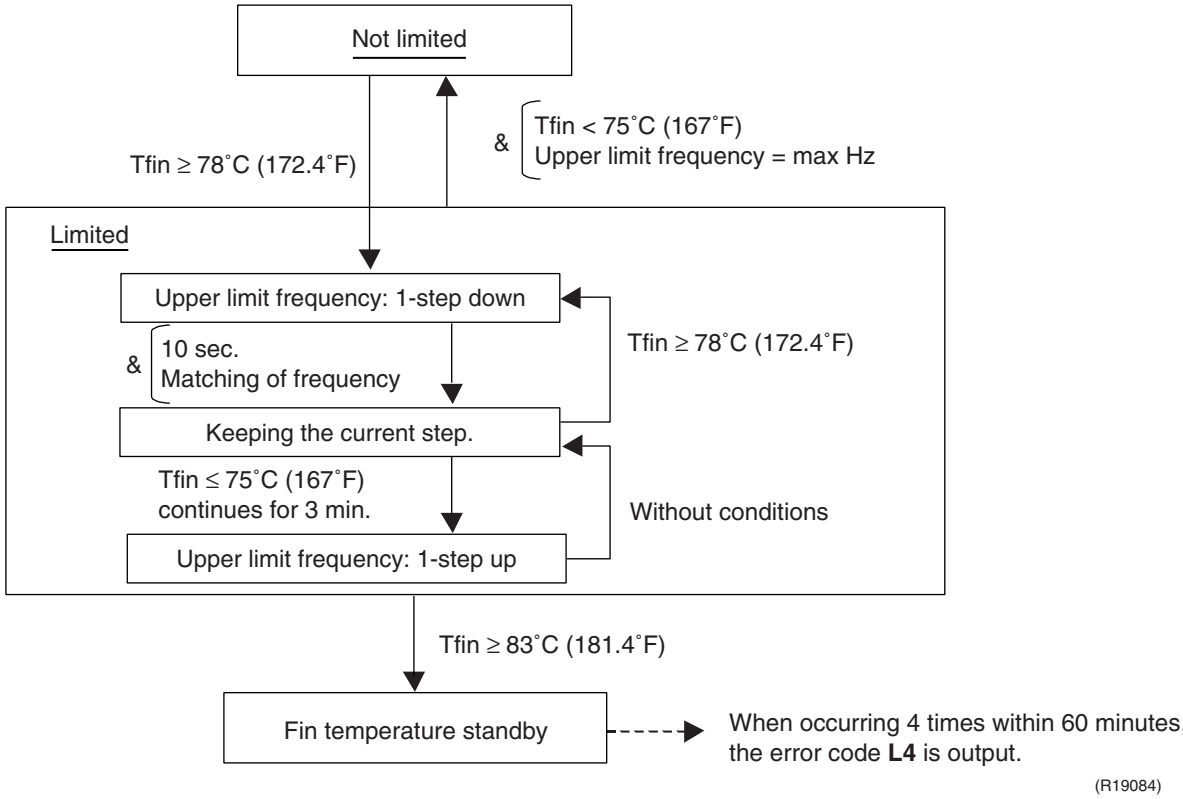
Outline

Inverter overcurrent protection control and inverter fin temperature control are performed to prevent tripping due to a malfunction, temporary inverter overcurrent, or radiation fin temperature increase.

<Inverter overcurrent protection control>



<Inverter fin temperature control>



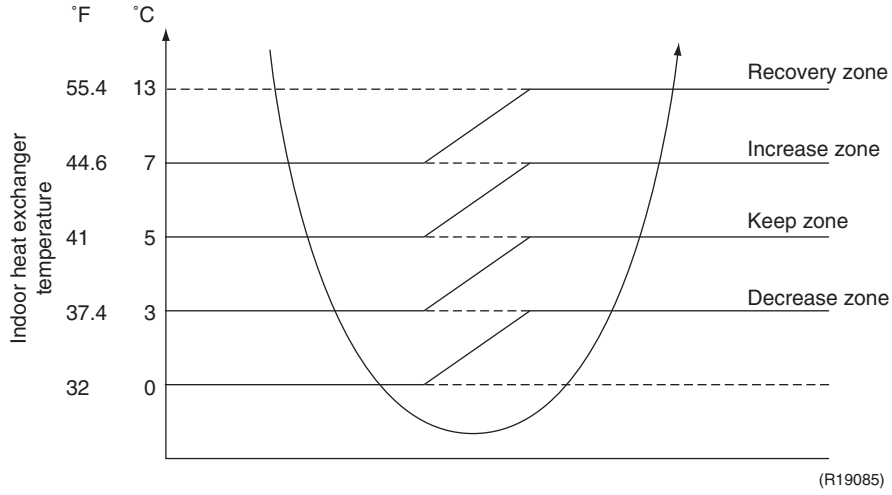
4.5 Freeze-up Protection Control

Outline

According to the freeze prevention status sent from the BP unit, the compressor output frequency is regulated to decrease compressor capacity in order to prevent the indoor heat exchanger from freezing.

Detail

Zones are divided based on the freeze prevention status signal sent from the BP unit (indoor unit), and the freeze prevention control prevents freezing of the indoor unit.



Recovery zone: Lift the control
Increase zone: 1 step up / 60 sec.
Keep zone: Frequency is not controlled
Decrease zone: 1 step down / 60 sec.
Stop zone: Thermostat-OFF (only the target indoor unit)

The temperature in the above figure depends on the model (reference value).

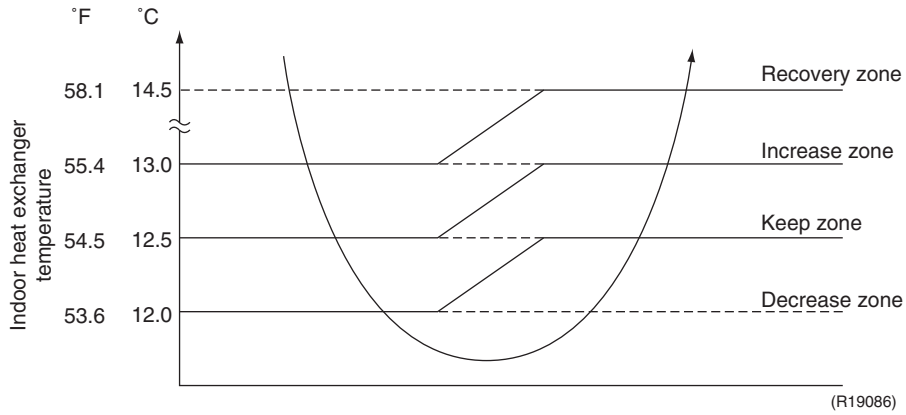
4.6 Dew Condensation Prevention Control

Outline

According to the dew condensation prevention status sent from the BP unit, the compressor output frequency is regulated to decrease compressor capacity in order to prevent the indoor unit from dew condensation.

Detail

Zones are divided based on the dew condensation prevention status signal sent from the BP unit (indoor unit), and the dew condensation prevention control prevents dew condensation of the indoor unit.



Recovery zone: Lift the control
Increase zone: 1 step up / 60 sec.
Keep zone: Frequency is not controlled
Decrease zone: 1 step down / 60 sec.

The temperature in the above figure depends on the model and actual room temperature (reference value).

5. Other Control

5.1 Demand Control

In order to lower power consumption, the capacity of the outdoor unit is forcibly lowered using the Demand 1 Setting.
To operate the unit with this mode, additional setting of Constant Demand Setting is necessary.

<Demand 1 setting>

Setting	Standard for upper limit of power consumption
Demand 1 setting 1	Approx. 60%
Demand 1 setting 2 (factory setting)	Approx. 70%
Demand 1 setting 3	Approx. 80%

★ Other protection control functions have precedence over the above operation.

5.2 Heating Operation Prohibition Control

Heating operation is prohibited when the outdoor temperature is above 24°CDB (75.2°FDB).

6. Branch Provider (BP) Unit Control

6.1 Branch Provider (BP) Unit Command Conversion

1. ∆D (room thermistor temperature − target temperature) signals from BP units are converted to a capacity up / down signal.

∆D signals from BP units are used as the capacity up / down signal in frequency commands (excludes during POWERFUL operation).

∆D Signal	Capacity up / down signal
0	Thermostat OFF
1	Down
2	
3	Keep
4	
5	Up
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

2. Processing during POWERFUL operation

(1) When POWERFUL command is received from one or more indoor units.

(2) Thermostats are not OFF at the indoor units from which POWERFUL commands are issued

When the above conditions are met, the POWERFUL operation is activated, and the POWERFUL operation signal is sent to the outdoor unit.

6.2 Branch Provider (BP) Unit Electronic Expansion Valve Control

This function provides instructions regarding the absolute flow rate, relative flow rate and fully closing from the outdoor unit to the BP unit in order to ensure outdoor unit compressor safety and optimum refrigerating cycle of the system.
With the transmission a permit/prohibit flag for each distribution control in the BP unit, the distribution control startup timing is controlled by the outdoor unit.

6.2.1 Electronic Expansion Valve Initial Opening Setting

Outline

This function improves stability of the system to set initial opening of the electronic expansion valve at starting operation.
When the EV opening command from outdoor unit is lifted, the following opening setting is performed.

Detail

<Cooling Operation>

Tr: room thermistor temperature
Ta: outdoor temperature

$$\text{Target opening (pulse)} = \frac{5}{2} \times (\text{Tr } (^\circ\text{C}) - 14) + \mathbf{A} - \mathbf{B} \times (\text{Ta } (^\circ\text{C}) - \text{Tr } (^\circ\text{C}))$$

$$= \frac{25}{18} \times (\text{Tr } (^\circ\text{F}) - \frac{286}{5}) + \mathbf{A} - \mathbf{B} \times \frac{5}{9} \times (\text{Ta } (^\circ\text{F}) - \text{Tr } (^\circ\text{F}))$$

	A
07 ~ 12 class	140
15 ~ 18 class	156
24 class	170

	B
Ta ≤ Tr	0
Tr < Ta	2.5

<Heating Operation>
Target opening = 350 pulse

6.2.2 Electronic Expansion Valve Flow Rate Restriction

Outline

This function prevents deviation from the specified electronic expansion valve range by restricting the electronic expansion valve flow rates of the operating and non-operating indoor units during compressor operation. It also prevents the generation of abnormal noise such as refrigerant flowing sound by restricting the circulation of refrigerant according to the operating conditions (unit ON/OFF) of indoor units.

Detail

Restriction of electronic expansion valve opening degrees of operating indoor units;
... Restriction of maximum and minimum flow rates based on constant
Restriction of electronic expansion valve opening degrees of non-heating indoor units;
... Restriction of minimum flow rate based on constant
... Maximum flow rate determined based on flow rates of operating indoor units

6.2.3 Full Closing of Electronic Expansion Valves

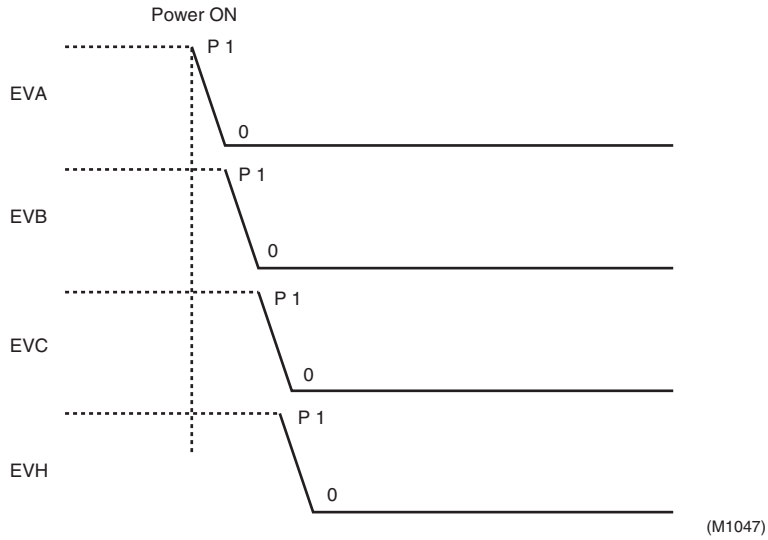
Outline

The electronic expansion valves are initialized when the power is turned on.

Detail

The following processes are conducted.

1. Conducts P1 pulses close when power is turned on, and sets current opening to 0 pulse (fully closing process).
2. Sends electronic expansion valve initialization signal to outdoor unit.
3. Closes the electronic expansion valve of each chamber (sets the electronic expansion valve pulse to 0).
4. Stops transmission of electronic expansion valve initialization signal when EVH (bypass electronic expansion valve) retightening is completed.



6.2.4 Control Based on EV Opening Command from Outdoor Unit

Outline

This function operates the electronic expansion valve based on EV opening command sent from the outdoor unit.

Detail

The electronic expansion valve operation based on EV opening command provides the following functions.

1) Pressure equalization prior to startup
2) Startup control
3) Restart standby
4) Pump-down residual operation
5) Oil return operation
6) Defrosting operation

6.3 SH Control in Cooling Operation

Outline

This function ensures appropriate refrigerant distribution when many indoor units are operating in cooling operation.

Detail

The heat exchanger temperatures and gas pipe temperatures of operating indoor units are detected by the gas pipe thermistors, and the flow rates of the electronic expansion valve are corrected so as to adjust the difference between the heat exchanger temperature and gas pipe temperature of each indoor unit (hereafter referred to as SH) close to the target values.

When SH is higher than target value → Opens the valve of that indoor unit
When SH is lower than target value → Closes the valve of that indoor unit

When the liquid pipe temperature is lower than the heat exchanger temperature, the electronic expansion valve is opened more than normal opening.
(Protection function to prevent rotor dew condensation)

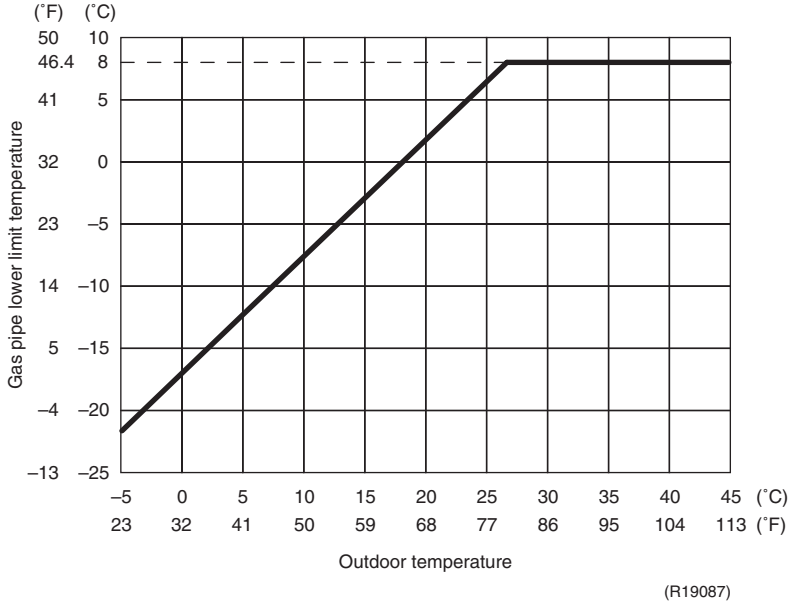
The gas pipe temperature and indoor heat exchanger temperature are detected with a sampling time of 40 seconds for the cooling SH control.

In order to prevent dew condensation in the connection pipe, the gas pipe lower-limit temperature is set as follows.

$$\text{Gas pipe lower limit temperature (˚C)} = \frac{240}{256} \times \text{outdoor temperature (˚C)} - 17$$

$$\text{(Gas pipe lower limit temperature (˚F)} = \frac{240}{256} \times \text{outdoor temperature (˚F)} - 28.6)$$

Gas pipe lower limit temperature ≤ 8˚C (46.4˚F)



Note:
1. In SkyAir models, the indoor units are equipped with distribution capillary tubes; as a result, the heat exchangers may superheat even when the condition is met.
2. In SkyAir models, the heat exchanger intermediate position is provided on the liquid connection pipe side; as a result, superheated condition is difficult to detect.

6.4 SC Control in Heating Operation

Outline

This function ensures appropriate refrigerant distribution when many indoor units are operating in heating operation.

Detail

The heat exchanger temperatures and liquid pipe temperatures of operating indoor units are detected by the liquid pipe thermistors, and the flow rates of the electronic expansion valve are corrected so as to adjust the difference between the heat exchanger temperature and liquid pipe temperature of each indoor unit (hereafter referred to as SC) close to the target values.

When SC is higher than target value → Opens the valve of that indoor unit
When SC is lower than target value → Closes the valve of that indoor unit

The liquid pipe temperature and indoor heat exchanger temperature are detected with a sampling time of 20 seconds for the heating SC control.

6.5 Heat Exchanger Isothermal Control in Heating Operation

Outline

This function ensures appropriate refrigerant distribution when indoor units are operating in heating operation.
It prevents abnormal increase of the high pressure and operation with gas shortage due to uneven refrigerant distribution (Protection function).

Detail

The indoor heat exchanger thermistors (of all connected indoor units to the same BP unit including non-operating indoor units) in heating operation are detected. Then, the highest heat exchanger temperature is compared with the heat exchanger temperature of each indoor unit. If the temperature difference exceeds the predetermined value, it is judged that the indoor heat exchanger thermistor position is in subcooled zone, and the electronic expansion valves of indoor units with the temperature difference exceeding the predetermined level are opened to return to the saturation zone.
Since this is a protection function, it is effective for all connected indoor units in heating operation excluding those in defrosting operation. This function is inactive in indoor units with transmission problems.

The heat exchanger temperature is detected with a sampling time of 20 seconds of the heat exchanger isothermal control, and maximum value of each heat exchanger temperature is obtained.

If the temperature difference between the heat exchanger temperature and maximum heat exchanger temperature value exceeds 8°C (14.4°F), it is judged that the heat exchanger intermediate is in the subcooled zone, and the electronic expansion valve is opened.

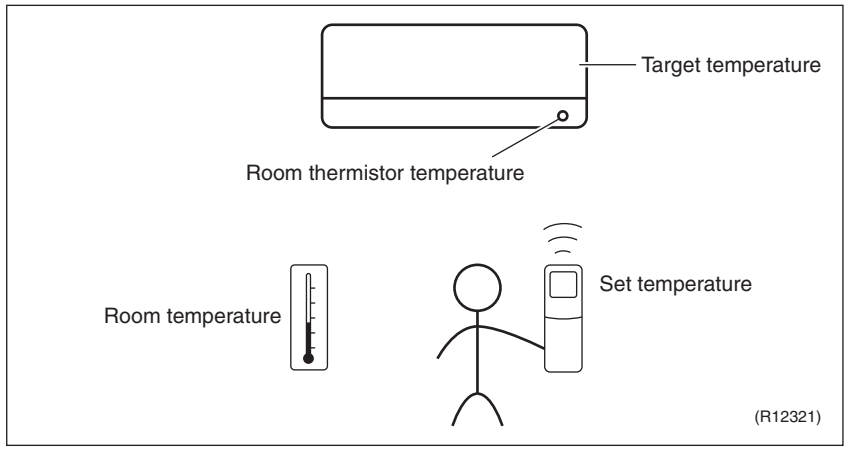
7. Function of CTXS, FTXS, CDXS, FDXS Series

7.1 Temperature Control

Definitions of Temperatures

The definitions of temperatures are classified as following.

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



★ The illustration is for CTXS/FTXS series as representative.

Temperature Control

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

7.2 Airflow Direction Control (CTXS/FTXS Series Only)

Power-Airflow Dual Louvers

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

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

<Heating>
During heating operation, the large louver directs airflow downward to spread the warm air to the entire room.

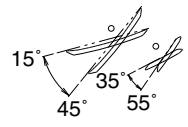
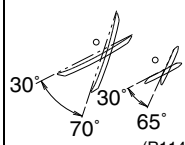
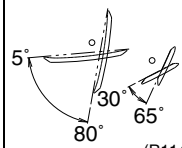
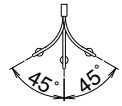
Wide-Angle Fins

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

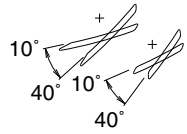
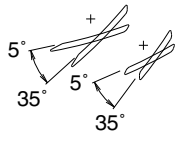
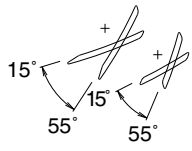
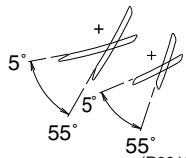
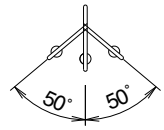
Auto-Swing

The following table explains the auto-swing process for cooling, dry, heating, and fan:

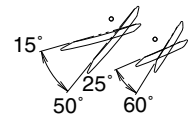
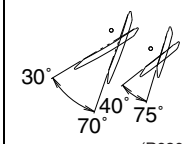
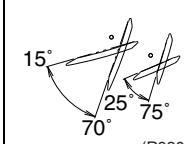
CTXS07LVJU

Vertical Swing (up and down)			Horizontal Swing (right and left)
Cooling / Dry	Heating	Fan	
 (R13527)	 (R11402)	 (R11403)	 (R11404)

CTXS07JVJU, CTXS09/12HVJU

Vertical Swing (up and down)				Horizontal Swing (right and left)
Cooling	Dry	Heating	Fan	
 (R2814)	 (R2815)	 (R2813)	 (R2816)	 (R2817)

FTXS15/18/24LVJU

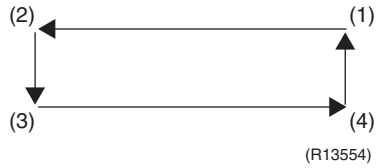
Vertical Swing (up and down)			Horizontal Swing (right and left)
Cooling / Dry	Heating	Fan	
 (R9303)	 (R9304)	 (R9305)	 (R9306)

3-D Airflow

Alternative repetition of vertical and horizontal swing motions enables uniform airconditioning of the entire room. This function is effective for starting the air conditioner.

When the horizontal swing and vertical swing are both set to automatic operation, the airflow becomes 3-D airflow. The horizontal and vertical swing motions are alternated and the airflow direction changes in the order shown in the following diagram.

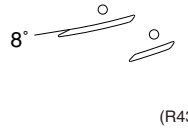
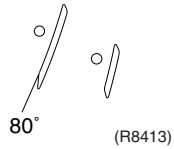
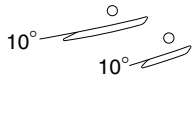
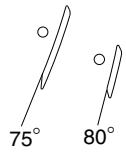
(1) The vertical blades (fins) move from the right to the left.
(2) The horizontal blades (louvers) move downward.
(3) The vertical blades (fins) move from the left to the right.
(4) The horizontal blades (louvers) move upward.



COMFORT AIRFLOW Operation

CTXS-L, FTXS-L Series

The horizontal blades (louvers) are controlled not to blow the air directly at the people in the room.

	Cooling	Heating
CTXS07LVJU		
FTXS15/18/ 24LVJU		

7.3 Fan Speed Control for Indoor Unit

Outline

Phase control and fan speed control contains 9 steps: LLL, LL, SL, L, ML, M, MH, H, and HH. The airflow rate can be automatically controlled depending on the difference between the room thermistor temperature and the target 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 160, 162.

Automatic Fan Speed Control

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

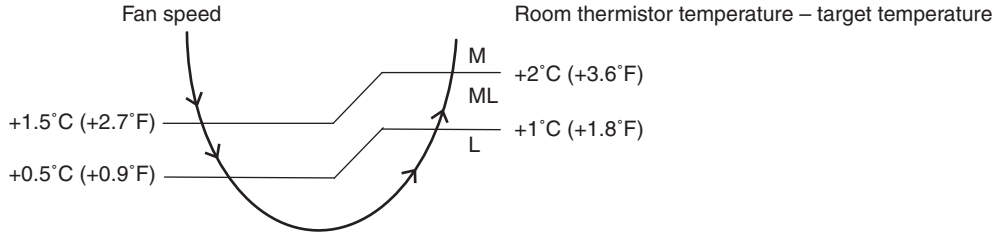
	CTXS-J, CTXS-H series		CTXS-L, FTXS-L, CDXS-L, FDXS-L series	
Step	**Cooling**	**Heating**	**Cooling**	**Heating**
LLL				
LL				
L				
ML				
M				
MH				
H				
HH (POWERFUL)	(R6833)	(R6834)	(R11681)	(R6834)

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

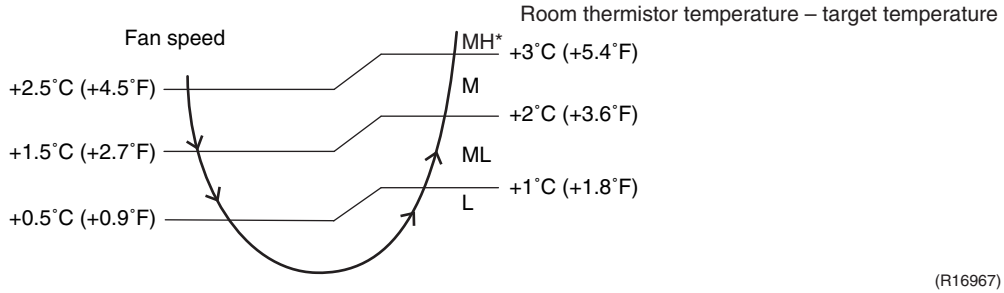
<Cooling>

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

CTXS-J, CTXS-H Series



CTXS-L, FTXS-L, CDXS-L, FDXS-L Series



*For CTXS-L and FTXS-L series, the upper limit is M tap in 30 minutes from the operation start.

<Heating>

In heating operation, the fan speed is regulated according to the indoor heat exchanger temperature and the difference between the room thermistor temperature and the target temperature.

Note:
1. During POWERFUL operation, the fan rotates at H tap + 50 ~ 90 rpm (depending on the model).
2. The fan stops during defrost operation.

COMFORT AIRFLOW Operation

CTXS-L, FTXS-L Series

- The fan speed is automatically controlled within the following steps.
  <Cooling>
  L tap ~ MH tap (same as AUTOMATIC)
  <Heating>
  ML tap ~ MH tap

- The latest command has the priority between POWERFUL and COMFORT AIRFLOW.

7.4 Program Dry Operation

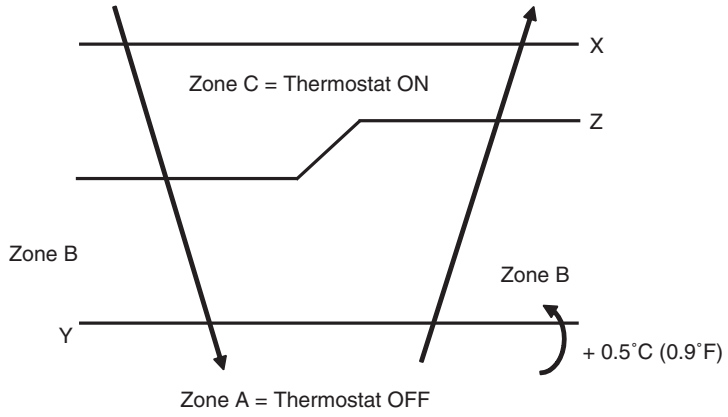
Outline

Program dry operation removes humidity while preventing the room temperature from lowering. Since the microcomputer controls both the temperature and airflow rate, the temperature adjustment and **FAN** setting buttons are inoperable.

Detail

The microcomputer automatically sets the temperature and airflow rate. The difference between the room thermistor temperature at start-up and the target temperature is divided into two zones. Then, the unit operates in an appropriate capacity for each zone to maintain the temperature and humidity at a comfortable level.

Room thermistor temperature at start-up	Target temperature X	Thermostat OFF point Y	Thermostat ON point Z
24°C (75.2°F) or more	Room thermistor temperature at start-up	X – 2.5°C (–4.5°F)	X – 0.5°C (– 0.9°F) or Y + 0.5°C (0.9°F) (zone B) continues for 10 min.
23.5°C (74.3°F) ~ 18°C (64.4°F)		X – 2.0°C (–3.6°F)	X – 0.5°C (– 0.9°F) or Y + 0.5°C (0.9°F) (zone B) continues for 10 min.
17.5°C (63.5°F) ~	18°C (64.4°F)	X – 2.0°C (–3.6°F)	X – 0.5°C (– 0.9°F) = 17.5°C (63.5°F) or Y + 0.5°C (0.9°F) (zone B) continues for 10 min.



(R11587)

7.5 Automatic Operation

Outline

Automatic Cooling / Heating Function

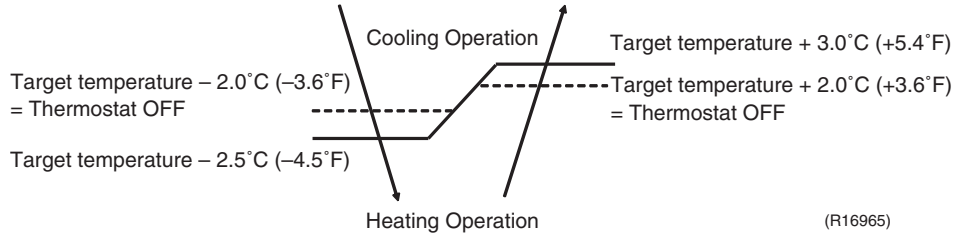
When the automatic operation is selected with the remote controller, the microcomputer automatically determines the operation mode as cooling or heating according to the room temperature and the set temperature at start-up.
The unit automatically switches the operation mode to maintain the room temperature at the set temperature.

Detail

Ts: set temperature (set by remote controller)
Tt: target temperature (determined by microcomputer)
Tr: room thermistor temperature (detected by room temperature thermistor)
C: correction value

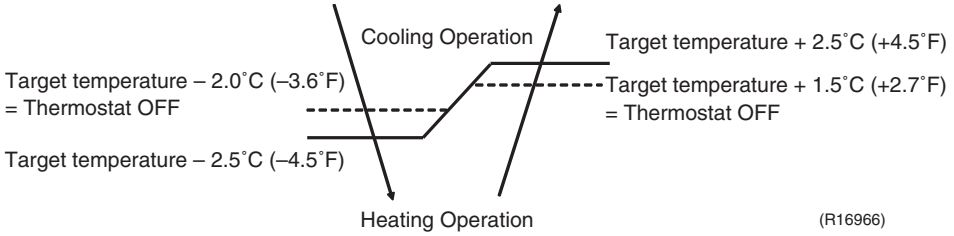
1. The set temperature (Ts) determines the target temperature (Tt).
   (Ts = 18 ~ 30°C, 64.4 ~ 86°F).
2. The target temperature (Tt) is calculated as;
   Tt = Ts + C
   where C is the correction value.
   C = 0°C (32°F)
3. Thermostat ON/OFF point and operation mode switching point are as follows.
   (1) Heating → Cooling switching point:
   Tr ≥ Tt + 3.0°C (+5.4°F) (CTXS-L, FTXS-L series)
   Tr ≥ Tt + 2.5°C (+4.5°F) (other models)
   (2) Cooling → Heating switching point:
   Tr < Tt – 2.5°C (–4.5°F)
   (3) Thermostat ON/OFF point is the same as the ON/OFF point of cooling or heating operation.
4. During initial operation
   Tr ≥ Ts : Cooling operation
   Tr < Ts : Heating operation

CTXS-L, FTXS-L series



Ex: When the target temperature is 25°C (77°F)
Cooling → 23°C (73.4°F): Thermostat OFF → 22°C (71.6°F): Switch to heating
Heating → 27°C (80.6°F): Thermostat OFF → 28°C (82.4°F): Switch to cooling

Other models



Ex: When the target temperature is 25°C (77°F)
Cooling → 23°C (73.4°F): Thermostat OFF → 22°C (71.6°F): Switch to heating
Heating → 26.5°C (79.7°F): Thermostat OFF → 27.5°C (81.5°F): Switch to cooling

7.6 Thermostat Control

Outline

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

Detail

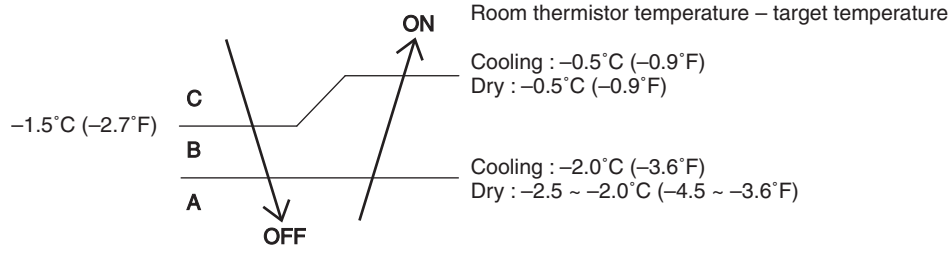
Thermostat OFF Condition

- The temperature difference is in the zone A.

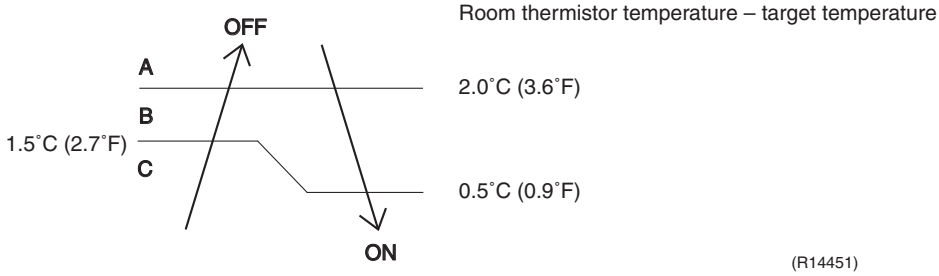
Thermostat ON Condition

- The temperature difference returns to 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)

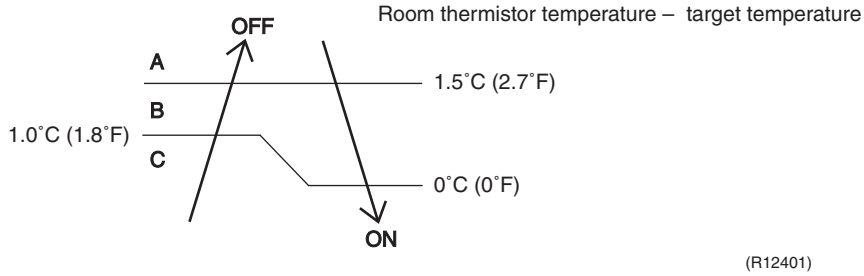
<Cooling / Dry>



<Heating>
CTXS-L, FTXS-L series



Other Models



Refer to Temperature Control on page 62 for detail.

7.7 NIGHT SET Mode

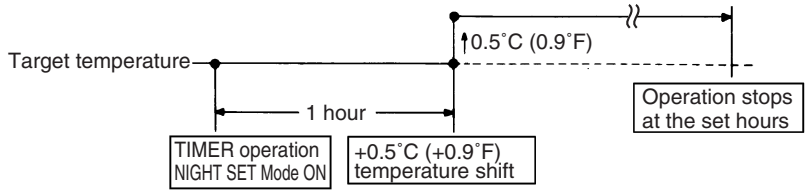
Outline

When the OFF timer is set, the NIGHT SET Mode is automatically activated. The NIGHT SET Mode keeps the airflow rate setting.

Detail

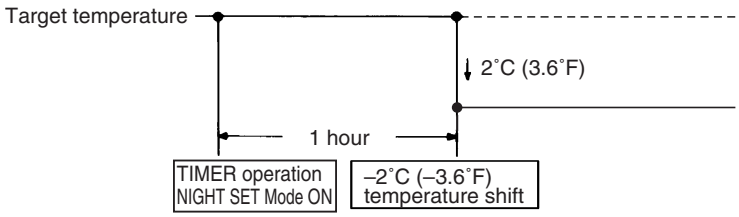
The NIGHT SET Mode continues operation at the target temperature for the first one hour, then automatically raises the target temperature slightly in cooling, or lowers it slightly in heating. This prevents excessive cooling or heating to ensure comfortable sleeping conditions, and also conserves electricity.

<Cooling>



(R18809)

<Heating>



(R19113)

7.8 ECONO Operation

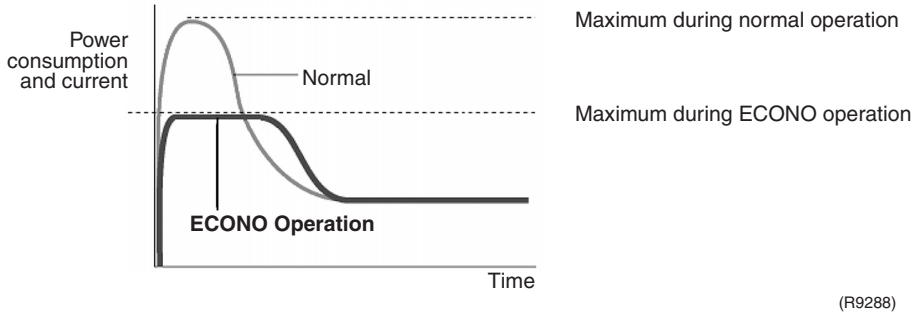
Outline

CTXS-L, FTXS-L, CDXS-L, FDXS-L Series

ECONO operation reduces the maximum operating current and the power consumption.

Detail

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



(R9288)

7.9 HOME LEAVE Operation

Outline

CTXS-J, CTXS-H Series

HOME LEAVE operation is a function that allows you to record your favorite set temperature and airflow rate. You can start your favorite operation mode simply by pressing the **HOME LEAVE** button on the remote controller.

Detail

1. Start of Function

The function starts when the **HOME LEAVE** button is pressed in cooling mode, heating mode (including POWERFUL operation), or while the operation is stopped. If this button is pressed in POWERFUL operation, the POWERFUL operation is canceled and this function becomes effective.

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

2. Details of Function

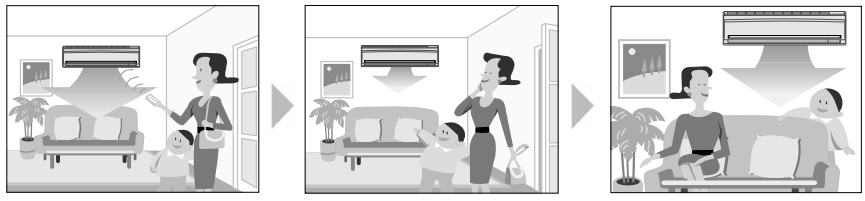
A mark representing HOME LEAVE is indicated on the display of the remote controller. The indoor unit is operated according to the set temperature and airflow rate for HOME LEAVE which were pre-set in the memory of the remote controller.

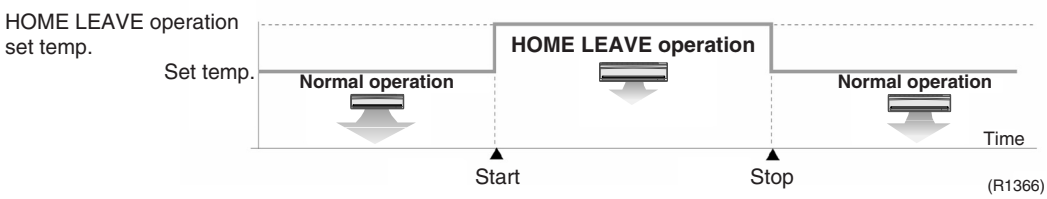
The LED (red) of indoor unit representing HOME LEAVE lights up. (It goes out when the operation is stopped.)

3. End of Function

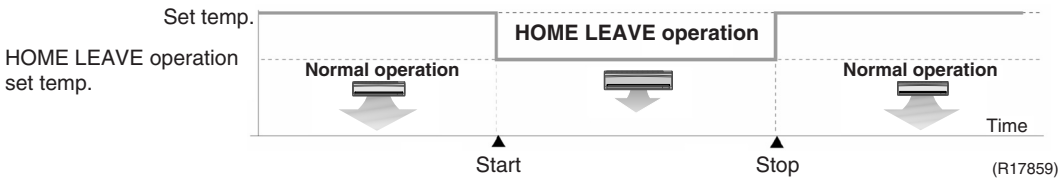
The function ends when the **HOME LEAVE** button is pressed again during HOME LEAVE operation or when the **POWERFUL** button is pressed.

<Cooling>





<Heating>



How to Set the Temperature and Airflow Rate

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

	Initial setting		Selectable range	
	Temperature	Airflow rate	Temperature	Airflow rate
Cooling	25°C (77°F)	AUTO	18 ~ 32°C (64.4 ~ 89.6°F)	5 steps, AUTO ,
Heating	25°C (77°F)	AUTO	10 ~ 30°C (50 ~ 86°F)	5 steps, AUTO ,

1. Press the **HOME LEAVE** button.
   Make sure is displayed on the remote controller display.
2. Adjust the temperature with ▲ or ▼ as you like.
3. Adjust the airflow rate with the **FAN** setting button as you like.

HOME LEAVE operation will run with these settings the next time you start HOME LEAVE operation. To change the recorded information, repeat steps 1 – 3.

Others

- The set temperature and airflow rate 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 airflow rate again for HOME LEAVE operation.
- The operation mode cannot be changed while HOME LEAVE operation is being used.

7.10 INTELLIGENT EYE Operation

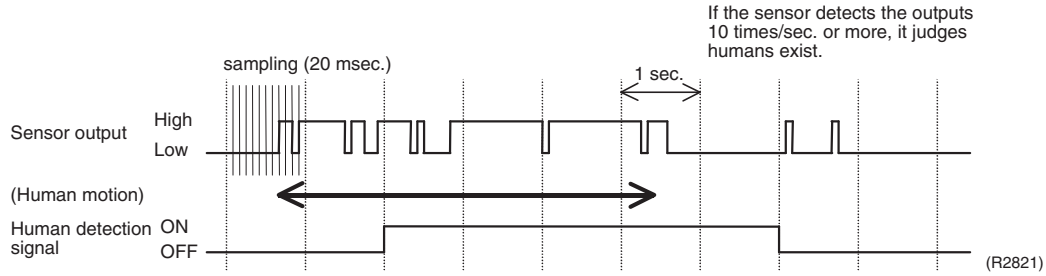
Outline

CTXS, FTXS Series

This function detects the existence of humans in the room with a motion sensor (INTELLIGENT EYE) and reduces the capacity when there is nobody in the room in order to save electricity.

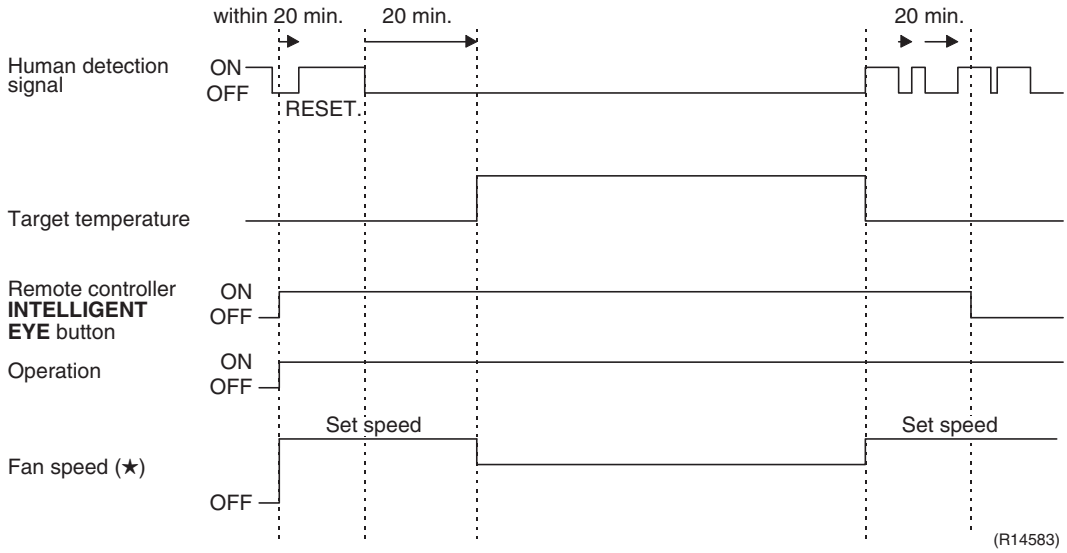
Detail

1. Detection method by INTELLIGENT EYE



- This sensor detects human motion by receiving infrared rays and displays the pulse wave output.
- The microcomputer in the indoor unit carries out a sampling every 20 msec. and if it detects 10 cycles of the wave in 1 second in total (corresponding to 20 msec. × 10 = 200 msec.), it judges humans are in the room as the motion signal is ON.

2. The motions (for example: in cooling)



- When the microcomputer does not have a signal from the sensor in 20 minutes, it judges that nobody is in the room and operates the unit at a temperature shifted from the target temperature. (Cooling / Dry: 1 ~ 2°C (1.8 ~ 3.6°F) higher, Heating: 2°C (3.6°F) lower, Auto: according to the operation mode at that time.)

★ In FAN operation, the fan speed is reduced by 50 ~ 60 rpm.

Others

- For dry operation, you cannot set the temperature with a remote controller, but the target temperature is shifted internally.

7.11 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.

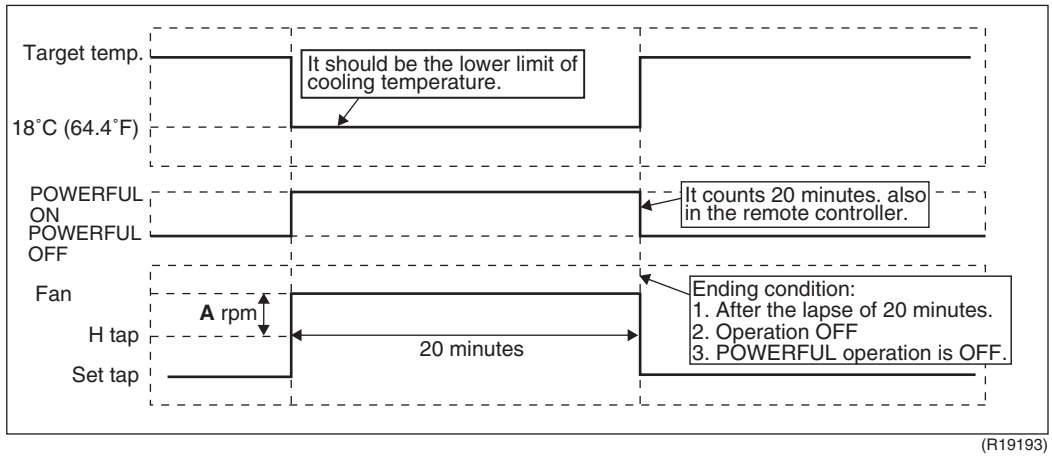
Detail

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

Operation mode	Fan speed	Target temperature
COOL	H tap + **A** rpm	18°C (64.4°F)
DRY	Dry rotating speed + **A** rpm	Lowered by 2 ~ 2.5°C (3.6 ~ 4.5°F)
HEAT	H tap + **A** rpm	30 ~ 31.5°C (86 ~ 88.7°F)
FAN	H tap + **A** rpm	—
AUTO	Same as cooling / heating in POWERFUL operation	The target temperature is kept unchanged.

A = 50 ~ 90 rpm (depending on the model)

Ex: POWERFUL operation in cooling



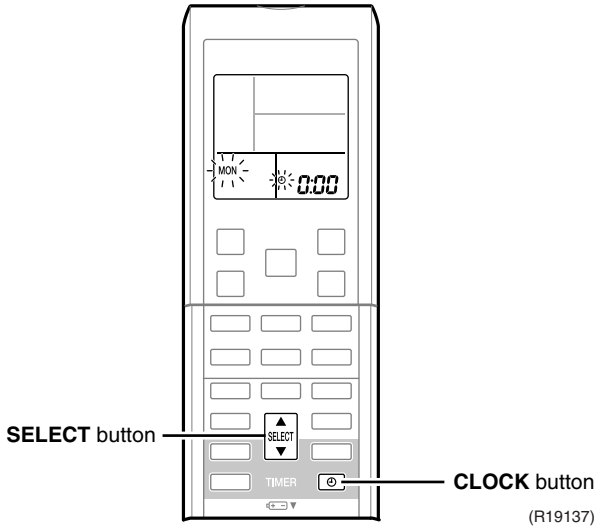
(R19193)

7.12 Clock Setting

ARC452 Series

The clock can be set by taking the following steps:

1. Press the **CLOCK** button.
   → 0:00 is displayed and **MON** and ⏲ blink.
2. Press the **SELECT** ▲ or ▼ button to set the clock to the current day of the week.
3. Press the **CLOCK** button.
   → ⏲ blinks.
4. Press the **SELECT** ▲ or ▼ button to set the clock to the present time.
   Holding down the **SELECT** ▲ or ▼ button increases or decreases the time display rapidly.
5. Press the **CLOCK** button. (Point the remote controller at the indoor unit when pressing the button.)
   → : blinks and clock setting is completed.



(R19137)

7.13 WEEKLY TIMER Operation

Outline

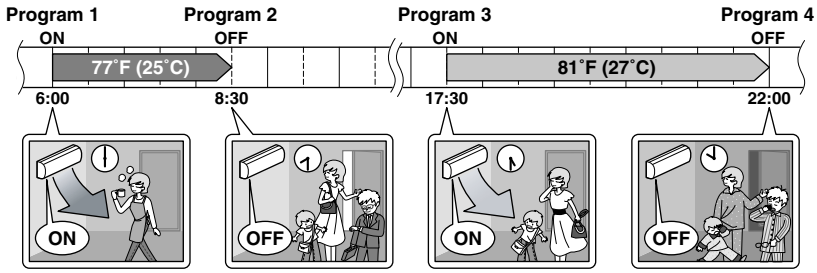
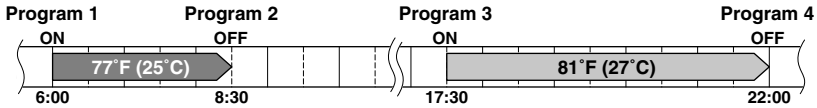
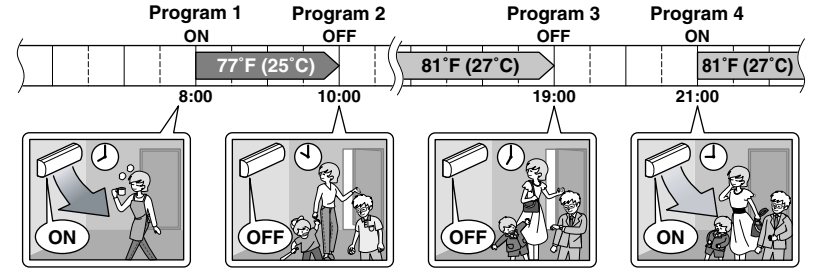
CTXS-L, FTXS-L series

Up to 4 timer settings can be saved for each day of the week (up to 28 settings in total).
The 3 items: ON/OFF, temperature, and time can be set.

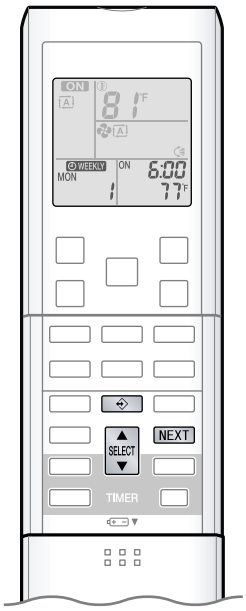
Detail

■ Using in these cases of WEEKLY TIMER

Example: The same timer settings are made for the week from Monday through Friday while different timer settings are made for the weekend.

Monday	Make timer settings up to programs 1-4. 
Tuesday to Friday	Use the copy mode to make settings for Tuesday to Friday, because these settings are the same as those for Monday. 
Saturday	No timer settings
Sunday	Make timer settings up to programs 1-4. 

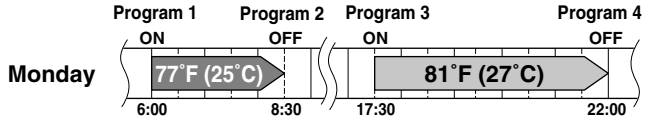
- Up to 4 reservations per day and 28 reservations per week can be set in the WEEKLY TIMER. The effective use of the copy mode ensures ease of making reservations.
- The use of ON-ON-ON-ON settings, for example, makes it possible to schedule operating mode and set temperature changes. Furthermore, by using OFF-OFF-OFF-OFF settings, only the turn off time of each day can be set. This will automatically turn off the air conditioner if the user forgets to turn it off.



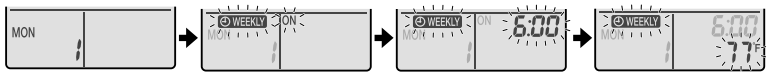
■ To use WEEKLY TIMER operation

Setting mode

• Make sure the day of the week and time are set. If not, set the day of the week and time.



Setting Displays



Day and number settings | ON/OFF settings | Time settings | Temperature settings

1. Press ⇗ **.**

• The day of the week and the reservation number of the current day will be displayed.
• 1 to 4 settings can be made per day.

2. Press SELECT ▲▼ to select the desired day of the week and reservation number.

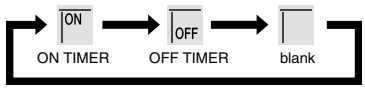
• Pressing SELECT ▲▼ changes the reservation number and the day of the week.

3. Press NEXT .

• The day of the week and reservation number will be set.
• WEEKLY and ON blink.

4. Press SELECT ▲▼ to select the desired mode.

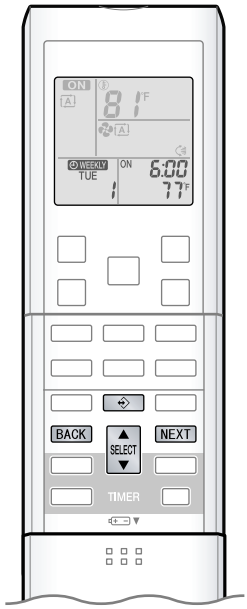
• Pressing SELECT ▲▼ changes ON or OFF setting in sequence.



• In case the reservation has already been set, selecting blank deletes the reservation.
• Go to **STEP *9*** if blank is selected.

5. Press NEXT .

• The ON/OFF TIMER mode will be set.
• WEEKLY and the time blink.



6. Press SELECT to select the desired time.

- The time can be set between 0:00 and 23:50 in 10 minute intervals.
- To return to the ON/OFF TIMER mode setting, press BACK .
- Go to **STEP *9*** when setting the OFF TIMER.

7. Press NEXT .

- The time will be set.
- WEEKLY and the temperature blink.

8. Press SELECT to select the desired temperature.

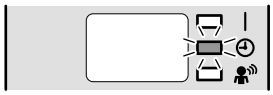
- The temperature can be set between 50˚F (10˚C) and 90˚F (32˚C).
  Cooling: The unit operates at 64˚F (18˚C) even if it is set at 50 (10) to 63˚F (17˚C).
  Heating: The unit operates at 86˚F (30˚C) even if it is set at 87 (31) to 90˚F (32˚C).
- To return to the time setting, press BACK .
- The set temperature is only displayed when the mode setting is on.

9. Press NEXT .

- The temperature will be set and go to the next reservation setting.
- To continue further settings, repeat the procedure from **STEP *4***.

10. Press to complete the setting.

- Be sure to direct the remote controller toward the indoor unit and check for a receiving tone and flashing the OPERATION lamp.
- WEEKLY is displayed on the LCD and WEEKLY TIMER operation is activated.
- The TIMER lamp lights yellow.



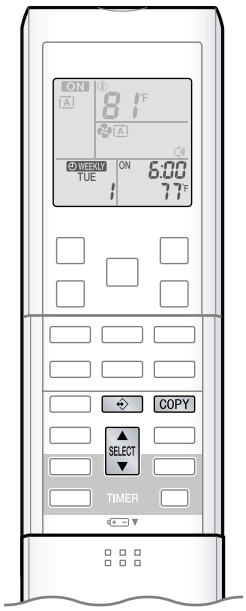
Display

- A reservation made once can be easily copied and the same settings used for another day of the week. Refer to **Copy mode** .

NOTE

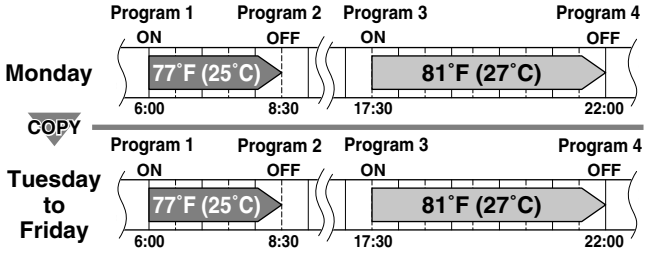
■ **Notes on WEEKLY TIMER operation**

- Do not forget to set the clock on the remote controller first.
- The day of the week, ON/OFF TIMER mode, time and set temperature (only for ON TIMER mode) can be set with WEEKLY TIMER. Other settings for ON TIMER are based on the settings just before the operation.
- Both WEEKLY TIMER and ON/OFF TIMER operation cannot be used at the same time. The ON/OFF TIMER operation has priority if it is set while WEEKLY TIMER is still active. The WEEKLY TIMER will go into standby state, and WEEKLY will be no longer displayed on the LCD. When ON/OFF TIMER is up, the WEEKLY TIMER will automatically become active.
- Only the time and set temperature with the WEEKLY TIMER are sent with the . Set the WEEKLY TIMER only after setting the operation mode, the airflow rate and the airflow direction ahead of time.
- Shutting the breaker off, power failure, and other similar events will render operation of the indoor unit's internal clock inaccurate. Reset the clock.
- The BACK can be used only for the time and temperature settings. It cannot be used to go back to the reservation number.

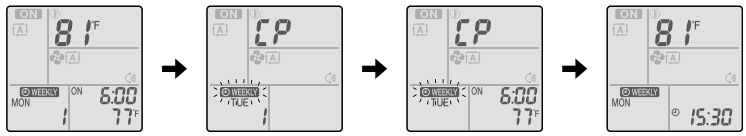


Copy mode

• A reservation made once can be copied to another day of the week. The whole reservation of the selected day of the week will be copied.



Setting Displays



1. **Press** [◈] .

2. **Press** [SELECT] **to confirm the day of the week to be copied.**

3. **Press** [COPY] .

• The whole reservation of the selected day of the week will be copied.

4. **Press** [SELECT] **to select the destination day of the week.**

5. **Press** [COPY] .

• The reservation will be copied to the selected day of the week. The whole reservation of the selected day of the week will be copied.

• To continue copying the settings to other days of the week, repeat **STEP *4*** and **STEP *5***.

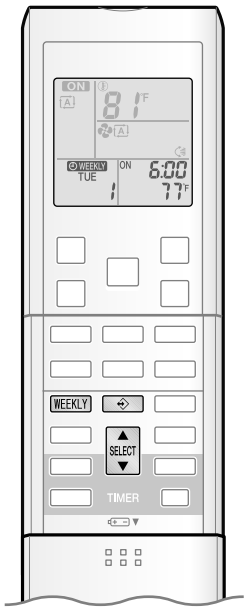
6. **Press** [◈] **to complete the setting.**

• WEEKLY is displayed on the LCD and WEEKLY TIMER operation is activated.

NOTE

■ **Note on COPY MODE**

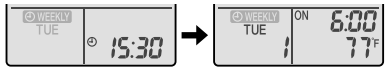
• The entire reservation of the source day of the week is copied in the copy mode.
In the case of making a reservation change for any day of the week individually after copying the content of weekly reservations, press [◈] and change the settings in the steps of [Setting mode] .



■ Confirming a reservation

• The reservation can be confirmed.

Setting Displays



Normal display Confirmation display

1. Press ⇔ .

• The day of the week and the reservation number of current day will be displayed.

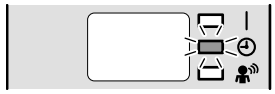
2. Press SELECT ▲▼ to select the day of the week and the reservation number to be confirmed.

• Pressing SELECT ▲▼ displays the reservation details.

• To change the confirmed reserved settings, select the reservation number and press NEXT.
The mode is switched to setting mode. Go to **Setting mode** **STEP *4***.

3. Press ⇔ to exit confirming mode.

• WEEKLY is displayed on the LCD and WEEKLY TIMER operation is activated.
• The TIMER lamp lights yellow.

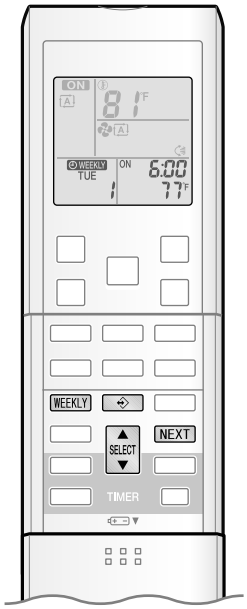


Display

■ To deactivate WEEKLY TIMER operation

Press WEEKLY while WEEKLY is displayed on the LCD.

• WEEKLY will be no longer displayed on the LCD.
• The TIMER lamp goes off.
• To reactivate the WEEKLY TIMER operation, press WEEKLY again.
• If a reservation deactivated with WEEKLY is activated once again, the last reservation mode will be used.



■ To delete reservations

The individual reservation

1. Press [⇔] .

• The day of the week and the reservation number will be displayed.

2. Press [SELECT] to select the day of the week and the reservation number to be deleted.

3. Press [NEXT] .

• WEEKLY and ON or OFF blink.

4. Press [SELECT] and select blank.

• Pressing [SELECT] changes ON/OFF TIMER mode.

• The reservation has no setting when selecting blank.

5. Press [NEXT] .

• The selected reservation will be deleted.

6. Press [⇔] .

• If there are still other reservations, WEEKLY TIMER operation will be activated.

The reservations for each day of the week

• This function can be used for deleting reservations for each day of the week.
• It can be used while confirming or setting reservations.

1. Press [SELECT] to select the day of the week to be deleted.

2. Hold [WEEKLY] for 5 seconds.

• The reservation of the selected day of the week will be deleted.

All reservations

Hold [WEEKLY] for 5 seconds while normal display.

• Be sure to direct the remote controller toward the indoor unit and check for a receiving tone.
• This operation is not effective on the setting display of WEEKLY TIMER.
• All reservations will be deleted.

7.14 Other Functions

7.14.1 Hot-Start Function

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

7.14.2 Signal Receiving Sign

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

7.14.3 Indoor Unit ON/OFF Button

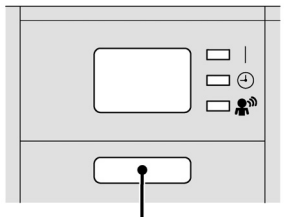
An **ON/OFF** button is provided on the display of the unit.

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

Operation mode	Temperature setting	Airflow rate
AUTO	25°C (77°F)	Automatic

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

Ex: CTXS-L, FTXS-L series



7.14.4 Air-Purifying Filter with Photocatalytic Deodorizing Function

CTXS-J, CTXS-H Series

This filter incorporates the benefits the Air-Purifying Filter and Photocatalytic Deodorizing Filter in a single unit. Combining the two filters in this way increases the active surface area of the new filter. This larger surface area allows the filter to effectively trap microscopic particles, decompose odors and deactivate bacteria and viruses even for the large living rooms. The filter can be used for approximately 3 years if periodic maintenance is performed.

7.14.5 Titanium Apatite Photocatalytic Air-Purifying Filter

CTXS-L, FTXS-L Series

This filter combines the Air-Purifying Filter and Titanium Apatite Photocatalytic Deodorizing Filter as a single highly effective filter. The filter traps microscopic particles, decomposes odors and even deactivates bacteria and viruses. It lasts for 3 years without replacement if washed about once every 6 months.

7.14.6 Auto-restart Function

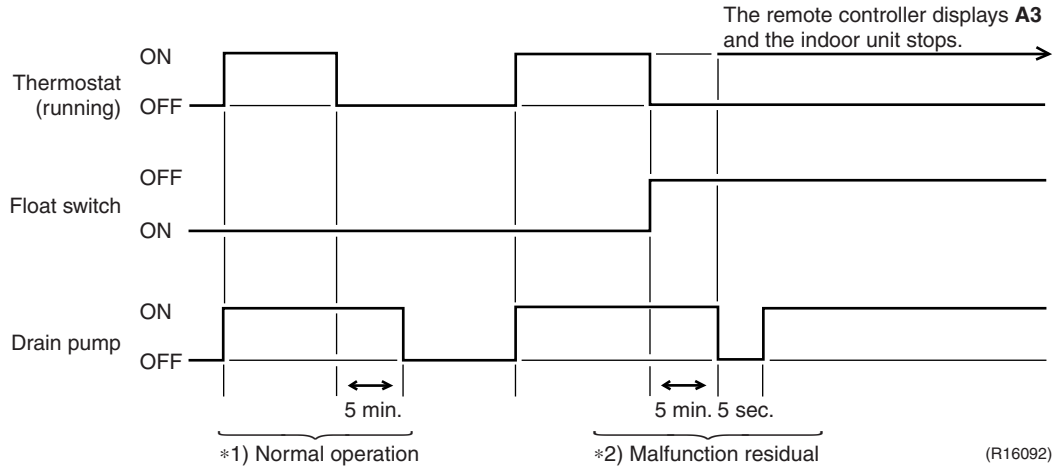
If a power failure (including one for just a moment) occurs during the operation, the operation automatically restarts when the power is restored in the same condition as before the power failure.

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

8. Function of FFQ Series

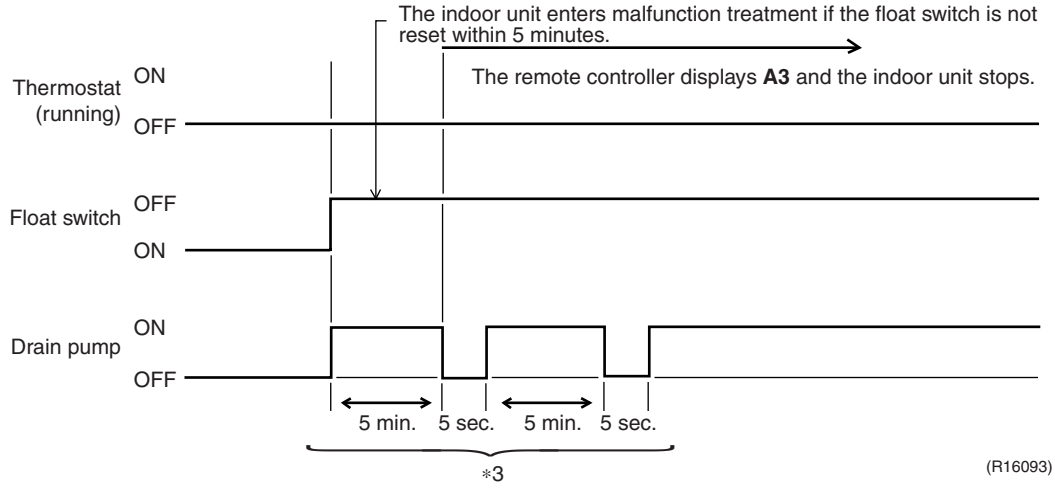
8.1 Drain Pump Control

8.1.1 When the Float Switch is Tripped While the Cooling Thermostat is ON:



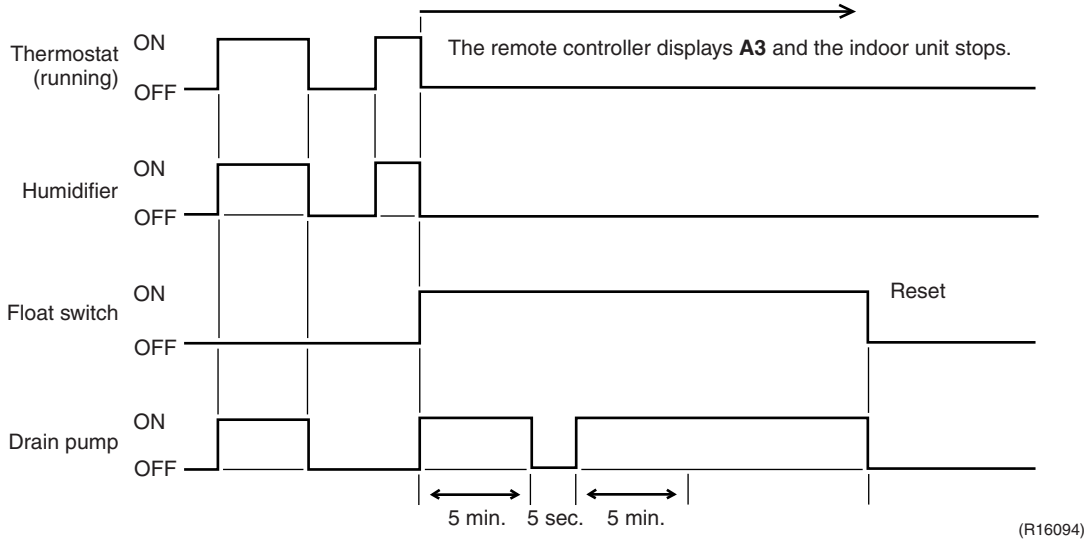
∗1. (Normal operation):
The purpose of residual operation is to completely drain any moisture adhering to the fin of the indoor heat exchanger when the thermostat goes off during cooling operation.
∗2. (Malfunction residual):
The remote controller displays **A3** and the air conditioner comes to an abnormal stop in 5 minutes if the float switch is turned OFF while the cooling thermostat is ON.

8.1.2 When the Float Switch is Tripped While the Cooling Thermostat is OFF:



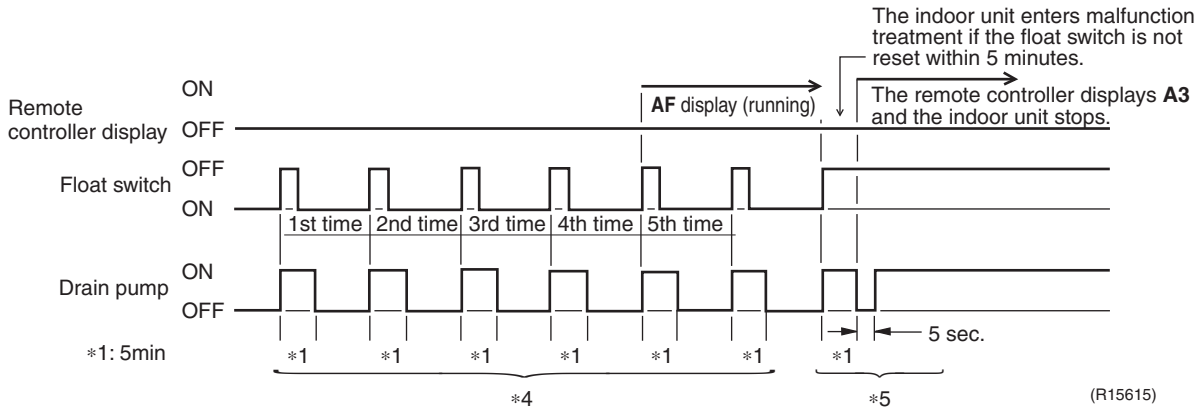
∗3. (Malfunction residual):
The remote controller displays **A3** and the air conditioner comes to an abnormal stop if the float switch is turned OFF and not turned ON again within 5 minutes while the cooling thermostat is OFF.

8.1.3 When the Float Switch is Tripped During Heating Operation:



During heating operation, if the float switch is not reset even after the 5 minutes operation, 5 seconds stop, 5 minutes operation cycle ends, operation continues until the switch is reset.

8.1.4 When the Float Switch is Tripped and AF is Displayed on the Remote Controller:



∗4. (Malfunction residual):
If the float switch is tripped 5 times in succession, a drain malfunction is determined to have occurred. **AF** is then displayed as operation continues.
∗5. (Malfunction residual):
The remote controller displays **A3** and the air conditioner comes to an abnormal stop if the float switch is OFF for more than 5 minutes in the case of ∗4.

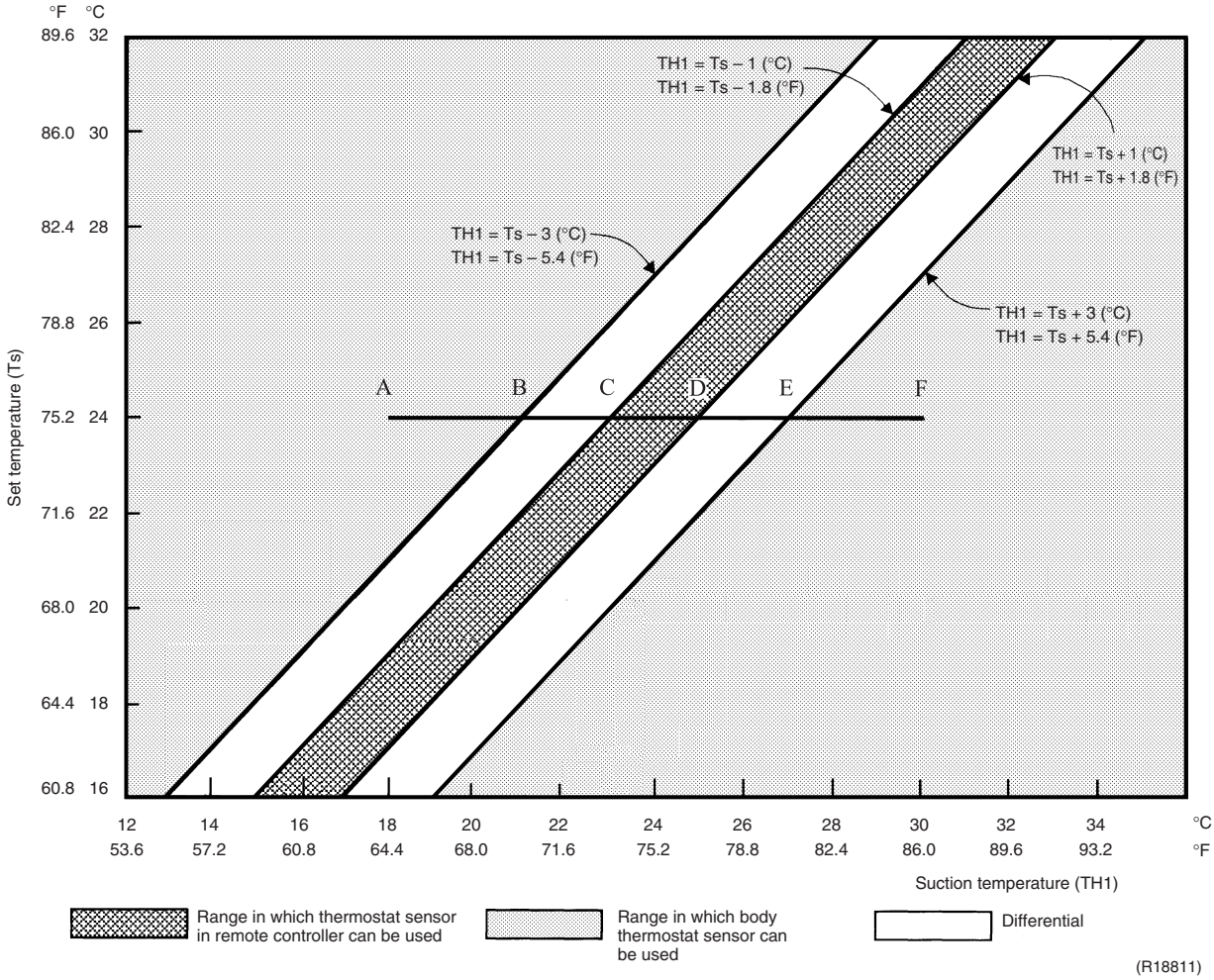
8.2 Thermostat Sensor in Remote Controller

Outline

Temperature is controlled by both the thermostat sensor in remote controller and air suction thermostat in the indoor unit. (This is however limited to when the field setting for the thermostat sensor in remote controller is utilized.)

Cooling

If there is a significant difference in the set temperature and the suction temperature, fine adjustment control is carried out using a body thermostat sensor, or using the sensor in the remote controller near the position of the user when the suction temperature is near the set temperature.



■ **Assuming the set temperature in the figure above is 24°C (75.2°F), and the suction temperature has changed from 18°C (64.4°F) to 30°C (86°F) (A → F):**

(This example also assumes there are several other air conditioners, and the suction temperature changes even when the thermostat sensor is off.)

18 → 23°C (64.4 → 73.4°F) (A → C): Body thermostat sensor is used.

23 → 27°C (73.4 → 80.6°F) (C → E): Remote controller thermostat sensor is used.

27 → 30°C (80.6 → 86°F) (E → F): Body thermostat sensor is used.

■ **Assuming suction temperature has changed from 30°C (86°F) to 18°C (64.4°F) (F → A):**

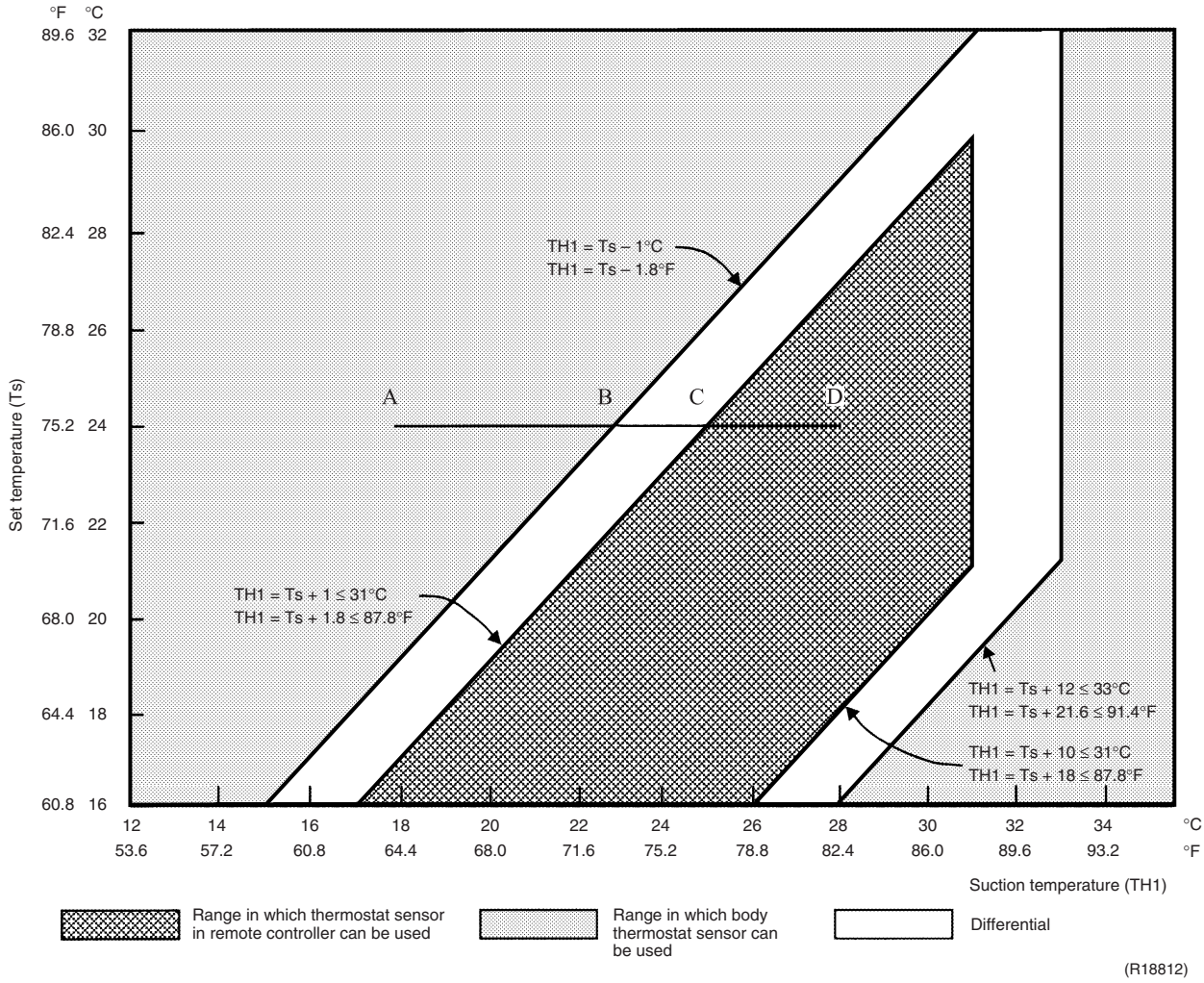
30 → 25°C (86 → 77°F) (F → D): Body thermostat sensor is used.

25 → 21°C (77 → 69.8°F) (D → B): Remote controller thermostat sensor is used.

21 → 18°C (69.8 → 64.4°F) (B → A): Body thermostat sensor is used.

Heating

When heating, the hot air rises to the top of the room, resulting in the temperature being lower near the floor where the occupants are. When controlling by body thermostat sensor only, the indoor unit may therefore be turned off by the thermostat before the lower part of the room reaches the set temperature. The temperature can be controlled so the lower part of the room where the occupants are does not become cold by widening the range in which thermostat sensor in remote controller can be used so that suction temperature is higher than the set temperature.



(R18812)

■ **Assuming the set temperature in the figure above is 24°C (75.2°F), and the suction temperature has changed from 18°C (64.4°F) to 28°C (82.4°F) (A → D):**

(This example also assumes there are several other air conditioners, and the suction temperature changes even when the thermostat sensor is off.)

18 → 25°C (64.4 → 77°F) (A → C): Body thermostat sensor is used.

25 → 28°C (77 → 82.4°F) (C → D): Remote controller thermostat sensor is used.

■ **Assuming suction temperature has changed from 28°C (82.4°F) to 18°C (64.4°F) (D → A):**

28 → 23°C (82.4 → 73.4°F) (D → B): Remote controller thermostat sensor is used.

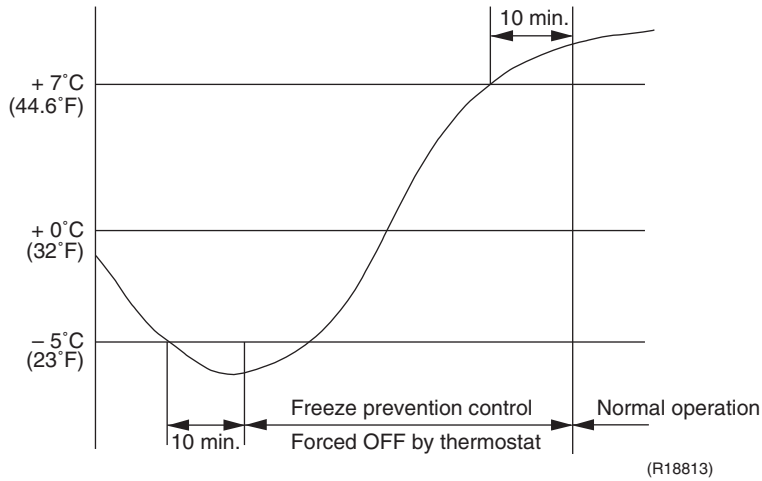
23 → 18°C (73.4 → 64.4°F) (B → A): Body thermostat sensor is used.

8.3 Freeze Prevention Control

When the temperature detected by liquid pipe thermistor (R2T) of the indoor heat exchanger drops too low, the unit enters freeze prevention control in accordance with the following conditions, and is also set in accordance with the conditions given below.

Conditions for starting: Temperature is –1°C (30.2°F) or less for total of 40 min., or temperature is –5°C (23°F) or less for total of 10 min.
Conditions for cancelling: Temperature is +7°C (44.6°F) or more for 10 min. continuously

Ex: Case where temperature is –5°C (23°F) or less for total of 10 min.

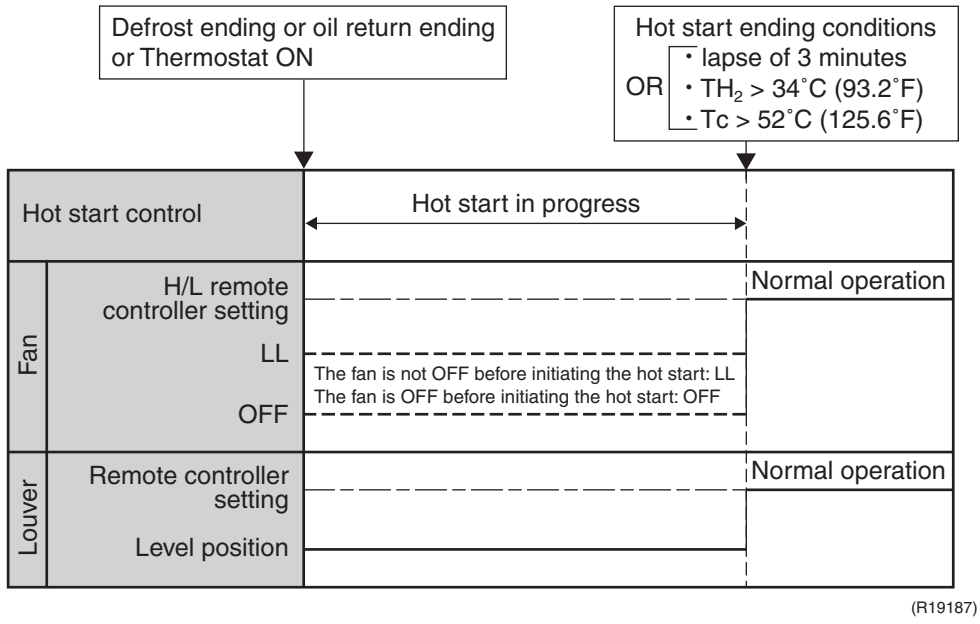


8.4 Hot Start Control (In Heating Operation Only)

Outline

At startup with thermostat ON or after the completion of defrosting in heating operation, the indoor unit fan is controlled to prevent cold air from blasting out and ensure startup capacity.

Detail



TH_2: Temperature detected by the gas thermistor

Tc: High pressure equivalent saturation temperature

Part 6
Test Operation and Field Settings

1. Test Operation

1.1 Procedure and Outline

Follow the following procedure to conduct the initial test operation after installation.

1.1.1 Check Work Prior to Turn Power Supply On

Check the below items.
- Power wiring
- Control transmission wiring between units
- Ground wire

⇩

Check on refrigerant piping.

⇩

Check on amount of refrigerant charge.

(R12942)

- ○ Is the power supply single-phase 208 ~ 230 V, 60 Hz?
- ○ Have you finished a duct work to drain?
- ○ Have you detach transport fitting?
- ○ Is the wiring performed as specified?
- ○ Are the designated wires used?
- ○ Is the grounding work completed?
  Use a 500 V megger tester to measure the insulation.
  Do not use a megger tester for other than 208 - 230 V circuit.
- ○ Are the screws of wiring not loose?
- ○ Is the electrical component box covered with an insulation cover completely?

- ○ Is pipe size proper? (The design pressure of this product is 4.0 MPa (1338 ftAq).)
- ○ Are pipe insulation materials installed securely?
  Liquid and gas pipes need to be insulated. (Otherwise causes water leak.)
- ○ Are respective stop valves on liquid and gas line securely open?

- ○ Is refrigerant charged up to the specified amount?
  If insufficient, charge the refrigerant from the service port of stop valve on the liquid side with outdoor unit in stop mode after turning power on.

1.1.2 Turn Power On

Turn outdoor unit power on.

⇩

Turn indoor unit power on.

⇩

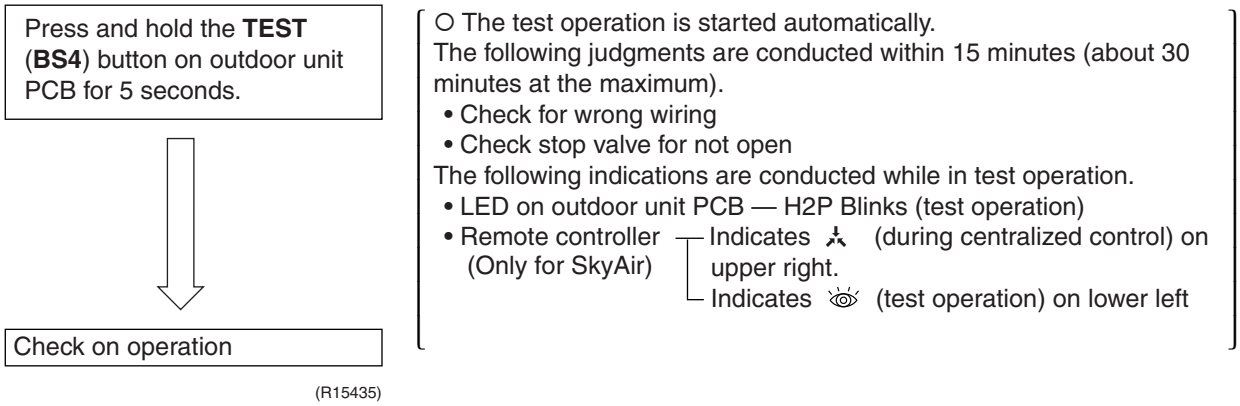
Carry out field setting on outdoor PCB.

(R12995)

- ○ Be sure to turn the power on 6 hours before starting operation to protect compressors.
- ○ Close outside panels of the outdoor unit.

1.1.3 Check Operation

* During check operation, mount front panel to avoid the misjudging.
* Check operation is mandatory for normal unit operation.
  (When the check operation is not executed, alarm code **U3** is displayed.)



On completion of test operation, LED on outdoor unit PCB displays the following.
H3P ON: Normal completion
H2P and H3P ON: Abnormal completion → Check the indoor unit remote controller for error code display and correct it.

Error code	Nonconformity during installation	Remedial action
E3	The stop valve of the outdoor unit is left closed.	Open the gas-side stop valve and the liquid-side stop valve.
	Refrigerant overcharged	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
E4	The stop valve of the outdoor unit is left closed.	Open the gas-side stop valve and the liquid-side stop valve.
	Refrigerant shortage	Check if the additional refrigerant charge has been finished correctly.
		Recalculate the required amount of refrigerant from the piping length and add an adequate amount of refrigerant.
F3	Refrigerant overcharged	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
	The stop valve of the outdoor unit is left closed.	Open the gas-side stop valve and the liquid-side stop valve.
	Refrigerant shortage	Check if the additional refrigerant charge has been finished correctly.
		Recalculate the required amount of refrigerant from the piping length and add an adequate amount of refrigerant.
F6	Refrigerant overcharged	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
U2	Insufficient power supply voltage	Check if the power supply voltage is supplied properly.
U3	If a check operation has not been performed.	Perform a check operation.
U4	No power is supplied to the outdoor unit.	Turn the power on for the outdoor unit.
UA	If no dedicated indoor unit is being used.	Check the indoor unit. If it is not a dedicated unit, replace the indoor unit.
UF	The stop valve of the outdoor unit is left closed.	Open the gas-side stop valve and the liquid-side stop valve.
	If the right indoor unit piping and wiring are not properly connected to the outdoor unit.	Make sure that the right indoor unit piping and wiring are properly connected to the outdoor unit.
UH	If the interunit wiring has not be connected or it has shorted.	Make sure the interunit wiring is correctly attached to terminals (X2M) F1/F2 on the outdoor unit circuit board.

1.1.4 Confirmation on Normal Operation

- Conduct normal unit operation after the check operation has been completed.
  (When outdoor air temperature is 24°CDB (75.2°FDB) or higher, the unit can not be operated with heating operation. See the installation manual attached.)
- Confirm that the indoor/outdoor units can be operated normally.
  (When an abnormal noise due to liquid compression by the compressor can be heard, stop the unit immediately, and turn on the crankcase heater to heat up it sufficiently, then start operation again.)
- Operate indoor unit one by one to check that the corresponding outdoor unit operates.
- Confirm that the indoor unit discharges cold air (or warm air).
- Operate the air direction control button and flow rate control button to check the function of the devices.

1.2 Operation when Power is Turned On

1.2.1 When Turning On Power First Time

The unit cannot be run for up to 12 minutes to automatically set the master power and address (indoor-outdoor address, etc.).

Status

Outdoor unit	Test lamp H2P .... Blinks Can also be set during operation described above.
Indoor unit	If the **ON** button is pushed during operation described above, the **UH** malfunction indicator blinks. (Returns to normal when automatic setting is complete.)

1.2.2 When Turning On Power the Second Time and Subsequent

Push the **RESET** (**BS5**) button on the outdoor unit PCB. Operation becomes possible for about 2 minutes. If you do not push the **RESET** button, the unit cannot be run for up to 10 minutes to automatically set master power.

Status

Outdoor unit	Test lamp H2P .... Blinks Can also be set during operation described above.
Indoor unit	If the **ON** button is pushed during operation described above, the operation lamp lights but the compressor does not operate. (Returns to normal when automatic setting is complete.)

1.2.3 When an Indoor Unit or Outdoor Unit has been Added, or Indoor or Outdoor Unit PCB has been Changed

Be sure to push and hold the **RESET** button for 5 seconds. If not, the addition cannot be recognized. In this case, the unit cannot be run for up to 12 minutes to automatically set the address (indoor-outdoor address, etc.)

Status

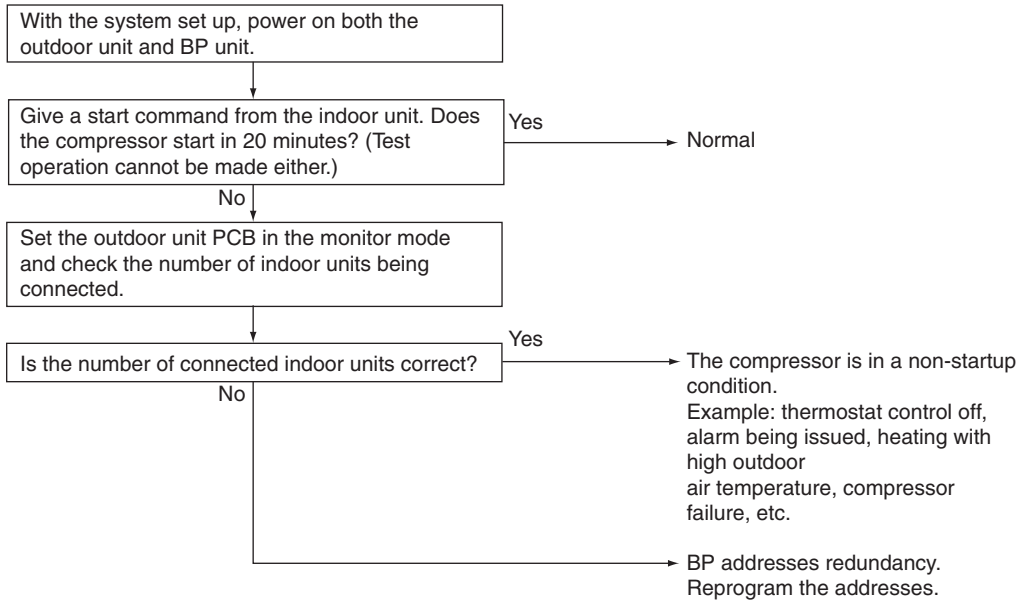
Outdoor unit	Test lamp H2P .... ON Can also be set during operation described above.
Indoor unit	If the **ON** button is pushed during operation described above, the **UH** or **U4** malfunction indicator blinks. (Returns to normal when automatic setting is complete.)

1.3 Branch Provider (BP) Unit

1.3.1 Judging and reprogramming in case of redundant BP addresses

The BP unit of this system is provided with specific addresses in its production stage. These addresses are for various controls. If by any chance (on 3 out of 260000 units) these addresses are redundant, the system may get in trouble. When replacing the PCB of the BP unit too, these addresses may be used repeatedly.

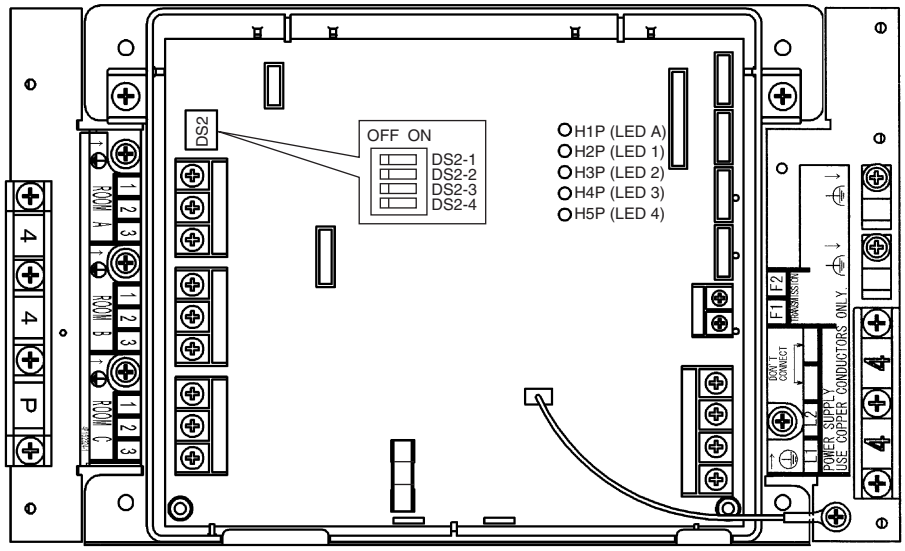
Address redundancy checking flowchart



(Q0517)

Reprogramming the PCB addresses of BP unit

Modify the DIP switch (DS2) settings on the BP unit's PCB in the following way.



(R19088)

Example of DIP switch (DS2) settings on the BP unit's PCB

	DS2-1	DS2-2	DS2-3	DS2-4
BP unit 1	OFF	OFF	ON	OFF
BP unit 2	OFF	OFF	OFF	ON
BP unit 3	OFF	OFF	ON	ON

DS1 ~ 4 : Factory setting is OFF.
The BP unit 1 through 3 show the first through third unit, respectively. The order of these BP units is flexible.
The above table is only for your reference. The redundancy of addresses can be avoided when the DIP switch settings are individually specified.
With the DIP switch settings reprogrammed, power on the outdoor unit and BP unit again. Check for address redundancy.

Note: If an error message is displayed on the indoor unit, BP unit or outdoor unit, follow its code and description.

1.4 RA Indoor Unit: CTXS, FTXS, CDXS, FDXS Series

Outline

1. Measure the power supply voltage and make sure that it falls within the specified range.
2. Test operation should be carried out in either cooling or heating operation.
   In cooling operation, select the lowest programmable temperature (18°C (64°F)); in heating operation, select the highest programmable temperature (30°C (86°F)).
   - Test operation may be disabled in either operation mode depending on the room temperature.
   - After test operation is complete, set the temperature to a normal level.
     (26 ~ 28°C (78 ~ 82°F) in cooling, 20 ~ 24°C (68 ~ 75°F) in heating)
   - For protection, the system does not start for 3 minutes after it is turned off.
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.

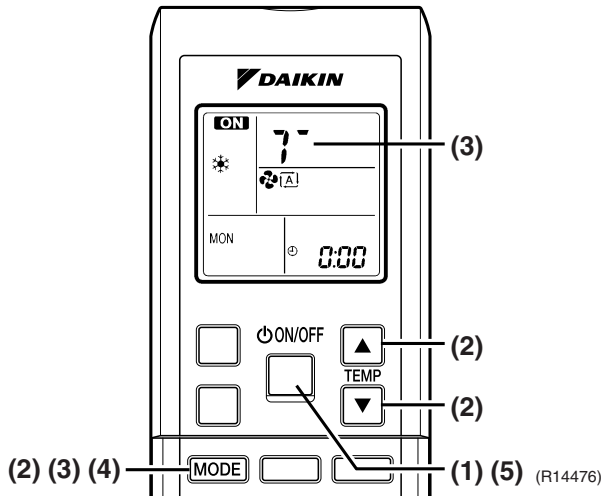
Note:

- The air conditioner requires a small amount of power in 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 backs up the operation mode. The system then restarts operation with the previous operation mode when the circuit breaker is restored.

Detail

ARC452 Series

(1) Press the **ON/OFF** button to turn on the system.
(2) Press the both of **TEMP** buttons and the **MODE** button at the same time.
(3) Press the **MODE** button twice.
(7 is displayed on the screen to indicate that test operation is selected.)
(4) Press the **MODE** button and select the operation mode.
(5) Test operation terminates in approx. 30 minutes and switches into normal mode. To quit a test operation, press the **ON/OFF** button.



1.5 SA Indoor Unit: FFQ Series

1.5.1 Checkpoints

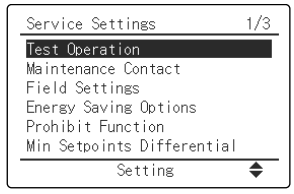
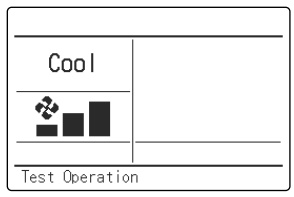
To carry out a test operation, check the following:

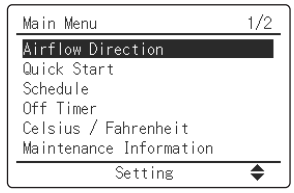
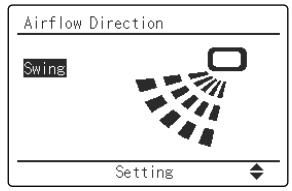
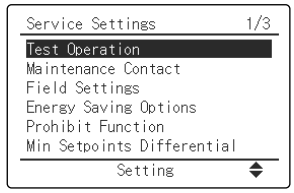
- Check that the temperature setting of the remote controller is at the lowest level in cooling operation or use test operation mode.
- Go through the following checklist:

Checkpoints	Cautions or warnings
Are all units securely installed?	● Dangerous for turning over during storm ● Possible damage to pipe connections
Is the ground wire installed according to the applicable local standard?	Dangerous if electric leakage occurs.
Are all air inlets and outlets of the indoor and outdoor units unobstructed?	● Poor cooling ● Poor heating
Does the drain flow out smoothly?	Water leakage
Is piping adequately heat-insulated?	Water leakage
Have the connections been checked for refrigerant leakage?	● Poor cooling ● Poor heating ● Stop
Is the power supply voltage conform to the specifications on the name plate?	Incorrect operation
Are the cable sizes as specified and according to local regulations?	Damage of cables
Are the remote controller signals received by the unit?	No operation

1.5.2 Test operation

BRC1E72

Step	Action	Remote controller
Before test operation		
1	Turn on the power supply more than 6 hours before test operation.	
2	Open the gas stop valve.	
3	Open the liquid stop valve.	
How to activate test operation		
4	Press and hold the **Cancel** button for 4 seconds to enter the **Service Settings** menu.	
5	Use the ▼▲ buttons to select **Test Operation** and push the **Menu/OK** button.	 (R18827)
6	**Test Operation** is displayed on the bottom of the basic screen.	 (R18828)
7	Push the **On/Off** button within 10 seconds to start the test operation.	

Step	Action	Remote controller
How to check airflow direction		
8	Push the **Menu/OK** button to enter the **Main Menu**.	
9	Use the ▼▲ buttons to select **Airflow Direction** and push the **Menu/OK** button.	 (R18829)
10	Check that the airflow direction is actuated according to the setting and push the **Menu/OK** button.	 (R18830)
How to deactivate test operation		
11	Press and hold the **Cancel** button for 4 seconds to enter the **Service Settings** menu.	
12	Use the ▼▲ buttons to select **Test Operation** in the menu and push the **Menu/OK** button.	 (R18827)

BRC7E830

Step	Action
1	Turn on the power supply more than 6 hours before test operation.
2	Open the gas stop valve.
3	Open the liquid stop valve.
4	Set to cooling operation with the remote controller and start operation by pressing **ON/OFF** button.
5	Press the **INSPECTION/TEST** button (/TEST) 2 times and operate at test operation mode for 3 minutes.
6	Press the **SWING** button to make sure the unit is in operation.
7	Press the **INSPECTION/TEST** button (/TEST) and operate normally.
8	Confirm all functions of the unit according to the operation manual.
9	If the decoration panel has not been installed, turn off the power after the test operation.

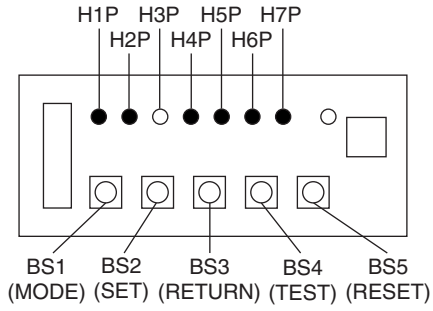
2. Field Settings

2.1 Outdoor Unit

2.1.1 Setting Mode and Monitor Mode

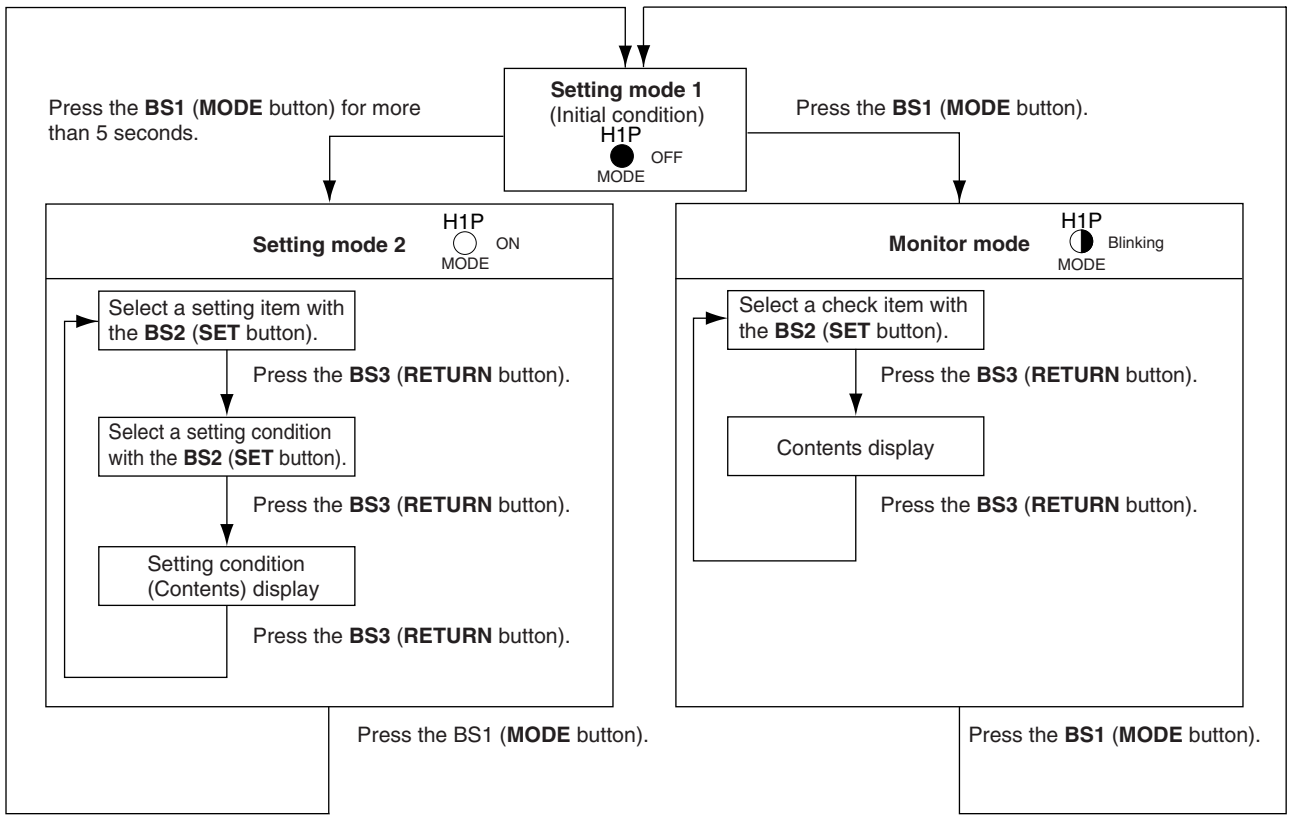
Outline

The following 3 modes can be changed over with the button switches on the service PCB and you can find the present mode by the status of the H1P indicator.



(R15629)

(1) Setting mode 1 (H1P off)
Initial status (normal) : Also indicates during abnormal.
(2) Setting mode 2 (H1P on)
Used to modify the operating status and to set program addresses, etc. Usually used in servicing the system.
(3) Monitor mode (H1P blinks)
Used to check the program made in setting mode 2.



(R15657)

Setting Mode 1

This mode is used to set and check the following items.

1. Set items ····· In order to make COOL/HEAT selection in a batch of outdoor unit group, change the setting.
   - COOL/HEAT selection (IND) ····· Used to select COOL or HEAT by individual outdoor unit (factory setting).
   - COOL/HEAT selection (MASTER) ····· Used to select COOL or HEAT by outdoor unit group with the master unit.
   - COOL/HEAT selection (SLAVE)····· Used to select COOL or HEAT by outdoor unit group with the slave unit.
2. Check items ····· The following items can be checked.
   (1) Current operating conditions (Normal / Abnormal / In check operation)
   (2) Setting conditions of COOL/HEAT selection (Individual / Batch master / Batch slave)
   (3) Low noise operating conditions (In normal operation / In low noise operation)
   (4) Demand operating conditions (In normal operation / In demand operation)

Procedure for changing COOL/HEAT selection setting

Setting mode 1 is the initial status (normal). In case of other status, press the **MODE** (**BS1**) button one time and return to the setting mode 1.

Press the **SET** (**BS2**) button to set the blinking LED according to the pattern shown on the right.

Press the **RETURN** (**BS3**) button to determine the setting.

The system returns to the initial status of setting mode 1.

○ ON
● OFF
◑ Blink

Setting (displaying) item	MODE H1P	TEST H2P	COOL/HEAT select			LOW NOISE H6P	DEMAND H7P
			IND H3P	MASTER H4P	SLAVE H5P		
For selection by individual outdoor unit (factory setting)	●	●	◑	●	●	●	●
For selection in a batch of outdoor unit group with master unit	●	●	●	◑	●	●	●
For selection in a batch of outdoor unit group with slave unit	●	●	●	●	◑	●	●

(R15637)

Procedure for checking

Setting mode 1 is the initial status (normal). In case of other status, press the **MODE** (**BS1**) button one time and return to the setting mode 1.

Check the system for each condition through LED displays. (Refer to information in table on the right.)

Press the **RETURN** (**BS3**) button and return to the initial status of setting mode 1.

MODE H1P	TEST H2P	COOL/HEAT select			Low noise H6P	Demand H7P
		IND H3P	MASTER H4P	SLAVE H5P		
●	●	○	●	●	●	●

Current operating conditions
- ● Normal
- ○ Abnormal
- ◑ In preparation or in check operation

Setting of COOL/HEAT selection
- ○ ● ● By individual outdoor unit
- ● ○ ● In a batch of outdoor unit group with master unit
- ● ● ○ In a batch of outdoor unit group with slave unit

Low noise operating conditions
- ● In normal operation
- ○ In low noise operation

Demand operating conditions
- ● In normal operation
- ○ In demand operation

(R15638)

Setting Mode 2

Press the **MODE** (**BS1**) button for 5 seconds and enter the setting mode 2.

<Selection of setting items>

Press the **SET** (**BS2**) button and select a setting item according to the LED pattern shown in the table on the right.

↓

Press the **RETURN** (**BS3**) button and decide the item. (The present setting condition is shown.)

<Selection of setting conditions>

Press the **SET** (**BS2**) button and select to the setting condition you want.

↓

Press the **RETURN** (**BS3**) button and decide the condition.

Press the **RETURN** (**BS3**) button and return to the initial status of setting mode 2.

∗ If you become unsure of how to proceed, press the **MODE** (**BS1**) button and return to the setting mode 1.

No.	Setting item	Description
1	Cool / heat unified address	Sets address for cool / heat unified operation.
2	Low noise / demand address	Address for low noise / demand operation
3	Test operation settings	Used to conduct test operation without making changes to the PCB and replacing the refrigerant, after the completion of maintenance.
5	Indoor unit forced fan H	Allows forced operation of indoor unit fan while unit is stopped. (H tap)
6	Indoor unit forced operation	Allows forced operation of indoor unit.
8	Te setting	Target evaporation temperature for cooling
9	Tc setting	Target condensation temperature for heating
10	Defrost changeover setting	Changes the temperature condition for defrost and sets to quick defrost or slow defrost.
12	External low noise setting / Demand setting	Reception of external low noise or demand signal
13	AIRNET address	Set address for AIRNET.
16	Setting of hot water heater	Make this setting to conduct heating operation with hot water heater.
20	Additional refrigerant charge operation setting	Carries out additional refrigerant charge operation.
21	Refrigerant recovery / vacuuming mode setting	Sets to refrigerant recovery or vacuuming mode.
22	Night-time low noise setting	Sets automatic nighttime low noise operation in a simple way. The operating time is based on Starting Set and Ending Set.
25	Setting of low noise level	Sets low noise level when the low noise signal is received.
26	Night-time low noise operation start setting	Sets starting time of nighttime low noise operation. (Night-time low noise setting is also required.)
27	Night-time low noise operation end setting	Sets ending time of nighttime low noise operation. (Night-time low noise setting is also required.)
28	Power transistor check mode ∗Check after disconnection of compressor wires	Used for trouble diagnosis of DC compressor. Since the waveform of inverter is output without wiring to the compressor, it is convenient to probe whether the trouble comes from the compressor or PCB.
29	Capacity precedence setting	If the capacity control is required, the low noise control is automatically released by this setting during carrying out low noise operation and nighttime low noise operation.
30	Demand setting 1	Changes target value of power consumption when demand control 1 is received.
32	Constant demand setting	Enables demand control 1 without external input. (Effective to prevent a problem that circuit breaker of small capacity is shut down due to large load.)

The numbers in the No. column represent the number of times to press the **SET** (**BS2**) button.

No.	Setting item display								Setting condition display			
	Setting item	MODE H1P	TEST H2P	C/H selection			Low noise H6P	Demand H7P				✻ Factory setting
				IND H3P	Master H4P	Slave H5P						
1	Cool / heat unified address	○	●	●	●	●	●	○	Address Binary number (6 digits)	0 1 ~ 31	○●●●●●● ○●●●●●○ ○●○○○○○	✻
2	Low noise/demand address	○	●	●	●	●	○	●	Address Binary number (6 digits)	0 1 ~ 31	○●●●●●● ○●●●●●○ ○●○○○○○	✻
3	Test operation settings	○	●	●	●	●	○	○	Test operation : OFF Test operation : ON		○●●●●●○ ○●●●●○●	✻
5	Indoor unit forced fan H	○	●	●	●	○	●	○	Normal operation Indoor forced fan H		○●●●●●○ ○●●●●○●	✻
6	Indoor unit forced operation	○	●	●	●	○	○	●	Normal operation Indoor forced operation		○●●●●●○ ○●●●●○●	✻
8	Te setting	○	●	●	○	●	●	●	High Normal (factory setting) Low		○●●●○●● ○●●●●○● ○●●●●●○	✻
9	Tc setting	○	●	●	○	●	●	○	High Normal (factory setting) Low		○●●●○●● ○●●●●○● ○●●●●●○	✻
10	Defrost changeover setting	○	●	●	○	●	○	●	Quick defrost Normal (factory setting) Slow defrost		○●●●○●● ○●●●●○● ○●●●●●○	✻
12	External low noise setting / demand setting	○	●	●	○	○	●	●	External low noise/demand: NO External low noise/demand: YES		○●●●●●○ ○●●●●○●	✻
13	AIRNET address	○	●	●	○	○	●	○	Address Binary number (6 digits)	0 1 ~ 63	○●●●●●● ○●●●●●○ ○○○○○○○	✻
16	Setting of hot water heater	○	●	○	●	●	●	●	OFF ON		○●●●●●○ ○●●●●○●	✻
20	Additional refrigerant charge operation setting	○	●	○	●	○	●	●	Refrigerant charging: OFF Refrigerant charging: ON		○●●●●●○ ○●●●●○●	✻
21	Refrigerant recovery / vacuuming mode setting	○	●	○	●	○	●	○	Refrigerant recovery / vacuuming: OFF Refrigerant recovery / vacuuming: ON		○●●●●●○ ○●●●●○●	✻
22	Night-time low noise setting	○	●	○	●	○	○	●	OFF Level 1 (outdoor fan with 6 step or lower) Level 2 (outdoor fan with 5 step or lower) Level 3 (outdoor fan with 4 step or lower)		○●●●●●● ○●●●●●○ ○●●●●○● ○●●●●○○	✻

The numbers in the No. column represent the number of times to press the **SET** (**BS2**) button.

No.	Setting item	Setting item display: MODE H1P	TEST H2P	C/H selection: IND H3P	Master H4P	Slave H5P	Low noise H6P	Demand H7P	Setting condition display (∗ Factory setting)
25	Setting of low noise level	○	●	○	○	●	●	○	Level 1 (outdoor fan with 6 step or lower) ○●●●●●○ Level 2 (outdoor fan with 5 step or lower) ○●●●●○● ∗ Level 3 (outdoor fan with 4 step or lower) ○●●●○●●
26	Night-time low noise operation start setting	○	●	○	○	●	○	●	About 20:00 ○●●●●●○ About 22:00 (factory setting) ○●●●●○● ∗ About 24:00 ○●●●○●●
27	Night-time low noise operation end setting	○	●	○	○	●	○	○	About 6:00 ○●●●●●○ About 7:00 ○●●●●○● About 8:00 (factory setting) ○●●●○●● ∗
28	Power transistor check mode	○	●	○	○	○	●	●	OFF ○●●●●●○ ∗ ON ○●●●●○●
29	Capacity precedence setting	○	●	○	○	○	●	○	OFF ○●●●●●○ ∗ ON ○●●●●○●
30	Demand setting 1	○	●	○	○	○	○	●	60 % demand ○●●●●●○ 70 % demand ○●●●●○● ∗ 80 % demand ○●●●○●●
32	Constant demand setting	○	○	●	●	●	●	●	OFF ○●●●●●○ ∗ ON ○●●●●○●

The numbers in the No. column represent the number of times to press the **SET** (**BS2**) button.

Monitor Mode

Press the **MODE** (**BS1**) button and enter the monitor mode.

<Selection of check item>

Press the **SET** (**BS2**) button and select a check item according to the LED pattern.

<Confirmation on check item>

Press the **RETURN** (**BS3**) button to display different data of check item.

Press the **RETURN** (**BS3**) button and return to the initial status of monitor mode.

∗ If you become unsure of how to proceed, press the **MODE** (**BS1**) button and return to the setting mode 1.

No.	Check item	LED display							Data display
		H1P	H2P	H3P	H4P	H5P	H6P	H7P	
0	Various setting	◑	●	●	●	●	●	●	See the note below.
1	Cool / heat unified address	◑	●	●	●	●	●	○	Lower 6 digits
2	Low noise / demand address	◑	●	●	●	●	○	●	
3	Not used	◑	●	●	●	●	○	○	
4	AIRNET address	◑	●	●	●	○	●	●	
5	Number of connected indoor units	◑	●	●	●	○	●	○	
7	Number of connected zone units (excluding outdoor and BS unit)	◑	●	●	●	○	○	○	
8	Number of outdoor units	◑	●	●	○	●	●	●	
11	Number of zone units (excluding outdoor and BS unit)	◑	●	●	○	●	○	○	Lower 6 digits
12	Number of terminal blocks	◑	●	●	○	○	●	●	Lower 4 digits: upper
13	Number of terminal blocks	◑	●	●	○	○	●	○	Lower 4 digits: lower
14	Contents of malfunction (the latest)	◑	●	●	○	○	○	●	Error code table Refer to page 139 ~ 142.
15	Contents of malfunction (1 cycle before)	◑	●	●	○	○	○	○	
16	Contents of malfunction (2 cycle before)	◑	●	○	●	●	●	●	
20	Contents of retry (the latest)	◑	●	○	●	○	●	●	
21	Contents of retry (1 cycle before)	◑	●	○	●	○	●	○	
22	Contents of retry (2 cycle before)	◑	●	○	●	○	○	●	
25	Normal judgment of outdoor units PCB	◑	●	○	○	●	●	○	Lower 2 digits: ○● Abnormal ●○ Normal ●● Undetermined

The numbers in the No. column represent the number of times to press the **SET** (**BS2**) button.

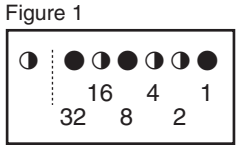
Note: Various Settings

		H1P	H2P	H3P	H4P	H5P	H6P	H7P
Emergency operation / backup operation setting	ON	◑	●	●	○	●	●	●
	OFF	◑	●	●	●	●	●	●
Defrost select setting	Short	◑	●	●	●	○	●	●
	Medium	◑	●	●	●	◑	●	●
	Long	◑	●	●	●	●	●	●
Te setting	H	◑	●	●	●	●	○	●
	M	◑	●	●	●	●	◑	●
	L	◑	●	●	●	●	●	●
Tc setting	H	◑	●	●	●	●	●	○
	M	◑	●	●	●	●	●	◑
	L	◑	●	●	●	●	●	●

Push the **BS2** (**SET** button) and match with the LEDs No. 1 - 15, push the **BS3** (**RETURN** button), and confirm the data for each setting.

★ Data such as addresses and number of units is expressed as binary numbers; the two ways of expressing are as follows:

Figure 1

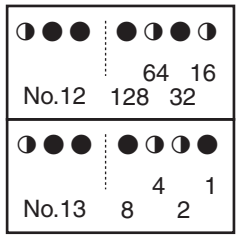


(R12951)

The No. 1 cool / heat unified address is expressed as a binary number consisting of the lower 6 digits. (0 - 63)

In the figure 1, the address is 010110 (binary number), which translates to 16 + 4 + 2 = 22 (base 10 number). In other words, the address is 22.

Figure 2



(R12952)

The number of terminal blocks for No. 12 and 13 is expressed as an 8-digit binary number, which is the combination of four upper, and four lower digits for No. 12 and 13 respectively. (0 - 128)
In the figure 2, the address for No. 12 is 0101, the address for No. 13 is 0110, and the combination of the two is 01010110 (binary number), which translates to 64 + 16 + 4 + 2 = 86 (base 10 number). In other words, the number of terminal block is 86.

★ Refer to the preceding page for a list of data, etc. for No. 0 - 25.

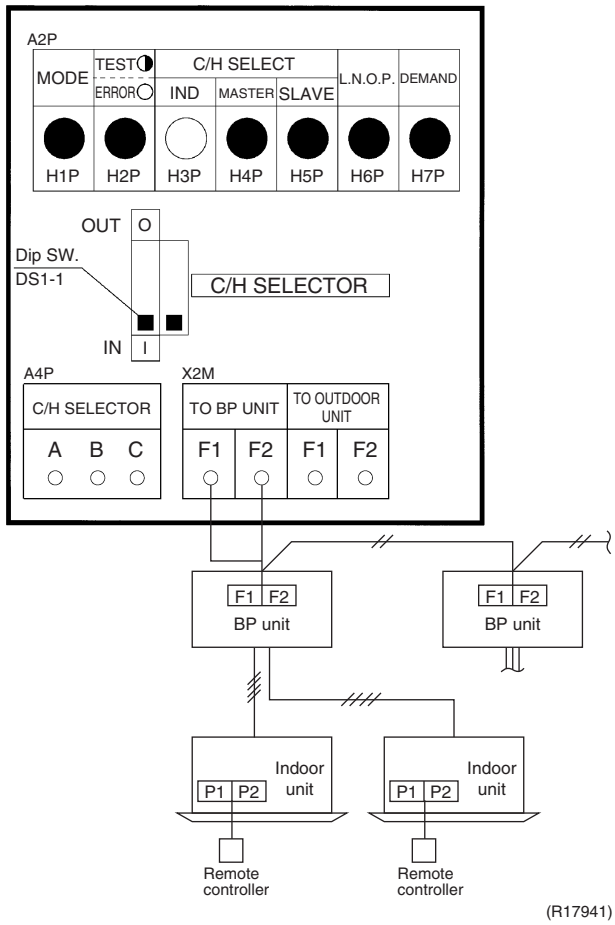
2.1.2 COOL/HEAT Changeover Setting by Dip Switches

The following field settings are made by dip switches on the service PCB.

Dip switch		Setting item	Description
No.	Setting		
DS1-1	ON (OUT)	Cool / Heat changeover setting	It is used for changing over the unit which inputs the COOL/HEAT switching command.
	OFF (IN) (Factory setting)		
DS1-2	ON	Not used	Do not change the factory settings.
	OFF (Factory setting)		

(1) Set Cool/Heat Separately for Each Outdoor Unit System by Indoor Unit Remote Controller

- It does not matter whether or not there is outdoor - outdoor unit wiring.
- Set the dip switch DS1-1 of the outdoor unit PCB (A2P) to **IN** (factory setting).
- Set cool/heat switching to **IND** (individual) in the setting mode 1 (factory setting).



<Set the master unit (= indoor unit having the right to select the cooling / heating operation mode).>

In the case of wired remote controllers

- After the check operation, **CHANGEOVER UNDER CONTROL** is flashing in all connected remote controllers.
- Select an indoor unit to be used as the master unit in accordance with the request from the customer. (It is recommended to select an indoor unit which will be used most often as the master unit.)
- Press the operation mode selector button in the remote controller of the indoor unit selected as the master unit.
- In that remote controller, **CHANGEOVER UNDER CONTROL** disappears. That remote controller controls changeover of the cooling / heating operation mode.
- In other remote controllers, **CHANGEOVER UNDER CONTROL** lights.

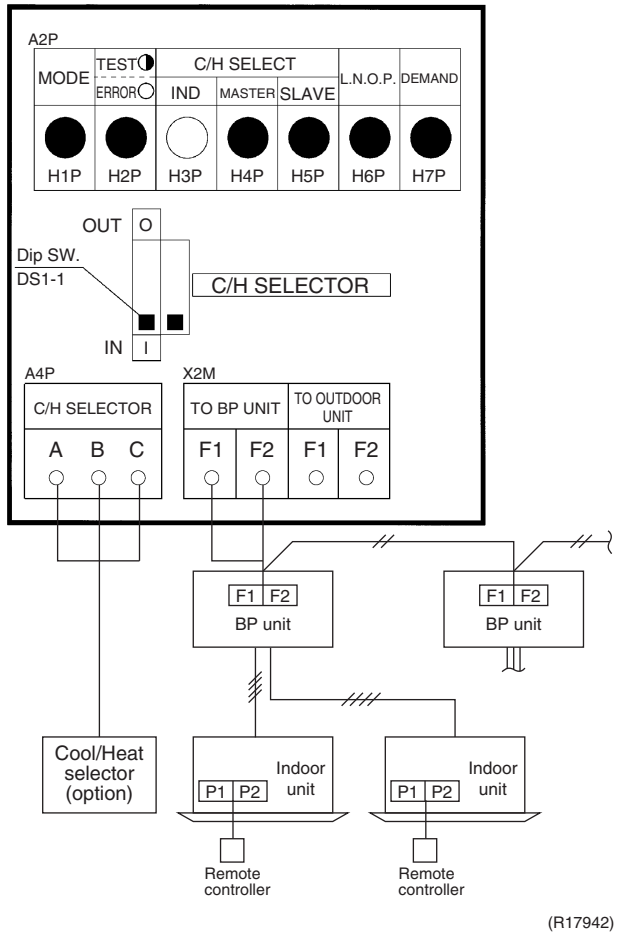
For the details, refer to the installation manual supplied together with the indoor unit.

In the case of wireless remote controllers

- After the check operation, the timer lamp is flashing in all connected indoor units.
- Select an indoor unit to be used as the master unit in accordance with the request from the customer. (It is recommended to select an indoor unit which will be used most often as the master unit.)
- Press the operation selector mode button in the remote controller of the indoor unit selected as the master unit. A peep sound is emitted, and the timer lamp turns off in all indoor units.
- That indoor unit controls changeover of the cooling / heating operation mode.

(2) Set Cool/Heat Separately for Each Outdoor Unit System by Cool/Heat Selector

- Connect the cool/heat selector (option) to the terminals A, B, C on the outdoor unit PCB (A4P).
- It does not matter whether or not there is outdoor - outdoor unit wiring.
- Set the dip switch DS1-1 of the outdoor unit PCB (A2P) to **OUT**.
- Set cool/heat switching to **IND** (individual) in the setting mode 1 (factory setting).



2.1.3 Setting of Low Noise Operation and Demand Operation

Setting of Low Noise Operation

By connecting the external contact input to the low noise input of the outdoor unit external control adaptor (optional), you can lower operating noise by 2 ~ 3 dB.

When the low noise operation is automatically carried out at night (The external control adaptor for outdoor unit is not required)

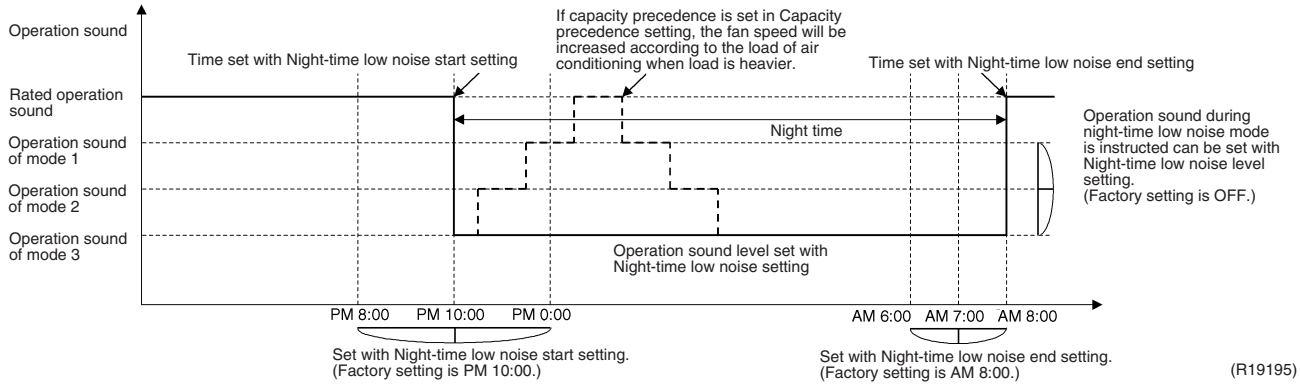
1. While in setting mode 2, select the setting condition (i.e., Mode 1, Mode 2, or Mode 3) for set item No. 22 (Setting of nighttime low noise level).

2. If necessary, while in setting mode 2, select the setting condition (i.e., 20:00, 22:00, or 24:00) for set item No. 26 (Setting of start time of nighttime low noise operation).
   (Use the start time as a guide since it is estimated according to outdoor temperatures.)

3. If necessary, while in setting mode 2, select the setting condition (i.e., 06:00, 07:00, or 08:00) for set item No. 27 (Setting of end time of nighttime low noise operation).
   (Use the end time as a guide since it is estimated according to outdoor temperatures.)

4. If necessary, while in setting mode 2, set the setting condition for set item No. 29 (Setting of capacity precedence) to ON.
   (If the condition is set to ON, when the air-conditioning load reaches a high level, the system enters to normal operation mode even during nighttime.)

Image of operation



Setting of Demand Operation

By connecting the external contact input to the demand input of the outdoor unit external control adaptor (optional), the power consumption of unit operation can be saved suppressing the compressor operating condition.

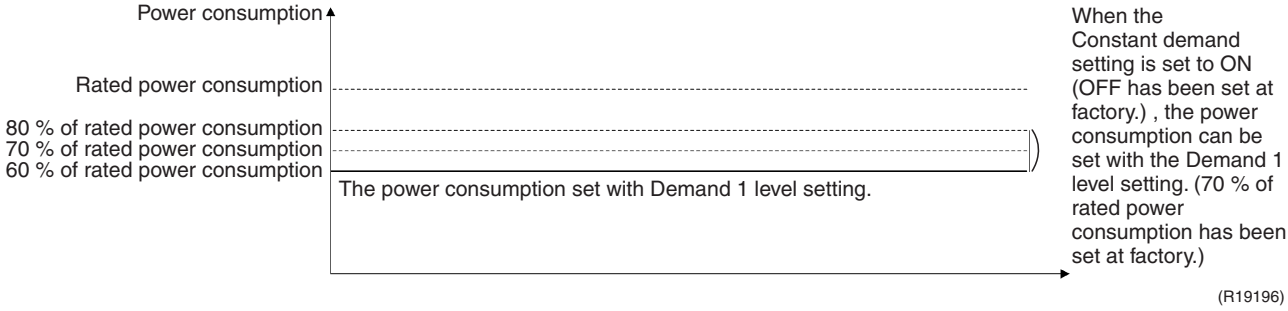
Set item	Condition	Content
Demand	Mode 1	The compressor operates at approx. 60% or less of rating.
	Mode 2	The compressor operates at approx. 70% or less of rating.
	Mode 3	The compressor operates at approx. 80% or less of rating.

When the constant demand operation is carried out. (Use of the external control adaptor for outdoor unit is not required.)

1. While in setting mode 2, make setting of the set item No. 32 (Setting of constant demand) to ON.

2. While in setting mode 2, select the set item No. 30 (Setting of Demand 1 level) and then set the setting condition to targeted mode.

Image of operation



Detailed Setting Procedure of Low Noise Operation and Demand Control

1. Setting mode 1 (H1P off)

In setting mode 2, push the **BS1** (**MODE** button) one time. → The system enters setting mode 1 and the H1P goes off.

In setting mode 1, the H6P (In low noise operation) and the H7P (In demand control) keep lighting.

2. Setting mode 2 (H1P on)

(1) In setting mode 1, push and hold the **BS1** (**MODE** button) for more than 5 seconds. → The system enters setting mode 2 and the H1P lights up.

(2) Push the **BS2** (**SET** button) several times and match the LED display with the Setting No. you want.

(3) Push the **BS3** (**RETURN** button) one time, and the present setting content is displayed.
→ Push the **BS2** (**SET** button) several times and match the LED display with the setting content (as shown on next page) you want.

(4) Push the **BS3** (**RETURN** button) two times. → The system returns to (1).

(5) Push the **BS1** (**MODE** button) one time. → The system returns to setting mode 1 and the H1P goes off.

○: ON ●: OFF ◑: Blink

		(1)							(2)								(3)						
Setting No.	Setting contents	Setting No. indication							Setting No. indication							Setting contents	Setting contents indication (Initial setting)						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P		H1P	H2P	H3P	H4P	H5P	H6P	H7P
12	External low noise setting / Demand setting	○	●	●	●	●	●	●	○	●	●	○	○	●	●	NO (Factory setting)	○	●	●	●	●	●	◑
																YES	○	●	●	●	●	◑	●
22	Night-time low noise setting								○	●	○	●	○	○	●	OFF (Factory setting)	○	●	●	●	●	●	●
																Level 1	○	●	●	●	●	●	◑
																Level 2	○	●	●	●	●	◑	●
																Level 3	○	●	●	●	●	◑	◑
26	Night-time low noise operation start setting								○	●	○	○	●	○	●	PM 8:00	○	●	●	●	●	●	◑
																PM 10:00 (Factory setting)	○	●	●	●	●	◑	●
																PM 0:00	○	●	●	●	◑	●	●
27	Night-time low noise operation end setting								○	●	○	○	●	○	○	AM 6:00	○	●	●	●	●	●	◑
																AM 7:00	○	●	●	●	●	◑	●
																AM 8:00 (Factory setting)	○	●	●	●	◑	●	●
29	Capacity precedence setting								○	●	○	○	○	●	○	Low noise precedence (Factory setting)	○	●	●	●	●	●	◑
																Capacity precedence	○	●	●	●	●	◑	●
30	Demand setting 1								○	●	○	○	○	○	●	60 % of rated power consumption	○	●	●	●	●	●	◑
																70 % of rated power consumption (Factory setting)	○	●	●	●	●	◑	●
																80 % of rated power consumption	○	●	●	●	◑	●	●
32	Constant demand setting								○	○	●	●	●	●	●	OFF (Factory setting)	○	●	●	●	●	●	◑
																ON	○	●	●	●	●	◑	●

Setting mode indication section Setting No. indication section Set contents indication section

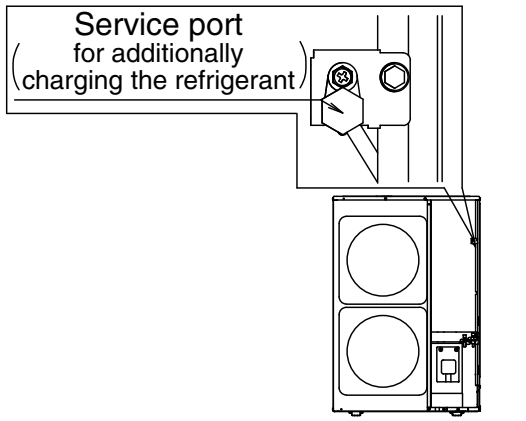
2.1.4 Setting of Refrigerant Additional Charging Operation

When the outdoor unit is stopped and the entire quantity of refrigerant cannot be charged from the stop valve on the liquid side, make sure to charge the remaining quantity of refrigerant using this procedure. If the refrigerant quantity is insufficient, the unit may malfunction.

(1) Turn ON the power of the indoor unit and the outdoor unit.
(2) Make sure to completely open the stop valve on the gas side and the stop valve on the liquid side.
(3) Connect the refrigerant charge hose to the service port (for additionally charging the refrigerant).
(4) In the stopped status, set to ON the refrigerant additional charging operation (A) in setting mode 2 (H1P: Turn on).
(5) The operation is automatically started.
(The LED indicator H2P flickers, and **Test Operation** and **Under Centralized Control** are displayed on the remote controller.)
(6) After charging the specified quantity of refrigerant, press the **RETURN** (**BS3**) button to stop the operation.

(The operation is automatically stopped within 30 minutes.
If charging is not completed within 30 minutes, set and perform the refrigerant additional charging operation (A) again.
If the refrigerant additional charging operation is stopped soon, the refrigerant may be overcharged.
Never charge extra refrigerant.)

(7) Disconnect the refrigerant charge hose.



(R9208)

2.1.5 Setting of Refrigerant Recovery Mode

When carrying out the refrigerant collection on site, fully open the respective expansion valve of indoor and outdoor units.
All indoor and outdoor unit's operation are prohibited.

<Operation procedure>

(1) In setting mode 2 with units in stop mode, set the item No.21 (refrigerant recovery / vacuuming mode) to ON. The respective expansion valve of indoor and outdoor units are fully opened. **Test Operation** and **Under Centralized Control** are displayed on the remote controller, and the indoor / outdoor unit operation is prohibited.
After setting, do not cancel setting mode 2 until completion of refrigerant recovery operation.

(2) Collect the refrigerant using a refrigerant recovery unit. (See the instruction attached to the refrigerant recovery unit for more detail.)

(3) Press the **MODE** (**BS1**) button once and return to setting mode 2.

2.1.6 Setting of Vacuuming Mode

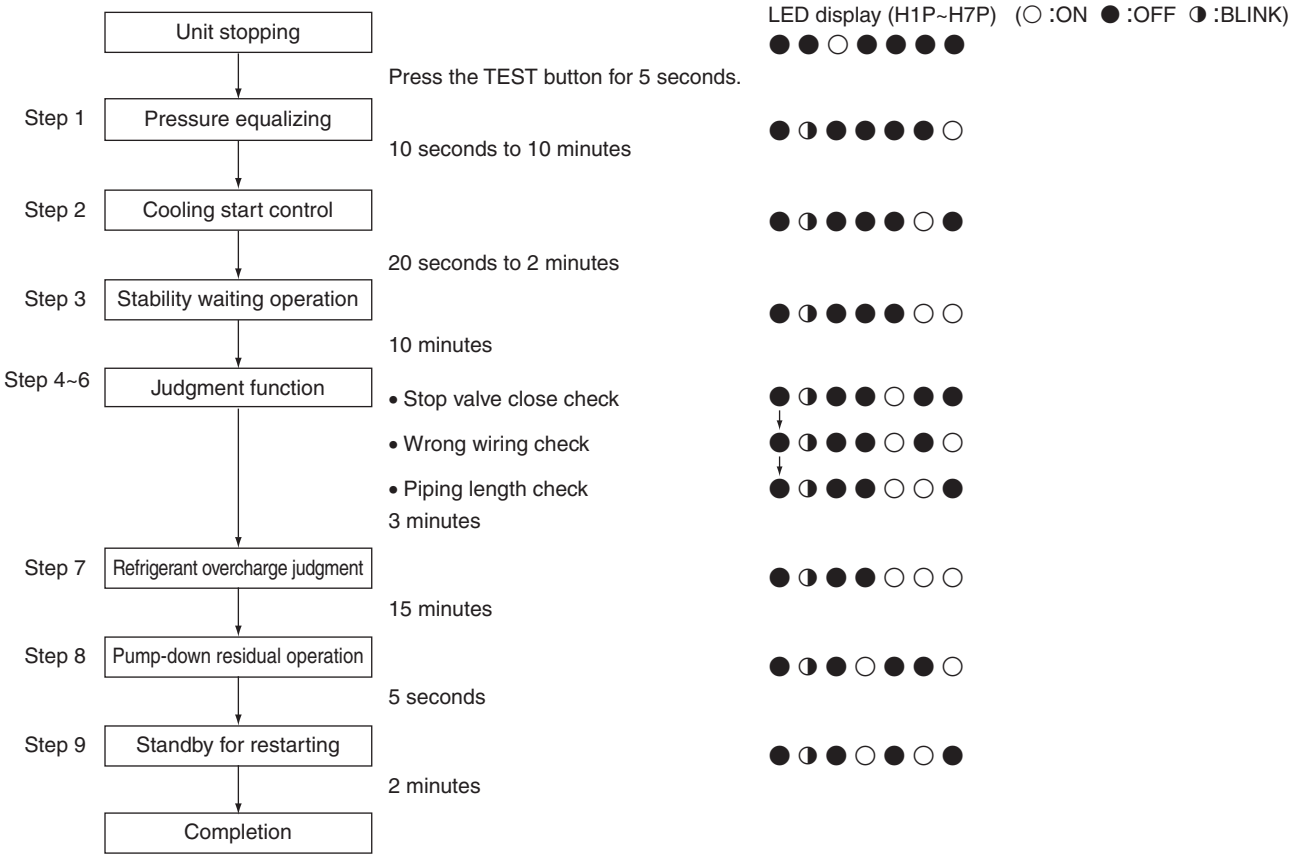
In order to perform vacuuming operation at site, fully open the expansion valves of indoor and outdoor units and turn on some solenoid valves.

<Operating procedure>

(1) In setting mode 2 with units in stop mode, set the item No.21 (refrigerant recovery / vacuuming mode) to ON. The respective expansion valve of indoor and outdoor units are fully opened. **Test Operation** and **Under Centralized Control** are displayed on the remote controller, and the indoor / outdoor unit operation is prohibited.
After setting, do not cancel setting mode 2 until completion of Vacuuming operation.
(2) Use the vacuum pump to perform vacuuming operation.
(3) Press the **MODE** (**BS1**) button once and reset setting mode 2.

2.1.7 Check Operation

To prevent any trouble in the period of installation at site, the system is provided with a test operation mode enabling check for incorrect wiring, stop valve left in closed, coming out (or misplacing with suction pipe thermistor) or discharge pipe thermistor and judgment of piping length, refrigerant overcharging, and learning for the minimum opening degree of electronic expansion valve.



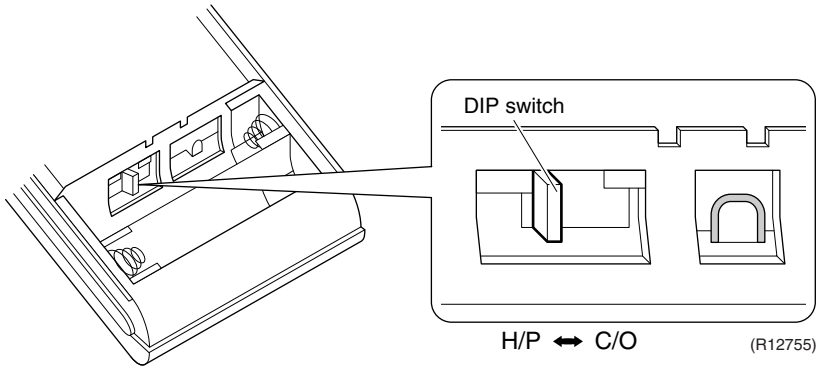
(R12957)

2.2 RA Indoor Unit: CTXS, FTXS, CDXS, FDXS Series

2.2.1 Model Type Setting

ARC452A21, ARC452A23

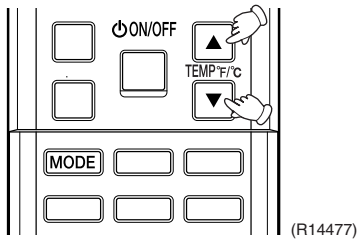
- The remote controller is common to the heat pump model and cooling only model. Use the DIP switch on the remote controller to set the model type.
- Set the DIP switch as shown in the illustration. (The factory set is the heat pump side.)
  - Heat pump model: Set the DIP switch to H/P.
  - Cooling only model: Set the DIP switch to C/O.



2.2.2 Temperature Display Switch

ARC452 Series

- You can select Fahrenheit or Celsius for temperature display.
- Press the **TEMP▲** and **▼** buttons simultaneously for 5 seconds to change the unit of temperature display.



2.2.3 When 2 Units are Installed in 1 Room

Outline

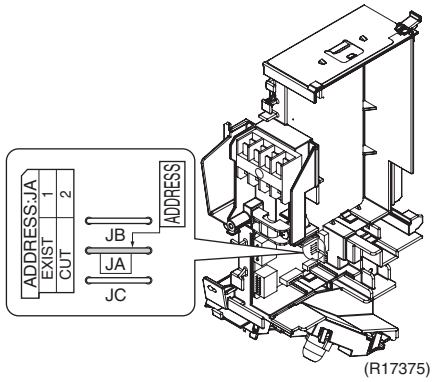
When 2 indoor units are installed in 1 room, 1 of the 2 indoor units and the corresponding wireless remote controller can be set for different address.
Both the indoor unit PCB and the wireless remote controller need alteration.

The method of address setting varies depending on the type of indoor unit and the series of wired remote controller. Refer to the following pages for the appropriate indoor unit and wireless remote controller.

CTXS/FTXS Series

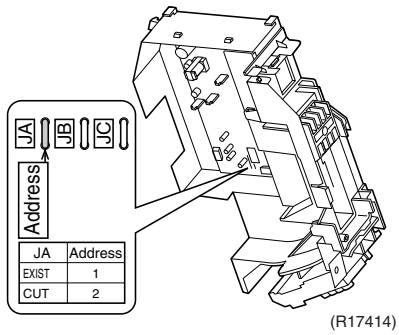
(1) Remove the front grille.
(2) Remove the electrical box.
(3) Remove the shield plate of the electrical box.
(4) Cut the address setting jumper JA on the PCB.

CTXS07LVJU



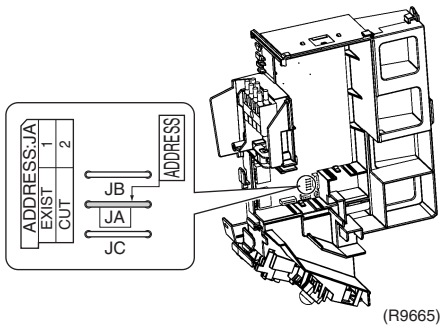
(R17375)

CTXS07JVJU, CTXS09/12HVJU



(R17414)

FTXS15/18/24LVJU

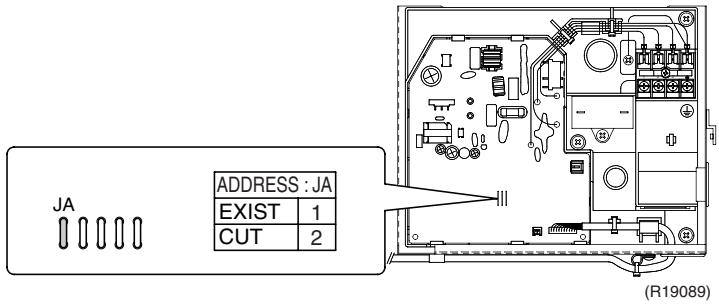


(R9665)

Caution **Replace the PCB if you accidentally cut a wrong jumper.**
Jumpers are necessary for electronic circuit. Improper operation may occur if you cut any of them.

CDXS/FDXS Series

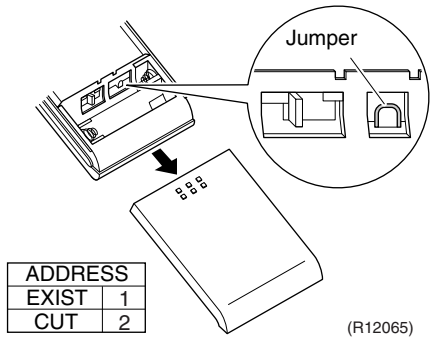
■ Cut the jumper JA on PCB.



Caution **Replace the PCB if you accidentally cut a wrong jumper.**
Jumpers are necessary for electronic circuit. Improper operation may occur if you cut any of them.

Wireless Remote Controller

(1) Remove the cover and take it off.
(2) Cut the address setting jumper.



2.2.4 Jumper Settings

Jumper (on indoor unit PCB)	Function	When connected (factory set)	When cut
JB	Fan speed setting when compressor stops for thermostat OFF. (effective only at cooling operation)	Fan speed setting; Remote controller setting	The fan stops.
JC	Power failure recovery function	Auto-restart	The unit does not resume operation after recovering from a power failure. Timer settings are cleared.

For the location of the jumper, refer to the following pages.
CTXS07LVJU: page 18
CTXS07JVJU, CTXS09/12HVJU: page 20
FTXS15/18/24LVJU: page 22
FDXS09/12LVJU, CDXS15/18/24LVJU: page 24

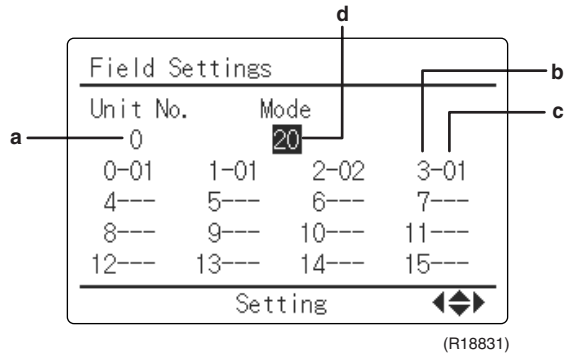
2.3 SA Indoor Unit: FFQ Series

2.3.1 How to Change the Field Settings

Outline

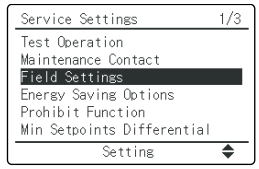
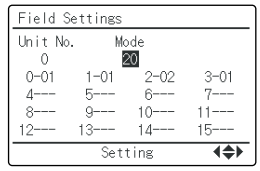
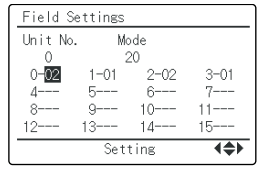
If optional accessories are mounted on the indoor unit, the indoor unit setting may have to be changed. Refer to the instruction manual for each optional accessory.

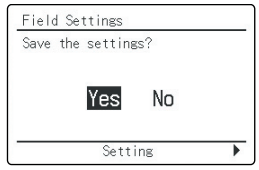
BRC1E72



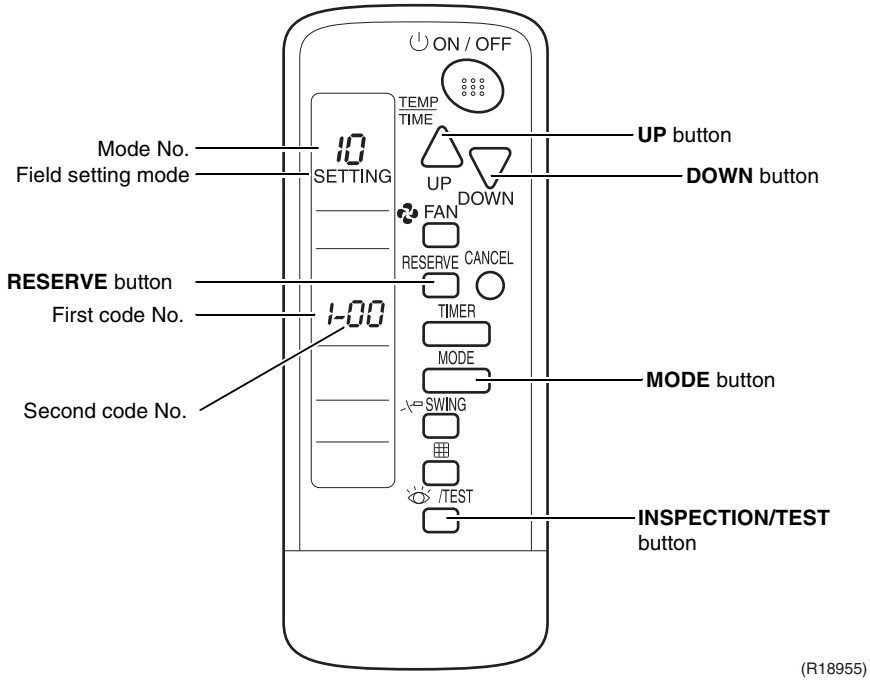
(R18831)

a Unit No.
b First code No.
c Second code No.
d Mode

Step	Action	Remote controller
1	Press and hold the **Cancel** button for 4 seconds to enter the **Service Settings** menu.	
2	Use the ▼▲ buttons to select **Field Settings** and push the **Menu/OK** button.	 (R18832)
3	Use the ▼▲ buttons to select the desired Mode.	 (R18831)
4	During group control, when setting by each indoor unit (**Mode 20, 21, 22** or **23** have been selected), push the ◄ button to highlight and ▼▲ buttons to select the Unit No. to be set. This operation is unnecessary when setting by group.	
5	Highlight the second code No. to be changed using the ◄► buttons, and use the ▼▲ buttons to select the desired second code No.	 (R18833) When setting by group, all of the second code No. that may be set are displayed as *.

Step	Action	Remote controller
6	Push the **Menu/OK** button to display the confirmation screen.	
7	Use the ◄► buttons to select **Yes** and push the **Menu/OK** button.	 (R18834) When multiple setting changes are needed, repeat steps 3 to 7.
8	Push the **Cancel** button 2 times to return to basic screen.	

BRC7E830



(R18955)

To set the field settings, you have to change:

- Mode No.
- First code No.
- Second code No.

Step	Action
1	Press the **INSPECTION/TEST** button for 4 seconds during normal mode to enter the field setting mode.
2	Press the **MODE** button to select the desired mode No.
3	Press the **UP** button to select the first code No.
4	Press the **DOWN** button to select the second code No.
5	Press the **RESERVE** button to confirm the setting.
6	Press the **INSPECTION/TEST** button to return to the normal mode.

2.3.2 Overview of the Field Settings

Mode No. (Note 1)	First Code No.	Description of setting	Second Code No. (Note 2)			
			01	02	03	04
10 (20)	0	Filter cleaning sign interval — Longlife filter	Light — Approx. 2,500 hrs.	Heavy — Approx. 1,250 hrs.	—	—
	2	Priority of thermistor sensors for space temperature control	The return air thermistor is primary and the remote controller thermistor is secondary.	The remote controller thermistor is not utilized. Only the return air thermistor will be utilized.	Only the remote controller thermistor will be utilized.	—
	3	Filter cleaning sign	Display	No display	—	—
	5	Room temperature value reported to multizone controllers	Return air thermistor	Thermistor designated by 10-2 above (Note 3)	—	—
12 (22)	1	Forced ON/OFF from outside function	Forced OFF	ON/OFF operation	—	—
	2	Thermostat differential changeover (setting for when using remote sensor) (Note 4)	1°C (2°F)	0.5°C (1°F)	—	—
13 (23)	1	Selection of airflow direction (setting for when a blocking pad kit has been installed)	4-way flow	3-way flow	2-way flow	—
	4	Airflow direction range setting	Upper	Normal	Lower	—
1c	1	Thermistor sensor for auto changeover and setback control by the remote controller	Utilize the return air thermistor	Utilize the remote controller thermistor	—	—
	3	Access permission level setting	Level 2	Level 3	—	—
1e	2	Setback availability	N/A	Heat only	Cool only	Cool/Heat

: factory setting

Note:

1. Field settings are normally applied to the entire remote control group, however if individual indoor units in the remote control group require specific settings or for confirmation that settings have been established, utilize the mode number in parenthesis.
2. Any features not supported by the installed indoor unit will not be displayed.
3. When mode 10-2-01 is selected, only the return air temperature value is reported to the multizone controller.
4. The actual default value will depend upon the indoor unit model.

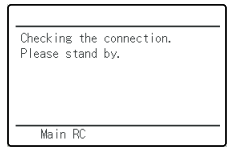
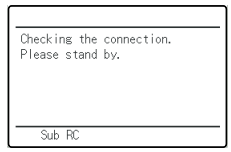
2.3.3 MAIN / SUB Setting when Using 2 Wired Remote Controllers

Outline

The MAIN / SUB setting is necessary when 1 indoor unit is controlled by 2 remote controllers. When you use 2 remote controllers (control panel and separate remote controller), set one to MAIN and the other to SUB.

Detail

The remote controllers are factory set to MAIN, so you only have to change one remote controller from MAIN to SUB.

Step	Action	Remote controller
1	Put on the power for both remote controllers.	
2	Determine which one is the sub/main remote controller.	
3	When **Checking the connection. Please stand by.** is displayed on both remote controllers, push and hold the **Mode** button of the sub remote controller for 4 seconds.	 (R18973)
4	The sub remote controller now displays **Sub RC.** Note) The main remote controller still displays **Main RC.**	 (R18974)
5	After a few seconds, the basic screen is displayed.	

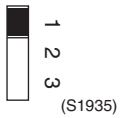
2.3.4 Address and MAIN / SUB Setting for Wireless Remote Controller

Outline

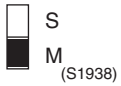
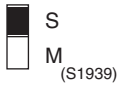
If several wireless remote controller units are used together in the same room (including the case where both group control and individual remote controller control are used together), be sure to set the addresses for the receiver and wireless remote controller. (For group control, see the attached installation manual for the indoor unit.) If using together with a wired remote controller, you have to change the MAIN / SUB setting on the signal receiver PCB.

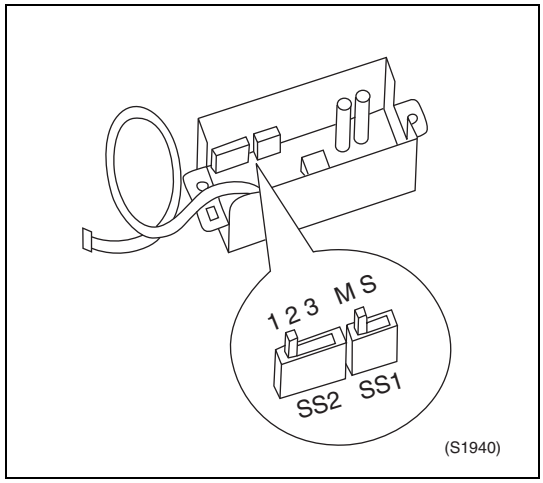
Signal Receiver PCB

Set the address setting switch (SS2) on the signal receiver PCB according to the table below.

Unit No.	No.1	No.2	No.3
Address setting switch (SS2)	 (S1935)	 (S1936)	 (S1937)

When using both a wired and a wireless remote controller for 1 indoor unit, the wired controller should be set to MAIN. Therefore, set the MAIN / SUB setting switch (SS1) on the signal receiver PCB to SUB.

	MAIN	SUB
MAIN / SUB setting switch (SS1)	 (S1938)	 (S1939)



(S1940)

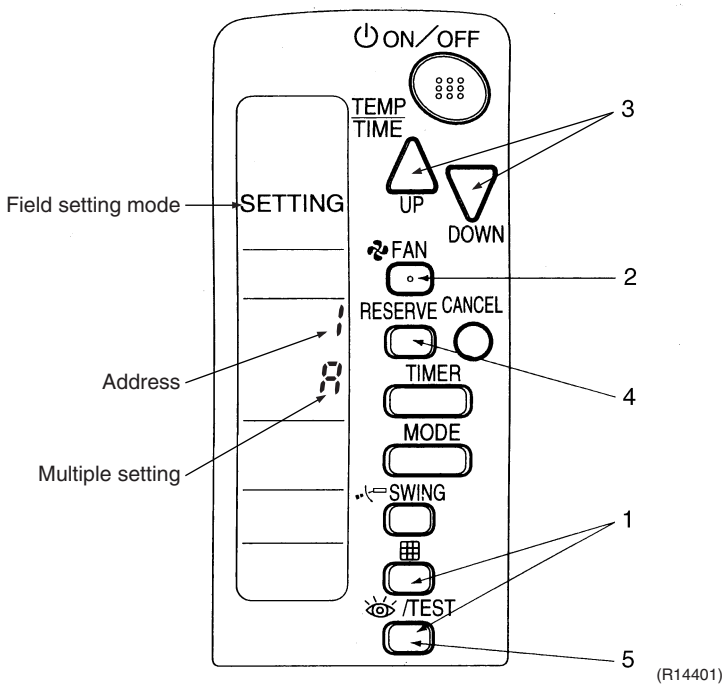
After completing setting, seal off the opening of the address setting switch (SS2) and the MAIN / SUB setting switch (SS1) with the attached sealing pad.

Wireless Remote Controller (Factory Set is 1)

1. Hold down the **FILTER SIGN RESET** (▦) button and the **INSPECTION/TEST** button at the same time for at least 4 seconds to enter the field setting mode. (SETTING is indicated on the display).
2. Press the **FAN** button and select A or b. Each time the button is pressed, the display switches between A and b.
3. Press the **UP** button and **DOWN** button to set the address.

   1 → 2 → 3 → 4 → 5 → 6

   Address can be set from 1 ~ 6, but set it to 1 ~ 3 and to same address as the receiver. (The receiver does not work with address 4 ~ 6.)
4. Press the **RESERVE** button to confirm the setting.
5. Hold down the **INSPECTION/TEST** button for at least 1 second to exit the field setting mode and return to the normal display.



(R14401)

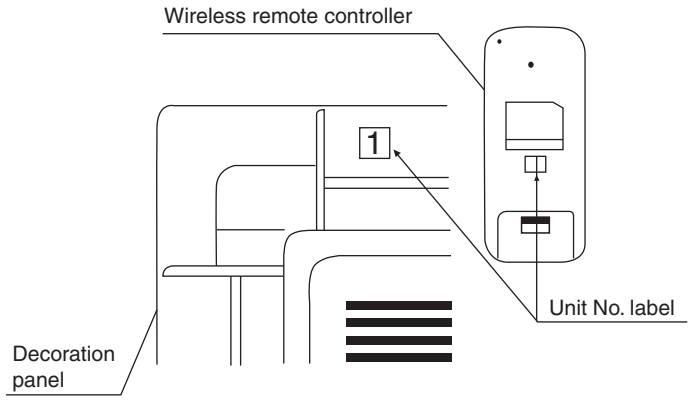
Multiple Settings A/b

When the indoor is controlled by outside controller (central remote controller, etc.), it sometimes does not respond to ON/OFF command or temperature setting command from the remote controller. Check what setting the customer needs and make the multiple setting as shown below.

Remote Controller		Indoor Unit	
Multiple Setting	Remote Controller Display	Controlled by other air conditioners or devices	Other condition
A: Standard	All items are displayed.	ON/OFF command and temperature setting command cannot be accepted. (1 long beep or 3 short beeps emitted)	
b: Multiple display	Operations set only is displayed shortly after execution.	All the commands can be accepted (2 short beeps)	

After Setting

Stick the unit No. label at the decoration panel air discharge outlet as well as on the back of the wireless remote controller.

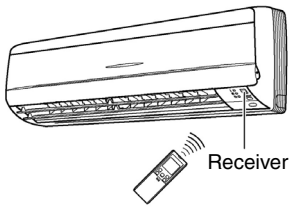


Note: Set the unit No. of the receiver and the wireless remote controller to be the same. If the settings differ, the signal from the remote controller cannot be received.

Part 7
Remote Controller

1. CTXS07JVJU, CTXS09/12HVJU

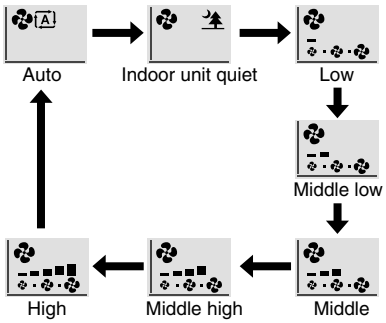
Signal transmitter



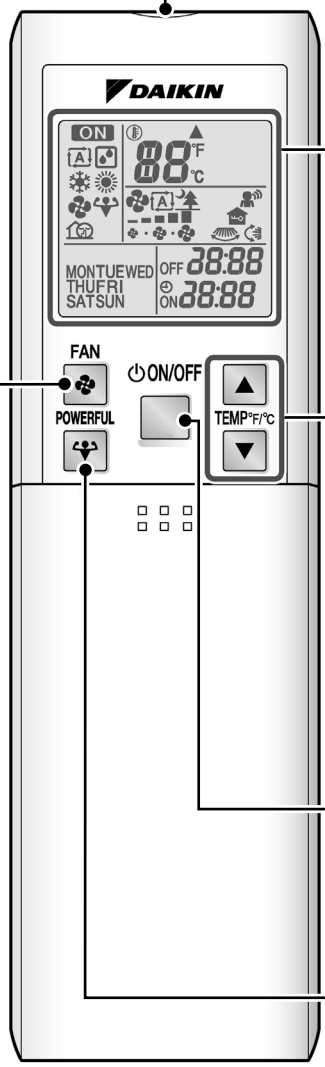
- To use the remote controller, aim the transmitter at the indoor unit. If there is anything to block signals between the unit and the remote controller, such as a curtain, the unit will not operate.
- Do not drop the remote controller. Do not get it wet.
- The maximum distance for communication is approximately 23 ft. (7 m).

FAN setting button

- Selects the airflow rate setting every time you press this button.



- In indoor unit quiet operation, operation sound becomes weak. (The airflow rate also decreases.)
- In DRY operation, the airflow rate setting is not available.



Display (LCD)

- Displays the current settings. (In this illustration, each section is shown with all its displays on for the purpose of explanation.)

TEMPERATURE adjustment buttons

- Changes the temperature setting.

: AUTO	18 ~ 30 °C (64 ~ 86 °F)
: DRY	Not available
: COOL	18 ~ 32 °C (64 ~ 90 °F)
: HEAT	10 ~ 30 °C (50 ~ 86 °F)
: FAN	Not available

ON/OFF button

- Press this button once to start operation. Press once again to stop it.

POWERFUL*1 button

- POWERFUL operation.

(R18850)

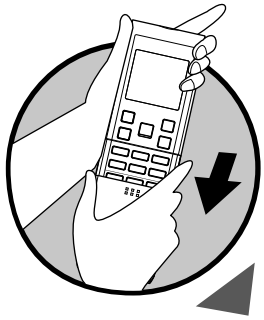
< ARC452A9 >

Reference Refer to the following pages for detail.

★1	POWERFUL operation	P.73

Note: Refer to the operation manual of applicable model for detail. You can download operation manual from DISTRIBUTOR'S PAGE:
DISTRIBUTOR'S PAGE → Product Information → Operation/Installation Manual
(URL: http://global.daikin.com/Daikin/global/Distributors_admin/user_mng/login.php)

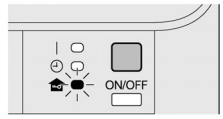
Open the Front Cover



MODE button
- Selects the operation mode.

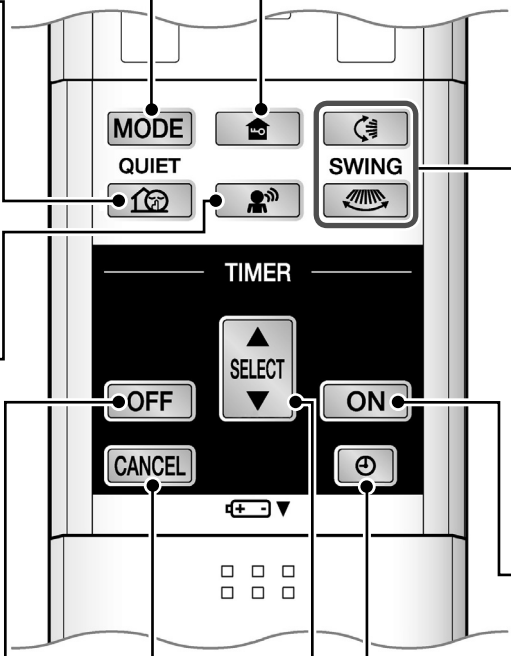
AUTO → DRY → COOL → HEAT → FAN

HOME LEAVE★3 button
- Press this button to start HOME LEAVE operation. The HOME LEAVE lamp lights up.



- Press the button again to cancel HOME LEAVE operation.

QUIET button
- OUTDOOR UNIT QUIET operation.
- QUIET operation is not available in FAN and DRY operation.
- QUIET operation and POWERFUL operation cannot be used at the same time. Priority is given to the function you pressed last.



SWING★4 button
- Adjusts the airflow direction.
- When you press the SWING button, the louver moves up and down, or (and) the fin moves right and left. The louver (fin) stops when you press the SWING button again.

SENSOR button (INTELLIGENT EYE operation★2)
- To start INTELLIGENT EYE operation, press the SENSOR button.
  is displayed on the LCD.
- To cancel the INTELLIGENT EYE operation, press the SENSOR button again.
  disappears from the LCD.

ON TIMER button
- Press this button and adjust the day and time with the SELECT button.
  Press this button again to complete TIMER setting.

OFF TIMER button
- Press this button and adjust the day and time with the SELECT button.
  Press this button again to complete TIMER setting.

CLOCK★5 button

TIMER CANCEL button
- Cancels the timer setting.

SELECT button
- Changes the ON/OFF TIMER settings.

(R18851)

Reference

Refer to the following pages for detail.

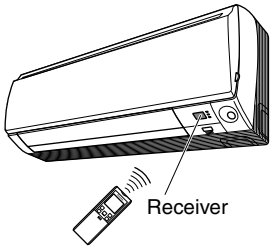
★2	INTELLIGENT EYE operation	P.72
★3	HOME LEAVE operation	P.70

★4	Auto-swing setting	P.63
★5	Clock setting	P.74

Note: Refer to the operation manual of applicable model for detail. You can download operation manual from DISTRIBUTOR'S PAGE:
DISTRIBUTOR'S PAGE → Product Information → Operation/Installation Manual
(URL: http://global.daikin.com/Daikin/global/Distributors_admin/user_mng/login.php)

2. CTXS07LVJU, FTXS15/18/24LVJU

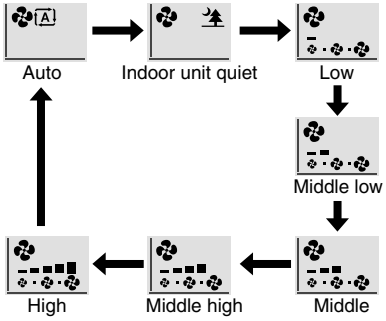
Signal transmitter



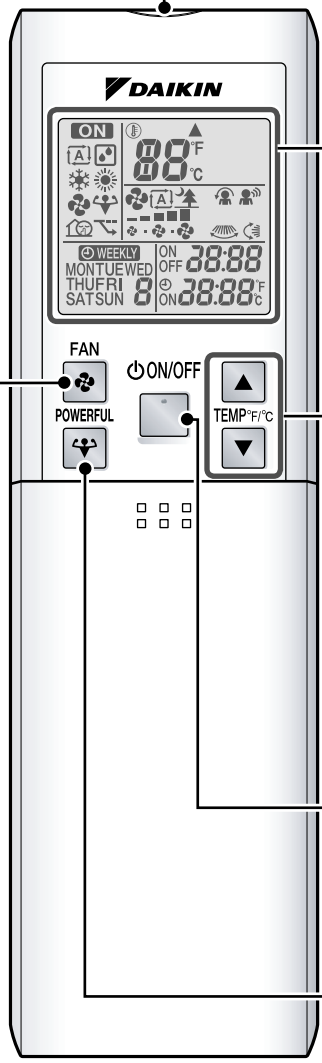
- To use the remote controller, aim the transmitter at the indoor unit. If there is anything to block signals between the unit and the remote controller, such as a curtain, the unit will not operate.
- Do not drop the remote controller. Do not get it wet.
- The maximum distance for communication is approximately 23 ft. (7 m).

FAN setting button

- Selects the airflow rate setting every time you press this button.



- In indoor unit quiet operation, operation sound becomes weak. (The airflow rate also decreases.)
- In DRY operation, the airflow rate setting is not available.



Display (LCD)

- Displays the current settings. (In this illustration, each section is shown with all its displays on for the purpose of explanation.)

TEMPERATURE adjustment buttons

- Changes the temperature setting.

: AUTO	18 ~ 30 °C (64 ~ 86 °F)
: DRY	Not available
: COOL	18 ~ 32 °C (64 ~ 90 °F)
: HEAT	10 ~ 30 °C (50 ~ 86 °F)
: FAN	Not available

ON/OFF button

- Press this button once to start operation. Press once again to stop it.

POWERFUL*1 button

- POWERFUL operation.

(R18852)

< ARC452A21 >

Reference

Refer to the following pages for detail.

★1	POWERFUL operation	P.73

Note: Refer to the operation manual of applicable model for detail. You can download operation manual from DISTRIBUTOR'S PAGE:
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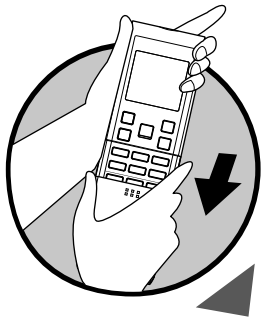
(URL: http://global.daikin.com/Daikin/global/Distributors_admin/user_mng/login.php)

Open the Front Cover



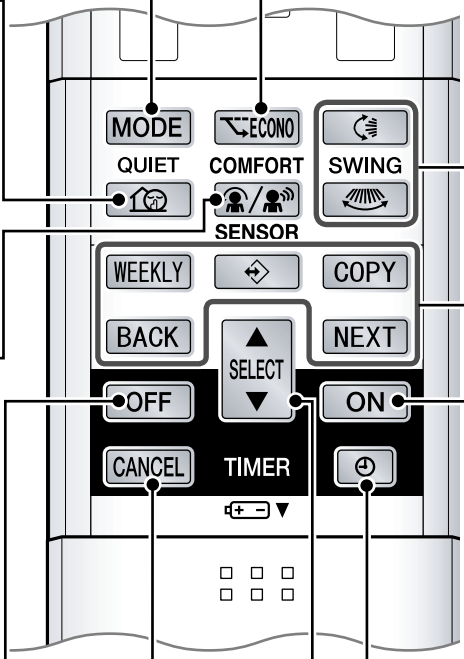
MODE button
- Selects the operation mode.

AUTO → DRY → COOL → HEAT → FAN

ECONO★4 button
- ECONO operation.

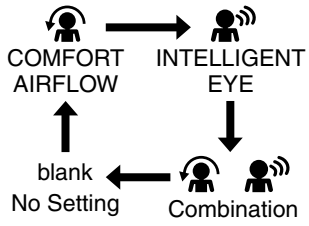
QUIET button
- OUTDOOR UNIT QUIET operation.
- QUIET operation is not available in FAN and DRY operation.
- QUIET operation and POWERFUL operation cannot be used at the same time. Priority is given to the function you pressed last.

SWING★5 button
- Adjusts the airflow direction.
- When you press the SWING button, the louver moves up and down, or (and) the fin moves right and left. The louver (fin) stops when you press the SWING button again.



WEEKLY button
- WEEKLY : WEEKLY button
- : PROGRAM button
- COPY : COPY button
- BACK : BACK button
- NEXT : NEXT button
- WEEKLY TIMER★6 operation.

COMFORT★2/SENSOR★3 button
- Every time you press the COMFORT/SENSOR button, the setting changes in the following order.



ON TIMER button
- Press this button and adjust the day and time with the SELECT button.
  Press this button again to complete TIMER setting.

OFF TIMER button
- Press this button and adjust the day and time with the SELECT button.
  Press this button again to complete TIMER setting.

TIMER CANCEL button
- Cancels the timer setting.
- Cannot be used for the WEEKLY TIMER operation.

CLOCK★7 button

SELECT button
- Changes the ON/OFF TIMER and WEEKLY TIMER settings.

(R18853)

Reference Refer to the following pages for detail.

★2	COMFORT AIRFLOW operation	P.64, 66
★3	INTELLIGENT EYE operation	P.72
★4	ECONO operation	P.69

★5	Auto-swing setting	P.63
★6	WEEKLY TIMER operation	P.75
★7	Clock setting	P.74

Note: Refer to the operation manual of applicable model for detail. You can download operation manual from DISTRIBUTOR'S PAGE:
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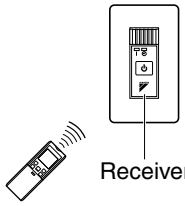
(URL: http://global.daikin.com/Daikin/global/Distributors_admin/user_mng/login.php)

3. FDXS09/12LVJU, CDXS15/18/24LVJU

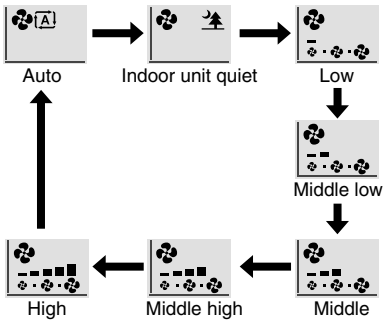
Signal transmitter



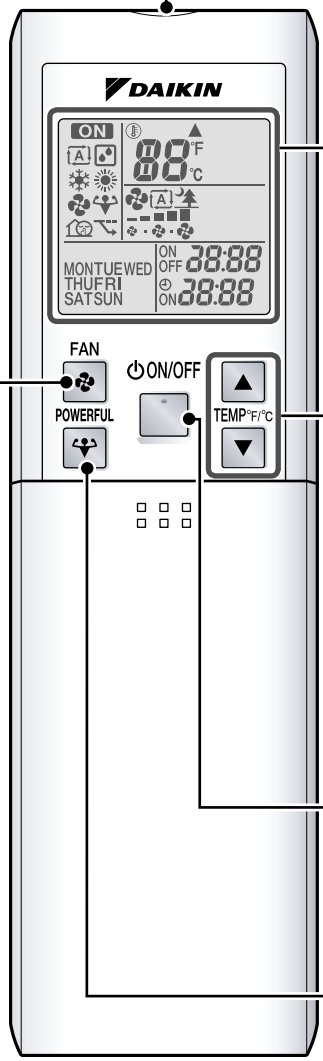
- To use the remote controller, aim the transmitter at the indoor unit. If there is anything to block signals between the unit and the remote controller, such as a curtain, the unit will not operate.
- Do not drop the remote controller. Do not get it wet.
- The maximum distance for communication is approximately 13 ft (4 m).

FAN setting button

- Selects the airflow rate setting every time you press this button.



- In indoor unit quiet operation, operation sound becomes weak. (The airflow rate also decreases.)
- In DRY operation, the airflow rate setting is not available.



Display (LCD)

- Displays the current settings. (In this illustration, each section is shown with all its displays on for the purpose of explanation.)

TEMPERATURE adjustment buttons

- Changes the temperature setting.

: AUTO	18 ~ 30 °C (64 ~ 86 °F)
: DRY	Not available
: COOL	18 ~ 32 °C (64 ~ 90 °F)
: HEAT	10 ~ 30 °C (50 ~ 86 °F)
: FAN	Not available

ON/OFF button

- Press this button once to start operation. Press once again to stop it.

POWERFUL*1 button

- POWERFUL operation.

(R18861)

< ARC452A23 >

Reference Refer to the following pages for detail.

★1	POWERFUL operation	P.73

Note: Refer to the operation manual of applicable model for detail. You can download operation manual from DISTRIBUTOR'S PAGE:
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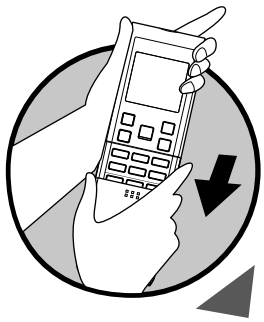
(URL: http://global.daikin.com/Daikin/global/Distributors_admin/user_mng/login.php)

Open the Front Cover



(R18862)

Reference Refer to the following pages for detail.

★2	ECONO operation	P.69
★3	Clock setting	P.74

Note: Refer to the operation manual of applicable model for detail. You can download operation manual from DISTRIBUTOR'S PAGE:
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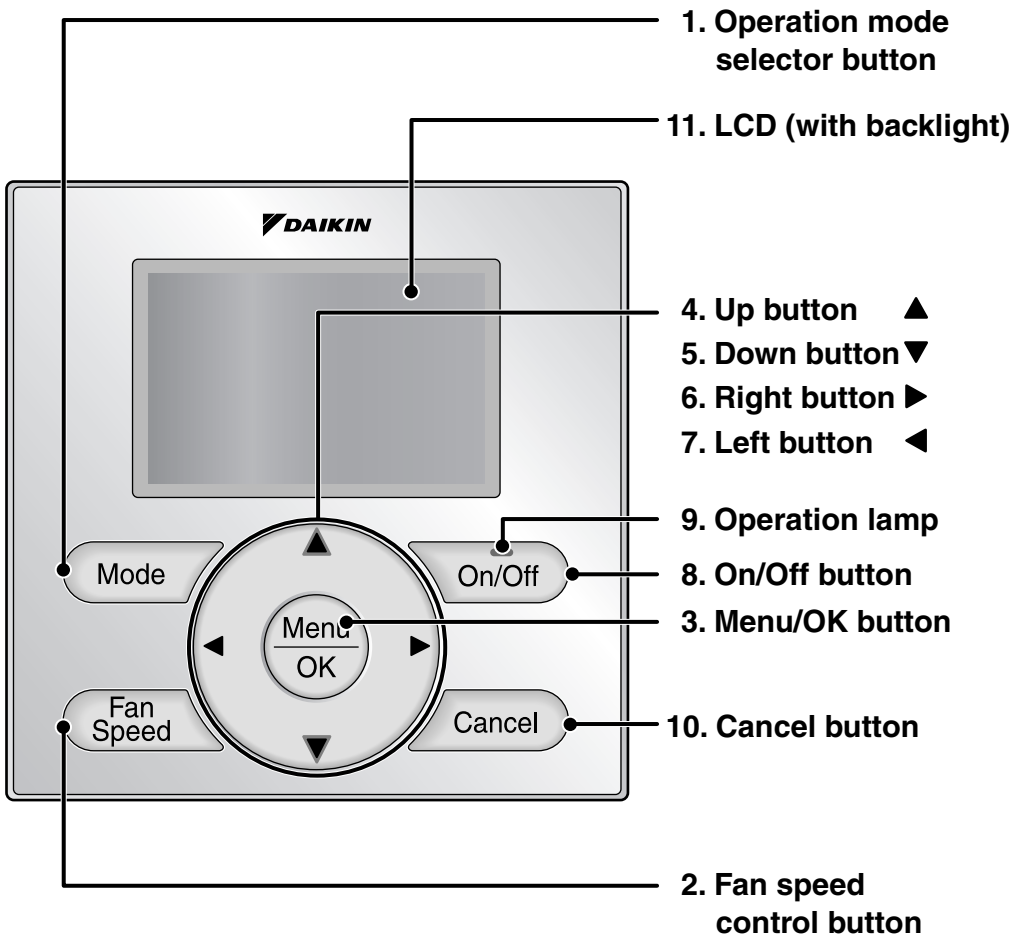
(URL: http://global.daikin.com/Daikin/global/Distributors_admin/user_mng/login.php)

4. FFQ09/12/15/18LVJU

4.1 <BRC1E72> Wired Remote Controller



1. Operation mode selector button

- Press this button to select the operation mode of your preference.
  * Available modes vary with the indoor unit model.

2. Fan speed control button

- Press this button to select the fan speed of your preference.
  * Available fan speeds vary with the indoor unit model.

3. Menu/OK button

- Used to indicate the main menu.
- Used to enter the selected item.

4. Up button ▲

- Used to raise the setpoint.
- The item above the current selection will be highlighted.
  (The highlighted items will be scrolled continuously when the button is continuously pressed.)
- Used to change the selected item.

5. Down button ▼

- Used to lower the setpoint.
- The item below the current selection will be highlighted.
  (The highlighted items will be scrolled continuously when the button is continuously pressed.)
- Used to change the selected item.

6. Right button ▶

- Used to highlight the next items on the right-hand side.
- Each screen is scrolled in the right-hand direction.

7. Left button ◀

- Used to highlight the next items on the left-hand side.
- Each screen is scrolled in the left-hand direction.

8. On/Off button

- Press this button and system will start.
- Press this button again to stop the system.

9. Operation lamp (Green)

- This lamp illuminates solid during normal operation.
- This lamp blinks if a error occurs.

10. Cancel button

- Used to return to the previous screen.

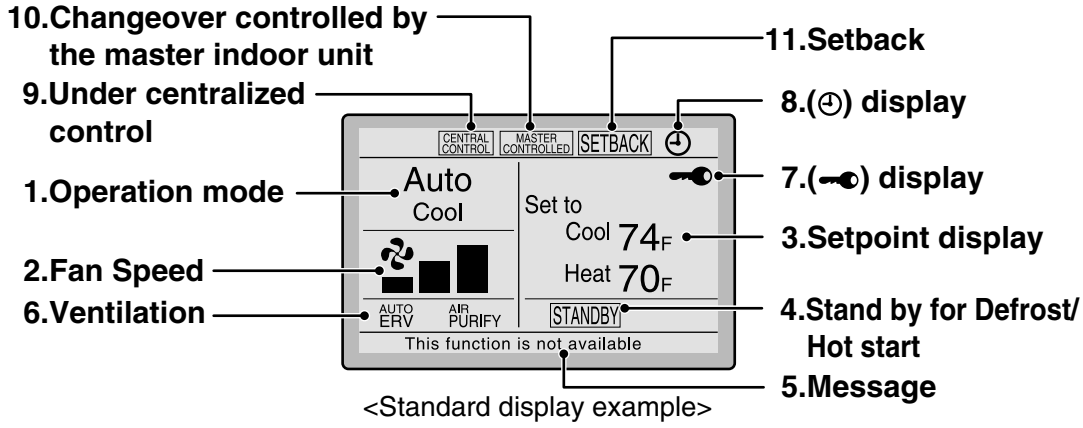
11. LCD (with backlight)

- The backlight will be illuminated for approximately 30 seconds by pressing any button.
- If two remote controllers are used to control a single indoor unit, only the controller to be accessed first will have backlight functionality.

Liquid Crystal Display

- Three types of liquid crystal display (LCD) are available. The standard display is set by default.
- Detailed and Simple displays can be selected in the main menu.
- The displayed contents of the screen vary with the operation mode of the indoor unit model. (The following display will appear when the indoor unit is in Auto mode.)

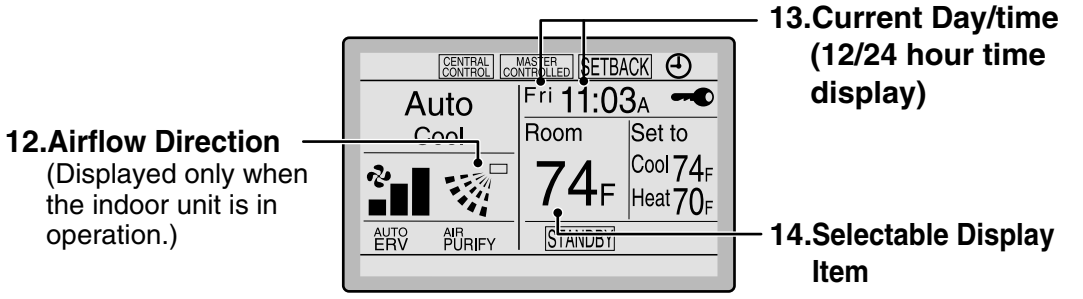
Standard display



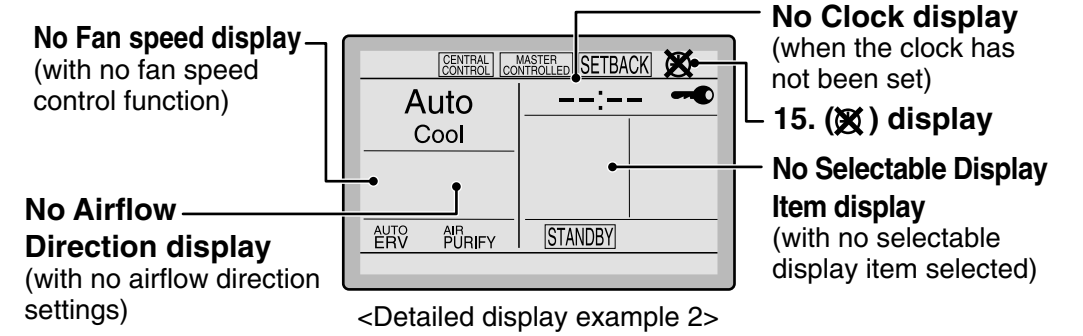
<Standard display example>

Detailed Display

■ **The airflow direction, clock, and selectable item appear on the detailed display screen in addition to the items appearing on the standard display.**

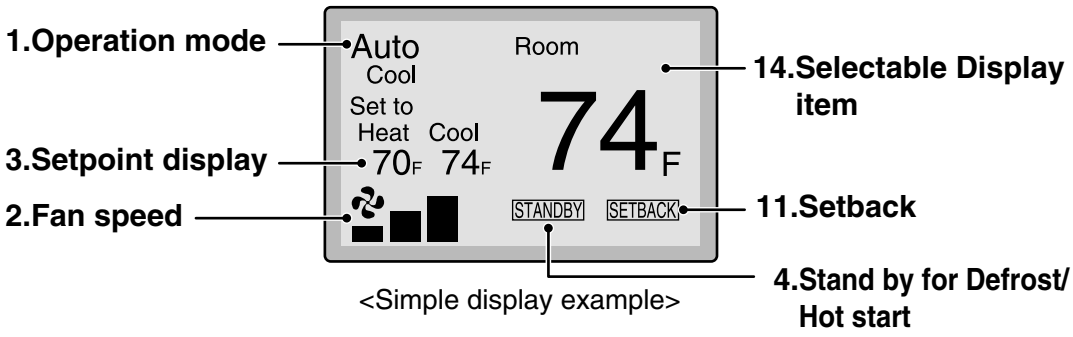


<Detailed display example 1>



<Detailed display example 2>

Simple Display



<Simple display example>

Common precautions for all display modes

- Depending on the field settings, while the indoor unit is stopped, OFF may be displayed instead of the operation mode and/or the setpoint may not be displayed.

1. Operation mode

- Used to display the current operation mode: Cool, Heat, Vent, Fan, Dry or Auto.
- In Auto mode, the actual operation mode (Cool or Heat) will be also displayed.
- Operation mode cannot be changed when OFF is displayed.
  Operation mode can be changed after starting operation.

2. Fan Speed

- Used to display the fan speed that is set for the indoor unit.
- The fan speed will not be displayed if the connected model does not have fan speed control functionality.

3. Setpoint display

- Used to display the setpoint for the indoor unit.
- Use the Celsius/Fahrenheit item in the main menu to select the temperature unit (Celsius or Fahrenheit).

4. Stand by for Defrost/Hot start

STANDBY

If ventilation icon is displayed in this field:

- Indicates that an energy recovery ventilator is connected.
  For details, refer to the Operation Manual of the ERV.

5. Message

The following messages may be displayed.

This function is not available

- Displayed for a few seconds when an **Operation** button is pressed and the indoor unit does not provide the corresponding function.
- In a remote control group, the message will not be displayed if at least one of the indoor units provides the corresponding function.

Error: Push Menu button
Warning: Push Menu button

- Displayed if an error or warning is detected.

Time to clean filter
Time to clean element
Time to clean filter & element

- Displayed as a reminder when it is time to clean the filter or element.

6. Ventilation

- Displayed when a energy recovery ventilator is connected.
- **Ventilation Mode icon.** (AUTO ERV ERV BYPASS)
  These icons indicate the current ventilation mode (ERV only) (AUTO, ERV, BYPASS).
- **Air Purify ICON** (AIR PURIFY)
  This icon indicates that the air purifying unit (option) in operation.

7. display

- Displayed when the key lock is set.

8. display

- Displayed if the Schedule or Off timer is enabled.

9. Under Centralized control CENTRAL CONTROL

- Displayed if the system is under the management of a multi-zone controller (option) and the operation of the system through the remote controller is limited.

10. Changeover controlled by the master indoor unit MASTER CONTROLLED

(VRV only)

- Displayed when another indoor unit on the system has the authority to change the operation mode between cool and heat.

11.Setback SETBACK

- The setback icon flashes when the unit is turned on under the setback control.

12.Airflow Direction

- Displayed when the airflow direction and swing are set.
- If the connected indoor unit model does not include oscillating louvers this item will not be displayed.

13.Current Day/Time (12/24 hour time display)

- Displayed if the clock is set.
- If the clock is not set, -- : -- will be displayed.
- 12 hour time format is displayed by default.
- Select 12/24 hour time display option in the main menu under Clock & Calendar.

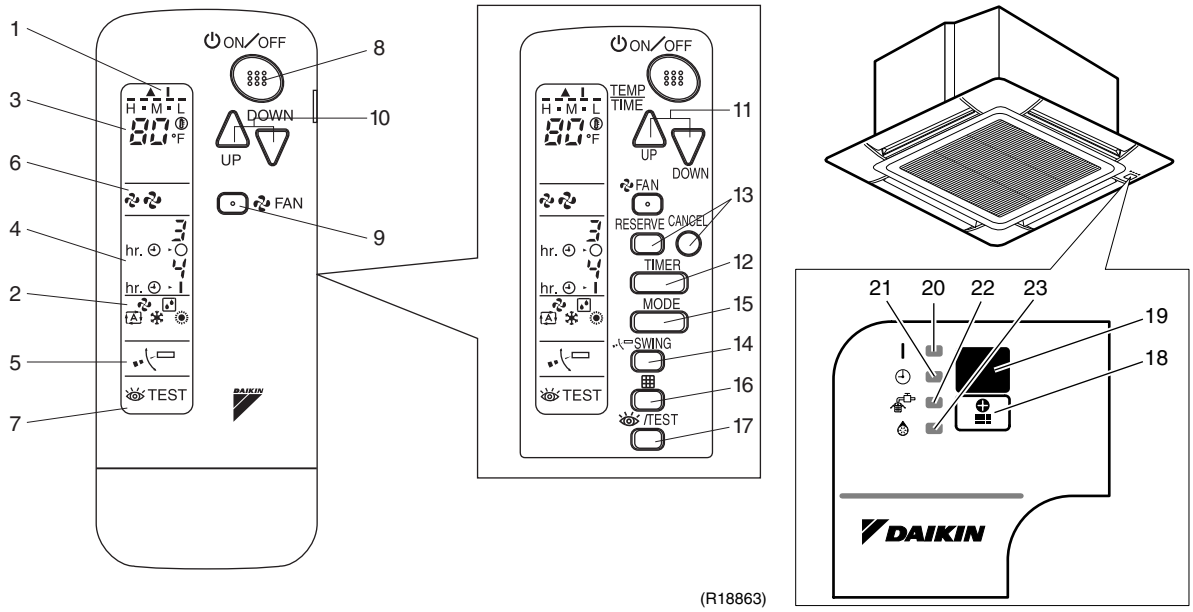
14.Selectable Display Item

- Displayed if the selectable display item is selected.
- Room temperature is selected by default.

15. ☒ display

- Displayed when the clock needs to be set.
- The schedule function will not work unless the clock is set.

4.2 <BRC7E830> Wireless Remote Controller



1	**DISPLAY ▲ (SIGNAL TRANSMISSION)**
	This lights up when a signal is being transmitted.
2	**DISPLAY , , , , (OPERATION MODE)**
	This display shows the current OPERATION MODE.
3	**DISPLAY (SET TEMPERATURE)**
	This display shows the set temperature.
4	**DISPLAY (PROGRAMMED TIME)**
	This display shows PROGRAMMED TIME of the system start or stop.
5	**DISPLAY (AIRFLOW LOUVER)**
6	**DISPLAY (FAN SPEED)**
	The display shows the set fan speed.
7	**DISPLAY TEST (INSPECTION/ TEST RUN)**
	When the INSPECTION/TEST RUN BUTTON is pressed, the display shows the system mode is in.
8	**ON/OFF BUTTON**
	Press the button and the system will start. Press the button again and the system will stop.
9	**FAN SPEED CONTROL BUTTON**
	Press this button to select the fan speed, HIGH or LOW, of your choice.
10	**TEMPERATURE SETTING BUTTON**
	Use this button for SETTING TEMPERATURE (Operates with the front cover of the remote controller closed.)

11	**PROGRAMMING TIMER BUTTON**
	Use this button for programming START and/or STOP time. (Operates with the front over of the remote controller opened.)
12	**TIMER MODE START/STOP BUTTON**
13	**TIMER RESERVE/CANCEL BUTTON**
14	**AIRFLOW DIRECTION ADJUST BUTTON**
15	**OPERATION MODE SELECTOR BUTTON**
	Press this button to select OPERATION MODE.
16	**FILTER SIGN RESET BUTTON**
	Refer to the section of MAINTENANCE in the operation manual attached to the indoor unit.
17	**INSPECTION/TEST RUN BUTTON**
	This button is used only by qualified service persons for maintenance purposes.
18	**EMERGENCY OPERATION SWITCH**
	This switch is readily used if the remote controller does not work.
19	**RECEIVER**
	This receives the signals from the remote controller.
20	**OPERATING INDICATOR LAMP (Red)**
	This lamp stays lit while the air conditioner runs. It flashes when the unit is in trouble.
21	**TIMER INDICATOR LAMP (Green)**
	This lamp stays lit while the timer is set.
22	**AIR FILTER CLEANING TIME INDICATOR LAMP (Red)**
	Lights up when it is time to clean the air filter.
23	**DEFROST LAMP (Orange)**
	Lights up when the defrosting operation has started.

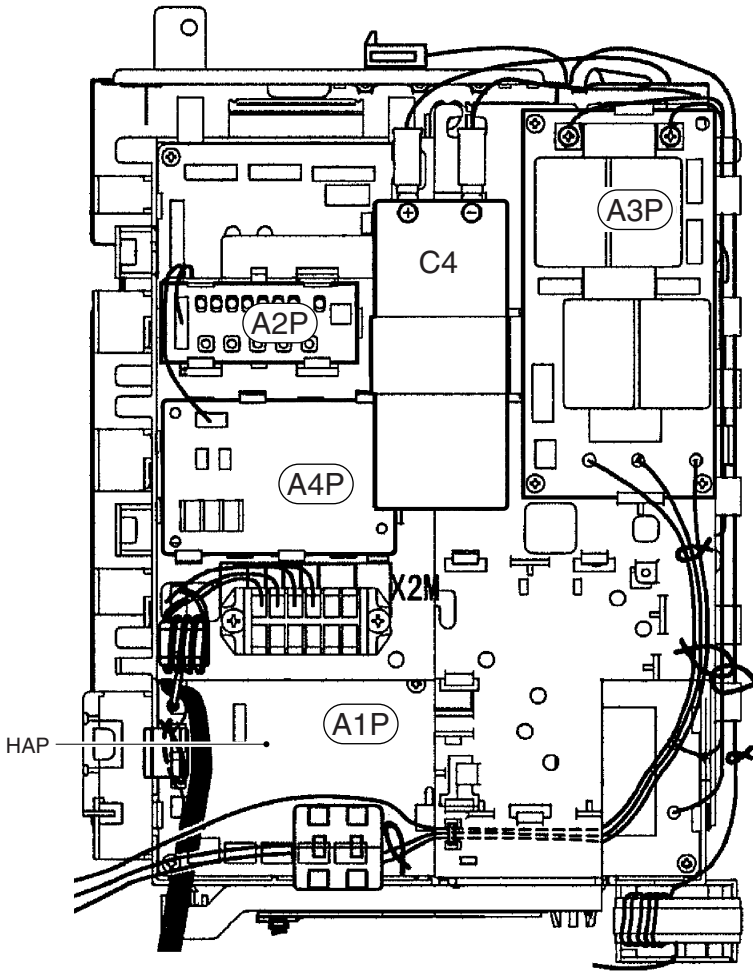
Part 8
Troubleshooting

1. Troubleshooting with LED

1.1 Outdoor Unit

1.1.1 Main PCB (A1P)

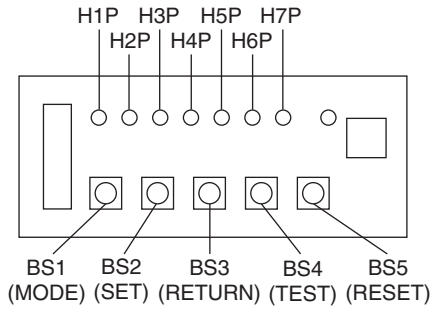
The main PCB (A1P) has a green LED (HAP). When the microcomputer works in order, the LED blinks.



(R13068)

1.1.2 Service PCB (A2P)

The service PCB (A2P) has orange LEDs (H1P ~ H7P). You can identify the error code with these LEDs in monitor mode.



(R13069)

Error code indication in monitor mode

<Monitor mode>

Press the **MODE** (**BS1**) button and enter the monitor mode.

<Selection of check item>

Press the **SET** (**BS2**) button and select a check item according to the LED pattern of No.14~16 and No.20~22.
Refer to page 102 for check items.

<Confirmation of malfunction 1>

Press the **RETURN** (**BS3**) button once to display the first digit of error code.

<Confirmation of malfunction 2>

Press the **SET** (**BS2**) button once to display the second digit of error code.

Detail description on next page.

<Confirmation of malfunction 3>

Press the **SET** (**BS2**) button once to display the malfunction location.

<Confirmation of malfunction 4>

Press the **SET** (**BS2**) button once to display the malfunction unit and the malfunction location.

Press the **RETURN** (**BS3**) button and return to the initial status of monitor mode.

∗ If you become unsure of how to proceed, press the **MODE** (**BS1**) button and return to the setting mode 1.

Contents of malfunction		Error code
Outdoor unit PCB abnormality	Detection of DIII-Net	E1
Actuation of high pressure switch	High pressure switch activated (S1PH)	E3
Actuation of low pressure sensor	Abnormal Pe	E4
Compressor motor lock	Detection of compressor lock	E5
Outdoor fan motor abnormality	Detection of fan motor lock (M1F)	E7
	Detection of fan motor lock (M2F)	
Moving part of electronic expansion valve (Y1E, Y3E) abnormality	Y1E (main)	E9
	Y3E (subcooling)	
Outdoor temperature thermistor (R1T) abnormality	Short or open circuit (R1T)	H9
Discharge pipe temperature abnormality	Abnormal Tdi	F3
Refrigerant overcharged	Refrigerant overcharge	F6
Discharge pipe thermistor (R2T) abnormality	Short or open circuit (R2T)	J3
Suction pipe thermistor (R3T, R5T) abnormality	Short or open circuit (suction 1: R3T)	J5
	Short or open circuit (suction 2: R5T)	
Outdoor heat exchanger thermistor (R4T) abnormality	Short or open circuit (R4T)	J6
Outdoor liquid pipe thermistor (R7T) abnormality	Short or open circuit (R7T)	J7
Subcooling heat exchanger gas pipe thermistor (R6T) abnormality	Short or open circuit (R6T)	J9
High pressure sensor abnormality	Short or open circuit (S1NPH)	JA
Low pressure sensor abnormality	Short or open circuit (S1NPL)	JC
Outdoor unit PCB abnormality	Faulty IPM	L1
	Abnormal current sensor offset	
	Abnormal IGBT	
	Faulty current sensor	
	Abnormal SP-PAM overvoltage	
Radiation fin temperature rise	Overheating (FINTH)	L4
Inverter compressor abnormality	Inverter instantaneous overcurrent	L5
Inverter current abnormality	Electronic thermal switch 1	L8
	Electronic thermal switch 2	
	Out-of-step	
	Speed down after startup	
	Lightening detection	
Compressor start-up error	Stall prevention (Current increasing)	L9
	Stall prevention (Faulty start up)	
	Abnormal waveform in startup	
	Out-of-step	

○ : ON ● : OFF ◑ : Blink

Error code	Confirmation of malfunction 1							Confirmation of malfunction 2							Confirmation of malfunction 3							Confirmation of malfunction 4						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P
E1	◑			●	●	◑	◑	◑			●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
E3								◑			●	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
E4								◑			●	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
E5								◑			●	◑	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
E7								◑			●	◑	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	◑	∗1	
															◑	○	●	●	●	●	◑	◑	○	○	●	◑		
E9								◑			◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	◑	●		
H9	◑			●	◑	●	●	◑			◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	∗1	
F3	◑			●	◑	●	◑	◑			●	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	∗1	
F6								◑			●	◑	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
J3	◑			●	◑	◑	●	◑			●	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
J5								◑			●	◑	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
J6								◑			●	◑	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
J7								◑			●	◑	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	∗1	
J9								◑			◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
JA								◑			◑	●	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
JC								◑			◑	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
L1	◑			●	◑	◑	◑	◑			●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	●	●
															◑	○	●	●	●	●	●	◑	○	○	●	●	●	◑
															◑	○	●	●	●	●	●	◑	○	○	●	●	◑	●
															◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
															◑	○	●	●	●	●	●	◑	○	○	●	◑	●	●
L4								◑			●	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
L5								◑			●	◑	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
L8								◑			◑	●	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
															◑	○	●	●	●	●	●	◑	○	○	◑	●	∗1	
															◑	○	●	●	●	●	◑	◑	○	○	●	●		
L9								◑			◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
															◑	○	●	●	●	●	●	◑	○	○	◑	●		

Display of contents of malfunction (first digit)

Display of contents of malfunction (second digit)

Display 1 of malfunction in detail

Display 2 of malfunction in detail

∗1		
	● ●	Master
	● ◑	Slave1
	◑ ●	Slave2
	◑ ◑	System

<Monitor mode>

Press the **MODE** (**BS1**) button and enter the monitor mode.

<Selection of check item>

Press the **SET** (**BS2**) button and select a check item according to the LED pattern of No.14~16 and No.20~22.
Refer to page 102 for check items.

<Confirmation of malfunction 1>

Press the **RETURN** (**BS3**) button once to display the first digit of error code.

<Confirmation of malfunction 2>

Press the **SET** (**BS2**) button once to display the second digit of error code.

<Confirmation of malfunction 3>

Press the **SET** (**BS2**) button once to display the malfunction location.

<Confirmation of malfunction 4>

Press the **SET** (**BS2**) button once to display the malfunction unit and the malfunction location.

Press the **RETURN** (**BS3**) button and return to the initial status of monitor mode.

∗ If you become unsure of how to proceed, press the **MODE** (**BS1**) button and return to the setting mode 1.

Detail description on next page.

Contents of malfunction		Error code
High voltage of capacitor in main inverter circuit	Imbalance of inverter power supply voltage	P1
Radiation fin thermistor abnormality	Faulty thermistor of inverter fin	P4
Low pressure drop due to refrigerant shortage or electronic expansion valve abnormality	Refrigerant shortage alarm	U0
Power supply insufficient or instantaneous failure	Insufficient Inverter voltage	U2
	Faulty charge of capacitor in main inverter circuit	
	Malfunction due to SP-PAM overvoltage	
	Malfunction due to P-N short circuit	
Check operation is not conducted.		U3
Transmission error between indoor unit and BP unit	I/O transmission error	U4
	I/O transmission error	
Transmission error between indoor unit and outdoor unit in the same system	Indoor unit system abnormal in other system or other indoor unit system abnormal in own system	U9
Field setting switch abnormality or Excessive number of indoor units	System transmission malfunction	UA
	Overconnection malfunction of indoor units	
	Malfunction of field setting	
	Refrigerant abnormal	
	Connection error (BP unit)	
System abnormality, refrigerant system address undefined	Wiring error (Auto-address error)	UH
System is not set yet	Conflict in wiring and piping	UF

○ : ON ● : OFF ◑ : Blink

Error code	Confirmation of malfunction 1							Confirmation of malfunction 2							Confirmation of malfunction 3							Confirmation of malfunction 4						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P
P1	◑			◑	●	●	●	◑			●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	*1	
P4								◑			●	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
U0	◑			◑	●	●	◑	◑			●	●	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
U2								◑			●	●	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●	*1	
															◑	○	●	●	●	●	●		○	○	●	◑		
															◑	○	●	●	●	●	●	◑	○	○	●	●	◑	●
															◑	○	●	●	●	●	●	◑	○	○	●	●	●	◑
U3								◑			●	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
															◑	○	●	●	●	●	●	◑	○	○	●	◑	◑	◑
U4								◑			●	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
															◑	○	●	●	●	●	●	◑	○	○	●	◑	◑	◑
U9								◑			◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
UA								◑			◑	●	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
															◑	○	●	●	●	●	●	◑	○	○	●	◑	◑	◑
															◑	○	●	●	●	●	●	◑	○	○	◑	●	◑	◑
															◑	○	●	●	●	●	◑	◑	○	○	●	●	◑	◑
															◑	○	●	●	●	◑	●	◑	○	○	●	◑	◑	◑
UH								◑			◑	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
UF								◑			◑	◑	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑

Display of contents of malfunction (first digit)

Display of contents of malfunction (second digit)

Display 1 of malfunction in detail

Display 2 of malfunction in detail

*1

●	●	Master
●	◑	Slave1
◑	●	Slave2
◑	◑	System

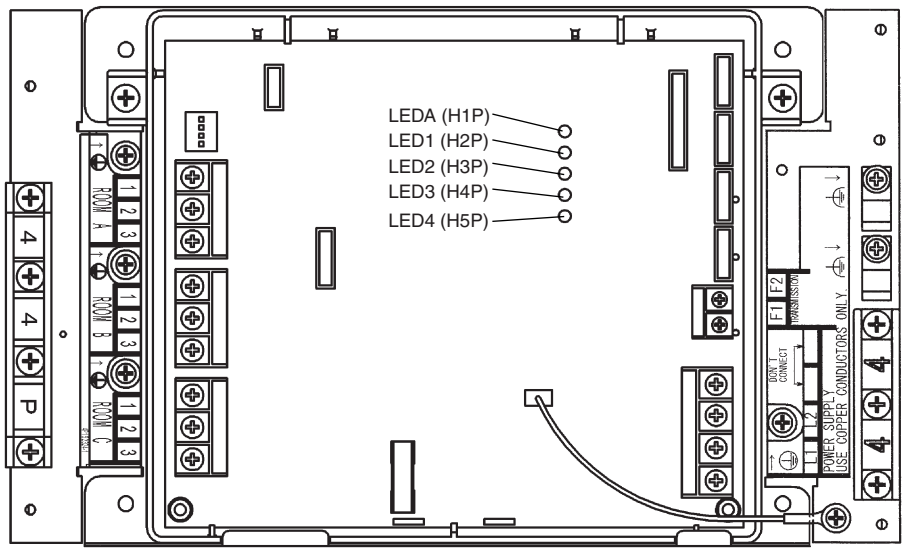
1.2 Branch Provider (BP) Unit

☼: ON, ●: OFF, ◑: Blinks, —: No matter

Green : Blinks in normal condition
Red : OFF in normal condition

BP Unit LED Indication					Description
Green	Red				
A	1	2	3	4	
◑	●	●	●	●	Normal condition
◑	☼	●	●	●	Defective electronic expansion valve or anti-icing control in non-operating indoor unit
◑	☼	☼	●	●	Defective thermistor
◑	☼	●	☼	☼	Freeze-up protection control in operating indoor unit or standby indoor unit
☼	—	—	—	—	Defective BP unit PCB (See note.)
●	—	—	—	—	Power supply abnormality (See note.)

Note: Turn the power off then on again. If the LED display recurs, the BP unit PCB is defective.



(R19090)

1.3 Indoor Unit

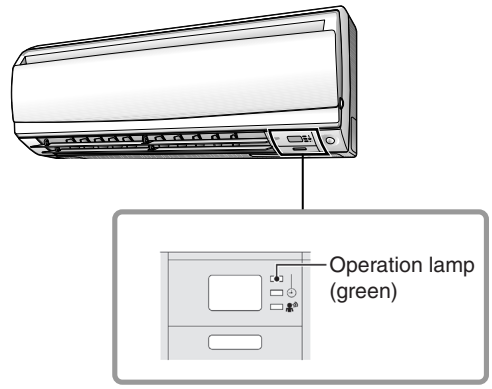
Operation Lamp

The operation lamp blinks 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.
2. When a signal transmission error occurs between the indoor and outdoor units.

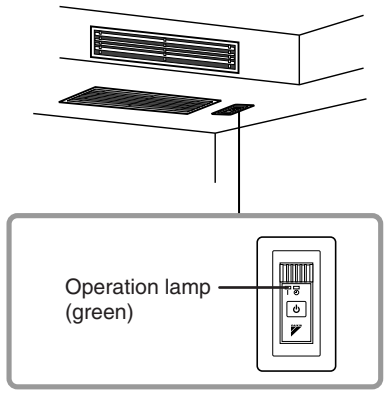
In either case, conduct the diagnostic procedure described in the following pages.

CTXS/FTXS series
(Ex: CTXS07LVJU, FTXS09/12LVJU)



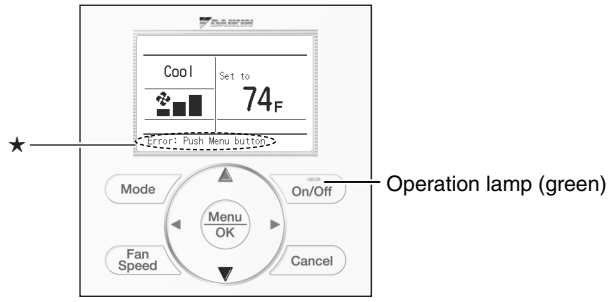
(R13534)

CDXS/FDXS series



(R16589)

BRC1E72



★The error or warning message also blinks on the basic screen. (R18816)

BRC7E830

In case of wireless remote controller, a signal receiver PCB and a display PCB are installed on indoor unit. When the error occurs, the operation lamp on the display PCB blinks.

Caution: When operation stops suddenly and the operation lamp blinks, it could be operation mode conflict. Check followings;
Are the operation modes all the same for the indoor units connected to multi system outdoor unit? If not, set all the indoor units to the same operation mode and confirm that the operation lamp is not blinking.
Moreover, when the operation mode is automatic, set all the indoor unit operation mode as cooling or heating 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 different operation mode is set later. (The first set operation mode has priority.)

Service Monitor

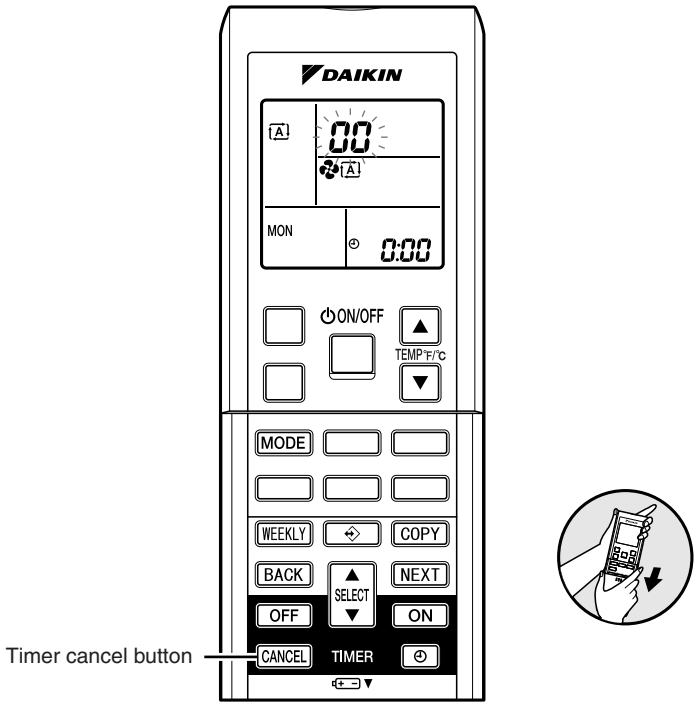
The indoor unit has one green LED (LED A) on the control PCB. When the microcomputer works in order, the LED A blinks.

2. Service Check Function

2.1 CTXS, FTXS, CDXS, FDXS Series

Check Method 1

1. When the timer cancel button is held down for 5 seconds, 00 is displayed on the temperature display screen.



< ARC452 Series >

(R14460)

2. Press the timer cancel button repeatedly until a long beep sounds.

■ The code indication changes in the sequence shown below.

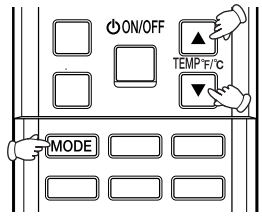
No.	Code	No.	Code	No.	Code
1	00	13	C7	25	UA
2	U4	14	A3	26	UH
3	L5	15	H8	27	P4
4	E6	16	H9	28	L3
5	H6	17	C9	29	L4
6	H0	18	C4	30	H7
7	A6	19	C5	31	U2
8	E7	20	J3	32	EA
9	U0	21	J6	33	AH
10	F3	22	E5	34	FA
11	A5	23	A1	35	H1
12	F6	24	E1	36	P9

Note:

1. A short beep or two consecutive beeps indicate non-corresponding codes.
2. To return to the normal mode, hold the timer cancel button down for 5 seconds. When the remote controller is left untouched for 60 seconds, it also returns to the normal mode.
3. Not all the error codes are displayed. When you cannot find the error code, try the check method 2. (→ Refer to page 146.)

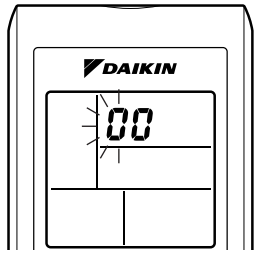
Check Method 2

1. Press the 3 buttons (**TEMP▲**, **TEMP▼**, **MODE**) at the same time to enter the diagnosis mode.



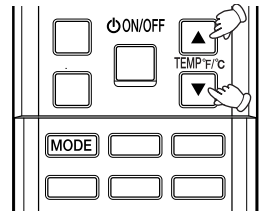
(R14550)

The left-side number blinks.



(R9430)

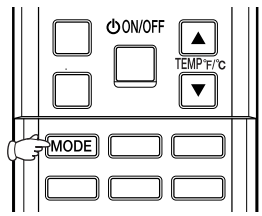
2. Press the **TEMP** ▲ or ▼ button and change the number until you hear the two consecutive beeps or the long beep.



(R14551)

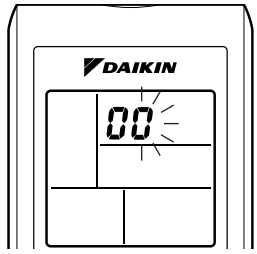
3. Diagnose by the sound.
   ★beep : The left-side number does not correspond with the error code.
   ★two consecutive beeps : The left-side number corresponds with the error code but the right-side number does not.
   ★long beep : Both the left-side and right-side number correspond with the error code. The numbers indicated when you hear the long beep are the error code.
   Error codes and description → Refer to page 154, 155.

4. Press the **MODE** button.



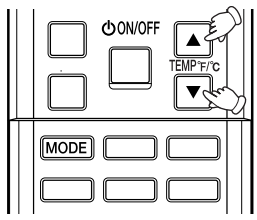
(R14552)

The right-side number blinks.



(R9429)

5. Press the **TEMP** ▲ or ▼ button and change the number until you hear the long beep.

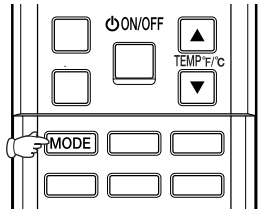


(R14547)

6. Diagnose by the sound.
   ★beep : The left-side number does not correspond with the error code.
   ★two consecutive beeps : The left-side number corresponds with the error code but the right-side number does not.
   ★long beep : Both the left-side and right-side number corresponds with the error code.

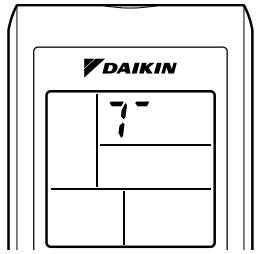
7. Determine the error code.
   The numbers indicated when you hear the long beep are the error code.
   Error codes and description → Refer to page 154, 155.

8. Press the **MODE** button to exit from the diagnosis mode.



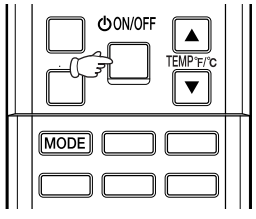
(R14548)

   The display "7" means the test operation mode.
   Refer to page 93 for test operation.



(R9879)

9. Press the **ON/OFF** button twice to return to the normal mode.

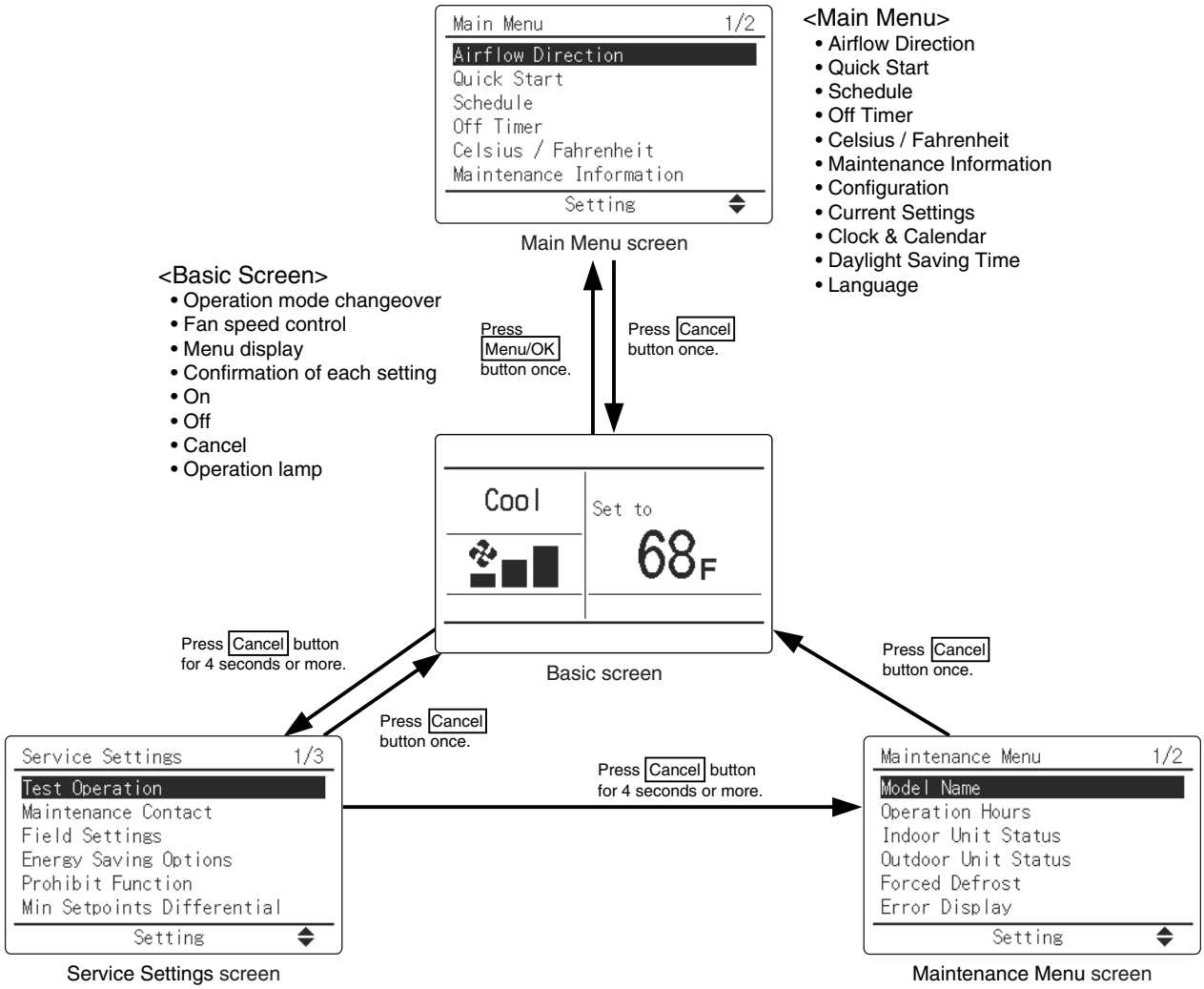


(R14549)

Note: When the remote controller is left untouched for 60 seconds, it returns to the normal mode.

2.2 FFQ Series
2.2.1 BRC1E72

Relations
Between Modes

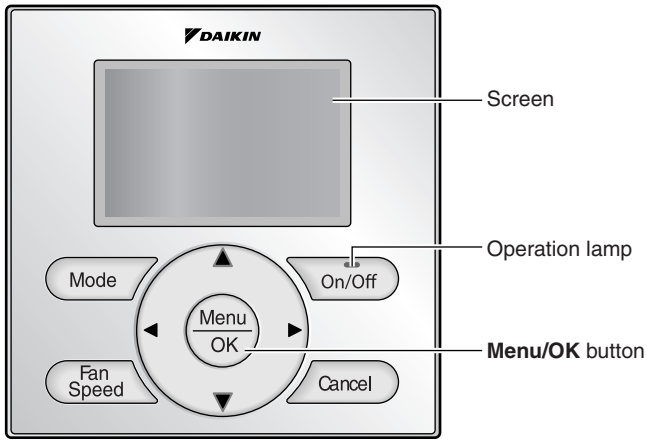


<Service Settings>
- Test Operation
- Maintenance Contact
- Field Settings
- Energy Saving Options
- Prohibit Function
- Min Setpoints Differential
- Group Address
- Indoor unit AIRNET Address
- Outdoor unit AIRNET Address
- Error History
- Indoor Unit Status
- Outdoor Unit Status
- Forced Fan ON
- Switch Main Sub Controller
- Filter Indicator
- Test Filter Auto Clean
- Brush / Filter Ind.
- Disable Filter Auto Clean

<Maintenance Menu>
- Model Name
- Operation Hours
- Indoor Unit Status
- Outdoor Unit Status
- Forced Defrost
- Error Display
- Swap Unit No.
- Addressed Sensor Value

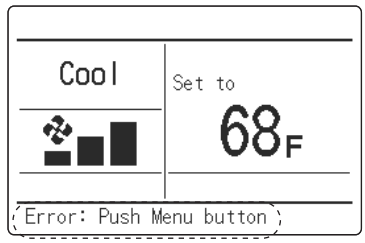
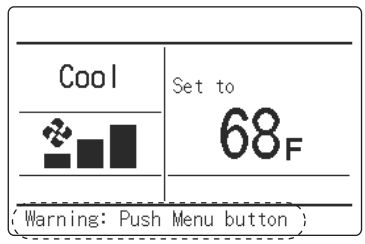
Service Check Function

The following message is displayed on the screen when a error (or a warning) occurs during operation. Check the error code and take the corrective action specified for the particular model.



(R18817)

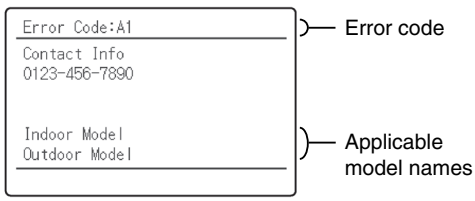
(1) Check if it is error or warning.

	Operation status	Display	
Abnormal shutdown	The system stops operating.	The operation lamp (green) starts to blink. The message **Error: Push Menu button** blinks at the bottom of the screen.	 (R18971)
Warning	The system continues its operation.	The operation lamp (green) remains on. The message **Warning: Push Menu button** blinks at the bottom of the screen.	 (R18972)

(2) Take corrective action.

· Press the **Menu/OK** button to check the error code.

· Take the corrective action specific to the model.

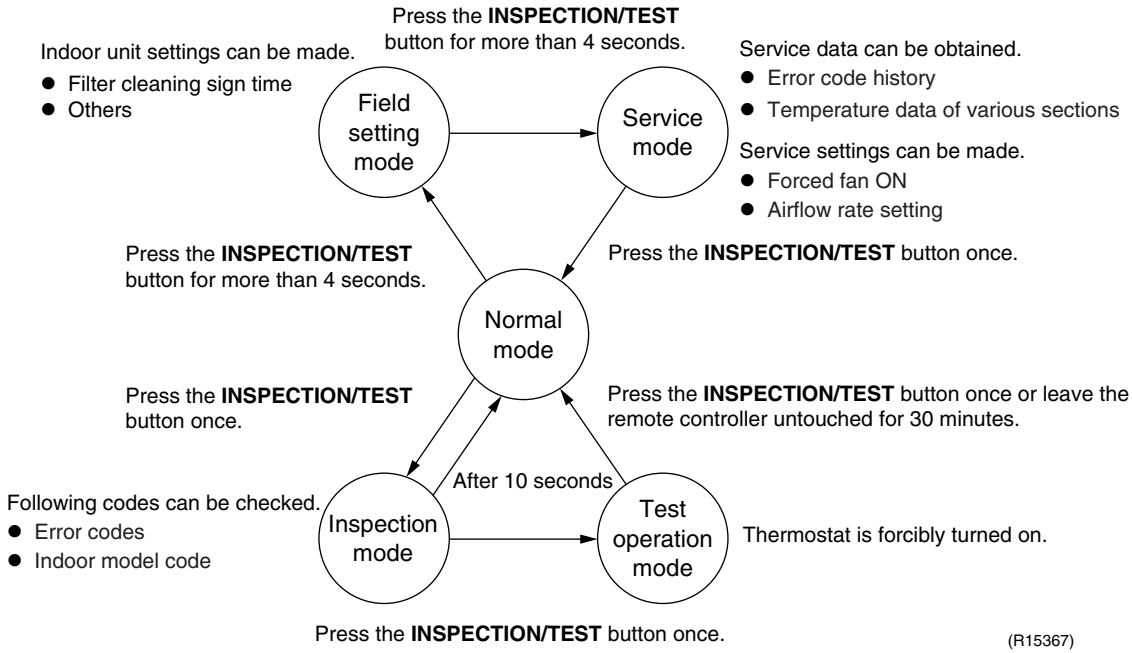


(R18820)

2.2.2 BRC7E830

Relations Between Modes

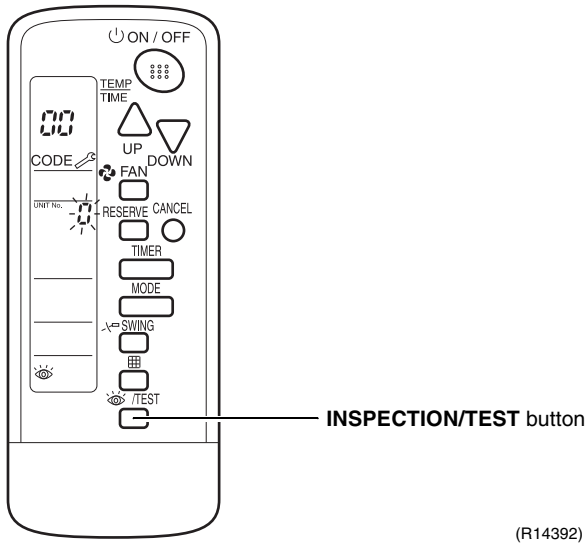
The following modes can be selected by using the **INSPECTION/TEST** button on the remote controller.

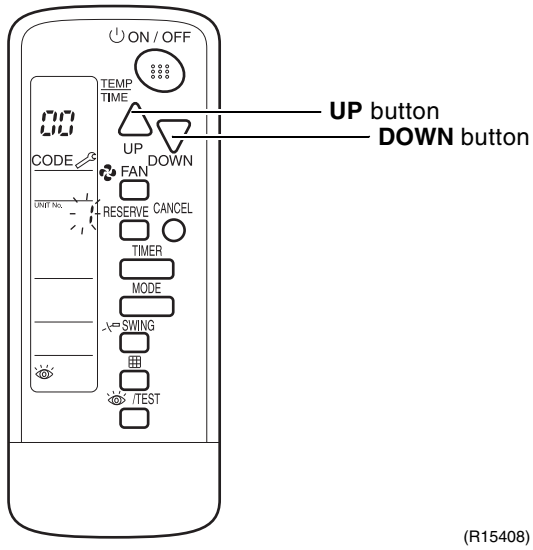
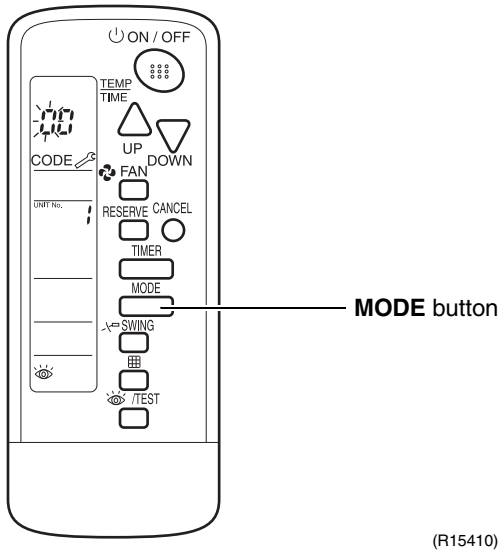


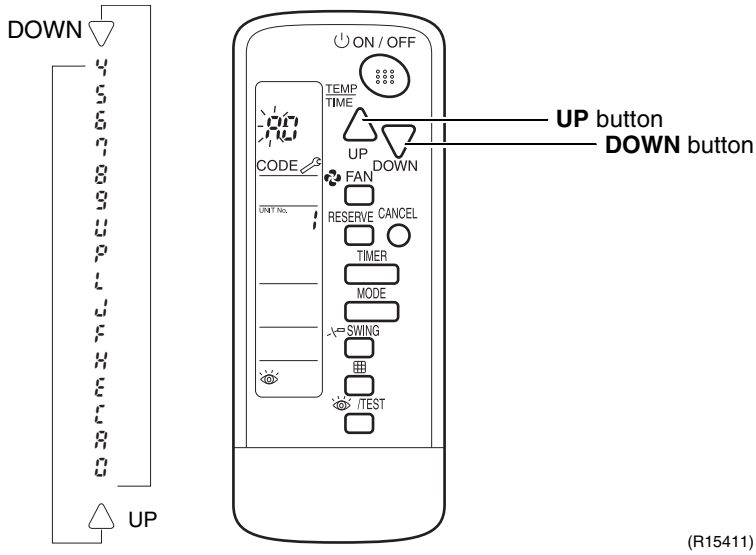
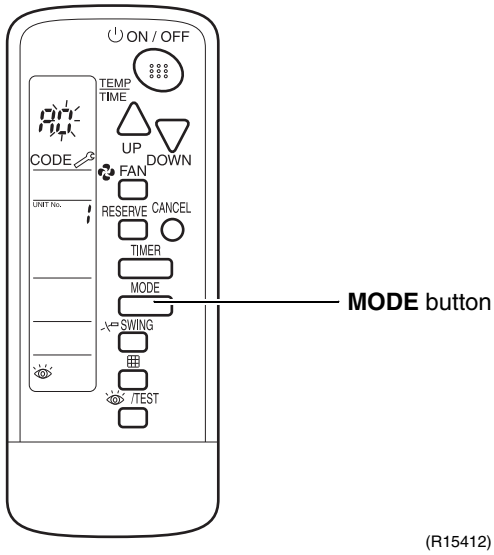
Service Check Function

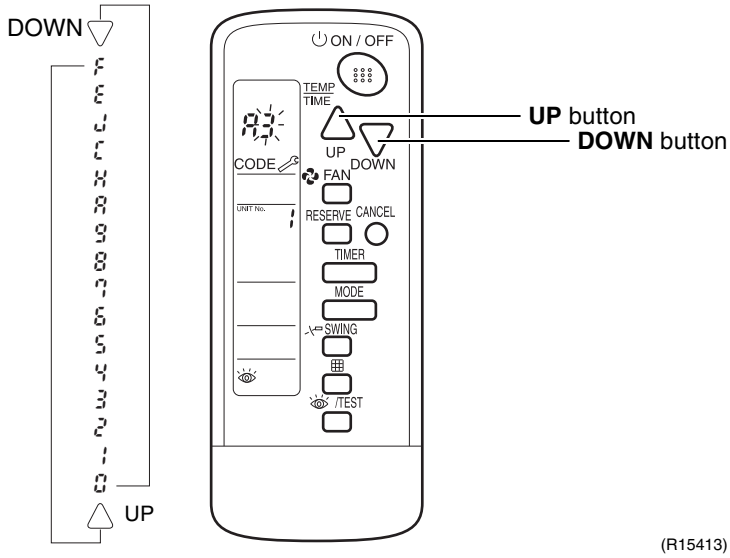
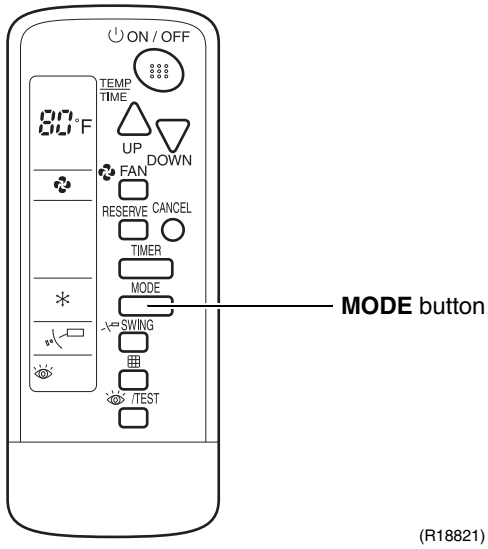
To find the error code, proceed as follows:

Step	Action
1	Press the **INSPECTION/TEST** button to enter the inspection mode. Then the figure ☐ blinks on the UNIT No. display.



Step	Action
2	Press the **UP** or **DOWN** button and change the UNIT No. until the receiver of the remote controller starts to beep.  (R15408) **If you hear...** / **Then...** 3 short beeps — Follow all steps below. 1 short beep — Follow steps 3 and 4. Continue the operation in step 4 until you hear a continuous beep. This continuous beep indicates that the error code is confirmed. 1 continuous beep — There is no abnormality.
3	Press the **MODE** button. The left 0 (upper digit) indication of the error code blinks.  (R15410)

Step	Action
4	Press the **UP** or **DOWN** button to change the error code upper digit until the receiver of the remote controller starts to beep.  **If you hear...** / **Then...** 2 short beeps — The upper digit matches. 1 short beep — No digits match. 1 continuous beep — Both upper and lower digits match.
5	Press the **MODE** button. The right 0 (lower digit) indication of the error code blinks. 

Step	Action
6	Press the **UP** or **DOWN** button and change the error code lower digit until the receiver of the remote controller generates a continuous beep.  (R15413)
7	Press the **MODE** button to return to the normal mode. If you do not press any button for 1 minutes, the remote controller automatically returns to the normal mode.  (R18821)

3. Error Codes and Description

	Error code	Description	Reference page			
			RA Indoor Unit	SA Indoor Unit	BP Unit	Outdoor Unit
Indoor Unit	**A1**	Indoor unit PCB abnormality	156	167	—	—
	A3	Drain level control system abnormality	—	168	—	—
	A5	Freeze-up protection control or heating peak-cut control	158	—	—	—
	A6	Fan motor or related abnormality	160, 162	169	—	—
	A9	Electronic expansion valve abnormality	—	—	176	—
	AF	Drain system abnormality	—	170	—	—
	C4	Indoor heat exchanger thermistor 1 (liquid pipe) or related abnormality	164	171	—	—
	C5	Indoor heat exchanger thermistor 2 or related abnormality	—	171	—	—
	C9	Room temperature thermistor or related abnormality	164	171	—	—
	CJ	Remote controller thermistor abnormality	—	172	—	—
Outdoor Unit	**E1**	Outdoor unit PCB abnormality	—	—	—	183
	E2	Branch provider (BP) unit PCB abnormality	—	—	177	—
	E3	Actuation of high pressure switch	—	—	—	184
	E4	Actuation of low pressure sensor	—	—	—	186
	E5	Compressor motor lock	—	—	—	188
	E7	Outdoor fan motor abnormality	—	—	—	189
	E9	Moving part of electronic expansion valve (Y1E, Y3E) abnormality	—	—	—	190
	F3	Discharge pipe temperature abnormality	—	—	—	192
	F6	Refrigerant overcharged	—	—	—	193
	H9	Outdoor temperature thermistor (R1T) abnormality	—	—	—	194
	J0	Branch provider (BP) liquid or gas pipe thermistor abnormality	—	—	178	—
	J3	Discharge pipe thermistor (R2T) abnormality	—	—	—	195
	J5	Suction pipe thermistor (R3T, R5T) abnormality	—	—	—	196
	J6	Outdoor heat exchanger thermistor (R4T) abnormality	—	—	—	197
	J7	Outdoor liquid pipe thermistor (R7T) abnormality	—	—	—	198
	J9	Subcooling heat exchanger gas pipe thermistor (R6T) abnormality	—	—	—	199
	JA	High pressure sensor abnormality	—	—	—	200
	JC	Low pressure sensor abnormality	—	—	—	201
	L1	Outdoor unit PCB abnormality	—	—	—	202

	Error code	Description	Reference page			
			RA Indoor Unit	SA Indoor Unit	BP Unit	Outdoor Unit
Outdoor Unit	**L4**	Radiation fin temperature rise	—	—	—	203
	L5	Inverter compressor abnormality	—	—	—	204
	L8	Inverter current abnormality	—	—	—	205
	L9	Compressor start-up error	—	—	—	206
	P1	High voltage of capacitor in main inverter circuit	—	—	—	207
	P4	Radiation fin thermistor abnormality	—	—	—	208
System	**U0**	Low pressure drop due to refrigerant shortage or electronic expansion valve abnormality	—	—	—	209
	U2	Power supply insufficient or instantaneous failure	—	—	—	211
	U3	Check operation is not conducted.	—	—	—	212
	U4	Signal transmission error between indoor unit and Branch provider (BP) unit	—	—	179	—
	U5	Signal transmission error between remote controller and indoor unit	—	173	—	—
	U8	Signal transmission error between MAIN remote controller and SUB remote controller	—	174	—	—
System	**U9**	Signal transmission error between indoor unit and outdoor unit in the same system	—	—	—	213
	UA	Field setting abnormality	—	175	—	—
		Excessive number of indoor units	—	—	—	214
	UC	Address duplication of central remote controller	—	—	—	215
	UE	Transmission error between centralized remote controller and indoor unit	—	—	—	216
	UF	System is not set yet.	—	—	—	218
	UH	System abnormality, refrigerant system address undefined	—	—	—	219
	UJ	Transmission error between outdoor unit and Branch provider (BP) unit	—	—	181	—

The system keeps operating even though the error code is indicated, however, be sure to check and repair.

4. Troubleshooting for CTXS, FTXS, CDXS, FDXS Series

4.1 Indoor Unit PCB Abnormality

Error Code

A1

Method of Error Detection

The system checks if the circuit works properly within the microcomputer of the indoor unit.

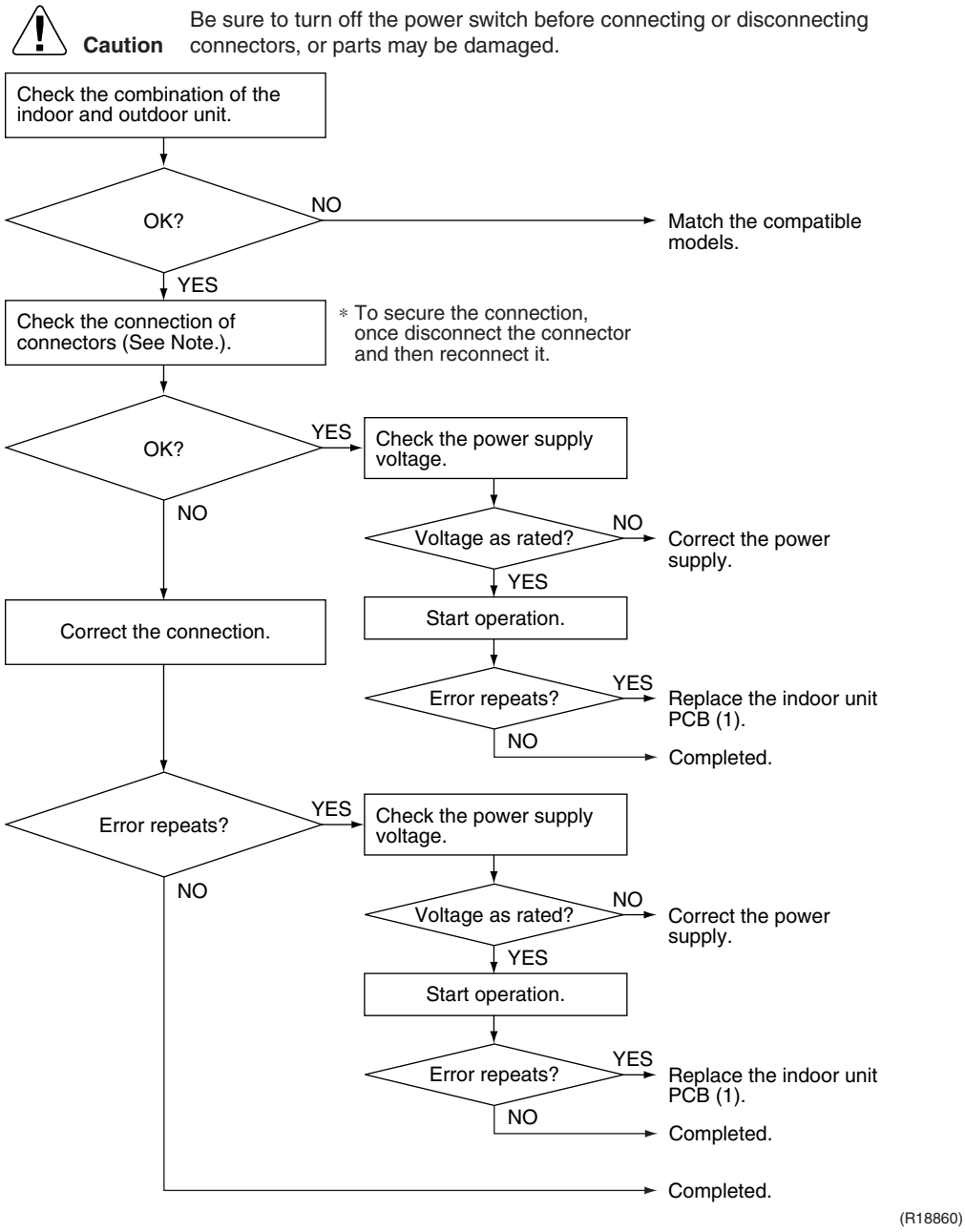
Error Decision Conditions

The system cannot set the internal settings.

Supposed Causes

- Wrong models interconnected
- Defective indoor unit PCB
- Disconnection of connector
- Reduction of power supply voltage

Troubleshooting



Note: Check the following connector.

Model Type	Connector
CTXS/FTXS series	Terminal board ~ Control PCB (H1, H2, H3)
CDXS/FDXS series	Terminal board ~ Control PCB (H1, H2, H3)

4.2 Freeze-up Protection Control or Heating Peak-cut Control

Error Code

A5

Method of Error Detection

- Freeze-up protection control
  During cooling operation, the freeze-up protection control (operation halt) is activated according to the temperature detected by the indoor heat exchanger thermistor.
- Heating peak-cut control
  During heating operation, the temperature detected by the indoor heat exchanger thermistor is used for the heating peak-cut control (operation halt, outdoor fan stop, etc.)

Error Decision Conditions

- Freeze-up protection control
  During cooling operation, the indoor heat exchanger temperature is below 0°C (32°F).
- Heating peak-cut control
  During heating operation, the indoor heat exchanger temperature is above 65°C (149°F).

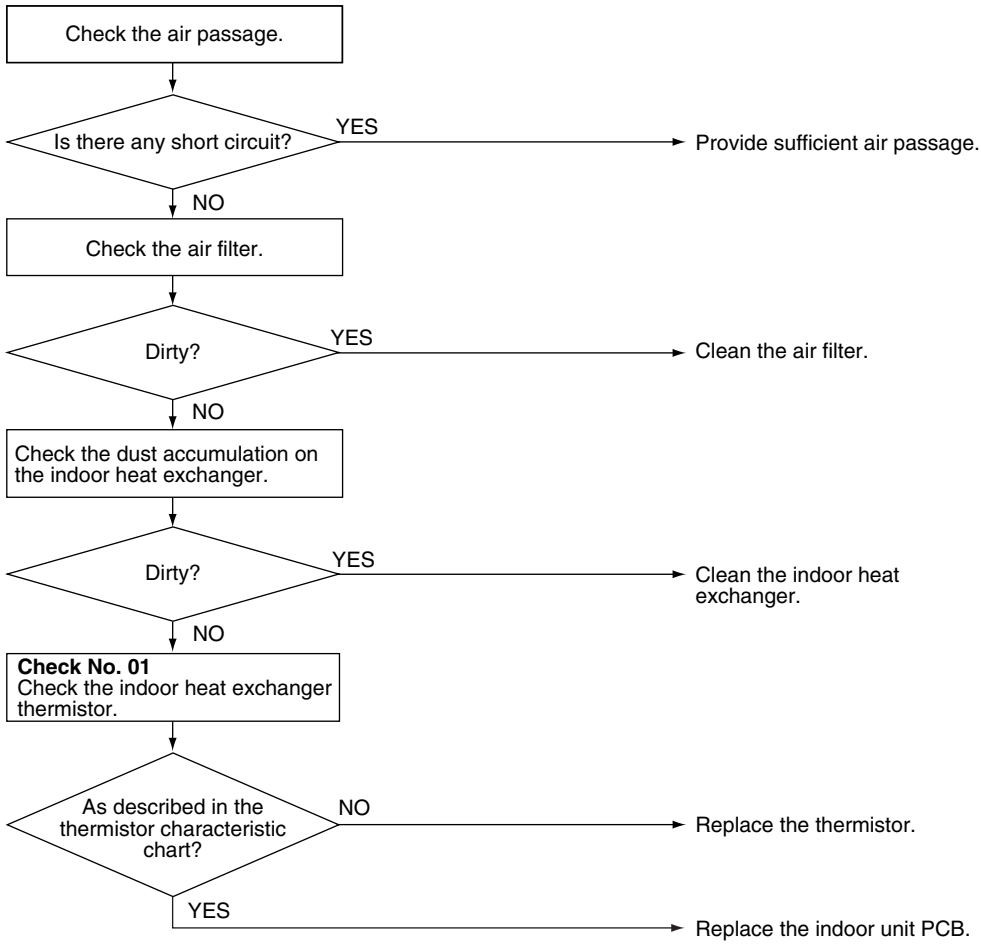
Supposed Causes

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

Troubleshooting

Check No.01
Refer to P.165

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



(R18864)

4.3 Fan Motor or Related Abnormality

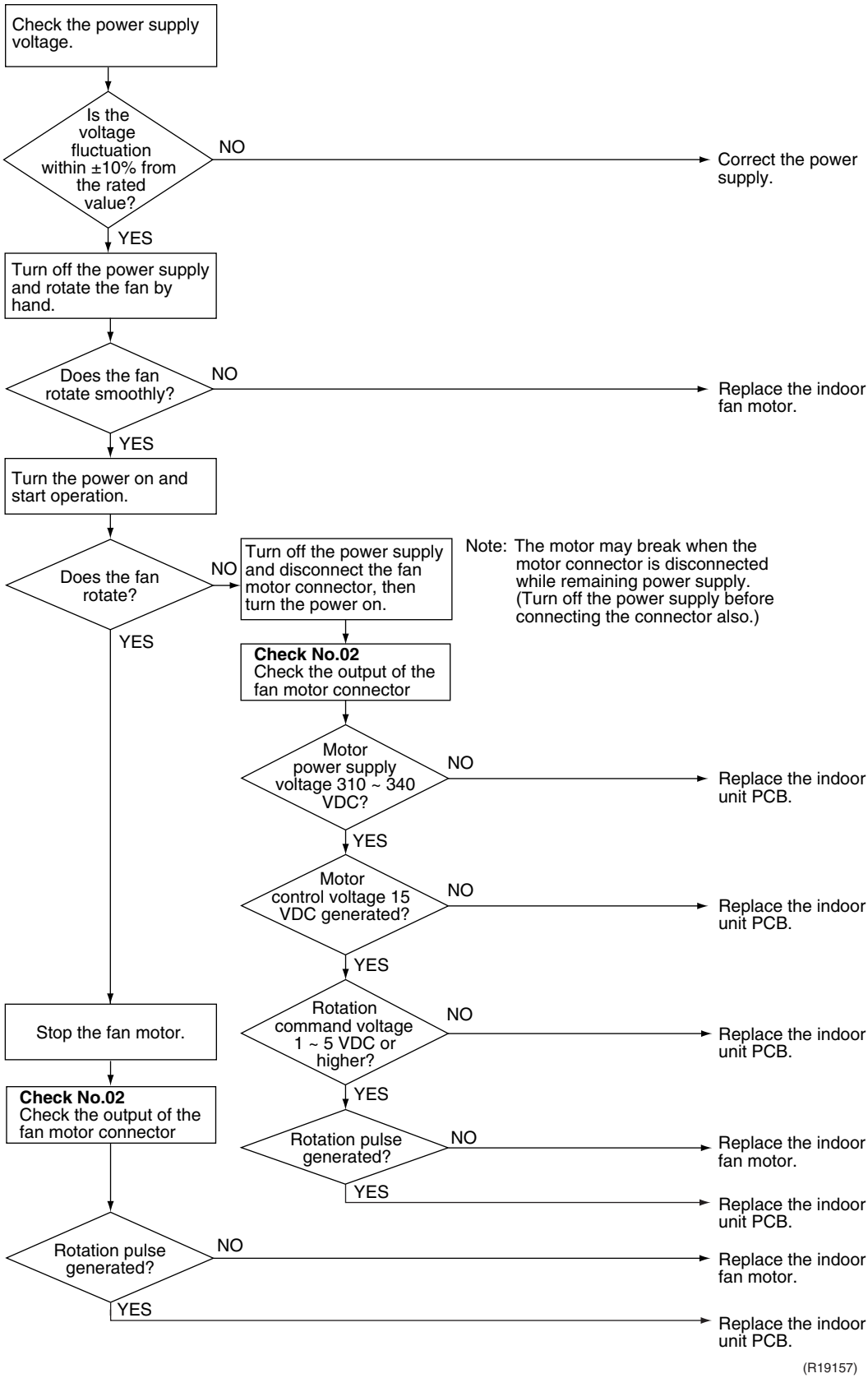
4.3.1 DC Motor (CTXS/FTXS Series)

Error Code	**A6**
Method of Error Detection	The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor operation.
Error Decision Conditions	The detected rotation speed does not reach the demanded rotation speed of the target tap, and is less than 50% of the maximum fan motor rotation speed.
Supposed Causes	■ Supply voltage is not as specified. ■ Layer short inside the fan motor winding ■ Breaking of wire inside the fan motor ■ Breaking of the fan motor lead wires ■ Defective capacitor of the fan motor ■ Defective indoor unit PCB

Troubleshooting

Check No.02
Refer to P.166

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



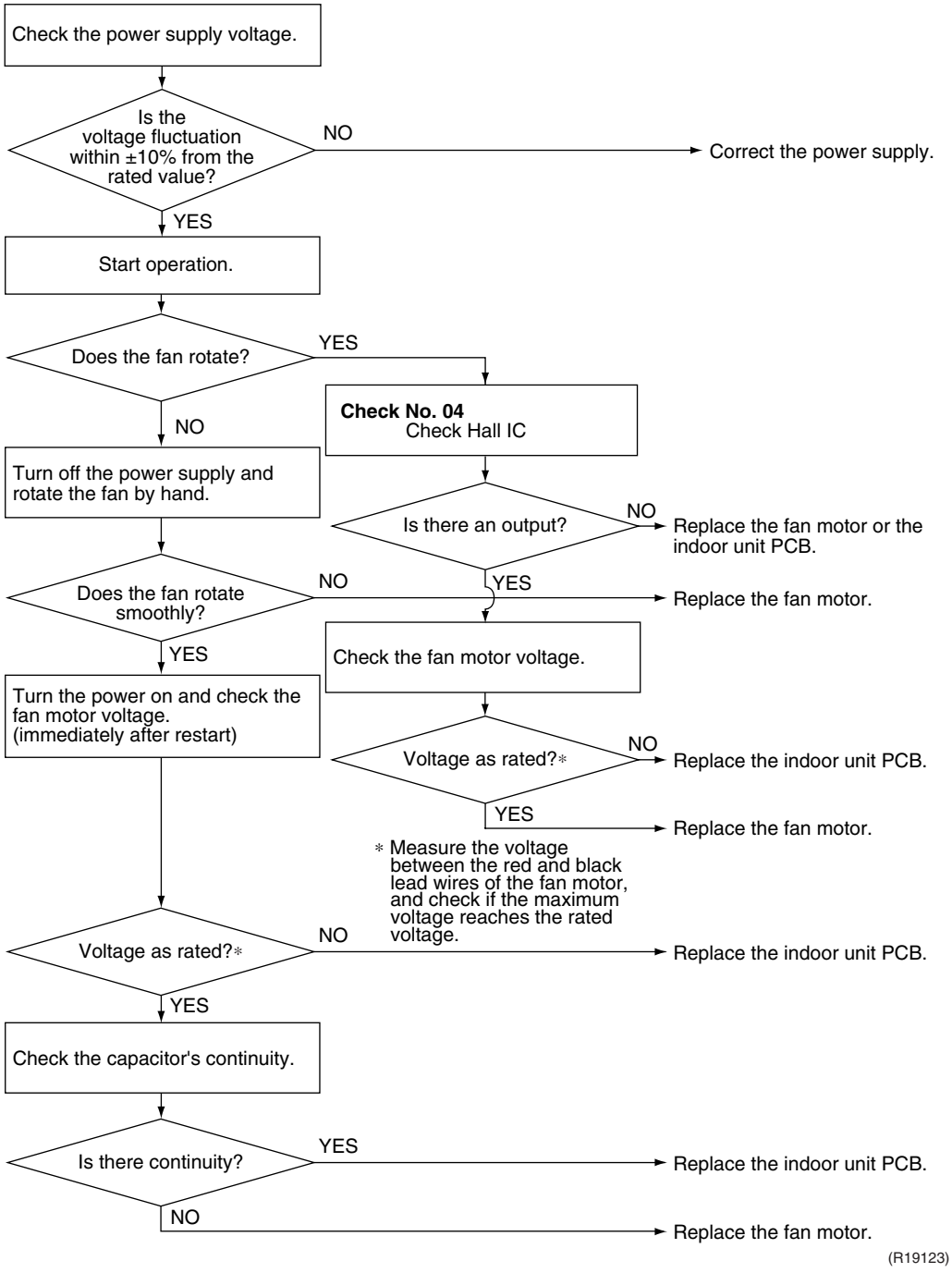
4.3.2 AC Motor (CDXS/FDXS Series)

Error code	**A6**
Method of Error Detection	The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor operation.
Error Decision Conditions	The detected rotation speed does not reach the demanded rotation speed of the target tap, and is less than 50% of the maximum fan motor rotation speed.
Supposed Causes	■ Supply voltage is not as specified. ■ Layer short inside the fan motor winding ■ Breaking of wire inside the fan motor ■ Breaking of the fan motor lead wires ■ Defective capacitor of the fan motor ■ Defective indoor unit PCB

Troubleshooting

Check No.04
Refer to P.166

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



(R19123)

4.4 Thermistor or Related Abnormality

Error Code

C4, C9

Method of Error Detection

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

Error Decision Conditions

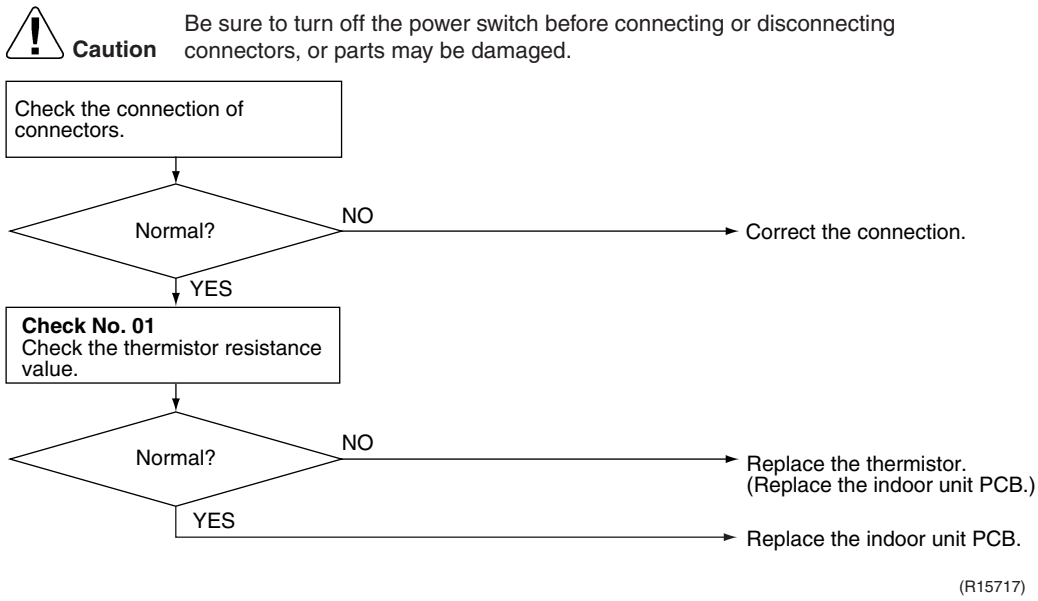
The thermistor input is more than 4.96 V or less than 0.04 V during compressor operation.

Supposed Causes

- Disconnection of connector
- Defective thermistor corresponding to the error code
- Defective indoor unit PCB

Troubleshooting

Check No.01
Refer to P.165



C4 : Indoor heat exchanger thermistor
C9 : Room temperature thermistor

4.5 Check for CTXS, FTXS, CDXS, FDXS Series

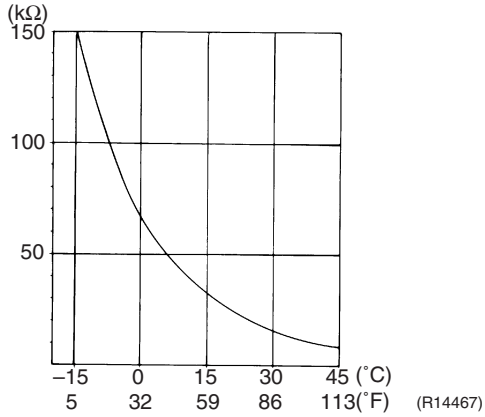
4.5.1 Thermistor Resistance Check

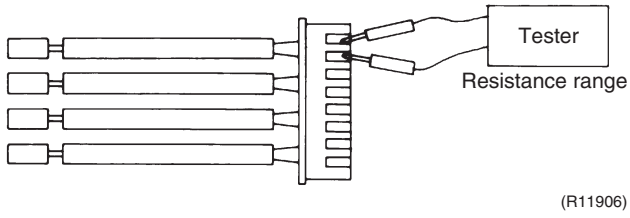
Check No.01 Disconnect the connectors of the thermistors from the PCB, and measure the resistance of each thermistor using tester.

The data is for reference purpose only.

Temperature (°C / °F)	Resistance (kΩ)
–20 / –4	197.8
–15 / 5	148.2
–10 / 14	112.1
–5 / 23	85.60
0 / 32	65.93
5 / 41	51.14
10 / 50	39.99
15 / 59	31.52
20 / 68	25.02
25 / 77	20.00
30 / 86	16.10
35 / 95	13.04
40 / 104	10.62
45 / 113	8.707
50 / 122	7.176

(R25°C (77°F) = 20 kΩ, B = 3950 K)



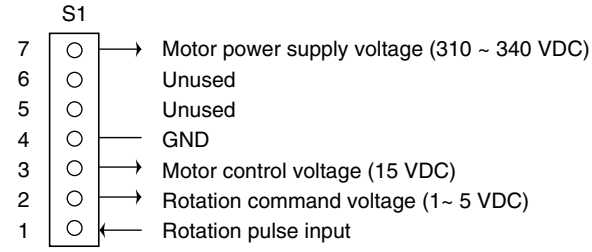


- When the room temperature thermistor is directly mounted on a PCB, remove the PCB from the control PCB to measure the resistance.
- When the connector of indoor heat exchanger thermistor is soldered on a PCB, remove the thermistor and measure the resistance.

4.5.2 Fan Motor Connector Check

Check No.02 **CTXS/FTXS Series**

1. Check the connection of connector.
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).

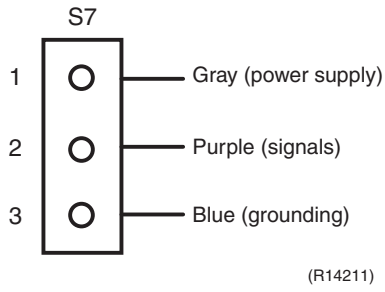


4.5.3 Hall IC Check

Check No.04 **CDXS/FDXS Series**

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.

If NG in step 1 → Defective PCB → Replace the PCB.
If NG in step 2 → Defective Hall IC → Replace the fan motor.
If OK in both steps 1 and 2 → Replace the PCB.



5. Troubleshooting for FFQ Series

5.1 Indoor Unit PCB Abnormality

Error Code

A1

Method of Error Detection

The system checks the data from EEPROM.

Error Decision Conditions

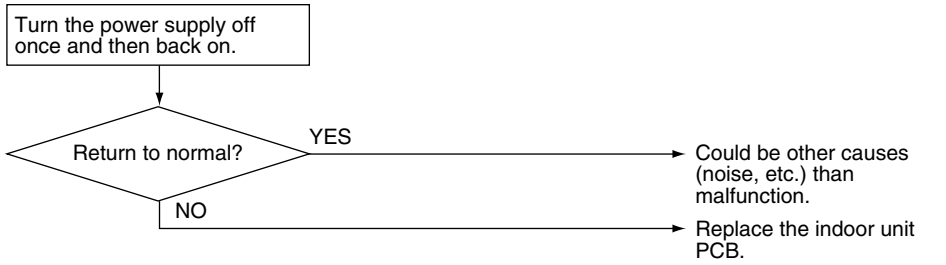
When data could not be correctly received from the EEPROM
EEPROM : Type of nonvolatile memory. Maintains memory contents even when the power supply is turned off.

Supposed Causes

- External factor (noise etc.)
- Defective indoor unit PCB

Troubleshooting

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



(R15319)

5.2 Drain Level Control System Abnormality

Error Code

A3

Method of Error Detection

The float switch detects error.

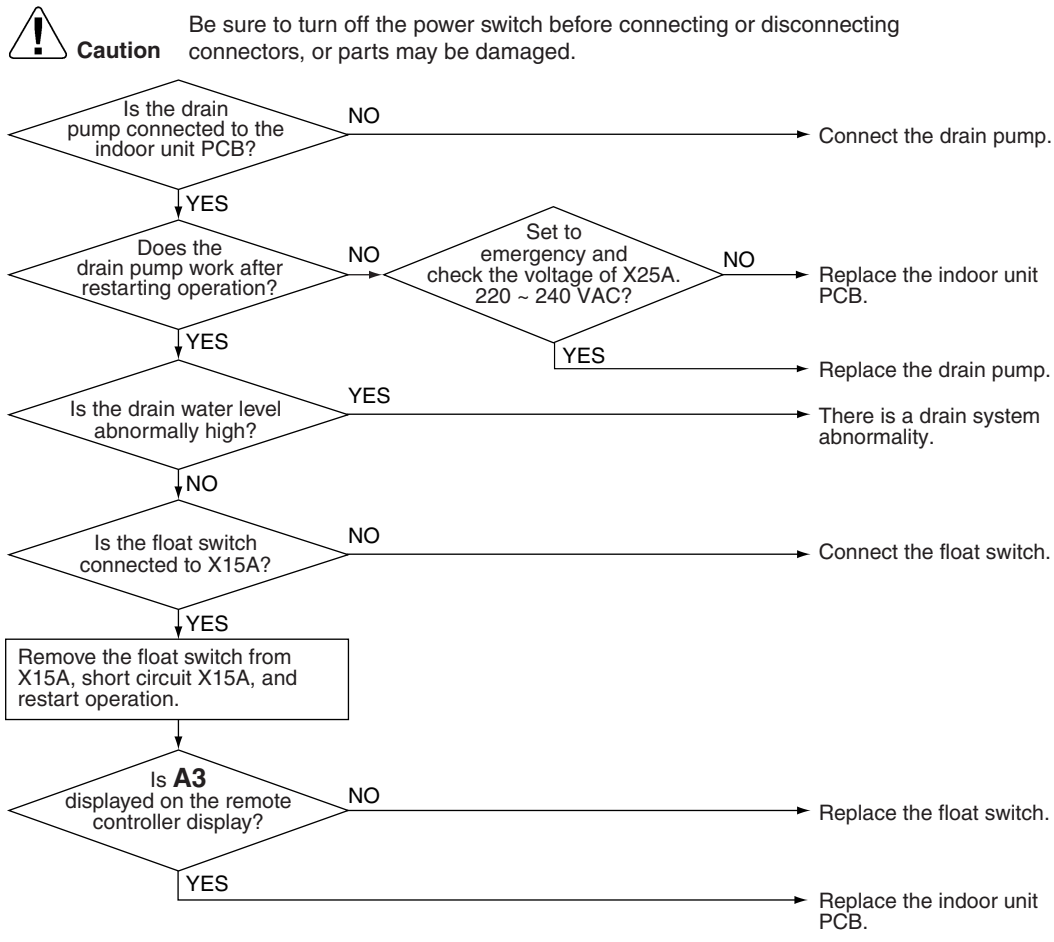
Error Decision Conditions

When the water level reaches its upper limit and when the float switch turns OFF

Supposed Causes

- Defective drain pump
- Improper drain piping work
- Clogged drain piping
- Defective float switch
- Defective indoor unit PCB
- Defective short circuit connector X15A on indoor unit PCB

Troubleshooting



5.3 Fan Motor or Related Abnormality

Error Code

A6

Method of Error Detection

The signal from the fan motor detects abnormal fan speed.

Error Decision Conditions

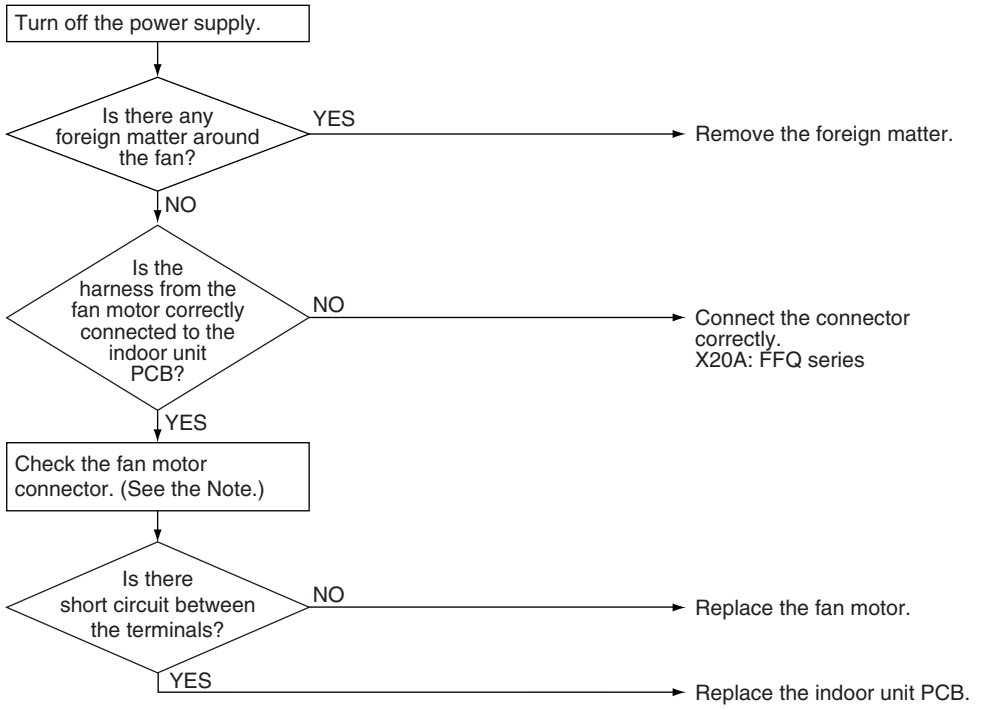
The fan rotations are not detected while the output voltage to the fan is at its maximum.

Supposed Causes

- Disconnection, short circuit or disengagement of connector in fan motor harness
- Defective fan motor (disconnection, poor insulation)
- Abnormal signal from fan motor (faulty circuit)
- Defective indoor unit PCB
- Momentary fluctuation of power supply voltage
- Fan motor lock
  (Caused by motor or other external factors)
- Fan does not rotate due to tangled foreign matters.

Troubleshooting

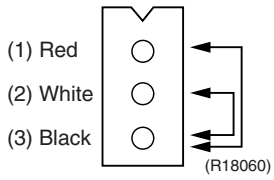
Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

1. Check the connector of fan motor. (Power supply cable)
2. Turn OFF the power supply.
3. Measure the resistance between the terminals at the motor side connectors to check that there is no short circuit, while the connector is disconnected.

FFQ series



Measuring points	Resistance for judgement
(1) - (3)	88.2 Ω ± 10%
(2) - (3)	85.5 Ω ± 10%

5.4 Drain System Abnormality

Error Code

AF

Method of Error Detection

Water leakage is detected based on the float switch ON/OFF changeover while the compressor is not operating.

Error Decision Conditions

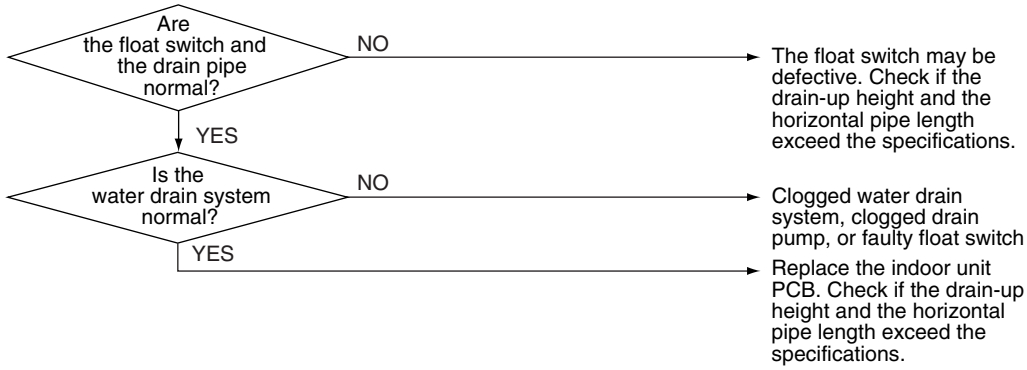
When the float switch changes from ON to OFF while the compressor is OFF

Supposed Causes

- Error in the drain pipe installation
- Defective float switch
- Defective indoor unit PCB

Troubleshooting

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



(R16022)

5.5 Thermistor or Related Abnormality

Error Code

C4, C5, C9

Method of Error Detection

The temperatures detected by the thermistors determine thermistor errors.

Error Decision Conditions

The thermistor input is more than 4.96 V or less than 0.04 V during compressor operation.

Supposed Causes

- Disconnection of connector
- Defective thermistor corresponding to the error code
- Defective indoor unit PCB

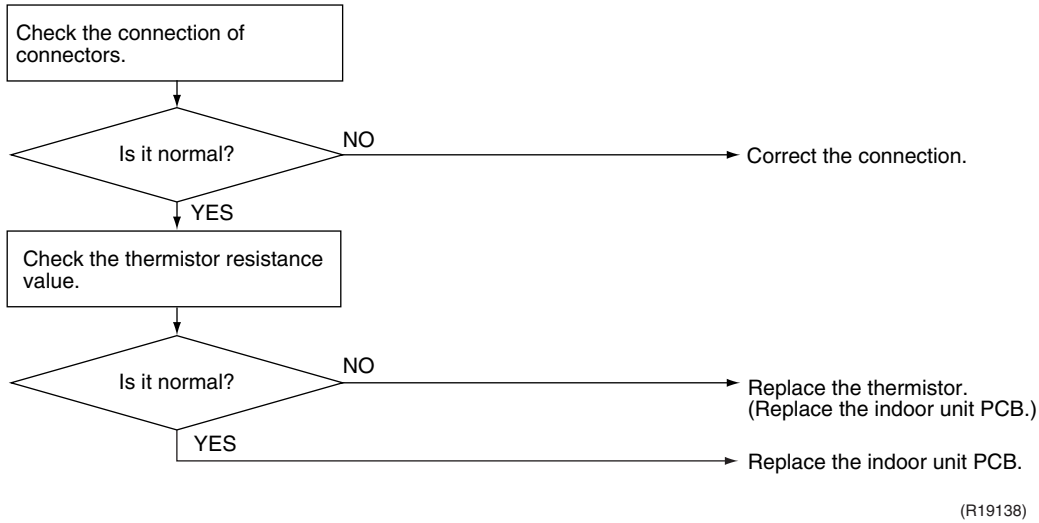
Troubleshooting

If the cause of the problem is related to the thermistors, the thermistors should be checked prior to changing the indoor unit PCB.

To check the thermistors, proceed as follows:

Step	Action
1	Disconnect the thermistor from the indoor unit PCB.
2	Read the temperature and the resistance value.
3	Check if the measured values correspond with the values in the table of thermistor resistance check.

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



C4 : Indoor heat exchanger thermistor 1 (liquid pipe) (R2T)
C5 : Indoor heat exchanger thermistor 2 (R3T)
C9 : Room temperature thermistor (R1T)

Refer to Thermistor Resistance / Temperature Characteristics table 1 on page 224.

5.6 Remote Controller Thermistor Abnormality

Error Code

CJ

Method of Error Detection

Even if remote controller thermistor is malfunctioning, the system can operate with the system thermistor.
Malfunction detection is carried out by the temperature detected by the remote controller thermistor.

Error Decision Conditions

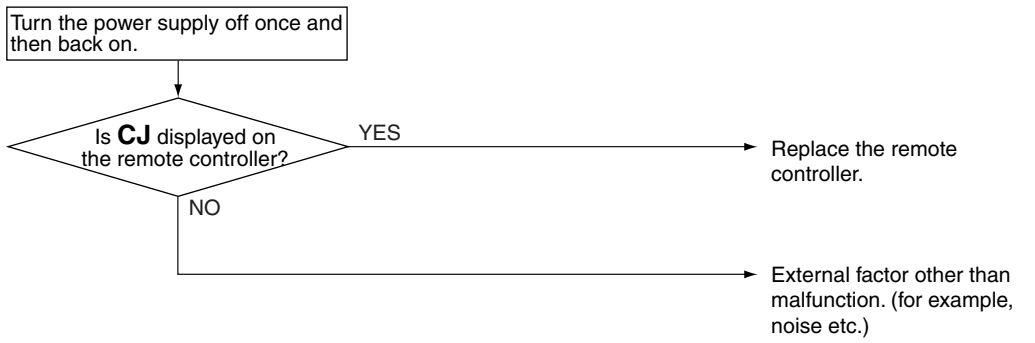
The remote controller thermistor disconnected or shorted while the unit is running.

Supposed Causes

- Defective thermistor
- Broken wire

Troubleshooting

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



(R11300)

5.7 Signal Transmission Error between Remote Controller and Indoor Unit

Error Code **U5**

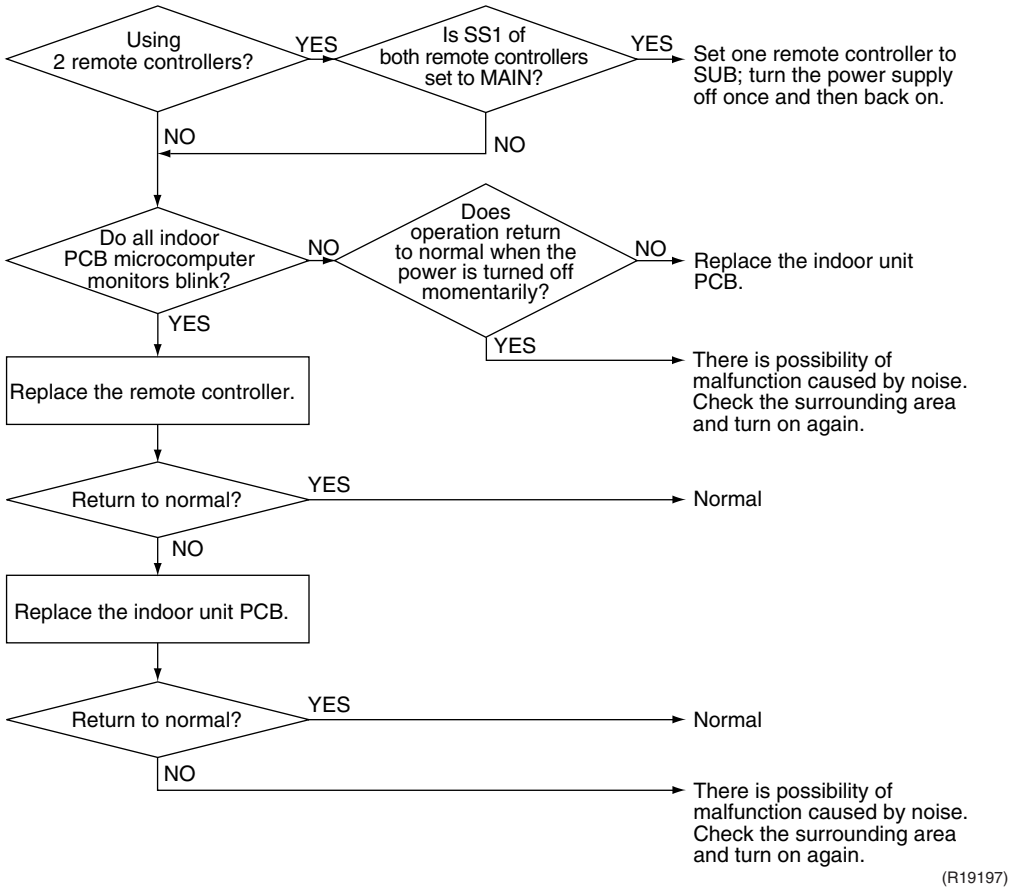
Method of Error Detection
In case of controlling with 2 remote controllers, check the system using microcomputer if signal transmission between indoor unit and remote controller (main and sub) is normal.

Error Decision Conditions
Normal transmission does not continue for specified period.

Supposed Causes
- Connection of 2 main remote controllers (when using 2 remote controllers)
- Defective indoor unit PCB
- Defective remote controller
- Signal transmission error caused by noise

Troubleshooting

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



5.8 Signal Transmission Error between MAIN Remote Controller and SUB Remote Controller

Error Code

U8

Method of Error Detection

In case of controlling with 2 remote controllers, check the system using microcomputer if signal transmission between indoor unit and remote controller (main and sub) is normal.

Error Decision Conditions

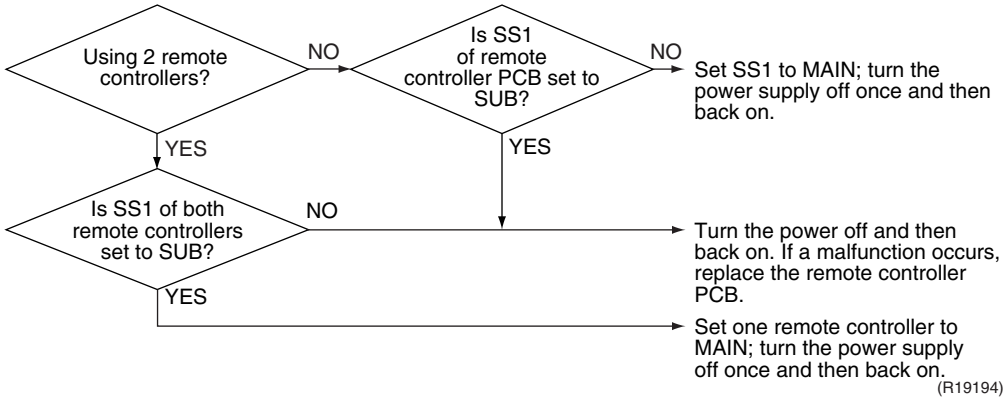
Normal transmission does not continue for specified period.

Supposed Causes

- Remote controller is set to SUB when using 1 remote controller
- Connection of 2 sub remote controllers (when using 2 remote controllers)
- Defective remote controller PCB

Troubleshooting

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



(R19194)

5.9 Field Setting Abnormality

Error Code **UA**

Method of Error Detection

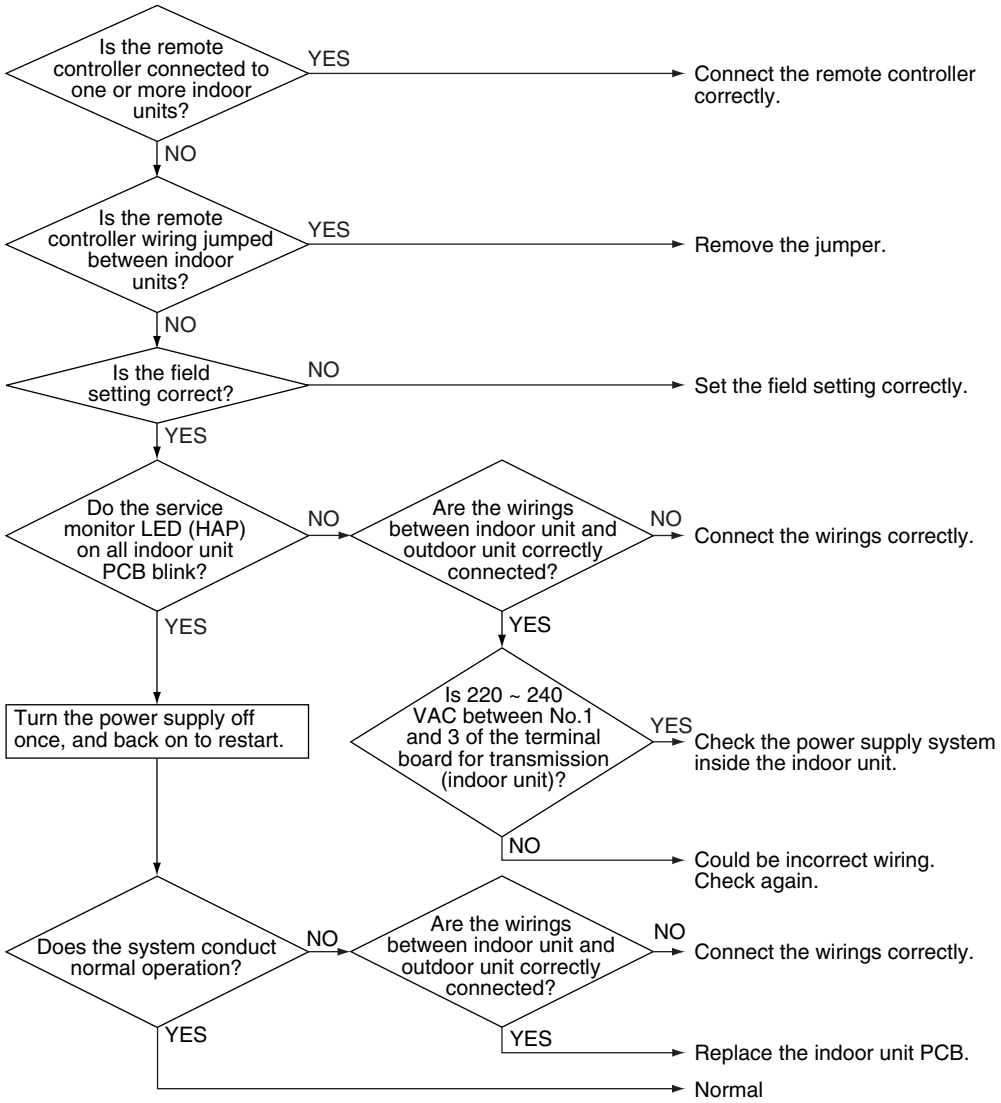
Error Decision Conditions Incorrect field setting

Supposed Causes

- Defective indoor unit PCB
- Defective outdoor unit PCB
- Defective power supply PCB
- Indoor-outdoor, indoor-indoor unit transmission wiring
- Defective remote controller wiring

Troubleshooting

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



(R17253)

6. Troubleshooting for Branch Provider (BP) Unit

6.1 Electronic Expansion Valve Abnormality

Error Code

A9

Method of Error Detection

Detection by checking continuity and lack of connector

Error Decision Conditions

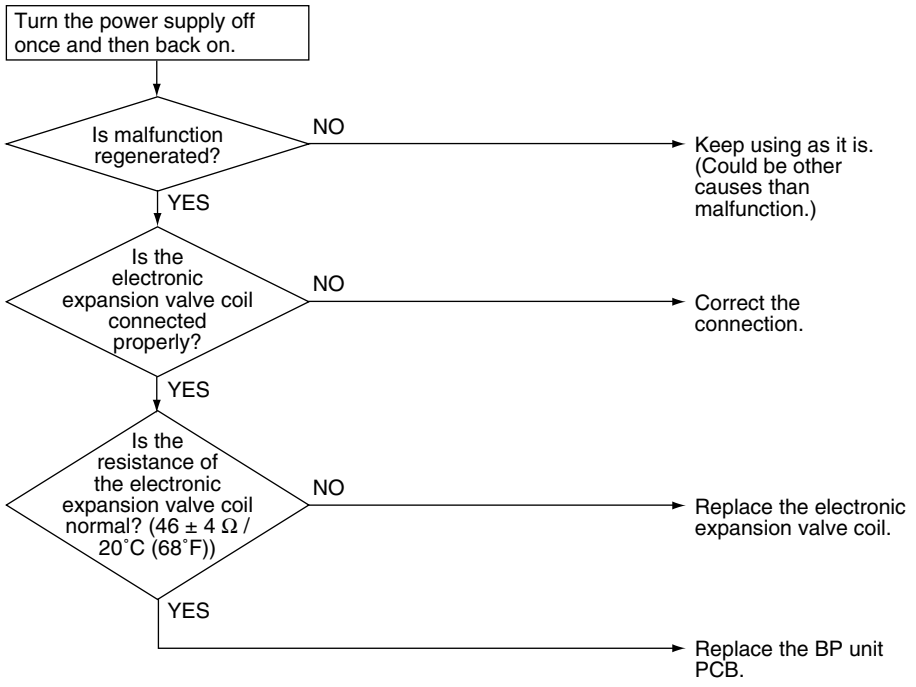
No voltage applied when turning the power supply on

Supposed Causes

- Broken harness of electronic expansion valve coil
- Incorrect connection of connectors for electronic expansion valve coil

Troubleshooting

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



(R19091)

6.2 Branch Provider (BP) Unit PCB Abnormality

Error Code

E2

Method of Error Detection

Check data from EEPROM

Error Decision Conditions

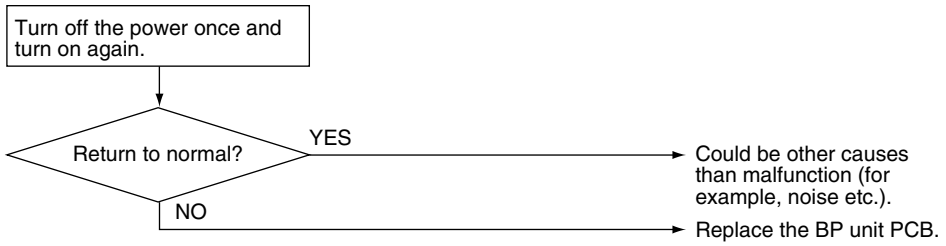
When data could not be correctly received from the EEPROM
EEPROM : Type of nonvolatile memory. Maintains memory contents even when the power supply is turned off.

Supposed Causes

- Defective BP unit PCB

Troubleshooting

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



(R13278)

6.3 Branch Provider (BP) Liquid or Gas Pipe Thermistor Abnormality

Error Code **J0**

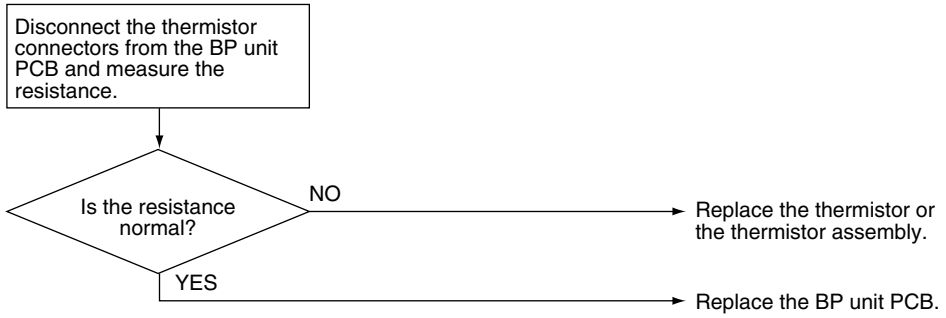
Method of Error Detection

Error Decision Conditions When the BP liquid or gas pipe thermistor has short circuit or open circuit

Supposed Causes
- Defective BP liquid or gas pipe thermistor
- Incorrect connection of BP liquid or gas pipe thermistor

Troubleshooting

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



Refer to Thermistor Resistance / Temperature Characteristics table 1 on page 224.

6.4 Signal transmission Error between Indoor Unit and Branch Provider (BP) Unit

Error Code

U4

Method of Error Detection

The data received from the BP unit in signal transmission is checked whether it is normal.

Error Decision Conditions

When the data sent from the BP unit cannot be received normally, or when the content of the data is abnormal.

Supposed Causes

- Defective BP unit PCB
- Defective indoor unit PCB
- Signal transmission error due to wiring error
- Signal transmission error due to disturbed power supply waveform
- Signal transmission error due to breaking of connection wires (wire No. 2).

Troubleshooting

Check No.11
Refer to P.182

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

6.5 Transmission Error between Outdoor Unit and Branch Provider (BP) Unit

Error Code

UJ

Method of Error Detection

Transmission error is detected when the outdoor unit could not received the data from BP unit correctly.

Error Decision Conditions

When the data from BP unit could not be correctly received continuously for 10 minutes

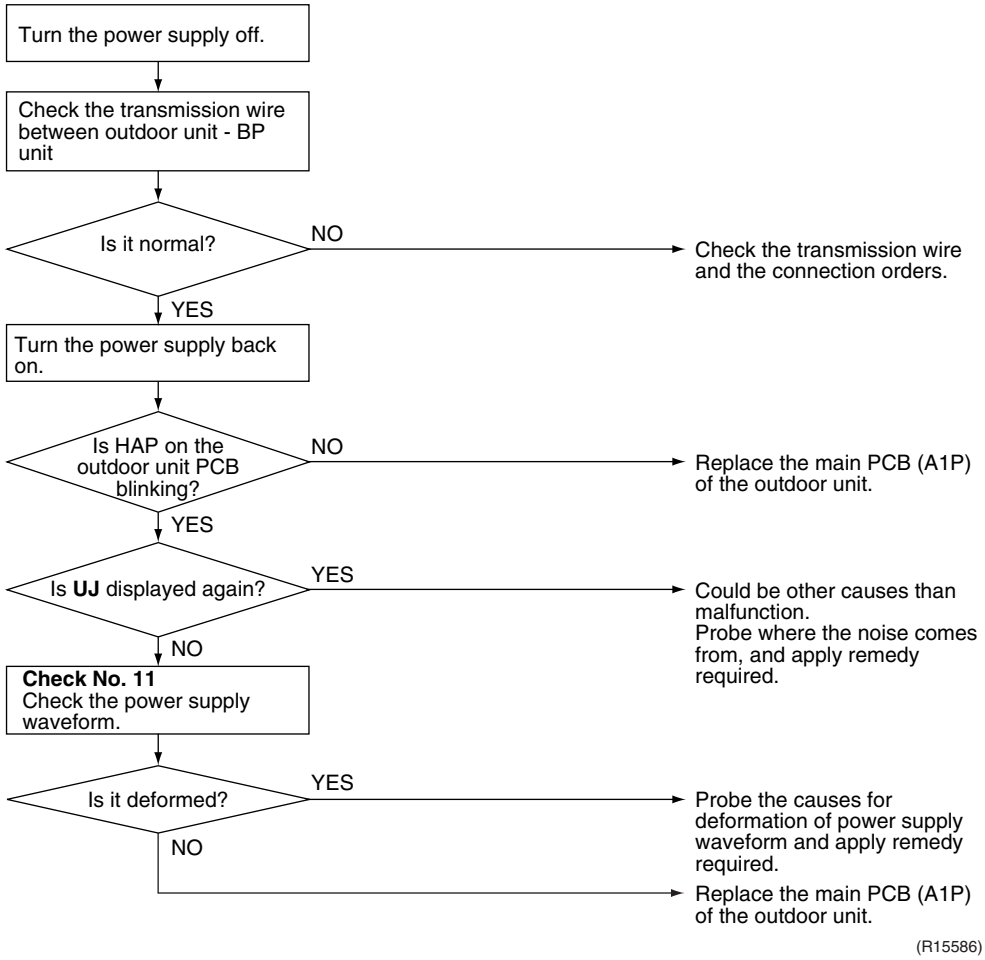
Supposed Causes

- Incorrect connection of transmission wire
- Faulty outdoor unit power supply
- Defective BP unit PCB
- Defective outdoor unit PCB
- Distortion of power supply waveform

Troubleshooting

Check No.11
Refer to P.182

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



(R15586)

6.6 Check for Branch Provider (BP) Unit

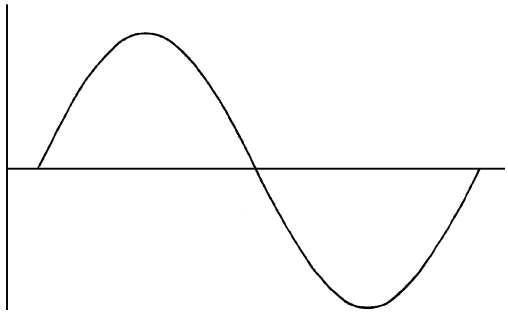
6.6.1 Power Supply Waveforms Check

Check No.11

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

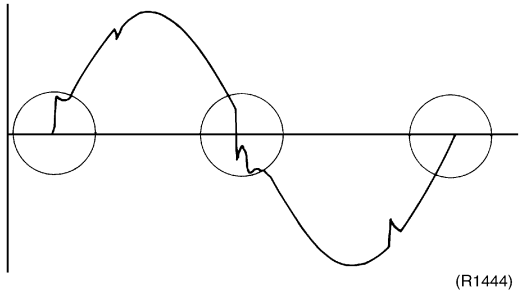
- Check to see if the power supply waveform is a sine wave (Fig.1).
- Check to see if there is waveform disturbance near the zero cross (sections circled in Fig.2)

Fig.1



(R1736)

Fig.2



(R1444)

7. Troubleshooting for Outdoor Unit

7.1 Outdoor Unit PCB Abnormality

Error Code

E1

Method of Error Detection

Check data from EEPROM

Error Decision Conditions

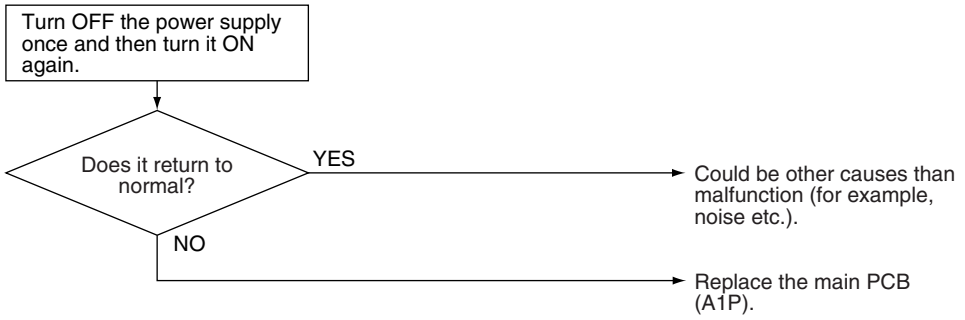
When data could not be correctly received from the EEPROM
EEPROM: Type of nonvolatile memory. Maintains memory contents even when the power supply is turned off.

Supposed Causes

- Defective main PCB (A1P)

Troubleshooting

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



(R15335)

7.2 Actuation of High Pressure Switch

Error Code	**E3**
Method of Error Detection	Abnormality is detected when the contact of the high pressure switch opens.
Error Decision Conditions	When the high pressure switch activation count reaches the number specific to the operation mode (Reference) Operating pressure: 4.0 MPa (1338 ftAq) Reset pressure: 3.0 MPa (1004 ftAq)
Supposed Causes	■ Actuation of high pressure switch ■ Defective high pressure switch ■ Defective outdoor unit PCB ■ Instantaneous power failure ■ Defective high pressure sensor

Troubleshooting

Check No.30
Refer to P.220

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

Check for the points shown below.
(1) Is the stop valve open?
(2) Is the high pressure switch connector properly connected to the main PCB (A1P)?
(3) Does the high pressure switch have continuity?

Are the three points above OK?
- NO → Rectify the defective points.
- YES

(1) Mount a pressure gauge on the high pressure service port.
(2) Reset the operation using the remote controller, and then restart the operation.

Does the stop due to malfunction (**E3**) recur?
- YES → Is the high pressure switch operating value normal (4.0 MPa (1338 ftAq))?
  - NO → Replace the high pressure switch.
  - YES
- NO

Are the characteristics of the high pressure sensor normal? (See ∗1.)
- NO → Replace the high pressure sensor.
- YES

Service Checker
Connect the service checker to compare the high pressure value and the actual measurement value by pressure sensor by using the service checker. (See ∗2)

Are the high pressure value and the actual measurement value by pressure sensor the same?
- NO → Replace the main PCB (A1P).
- YES

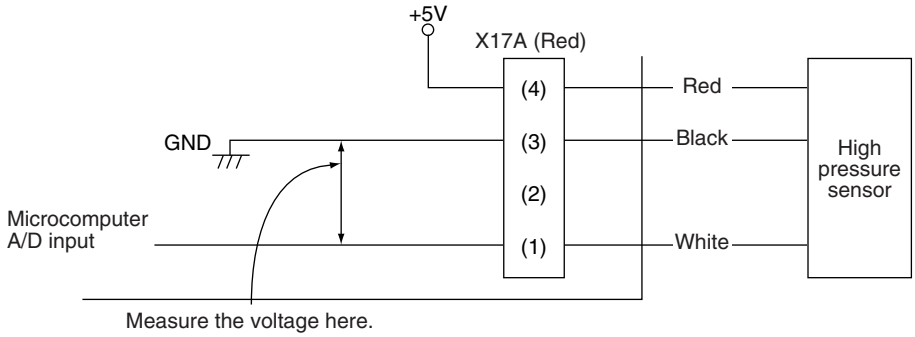
· The high pressure sensor is normal, and the pressure detected with the PCB is also normal.
· The high pressure has really become high.

Check No.30 Remove the causes by which the high pressure has become high.

(R19092)

∗1: Compare the voltages of the pressure sensor and the pressure gauge.
(For the voltage of the pressure sensor, measure the voltage at the connector, and then convert it to pressure, referring to page 226.)

∗2: Measure the voltage of the pressure sensor.



(R19189)

7.3 Actuation of Low Pressure Sensor

Error Code	**E4**
Method of Error Detection	Detection by the pressure value with the low pressure sensor
Error Decision Conditions	When the low pressure is dropped under specific pressure Operating pressure: 0.07 MPa (23 ftAq)
Supposed Causes	■ Abnormal drop of low pressure (Lower than 0.07 MPa (23 ftAq)) ■ Defective low pressure sensor ■ Defective outdoor unit PCB ■ Stop valve is not opened.

Troubleshooting

Check No.31
Refer to P.221

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

Is the stop valve open?
- NO → Open the stop valve.
- YES →

(1) Mount a pressure gauge on the low pressure service port.
(2) Reset the operation using the remote controller, and then restart the operation.

Are the characteristics of the low pressure sensor normal? (See ∗1.)
- NO → Replace the low pressure sensor.
- YES →

Service Checker
Connect the service checker to compare the low pressure value and the actual measurement value by pressure sensor by using the service checker. (See ∗2)

Check if the low pressure value and the actual measurement value by pressure sensor are the same.
- NO → Replace the main PCB (A1P).
- YES →

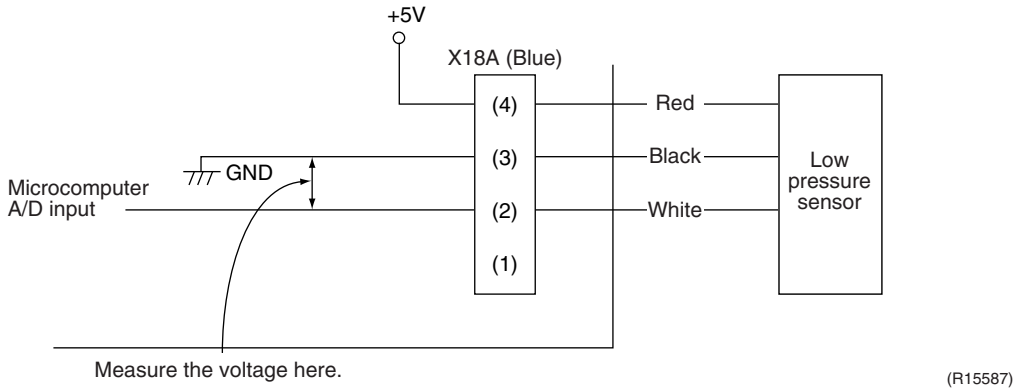
· The low pressure sensor is normal, and the pressure detected with the PCB is also normal.
· The low pressure has really become low.

Check No.31 Remove the causes by which the low pressure has become low.

(R15632)

∗1: Compare the voltages of the pressure sensor and the pressure gauge.
(For the voltage of the pressure sensor, measure the voltage at the connector, and then convert it to pressure, referring to page 226.)

∗2: Measure the voltage of the pressure sensor.



(R15587)

7.4 Compressor Motor Lock

Error Code

E5

Method of Error Detection

The position signal is taken from UVW line, and the malfunction is detected when any abnormality is observed in the phase-current waveform.

Error Decision Conditions

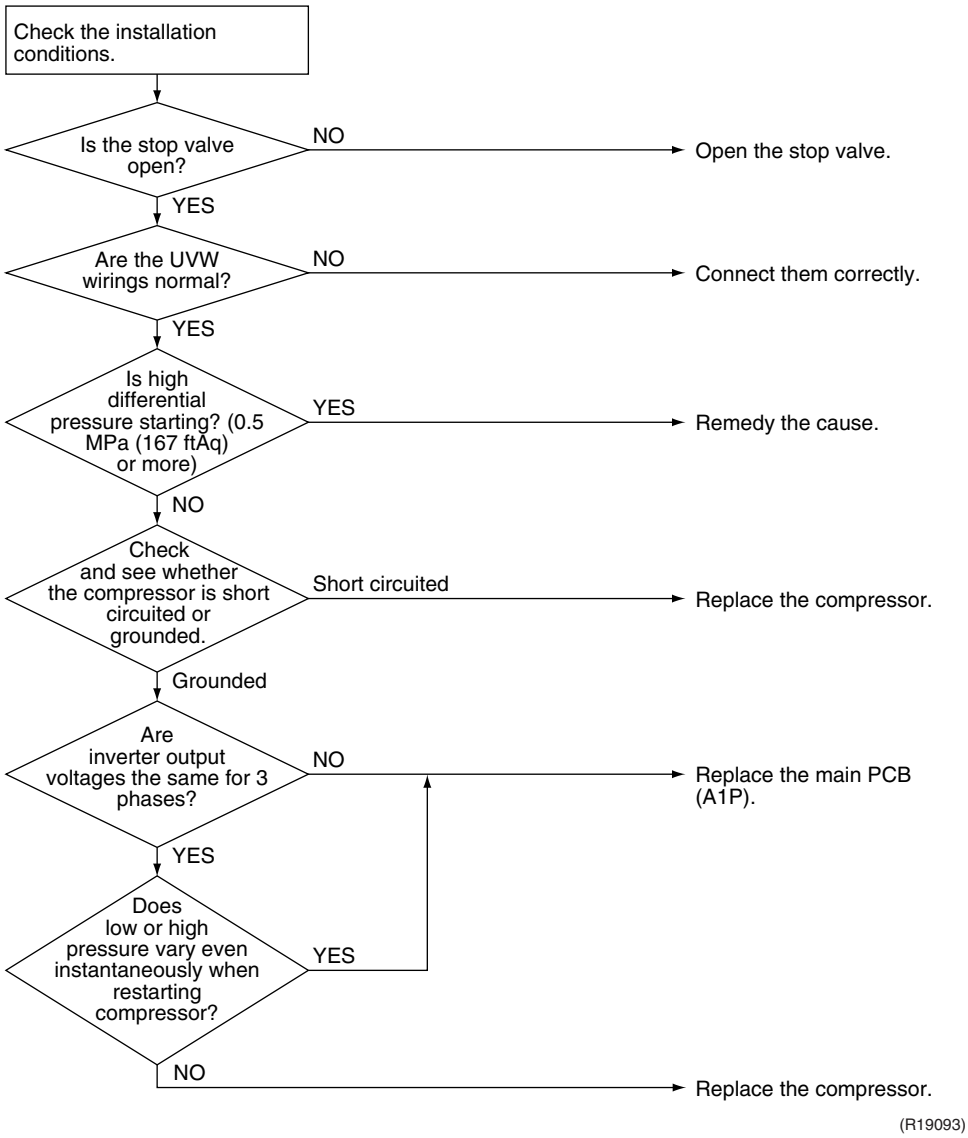
When the compressor motor does not start up even in forced startup mode

Supposed Causes

- Compressor lock
- High differential pressure (0.5 MPa (167 ftAq) or more)
- Incorrect UVW wiring
- Defective outdoor unit PCB
- Stop valve is left closed.

Troubleshooting

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



(R19093)

7.5 Outdoor Fan Motor Abnormality

Error Code

E7

Method of Error Detection

The error is determined according to the fan speed detected by Hall IC when the fan motor runs.

Error Decision Conditions

- When the fan runs with speed less than a specified one for 6 seconds or more when the fan motor running conditions are met
- When the error is generated 4 times, the system shuts down.
- Clearing condition: Operate for 5 minutes (normal)

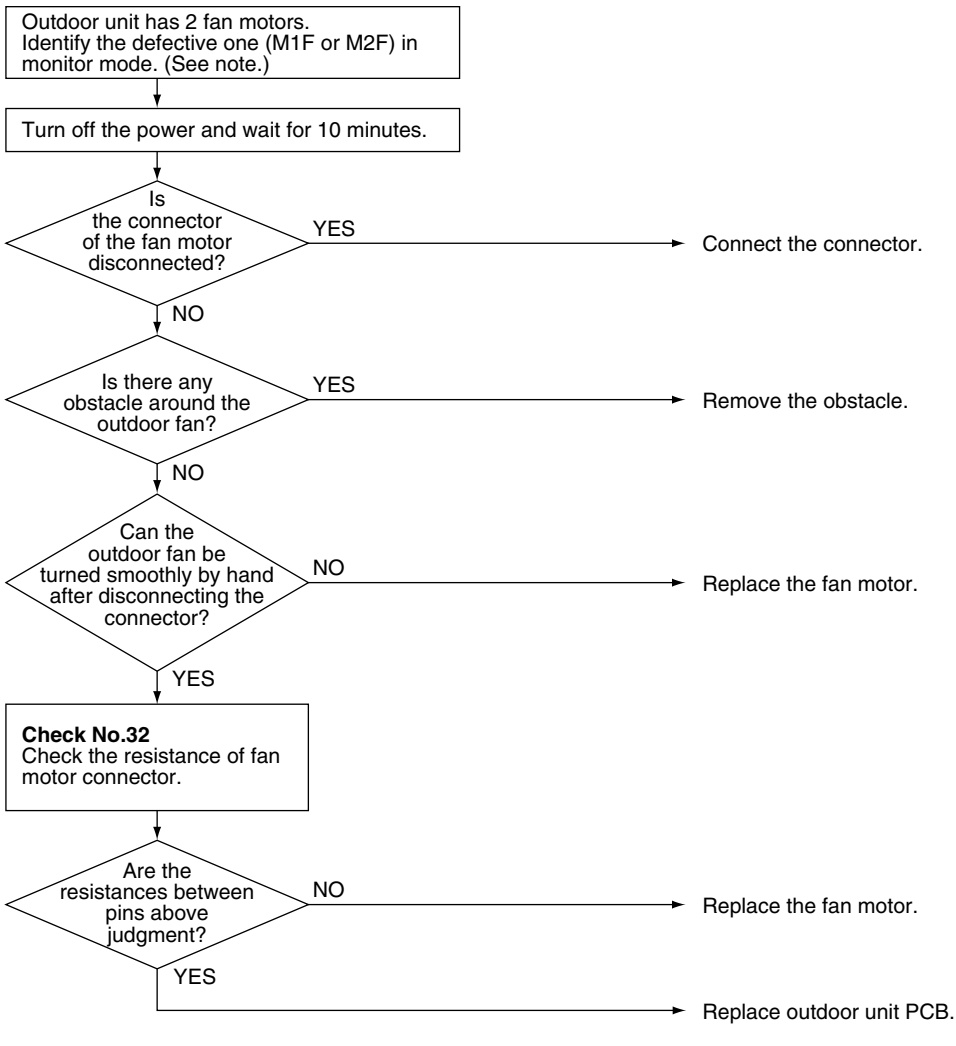
Supposed Causes

- Defective fan motor
- Disconnection of connector
- Fan does not rotate due to tangled foreign matters

Troubleshooting

Check No.32
Refer to P.222

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



(R15332)

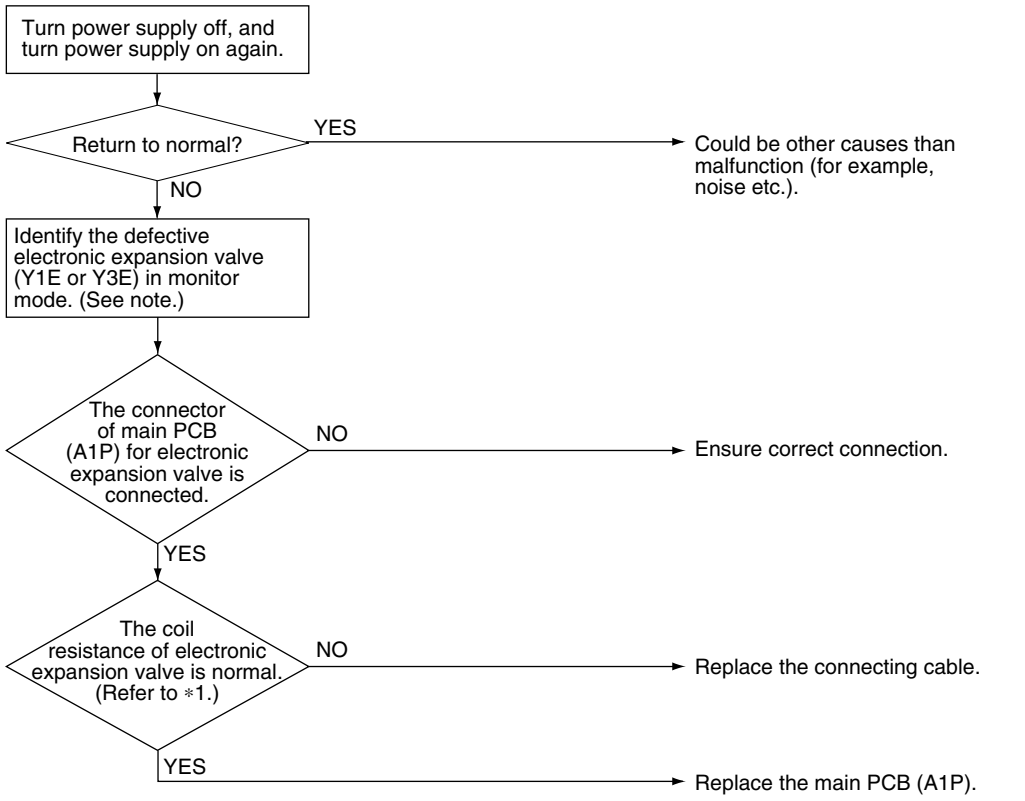
Note: Refer to page 139 for detail about monitor mode.

7.6 Moving Part of Electronic Expansion Valve (Y1E, Y3E) Abnormality

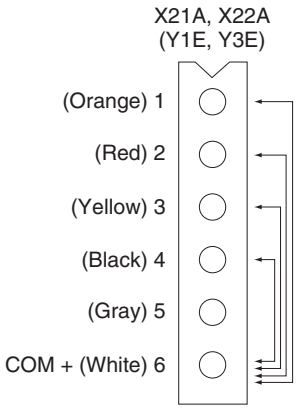
Error Code	**E9**
Method of Error Detection	System checks if the connector is disconnected, and the detection is based on the continuity of electronic expansion valve coil.
Error Decision Conditions	No current is detected in the common (COM +) when power supply is ON.
Supposed Causes	■ Disconnection of connectors for electronic expansion valve Y1E or Y3E ■ Defective moving part of electronic expansion valve ■ Defective main PCB (A1P)

Troubleshooting

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



∗ 1. Make measurement of resistance between the connector pins, and then make sure the resistance falls in the range of 40 to 50 Ω.



Measuring points	Judgment criteria
1 - 6	40 ~ 50 Ω
2 - 6	
3 - 6	
4 - 6	

(R15616)

Note: Refer to page 139 for detail about monitor mode.

7.7 Discharge Pipe Temperature Abnormality

Error Code

F3

Method of Error Detection

The temperature detected by the discharge pipe thermistor determines the error.

Error Decision Conditions

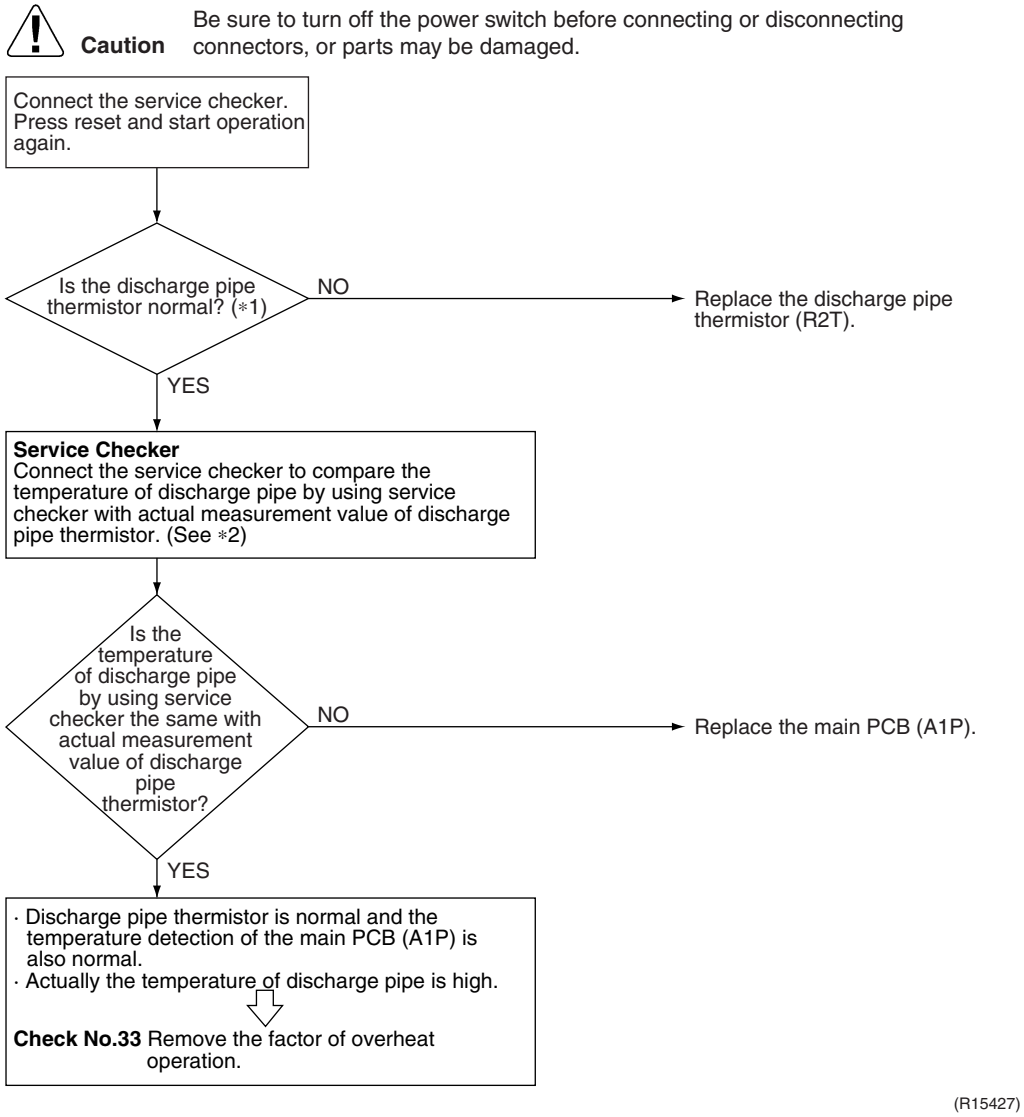
- When the discharge pipe temperature rises to an abnormally high level (135 °C (275°F) and above)
- When the discharge pipe temperature rises suddenly (120 °C (248°F) and above for 10 successive minutes)

Supposed Causes

- Defective discharge pipe thermistor
- Disconnection of discharge pipe thermistor (R2T)
- Defective main PCB (A1P)

Troubleshooting

Check No.33
Refer to P.223



∗1: Refer to Thermistor Resistance / Temperature Characteristics table 2 on page 225.
∗2: Compare the resistance value of discharge pipe thermistor and the value based on the surface thermometer.

7.8 Refrigerant Overcharged

Error Code

F6

Method of Error Detection

Excessive charging of refrigerant is detected during check operation by using outdoor temperature, outdoor heat exchanger temperature, and liquid pipe temperature.

Error Decision Conditions

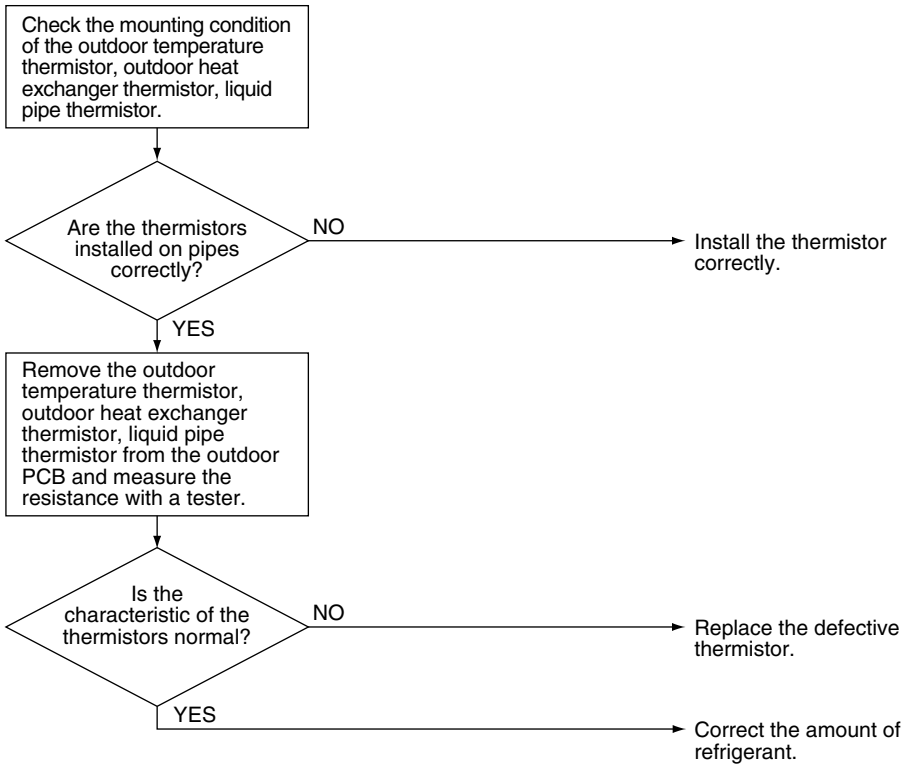
When the amount of refrigerant, which is calculated during check operation by using outdoor temperature, outdoor heat exchanger temperature, and liquid pipe temperature, exceeds the standard.

Supposed Causes

- Refrigerant overcharge
- Incorrect installation of outdoor temperature thermistor, outdoor heat exchanger thermistor, liquid pipe thermistor (R1T, R4T, R7T)
- Defective outdoor temperature thermistor, outdoor heat exchanger thermistor, liquid pipe thermistor (R1T, R4T, R7T)

Troubleshooting

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



Refer to Thermistor Resistance / Temperature Characteristics table 1 on page 224.

7.9 Outdoor Temperature Thermistor (R1T) Abnormality

Error Code

H9

Method of Error Detection

The temperature detected by the outdoor temperature thermistor determines the error.

Error Decision Conditions

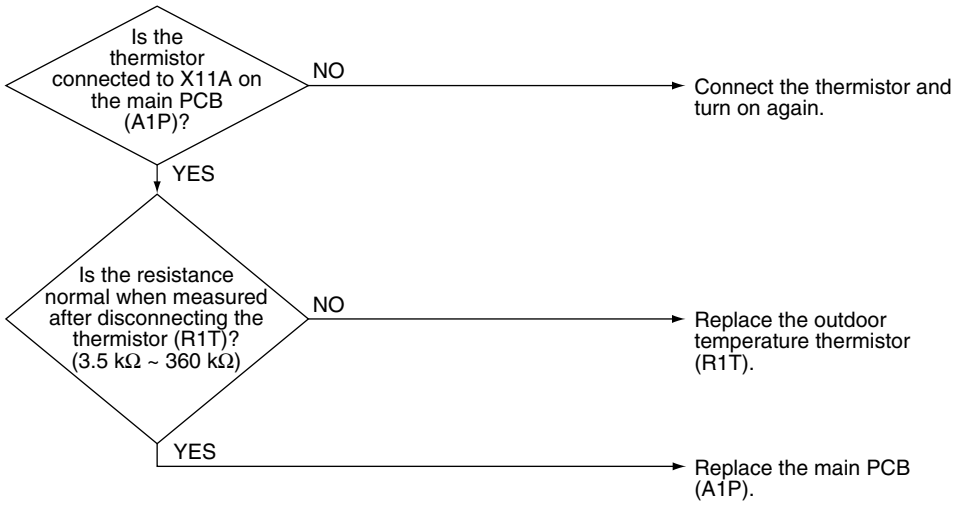
When the outdoor temperature thermistor has short circuit or open circuit

Supposed Causes

- Disconnection of thermistor
- Defective outdoor temperature thermistor (R1T)
- Defective main PCB (A1P)

Troubleshooting

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



(R15642)

Refer to Thermistor Resistance / Temperature Characteristics table 1 on page 224.

7.10 Discharge Pipe Thermistor (R2T) Abnormality

Error Code **J3**

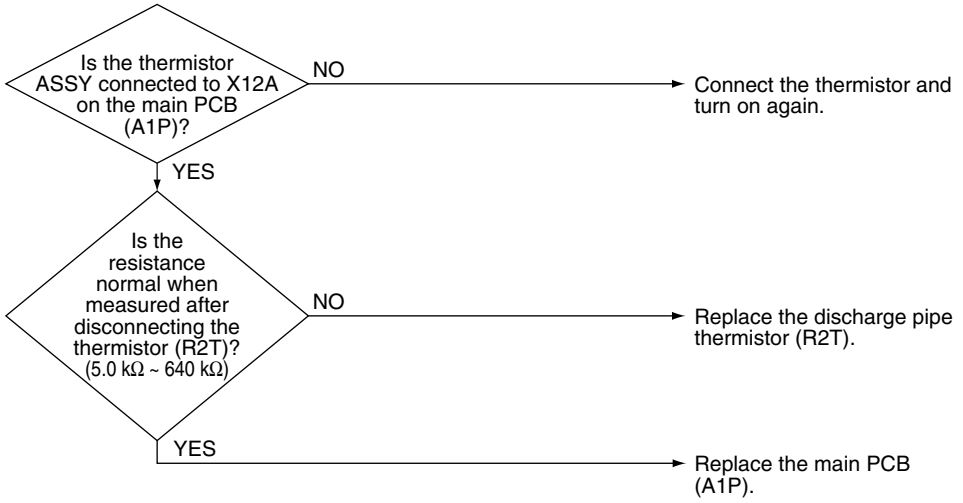
Method of Error Detection The temperature detected by discharge pipe thermistor determines the error.

Error Decision Conditions When a short circuit or an open circuit in the discharge pipe thermistor is detected

Supposed Causes
- Disconnection of thermistor
- Defective discharge pipe thermistor (R2T)
- Defective main PCB (A1P)

Troubleshooting

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



(R13026)

Refer to Thermistor Resistance / Temperature Characteristics table 2 on page 225.

7.11 Suction Pipe Thermistor (R3T, R5T) Abnormality

Error Code **J5**

Method of Error Detection The temperature detected by the suction pipe thermistor determines the error.

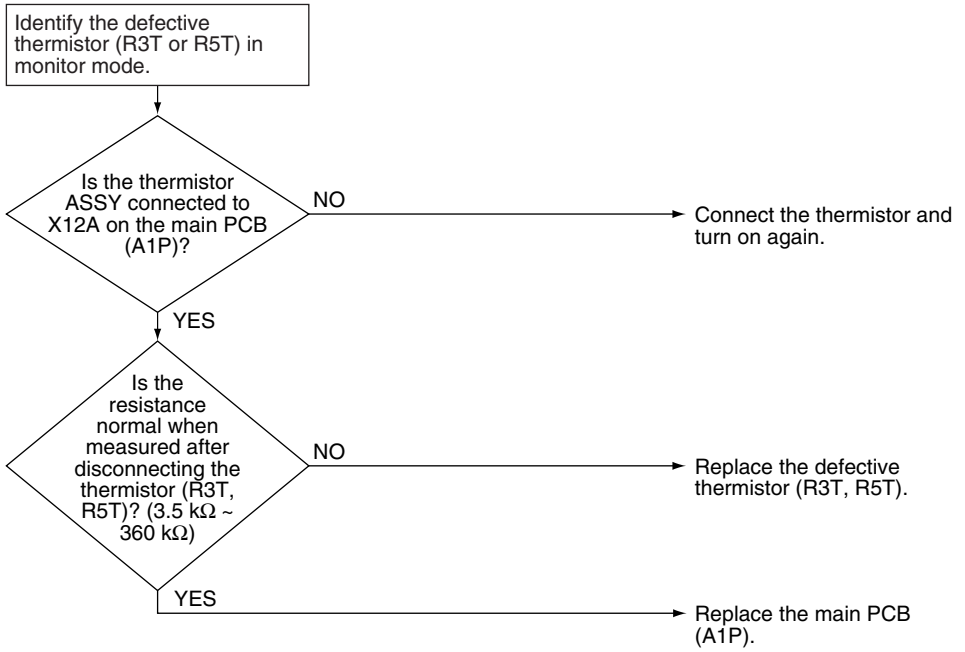
Error Decision Conditions When a short circuit or an open circuit in the suction pipe thermistor is detected

Supposed Causes

- Disconnection of thermistor
- Defective suction pipe thermistor (R3T, R5T)
- Defective main PCB (A1P)

Troubleshooting

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



Refer to Thermistor Resistance / Temperature Characteristics table 1 on page 224.

Refer to page 139 for detail about monitor mode.

7.12 Outdoor Heat Exchanger Thermistor (R4T) Abnormality

Error Code **J6**

Method of Error Detection The temperature detected by the outdoor heat exchanger thermistor determines the error.

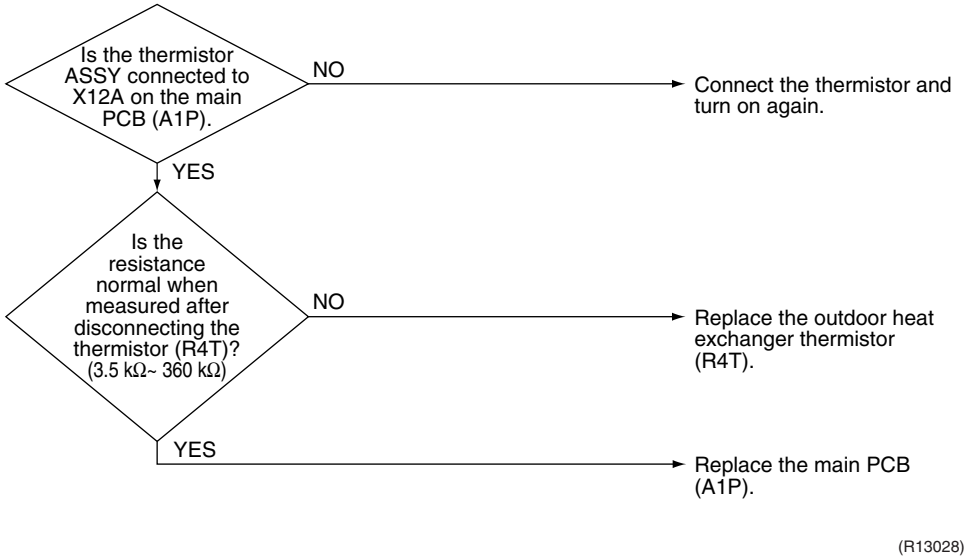
Error Decision Conditions When a short circuit or an open circuit in the outdoor heat exchanger thermistor is detected

Supposed Causes

- Disconnection of thermistor
- Defective outdoor heat exchanger thermistor (R4T)
- Defective main PCB (A1P)

Troubleshooting

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



(R13028)

Refer to Thermistor Resistance / Temperature Characteristics table 1 on page 224.

7.13 Outdoor Liquid Pipe Thermistor (R7T) Abnormality

Error Code

J7

Method of Error Detection

The temperature detected by the outdoor liquid pipe thermistor determines the error.

Error Decision Conditions

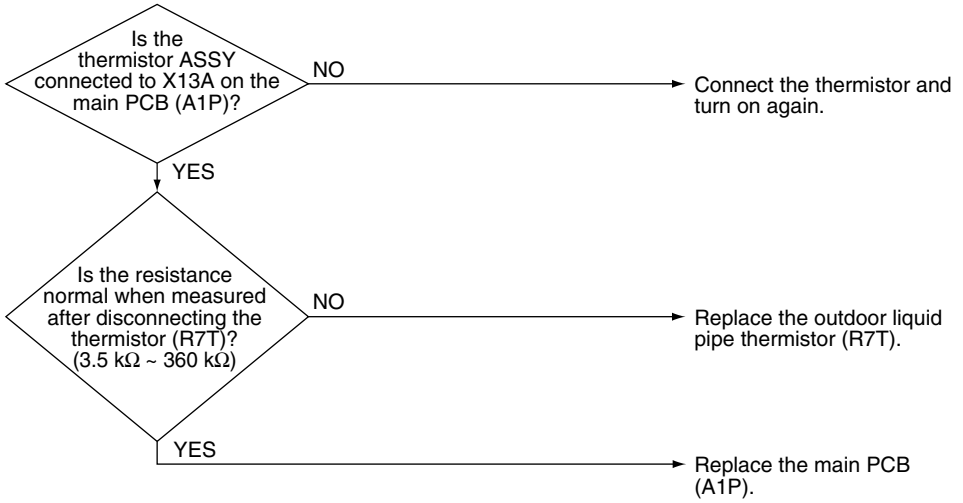
When a short circuit or an open circuit in the outdoor liquid pipe thermistor is detected

Supposed Causes

- Disconnection of thermistor
- Defective outdoor liquid pipe thermistor (R7T)
- Defective main PCB (A1P)

Troubleshooting

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



(R13029)

Refer to Thermistor Resistance / Temperature Characteristics table 1 on page 224.

7.14 Subcooling Heat Exchanger Gas Pipe Thermistor (R6T) Abnormality

Error Code

J9

Method of Error Detection

The temperature detected by subcooling heat exchanger gas pipe thermistor determines the error.

Error Decision Conditions

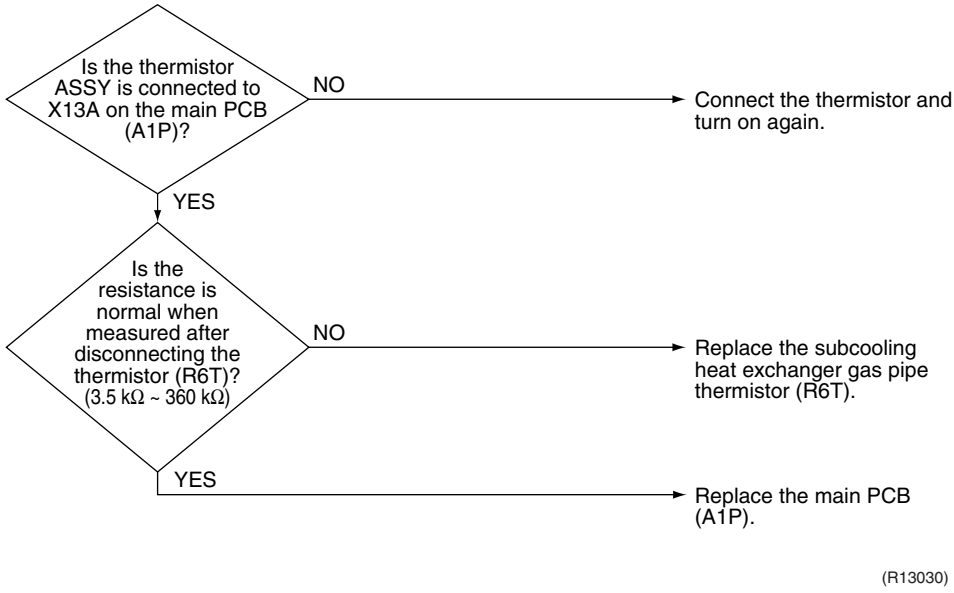
When the subcooling heat exchanger gas pipe thermistor is short circuited or open

Supposed Causes

- Disconnection of thermistor
- Defective subcooling heat exchanger gas pipe thermistor (R6T)
- Defective main PCB (A1P)

Troubleshooting

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



Refer to Thermistor Resistance / Temperature Characteristics table 1 on page 224.

7.15 High Pressure Sensor Abnormality

Error Code **JA**

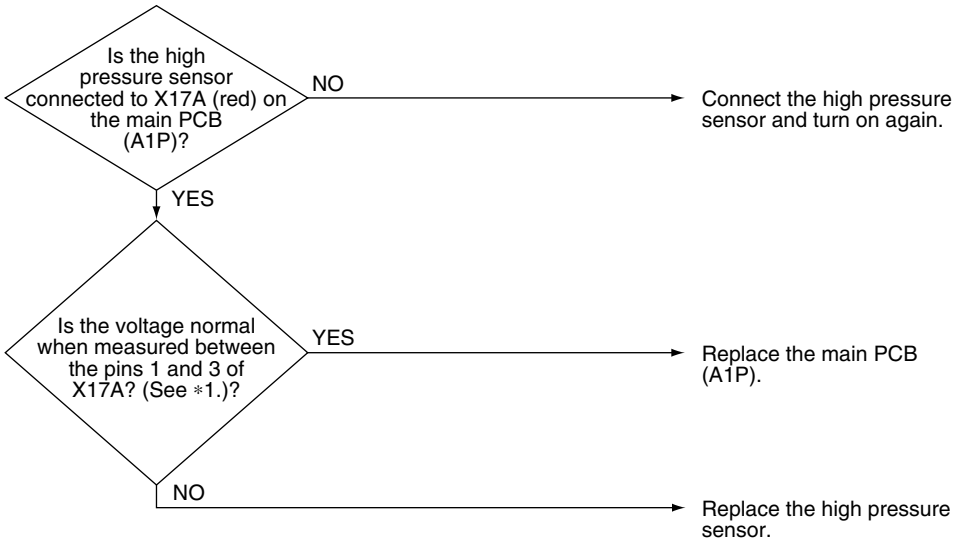
Method of Error Detection The pressure detected by high pressure sensor determines the error.

Error Decision Conditions When the high pressure sensor is short circuit or open circuit

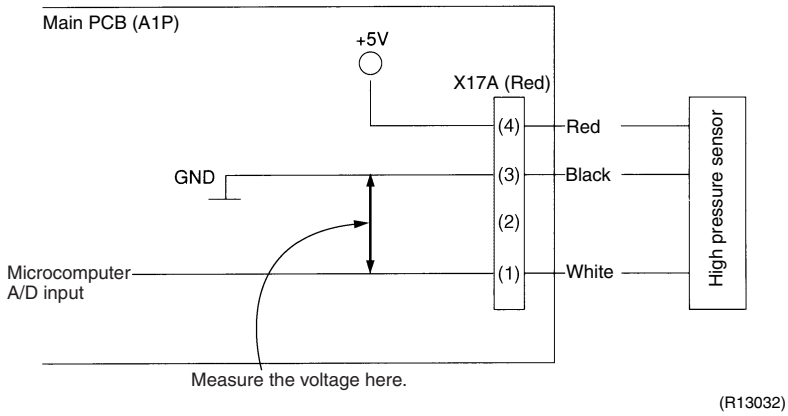
Supposed Causes
- Defective high pressure sensor
- Wrong connection with low pressure sensor
- Defective main PCB (A1P)

Troubleshooting

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



∗1: Voltage measurement point



For pressure / voltage characteristics graph, refer to Pressure Sensor on page 226.

7.16 Low Pressure Sensor Abnormality

Error Code

JC

Method of Error Detection

The pressure detected by low pressure sensor determines the error.

Error Decision Conditions

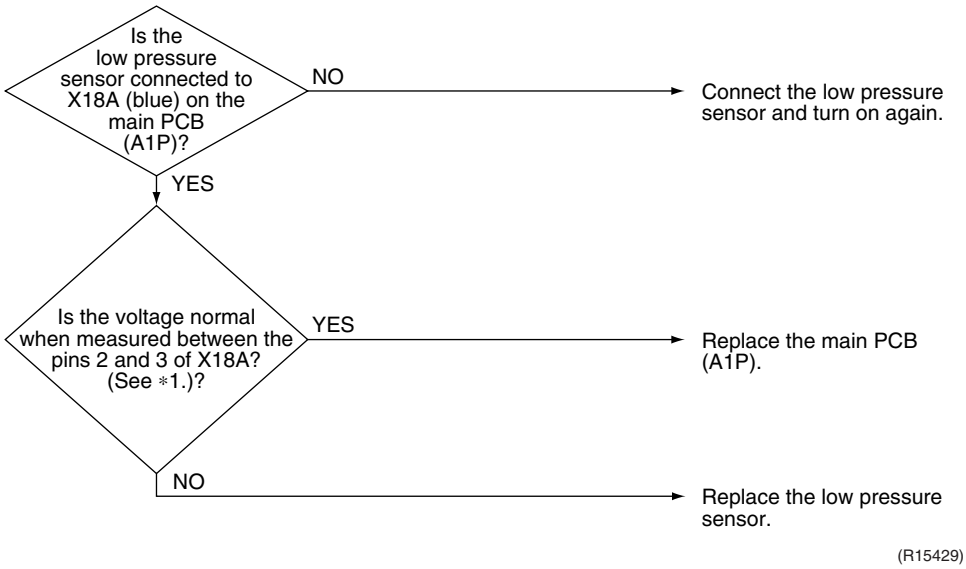
When the low pressure sensor is short circuit or open circuit

Supposed Causes

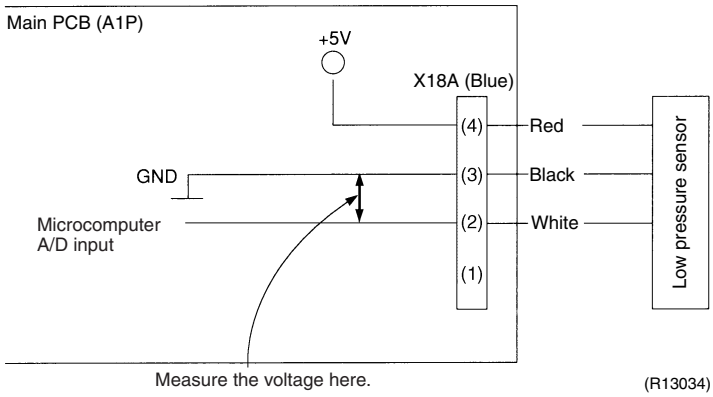
- Defective low pressure sensor
- Wrong connection with high pressure sensor
- Defective main PCB (A1P)

Troubleshooting

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



∗1: Voltage measurement point



For pressure / voltage characteristics graph, refer to Pressure Sensor on page 226.

7.17 Outdoor Unit PCB Abnormality

Error Code

L1

Method of Error Detection

- The error is detected based on the current value during waveform output before starting compressor.
- The error is detected based on the value from current sensor during synchronous operation when starting the unit.

Error Decision Conditions

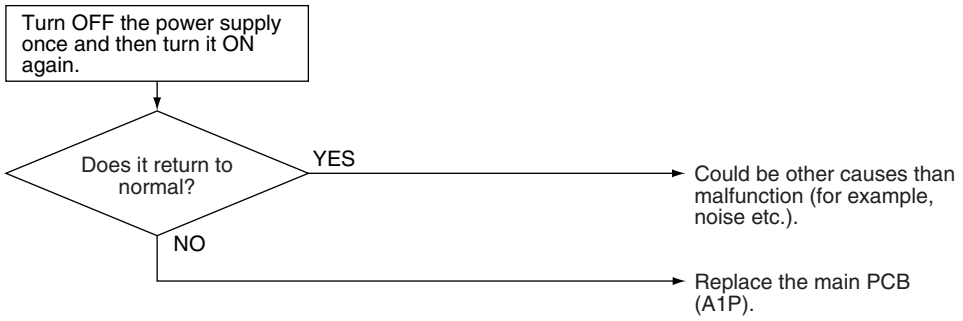
- Overcurrent (OCP) flows during waveform output.
- Malfunction of current sensor during synchronous operation
- IPM failure

Supposed Causes

- Defective main PCB (A1P)
  - IPM failure
  - Current sensor failure
  - Failure of IGBT or drive circuit

Troubleshooting

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



(R15335)

7.18 Radiation Fin Temperature Rise

Error Code **L4**

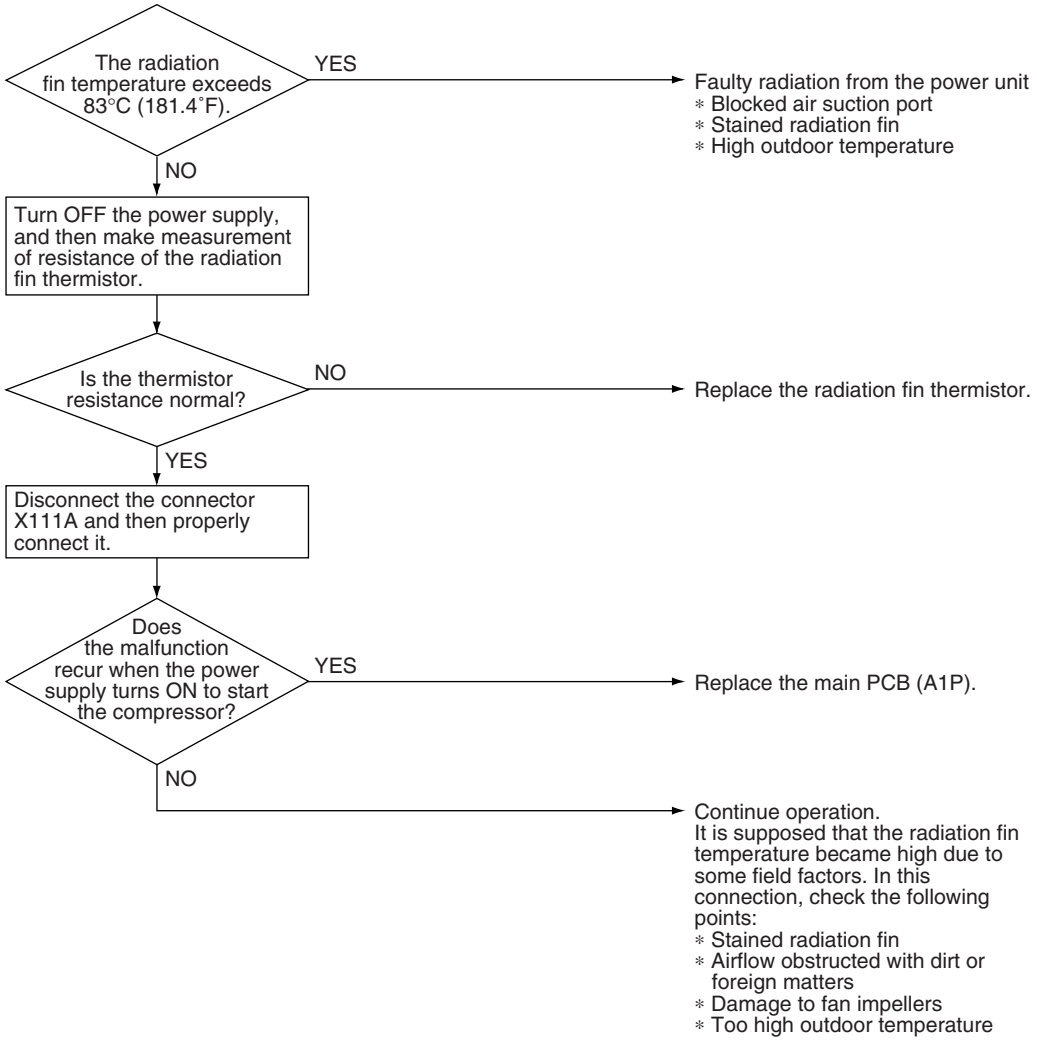
Method of Error Detection Fin temperature is detected by the thermistor of the radiation fin.

Error Decision Conditions When the radiation fin temperature increases above 83°C (181.4°F)

Supposed Causes
- Defective main PCB (A1P)
- Defective radiation fin thermistor (FINTH)

Troubleshooting

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



(R19094)

Refer to Thermistor Resistance / Temperature Characteristics table 2 on page 225.

7.19 Inverter Compressor Abnormality

Error Code **L5**

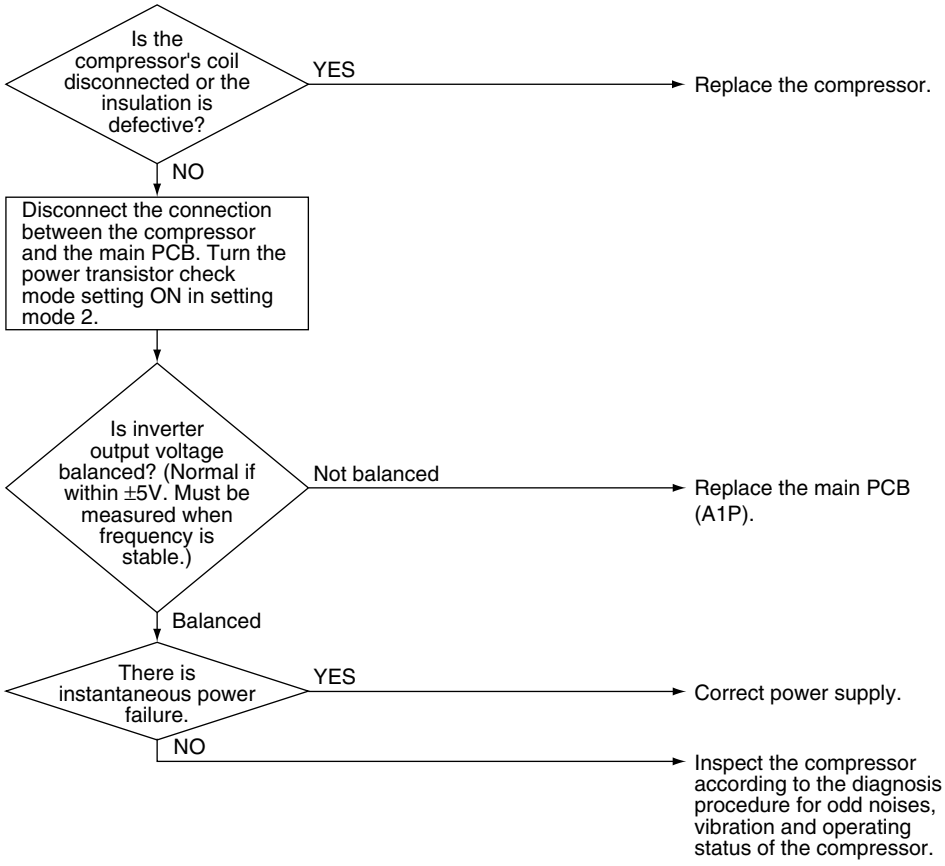
Method of Error Detection The error is detected from current flowing in the power transistor.

Error Decision Conditions When an excessive current flows in the power transistor
(Instantaneous overcurrent also causes activation.)

Supposed Causes
- Defective compressor coil (disconnected, defective insulation)
- Compressor start-up malfunction (mechanical lock)
- Defective main PCB (A1P)

Troubleshooting

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



(R19190)

Note: Higher voltage than actual is displayed when the inverter output voltage is checked by tester.

7.20 Inverter Current Abnormality

Error Code **L8**

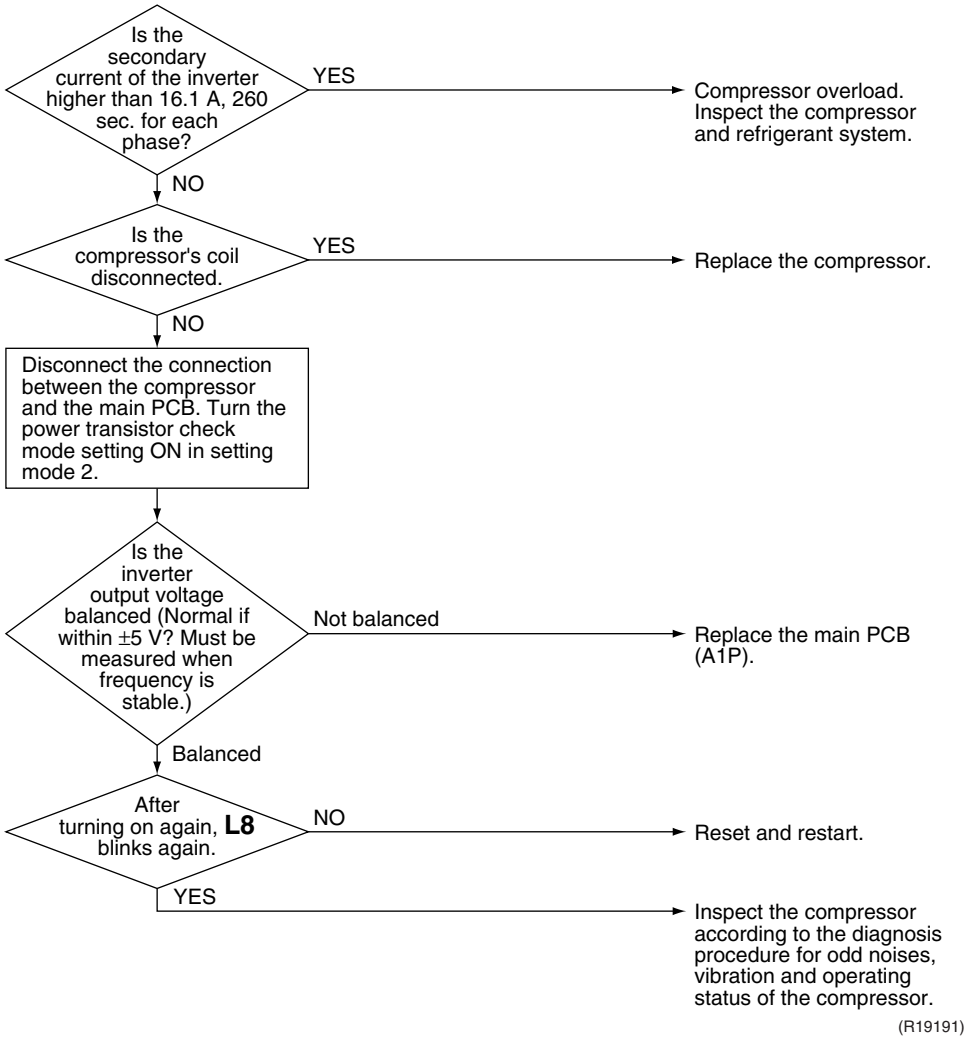
Method of Error Detection
The error is detected by current flowing in the power transistor.

Error Decision Conditions
When overload in the compressor is detected. (Inverter secondary current 16.1 A)
(1) 19.0 A and over continues for 5 seconds.
(2) 16.1 A and over continues for 260 seconds.

Supposed Causes
- Compressor overload
- Compressor coil disconnected
- Defective main PCB (A1P)

Troubleshooting

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



(R19191)

7.21 Compressor Start-up Error

Error Code

L9

Method of Error Detection

The error is detected from current flowing in the power transistor.

Error Decision Conditions

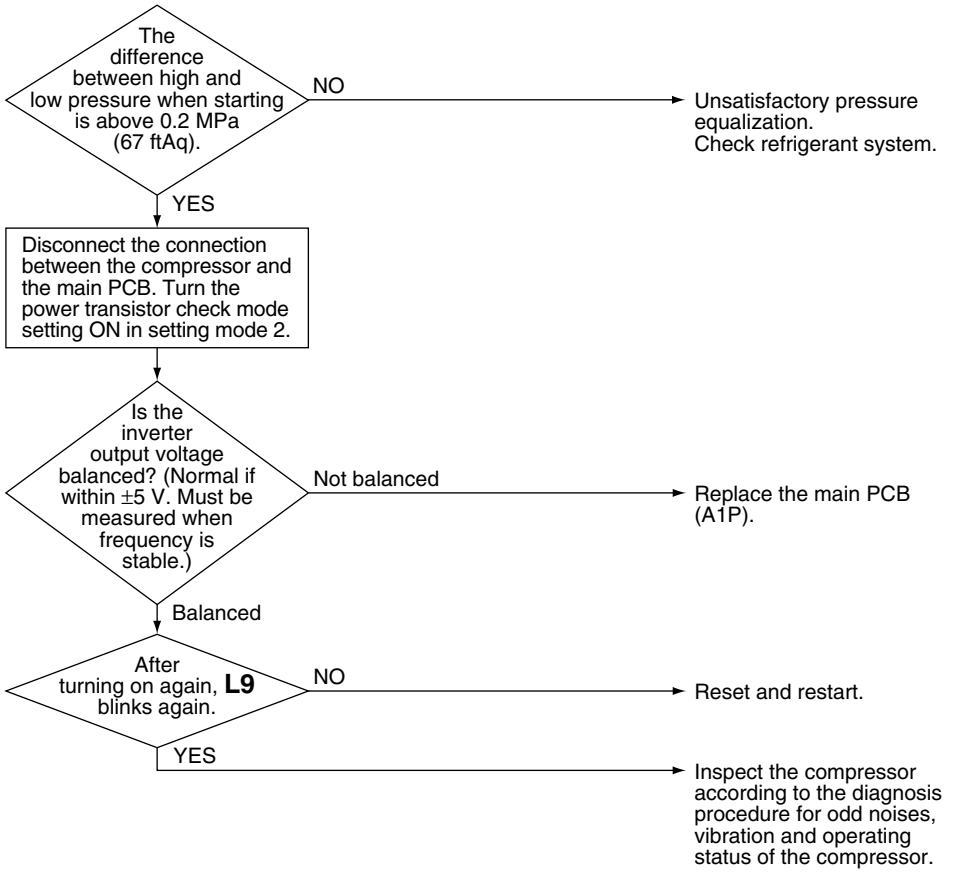
Starting control of the compressor does not complete.

Supposed Causes

- Defective compressor
- Large pressure difference before starting the compressor
- Defective main PCB (A1P)

Troubleshooting

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



(R19095)

7.22 High Voltage of Capacitor in Main Inverter Circuit

Error Code

P1

Method of Error Detection

The error is detected according to the voltage waveform of main circuit capacitor built in the inverter.

Error Decision Conditions

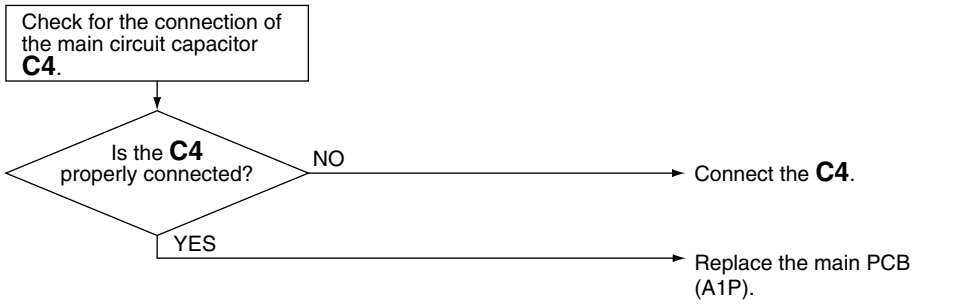
When the voltage waveform becomes identical with the waveform of the power supply open phase

Supposed Causes

- Defective main circuit capacitor
- Improper main circuit wiring
- Defective main PCB (A1P)

Troubleshooting

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



(R15619)

7.23 Radiation Fin Thermistor Abnormality

Error Code

P4

Method of Error Detection

Resistance of radiation fin thermistor is detected when the compressor is not operating.

Error Decision Conditions

When the resistance value of thermistor becomes a value equivalent to open or short circuited status

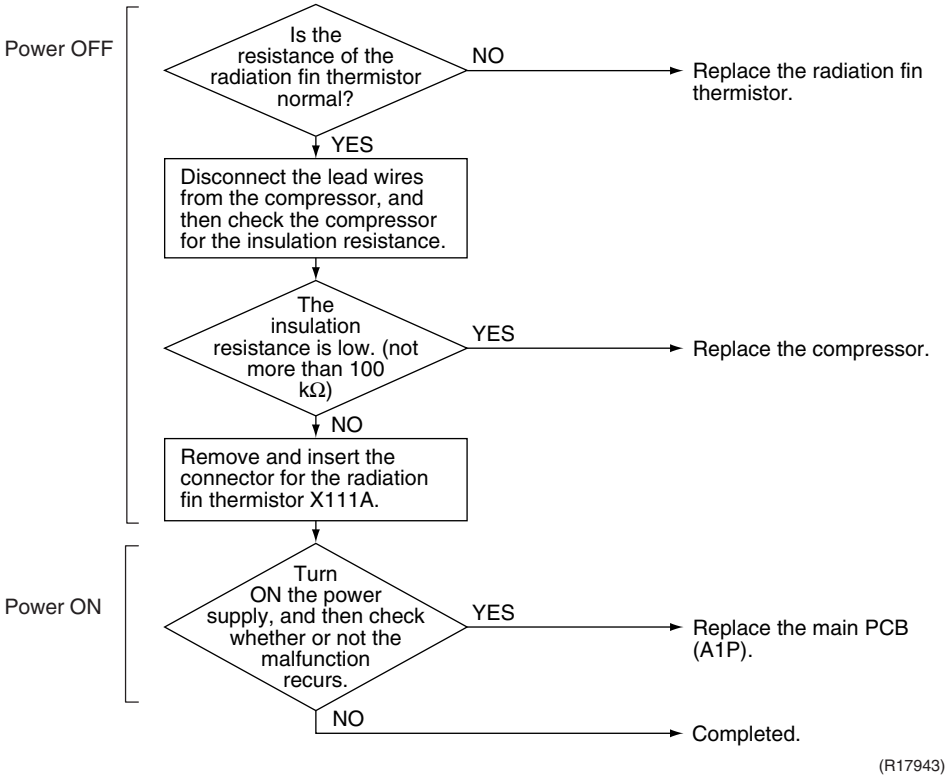
★ Malfunction is not decided while the unit operation is continued.
P4 is displayed by pressing the inspection button.

Supposed Causes

- Defective radiation fin thermistor (FINTH)
- Defective main PCB (A1P)

Troubleshooting

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



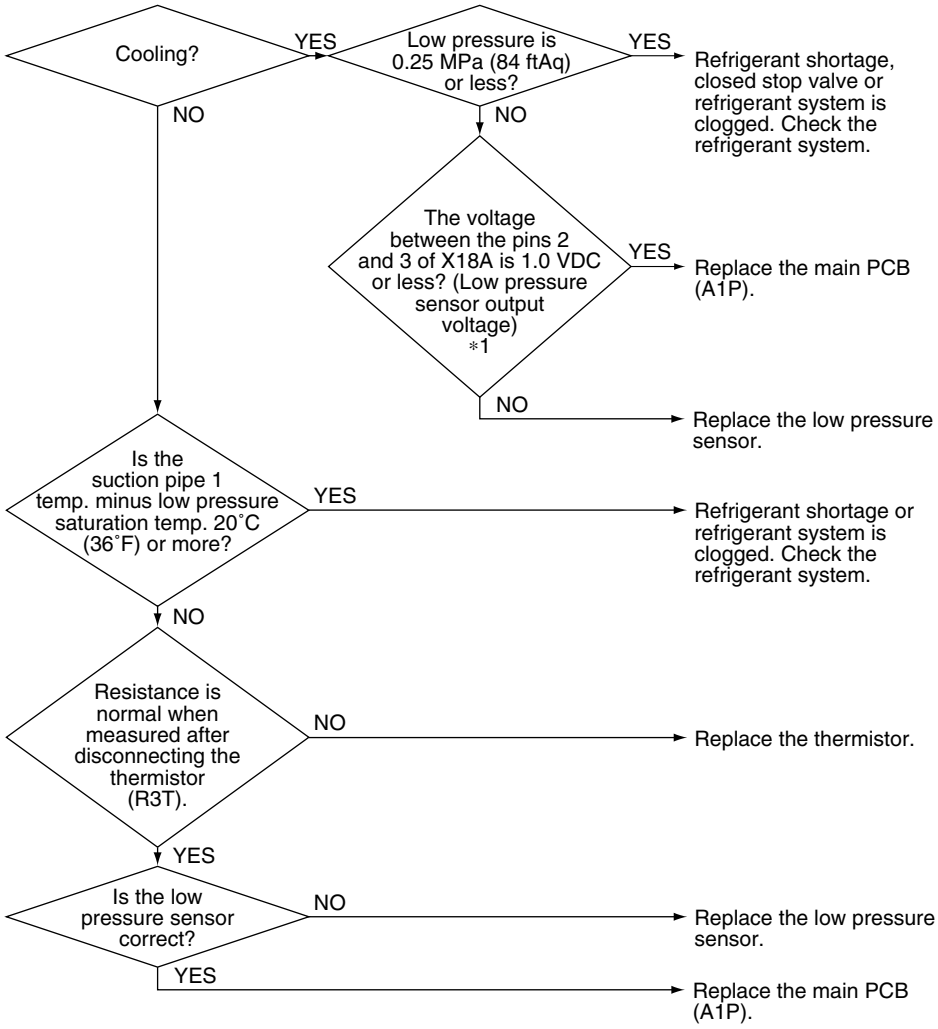
Refer to Thermistor Resistance / Temperature Characteristics table 2 on page 225.

7.24 Low Pressure Drop due to Refrigerant Shortage or Electronic Expansion Valve Abnormality

Error Code	**U0**
Method of Error Detection	Refrigerant shortage is detected by discharge pipe thermistor and low pressure saturation temperature.
Error Decision Conditions	Microcomputer judge and detect if the system is short of refrigerant. ★The error is not decided while the operation continues.
Supposed Causes	■ Refrigerant shortage or refrigerant system clogging (incorrect piping) ■ Defective low pressure sensor ■ Defective main PCB (A1P) ■ Defective thermistor (R3T)

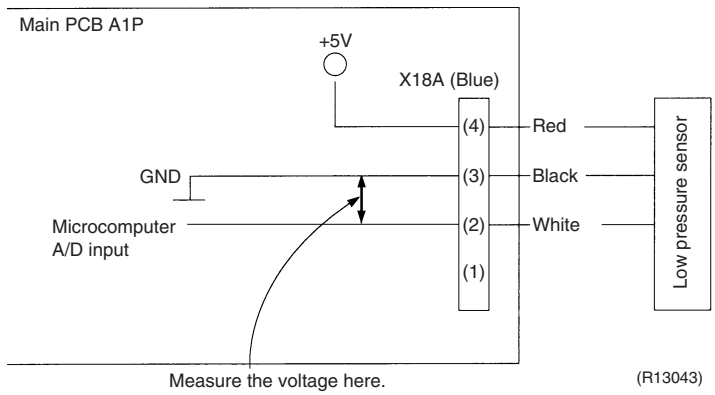
Troubleshooting

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



(R19096)

∗1: Voltage measurement point



(R13043)

Refer to Thermistor Resistance / Temperature Characteristics table 1 on page 224.

For pressure / voltage characteristics graph, refer to Pressure Sensor on page 226.

7.25 Power Supply Insufficient or Instantaneous Failure

Error Code **U2**

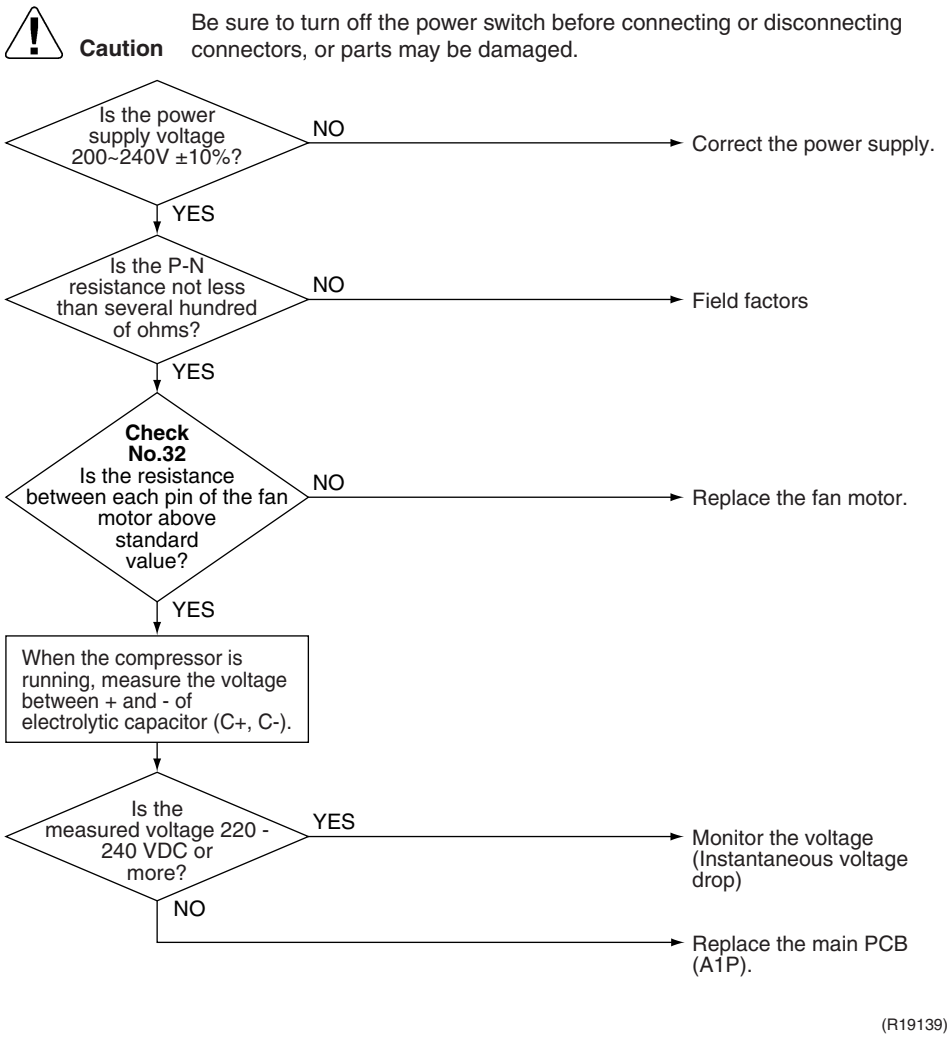
Method of Error Detection
Detection of voltage of main circuit capacitor built in the inverter and power supply voltage.

Error Decision Conditions
When the abnormal voltage of main circuit capacitor built in the inverter and abnormal power supply voltage are detected

Supposed Causes
- Power supply insufficient
- Instantaneous power failure
- Defective outdoor fan motor
- Defective main PCB (A1P)

Troubleshooting

Check No.32
Refer to P.222

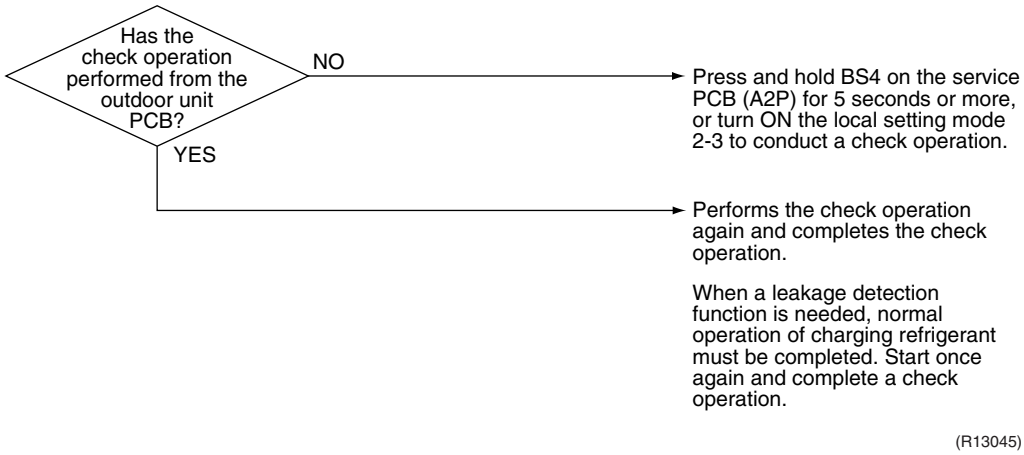


7.26 Check Operation is not Conducted

Error Code	**U3**
Method of Error Detection	Check operation is executed or not
Error Decision Conditions	When the unit starts operation without check operation
Supposed Causes	Check operation is not executed.

Troubleshooting

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



(R13045)

7.27 Signal transmission Error between Indoor Unit and Outdoor Unit in the Same System

Error Code **U9**

Method of Error Detection

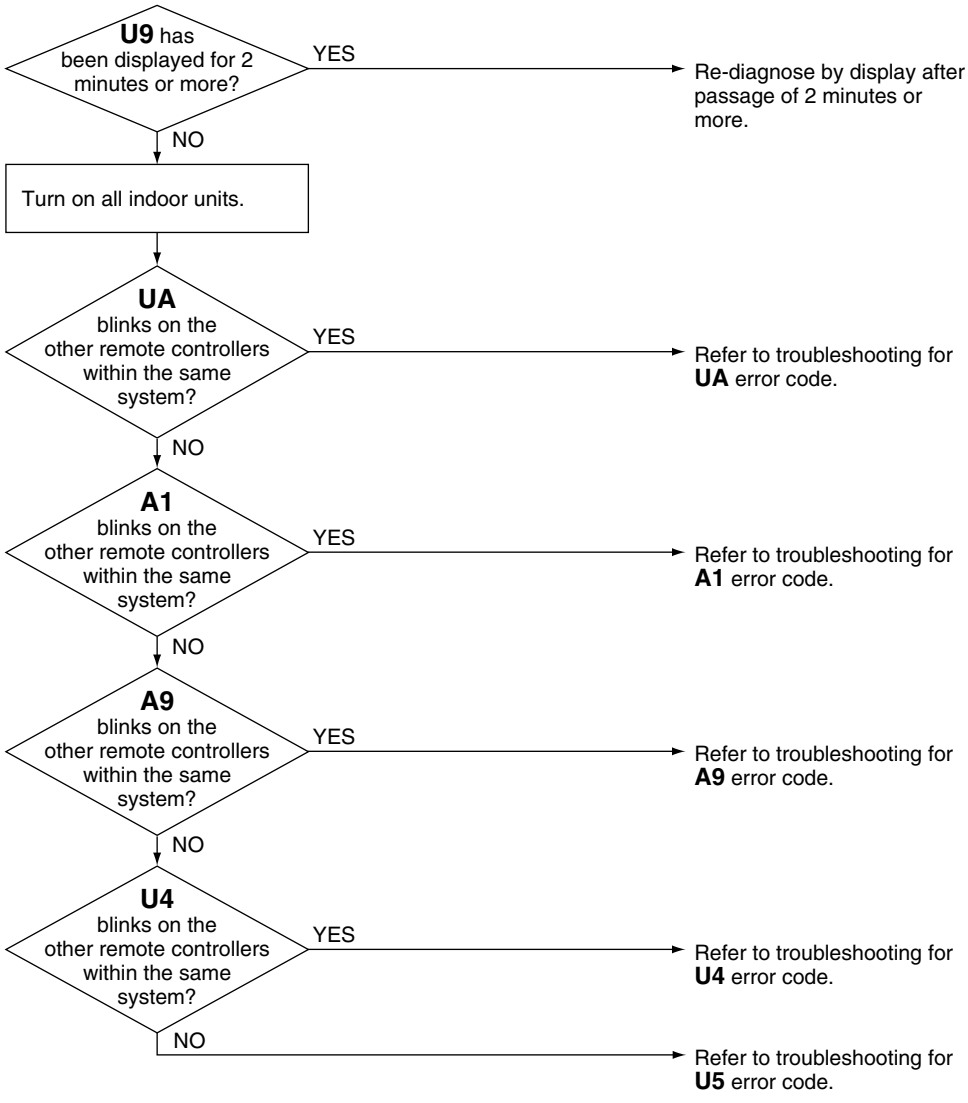
Error Decision Conditions

Supposed Causes

- Signal transmission error within system
- Defective electronic expansion valve in indoor unit of other system
- Defective indoor unit PCB in other system
- Improper connection of transmission wiring between indoor and outdoor unit

Troubleshooting

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



(R19192)

7.28 Excessive Number of Indoor Units

Error Code

UA

Method of Error Detection

- A difference occurs in data by the type of refrigerant between indoor and outdoor units.
- The number of indoor units is out of the allowable range.
- Incorrect signals are transmitted among the indoor unit, BP unit, and outdoor unit.

Error Decision Conditions

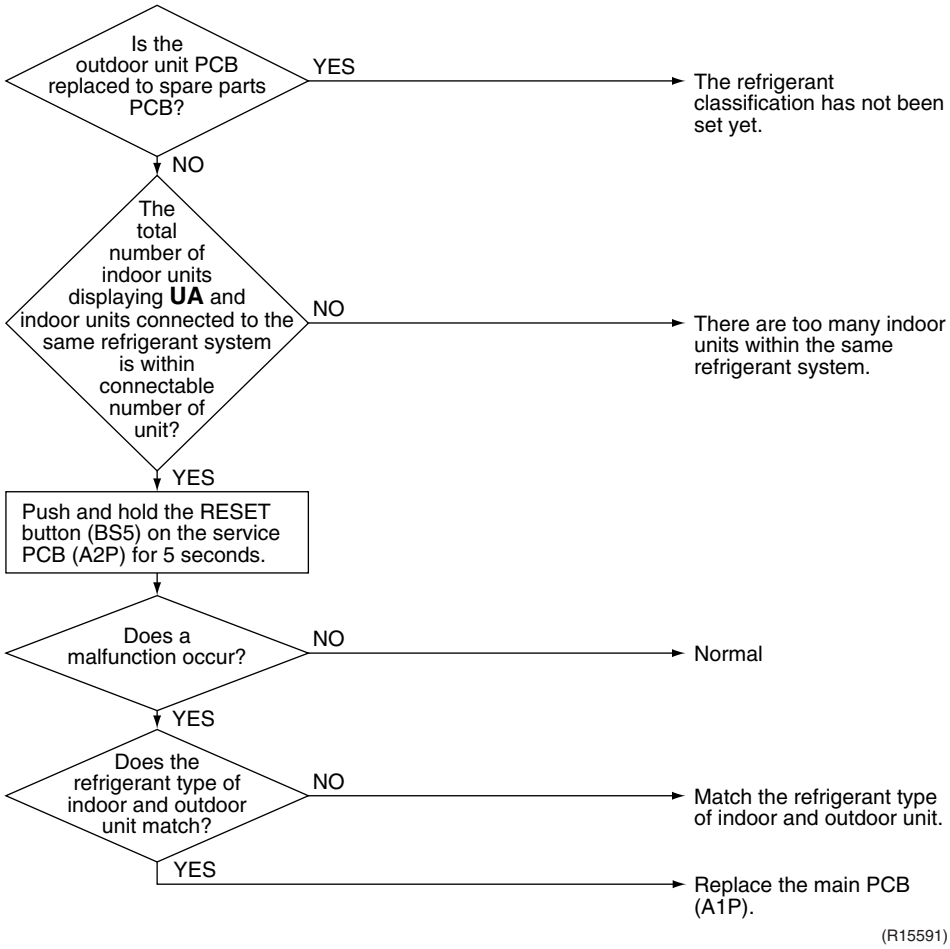
The malfunction decision is made as soon as either of the abnormalities is detected.

Supposed Causes

- Excess of connected indoor units
- Defective main PCB (A1P)
- Mismatching of the refrigerant type of indoor and outdoor unit.
- Setting of outdoor unit PCB was not conducted after replacing to spare parts PCB.

Troubleshooting

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



7.29 Address Duplication of Central Remote Controller

Error Code

UC

Method of Error Detection

The principal indoor unit detects the same address as that of its own on any other indoor unit.

Error Decision Conditions

The malfunction decision is made as soon as the abnormality is detected.

Supposed Causes

- Address duplication of centralized remote controller
- Defective indoor unit PCB

Troubleshooting

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

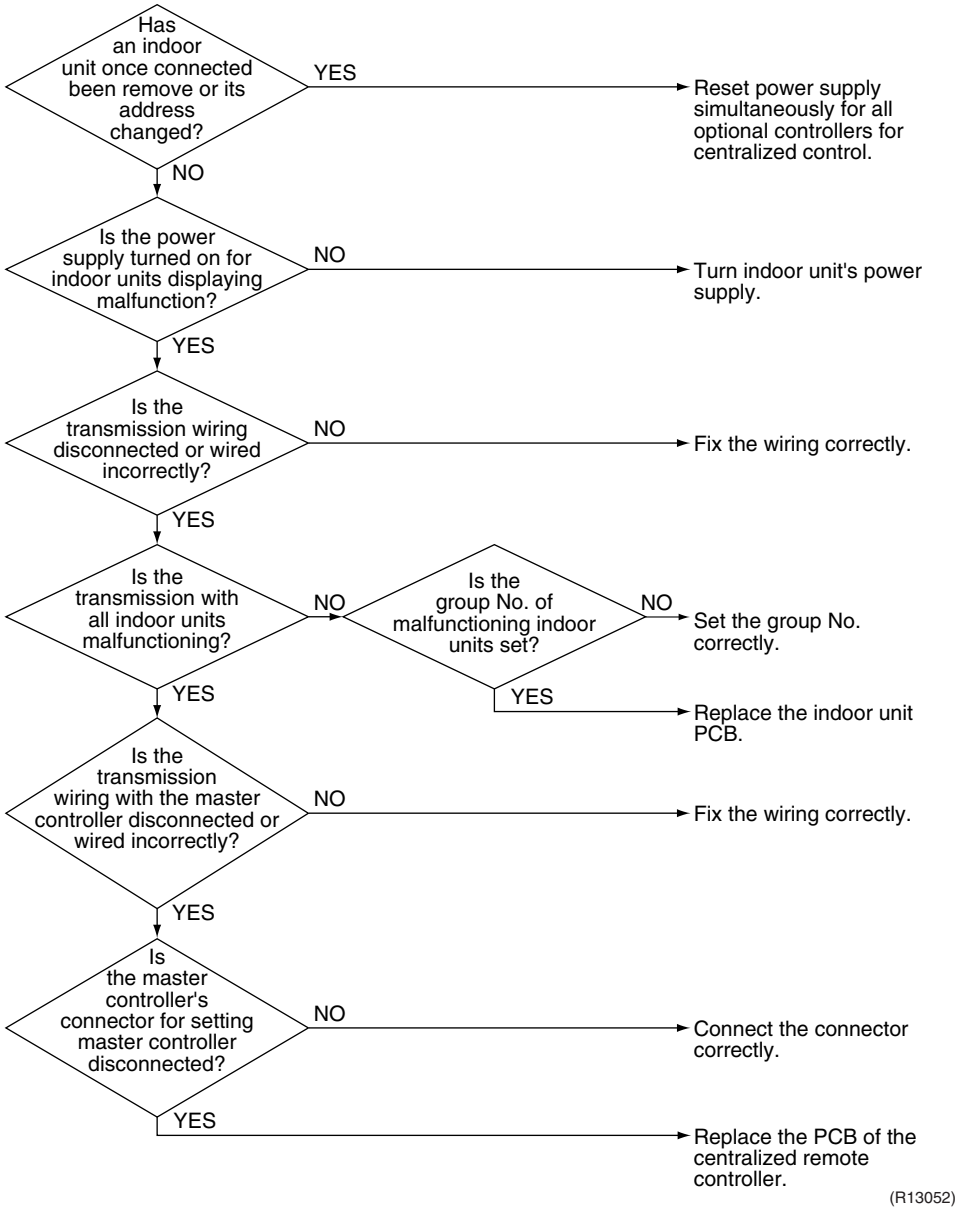
(R13051)

7.30 Transmission Error between Centralized Remote Controller and Indoor Unit

Error Code	**UE**
Method of Error Detection	Microcomputer checks if transmission between indoor unit and centralized remote controller is normal.
Error Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	■ Transmission error between optional controllers for centralized control and indoor unit ■ Connector for setting master controller is disconnected. ■ Defective PCB of centralized remote controller ■ Defective indoor unit PCB

Troubleshooting

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



7.31 System is not Set yet

Error Code

UF

Method of Error Detection

On check operation, the number of indoor units in terms of transmission is not corresponding to that of indoor units that have made changes in temperature.

Error Decision Conditions

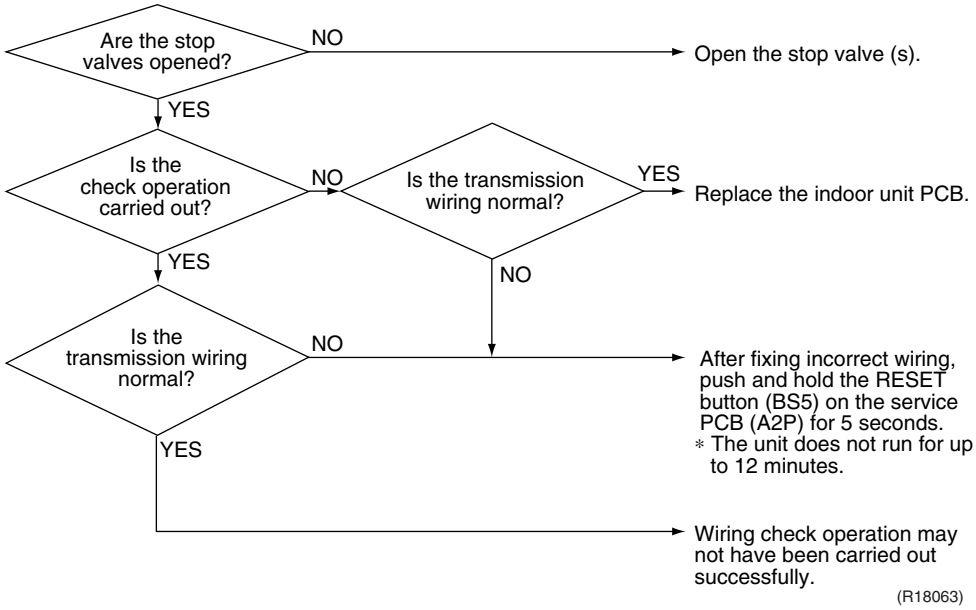
The malfunction is determined as soon as the abnormality aforementioned is detected through checking the system for any erroneous connection of units on the check operation.

Supposed Causes

- Improper connection of transmission wiring between indoor unit - outdoor unit
- Failure to execute check operation
- Defective indoor unit PCB
- Stop valve is left closed

Troubleshooting

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



Note: Wiring check operation may not be successful if carried out after the outdoor unit has been off for more than 12 hours, or if it is not carried out after running all connected indoor units in the fan mode for at least an hour.

7.32 System Abnormality, Refrigerant System Address Undefined

Error Code

UH

Method of Error Detection

The system detects an indoor unit to which auto address has not been assigned.

Error Decision Conditions

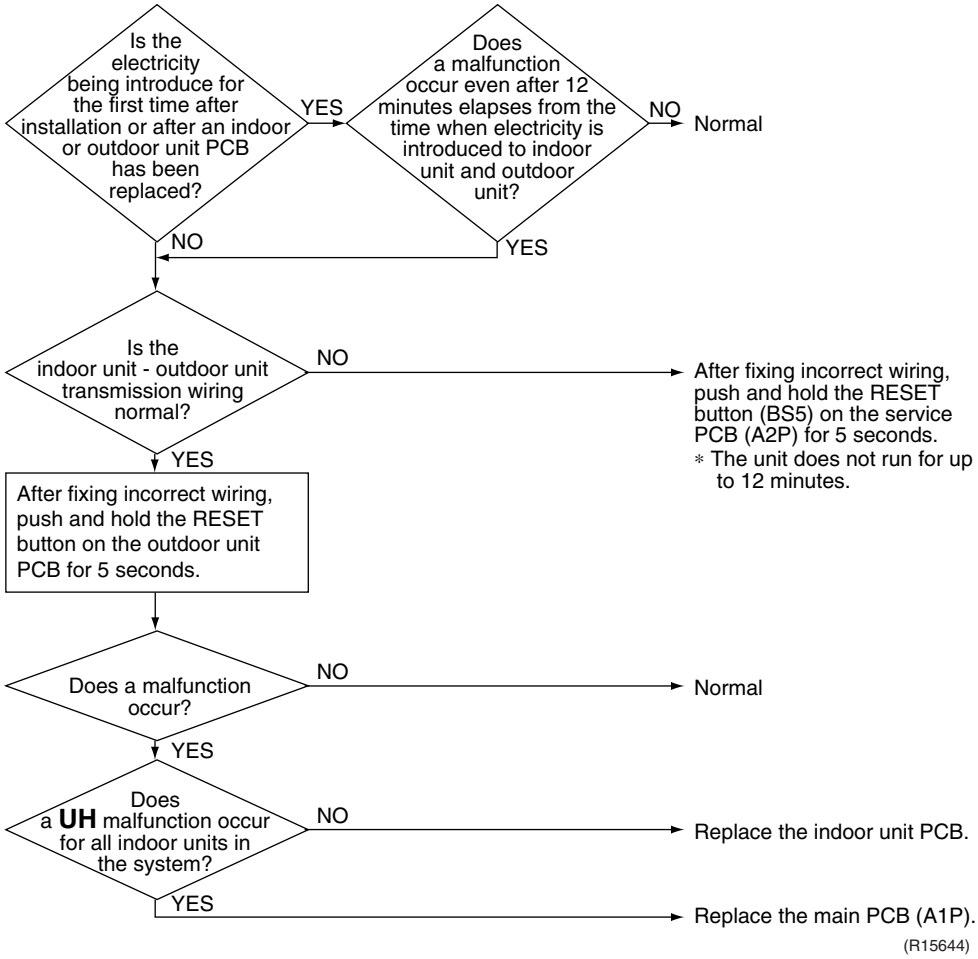
The malfunction decision is made as soon as the abnormality is detected.

Supposed Causes

- Improper connection of transmission wiring between indoor and outdoor unit
- Defective indoor unit PCB
- Defective main PCB (A1P)

Troubleshooting

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

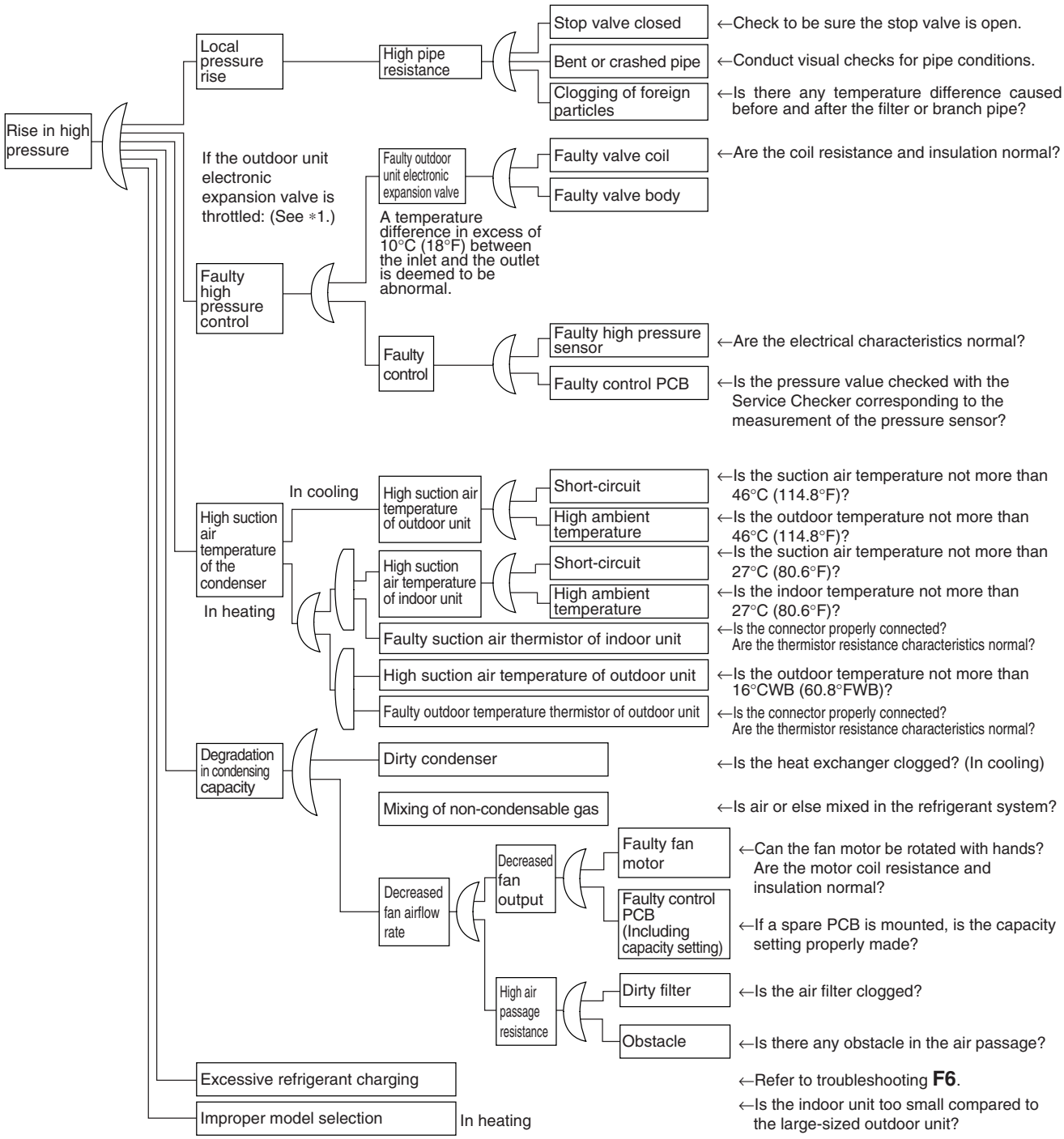


(R15644)

7.33 Check for Outdoor Unit

7.33.1 Check for Causes of Rise in High Pressure

Check No.30 Referring to the Fault Tree Analysis (FTA) shown below, probe the faulty points.

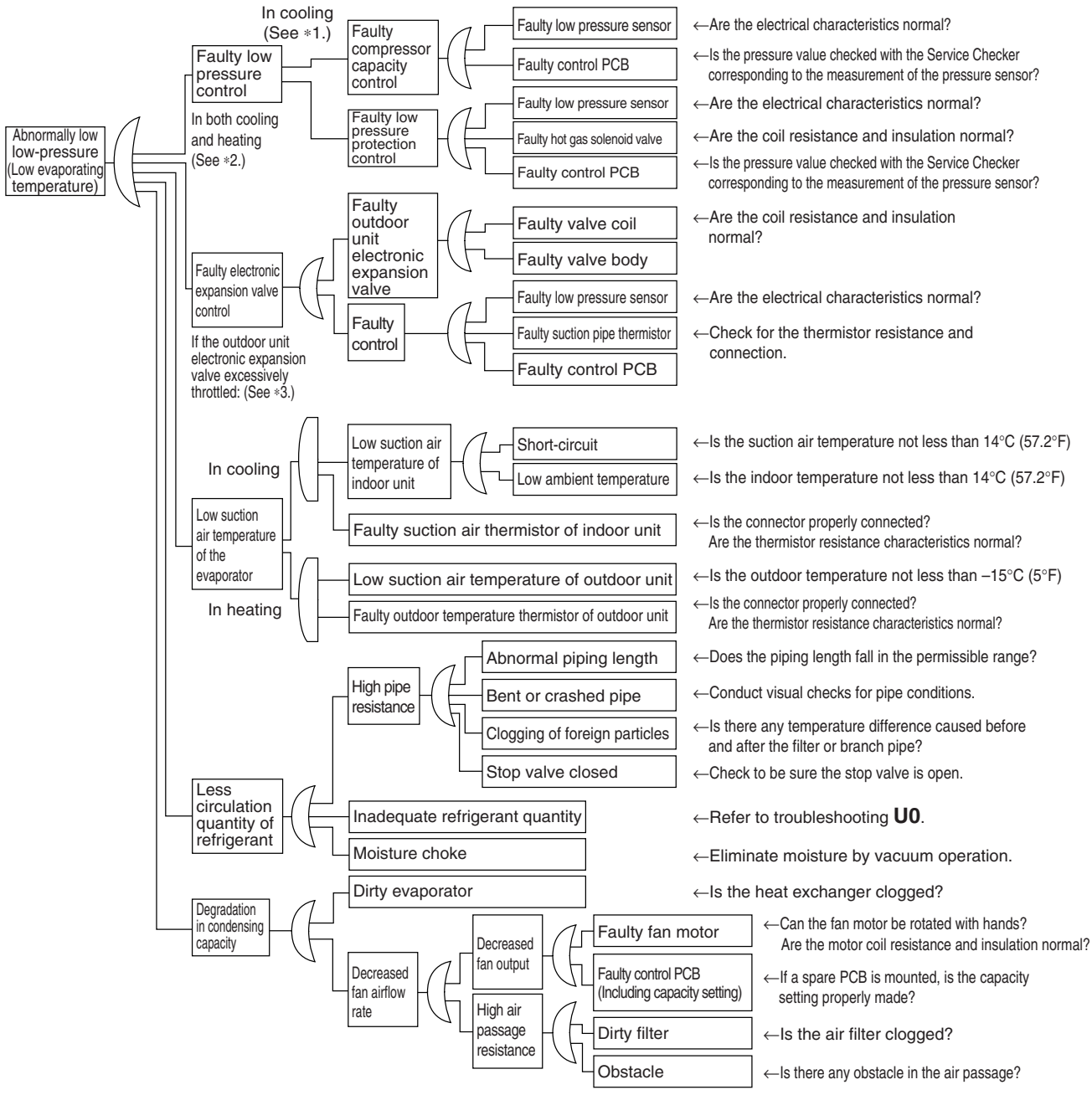


∗1: In cooling, it is normal if the outdoor unit electronic expansion valve (Y1E) is fully open.

(R19097)

7.33.2 Check for Causes of Drop in Low Pressure

Check No.31 Referring to the Fault Tree Analysis (FTA) shown below, probe the faulty points.



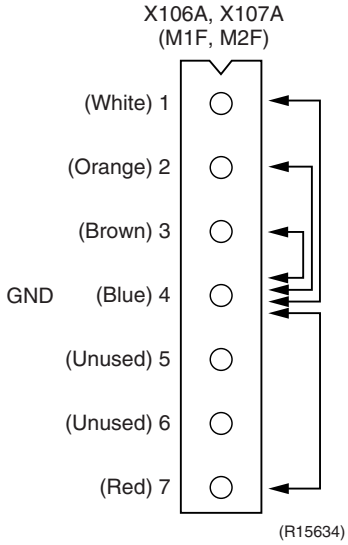
∗1: For details of the compressor capacity control while in cooling, refer to Compressor PI Control.
∗2: The Low Pressure Protection Control includes low pressure protection control and hot gas bypass control.
∗3: In heating, the outdoor unit electronic expansion valve (Y1E) is used for superheated degree control of outdoor unit heat exchanger. (For details, refer to Electronic Expansion Valve PI Control.)

(R19098)

7.33.3 Fan Motor Connector Check

Check No. 32

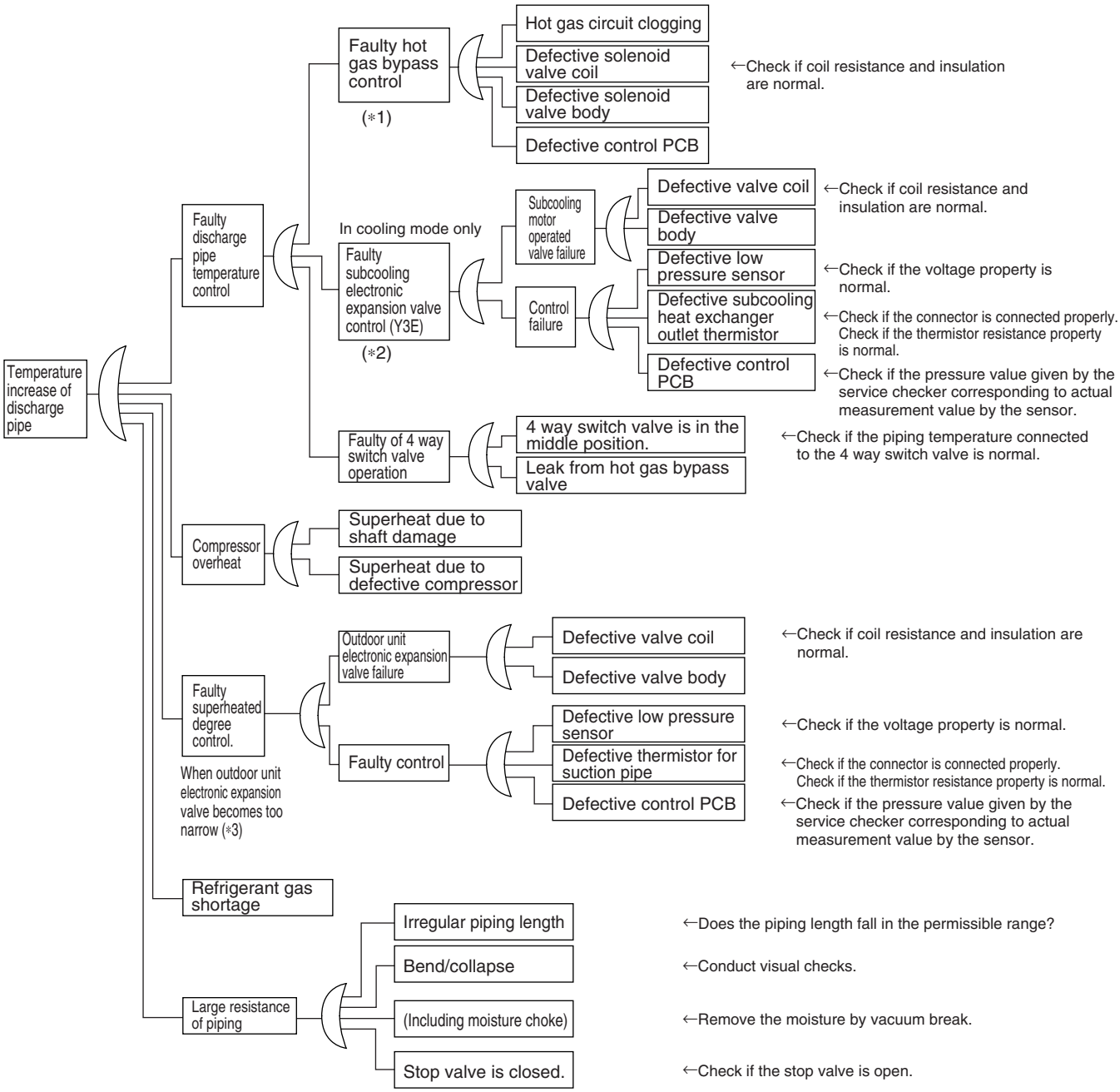
(1) Turn the power supply off.
(2) With the fan motor connector disconnected, measure the resistance between each pin, then make sure that the resistance is more than the value mentioned in the following table.



Measurement point	Judgment
1 - 4	1 MΩ or more
2 - 4	100 kΩ or more
3 - 4	100 Ω or more
4 - 7	100 kΩ or more

7.33.4 Check for the Factors of Overheat Operation

Check No. 33 Identify the defective points referring to the failure factor analysis (FTA) as follows.



∗1: Refer to Low Pressure Protection Control for hot gas bypass control.
∗2: Refer to Electronic Expansion Valve PI Control for subcooling electronic expansion valve control.
∗3: Superheating temperature control in heating operation is conducted by outdoor unit electronic expansion valve. (Refer to Electronic Expansion Valve PI Control).
∗4: Judgment criteria of superheat operation:
(1) Suction gas superheated degree: 10˚C (18˚F) and over.
(2) Discharge gas superheated degree: 45˚C (81˚F) and over, except for immediately after starting and drooping control, etc..
(Use the above stated values as a guide. Depending on the other conditions, the unit may be normal despite the values within the above scope.)

(R19140)

8. Thermistor Resistance / Temperature Characteristics

Table 1

Applicable thermistor	**Indoor unit** R2T: Indoor heat exchanger 1 (liquid pipe) R3T: Indoor heat exchanger 2 **Outdoor unit** R3T: Suction pipe 1 R4T: Outdoor heat exchanger R5T: Suction pipe 2 R6T: Subcooling heat exchanger gas pipe R7T: Liquid pipe	**Indoor unit** R1T: Room temperature	**Outdoor unit** R1T: Outdoor temperature	**BP unit** DGA - DGC: Gas pipe DLA - DLC: Liquid pipe
Thermistor temperature °C (°F)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)
–30 (–22)	363.8	361.7719	362.4862	363.3
–25 (–13)	266.8	265.4704	265.9943	266.6
–20 (–4)	197.8	196.9198	197.3083	197.8
–15 (5)	148.2	147.5687	147.8597	148.2
–10 (14)	112.0	111.6578	111.8780	112.1
–5 (23)	85.52	85.2610	85.4291	85.60
0 (32)	65.84	65.6705	65.8000	65.93
5 (41)	51.05	50.9947	51.0954	51.14
10 (50)	39.91	39.9149	39.9938	39.99
15 (59)	31.44	31.4796	31.5417	31.52
20 (68)	24.95	25.0060	25.0554	25.02
25 (77)	19.94	20.0000	20.0395	20.00
30 (86)	16.04	16.1008	16.1326	16.10
35 (95)	12.99	13.0426	13.0683	13.04
40 (104)	10.58	10.6281	10.6490	10.62
45 (113)	8.669	8.7097	8.7269	8.707
50 (122)	7.143	7.1764	7.1905	7.176
55 (131)	5.918	5.9407	5.9524	5.947
60 (140)	4.928	4.9439	4.9536	4.953
65 (149)	4.123	4.1352	4.1434	4.146
70 (158)	3.467	3.4757	3.4825	3.487
75 (167)	–	2.9349	2.9407	2.946
80 (176)	–	2.4894	2.4943	2.499
85 (185)	–	2.1205	2.1247	2.130
90 (194)	–	1.8138	1.8173	1.822
95 (203)	–	1.5575	1.5605	1.565
100 (212)	1.339	1.3425	1.3451	1.349
105 (221)	–	1.1614	1.1636	1.167
Drawing No.	3SA48002, 3SA48004 (AD94A045)	3SA48001 (AD87A001)	3PA50504 (AD87A001)	3P150006 (ED97B002, ED01B012)

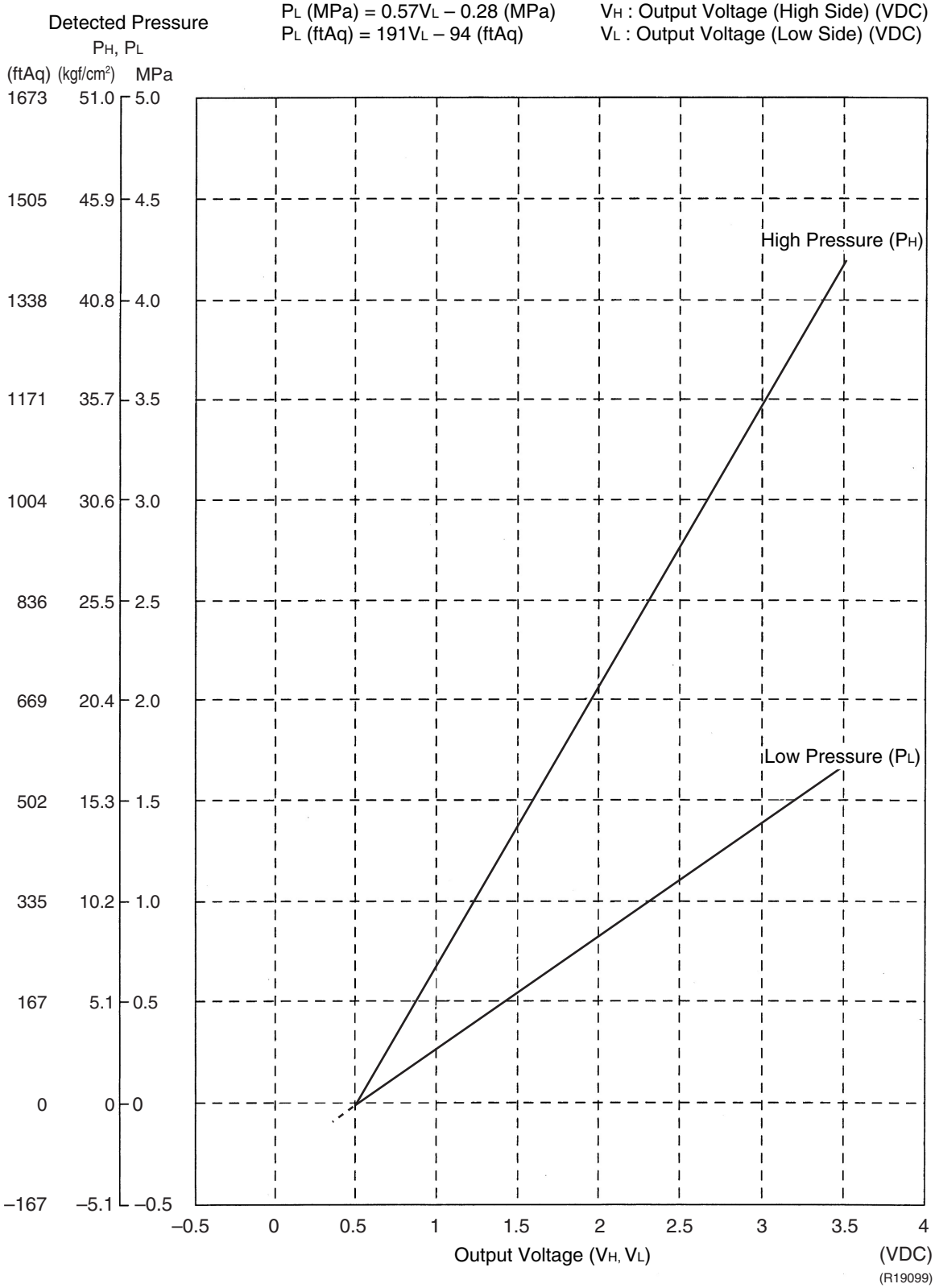
Table 2

Applicable thermistor	**Outdoor unit** FINTH: Radiation fin	**Outdoor unit** R2T: Discharge pipe
Thermistor temperature °C (°F)	Resistance (kΩ)	Resistance (kΩ)
–30 (–22)	354.1	4759
–25 (–13)	259.7	3454
–20 (–4)	192.6	2534
–15 (5)	144.2	1877
–10 (14)	109.1	1404
–5 (23)	83.25	1059
0 (32)	64.10	806.5
5 (41)	49.70	618.9
10 (50)	38.85	478.8
15 (59)	30.61	373.1
20 (68)	24.29	292.9
25 (77)	19.41	231.4
30 (86)	15.61	184.1
35 (95)	12.64	147.4
40 (104)	10.30	118.7
45 (113)	8.439	96.13
50 (122)	6.954	78.29
55 (131)	5.761	64.10
60 (140)	4.797	52.76
65 (149)	4.014	43.63
70 (158)	3.375	36.26
75 (167)	2.851	30.27
80 (176)	2.418	25.38
85 (185)	2.060	21.37
90 (194)	1.762	18.06
95 (203)	1.513	15.33
100 (212)	1.304	13.06
105 (221)	1.128	11.17
110 (230)	0.9790	9.585
115 (239)	0.8527	8.254
120 (248)	0.7450	7.131
125 (257)	0.6530	6.181
130 (266)	0.5741	5.374
135 (275)	–	4.686
140 (284)	–	4.098
145 (293)	–	3.594
150 (302)	–	3.161
Drawing No.	3PA61998 (AD92A057)	3SA48009 (AD970175)

9. Pressure Sensor

P_H (MPa) = 1.38V_H – 0.69 (MPa)
P_H (ftAq) = 462V_H – 231 (ftAq)
P_L (MPa) = 0.57V_L – 0.28 (MPa)
P_L (ftAq) = 191V_L – 94 (ftAq)

P_H : High pressure
P_L : Low pressure
V_H : Output Voltage (High Side) (VDC)
V_L : Output Voltage (Low Side) (VDC)



10.Method of Replacing Inverter's Power Transistors Modules

Check the power semiconductors mounted on the main PCB (A1P) with a multiple tester.

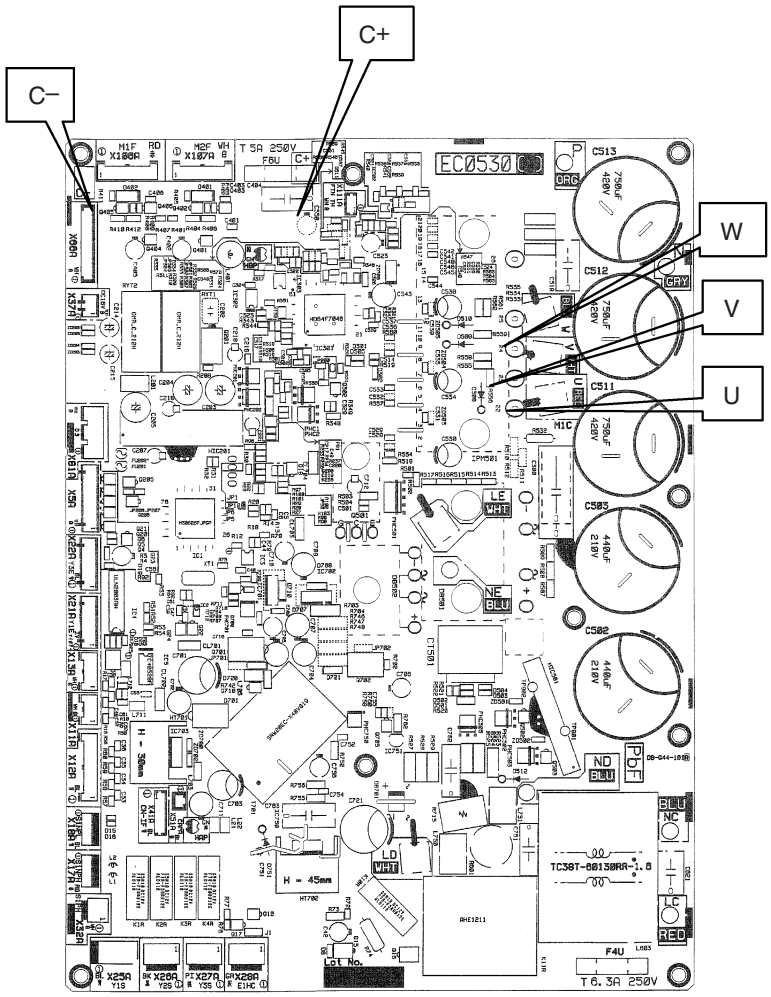
<Items to be prepared>

- Multiple tester : Prepare the digital type of multiple tester with diode check function.

<Preparation>

- Turn OFF the power supply. Then, after a lapse of 10 minutes or more, make measurement of resistance.
- To make measurement, disconnect all connectors and terminals.

Main PCB (A1P)



(R13060)

Power module checking

When using the digital type of multiple tester, make measurement in diode check mode.

Tester terminal		Criterion	Remark
+	–		
C+	U	Not less than 0.3 V (including ∞)*	It may take time to determine the voltage due to capacitor charge or else.
	V		
	W		
U	C–	Not less than 0.3 V (including ∞)*	
V			
W			
U	C+	0.3 ~ 0.7 V (including ∞)*	
V			
W			
C–	U	0.3 ~ 0.7 V (including ∞)*	
	V		
	W		

*There needs to be none of each value variation.

The following abnormalities are also doubted besides the PCB abnormality.

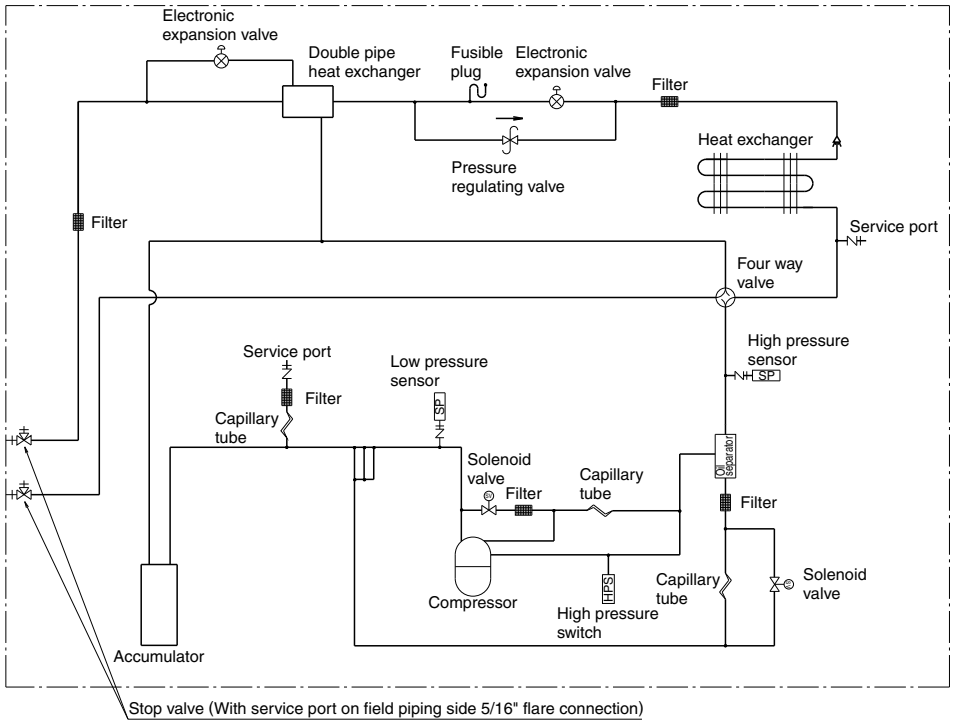
- Defective compressor (ground fault, ground leakage)
- Defective fan motor (ground leakage)

Part 9
Appendix

1. Piping Diagrams

1.1 Outdoor Unit

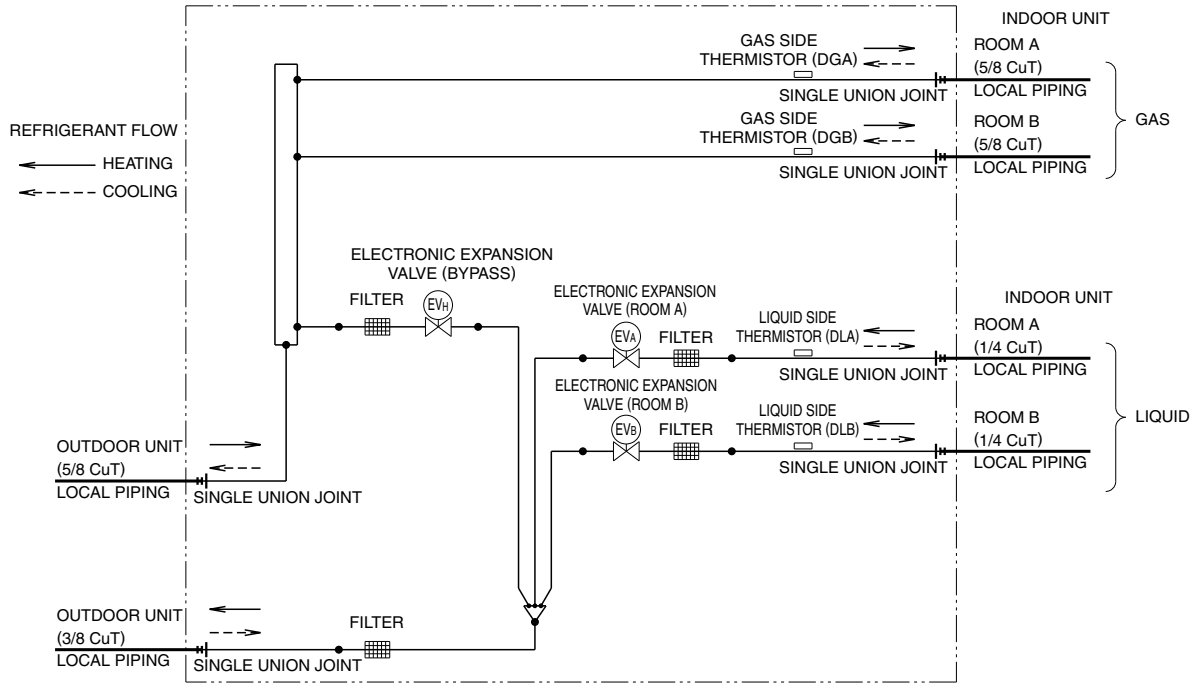
RMXS48LVJU



3D080741

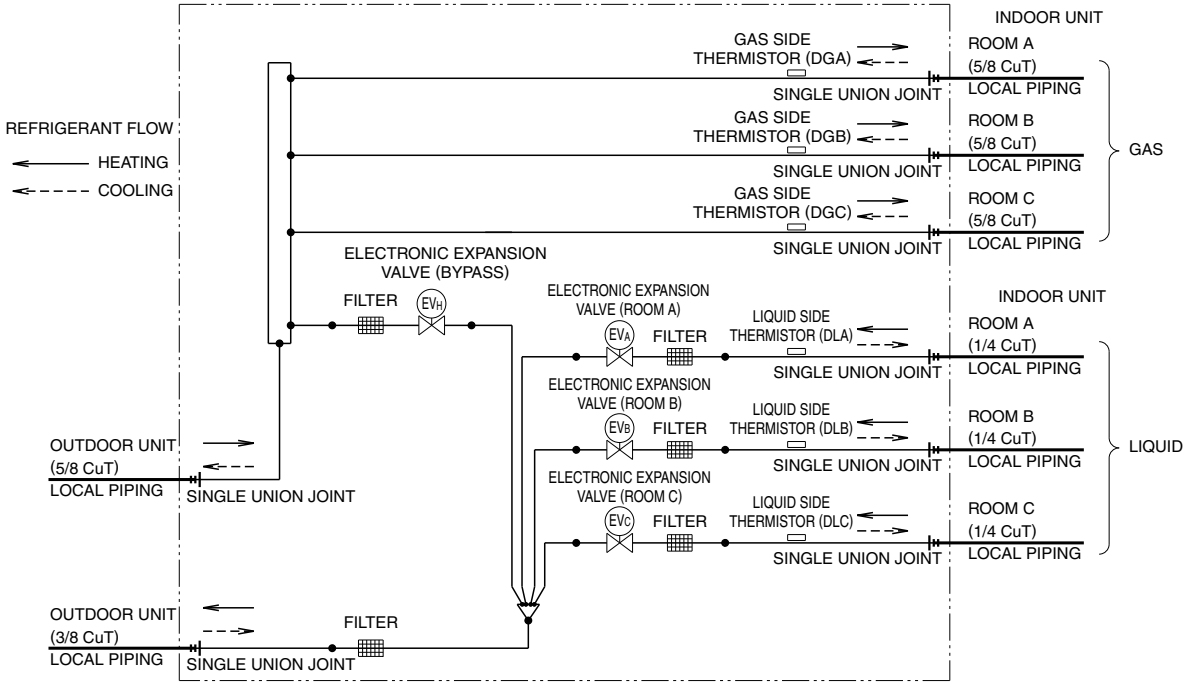
1.2 Branch Provider (BP) Unit

BPMKS048A2U



3D080438

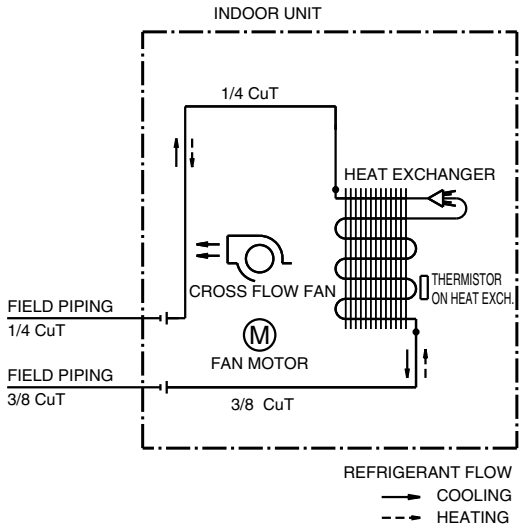
BPMKS049A3U



3D080437

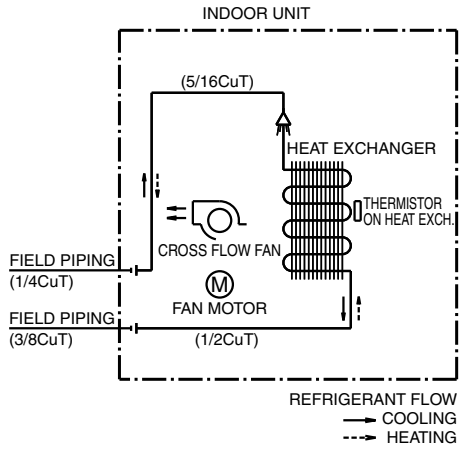
1.3 Indoor Unit

CTXS07LVJU



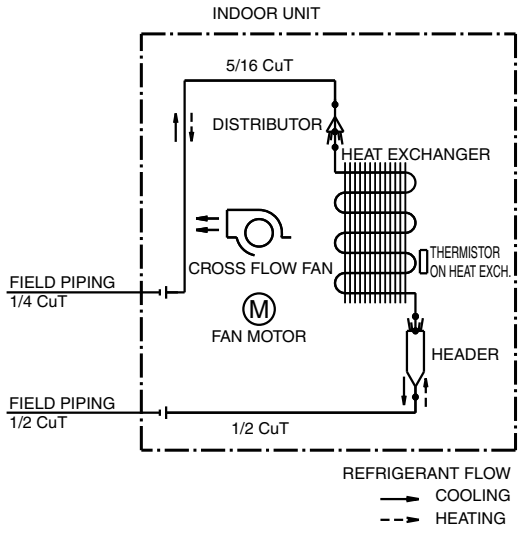
4D074606

CTXS07JVJU, CTXS09/12HVJU



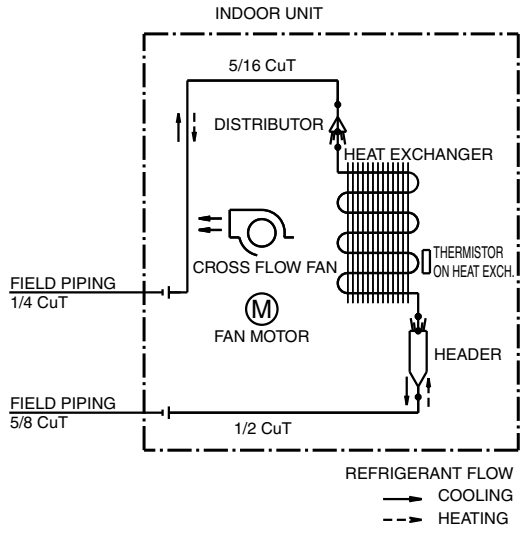
4D048251C

FTXS15/18LVJU



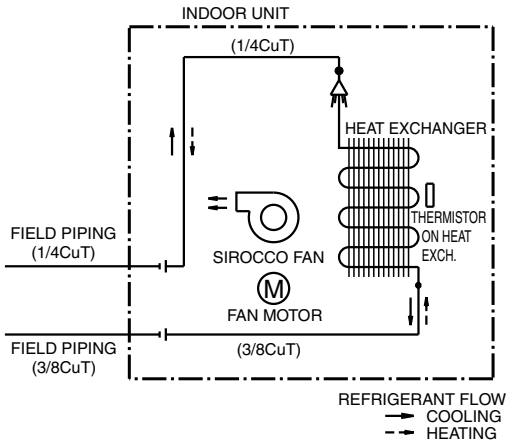
4D074609

FTXS24LVJU



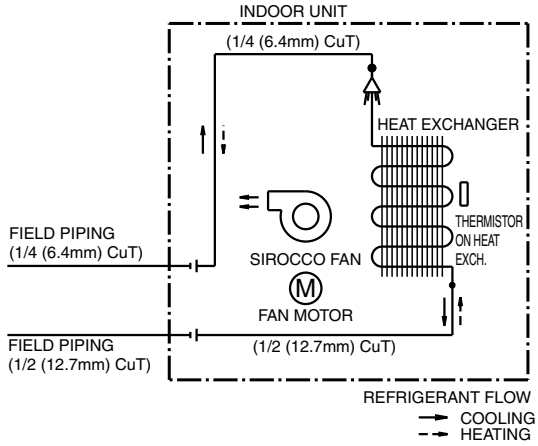
4D074608

FDXS09/12LVJU



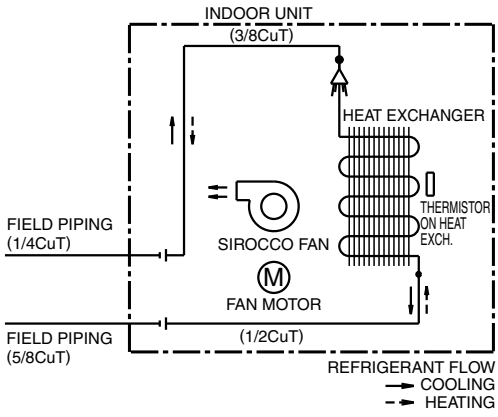
4D074621

CDXS15/18LVJU



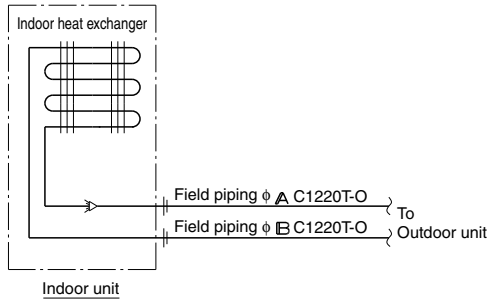
4D075271

CDXS24LVJU



4D080593

FFQ09/12/15/18LVJU



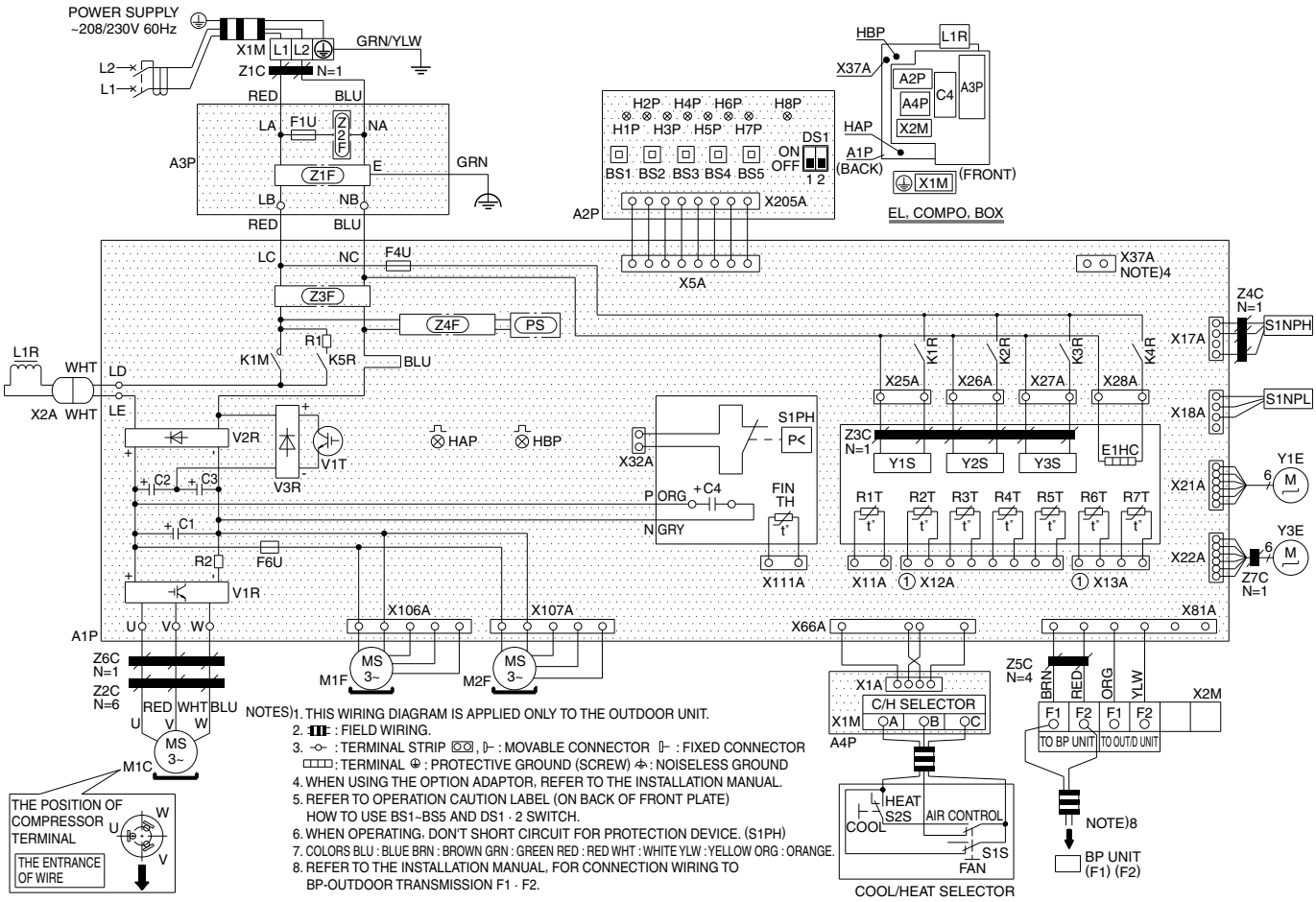
MODEL	A	B
FFQ09 · 12LVJU	1/4 (6.4)	3/8 (9.5)
FFQ15 · 18LVJU	1/4 (6.4)	1/2 (12.7)

4D080624

2. Wiring Diagrams

2.1 Outdoor Unit

RMXS48LVJU



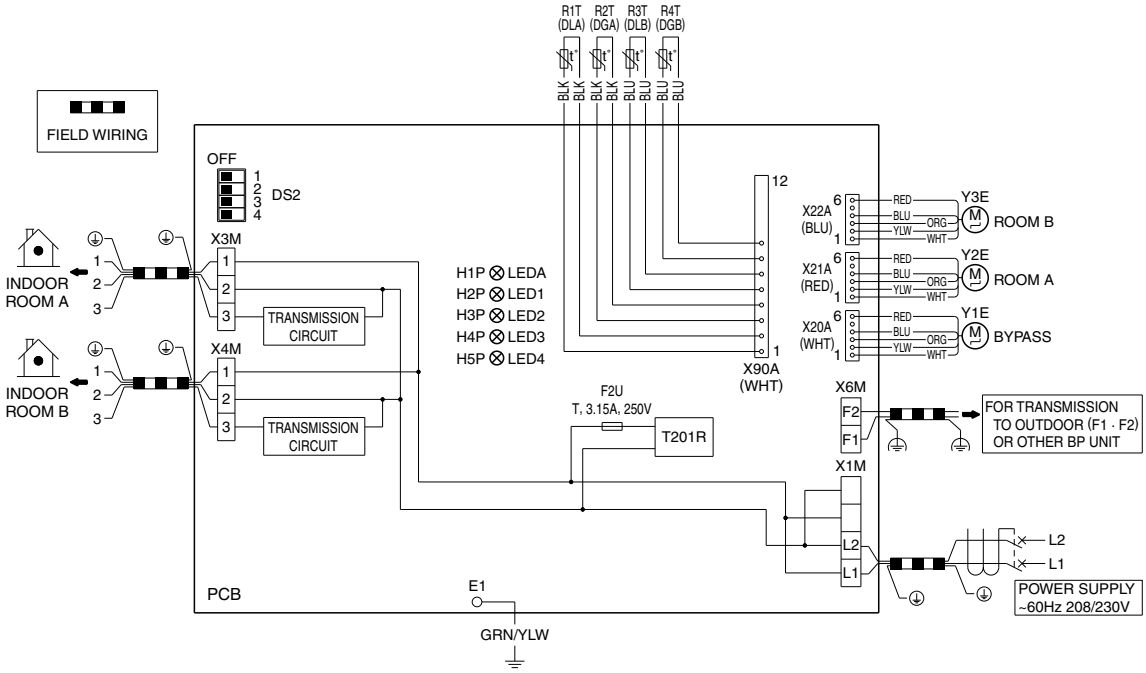
NOTES)
1. THIS WIRING DIAGRAM IS APPLIED ONLY TO THE OUTDOOR UNIT.
2. : FIELD WIRING.
3. : TERMINAL STRIP, : MOVABLE CONNECTOR : FIXED CONNECTOR
: TERMINAL : PROTECTIVE GROUND (SCREW) : NOISELESS GROUND
4. WHEN USING THE OPTION ADAPTOR, REFER TO THE INSTALLATION MANUAL.
5. REFER TO OPERATION CAUTION LABEL (ON BACK OF FRONT PLATE)
HOW TO USE BS1~BS5 AND DS1 · 2 SWITCH.
6. WHEN OPERATING, DON'T SHORT CIRCUIT FOR PROTECTION DEVICE. (S1PH)
7. COLORS BLU : BLUE BRN : BROWN GRN : GREEN RED : RED WHT : WHITE YLW : YELLOW ORG : ORANGE.
8. REFER TO THE INSTALLATION MANUAL, FOR CONNECTION WIRING TO
BP-OUTDOOR TRANSMISSION F1 · F2.

L1-RED	L2-BLU	K2R	MAGNETIC RELAY (Y2S)	S1PH	PRESSURE SWITCH (HIGH)
A1P	PRINTED CIRCUIT BOARD (MAIN)	K3R	MAGNETIC RELAY (Y3S)	V1R	POWER MODULE
A2P	PRINTED CIRCUIT BOARD (SERVICE)	K4R	MAGNETIC RELAY (E1HC)	V2R, V3R	DIODE MODULE
A3P	PRINTED CIRCUIT BOARD (NOISE FILTER)	K5R	MAGNETIC RELAY	V1T	IGBT
A4P	PRINTED CIRCUIT BOARD (C/H SELECTOR)	L1R	REACTOR	X1M	TERMINAL STRIP (POWER SUPPLY)
BS1~5	PUSH BUTTON SWITCH (MODE, SET, RETURN, TEST, RESET)	M1C	MOTOR (COMPRESSOR)	X2M	TERMINAL STRIP (CONTROL)
		M1F	MOTOR (FAN) (UPPER)	X1M	TERMINAL STRIP (C/H SELECTOR) (A4P)
C1~4	CAPACITOR	M2F	MOTOR (FAN) (LOWER)	Y1E	ELECTRONIC EXPANSION VALVE (MAIN)
DS1	DIP SWITCH	PS	POWER SUPPLY	Y3E	ELECTRONIC EXPANSION VALVE (SUB COOL)
E1HC	CRANKCASE HEATER	R1	RESISTOR	Y1S	SOLENOID VALVE (4 WAY VALVE)
F1U, F4U	FUSE (T 6.3A/250V)	R2	RESISTOR	Y2S	SOLENOID VALVE (HOT GAS)
F6U	FUSE (T 5.0A/250V)	R1T	THERMISTOR (AIR)	Y3S	SOLENOID VALVE (U/L CIRCUIT)
H1P~8P	PILOT LAMP (SERVICE MONITOR-ORANGE)	R2T	THERMISTOR (M1C DISCHARGE)	Z1C~7C	NOISE FILTER (FERRITE CORE)
	H2P: PREPARE, TEST----------FLICKERING	R3T	THERMISTOR (SUCTION1)	Z1F~4F	NOISE FILTER
	MALFUNCTION DETECTION--LIGHT UP	R4T	THERMISTOR (COIL)	C/H SELECTOR	
HAP	OPERATION PILOT LAMP (SERVICE MONITOR-GREEN) (A1P)	R5T	THERMISTOR (SUCTION2)	S1S	SELECTOR SWITCH (FAN/COOL · HEAT)
		R6T	THERMISTOR (SUBCOOL)	S2S	SELECTOR SWITCH (COOL/HEAT)
HBP	INV. PILOT LAMP (SERVICE MONITOR-GREEN) (A1P)	R7T	THERMISTOR (LIQUID)	CONNECTOR OF OPTION ADAPTOR	
		FINTH	THERMISTOR (FIN)	X37A	CONNECTOR
K1M	MAGNETIC CONTACTOR	S1NPH	PRESSURE SENSOR (HIGH)	NOTE)4	(OPTION ADAPTOR POWER SUPPLY)
K1R	MAGNETIC RELAY (Y1S)	S1NPL	PRESSURE SENSOR (LOW)		

C: 3D080424

2.2 Branch Provider (BP) Unit

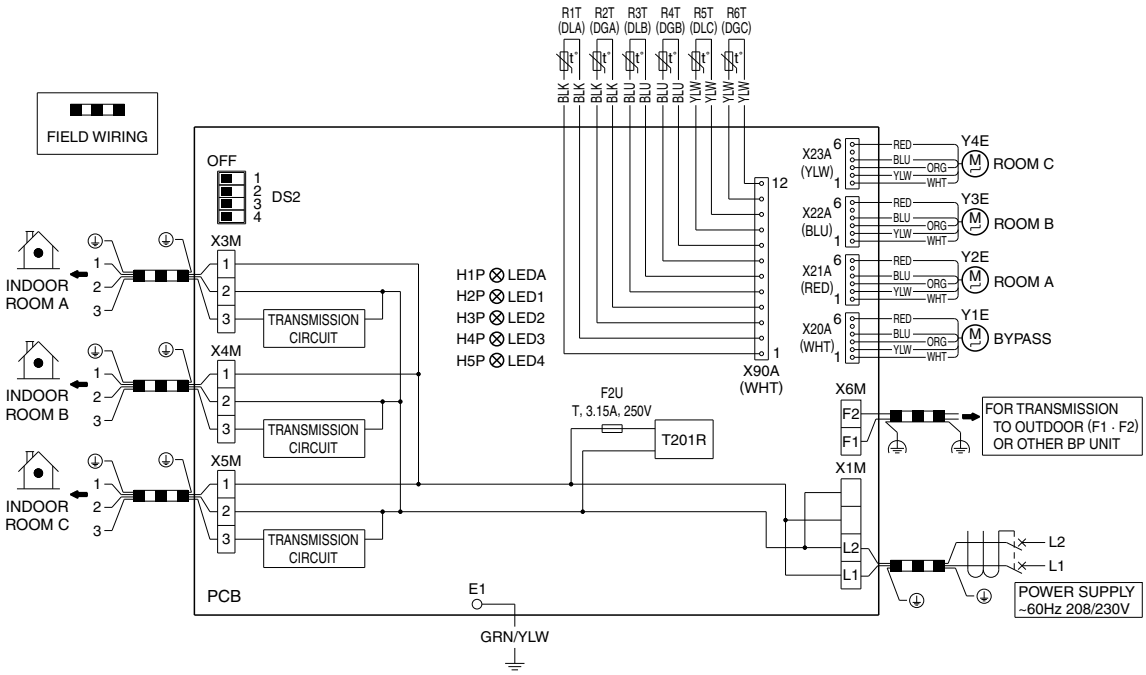
BPMKS048A2U



X20A~X22A, X90A	: CONNECTOR	H1P~H5P	: PILOT LAMP	T201R	: TRANSFORMER
PCB	: PRINTED CIRCUIT BOARD	R1T~R4T	: THERMISTOR	X1M, X3M, X4M, X6M	: TERMINAL STRIP
F2U	: FUSE	DS2	: DIP SWITCH	Y1E~Y3E	: MOTOR OPERATED VALVE COIL

3D079641

BPMKS049A3U

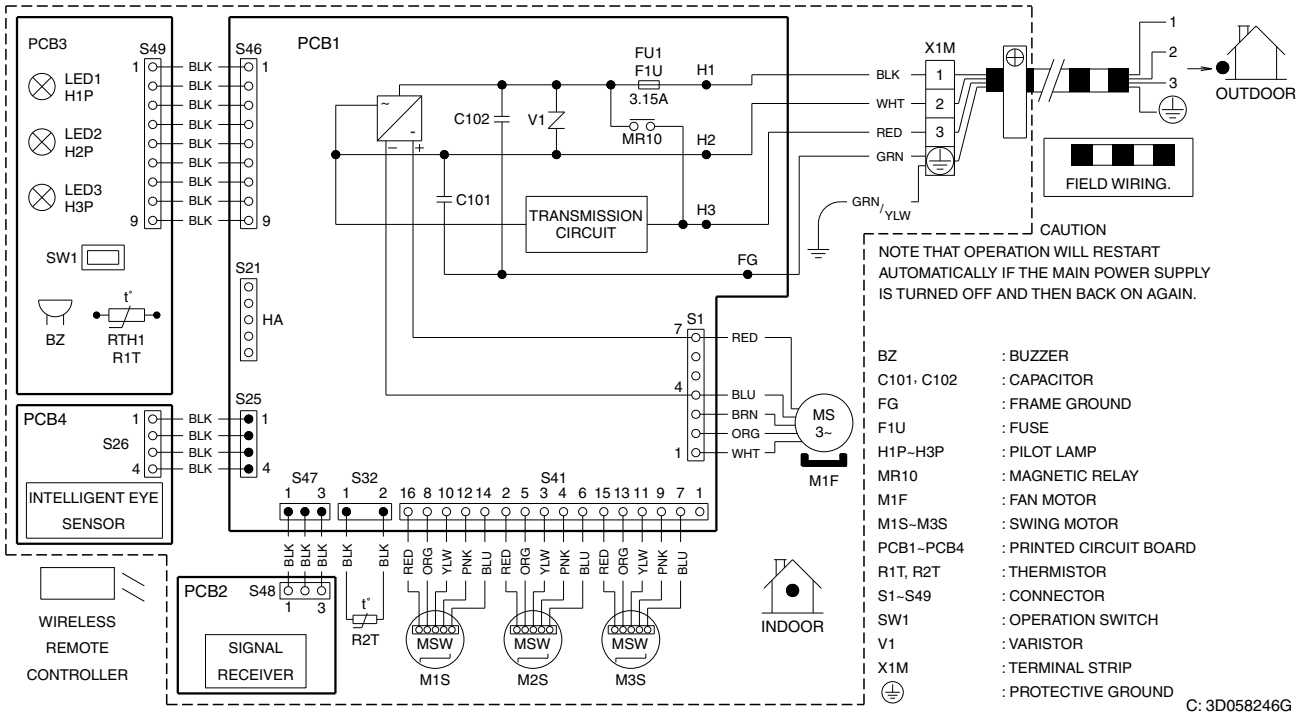


X20A~X23A, X90A	: CONNECTOR	H1P~H5P	: PILOT LAMP	T201R	: TRANSFORMER
PCB	: PRINTED CIRCUIT BOARD	R1T~R6T	: THERMISTOR	X1M, X3M~X6M	: TERMINAL STRIP
F2U	: FUSE	DS2	: DIP SWITCH	Y1E~Y4E	: MOTOR OPERATED VALVE COIL

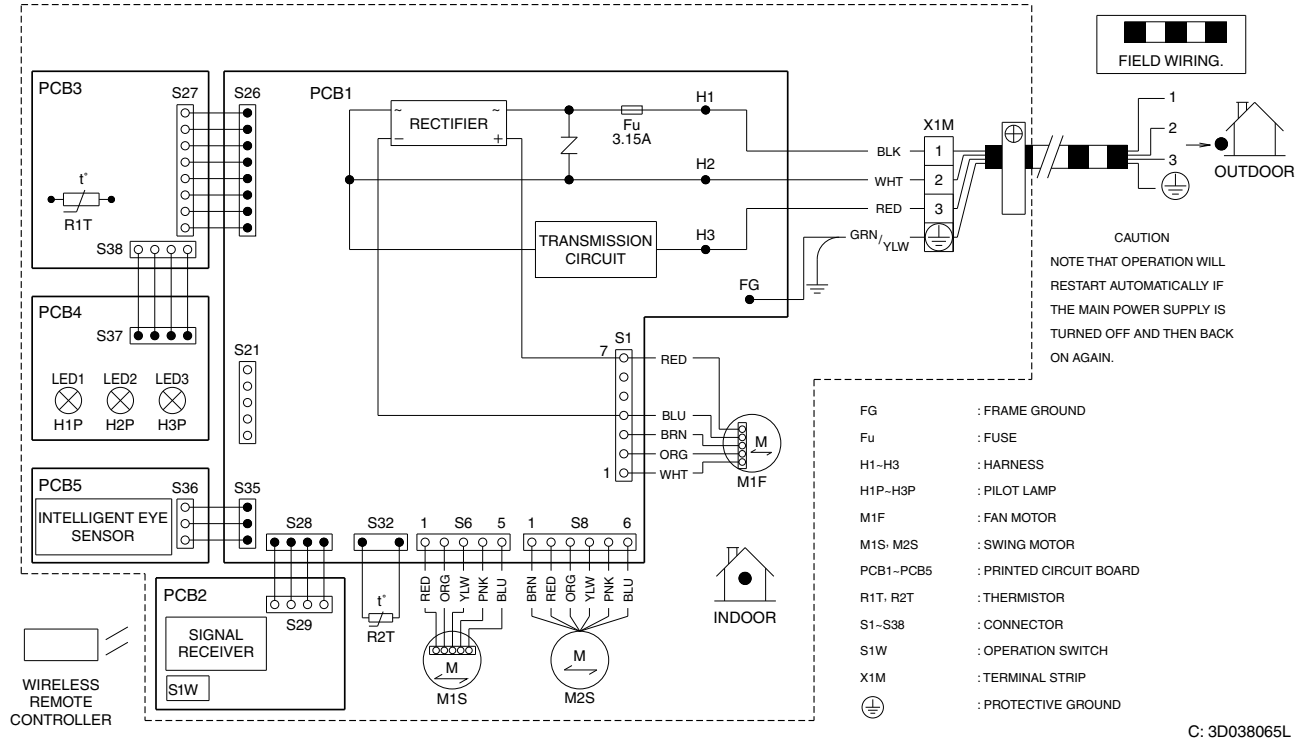
3D079640

2.3 Indoor Unit

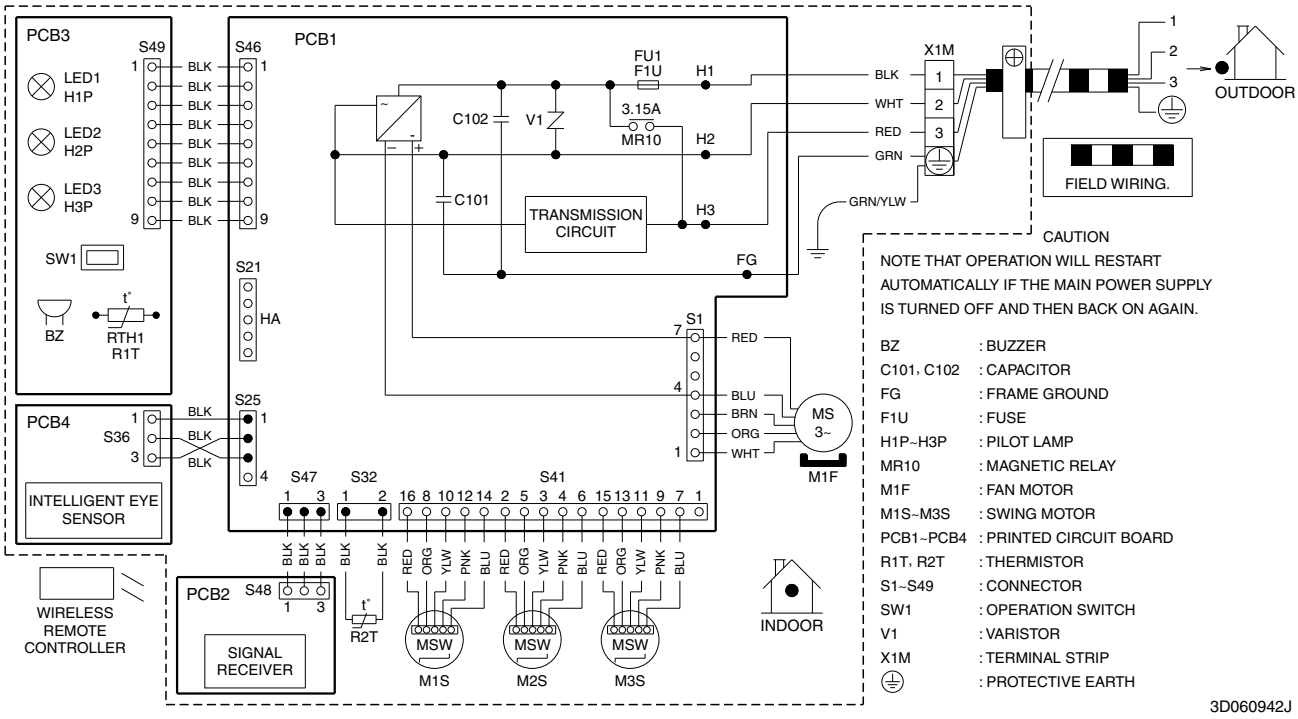
CTXS07LVJU



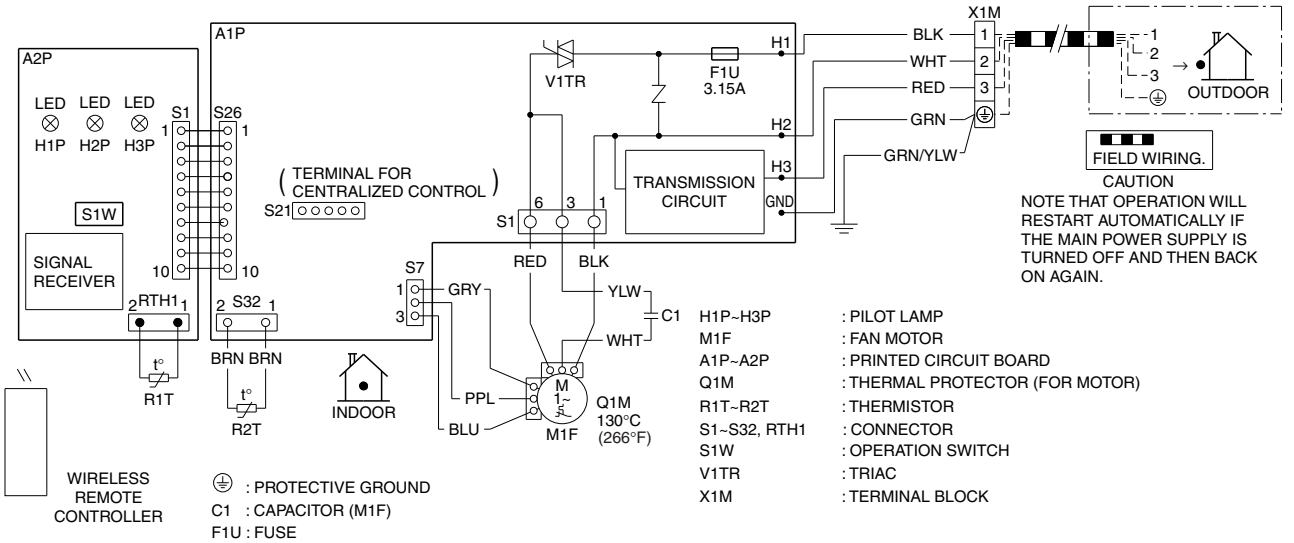
CTXS07JVJU, CTXS09/12HVJU



FTXS15/18/24LVJU

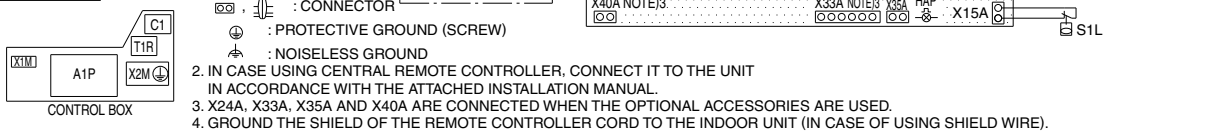


FDXS09/12LVJU, CDXS15/18/24LVJU



FFQ09/12/15/18LVJU

A1P	PRINTED CIRCUIT BOARD	H1P	PILOT LAMP (ON-RED)
C1	CAPACITOR (M1F)		
F1U	FUSE (F, 5A, 250V)	H2P	PILOT LAMP (TIMER-GREEN)
HAP	PILOT LAMP (SERVICE MONITOR GREEN)	H3P	PILOT LAMP (FILTER SIGN-RED)
KPR	MAGNETIC RELAY (M1P)		
M1F	FAN MOTOR	H4P	PILOT LAMP (DEFROST-ORANGE)
M1P	DRAIN PUMP MOTOR		
M1S	SWING LOUVER MOTOR	SS1	SELECTOR SWITCH (MAIN/SUB)
Q1M	THERMAL PROTECTOR FOR MOTOR		
R1T	THERMISTOR (AIR)	SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
R2T	THERMISTOR (COIL-1)		
R3T	THERMISTOR (COIL-2)	CONNECTOR FOR OPTIONAL PARTS	
S1L	FLOAT SWITCH	X24A	CONNECTOR (WIRELESS REMOTE CONTROLLER)
T1R	TRANSFORMER (208-230V/25V)		
V1TR	TRIAC	X33A	CONNECTOR (ADAPTOR FOR WIRING)
X1M	TERMINAL BLOCK		
X2M	TERMINAL BLOCK	X35A	CONNECTOR (GROUP CONTROL ADAPTOR)
(RC)	SIGNAL RECEIVER CIRCUIT		
(TC)	SIGNAL TRANSMISSION CIRCUIT	X40A	CONNECTOR (ON/OFF INPUT FROM OUTSIDE)
WIRED REMOTE CONTROLLER			
R1T	THERMISTOR (AIR)		
WIRED REMOTE CONTROLLER (RECEIVER/DISPLAY UNIT)			
A3P	PRINTED CIRCUIT BOARD		
A4P	PRINTED CIRCUIT BOARD		
BS1	PUSH BUTTON SWITCH (ON/OFF)		



NOTES)
1. : TERMINAL
: FIELD WIRING
, : CONNECTOR
: PROTECTIVE GROUND (SCREW)
: NOISELESS GROUND
2. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
3. X24A, X33A, X35A AND X40A ARE CONNECTED WHEN THE OPTIONAL ACCESSORIES ARE USED.
4. GROUND THE SHIELD OF THE REMOTE CONTROLLER CORD TO THE INDOOR UNIT (IN CASE OF USING SHIELD WIRE).
5. SYMBOLS SHOW AS FOLLOWS: RED: RED BLK: BLACK WHT: WHITE YLW: YELLOW GRN: GREEN BLU: BLUE

C: 3D080351A

3. Removal Procedure (Booklet No.)

Refer to the following booklets for removal procedure.

∗RMXS48LVJU, BPMKS048A2U, BPMKS049A3U	Refer to **Si181296_A**.
∗CTXS07LVJU	Refer to **Si041252_B**.
∗CTXS07JVJU, CTXS09/12HVJU	Refer to **Si041253_A**.
∗FTXS15/18/24LVJU	Refer to **Si041351**.
∗FDXS09/12LVJU, CDXS15/18/24LVJU, FFQ09/12/15/18LVJU	N/A

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 authorized importer, distributor and/or retailer whether this product conforms tot he applicable standards, and is suitable for use, in the region where the product will be used. This statement does not purport to exclude, restrict or modify the application of any local legislation.

Ask a qualified installer or contractor to install this product. Do not try to install the product yourself. Improper installation can result in water or refrigerant leakage, electrical shock, fire, or explosion.

Use only those parts and accessories supplied or specified by Daikin. Ask a qualified installer or contractor to install those parts and accessories. Use of unauthorized parts and accessories or improper installation of parts and accessories can result in water or refrigerant leakage, electrical shock, fire, or explosion.

Read the User's Manual carefully before using this product. The User's Manual provides important safety instructions and warnings. Be sure to follow these instructions and warnings.

If you have any inquiries, please contact your local importer, distributor, 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 seashore, direct exposure to the sea breeze should be avoided. If you need to install the outdoor unit close to the seashore, contact your local distributor.**

Dealer

●Specifications, designs and other content appearing in this brochure are current as of November 2013 but subject to change without notice.

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