DAIKIN

SiUS30-1301

R-410A

Service Manual

VRV-WIII

Water Cooled
Heat Pump / Heat Recovery
R-410A 60Hz

RWEYQ72-252PTJU(9)
RWEYQ72-252PYDN

VRV-WIII Water Cooled Inverter Series

1. Safety Considerations

Read these ***SAFETY CONSIDERATIONS*** carefully before performing any repair work. Comply with these safety symbols without fail. Meanings of **DANGER**, **WARNING**, **CAUTION**, and **NOTE** Symbols:

⚠ **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 Safety Considerations for Repair

- **If refrigerant gas leaks during repair or service, ventilate the area immediately. Refrigerant gas may produce toxic gas if it comes into contact with flames. Refrigerant gas is heavier than air and replaces oxygen. In the event of an accident, a massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur which will result in serious injury or death.**
- **Do not start or stop the air conditioner operation by plugging or unplugging the power cable plug if a plug is used. Plugging or unplugging the power cable plug to operate the equipment will result in an electrical shock or fire.**
- **Use parts listed in the service parts list and appropriate tools to conduct repair work. The use of inappropriate parts or tools could result in an electrical shock or fire.**
- **Disconnect power before disassembling the equipment for repairs. Working on the equipment that is connected to the power supply could result in 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.**
- **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 charged capacitor could result in an electrical shock.**
- **If refrigerant gas is discharged during repair work, do not touch the discharged refrigerant gas. The refrigerant gas could result in frostbite.**
- **Use only pipes, flare nuts, tools, and 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 result in a serious accident or an equipment failure.**
- **Check to see if the parts and wires are mounted and connected properly, and if the connections at the soldered or crimped terminals are secure. Improper installation and connections could result in excessive heat generation, fire or electrical shock.**
- **Securely fasten the condensing unit terminal cover (panel). If the terminal cover/panel is not fastened properly, dust or water may enter the condensing unit and could result in an electrical shock or fire.**
- **If refrigerant gas leaks, locate the leaking point and repair it before charging refrigerant. After charging refrigerant, check for refrigerant leaks. If the leaking point cannot be located and the repair work must be stopped, perform a pump-down and close the service valve to prevent the refrigerant gas from leaking into the room. The refrigerant gas itself is harmless, but it could generate toxic gases if it comes into contact with flames.**
- **Do not repair the electrical components with wet hands. Working on the equipment with wet hands could result in an electrical shock.**
- **Do not clean the air conditioner by splashing water on it. Washing the unit with water could result in an electrical shock.**
- **Prior to disconnecting the suction or discharge pipe from the compressor at the welded section, pump-down the refrigerant gas completely in a well-ventilated place first. If there is refrigerant gas or oil remaining inside the compressor, the refrigerant gas or oil can discharge when the pipe is being disconnected and it may result in an injury.**
- **Wear a safety helmet, gloves, and a safety belt when working at an elevated height of more than 6.5 ft (2 m). Insufficient safety measures may result in a falling injury.**
- **Do not mix air or gas other than the specified refrigerant R410A to the refrigerant system. If air enters the refrigerant systems, it may cause excessive high pressure and may result in equipment damage and injury.**
- **When relocating the equipment, check if the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength and the equipment is not properly secured, the equipment may fall and result in injury.**

- **When relocating the system, keep the refrigerant circuit free from substances other than the specified refrigerant (R-410A) such as air. Any presence of air or other foreign substance in the refrigerant circuit can result in an abnormal pressure rise or rupture, and may result in injury.**
- **Ground the unit when repairing equipment 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 or this could result in injury.**
- **Let the refrigerant lines cool down before performing any repair work. Working on the unit when the refrigerant lines are hot may result in burns.**
- **All welding and cutting operations must be done in a well-ventilated place to prevent the accumulation of toxic fumes or possibly oxygen deficiency to occur.**
- **Check the grounding and repair it if the equipment is not properly grounded. Improper grounding may result in an electrical shock.**
- **Measure the insulation resistance after the repair.**

  The resistance must be 1MΩ or higher. Faulty insulation may result in an electrical shock.
- **Check the drainage of the indoor unit after finishing repair work. Faulty drainage may result in water entering the room resulting in wet floors and furniture.**
- **Do not tilt the unit when removing it. The water inside the unit may spill resulting in wet floors and furniture.**
- **Dismantling of the unit, disposal of the refrigerant, oil, and additional parts, should be done in accordance with the relevant local, state, and national regulations.**

1.2 Safety Considerations for Users

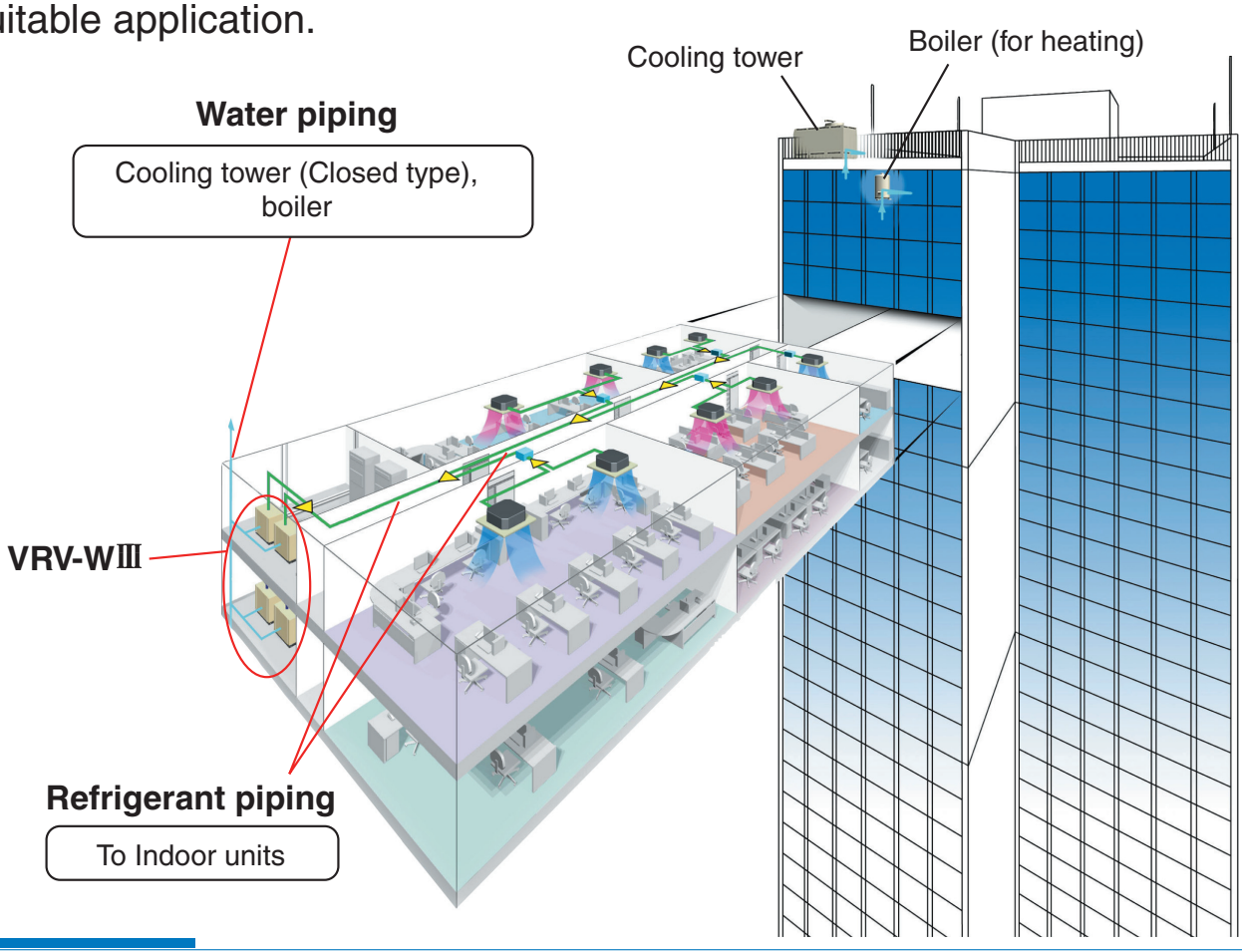
- **Never attempt to modify the equipment. Doing so will result in electrical shock, excessive heat generation or fire.**
- **If the power cable and lead wires have scratches or have become deteriorated, have them replaced. Damaged cable and wires could result in an electrical shock or fire.**
- **Do not use a joined power cable or an extension cord, or share the same power outlet with other electrical appliances as it could result in an electrical shock or fire.**
- **Use an exclusive power circuit for the equipment. Insufficient circuit amperage capacity could result in an electrical shock or fire.**
- **Never remove the fan guard of the unit. A fan rotating at high speed without the fan guard is very dangerous and could result 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 may fall which may result in injury. If the installation platform or frame has corroded, have it replaced. A corroded platform or frame could result in the unit falling and possible injury.**
- **Do not damage or modify the power cable. Damaged or modified power cables may result in an electrical shock or fire. Placing heavy items on the power cable or pulling the power cable may result in damage to the cable.**
- **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 may result in electrical shock or fire.**
- **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, see a doctor immediately.**
- **Before cleaning the unit, stop the operation of the unit by turning the power off or by pulling the power cable plug out from its receptacle. Otherwise an electrical shock or injury may result.**
- **Do not wipe the controller operation panel with benzene, thinner, chemical dust cloth, etc. 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
General Information

1. Features

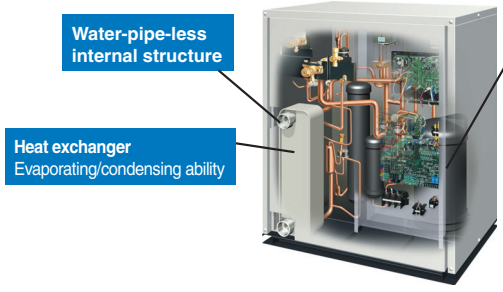
A water cooled intelligent individual air-conditioning system suitable for tall multistoried buildings.

This unique system can perform as Heat Pump or Heat Recovery to any suitable application.



Cutting-edge technologies

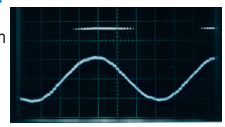
The compact unit is packed with the latest technologies.



High thrust mechanism

Smooth sine wave DC Inverter

By adoption of the Sine Wave which smoothes rotation of motor, operation efficiency is improved sharply.

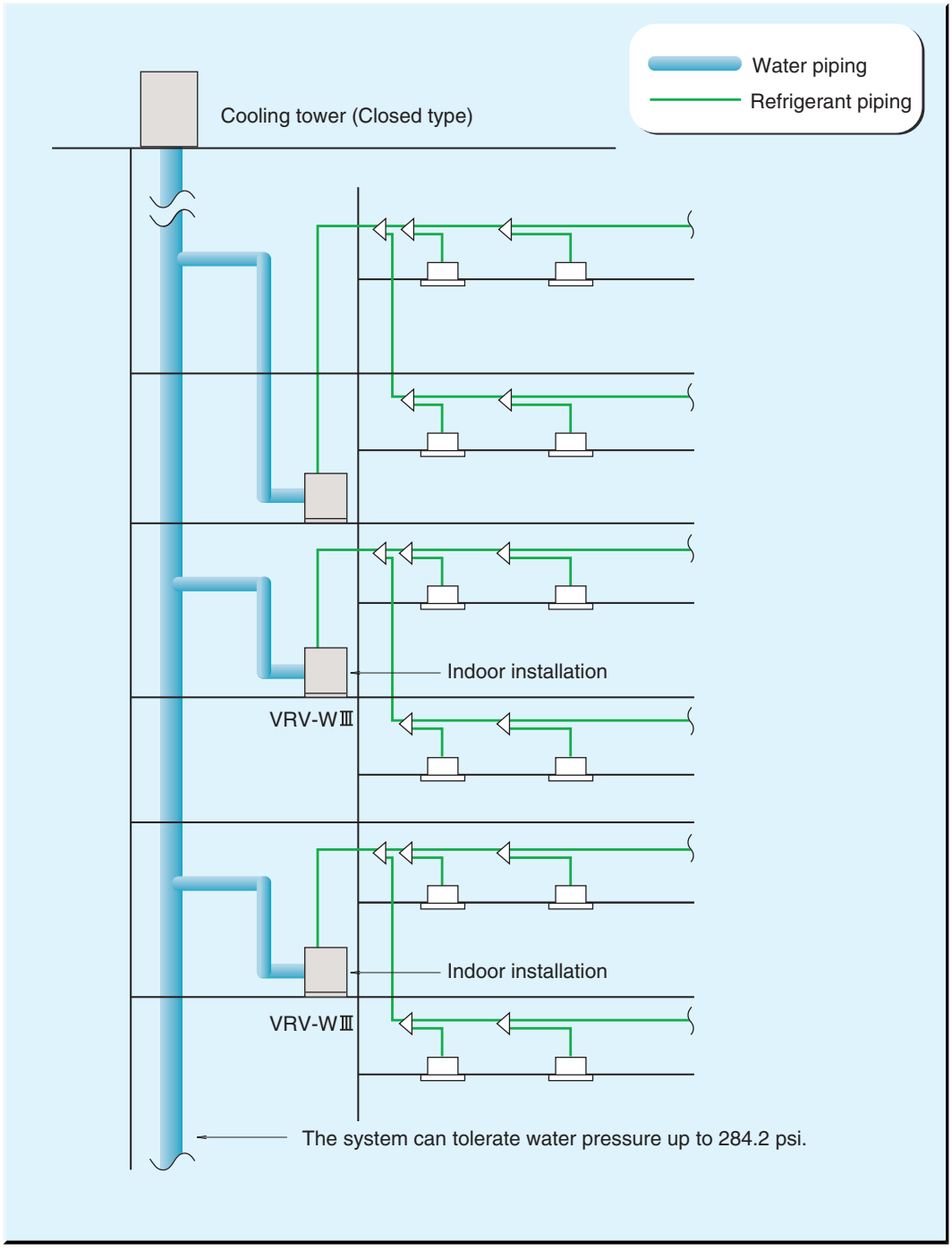


1.1 Design Flexibility

Enhanced design flexibility

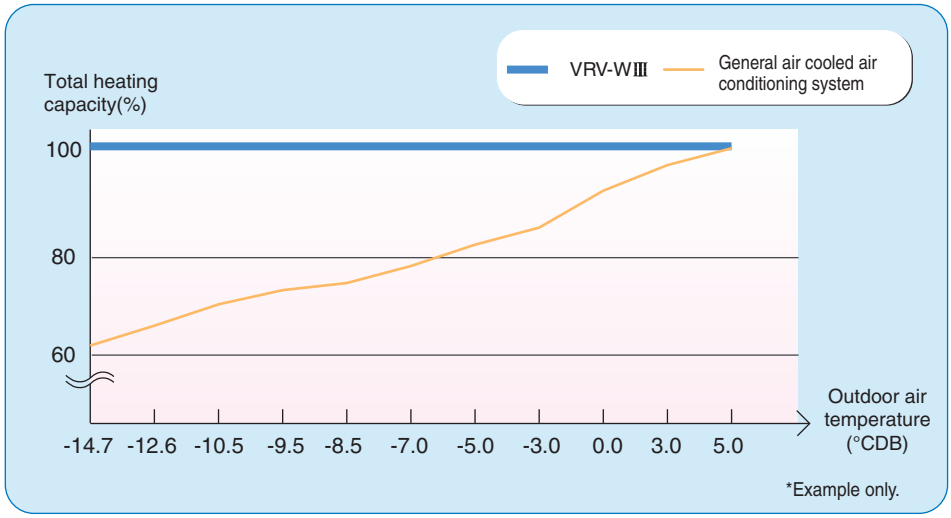
Water cooled VRV Ⅲ uses water as its heat source so is eminently suitable for tall, multistory or large buildings because the system can tolerate up to 284.2 psi water pressure. Furthermore, if the currently installed heat source water temperature is between 50°F and 113°F, it may be possible to use the existing water pipe work and heat source. This alone makes it an ideal system solution for building refurbishment projects.

* Prior consultation is necessary about the heat source equipment. Contact your Daikin dealer for details.



Cold climate capability

Because the system is water cooled, the outdoor air temperature does not affect capacity. Furthermore, water cooling means no defrost operation is required, so rapid starting assures quick and comfortable heating in the coldest conditions.

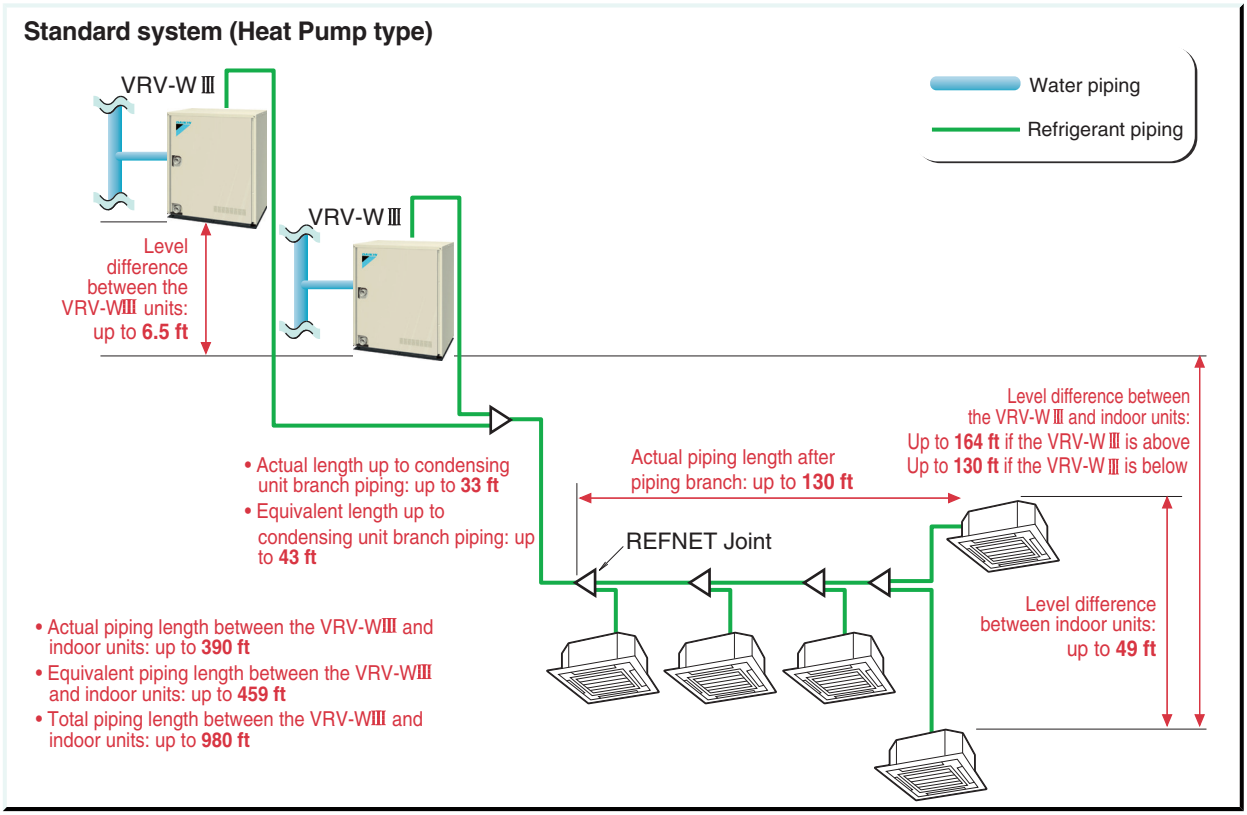


Long refrigerant piping length

Within the refrigerant piping system, up to 390 ft of actual piping length and 164 ft★ of height difference between the VRV-WIII and indoor units are possible. Water piping does not enter occupied spaces, so there is no worry of water leaking.

★ If the VRV-WII is above indoor units. 131 ft if the VRV-WIII is below indoor units.

Standard system (Heat Pump type)

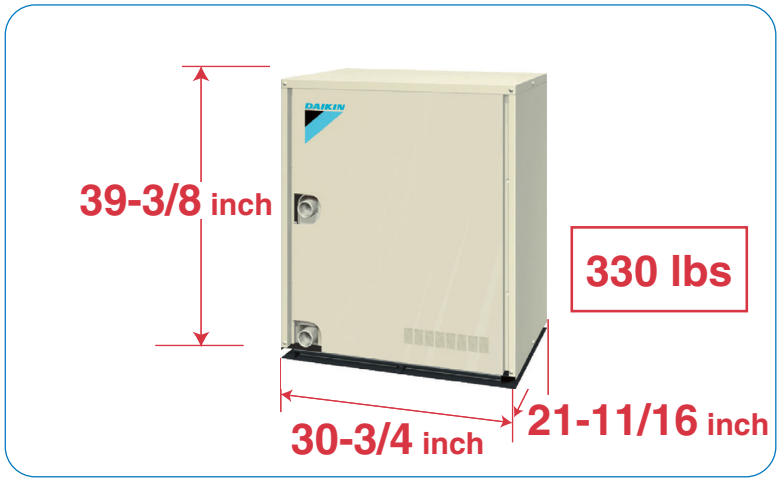


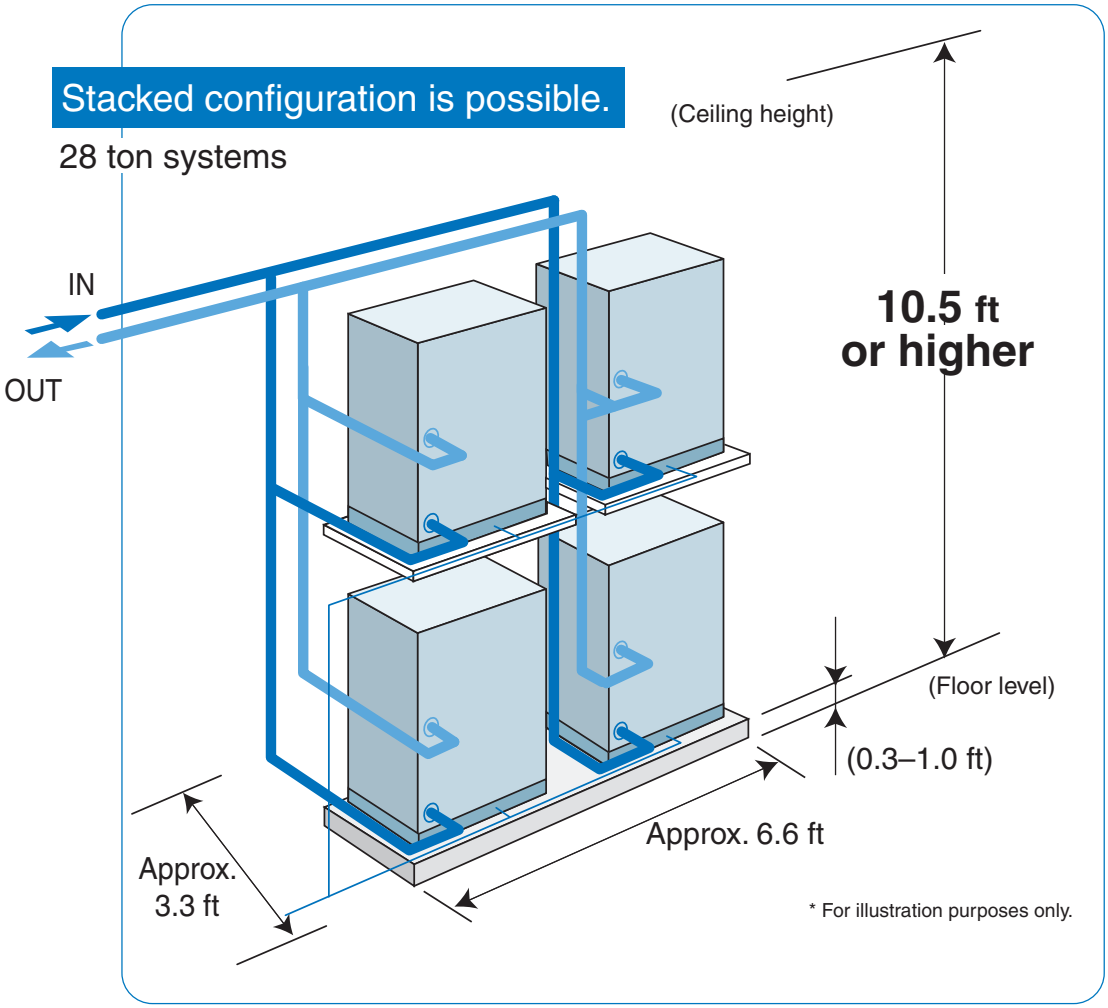
1.2 Easy Installation

Compact and lightweight

Adoption of a new water heat exchanger and optimization of the refrigerant control circuit has resulted in the Industry's most compact and lightweight equipment. A weight of 330 lbs and height of 39-3/8 inch make installation possible in buildings with limited space, or where no space is available for condensing units. This makes the system ideal for places that have no area outside—such as underground malls. Stacked configuration is also possible, further contributing to space savings.

* Unit is designed for indoor installation only.

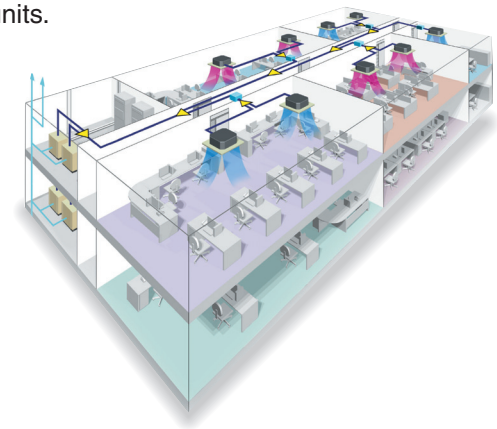




1.3 Energy Saving

Heat Recovery

Daikin now offers 2-stage Heat Recovery operation.
The first stage of Heat Recovery operation is within the refrigerant system. By controlling the Branch Selector unit that switches cooling and heating, simultaneous cooling and heating operation is made possible, with Heat Recovery performed between indoor units.
The second stage of Heat Recovery operation is within the water loop, where Heat Recovery is performed between the VRV-WIII units.
This 2-stage Heat Recovery operation substantially improves energy efficiency and makes the system the ideal solution to the requirements of modern office buildings, where some areas may require cooling even in winter, depending on the amount of sunshine received and the number of people in the room.

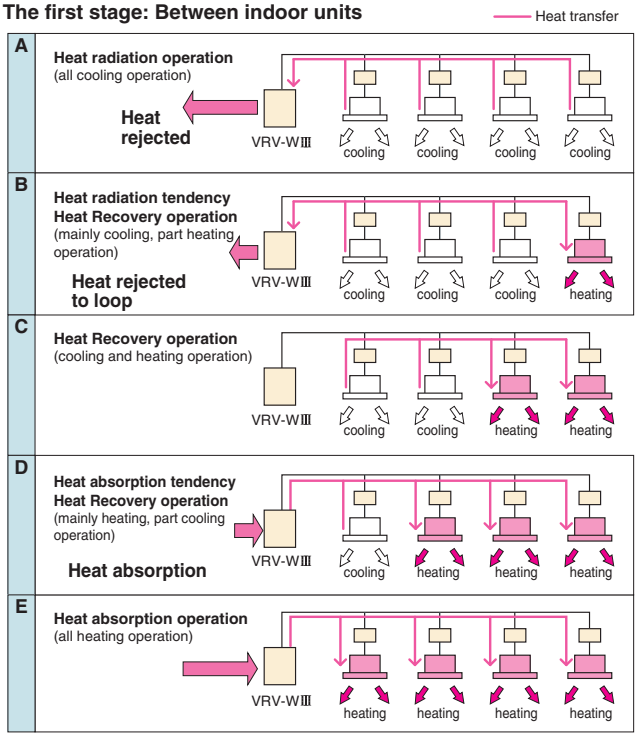


Stage 1

Simultaneous heating and cooling operation within the refrigerant system.

In mainly cooling, partly heating mode, the system recycles heat discharged from the cooling operation to use for heating. In mainly heating, partly cooling mode, the system uses cooled post-heating operation refrigerant for cooling. Efficiency improves the more simultaneous operation is performed.

The first stage: Between indoor units

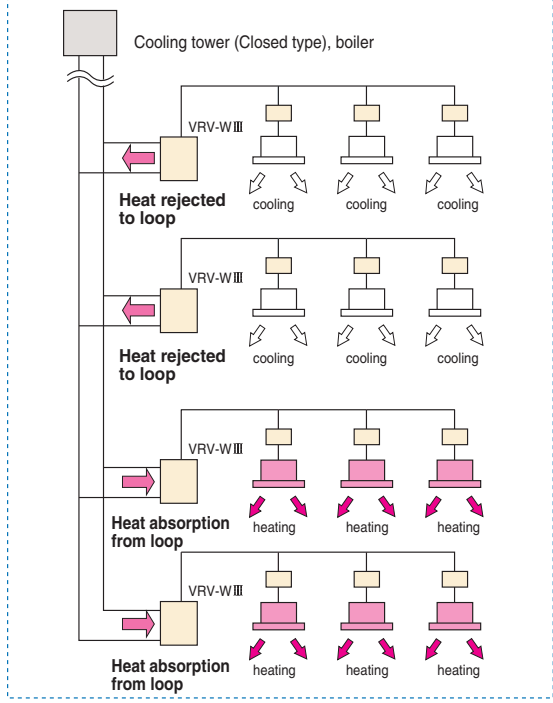


Stage 2

Heat Recovery operation between the VRV-WIII units.

Heat Recovery operation is also available between systems connected to the same water loop, with systems exchanging heat via water. This increases energy efficiency.

The second stage: Between VRV-WIII units



Notes: • Operation modes (A) and (E) are applicable when the outdoor air temperature is 95°F and 32°F respectively; The other modes are applicable under typical outside conditions.
• Above system configurations are for illustration purposes only.

1.4 Enhanced Usability

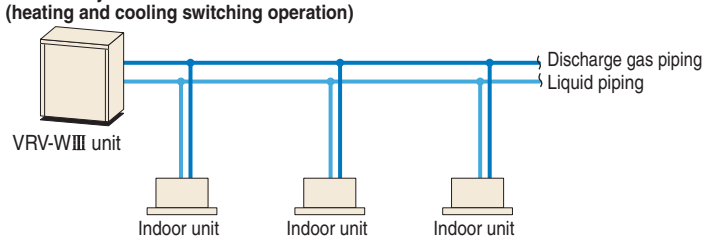
A variety of functions that realize easy installation and improve reliability

- Features a pump interlock function that controls the pump of the heat source simultaneously with the starting of the VRV-WⅢ unit. This significantly simplifies operation and management.
- Employs DIII-NET to enable the shared use of the wiring between the indoor units, the VRV-WⅢ unit and the central control wiring.
- Provides an auto address setting function and check function that detects connection errors in wiring and piping for easier installation.
- Water piping goes only to the VRV-WⅢ unit, with refrigerant piping run in occupied spaces, making the system ideal for installing in spaces such as OA rooms, with no worry of water leakage or corrosion.

Easily responds to simultaneous heating and cooling needs.

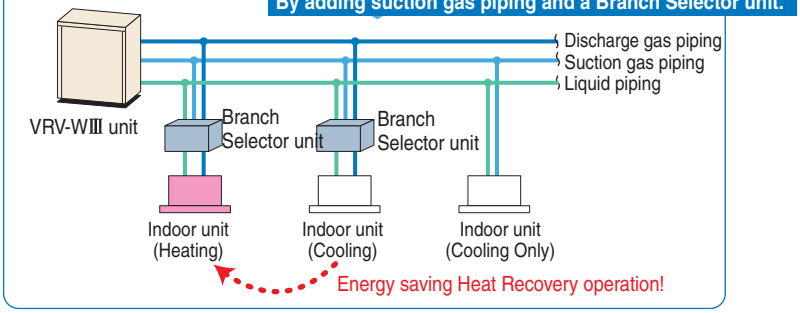
By adding suction gas piping and a Branch Selector unit (sold separately), simultaneous heating and cooling operation can be provided by a single system.

Standard system (heating and cooling switching operation)



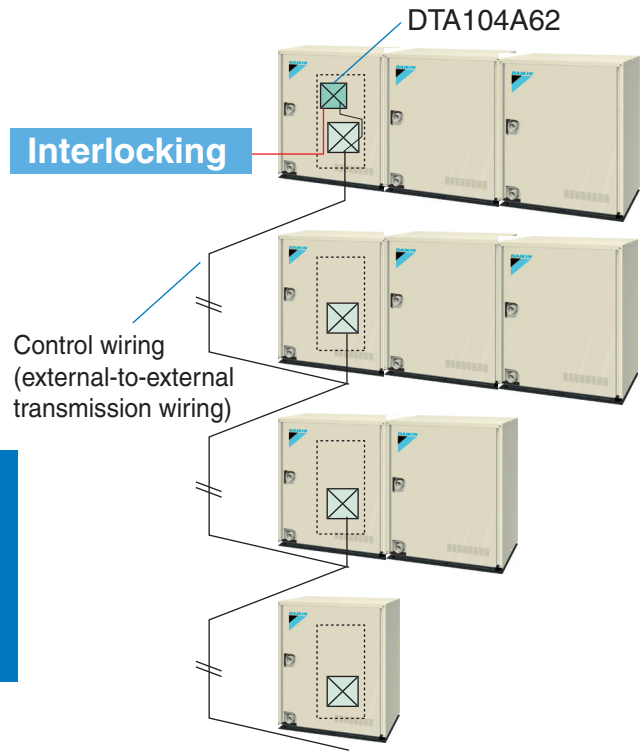
Simultaneous heating and cooling operation system

By adding suction gas piping and a Branch Selector unit.



Centralized interlocking function

Centralized interlocking input is possible using an external control adaptor (DTA104A62).



By using 1 external control adaptor circuit board, centralized interlocking input to multiple units within the same water system is possible.

1.5 Condensing Unit Lineup

A lineup of 6 ton to 21 ton models precisely meets wide-ranging office space requirements. The modular design imparts a simple and smart appearance and makes units easy to install.

RWEYQ72PTJU

Combination table for VRV-WIII

Capacity Range	Model	Combination
6 ton	RWEYQ72P	RWEYQ72P
7 ton	RWEYQ84P	RWEYQ84P
12 ton	RWEYQ144P	RWEYQ72P
14 ton	RWEYQ168P	RWEYQ84P
18 ton	RWEYQ216P	RWEYQ72P
21 ton	RWEYQ252P	RWEYQ84P

* An condensing unit multi connection piping kit (optional) is necessary for connection.

Series Lineup

Series	Capacity Range					
	6	7	12	14	18	21
Heat Pump type	●	●	●	●	●	●
Heat Recovery type	●	●	●	●	●	●

6·7 ton 12·14 ton 18·21 ton

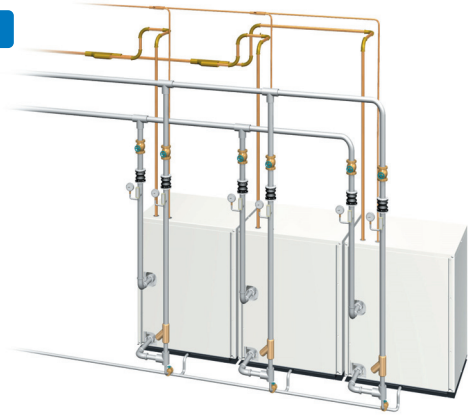
Numbers of connectable indoor units [60Hz]

Capacity Range	6 ton	7 ton	12 ton	14 ton	18 ton	21 ton
Model	RWEYQ72P	RWEYQ84P	RWEYQ144P	RWEYQ168P	RWEYQ216P	RWEYQ252P
Number of connectable indoor units	Up to 12	Up to 14	Up to 20		Up to 22	Up to 32
Number of connectable Branch Selector units	Up to 12	Up to 14	Up to 20		Up to 22	Up to 32
Connectable capacity	50–130% of the rated capacity of the VRV-WIII					

Example system layouts (Heat Pump system)

* For illustration purposes only.

21 ton



2. Model Names of Indoor / Condensing Units

2.1 Indoor Units

Indoor Units

Capacity Range		0.6 ton	0.8 ton	1 ton	1.5 ton	2 ton	2.5 ton	3 ton	3.5 ton	4 ton	4.5 ton	6 ton	8 ton	Power Supply, Standard
Capacity Index		7.5	9.5	12	18	24	30	36	42	48	54	72	96	
Ceiling Mounted Cassette (Round Flow) Type	FXFQ	—	09P	12P	18P	24P	30P	36P	—	48P	—	—	—	VJU
4-Way Ceiling Mounted Cassette (2'×2') Type	FXZQ	07M7	09M7	12M7	18M7	—	—	—	—	—	—	—	—	
Slim Ceiling Mounted Duct Type	FXDQ	07M	09M	12M	18M	24M	—	—	—	—	—	—	—	
Ceiling Mounted Duct Type (Middle and High Static Pressure)	FXMQ	07P	09P	12P	18P	24P	30P	36P	—	48P	—	—	—	
Ceiling Mounted Duct Type	FXMQ	—	—	—	—	—	—	—	—	—	—	72M	96M	
Ceiling Suspended Type	FXHQ	—	—	12M	—	24M	—	36M	—	—	—	—	—	
Wall Mounted Type	FXAQ	07P	09P	12P	18P	24P	—	—	—	—	—	—	—	
Floor Standing Type	FXLQ	—	—	12M	18M	24M	—	—	—	—	—	—	—	
Concealed Floor Standing Type	FXNQ	—	—	12M	18M	24M	—	—	—	—	—	—	—	
Air Handling Unit	FXTQ	—	—	12PA	18PA	24PA	30PA	36PA	42PA	48PA	54PA	—	—	

Branch Selector Units

Series	Model Name				Power Supply, Standard
Heat Recovery	BSVQ	36P	60P	96P	VJU

Centralized Branch Selector Units

Series	Model Name			Power Supply, Standard
Heat Recovery	BSV	4Q36P	6Q36P	VJU

2.2 Condensing Units

Capacity Range			6 ton	7 ton	12 ton	14 ton	18 ton	21 ton	Power Supply, Standard
Capacity Index			72	84	144	168	216	252	
Heat Pump / Heat Recovery	208/230V	RWEYQ	72P	84P	144P	168P	216P	252P	TJU
Heat Pump / Heat Recovery	460V	RWEYQ	72P	84P	144P	168P	216P	252P	YDN

VJ: 1 phase, 208/230V, 60Hz
TJ: 3 phase, 208/230V, 60Hz
YD: 3 phase, 460V, 60Hz
U(VJU, TJU): Standard Symbol

3. External Appearance

3.1 Indoor Units

Ceiling mounted cassette (Round flow) type

FXFQ09PVJU
FXFQ12PVJU
FXFQ18PVJU
FXFQ24PVJU
FXFQ30PVJU
FXFQ36PVJU
FXFQ48PVJU

Wall mounted type

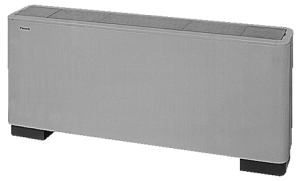
FXAQ07PVJU
FXAQ09PVJU
FXAQ12PVJU
FXAQ18PVJU
FXAQ24PVJU

4-way ceiling mounted cassette (2'×2') type

FXZQ07M7VJU
FXZQ09M7VJU
FXZQ12M7VJU
FXZQ18M7VJU

Floor standing type

FXLQ12MVJU
FXLQ18MVJU
FXLQ24MVJU

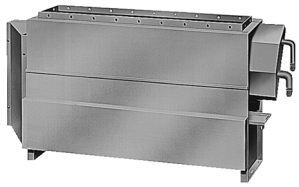


Slim ceiling mounted duct type

FXDQ07MVJU
FXDQ09MVJU
FXDQ12MVJU
FXDQ18MVJU
FXDQ24MVJU

Concealed floor standing type

FXNQ12MVJU
FXNQ18MVJU
FXNQ24MVJU



Ceiling mounted duct type (Middle and high static pressure)

FXMQ07PVJU
FXMQ09PVJU
FXMQ12PVJU
FXMQ18PVJU
FXMQ24PVJU
FXMQ30PVJU
FXMQ36PVJU
FXMQ48PVJU

Air handling unit

FXTQ12PAVJU
FXTQ18PAVJU
FXTQ24PAVJU
FXTQ30PAVJU
FXTQ36PAVJU
FXTQ42PAVJU
FXTQ48PAVJU
FXTQ54PAVJU

Ceiling mounted duct type

FXMQ72MVJU
FXMQ96MVJU

Branch Selector units

BSVQ36PVJU
BSVQ60PVJU
BSVQ96PVJU

Ceiling suspended type

FXHQ12MVJU
FXHQ24MVJU
FXHQ36MVJU

Centralized Branch Selector units

BSV4Q36PVJU
BSV6Q36PVJU

BSV4Q36PVJU

BSV6Q36PVJU

3.2 Air Treatment Equipment

Air-Processing Unit

FXMQ48MFVJU
FXMQ72MFVJU
FXMQ96MFVJU

3.3 Condensing Units

RWEYQ72PTJU / RWEYQ84PTJU
RWEYQ72PYDN / RWEYQ84PYDN

6, 7 ton

RWEYQ144PTJU / RWEYQ168PTJU
RWEYQ144PYDN / RWEYQ168PYDN

12, 14 ton

RWEYQ216PTJU / RWEYQ252PTJU
RWEYQ216PYDN / RWEYQ252PYDN

18, 21 ton

4. Combination of Condensing Units

System Capacity	Number of Units	Module		Condensing unit multi connection piping kit (option)
		6 ton	7 ton	
6 ton	1	●		—
7 ton	1		●	
12 ton	2	●●		Heat pump: BHFP22MA56U Heat recovery: BHFP26MA56U
14 ton	2		●●	
18 ton	3	●●●		Heat pump: BHFP22MA84U Heat recovery: BHFP26MA84U
21 ton	3		●●●	

Note: A condensing unit multi-connection piping kit (option) is necessary for multiple connections of 12 ton systems and above.

5. Capacity Range

Combination ratio

Connection capacity: 50% - 130%

$$\text{Combination ratio} = \frac{\text{Total capacity index of the indoor units}}{\text{Capacity index of the condensing units}}$$

Indoor unit connection capacity

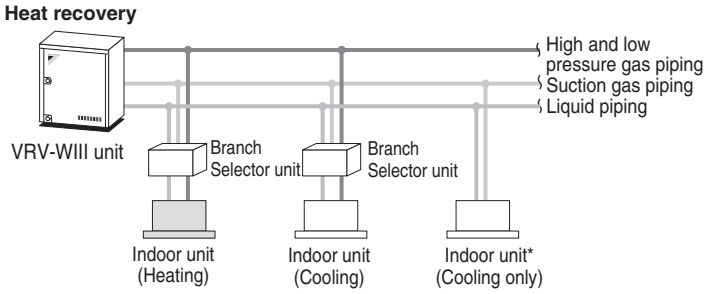
Type	Ton	Capacity index	Model name	Combination	Condensing unit multi connection piping kit *1	Total capacity index of connectable indoor units *2			Maximum number of connectable indoor units	Maximum number of connectable Branch Selector units
						Combination (%)				
						50%	100%	130%		
Single condensing units	6	72	RWEYQ72P	RWEYQ72P	—	36	72	93.5	12	12
	7	84	RWEYQ84P	RWEYQ84P		42	84	109	14	14
Double condensing units	12	144	RWEYQ144P	RWEYQ72P + RWEYQ72P	Heat pump: BHFP22MA56U Heat recovery: BHFP26MA56U	72	144	187	20	20
	14	168	RWEYQ168P	RWEYQ84P + RWEYQ84P		84	168	218	20	20
Triple condensing units	18	216	RWEYQ216P	RWEYQ72P + RWEYQ72P + RWEYQ72P	Heat pump: BHFP22MA84U Heat recovery: BHFP26MA84U	108	216	280	22	22
	21	252	RWEYQ252P	RWEYQ84P + RWEYQ84P + RWEYQ84P		126	252	327.5	32	32

Note: *1 An condensing unit multi connection piping kit (option) is necessary for multiple connections of 12 ton systems and above.

*2 Total capacity index of connectable indoor units must be 50%-130% of the capacity index of the condensing units.

For indoor units used for cooling only (do not connect to Branch Selector unit when using for heat recovery), total capacity index must be 50% or less than the capacity index of the condensing units.

Limitation of capacity index for heat recovery



* For indoor units used for cooling only (do not connect to Branch Selector unit when using for heat recovery), total capacity index must be 50% or less than the capacity index of the condensing units.

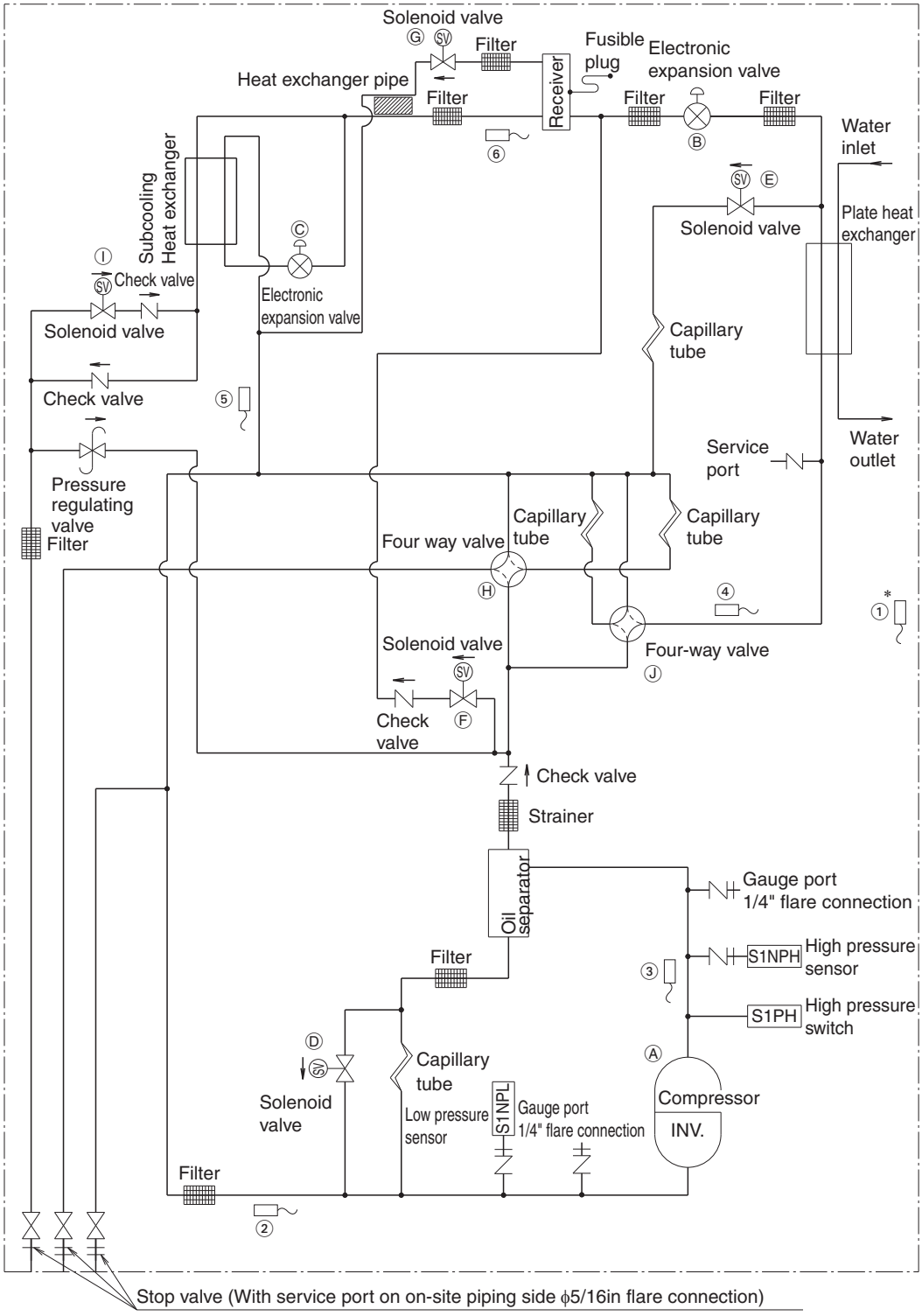
Part 2
Refrigerant Circuit

1. Refrigerant Circuit (Piping Diagram)

1.1 RWEYQ72PTJU / RWEYQ84PTJU RWEYQ72PYDN / RWEYQ84PYDN

No. in Refrigerant System Diagram	Electric Symbol	Name	Major Function
A	M1C	Inverter compressor	Inverter compressor is operated on frequencies between 52 Hz and 230 Hz by using the inverter. The number of operating steps is as follows. RWEYQ72P, 84P: 22 steps
B	Y1E	Electronic expansion valve (Main)	In cooling: High pressure control In heating or simultaneous cooling/heating operation: • When the heat exchanger is used as the evaporator : SH control • When the heat exchanger is used as the condensing : High pressure control
C	Y3E	Electronic expansion valve (Subcooling: EVB)	PI control is applied to keep the outlet superheated degree of subcooling heat exchanger constant.
D	Y1S	Solenoid valve (Hot gas: SVP)	Prevents the low pressure from transient falling.
E	Y2S	Solenoid valve (Oil return of water heat exchanger: SVE)	Collects the refrigerant oil from water heat exchanger.
F	Y3S	Solenoid valve (Receiver gas charging: SVL)	Maintains high pressure while in cooling at low water temperature. And also used to prevent the accumulation of refrigerant in non-operating condensing units in the case of multiple condensing unit system.
G	Y4S	Solenoid valve (Receiver gas vent: SVG)	Collects the refrigerant to receiver.
H	Y5S	Four-way valve (Main: 20S1)	Changes the operation into cooling, heating or simultaneous cooling/ heating operation.
I	Y6S	Solenoid valve (Non-operating unit liquid pipe closing: SVSL)	Prevents the accumulation of refrigerant in non-operating condensing units in the case of multiple condensing unit system.
J	Y7S	Four-way valve (Sub: 20S2)	Changes the water heat exchanger intocondensing or evaporator.
K	S1NPH	High pressure sensor	Detects high pressure.
L	S1NPL	Low pressure sensor	Detects low pressure.
M	S1PH	High pressure switch (For INV. compressor)	Prevents the increase of high pressure when an error occurs, this switch is activated at high pressure of 580 psi or more to stop the compressor operation.
N	–	Fusible plug	Prevents the increase of pressure when abnormal heating is caused by fire or others, the fusible part of the plug is molten at a temperature of 158 to 167°F to release the pressure into the atmosphere.
O	–	Pressure regulating valve (Liquid pipe to discharge pipe)	This valve opens at a pressure of 580 psi or more for prevention of pressure increase, thus resulting in no damage of functional parts due to the increase of pressure in transportation or storage.
1	R1T	Radiation fin thermistor	• Condensing unit fan speed control. • Inverter radiation fin temperature control. • Pressure difference control.
2	R2T	Suction pipe thermistor (Ts)	Detects suction pipe temperature, keep the suction superheated degree constant in heating, and others.
3	R3T	Discharge pipe thermistor (Tdi)	Detects discharge pipe temperature, make the temperature protection control of compressor, and others.
4	R4T	Heat exchanger gas pipe thermistor (Tg)	Detects gas pipe temperature of water heat exchanger.
5	R5T	Subcooling heat exchanger outlet pipe thermistor (Tsh)	Detects gas pipe temperature on the evaporating side of subcooling heat exchanger, keep the superheated degree at the outlet of subcooling heat exchanger constant, and others.
6	R6T	Receiver outlet liquid pipe thermistor (Tl)	Detects receiver outlet liquid pipe temperature, prevent the drift between condensing units while in heating in the case of multiple condensing unit system, and others.

RWEYQ72PTJU / RWEYQ84PTJU
RWEYQ72PYDN / RWEYQ84PYDN



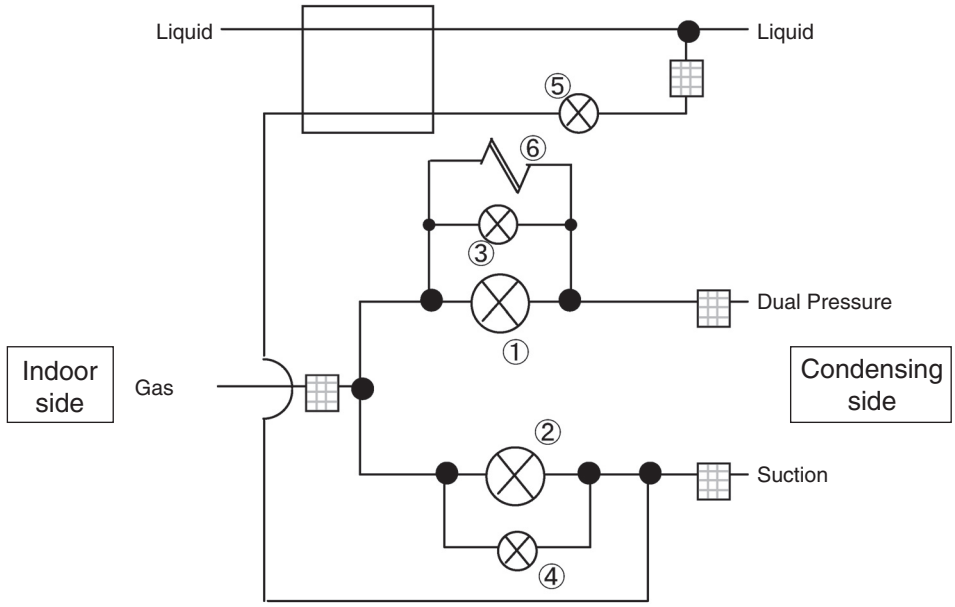
∗ This thermistor is near the electrical components box.

4D066041A

1.2 BSVQ36, 60, 96PVJU

No.	Name	Electric Symbol	Function
1	Electronic expansion valve (EVH)	Y4E	Opens while in heating or all indoor units are in cooling. (Max : 760 pls)
2	Electronic expansion valve (EVL)	Y5E	Opens while in cooling. (Max : 760 pls)
3	Electronic expansion valve (EVHS)	Y2E	Opens while in heating or all indoor units are in cooling. (Max : 480 pls)
4	Electronic expansion valve (EVLS)	Y3E	Opens while in cooling. (Max : 480 pls)
5	Electronic expansion valve (EVSC)	Y1E	In simultaneous cooling and heating, it is used for subcooling liquid refrigerants when an indoor unit downstream of this Branch Selector unit is in heating. (Max : 480 pls)
6	Capillary tube	—	Bypasses high pressure gas to low pressure side to protect “Refrigerant accumulation” in dual pressure gas pipes.

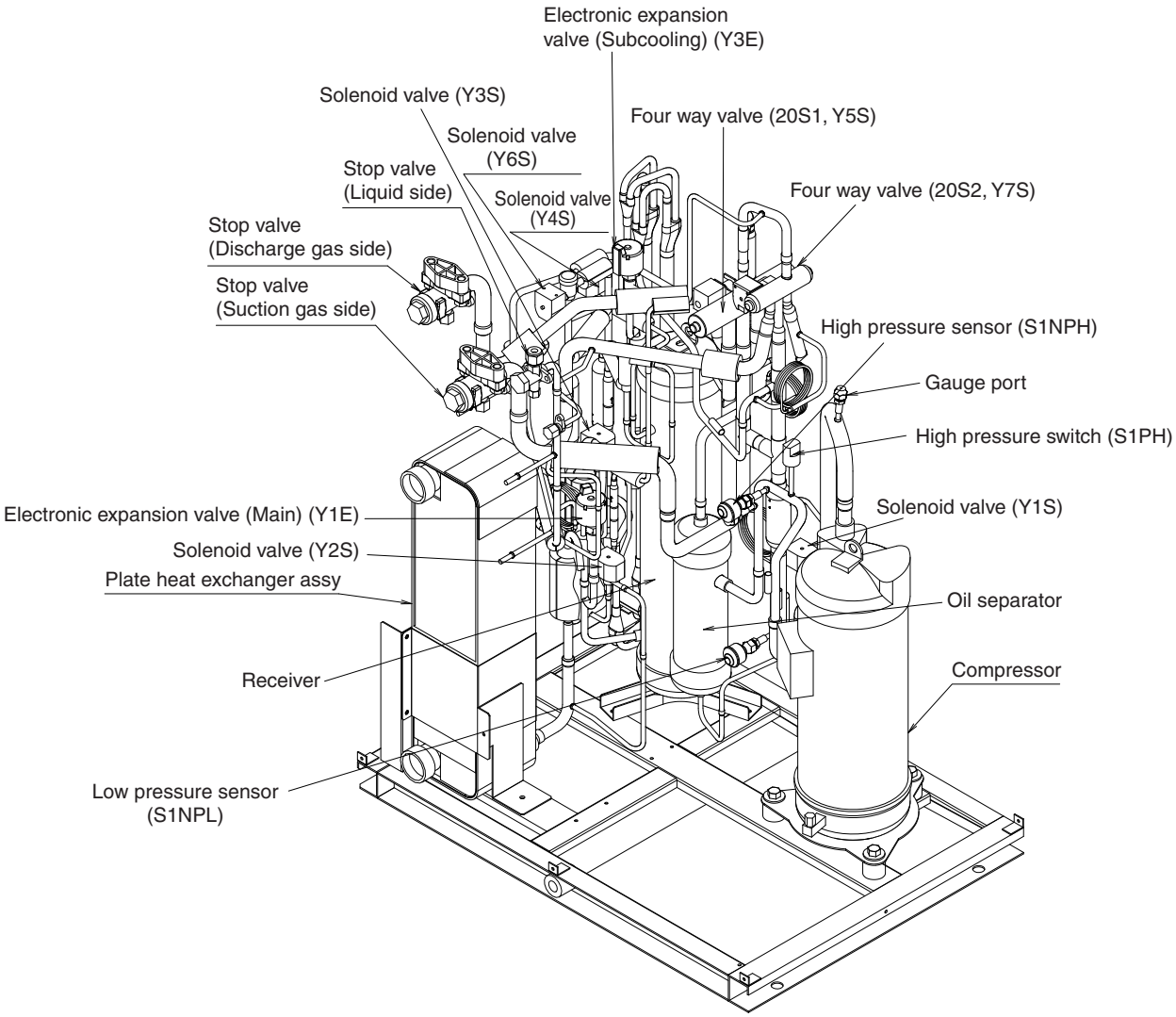
Note: Factory setting of all electronic expansion valve opening: 60 pls



2. Functional Parts Layout

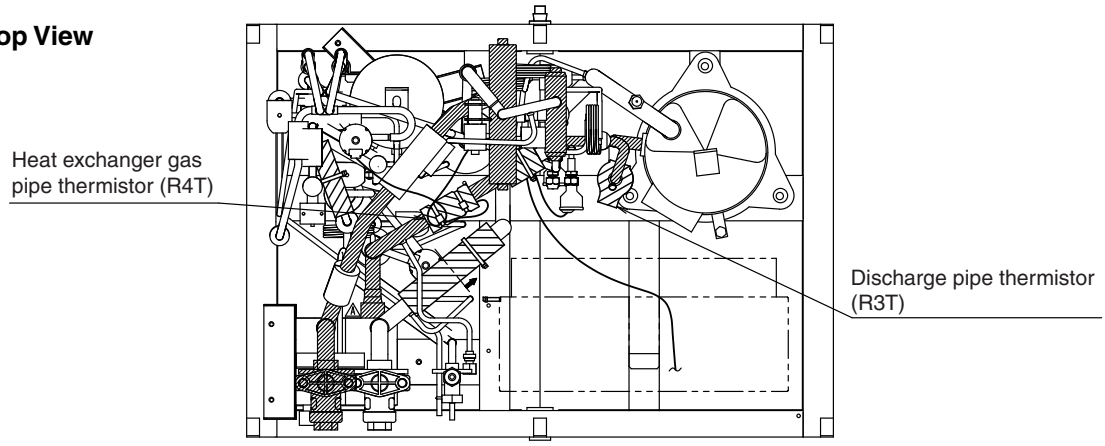
2.1 RWEYQ72PTJU / RWEYQ84PTJU RWEYQ72PYDN / RWEYQ84PYDN

2.1.1 Functional Parts Layout (Solenoid Valve etc.)

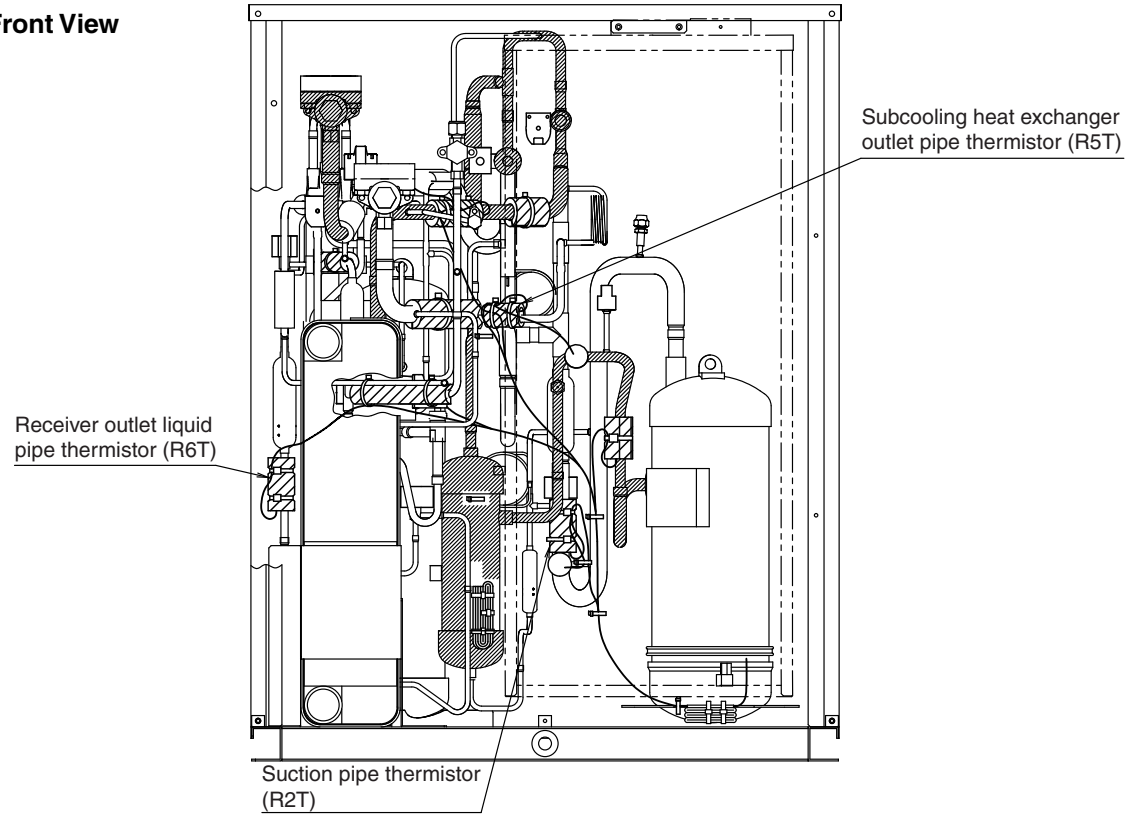


2.1.2 Thermistors

Top View



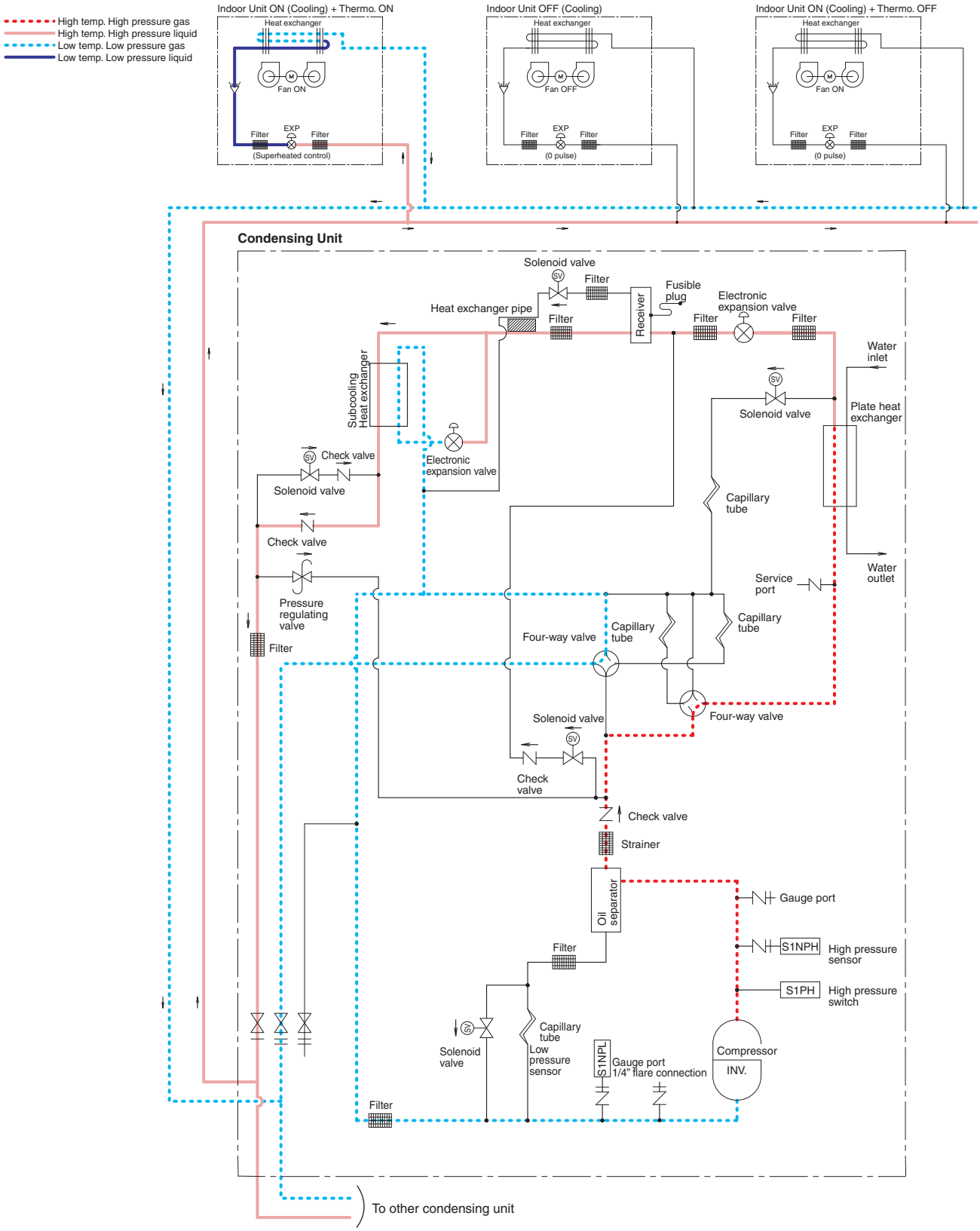
Front View



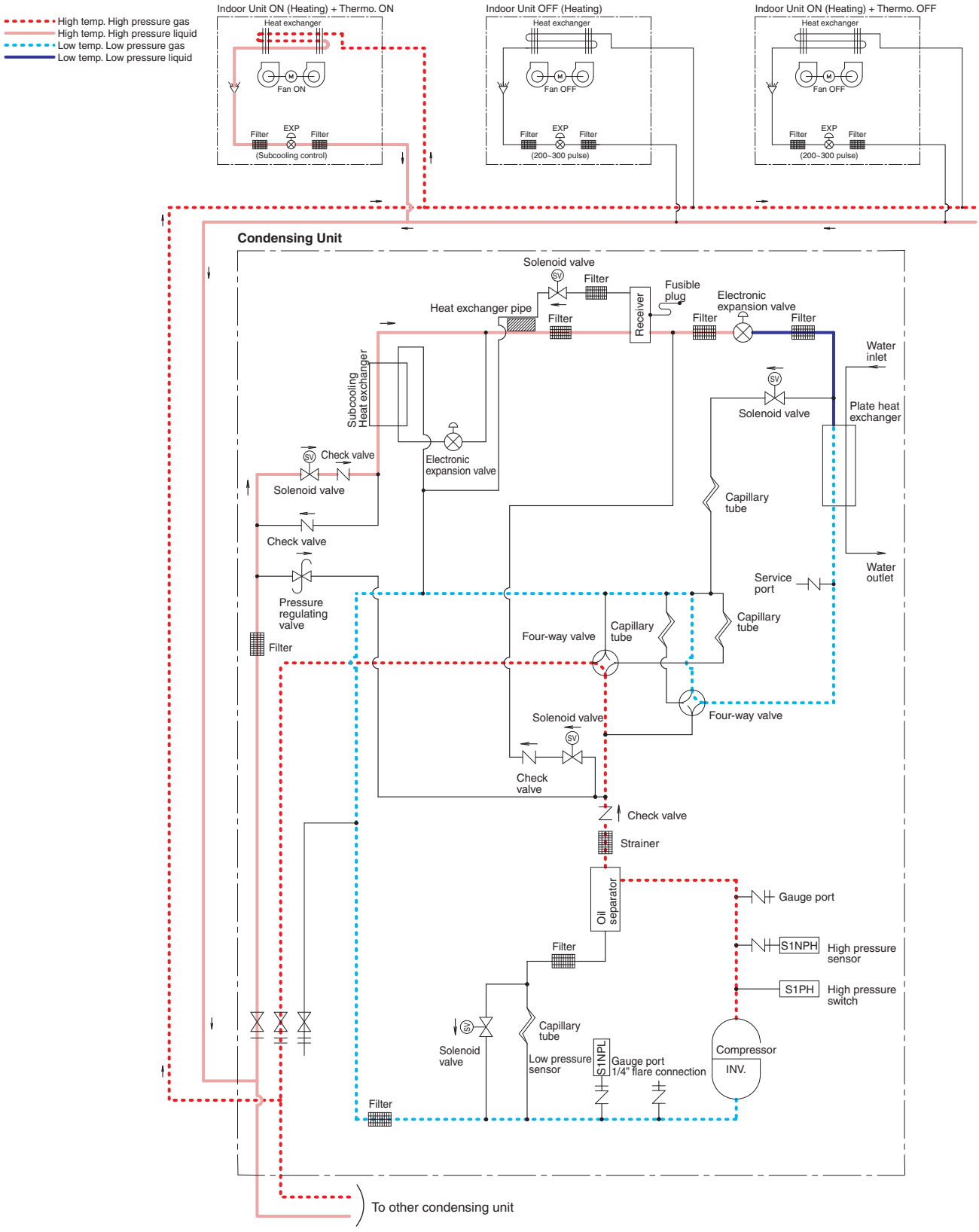
3. Refrigerant Flow for Each Operation Mode

3.1 In Case of Heat Pump Connection

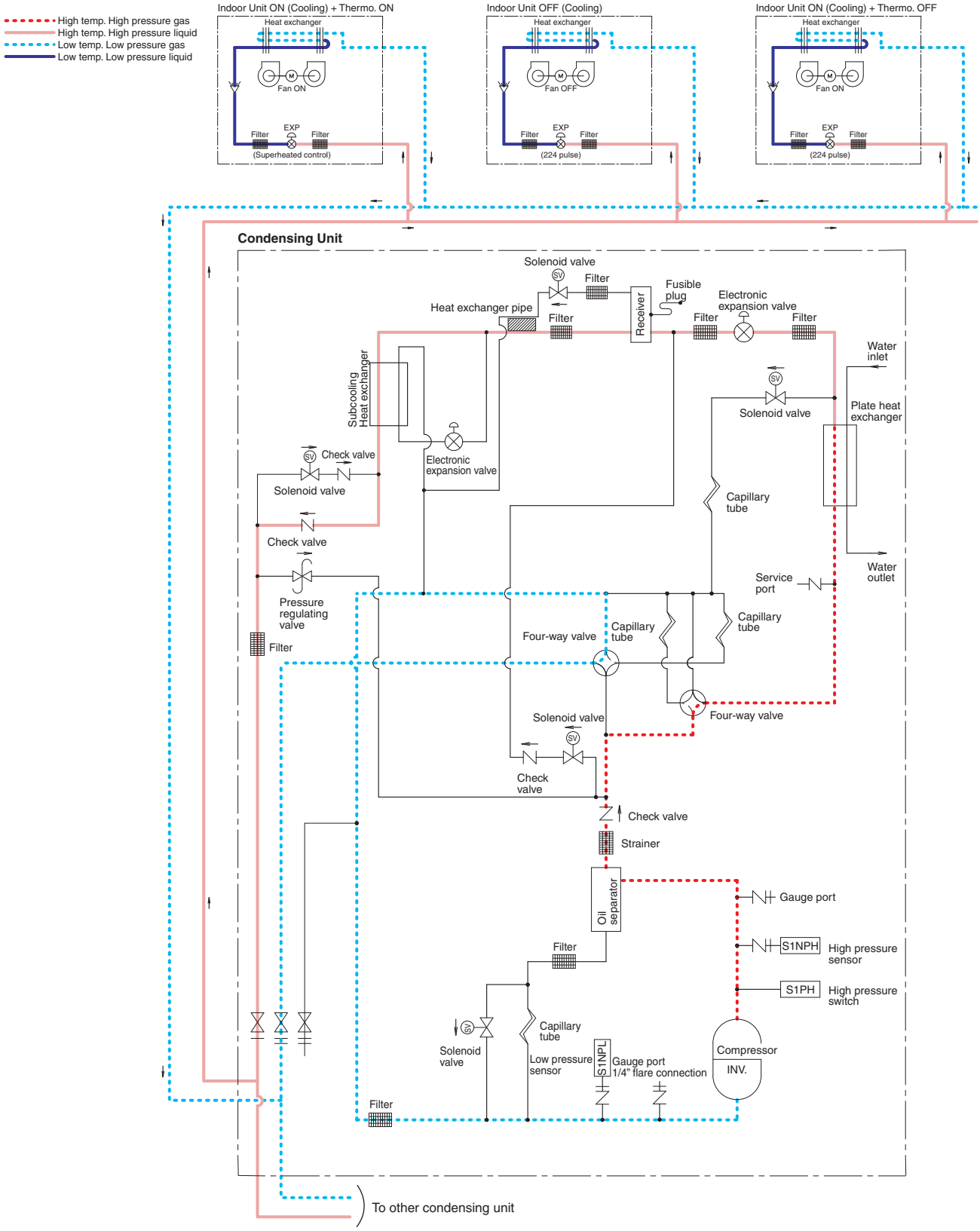
A. Cooling Operation



B. Heating Operation

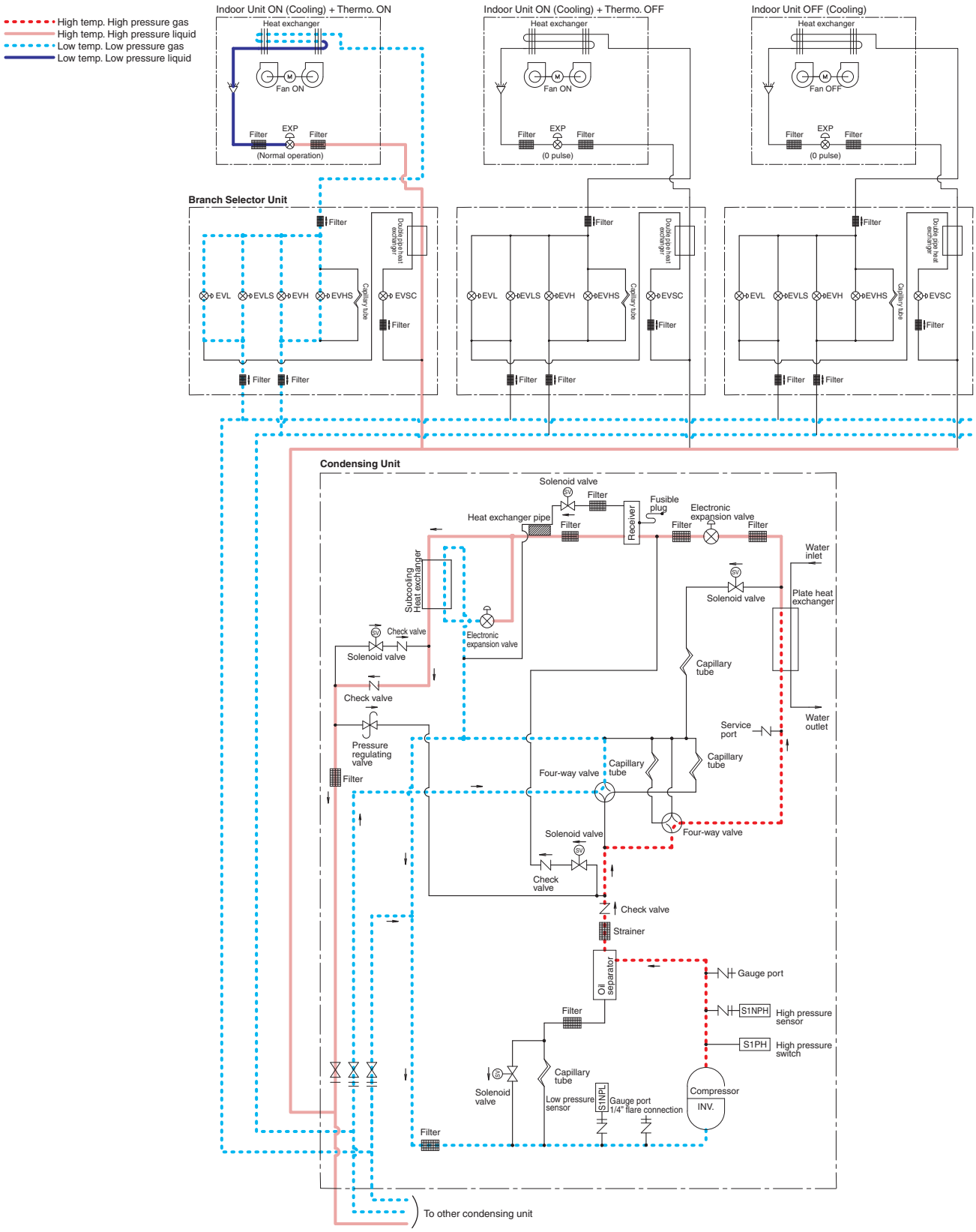


C. Oil Return Operation

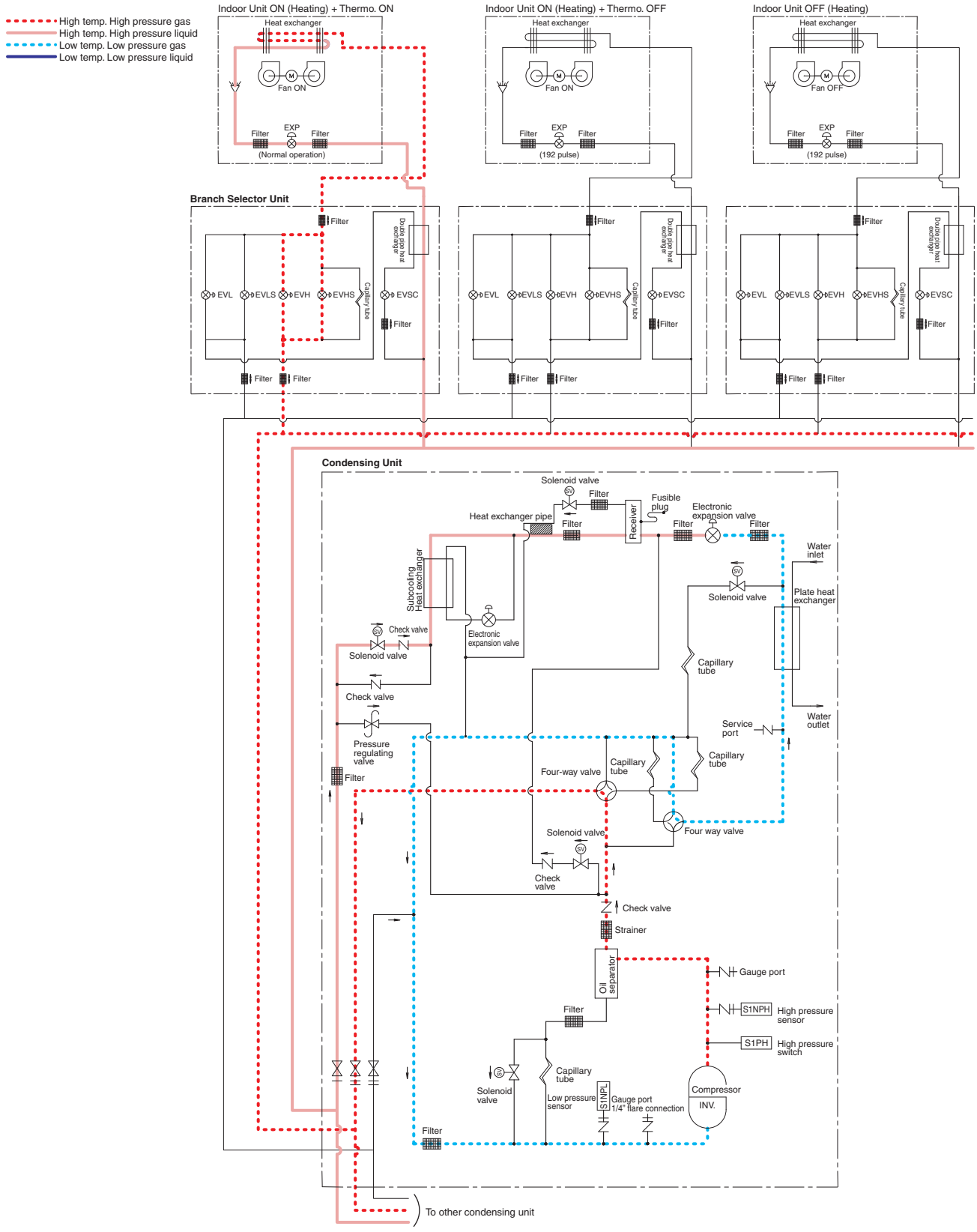


3.2 In Case of Heat Recovery Connection (1 Condensing Unit Installation)

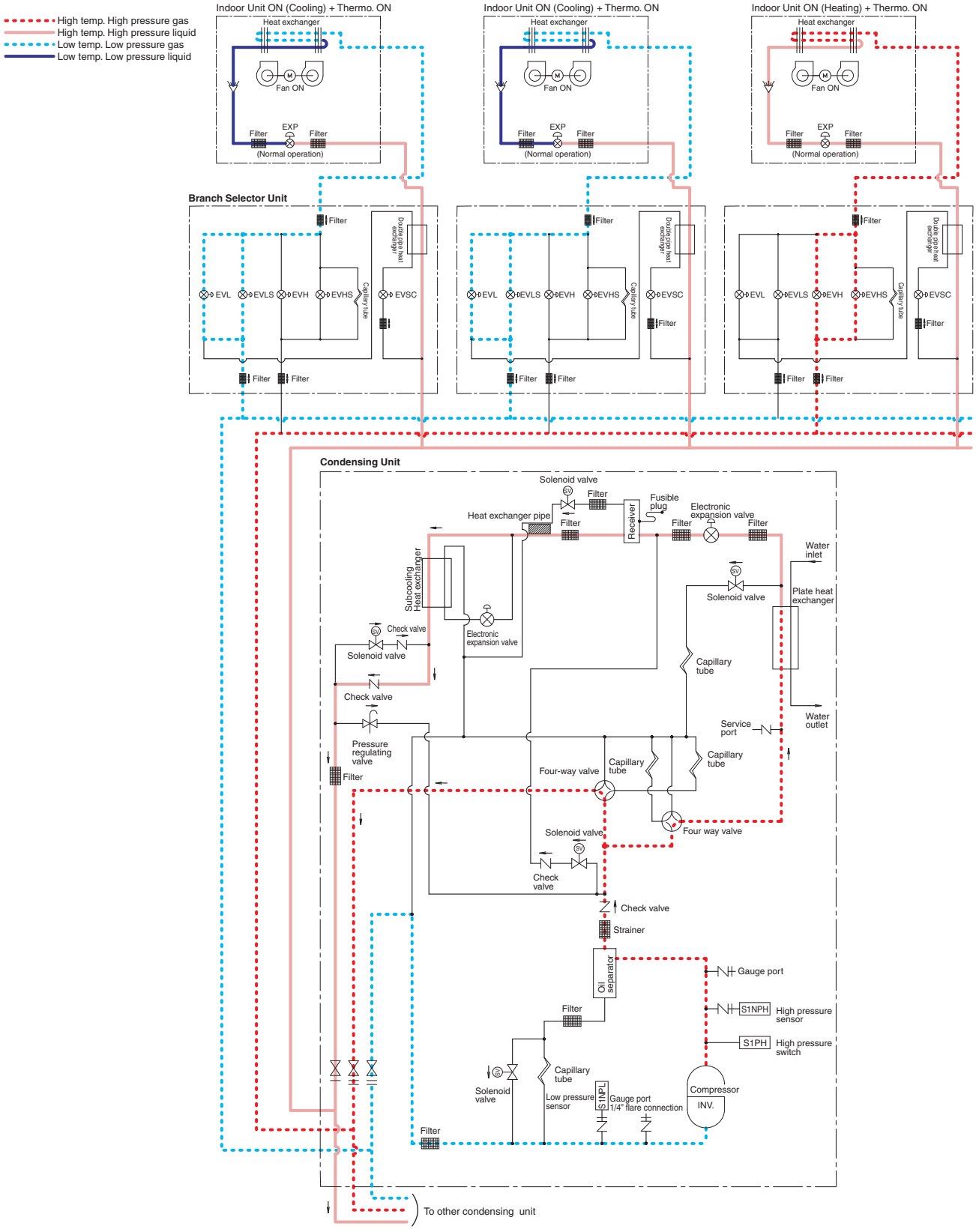
A. Cooling Operation



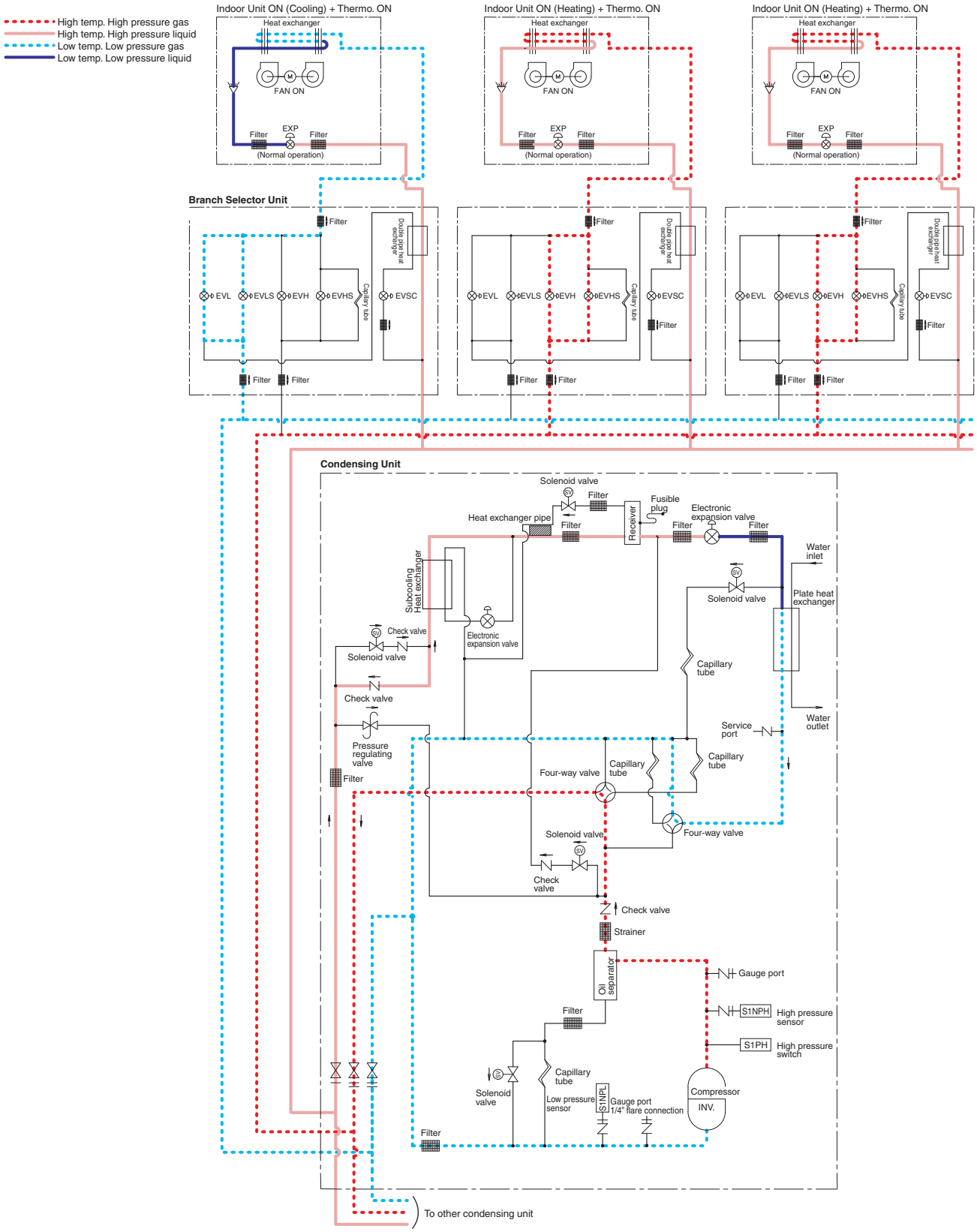
B. Heating Operation



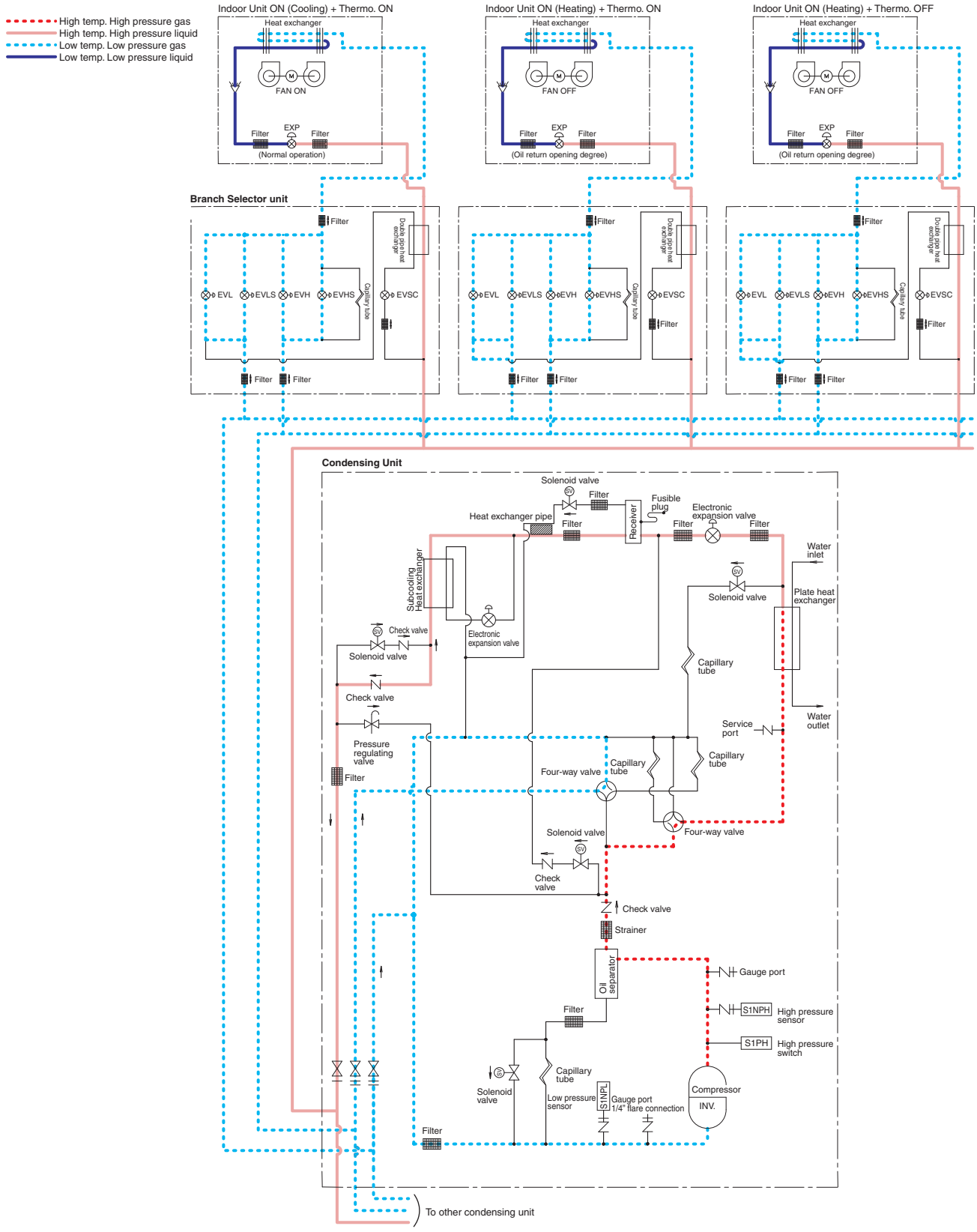
C. Heating and Simultaneous Cooling/Heating Operation (When the condensing water-cooled heat exchanger is used as condensing.)



D. Heating and Simultaneous Cooling/Heating Operation (When the condensing unit water cooled heat exchanger is used as evaporator.)
(In case there are indoor units operating with cooling thermostat “ON”.)



E. Oil Return Operation at Simultaneous Cooling/Heating Operation



Part 3
Remote Controller

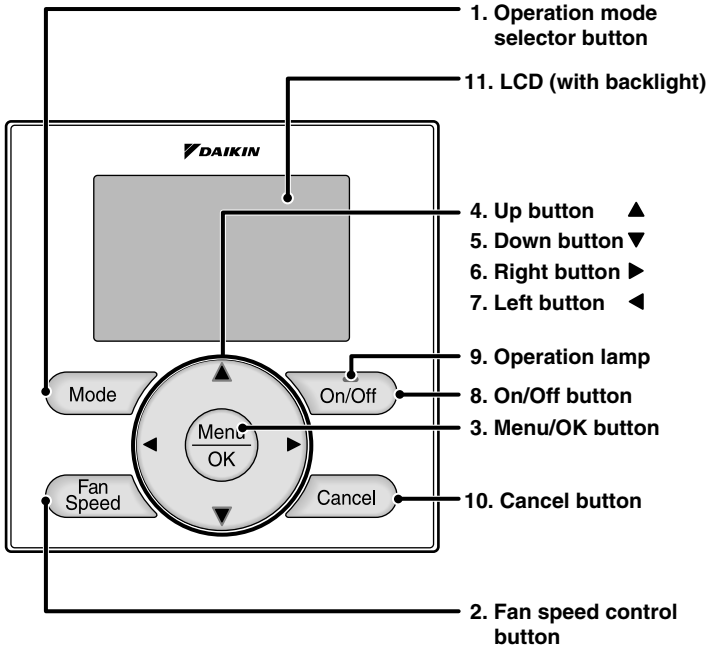
1. Wired Remote Controller

1.1 Applicable Models

Model	FXFQ-P	FXZQ-M	FXDQ-M	FXMQ-P	FXMQ-M	FXHQ-M	FXAQ-P	FXLQ-M FXNQ-M	FXTQ-PA
Navigation Remote Controller	BRC1E71/72								

1.2 Names and Functions

1.2.1 BRC1E71 /72



Functions other than basic operation items (i.e., On/Off, Operation mode selector, Fan speed control, and temperature settings) are set from the menu screen.

Note:

- Do not install the remote controller in places exposed to direct sunlight, otherwise the LCD will be damaged.
- Do not pull or twist the remote controller cord, otherwise the remote controller may be damaged.
- Do not use objects with sharp ends to press the buttons on the remote controller otherwise damage may result.

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 an 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 2 remote controllers are used to control a single indoor unit, only the controller to be accessed first will have backlight functionality.

1.3 MAIN/SUB Setting when Using 2 Remote Controllers

Situation

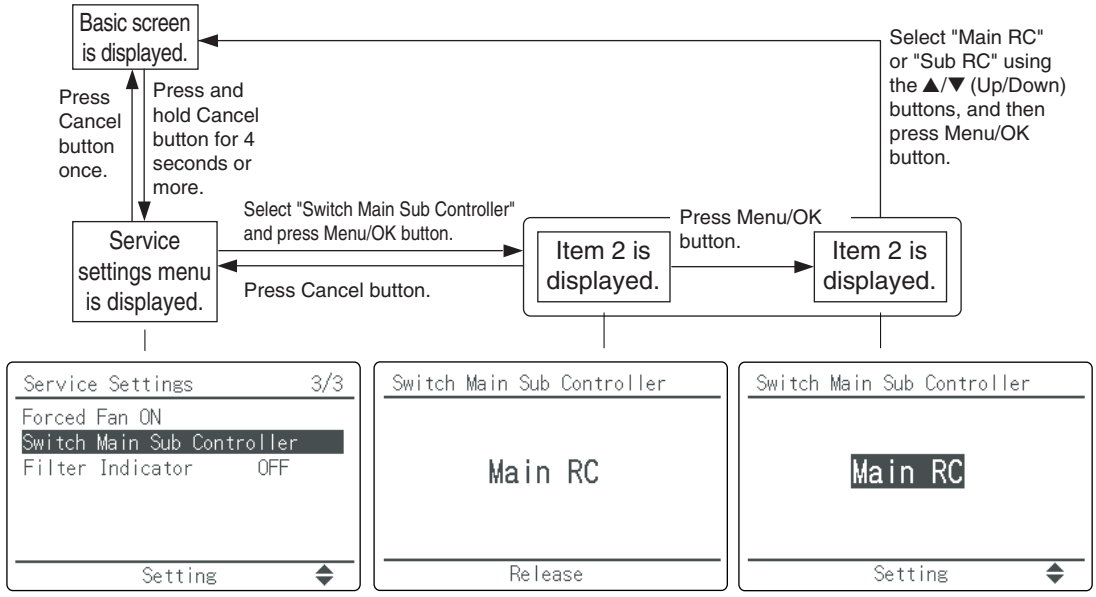
The MAIN/SUB setting is necessary when 1 indoor unit is controlled by 2 remote controllers. When you use 2 remote controllers (control panel and separate remote controller), set one to MAIN and the other to SUB.

Setting

The remote controllers are factory setting to MAIN, so you only have to change one remote controller from MAIN to SUB. To change a remote controller from MAIN to SUB, proceed as follows:

1.3.1 BRC1E71/72

The designation of the main and sub remote controllers can be swapped. Note that this change requires turning the power OFF and then ON again.



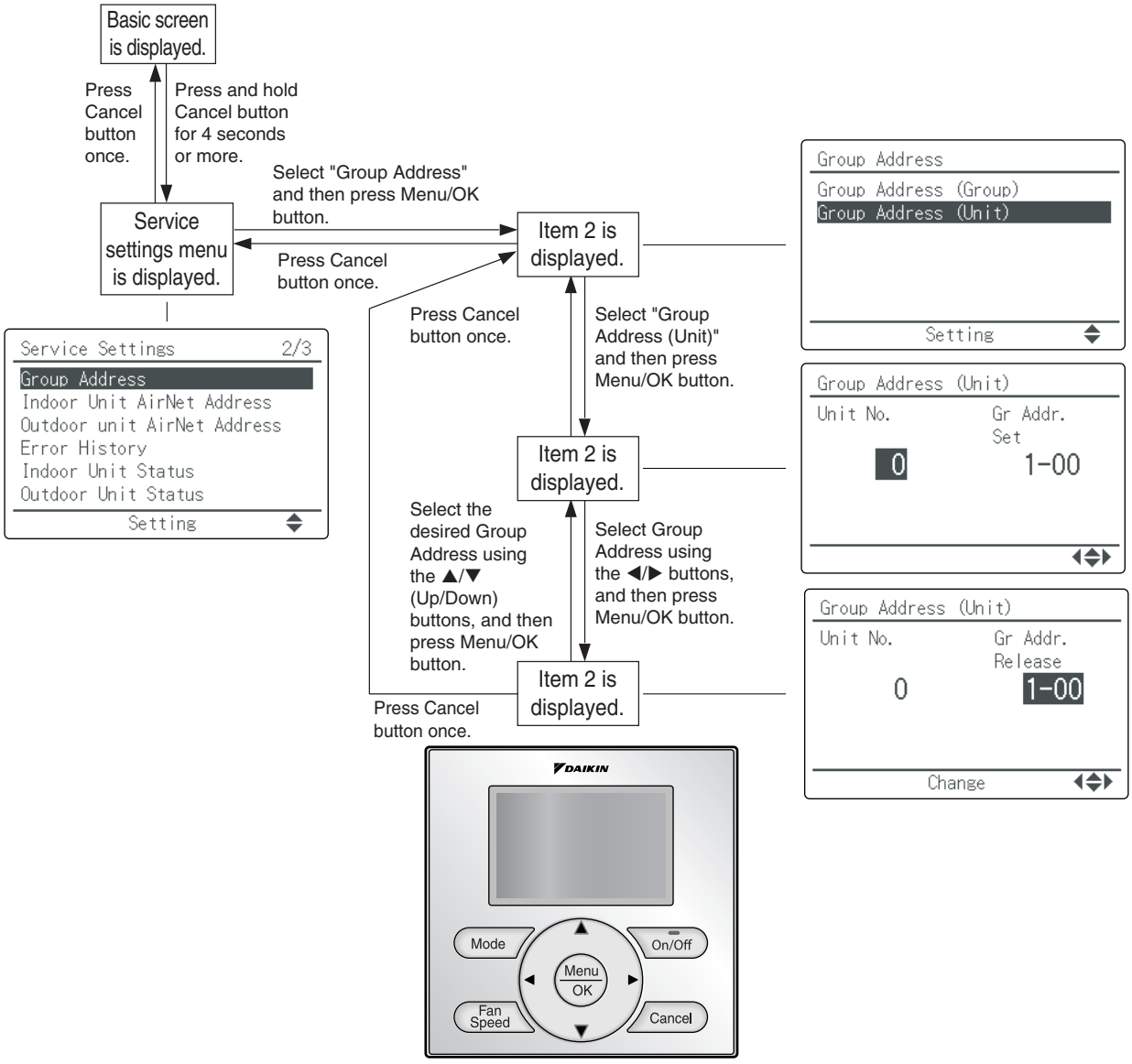
1.4 Centralized Control Group No. Setting

1.4.1 BRC1E71/72

In order to conduct the centralized remote control using the central remote controller and the unified ON/OFF controller, Group No. settings should be made by group using the operating remote controller.

Make Group No. settings for centralized remote control using the operating remote controller.

<Group Address (Unit)>



Service settings menu	Item 2
Group Address	Group Address (Group)
	Group Address (Unit)

■ Description

This menu is used to make group address setting for centralized control.

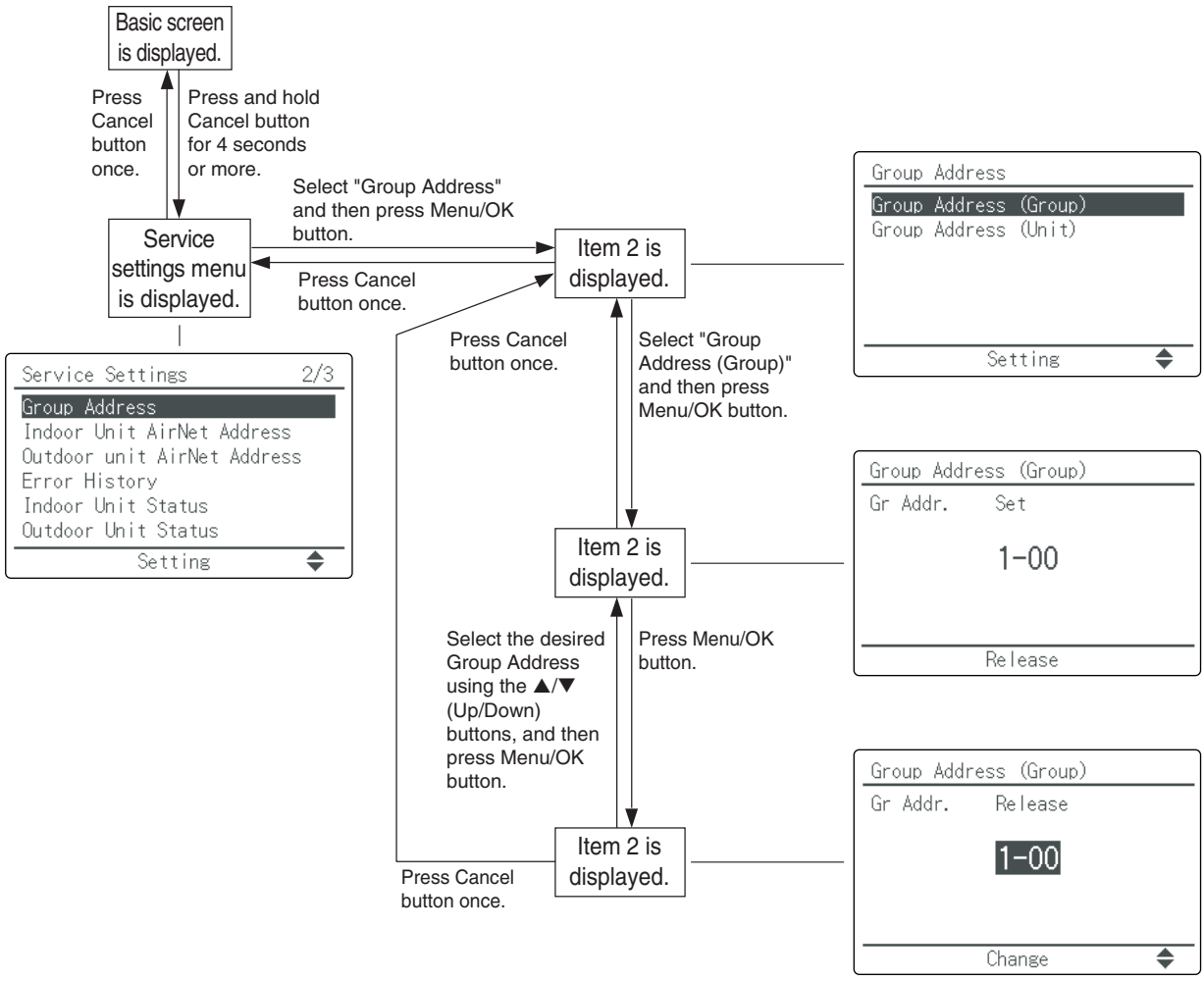
It is also used to make group address setting by indoor unit.

Note: ■ For setting group No. of Heat reclaim ventilator and wiring adaptor for other air conditioners, etc., refer to the instruction manual attached.

NOTICE

Enter the group No. and installation place of the indoor unit into the attached installation table. Be sure to keep the installation table with the operation manual for maintenance.

<Group Address (Group)>

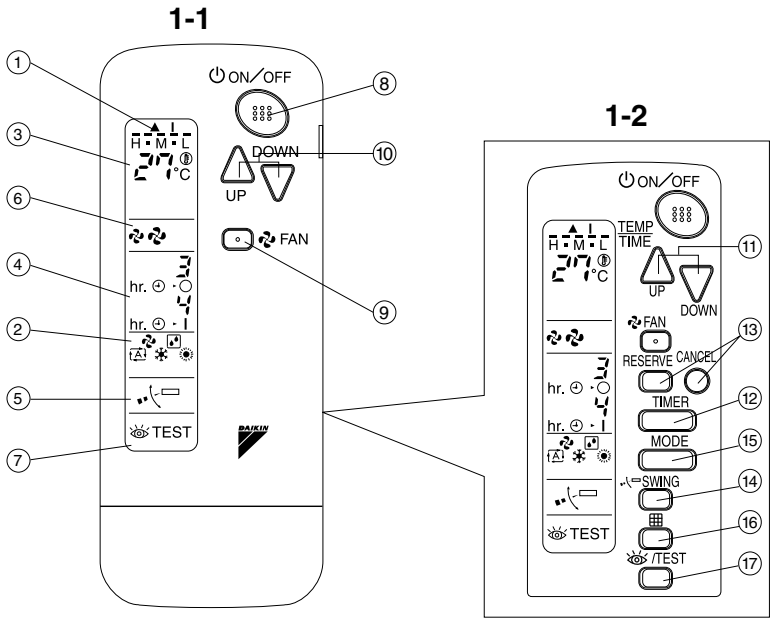


2. Wireless Remote Controller

2.1 Applicable Models

Model	FXFQ-P	FXZQ-M	FXDQ-M	FXMQ-P	FXMQ-M	FXHQ-M	FXAQ-P	FXLQ-M FXNQ-M	FXTQ-PA
Wireless Remote Controller	BRC7C812	–	BRC4C82			BRC7E83	BRC7E818	–	

2.2 Names and Functions



3P107422-11J

1	**DISPLAY " ▲ " (SIGNAL TRANSMISSION)**
	This lights up when a signal is being transmitted.
2	**DISPLAY " " " " " " " " " " (OPERATION MODE)**
	This display shows the current OPERATION MODE. For cooling only type, " " (Auto) and " " (Heating) are not installed.
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 FLAP)**
6	**DISPLAY " " " " (FAN SPEED)**
	The display shows the set fan speed.
7	**DISPLAY " TEST " (INSPECTION/ TEST OPERATION)**
	When the INSPECTION/TEST OPERATION 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 cover 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 OPERATION 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 blinks 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. (For cooling only type this lamp does not turn ON.)

NOTES

- For the sake of explanation, all indications are shown on the display in Figure 1 contrary to actual running situations.
- Fig. 1-2 shows the remote controller with the front cover opened.
- If the air filter cleaning time indicator lamp lights up, clean the air filter as explained in the operation manual provided with the indoor unit.
  After cleaning and reinstalling the air filter, press the filter sign reset button on the remote controller. The air filter cleaning time indicator lamp on the receiver will go out.
- The Defrost Lamp will blink when the power is turned ON. This is not an error.

C: 3P107422-11J

2.3 Address and MAIN/SUB Setting

Introduction

To set the wireless remote controller, you have to set the address for:

- The receiver of the wireless remote controller
- The wireless remote controller.

Setting the Address for the Receiver

The address for the receiver of the wireless remote controller is factory setting to 1. To change this setting, proceed as follows:

Set the wireless address switch (SS2) on the PCB according to the table below.

Unit No.	No. 1	No. 2	No. 3
Wireless address switch (SS2)			

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 switch (SS1) of the receiver to SUB.

MAIN/SUB	MAIN	SUB
MAIN/SUB switch (SS1)		

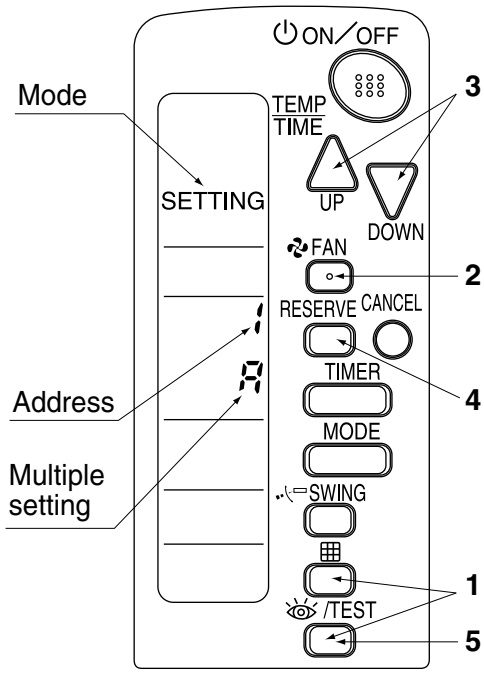
Setting the Address for the Wireless Remote Controller

The address for the wireless remote controller is factory setting to 1. To change this setting, proceed as follows:

1. Hold down the “ ” button and the “ /TEST ” button for at least 4 seconds to get the Field setting mode.
   (Indicated in the display area in the figure at right.)
2. Press the “ FAN ” button and select a multiple setting (A/b). Each time the button is pressed the display switches between “A” and “b”.
3. Press the “ UP ” button or “ DOWN ” button to set the address.

   1 → 2 → 3 → 4 → 5 → 6

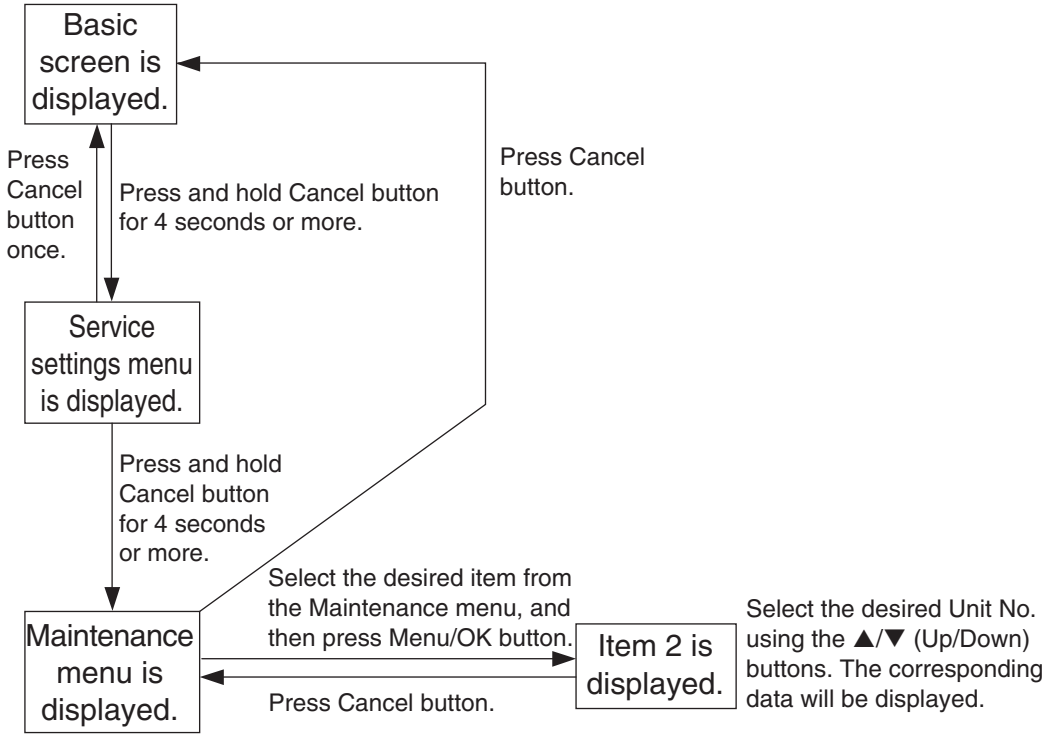
   Address can be set from 1 to 6, but set it to 1 ~ 3 and to same address as the receiver. (The receiver does not work with address 4 ~ 6.)
4. Press the “ RESERVE ” button to enter the setting.
5. Hold down the “ /TEST ” button for at least 1 second to quit the Field setting mode and return to the normal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



3. Service Mode

3.1 BRC1E71/72

Operating the remote controller allows service data to be acquired and various services to be set.



Maintenance Menu	Item 2	Remarks
2.1. Model Name	1. Unit No.	Select the Unit No. you want to check.
	2. Indoor unit	
	3. Condensing unit	
2.2. Operating Hours	1. Unit No.	Select the Unit No. you want to check.
	2. Indoor unit operating time	All of these are displayed in hours.
	3. Indoor unit fan operation	
	4. Indoor unit energized time	
	5. Condensing operating time	
	6. Condensing unit fan 1 operation	
	7. Condensing unit fan 2 operation	
	8. Condensing comp. 1 operation	
	9. Condensing comp. 2 operation	

Maintenance Menu	Item 2	Remarks
2.3. Indoor Unit Status	1. Unit No.	Select the Unit No. you want to check.
	2. FAN	Fan tap
	3. FLAP	Swing, fixed
	4. Speed	Fan speed (rpm)
	5. EV	Degree that electronic expansion valve is open (pls)
	6. MP	Drain pump ON/OFF
	7. EH	Electric heater ON/OFF
	8. Hu	Humidifier ON/OFF
	9. TBF	Anti-freezing control ON/OFF
2.3. Indoor Unit Status	10.FLOAT	
	11.T1/T2	
	12.Unit No.	Select the Unit No. you want to check.
		VRV
	13.Th1	Suction air thermistor
	14.Th2	Heat exchanger liquid pipe thermistor
	15.Th3	Heat exchanger gas pipe thermistor
	16.Th4	Discharge air thermistor
	17.Th5	—
	18.Th6	—
2.4. Condensing Unit Status	1. Unit No.	Select the Unit No. you want to check.
	2. FAN step	Fan tap
	3. COMP	Compressor power supply frequency (Hz)
	4. EV1	Degree that electronic expansion valve is open (pls)
	5. SV1	Solenoid valve ON/OFF
		VRV
	6. Th1	—
	7. Th2	—
	8. Th3	—
	9. Th4	—
	10.Th5	—
	11.Th6	—
2.5. Error Display	1. Display Warning ON	Displays a warning on the screen if an error occurs.
	2. Display Warning OFF	No warning is displayed.
	3. Display Error ON	Displays the error on the screen.
	4. Display Error OFF	Displays neither errors nor warnings.
2.6. Swap Unit No.	1. Current Unit No.	A unit No. can be transferred to another.
	2. Transfer Unit No.	
2.7. Addressed Sensor Value	○ Unit No.: 0 - 15	Select the Unit No. you want to check.
	○ Code 00: 01: 02: 03: 04: 05: 06: 07: 08: 09:	 Remote controller thermistor (°F) Suction air thermistor (°F) Heat exchanger liquid pipe thermistor (°F) Heat exchanger gas pipe thermistor (°F) Indoor unit address No. Condensing unit address No. Branch Selector unit address No. Zone control address No. Cooling/Heating batch address No. Demand/low-noise address No.
	○ Data	The corresponding data will be displayed, based on the Unit No. and Code selected.

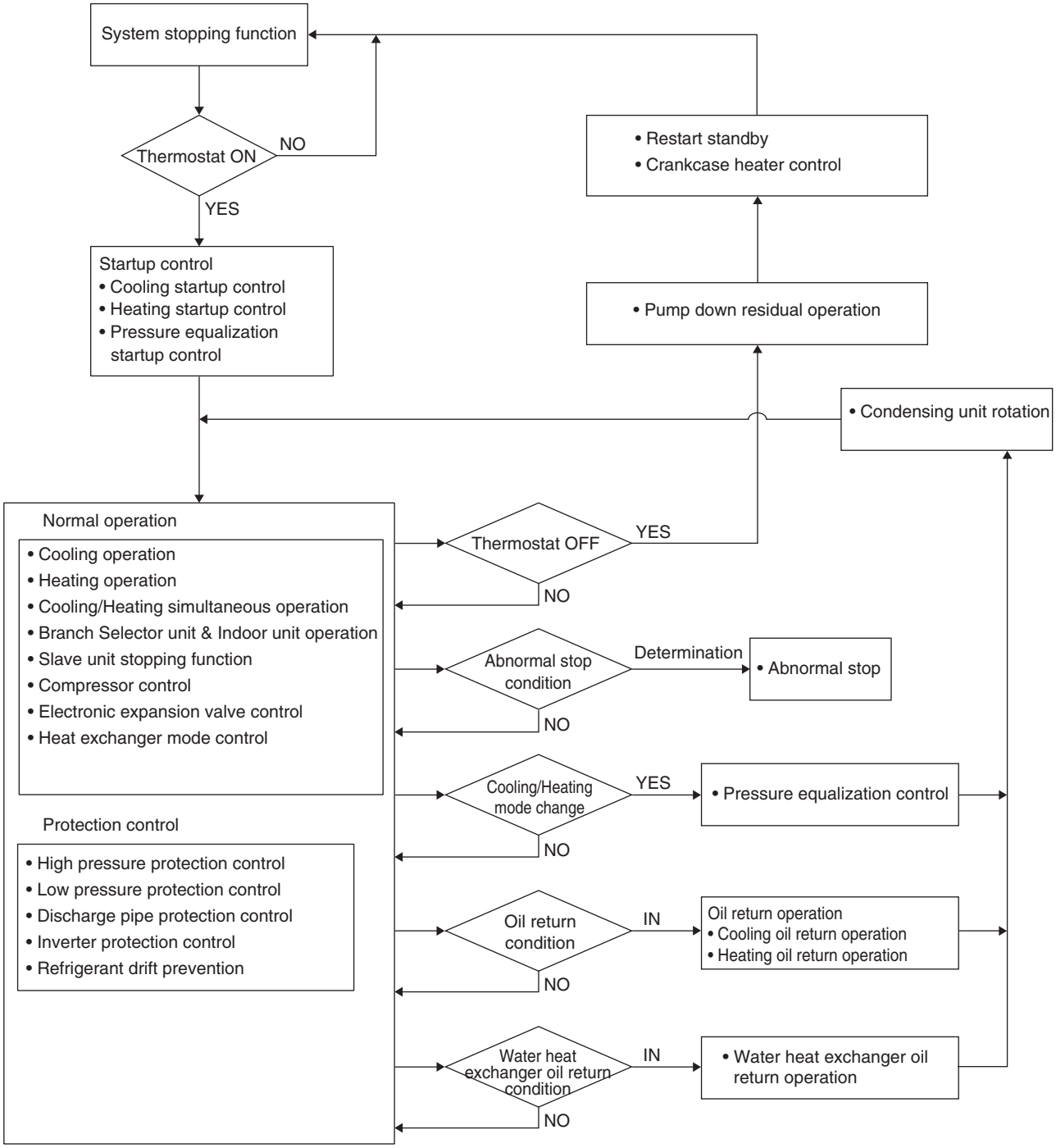
Part 4
Function and Control

1. Function General

1.1 Symbol

Symbol	Electric symbol	Description or function
20S1	Y5S	Four-way valve (Main)
20S2	Y7S	Four-way valve (Sub)
DSH	—	Discharge pipe superheat
DSHi	—	Discharge pipe superheat of INV. compressor
EV	(Y1E, Y3E)	Opening of electronic expansion valve
EV1	Y1E	Electronic expansion valve for water heat exchanger
EV3	Y3E	Electronic expansion valve for subcooling heat exchanger
HTDi	—	Value of INV. compressor discharge pipe temperature (R3T) compensated with outdoor air temperature
Pc	S1NPH	Value detected by high pressure sensor
Pe	S1NPL	Value detected by low pressure sensor
HPS	S1PH	In order to prevent the increase of high pressure when an error occurs, this switch is activated at high pressure of 580 psi or more to stop the compressor operation.
SH	—	Evaporator outlet superheat
SHS	—	Target evaporator outlet superheat
SVG	Y4S	Solenoid valve for discharging gas from receiver
SVL	Y3S	Solenoid valve for gas charging to receiver
SVE	Y2S	Solenoid valve for oil collection from water heat exchanger
SVP	Y1S	Solenoid valve for hot gas bypass
SVSL	Y6S	Solenoid valve for non-operating unit liquid pipe closing
Tc	—	High pressure equivalent saturation temperature
TcS	—	Target temperature of Tc (condensing temperature)
Te	—	Low pressure equivalent saturation temperature
TeS	—	Target temperature of Te (Evaporating temperature)
Tfin	R1T	Radiation fin temperature
Ts	R2T	Suction pipe temperature detected by R2T (Suction pipe)
Tsh	R5T	Temperature detected by R5T-gas pipe temperature of subcooling heat exchanger gas side (outlet temperature)
Tp	—	Calculated value of compressor port temperature
Tdi	R3T	Discharge pipe temperature detected by thermistor located the INV. compressor discharge pipe
Tl	R6T	Liquid pipe temperature
Tg	R4T	The gas pipe temperature of water heat exchanger

1.2 Operation Mode



1.3 Normal Operation

Parts Name	Symbol	Electric Symbol	Actuator Function	
			Normal cooling	Normal heating or normal cooling/ heating simultaneous operation
Inverter compressor	—	M1C	PI control, High pressure protection, Low pressure protection, Discharge pipe temperature protection control, Inverter protection control	PI control, High pressure protection, Low pressure protection, Discharge pipe temperature protection control, Inverter protection control
Inverter cooling fan	—	M1F, M2F	Inverter cooling fan control	Inverter cooling fan control
Four-way valve (Main)	20S1	Y5S	OFF	ON
Four-way valve (Sub)	20S2	Y7S	OFF	Heat exchanger mode control (In case of heating and simultaneous cooling/heating operation)
Electronic expansion valve (Main)	EV1	Y1E	Heat exchanger mode control (In case of cooling operation)	Heat exchanger mode control (In case of heating and simultaneous cooling/heating operation)
Electronic expansion valve (Subcooling)	EV3	Y3E	Y3E control	Y3E control
Solenoid valve (Hot gas)	SVP	Y1S	Protection control	Protection control
Solenoid valve (Oil return of water heat exchanger)	SVE	Y2S	OFF	Water heat exchanger oil return control
Solenoid valve (Receiver gas charging)	SVL	Y3S	Receiver pressurizing control	Receiver pressurizing control and drift protection control
Solenoid valve (Receiver gas vent)	SVG	Y4S	OFF	Drift protection control
Solenoid valve (Non-operating unit liquid pipe closing)	SVSL	Y6S	ON	ON
Indoor unit fan	—	M1F, M2F	Refer to following page for detail. (Branch Selector unit & Indoor unit operation mode detail)	Refer to following page for detail. (Branch Selector unit & Indoor unit operation mode detail)
Indoor unit electronic expansion valve	—	Y1E		
Branch Selector unit				

1.4 Branch Selector Unit & Indoor Unit Operation Mode Detail

∗1: The switch for the Branch Selector unit is operated when pressure equalization control turns ON after cooling/heating mode of other indoor unit is changed or on the timing of oil returns.

∗2: If 20RH: ON, depend on indoor control (200 pulse).
If 20RH: OFF, 0 pulse.

<Indoor unit>

Name	Electric symbol	Cooling			Heating		
		Thermostat ON	Thermostat OFF	Stopping	Thermostat ON	Thermostat OFF	Stopping
Indoor unit fan	M1F	Remote controller setting	Remote controller setting	OFF	Remote controller setting	LL	OFF
Indoor electronic expansion valve	Y1E	Normal opening degree	0 pulse	0 pulse	Normal opening degree	192 pulse	192 pulse

<Branch Selector unit>

Name	Electric symbol	Cooling		Heating
		Only cooling	Simultaneous cooling/heating	
Electronic expansion valve (EVSC)	Y1E	0 pulse	0 pulse	0 pulse
Electronic expansion valve (EVHS)	Y2E	480 pulse (Fully opened)	0 pulse	480 pulse (Fully opened)
Electronic expansion valve (EVLS)	Y3E	480 pulse (Fully opened)	480 pulse (Fully opened)	0 pulse
Electronic expansion valve (EVH)	Y4E	760 pulse (Fully opened)	0 pulse	760 pulse (Fully opened)
Electronic expansion valve (EVL)	Y5E	760 pulse (Fully opened)	760 pulse (Fully opened)	0 pulse

2. Stop

2.1 Stopping Operation

This operation defines the operation of the actuator while the system stops.

2.1.1 When System is in Stop Mode

Parts Name	Symbol	Electric Symbol	Actuator Function
Inverter compressor	—	M1C	OFF
Inverter cooling fan	—	M1F, M2F	OFF
Four-way valve (Main)	20S1	Y5S	Holding
Four-way valve (Sub)	20S2	Y7S	Holding
Electronic expansion valve (Main)	EV1	Y1E	0 pulse
Electronic expansion valve (Subcooling)	EV3	Y3E	0 pulse
Solenoid valve (Hot gas)	SVP	Y1S	OFF
Solenoid valve (Oil return of water heat exchanger)	SVE	Y2S	OFF
Solenoid valve (Receiver gas charging)	SVL	Y3S	OFF
Solenoid valve (Receiver gas discharging)	SVG	Y4S	OFF
Solenoid valve (Non-operating unit liquid pipe closing)	SVSL	Y6S	ON
Branch Selector unit			Indoor unit thermostat ON

2.1.2 Stopping Operation of Slave Units During Master Unit is in Operation with Multi Condensing Unit System

This operation makes adjustments of required refrigerant amount with non-operating slave units while the master unit is in operation.

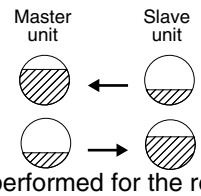
■ **Cooling**

The system operates in mode A or mode B listed in the table below.

Parts Name	Symbol	Electric Symbol	Mode A Operation (∗1)	Mode B Operation (∗1)
Inverter compressor	—	M1C	OFF	OFF
Inverter cooling fan	—	M1F, M2F	OFF	OFF
Four-way valve (Main)	20S1	Y5S	Holding	Holding
Four-way valve (Sub)	20S2	Y7S	Holding	Holding
Electronic expansion valve (Main)	EV1	Y1E	150 to 300 pulse	0 pulse
Electronic expansion valve (Subcooling)	EV3	Y3E	0 pulse	0 pulse
Solenoid valve (Hot gas)	SVP	Y1S	OFF	OFF
Solenoid valve (Oil return of water heat exchanger)	SVE	Y2S	ON	OFF
Solenoid valve (Receiver gas charging)	SVL	Y3S	OFF	OFF
Solenoid valve (Receiver gas discharging)	SVG	Y4S	OFF	OFF
Solenoid valve (Non-operating unit liquid pipe closing)	SVSL	Y6S	OFF	ON
Mode transition conditions			To Mode B when no refrigerant shortage signal is sent from indoor unit	To Mode A when refrigerant shortage signal is sent from indoor unit
Ending conditions			Slave units are required to operate.	

Note:

∗1 Mode A or B operation



{ Mode A: Master unit collects refrigerant.
{ Mode B: Slave unit storage refrigerant.

The changeover operation for mode A and B is performed for the reason that the required refrigerant amount varies depending on the indoor unit operation capacity.

■ **Heating or simultaneously cooling/heating operation**

The system operates in mode A or mode B listed in the table below.

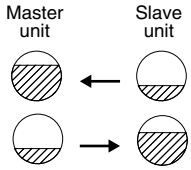
Parts Name	Symbol	Electric Symbol	Mode A Operation (∗1)	Mode B Operation (∗1)
Inverter compressor	—	M1C	OFF	OFF
Inverter cooling fan	—	M1F, M2F	OFF	OFF
Four-way valve (Main)	20S1	Y5S	Holding	Holding
Four-way valve (Sub)	20S2	Y7S	Holding	Holding
Electronic expansion valve (Main)	EV1	Y1E	0 pulse	0 pulse
Electronic expansion valve (Subcooling)	EV3	Y3E	0 pulse	0 pulse
Solenoid valve (Hot gas)	SVP	Y1S	OFF	OFF
Solenoid valve (Oil return of water heat exchanger)	SVE	Y2S	OFF	OFF
Solenoid valve (Receiver gas charging)	SVL	Y3S	ON	OFF
Solenoid valve (Receiver gas discharging)	SVG	Y4S	OFF	OFF
Solenoid valve (Non-operating unit liquid pipe closing)	SVSL	Y6S	OFF	ON
Mode transition conditions			To Mode B when no refrigerant shortage signal is sent from indoor unit	To Mode A when refrigerant shortage signal is sent from indoor unit
Ending conditions			Slave units are required to operate.	

Note:

∗1 Mode A or B operation

Mode A: Master unit collects refrigerant.

Mode B: Slave unit storage refrigerant.



The changeover operation for mode A and B is performed for the reason that the required refrigerant amount varies depending on the indoor unit operation capacity.

2.1.3 Abnormal Stop

In order to protect compressors, if any of the following items has an abnormal value, the system will make "stop with thermostat OFF" and the error will be determined according to the number of retry times.

Item	Judgement Value	Retry Number	Error Code
Low pressure abnormality	10.1 psi	3 times in 60 minutes	E4
High pressure abnormality	580 psi	2 times in 30 minutes	E3
Discharge pipe temperature abnormality	275°F	2 times in 100 minutes	F3
Power supply abnormality	Reverse phase	No retry	U1
Inverter current abnormality	230V unit: 26.1A for 260 sec. or 31.0A for 5 sec. 460V unit: 14.5A for 260 sec. or 17.0A for 5 sec.	3 times in 60 minutes	L8
Radiation fin temperature abnormality	192.2°F	3 times in 60 minutes	L4

3. Standby

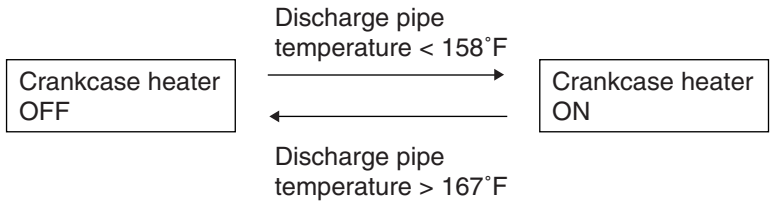
3.1 Restart Standby

Forced standby is performed to prevent frequent repetition of ON/OFF of the compressor, and to equalize pressure in the refrigerant system.

Parts Name	Symbol	Electric Symbol	Actuator Function
Inverter compressor	—	M1C	0 Hz
Inverter cooling fan	—	M1F, M2F	OFF
Four-way valve (Main)	20S1	Y5S	Holding
Four-way valve (Sub)	20S2	Y7S	Holding
Electronic expansion valve (Main)	EV1	Y1E	0 pulse
Electronic expansion valve (Subcooling)	EV3	Y3E	0 pulse
Solenoid valve (Hot gas)	SVP	Y1S	OFF
Solenoid valve (Oil return of water heat exchanger)	SVE	Y2S	OFF
Solenoid valve (Receiver gas charging)	SVL	Y3S	OFF
Solenoid valve (Receiver gas discharging)	SVG	Y4S	OFF
Solenoid valve (Non-operating unit liquid pipe closing)	SVSL	Y6S	ON
Indoor unit fan (Cooling)	—	M1F, M2F	Remote controller setting
Indoor unit electronic expansion valve (Cooling)	EV	Y1E	All indoor electronic expansion valve : 0 pulse
Indoor unit fan (Heating)	—	M1F, M2F	Indoor unit control
Indoor unit electronic expansion valve (Heating)	EV	Y1E	All indoor electronic expansion valve : 0 pulse
Branch Selector unit			Holding
Ending condition			4 minutes

3.2 Crankcase Heater Control

In order to prevent the refrigerant from melting in the compressor in the stop mode, this mode controls the crankcase heater.



4. Startup Control

This startup control provides the following control to reduce the compressor load resulting from liquid return or else during compressor startup, and also determine the position of four way valves.

4.1 Startup Control in Cooling

Both master and slave units operate same time for changing four way valve position → Normal operation after completion.

Pc: Value detected by high pressure sensor

Pe: Value detected by low pressure sensor

Thermostat ON

Parts Name	Symbol	Electric Symbol	Pressure Equalization Control before Startup	Startup Control
Inverter compressor	—	M1C	0 Hz	52Hz +2 steps/20 seconds (until Pc - Pe > 71.05 psi)
Inverter cooling fan	—	M1F, M2F	OFF	Inverter cooling fan control
Four way valve (Main)	20S1	Y5S	Holding	OFF
Four way valve (Sub)	20S2	Y7S	Holding	OFF
Electronic expansion valve (Main)	EV1	Y1E	0 pulse	2000 pulse
Electronic expansion valve (Subcooling)	EV3	Y3E	0 pulse	0 pulse
Solenoid valve (Hot gas)	SVP	Y1S	OFF	ON
Solenoid valve (Oil return of water heat exchanger)	SVE	Y2S	OFF	OFF
Solenoid valve (Receiver gas charging)	SVL	Y3S	OFF	OFF
Solenoid valve (Receiver gas discharging)	SVG	Y4S	OFF	OFF
Solenoid valve (Non-operating unit liquid pipe closing)	SVSL	Y6S	ON	ON
Indoor unit fan	—	M1F, M2F	Indoor unit control	Indoor unit control
Indoor unit electronic expansion valve	EV	Y1E	0 pulse	0 pulse → Initial opening
Ending condition			1 minute	Max. 5 minutes

4.2 Startup Control in Heating

Both master and slave units operate same time for changing four way valve position → Normal operation after completion.

Pc: Value detected by high pressure sensor

Pe: Value detected by low pressure sensor

Thermostat ON

Parts Name	Symbol	Electric Symbol	Pressure Equalization Control before Startup	Startup Control
Inverter compressor	—	M1C	0 Hz	52Hz +2 steps/20 seconds (till Pc - Pe > 71.05 psi)
Inverter cooling fan	—	M1F, M2F	OFF	Inverter cooling fan control
Four-way valve (Main)	20S1	Y5S	Holding	ON
Four-way valve (Sub)	20S2	Y7S	Holding	OFF
Electronic expansion valve (Main)	EV1	Y1E	0 pulse	180 pulse
Electronic expansion valve (Subcooling)	EV3	Y3E	0 pulse	0 pulse
Solenoid valve (Hot gas)	SVP	Y1S	OFF	ON
Solenoid valve (Oil return of water heat exchanger)	SVE	Y2S	OFF	OFF
Solenoid valve (Receiver gas charging)	SVL	Y3S	OFF	OFF
Solenoid valve (Receiver gas discharging)	SVG	Y4S	OFF	OFF
Solenoid valve (Non-operating unit liquid pipe closing)	SVSL	Y6S	ON	ON
Indoor unit fan	—	M1F, M2F	Indoor unit control	Indoor unit control
Indoor unit electronic expansion valve	EV	Y1E	0 pulse	Indoor unit control
Branch Selector unit			1 minute	Max. 6 minutes 40 seconds

4.3 Pressure Equalizing Control

This pressure equalizing control is used to equalize the pressure of discharge piping and suction piping in order to reduce refrigerant passing noise when changing over the Branch Selector units.

[Starting conditions]

The temperature control of indoor units with thermostat ON does not match up with the state of the Branch Selector unit changeover valve to which the indoor units are connected.

Parts name	Symbol	Electric symbol	Pressure equalizing control
Inverter compressor	—	M1C	74Hz
Four way valve (Main)	20S1	Y5S	OFF
Four way valve (Sub)	20S2	Y7S	OFF
Electronic expansion valve (Main)	EV1	Y1E	2000 pulse
Electronic expansion valve (Subcooling)	EV3	Y3E	0 pulse
Solenoid valve (Hot gas)	SVP	Y1S	ON
Solenoid valve (Oil return of water heat exchanger)	SVE	Y2S	OFF
Solenoid valve (Receiver gas charging)	SVL	Y3S	OFF
Solenoid valve (Receiver gas discharging)	SVG	Y4S	OFF
Solenoid valve (Non-operating unit liquid pipe closing)	SVSL	Y6S	ON
Indoor unit fan (Cooling)	—	M1F, M2F	No instruction
Indoor unit electronic expansion valve (Cooling)	EV	Y1E	No instruction
Indoor unit fan (Heating)	—	M1F, M2F	OFF
Indoor unit electronic expansion valve (Heating)	EV	Y1E	192 pulse
Ending condition			Max. 5 minutes

5. Normal Control

5.1 Compressor Control

5.1.1 Compressor Control

Compressor PI Control

Carries out the compressor capacity PI control to maintain Te at constant during cooling operation and Tc at constant during heating operation to ensure stable unit performance.

[Cooling operation]

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

Te: Low pressure equivalent saturation temperature (°F)

TeS: Target temperature of Te (Varies depending on Te setting, operating frequency, etc.)

Te setting (°F)

L	M (Normal) (factory setting)	H
37.4	42.8	48.2

[Heating operation]

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

Tc: High pressure equivalent saturation temperature (°F)

TcS: Target temperature of Tc (Varies depending on Tc setting, operating frequency, etc.)

Tc setting (°F)

L	M (Normal) (factory setting)	H
109.4	114.8	120.2

[Cooling/Heating simultaneous operation]

Controls compressor capacity to adjust Te to achieve target value (TeS) and Tc to achieve target value (TcS) at the same time.

Te setting (°F)

L	M (Normal) (factory setting)	H
37.4	42.8	48.2

Te: Low pressure equivalent saturation temperature (°F)

TeS: Target temperature of Te (Varies depending on Te setting, operating frequency, etc.)

Tc setting (°F)

L	M (Normal) (factory setting)	H
109.4	114.8	120.2

Tc: High pressure equivalent saturation temperature (°F)

TcS: Target temperature of Tc (Varies depending on Tc setting, operating frequency, etc.)

5.1.2 Compressor Operation Frequency Steps

1. One condensing unit installation

Step No.	Master	
1	52Hz	← Startup
2	57Hz	
3	62Hz	
4	68Hz	
5	74Hz	
6	81Hz	
7	88Hz	
8	96Hz	
9	104Hz	
10	110Hz	
11	112Hz	
12	120Hz	
13	130Hz	
14	141Hz	
15	156Hz	
16	168Hz	
17	177Hz	
18	189Hz	
19	202Hz	
20	210Hz	
21	216Hz	
22	230Hz	

2. Two condensing units connection installation

A: One Compressor operation

Step No.	Master
1	52Hz
2	57Hz
3	62Hz
4	68Hz
5	74Hz
6	81Hz
7	88Hz
8	96Hz
9	104Hz
10	110Hz
11	112Hz
12	120Hz
13	130Hz
14	141Hz

B: Two Compressors operation

Step No.	Master	Slave 1	
9	52Hz	52Hz	← Startup
10	57Hz	57Hz	
11	62Hz	62Hz	
12	68Hz	68Hz	
13	71Hz	71Hz	
14	74Hz	74Hz	
15	81Hz	81Hz	
16	88Hz	88Hz	
17	92Hz	92Hz	
18	96Hz	96Hz	
19	104Hz	104Hz	
20	110Hz	110Hz	
21	112Hz	112Hz	
22	120Hz	120Hz	
23	130Hz	130Hz	
24	141Hz	141Hz	
25	156Hz	156Hz	
26	168Hz	168Hz	
27	177Hz	177Hz	
28	189Hz	189Hz	
29	202Hz	202Hz	
30	210Hz	210Hz	
31	216Hz	216Hz	
32	230Hz	230Hz	

3. Three condensing units connection installation

A: One Compressor operation

Step No.	Master
1	52Hz
2	57Hz
3	62Hz
4	68Hz
5	74Hz
6	81Hz
7	88Hz
8	96Hz
9	104Hz
10	110Hz
11	112Hz
12	120Hz
13	130Hz
14	141Hz

B: Two Compressors operation

Step No.	Master	Slave 1
9	52Hz	52Hz
10	57Hz	57Hz
11	62Hz	62Hz
12	68Hz	68Hz
13	71Hz	71Hz
14	74Hz	74Hz
15	81Hz	81Hz
16	88Hz	88Hz
17	92Hz	92Hz
18	96Hz	96Hz
19	104Hz	104Hz
20	110Hz	110Hz
21	112Hz	112Hz

C: Three Compressors operation

Step No.	Master	Slave 1	Slave 2	
14	52Hz	52Hz	52Hz	← Startup
15	57Hz	57Hz	57Hz	
16	62Hz	62Hz	62Hz	
17	65Hz	65Hz	65Hz	
18	68Hz	68Hz	68Hz	
19	71Hz	71Hz	71Hz	
20	74Hz	74Hz	74Hz	
21	81Hz	81Hz	81Hz	
22	88Hz	88Hz	88Hz	
23	96Hz	96Hz	96Hz	
24	104Hz	104Hz	104Hz	
25	110Hz	110Hz	110Hz	
26	112Hz	112Hz	112Hz	
27	120Hz	120Hz	120Hz	
28	130Hz	130Hz	130Hz	
29	141Hz	141Hz	141Hz	
30	156Hz	156Hz	156Hz	
31	168Hz	168Hz	168Hz	
32	177Hz	177Hz	177Hz	
33	189Hz	189Hz	189Hz	
34	202Hz	202Hz	202Hz	
35	210Hz	210Hz	210Hz	
36	216Hz	216Hz	216Hz	
37	230Hz	230Hz	230Hz	

* Depending on operational conditions, operation pattern may be different from the description above.

5.2 Electronic Expansion Valve Control

Main Electronic Expansion Valve EV1 Control

Carries out the electronic expansion valve (Y1E) PI control to maintain the evaporator outlet superheated degree (SH) at constant during heating operation to make maximum use of the condensing unit heat exchanger (evaporator).

SH = Ts - Te

SH: Evaporator outlet superheated degree (°F)

Ts: Suction pipe temperature detected by thermistor R2T (°F)

Te: Low pressure equivalent saturation temperature (°F)

The optimum initial value of the evaporator outlet superheated degree is 41°F, but varies depending on the discharge pipe superheated degree of inverter compressor.

Subcooling Electronic Expansion Valve EV3 Control

[Cooling operation]

Makes PI control of the electronic expansion valve (Y3E) to keep the superheated degree of the outlet gas pipe on the evaporator side for the full use of the subcooling heat exchanger.

SH = Tsh -Te

SH: Outlet superheated degree of evaporator (°F)

Tsh: Suction pipe temperature detected with the thermistor R5T (°F)

Te: Low pressure equivalent saturation temperature (°F)

[Heating operation]

To lower the discharge pipe temperature when the discharge pipe temperature is over 203°F, makes PI control of the electronic expansion valve (Y3E) to keep the superheated degree of the outlet gas pipe on the evaporator side for the full use of the subcooling heat exchanger. (When the discharge pipe temperature is lower than 203°F, EV3 opening is 0 pulse.)

SH = Tsh -Te

SH: Outlet superheated degree of evaporator (°F)

Tsh: Suction pipe temperature detected with the thermistor R5T (°F)

Te: Low pressure equivalent saturation temperature (°F)

5.3 Heat Exchange Mode in Heating Operation or Simultaneous Cooling / Heating Operation

In heating or simultaneous cooling / heating operation, a target condensing and evaporating temperature can be secured by switching the water heat exchanger of the condensing unit into evaporator or condensing with load.

One condensing unit installation

	Master unit
Four-way valve for heat exchanger [Y7S] (For the application of heat exchanger)	OFF (Condenser)
Content of the control of electronic expansion valve [Y1E]	Control of heat exchange capacity balance

DGR > 0 ↓ ↑ DGR < 0

	Master unit
Four-way valve for heat exchanger [Y7S] (For the application of heat exchanger)	ON (Evaporator)
Content of the control of electronic expansion valve [Y1E]	Control of heat exchange capacity balance

Note 1: DGR = Target of heat exchange capacity balance – Actual measurement of heat balance
① DGR > 0: Insufficient evaporation (Excessive condensation)
② DGR < 0: Insufficient condensation (Excessive evaporation)
2: Control of heat exchange capacity balance
Control the electronic expansion valve so that Te or Tc will obtain the target value.

Two condensing units installation

	Master unit	Slave unit 1
Four-way valve for heat exchanger [Y7S] (For the application of heat exchanger)	OFF (Condenser)	OFF (Condenser)
Content of the control of electronic expansion valve [Y1E]	Control of heat exchange capacity balance	Control of heat exchange capacity balance

DGR > 0 ↓ ↑ DGR < 0

	Master unit	Slave unit 1
Four-way valve for heat exchanger [Y7S] (For the application of heat exchanger)	OFF (Condenser)	ON (Evaporator)
Content of the control of electronic expansion valve [Y1E]	Control of heat exchange capacity balance	0 pulse

DGR > 0 ↓ ↑ DGR < 0

DGR > 0

	Master unit	Slave unit 1
Four-way valve for heat exchanger [Y7S] (For the application of heat exchanger)	OFF (Condenser)	ON (Evaporator)
Content of the control of electronic expansion valve [Y1E]	Control of heat exchange capacity balance	Control of heat exchange capacity balance

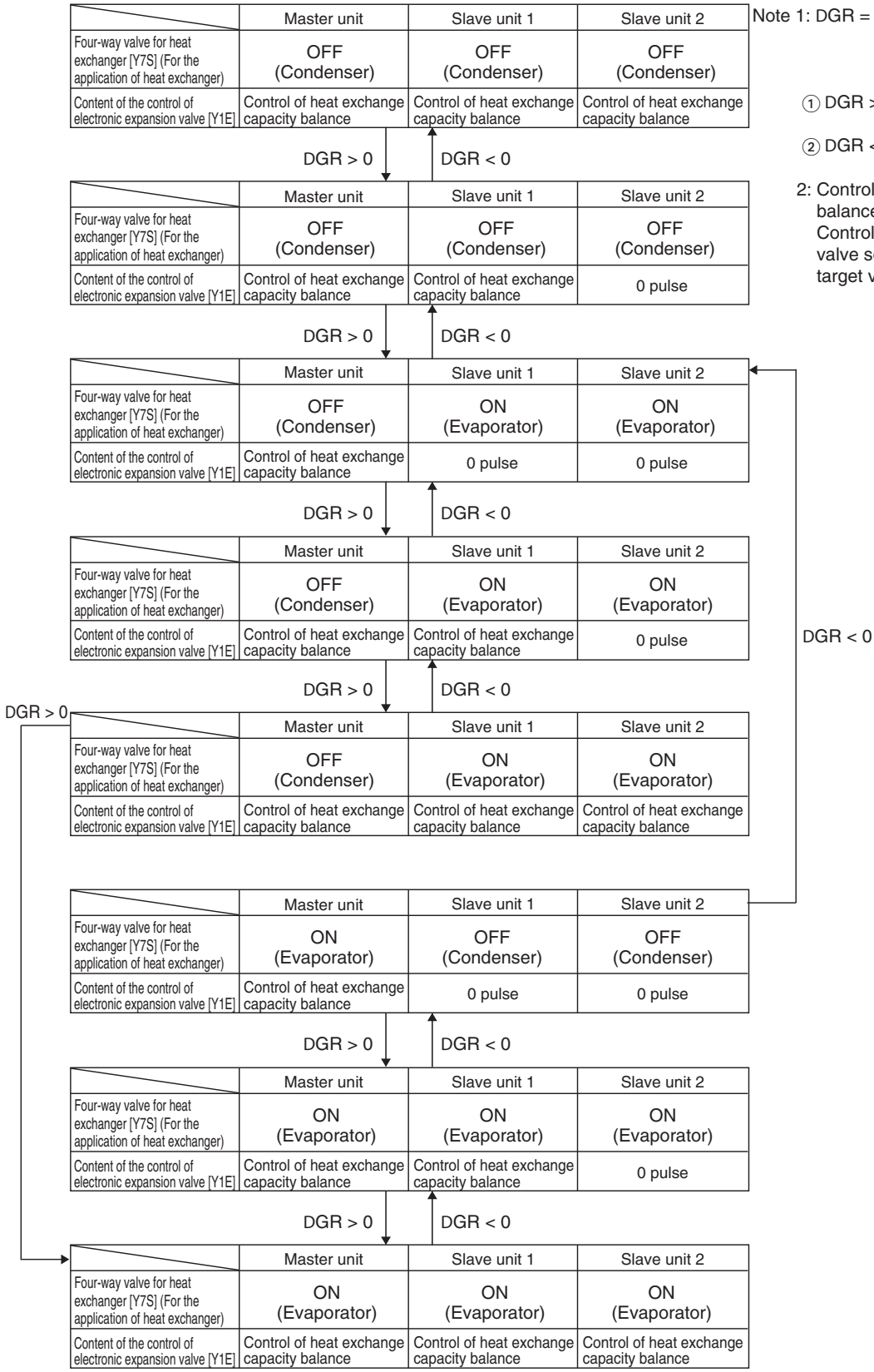
DGR < 0

	Master unit	Slave unit 1
Four-way valve for heat exchanger [Y7S] (For the application of heat exchanger)	ON (Evaporator)	ON (Evaporator)
Content of the control of electronic expansion valve [Y1E]	Control of heat exchange capacity balance	0 pulse

DGR > 0 ↓ ↑ DGR < 0

	Master unit	Slave unit 1
Four-way valve for heat exchanger [Y7S] (For the application of heat exchanger)	ON (Evaporator)	ON (Evaporator)
Content of the control of electronic expansion valve [Y1E]	Control of heat exchange capacity balance	Control of heat exchange capacity balance

Three condensing units installation



Note 1: DGR = Target of heat exchange capacity balance – Actual measurement of heat balance
① DGR > 0: Insufficient evaporation (Excessive condensation)
② DGR < 0: Insufficient condensation (Excessive evaporation)

2: Control of heat exchange capacity balance
Control the electronic expansion valve so that Te or Tc will obtain the target value.

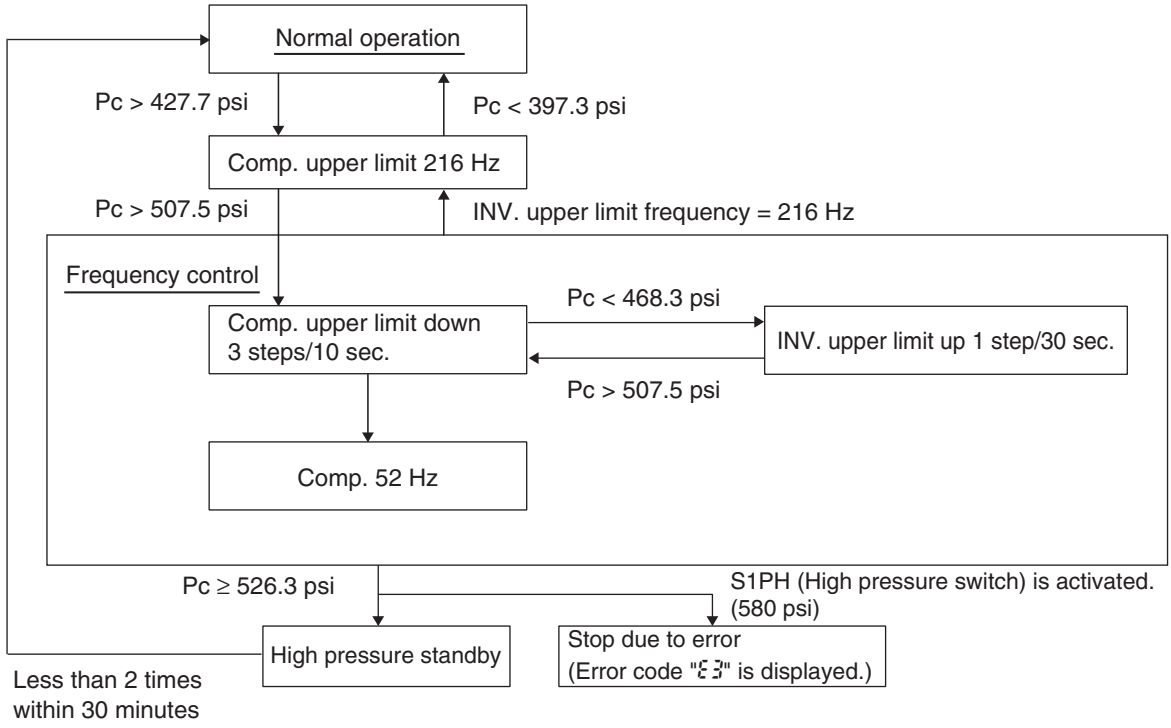
6. Protection Control

6.1 High Pressure Protection Control

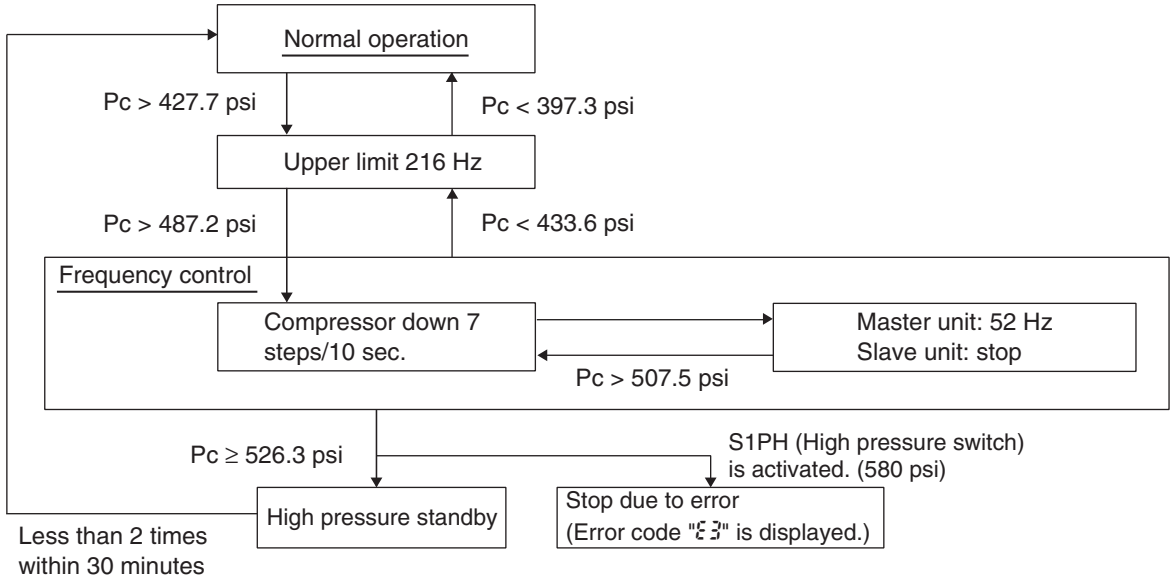
This high pressure protection control is used to prevent the activation of protection devices due to abnormal increase of high pressure and to protect compressors against the transient increase of high pressure.

[In cooling]

Pc: High pressure sensor detection value for each condensing unit



[In heating or simultaneous cooling/heating]

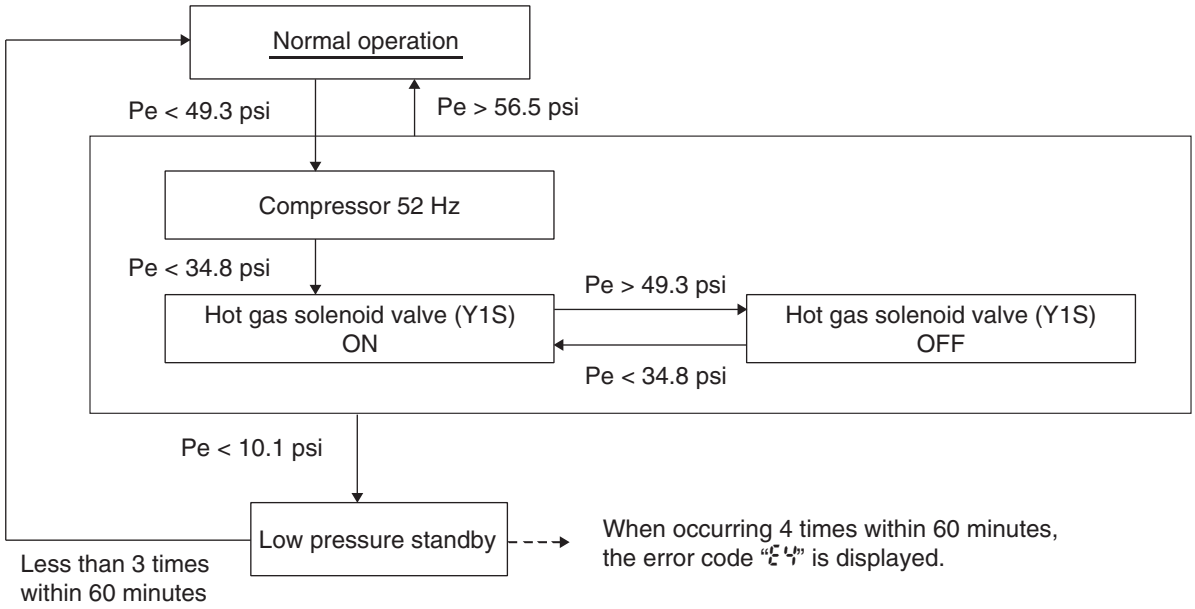


6.2 Low Pressure Protection Control

This low pressure protection control protects compressors against the transient decrease of low pressure.

[In cooling]

Pe: Value detected by low pressure sensor for master unit

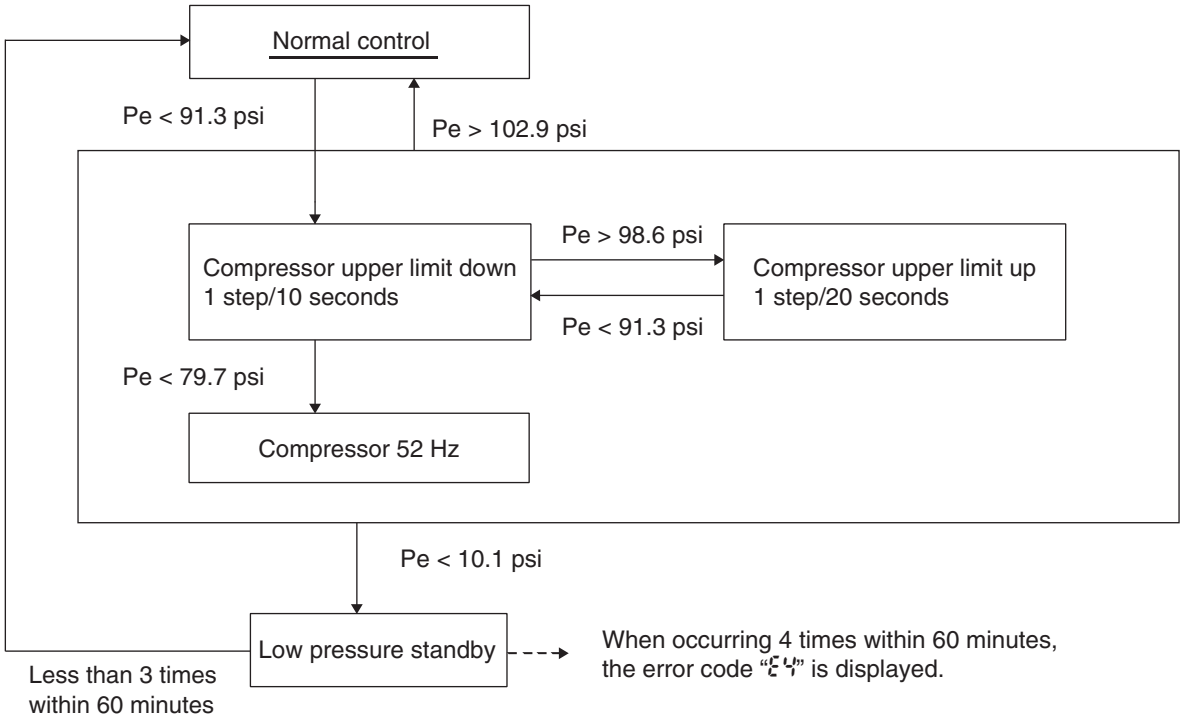


Note: ∗1 This frequency control is carried out in whole system.

[In heating or simultaneous cooling/heating]

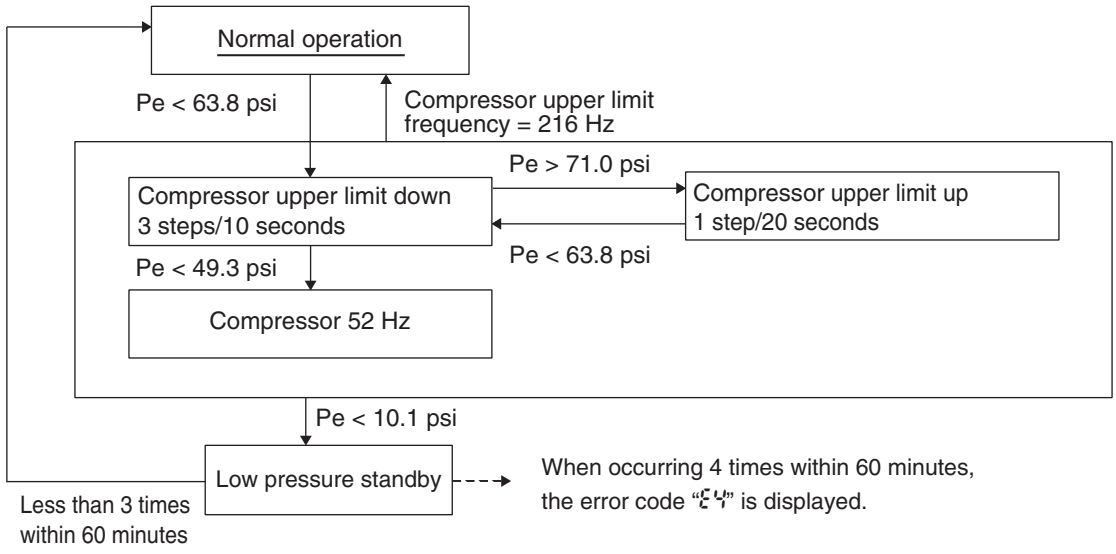
(When the condensing unit heat exchanger is used as evaporator.)

Pe: Value detected by low pressure sensor for each condensing unit



Note: ∗1 This frequency control is carried out in each condensing unit.

(When the condensing unit heat exchanger is used as condensing.)
Pe: Value detected by low pressure sensor for each condensing unit

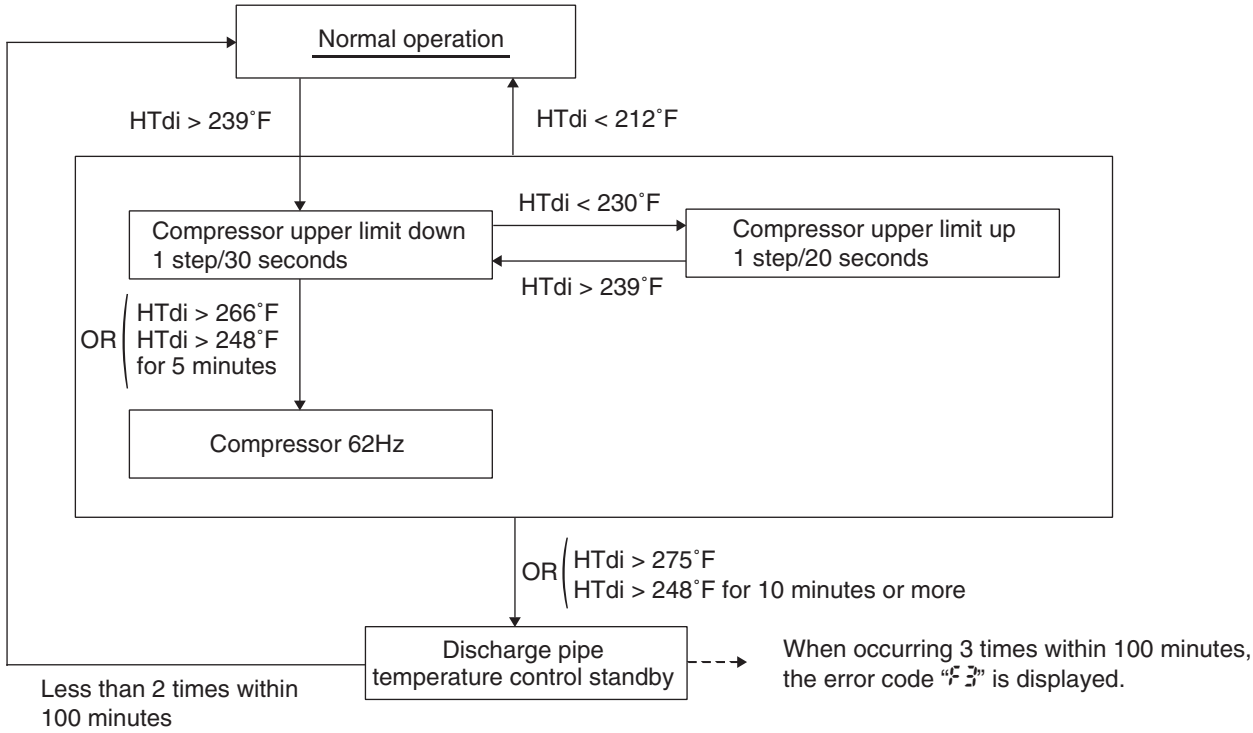


Note: ∗1 This frequency control is carried out in each condensing unit.

6.3 Discharge Pipe Protection Control

This discharge pipe protection control protects the compressor internal temperature against an error or transient increase of discharge pipe temperature.
Discharge pipe protection control is carried out in each condensing unit.

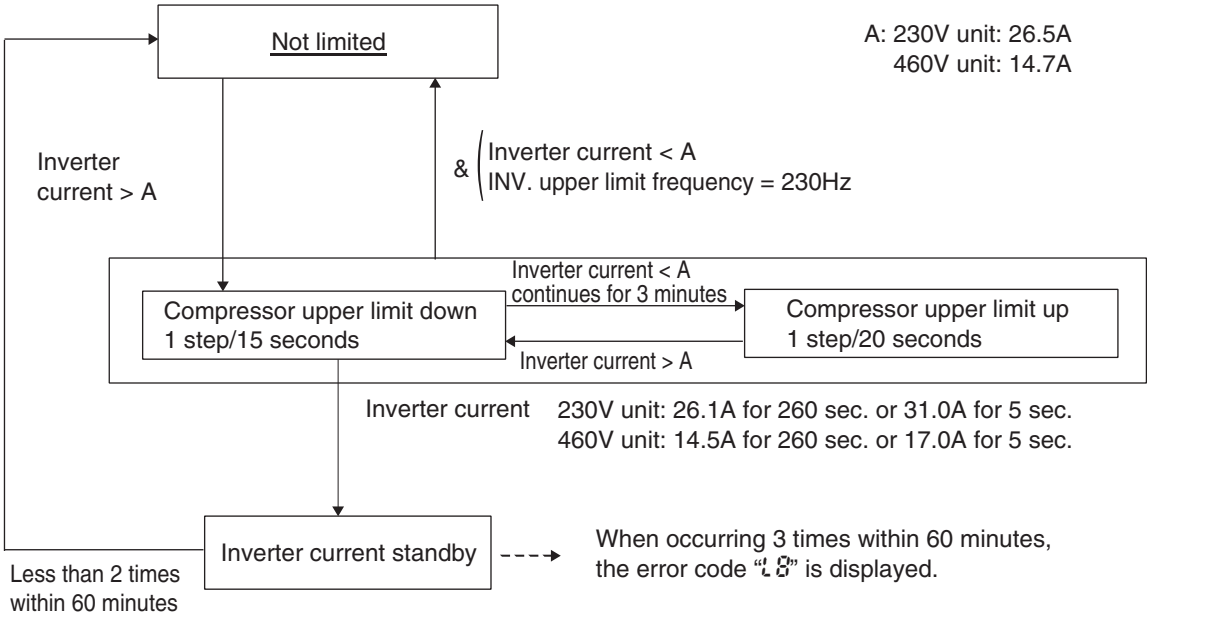
[INV. compressor]
HTdi: Value of INV. compressor discharge pipe temperature compensated with outdoor air temperature



6.4 Inverter Protection Control

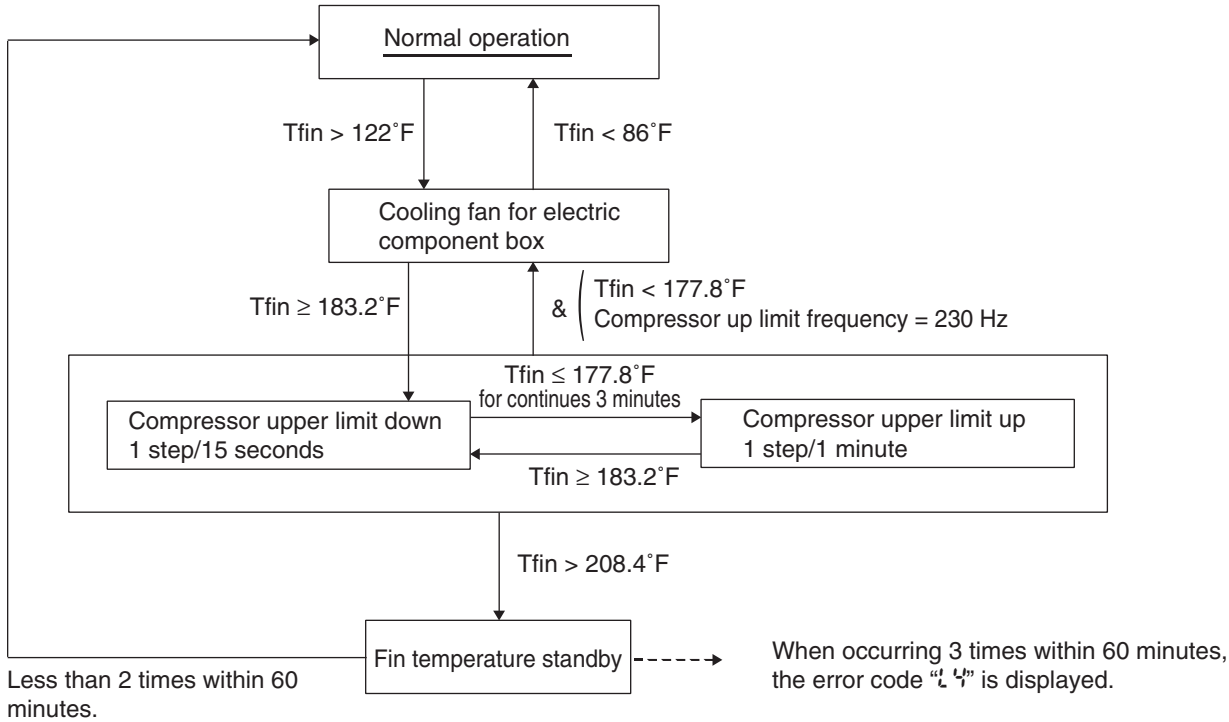
Inverter current protection control and radiation fin temperature control are performed to prevent tripping due to an error, or transient inverter overcurrent, and radiation fin temperature increase. This control is carried out in each condensing unit.

[Inverter overcurrent protection control]



[Radiation fin temperature control]

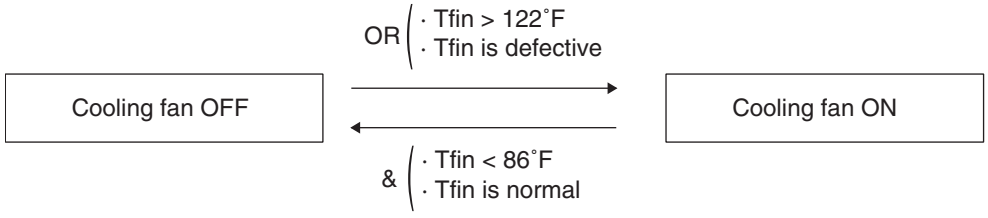
Tfin: Radiation fin temperature



6.5 Cooling Fan Control

This function is used for ON/OFF control of the cooling fan to cool the inverter. This cooling fan operates only when the temperature of the inverter fan is high, in order to reduce the operating time of the fan.
Tfin: Radiation fin temperature

[Details]
Control the cooling fan by each condensing unit.



7. Special Operation

7.1 Oil Return Operation

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

7.1.1 Oil Return Operation in Cooling

Tc: High pressure equivalent saturation temperature
Te: Low pressure equivalent saturation temperature
[Starting conditions]
Start oil return operation in cooling referring to the following conditions.
∗ Cumulative oil return amount
∗ Timer
Cumulative compressor operating time after power supply turns ON exceeds 2 hours and the time after the completion of previous oil return operation exceeds 8 hours.
Furthermore, the cumulative oil return is calculated according to Tc, Te, and compressor load.

Cooling Oil Return

Parts Name	Symbol	Electric Symbol	Preparation	During Oil Return Operation	After Oil Return Operation
Inverter compressor	—	M1C	Same as normal cooling operation	104 Hz	52 Hz
Four way valve (Main)	20S1	Y5S		OFF	OFF
Four way valve (Sub)	20S2	Y7S		OFF	OFF
Electronic expansion valve (Main)	EV1	Y1E		2000 pulse	2000 pulse
Electronic expansion valve (Subcooling)	EV3	Y3E		0 pulse	0 pulse
Solenoid valve (Hot gas)	SVP	Y1S		ON	ON
Solenoid valve (Oil return of water heat exchanger)	SVE	Y2S		OFF	OFF
Solenoid valve (Receiver gas charging)	SVL	Y3S		OFF	OFF
Solenoid valve (Receiver gas discharging)	SVG	Y4S		OFF	OFF
Solenoid valve (Non-operating unit liquid pipe closing)	SVSL	Y6S		ON	ON
Indoor unit fan (Cooling)	—	M1F, M2F		Thermostat ON/OFF: Indoor unit control Thermostat OFF: OFF	Normal control
Indoor unit electronic expansion valve (Cooling)	EV	Y1E		Stop/thermostat OFF: 200 pls Thermostat ON: Indoor unit control	Normal control
Indoor unit fan (Heating)	—	M1F, M2F		—	—
Indoor unit electronic expansion valve (Heating)	EV	Y1E		—	—
Ending condition			20 seconds	Max. 8 minutes	Max. 3 minutes

7.1.2 Oil Return Operation in Heating or Cooling/Heating Simultaneous Operation

Tc: High pressure equivalent saturation temperature

Te: Low pressure equivalent saturation temperature

[Starting conditions]

Start oil return operation in heating referring to the following conditions.

Cumulative compressor operating time after power supply turns ON exceeds 2 hours and the time after the completion of previous oil return operation exceeds 8 hours. And cumulative oil return is calculated based on Tc, Te compressor load.

Parts Name	Symbol	Electric Symbol	Preparation	During Oil Return Operation	After Oil Return Operation
Inverter compressor	—	M1C	Same as normal heating operation	104 Hz	74 Hz
Four way valve (Main)	20S1	Y5S		OFF	ON
Four way valve (Sub)	20S2	Y7S		OFF	Heat exchanger mode
Electronic expansion valve (Main)	EV1	Y1E		2000 pulse	Y7S = OFF: 2000 pulse Y7S = ON : 180 pulse
Electronic expansion valve (Subcooling)	EV3	Y3E		0 pulse	0 pulse
Solenoid valve (Hot gas)	SVP	Y1S		ON	ON
Solenoid valve (Oil return of water heat exchanger)	SVE	Y2S		OFF	OFF
Solenoid valve (Receiver gas charging)	SVL	Y3S		OFF	OFF
Solenoid valve (Receiver gas discharging)	SVG	Y4S		OFF	OFF
Solenoid valve (Non-operating unit liquid pipe closing)	SVSL	Y6S		ON	ON
Indoor unit fan (Cooling)	—	M1F, M2F		Thermostat ON/OFF: Indoor unit control Thermostat OFF: OFF	Normal control
Indoor unit electronic expansion valve (Cooling)	EV	Y1E		320 pulse	Normal control
Indoor unit fan (Heating)	—	M1F, M2F		OFF	Indoor unit control
Indoor unit electronic expansion valve (Heating)	EV	Y1E		320 pulse	Normal control
Ending condition			2 minutes	Max. 8 minutes	Max. 3 minutes

Cooling Branch Selector unit actuator	Electric symbol	Oil return operation
Electronic expansion valve (EVH)	Y4E	600pulse
Electronic expansion valve (EVL)	Y5E	760pulse (fully open)
Electronic expansion valve (EVHS)	Y2E	480pulse (fully open)
Electronic expansion valve (EVLS)	Y3E	480pulse (fully open)
Electronic expansion valve (EVSC)	Y1E	0pulse

Heating Branch Selector unit actuator	Electric symbol	Oil return operation
Electronic expansion valve (EVH)	Y4E	600pulse
Electronic expansion valve (EVL)	Y5E	760pulse (fully open)
Electronic expansion valve (EVHS)	Y2E	480pulse (fully open)
Electronic expansion valve (EVLS)	Y3E	480pulse (fully open)
Electronic expansion valve (EVSC)	Y1E	0pulse

7.2 Oil Return Operation of Water Heat Exchanger

[Oil return operation of water heat exchanger]

When the water heat exchanger is used as evaporator during heating or simultaneous cooling/ heating operation, the operation that the oil accumulated in the water heat exchanger is returned to compressor is conducted.

[Starting condition]

Tg: Gas pipe temperature of water heat exchanger

Te: Low pressure equivalent saturation temperature

After a certain continuous period of time has passed under the following conditions, oil return operation starts.

& ⎧ • Y7S = ON (Water heat exchanger is an evaporator.)
⎨ • Tg – Te > 18°F
⎩ • Elapse of a certain period of time

Parts Name	Symbol	Electric Symbol	Water Heat Exchanger Oil Return Control
Inverter compressor	—	M1C	52 Hz
Four way valve (Main)	20S1	Y5S	ON
Four way valve (Sub)	20S2	Y7S	OFF
Electronic expansion valve (Main)	EV1	Y1E	300 pulse
Electronic expansion valve (Subcooling)	EV3	Y3E	180 pulse
Solenoid valve (Hot gas)	SVP	Y1S	ON
Solenoid valve (Oil return of water heat exchanger)	SVE	Y2S	ON
Solenoid valve (Receiver gas charging)	SVL	Y3S	OFF
Solenoid valve (Receiver gas discharging)	SVG	Y4S	OFF
Solenoid valve (Non-operating unit liquid pipe closing)	SVSL	Y6S	ON
Indoor unit fan (Cooling)	—	M1F, M2F	↑
Indoor unit electronic expansion valve (Cooling)	EV	Y1E	Normal control
Indoor unit fan (Heating)	—	M1F, M2F	↓
Indoor unit electronic expansion valve (Heating)	EV	Y1E	Thermostat ON: Normal control Thermostat OFF/OFF: 500 pulse
Ending condition			Max. 90 seconds

7.3 Pump down Residual Operation Control

If any liquid refrigerant remains in the heat exchanger during compressor startup, the liquid refrigerant will enter the compressor, resulting in the dilution of the refrigerating oil in the compressor and the degradation of lubricating capacity.

Therefore, before the compressor stops, pump down residual operation is performed to collect the refrigerant in the heat exchanger.

7.3.1 Cooling Operation Mode

Parts Name	Symbol	Electric Symbol	Master Unit Operation	Slave Unit Operation
Inverter compressor	—	M1C	Current step	OFF
Inverter cooling fan	—	M1F, M2F	Inverter cooling fan control	Inverter cooling fan control
Four-way valve (Main)	20S1	Y5S	OFF	OFF
Four-way valve (Sub)	20S2	Y7S	OFF	OFF
Electronic expansion valve (Main)	EV1	Y1E	2000 pulse	0 pulse
Electronic expansion valve (Subcooling)	EV3	Y3E	0 pls	0 pulse
Solenoid valve (Hot gas)	SVP	Y1S	ON	OFF
Solenoid valve (Oil return of water heat exchanger)	SVE	Y2S	OFF	OFF
Solenoid valve (Receiver gas charging)	SVL	Y3S	OFF	OFF
Solenoid valve (Receiver gas discharging)	SVG	Y4S	OFF	OFF
Solenoid valve (Non-operating unit liquid pipe closing)	SVSL	Y6S	OFF	ON
Indoor unit fan (Cooling)	—	M1F, M2F	No instruction	
Indoor unit electronic expansion valve (Cooling)	EV	Y1E	All 0 pulse	
Ending condition			Max. 5 minutes	

7.3.2 Heating & Cooling/Heating Simultaneous Mode

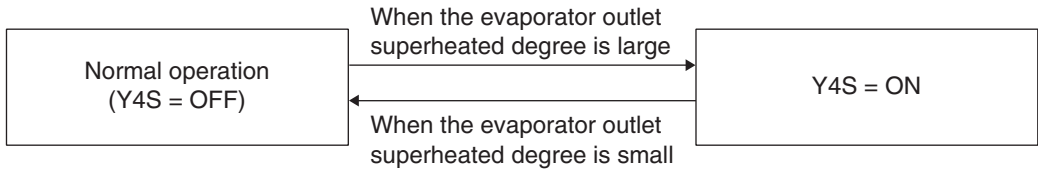
Parts Name	Symbol	Electric Symbol	Master Unit Operation	Slave Unit Operation
Inverter compressor	—	M1C	Current step	OFF
Inverter cooling fan	—	M1F, M2F	Inverter cooling fan control	Inverter cooling fan control
Four-way valve (Main)	20S1	Y5S	ON	ON
Four-way valve (Sub)	20S2	Y7S	Holding	Holding
Electronic expansion valve (Main)	EV1	Y1E	Y7S = OFF: 2000 pulse Y7S = ON: 0 pulse	0 pulse
Electronic expansion valve (Subcooling)	EV3	Y3E	0 pulse	0 pulse
Solenoid valve (Hot gas)	SVP	Y1S	ON	OFF
Solenoid valve (Oil return of water heat exchanger)	SVE	Y2S	OFF	OFF
Solenoid valve (Receiver gas charging)	SVL	Y3S	OFF	OFF
Solenoid valve (Receiver gas discharging)	SVG	Y4S	OFF	OFF
Solenoid valve (Non-operating unit liquid pipe closing)	SVSL	Y6S	OFF	ON
Indoor unit fan (Cooling)	—	M1F, M2F	No instruction	
Indoor unit electronic expansion valve (Cooling)	EV	Y1E	All 0 pulse	
Indoor unit fan (Heating)	—	M1F, M2F	No instruction	
Indoor unit electronic expansion valve (Heating)	EV	Y1E	All 500 pulse	
Ending condition			Max. 5 minutes	

7.4 Refrigerant Drift Prevention

"Refrigerant drift prevention control" is carried out, in order to prevent refrigerant drift among condensing units during heating operation using condensing multiple connection. Refrigerant overcharged in condensing units are collected and transferred to other condensing units that are refrigerant shortage by controlling the electronic expansion valve.

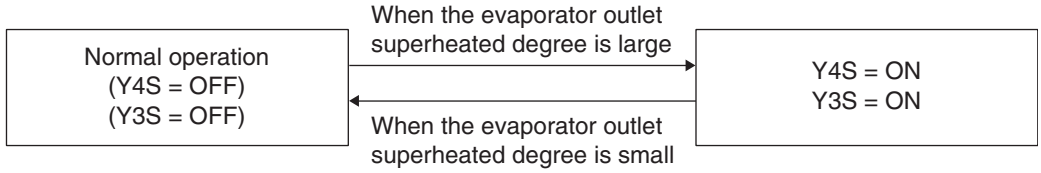
7.4.1 In case of cooling/heating changeover connection

When the evaporator outlet superheated degree is large, open the solenoid valve (Y4S) for venting receiver refrigerant of the condensing units that are refrigerant shortage.



7.4.2 In case of cooling/heating simultaneous connection

When the evaporator outlet superheated degree is large, open the solenoid valve (Y4S) for venting receiver gas of the condensing units that are refrigerant shortage and the solenoid valve (Y3S) for pressurizing the receiver of the overcharged condensing units.



8. Other Control

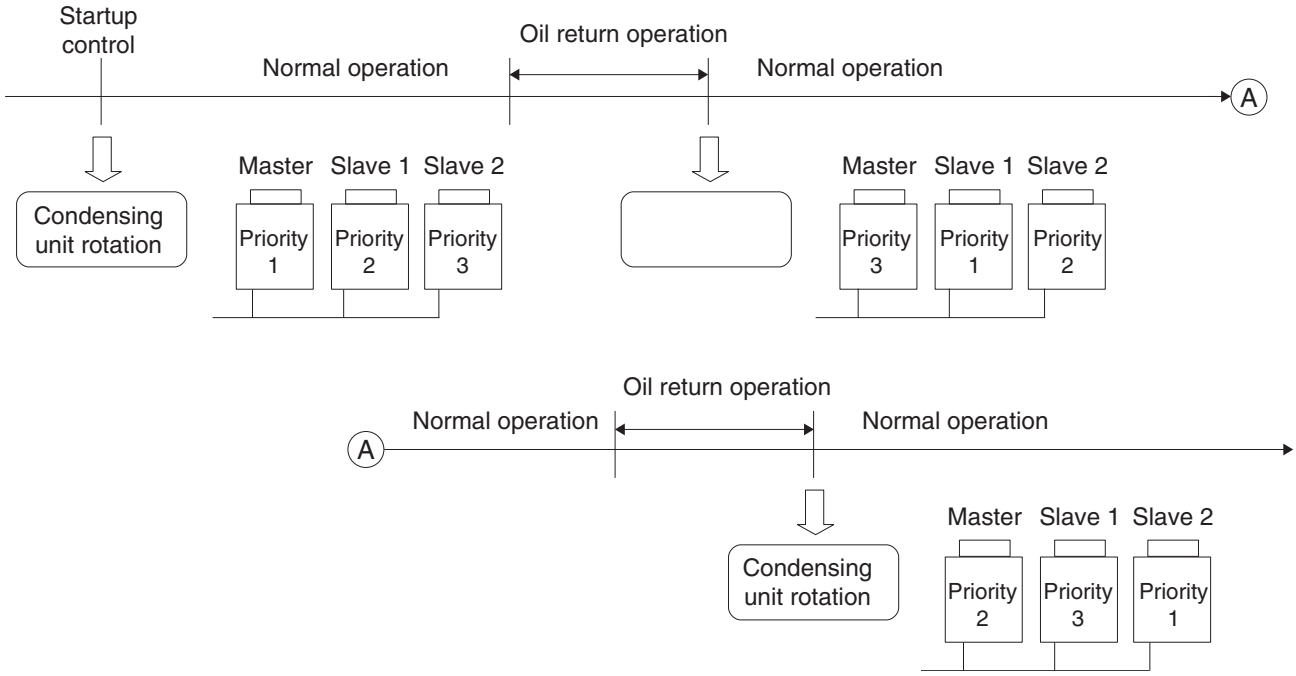
8.1 Condensing Unit Rotation

In the case of multi condensing unit system, this condensing unit rotation prevents the compressor from burning out due to unbalanced oil level between condensing units.

[Details of condensing unit rotation]
In the case of multi-condensing unit system, each condensing unit is given an operating priority for the control.
condensing unit rotation makes it possible to change the operating priority of condensing units. Thus, the system becomes free of compressors that stop over an extended period of time at the time of partial loading, preventing unbalanced oil level.

[Timing of condensing unit rotation]
- After oil return operation
- At the beginning of the startup control

Example) The following diagram shows condensing unit rotation in combination of 3 condensing units.



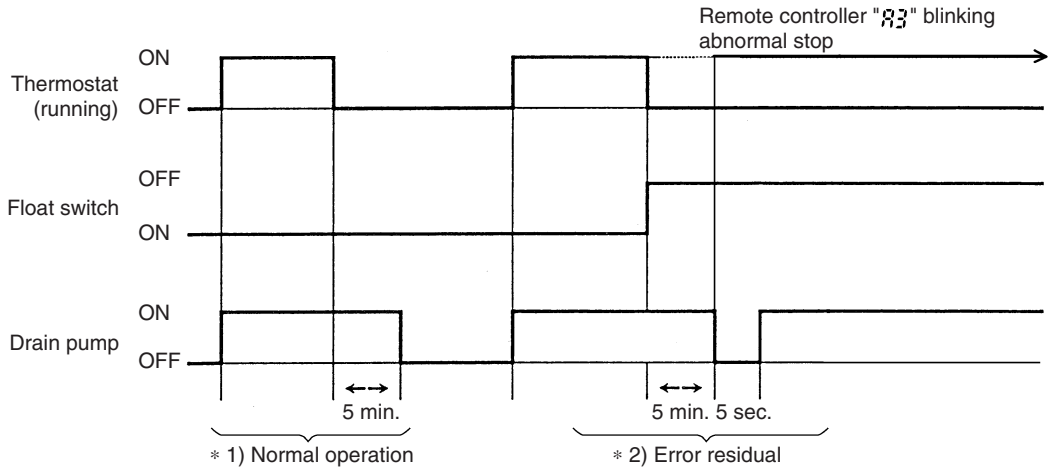
Note: ∗ “Master unit”, “slave unit 1” and “slave unit 2” in this section are the names for installation. They are determined in installation work, and not changed thereafter. (These names are different from “master unit” and “slave unit” for control.)
The condensing unit connected the control wires (F1 and F2) for the indoor unit should be designated as master unit.
Consequently, The LED display on the condensing unit main PCB for “master unit”, “slave unit 1” and “slave unit 2” do not change.

9. Outline of Control (Indoor Unit)

9.1 Drain Pump Control

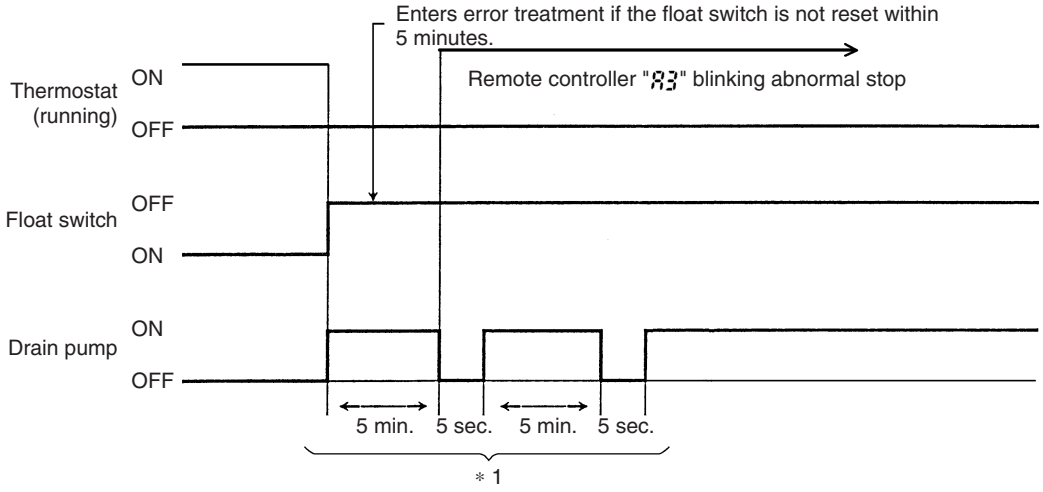
The drain pump is controlled by the ON/OFF buttons.

9.1.1 When the Float Switch is Tripped while the Cooling Thermostat is ON:



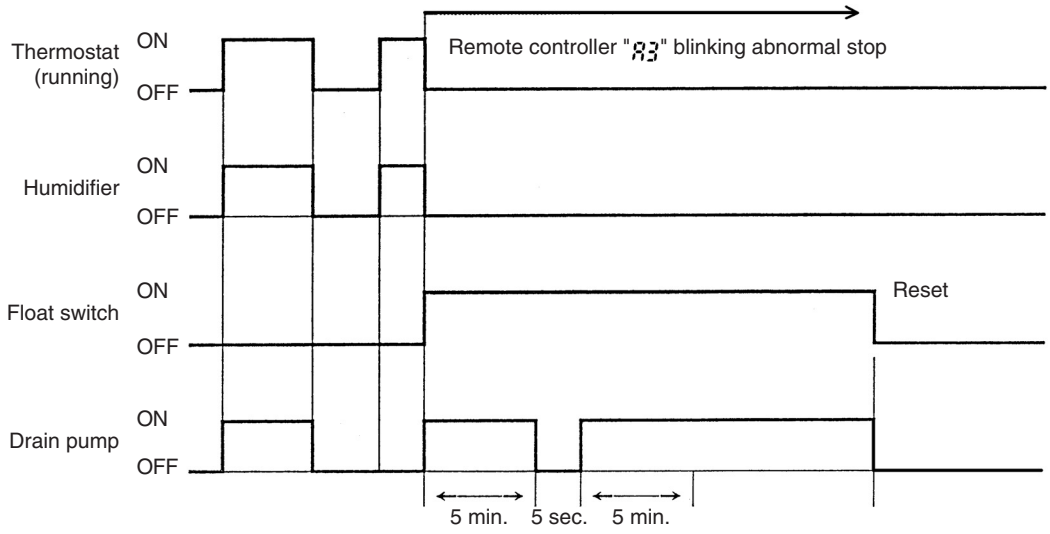
Note: ∗1. (Normal operation):
The objective of residual operation is to completely drain any moisture adhering to the fin of the indoor unit heat exchanger when the thermostat goes OFF during cooling operation.
∗2. (Error residual):
The remote controller will display "A3" and the air conditioner will come to an abnormal stop in 5 minutes if the float switch is turned OFF while the cooling thermo. is ON.

9.1.2 When the Float Switch is Tripped while the Cooling Thermostat is OFF:



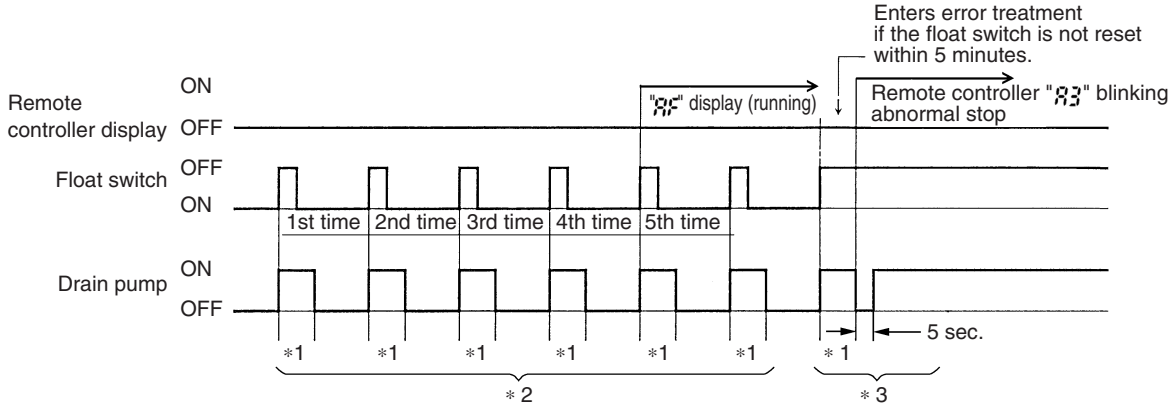
Note: ∗1. (Error residual):
The remote controller will display "A3" and the air conditioner will come to an abnormal stop if the float switch is turned OFF and not turned ON again within 5 minutes while the cooling thermo. is OFF.

9.1.3 When the Float Switch is Tripped During Heating Operation:



Note: 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.

9.1.4 When the Float Switch is Tripped and "PF" is Displayed on the Remote Controller:



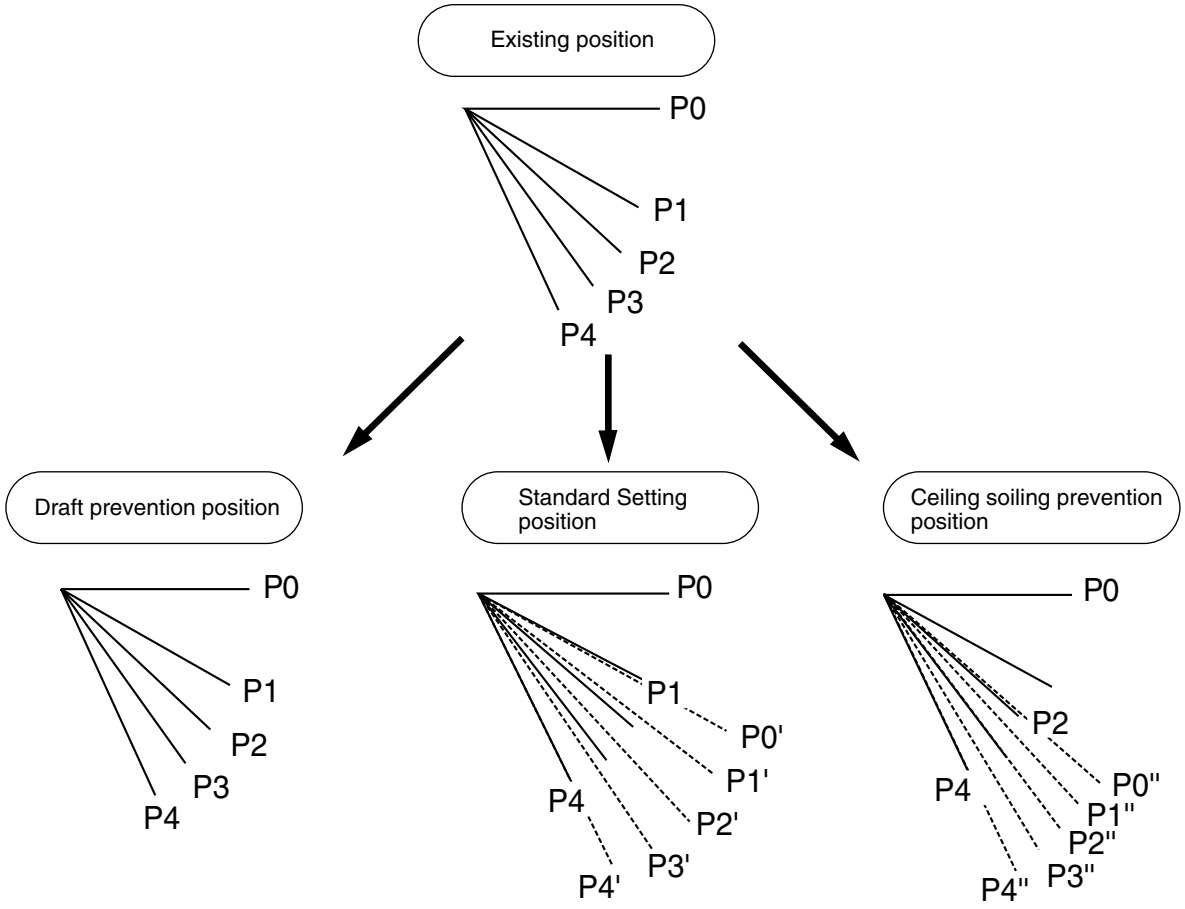
Note: ∗1. 5 min.

∗2. (Error residual):
If the float switch is tripped 5 times in succession, a drain error is determined to have occurred. "PF" is then displayed as operation continues.

∗3. (Error residual):
The remote controller will display "83" and the air conditioner will come to an abnormal stop if the float switch is OFF for more than 5 minutes in the case of ∗2.

9.2 Louver Control for Preventing Ceiling Dirt

We have added a control feature that allows you to select the range of in which air direction can be adjusted in order to prevent the ceiling surrounding the air discharge outlet of ceiling mounted cassette type units from being soiled. (This feature is available on round flow, 4-way ceiling mounted cassette (2'×2') types.)



Draft prevention position	P0	P1	P2	P3	P4	Same as existing position
			Range of direction adjustment			
Standard position	Prohibited	P0'	P1'	P2'	P3'	P4'	Separated into 5 positions (P1 - 4)
			Range of direction adjustment			
Dirt prevention position	Prohibited		P0"	P1"	P2"	P3"	P4"	Separated into 5 positions (P2 - 4)

The factory setting position is standard position.

Note: The factory setting position of FXFQ model only (round flow) is draft prevention position.

9.3 Room Temperature Thermistor in Remote Controller

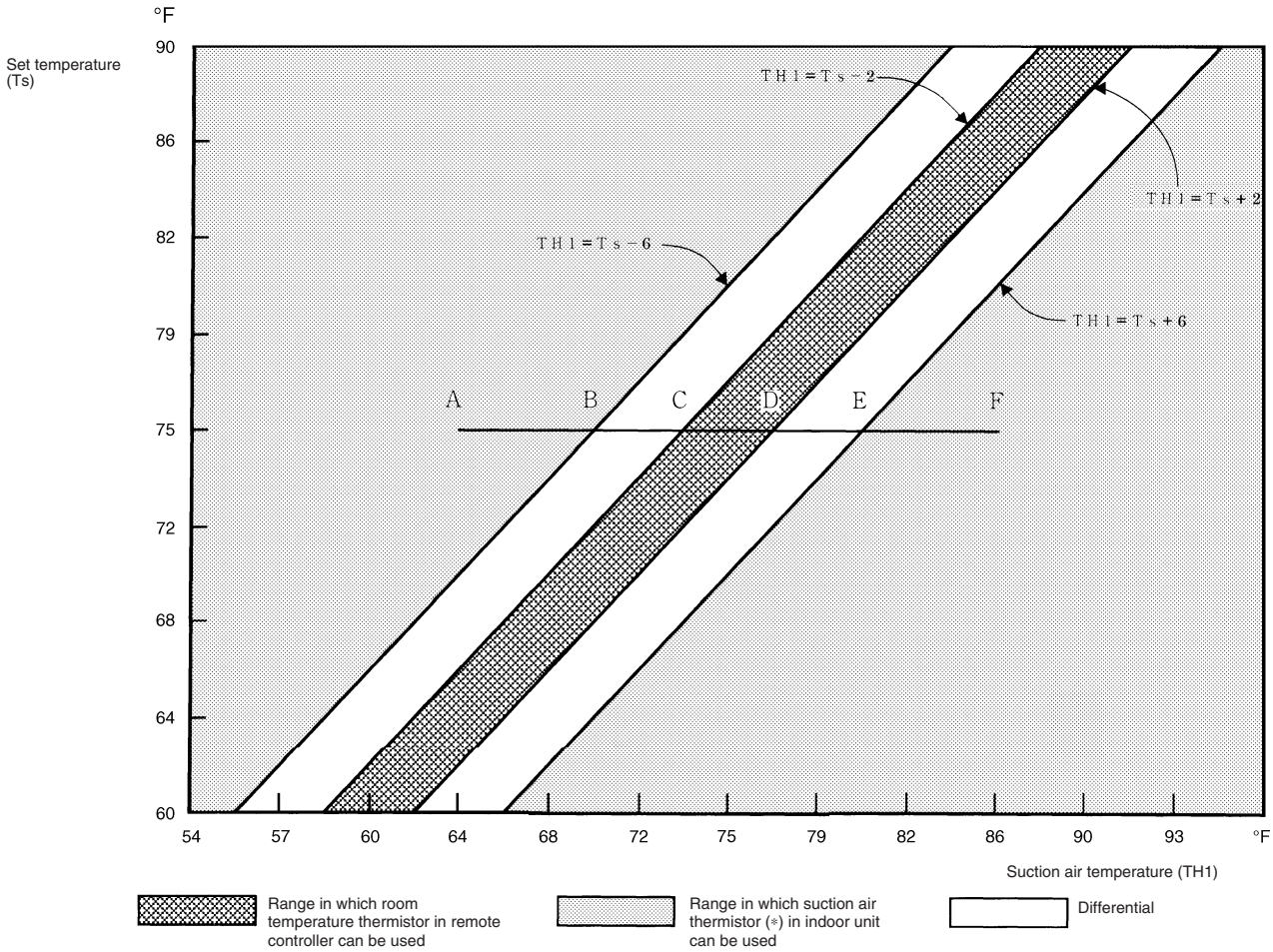
Temperature is controlled by both the room temperature thermistor in remote controller and suction air thermistor (∗) in the indoor unit. (This is however limited to when the field setting for the room temperature thermistor in remote controller is set to “Use.”)

Note: When outdoor air is introduced to the air-conditioner with mixed into indoor air, the room temperature may fail to be set temperature, since TS and TH1 do not enter the area of “use range of remote control thermistor.” In such a case, put the remote sensor (optional accessory) in your room, and use it with setting “do not use remote control thermostat.”

∗ For FXTQ: Remote sensor (Optional accessory)

Cooling

If there is a significant difference in the set temperature and the suction air temperature, fine adjustment control is carried out using suction air thermistor (∗) in the indoor unit, or using the room temperature thermistor in remote controller near the position of the user when the suction air temperature in indoor unit is near the set temperature.



■ **Ex: When cooling**

Assuming the set temperature in the figure is 75°F or more, and the suction air temperature has changed from 64°F to 86°F (A → F):

(This example also assumes there are several other air conditioners, the system is OFF, and that temperature changes even when the thermostat is OFF.)

Suction air thermistor (∗) in indoor unit is used for temperatures from 64°F to 73°F (A → C).

Room temperature thermistor in remote controller is used for temperatures from 73°F to 81°F (C → E).

Suction air thermistor (∗) in indoor unit is used for temperatures from 81°F to 86°F (E → F).

And, assuming suction air temperature has changed from 86°F to 64°F (F → A):

Suction air thermistor (∗) in indoor unit is used for temperatures from 86°F to 77°F (F → D).

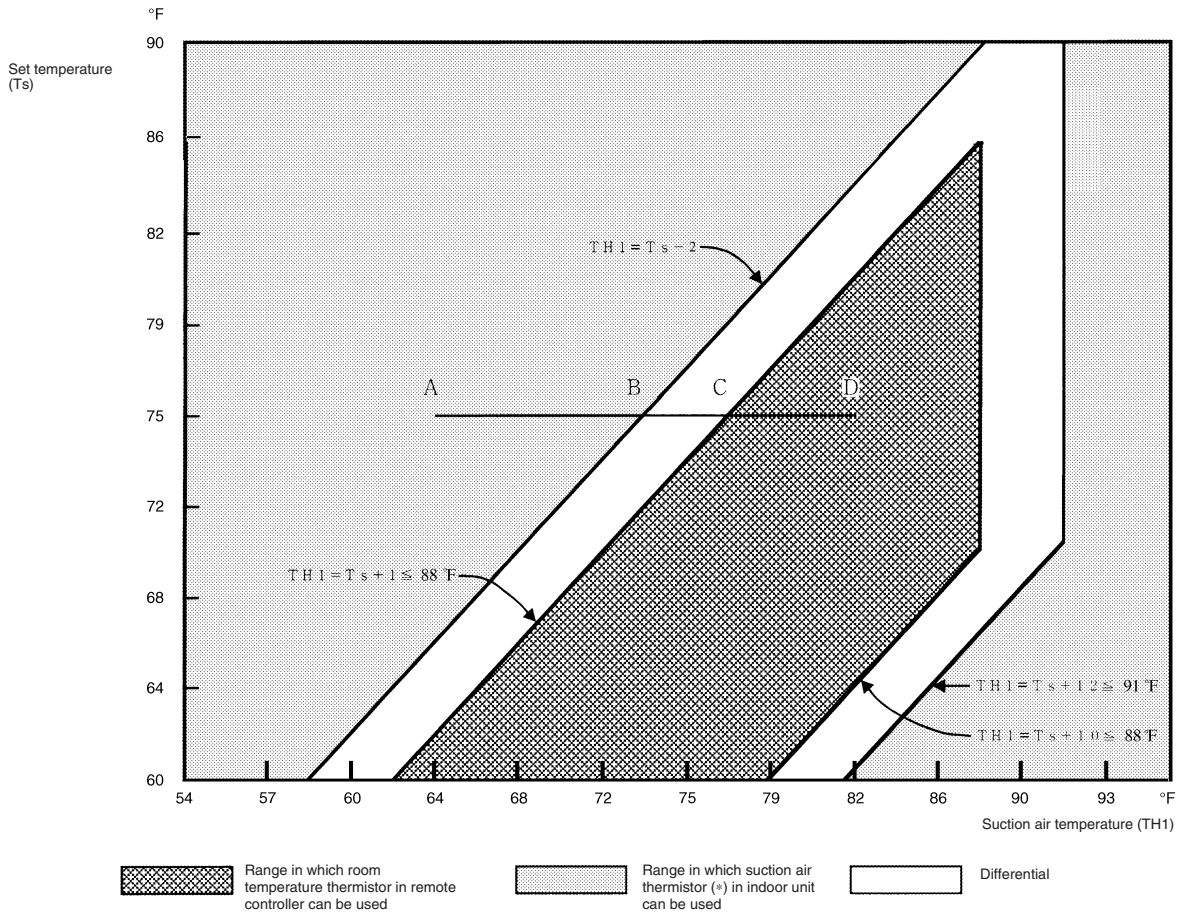
Room temperature thermistor in remote controller is used for temperatures from 77°F to 70°F (D → B).

Suction air thermistor (∗) in indoor unit is used for temperatures from 70°F to 64°F (B → A).

Note: ∗ For FXTQ: Remote sensor (Optional accessory)

Heating

When controlling the indoor unit by the suction air thermistor of the indoor unit alone, the indoor unit may be placed in thermos-off due to the room temperature being measured at the indoor unit's suction air thermistor before the lower part of the room reaches the set temperature. The indoor unit can be controlled so that the lower part of the room does not become cold. By using he combination of both the indoor unit suction air thermistor and remote controller thermistor, the point at which the room temperature is measure wills witch between the thermistors based upon the temperature differential. At high room temperatures, the suction air thermistor will be used. As the room temperature approaches the set temperature, the room temperature sensing will be switched to the remote controller thermistor to ensure the lower part of the room is not cold.



■ **Ex: When heating**

Assuming the set temperature in the figure is 75°F or more, and the suction air temperature has changed from 64°F to 82°F (A → D):

(This example also assumes there are several other air conditioners, the system is OFF, and that temperature changes even when the thermostat is OFF.)

Suction air thermistor (*) in indoor unit is used for temperatures from 64°F to 77°F (A → C).

Room temperature thermistor in remote controller is used for temperatures from 77°F to 82°F (C → D).

And, assuming suction air temperature has changed from 82°F to 64°F (D → A):

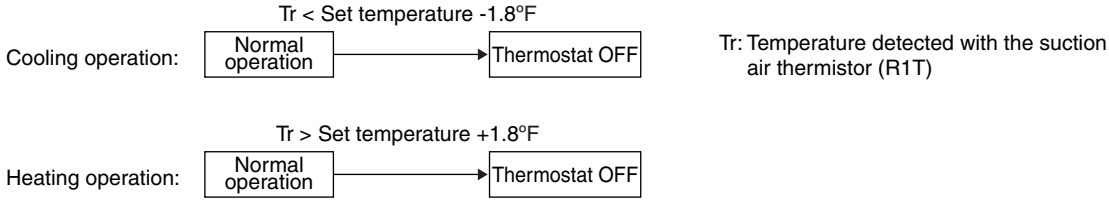
Room temperature thermistor in remote controller is used for temperatures from 82°F to 73°F (D → B).

Suction air thermistor (*) in indoor unit is used for temperatures from 73°F to 64°F (B → A).

Note: * For FXTQ: Remote sensor (Optional accessory)

9.4 Thermostat Control While in Normal Operation

VRV multi systems are set at factory to thermostat control mode using the remote controller. While in normal thermostat differential control mode (i.e., factory setting mode), the thermostat turns OFF when the system reaches a temperature of -1.8°F from the set temperature while in cooling operation or of +1.8°F from that while in heating operation.

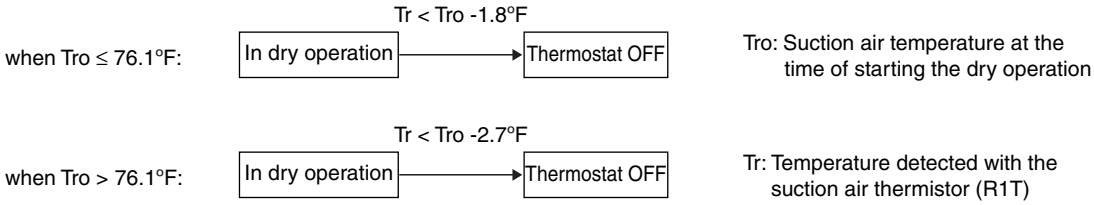


While in a single remote controller group control, the suction air thermistor in the indoor unit is only used from this control.
Furthermore, while in heating operation, ceiling mounted cassette type indoor units conduct the thermostat control by a value compensated by -3.6°F for the value detected with the suction air thermistor in the indoor unit. (Through field settings, the thermostat differential setting can be changed from 1.8°F to 0.9°F. For details on the changing procedure, refer to information on page onward.)

9.5 Thermostat Control in Dry Operation

While in dry operation, the thermostat control is conducted according to a suction air temperature at the time of starting the dry operation.

Assuming that the suction air temperature at the time of starting the dry operation is Tro and the suction air temperature in operation is Tr,



Furthermore, while in dry operation mode, fans operate at L flow rate, stops for a period of 6 minutes while the thermostat is OFF, and then return to operation at L flow rate. (This control is used to prevent a rise in indoor temperature while in thermostat OFF mode.)

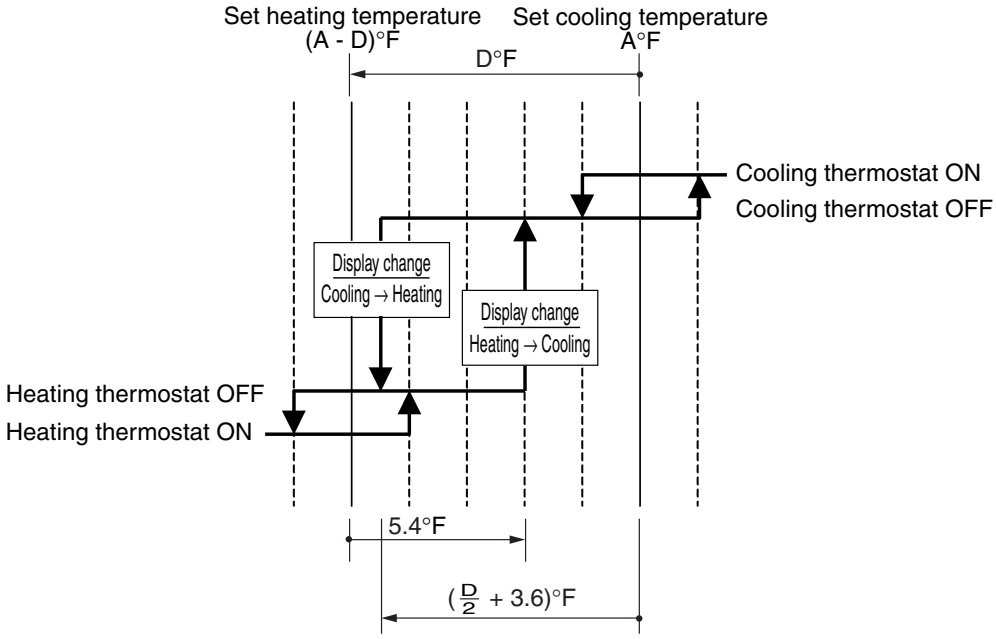
9.6 Thermostat Control with Operation Mode Set to "AUTO"

When the operation mode is set to "AUTO" on the remote controller, the system will conduct the temperature control shown below.

Furthermore, setting changes of the differential value (D°F) can be made according to information in the "Field Setting from Remote Controller (P.89 and later)" section.

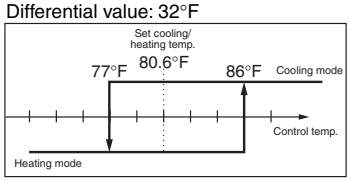
Mode No.	First code No.	Contents of setting	Second code No.							
			01	02	03	04	05	06	07	08
12	4	Differential value while in "AUTO" operation mode	0°F	1.8°F	3.6°F	5.4°F	7.2°F	9.0°F	10.8°F	12.6°F

: Factory setting

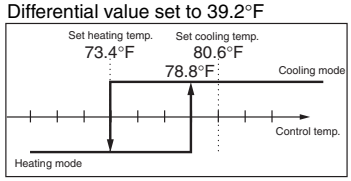


(Ex.) When automatic cooling temperature is set to 80.6°F:

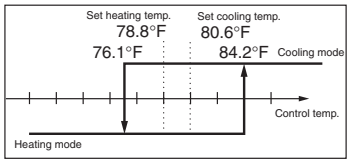
Differential value: 32°F



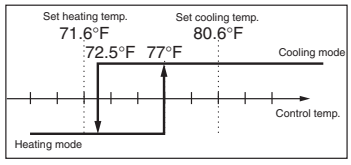
Differential value set to 39.2°F



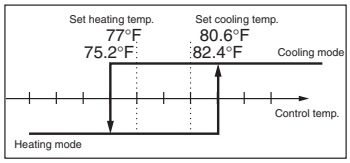
Differential value set to 33.8°F



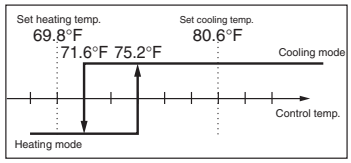
Differential value set to 41°F



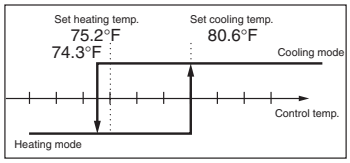
Differential value set to 35.6°F



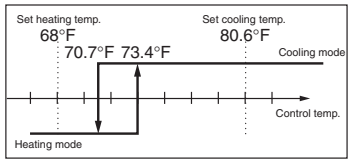
Differential value set to 42.8°F



Differential value set to 37.4°F



Differential value set to 44.6°F



9.7 Control of Electronic Expansion Valve

Electronic expansion valves in indoor units have the functions of conducting superheated degree control in cooling operation and subcooling degree control in heating operation. However, if the indoor units receive any control command such as a protection control command or a special control command from the condensing unit, the units will give a priority to the control command.

• Superheated degree control in cooling operation

This function is used to adjust the opening of the electronic expansion valve so that superheated degree (SH), which is calculated from the detection temperature (Tg) of the gas pipe thermistor (R3T) and the detection temperature (Tl) of the liquid temperature thermistor (R2T) of the indoor unit, will come close to a target superheated degree (SHS).
At that time, correction to the superheated degree is made according to the differences (ΔT) between set temperature and suction air temperature.

SH = Tg - Tl
SH: Evaporator outlet superheated degree (°F)
Tg: Indoor unit gas pipe temperature (R3T)
Tl: Indoor unit liquid pipe temperature (R2T)

SHS (Target SH value)
SHS: Target superheated degree

- Normally 41°F.
- As ΔT (Remote controller set temp. - Suction air temp.) becomes larger, SHS becomes lower.
- As ΔT (Remote controller set temp. - Suction air temp.) becomes smaller, SHS becomes higher.

• Subcooling degree control in heating operation

This function is used to adjust the opening of the electronic expansion valve so that the high pressure equivalent saturated temperature (Tc), which is converted from the detected pressure of the high pressure sensor in the condensing unit, and the subcooling degree (SC), which is calculated from the detected temperature (Tl) of the liquid temperature thermistor (R2T) in the indoor unit, will come close to the target subcooling degree (SCS).
At that time, corrections to the subcooling degree are made according to differences (ΔT) between set temperature and suction air temperatures.

SC = Tc - Tl
SC: condensing outlet subcooling degree (°F)
Tc: High pressure equivalent saturated temperature detected by the high pressure sensor (S1NPH)
Tl: Indoor unit liquid pipe temperature (R2T)

SCS (Target SC value)
SCS: Target subcooling degree

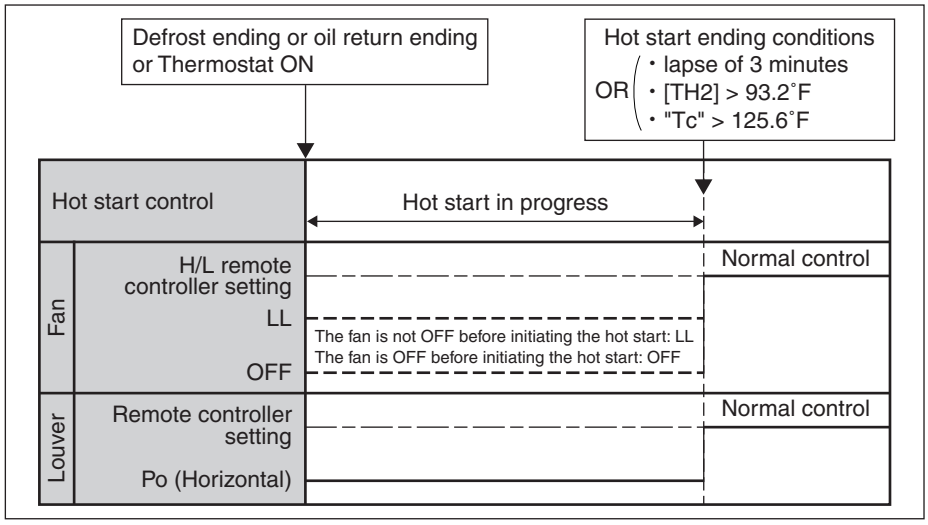
- Normally 41°F.
- As ΔT (Remote controller set temp. - Suction air temp.) becomes larger, SCS becomes lower.
- As ΔT (Remote controller set temp. - Suction air temp.) becomes lower, SCS becomes larger.

9.8 Hot Start Control (In Heating Only)

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 of operation]

When either the **starting condition 1** or the **starting condition 2** is established, the operations shown below will be conducted.

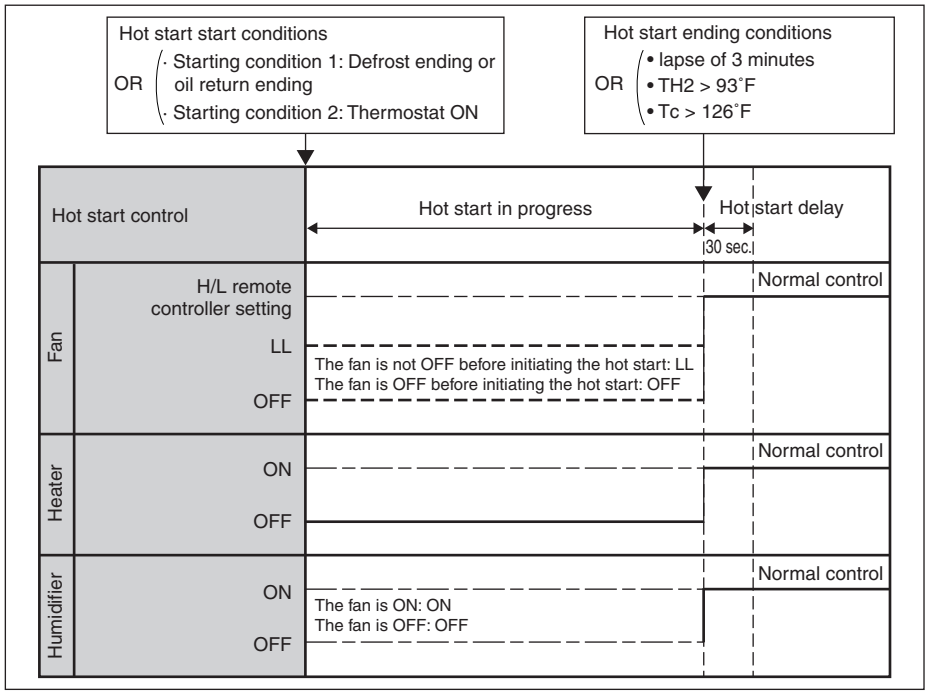


■ **FXTQ**

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 of operation]

When either the **starting condition 1** or the **starting condition 2** is established, the operations shown below will be conducted.



TH_2: Temperature detected with the gas thermistor

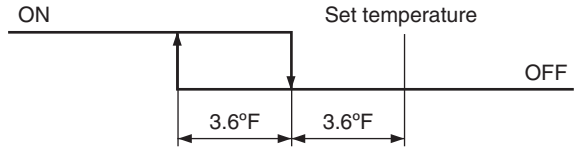
TC : High pressure equivalent saturated temperature

9.9 Heater Control (Optional PCB KRP1B ... is required.)

The heater control is conducted in the following manner.

[Normal control]

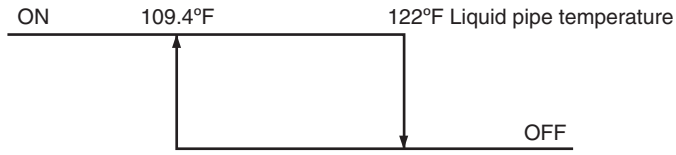
While in heating, the heater control (ON/OFF) is conducted as shown on the right.



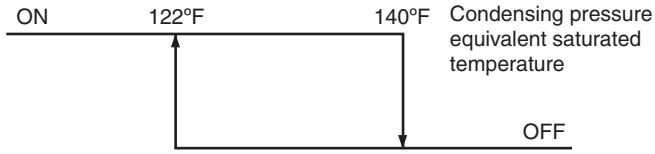
[Overload control]

When the system is overloaded in heating, the heater will be turned OFF in the following 2 manners.

(1) The heater control (ON/OFF) is conducted through the liquid pipe temperature (R2T) of the indoor unit.



(2) The heater control (ON/OFF) is conducted by converting the heater temperature into the condensing pressure equivalent saturated temperature (Tc) according to the temperature detection through the high pressure sensor (S1NPH) of the condensing unit.



[Fan residual operation]

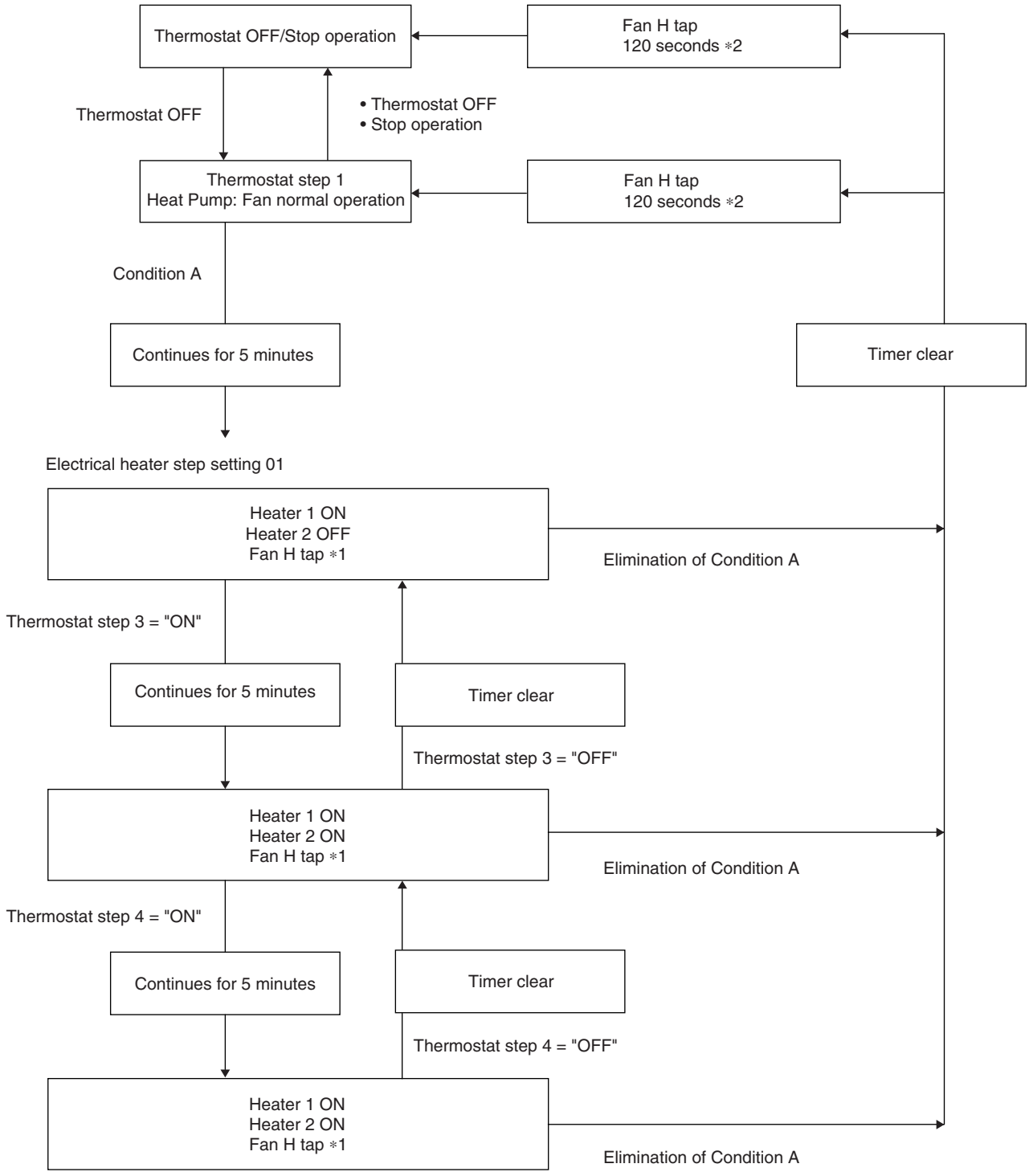
While the heater turns OFF, in order to prevent the activation of the thermal protector, the fan conducts residual operation for a given period of time after the heater turns OFF. (This operation is conducted regardless of with or without heater equipped.)

Residual operation time = 100 seconds on ceiling suspended type or 60 seconds on other types

9.10 Heater Control (FXTQ)

9.10.1 Auxiliary Heater Control

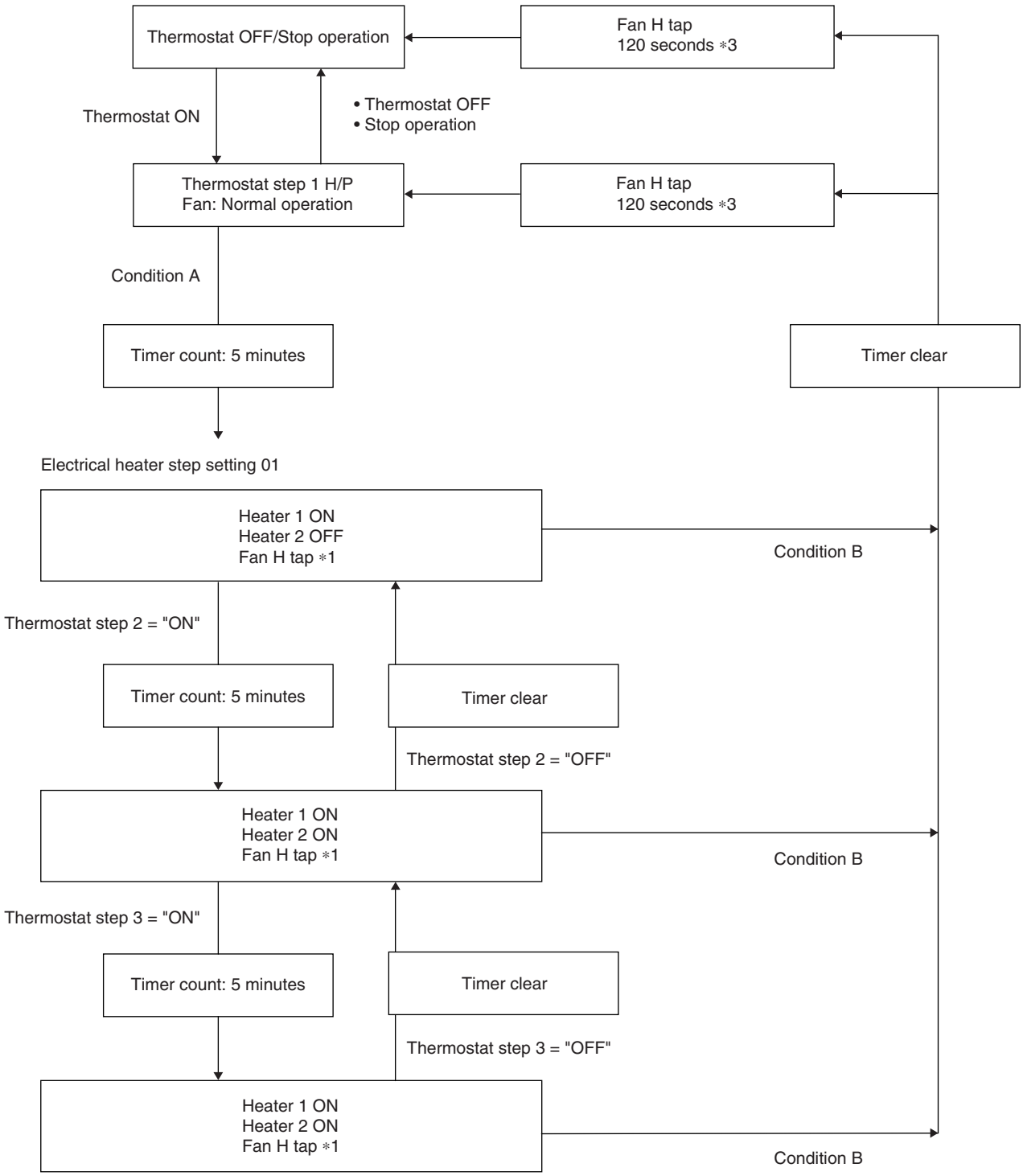
If heating is insufficient in heat pump system alone, an electrical heater is to be used as the auxiliary heater. The following shows the ON/OFF conditions for the electric heater.



9.10.2 Heat Pump Lockout Mode

During heating operation, users can select an electrical heater for heating. For this, signals are sent using ABC terminal of condensing unit PCB.

When the hot-water heating signal is received from the condensing unit PCB, heating operation is performed only with the heater as manual backup operation. The ON/OFF conditions for this electrical heater are shown below.



Condition A

& (• Heating mode
• Thermostat step 1 = "ON"
• Not during fan residual operation
& (OR (• [Electrical heater setting] = "01"
• [Electrical heater setting] = "03")
• Hot-water heater = "1" (ON))

Condition B

OR (• Elimination of Condition A
• Indoor unit error [Stop due to error]
• Indoor unit error [Abnormal stop]
• Indoor unit error [Remote control thermistor error]
• Indoor unit error [Suction air thermistor error]
• During defrosting or oil return operation) } Heater backup prohibiting conditions ∗2

Note: ∗1: Fixing of the fan H tap.
∗2: The heater backup prohibiting conditions are prioritized. Even when the heater ON conditions are met, the heater is turned OFF when the prohibiting conditions are met.
∗3: The operation must continue for a certain period of time after the heater turns OFF.
4: The thermostat steps for this control comply with the “9.11 4 Step Thermostat Processing (FXTQ)”.

9.11 4 Step Thermostat Processing (FXTQ)

[Outline]

The thermostat ON/OFF for the indoor unit is controlled in accordance with [Thermostat Step 1]. The heater ON/OFF operation during heating is controlled in accordance with [Thermostat Step 2, 3, or 4] or [Thermostat Step 1, 2, or 3].
For more details of the heater, see “9.10 Heater Control (FXTQ)”.

[Detail]

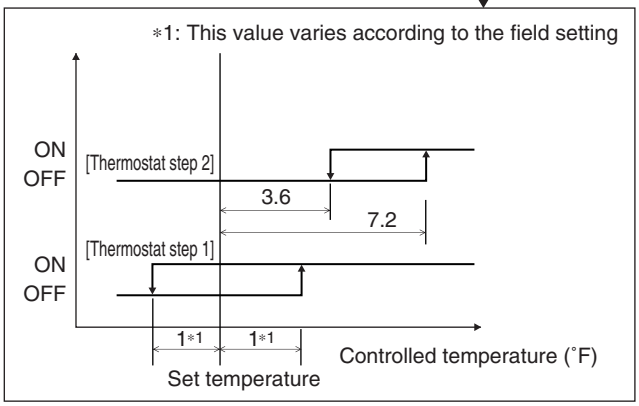
& (• Drain pump abnormal output = OFF
• Thermostat OFF error has not occurred.
• Forced thermostat OFF = "0" (OFF)
• Normal operation = ON
OR (• Remote control operation mode = "Heating"
• Not during anti-freeze operation)

• [Thermostat step 1] = "OFF"
• [Thermostat step 2] = "OFF"
• [Thermostat step 3] = "OFF"
• [Thermostat step 4] = "OFF"

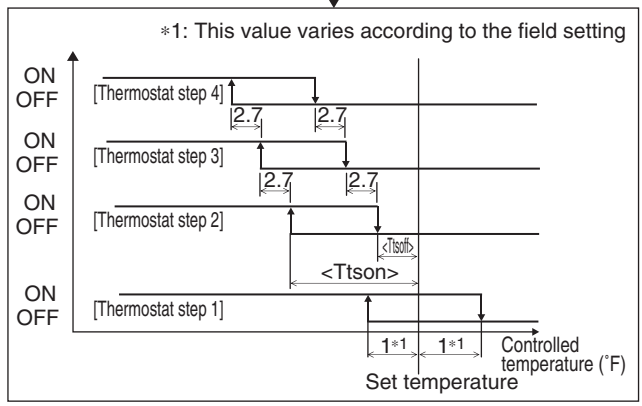
→ Perform the processing in the following chart.

← Elimination conditions of the above

① Cooling



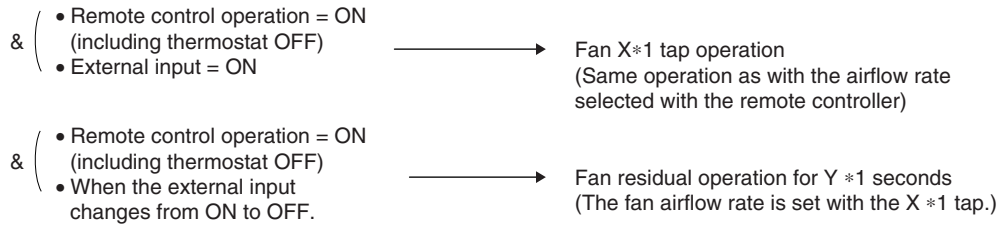
② Heating



9.12 Interlocked with External Equipment (FXTQ)

9.12.1 Humidifier

When a humidifier is connected onsite, the fan operates with the airflow rate set of the remote controller or with the H tap.



Note:
1. This control is different from connection of humidifier and it is used for humidifiers locally connected in North America.
2. External input ON is an input signal to the “X12A” terminal on the PCB (A3P).

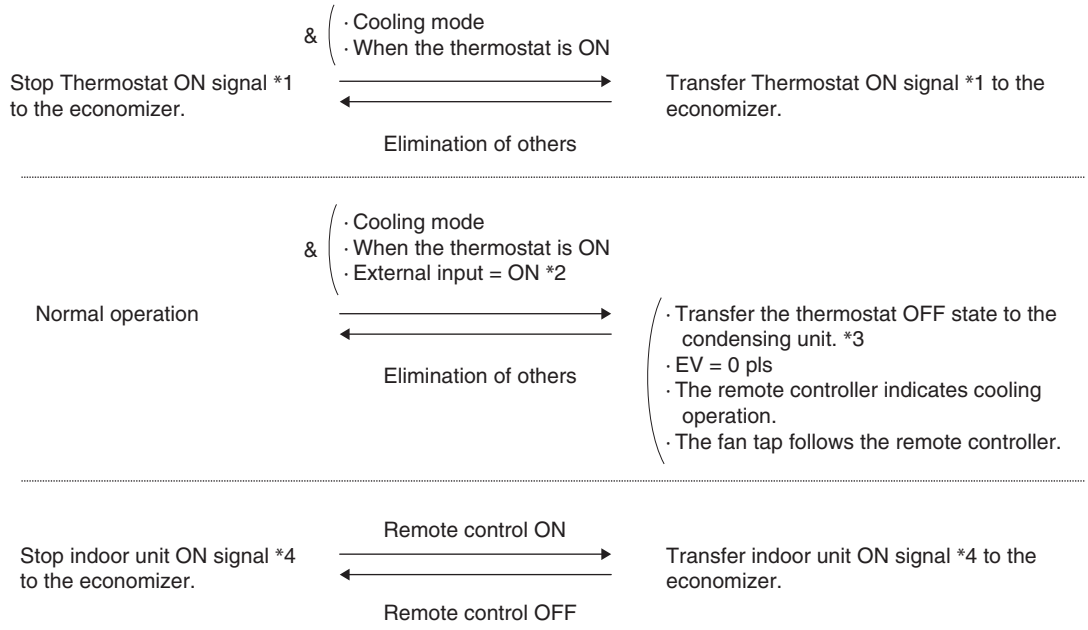
∗1 Refer to “2.4 Setting Contents and Code No. for Indoor Units” (P.92)

: Factory setting

Mode No.	First Code No.	Description of Setting	Second Code No.			
			01	02	03	04
14 (24)	4 ∗H	Setting of humidifier / air purifier fan tap	Remote controller setting	H tap	—	—
	5 ∗H	Humidifier residual operation time	30 sec.	60 sec.	120 sec.	—

9.12.2 Economizer

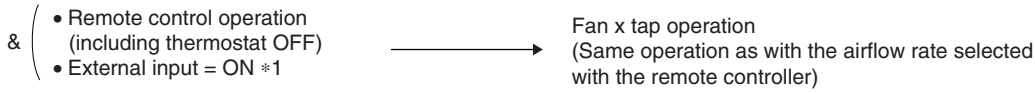
When indoor and outdoor air temperatures are reversed, the compressor is stopped to let in the outdoor air to save energy.
This operation is called economizer operation, and the equipment to detect indoor and outdoor air temperatures and open and close the damper to perform this operation is called an economizer.
The economizer detects indoor and outdoor air temperatures, informs the air conditioner that the economizer operation is ready, and opens and closes the damper.
The indoor unit stops the condensing unit when it receives a signal from the economizer and performs air supply operation.
When the indoor air temperature is cooled down sufficiently by the economizer operation, and it is no longer necessary (thermostat OFF), the indoor unit outputs a signal to the economizer to close the damper.



Note:
∗1 Thermostat ON signal: A signal to turn ON the indoor unit thermostat and allow the economizer to open the damper.
It turns ON the relay on the “X8A side of X23A” on the PCB (A3P).
∗2 External input ON is an input signal to the “X11A” terminal on the PCB (A3P).
∗3 To stop the compressor while the economizer is in operation to save energy.
∗4 Remote control ON signal: Contact output which shows the operating status of the indoor unit.
This signal turns on the relay “on the opposite side of X8A of X23A” on the PCB (A3P).

9.12.3 Air Purifier (UV lamp)

When an air purifier is connected onsite, the fan is operated with the airflow rate set of the remote controller or with the H tap.



Note:
∗1 External input ON is an input signal to the “X25A” terminal on the PCB (A3P).

9.13 List of Swing Flap Operations

Swing flaps operate as shown in table below.

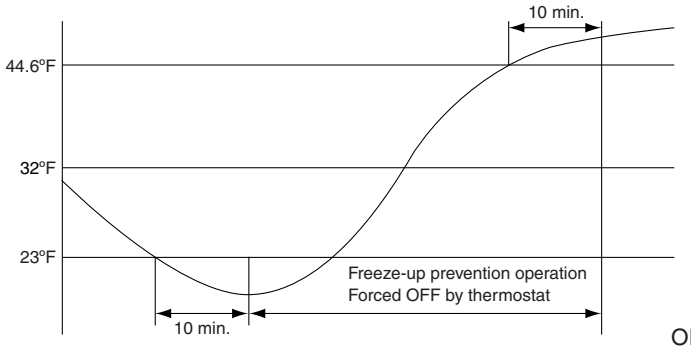
			Fan	Flap		
				FXFQ	FXHQ	FXAQ
Heating	Hot start from defrosting operation	Swing	OFF	Horizontal	Horizontal	Horizontal
		Airflow direction set	OFF	Horizontal	Horizontal	Horizontal
	Defrosting operation	Swing	OFF	Horizontal	Horizontal	Horizontal
		Airflow direction set	OFF	Horizontal	Horizontal	Horizontal
	Thermostat OFF	Swing	LL	Horizontal	Horizontal	Horizontal
		Airflow direction set	LL	Horizontal	Horizontal	Horizontal
	Hot start from thermostat OFF mode (for prevention of cold air)	Swing	LL	Horizontal	Horizontal	Horizontal
		Airflow direction set	LL	Horizontal	Horizontal	Horizontal
	Stop	Swing	OFF	Horizontal	Horizontal	Totally closed
		Airflow direction set	OFF	Horizontal	Horizontal	Totally closed
Cooling	Thermostat ON in program dry	Swing	L*1	Swing	Swing	Swing
		Airflow direction set	L*1	Set	Set	Set
	Thermostat OFF in program dry	Swing	OFF or L	Swing	Swing	Swing
		Airflow direction set		Horizontal or Set	Set	Set
	Thermostat OFF in cooling	Swing	Set	Swing	Swing	Swing
		Airflow direction set	Set	Set	Set	Set
	Stop	Swing	OFF	Horizontal	Horizontal	Totally closed
		Airflow direction set	OFF	Horizontal	Horizontal	Totally closed
	Micro-computer control (including cooling operation)	Swing	L	Swing	Swing	Swing
		Airflow direction set	L	Set	Set	Set

*1. L or LL only on FXFQ models

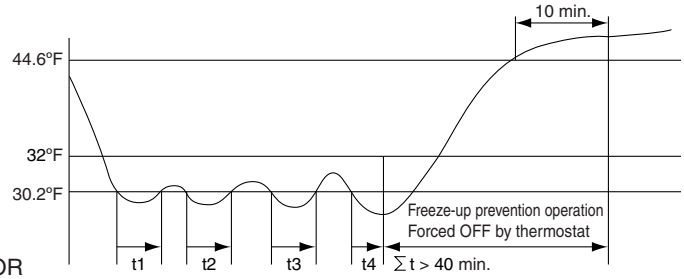
9.14 Freeze-up Prevention

Freeze-up Prevention by Off Cycle (Indoor Unit)

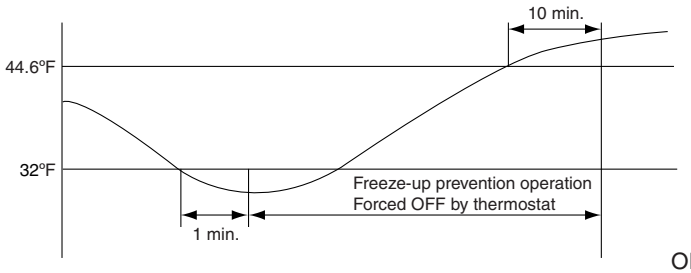
When the temperature detected by liquid pipe thermistor (R2T) of the indoor unit heat exchanger drops too low, the unit enters freeze-up prevention operation in accordance with the following conditions, and is also set in accordance with the conditions given below.
When freeze-up prevention is activated, the electronic expansion valve is closed, the drain pump turns ON and the fan tap is fixed to L airflow. When the following conditions for stopping are satisfied, it returns.
Conditions for starting freeze-up prevention: Temperature is 30.2°F or less for total of 40 minutes, or temperature is 23°F or less for total of 10 minutes.
Conditions for stopping freeze-up prevention: Temperature is 44.6°F or more for 10 minutes. continuously



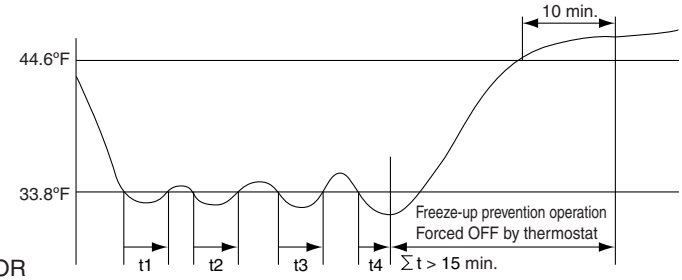
OR



[Conditions for starting when airflow direction is two-way or three-way]
Conditions for starting: Temperature is 33.8°F or less for a total of 15 minutes or 32°F or less for 1 minute continuously.



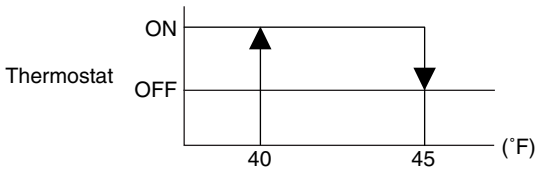
OR



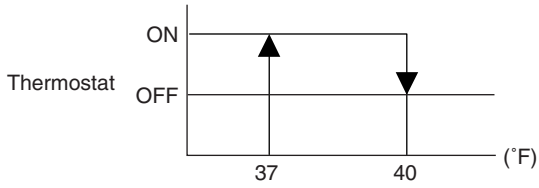
Condition A

& (
- Thermostat step 2 = "ON"
- Heating mode
- Not during test operation
- Not during control operation
- High pressure condition = "ON" ∗3
- Liquid pipe temperature condition = "ON" ∗4
- Electrical heater setting = "3"

Note: ∗1: Fixing of the fan H tap
∗2: The operation should continue for a certain period of time after the heater turns OFF.
∗3: High pressure condition



∗4: Liquid pipe temperature condition



Part 5
Field Setting

1. Test Operation

1.1 Procedure and Outline

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

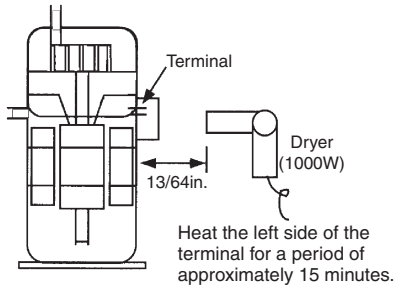
1.1.1 Check Work Prior to Turn Power Supply ON

Check the below items.
- Power wiring
- Control transmission wiring between units
- Operation signal to heat source pump and interlock wiring from pump
- Interlock circuit
- Ground wire

⇩

- ○ Is the wiring performed as specified?
- ○ Are the designated wires used?
- ○ Are the setscrews of wiring not loose?
- ○ Is the grounding work completed?
- ○ Is the insulation of main power supply circuit deteriorated?
  Use a 500V megger tester to measure the insulation. (*1)
  - Do not use a megger tester for other circuits than 200V (or 240V) circuit.

*1: Measure to be taken against decreased insulation resistance in the compressor
If the compressor is left to stand for an extended period of time after the refrigerant charge with the stop valve open and the power supply OFF, the refrigerant may be melted in the compressor, thus decreasing the insulation resistance.
Heat the compressor as shown on the right and then recheck the insulation.



Check on refrigerant piping, water piping and piping insulation

⇩

- ○ Is pipe size proper? (The design pressure of this product is 580 psi.)
- ○ Are pipe insulation materials installed securely?
  Liquid and gas pipes need to be insulated. (Otherwise causes water leak.)
- ○ Is refrigerant piping carried out correctly as per installation manual?
  (Special care is required for multi condensing unit installation.)

Check on air tight test and vacuum drying

⇩

- ○ Is the air tight test and vacuum drying carried out as per installation manual?

Check on amount of additional refrigerant charge

⇩

- ○ 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 condensing unit in stop mode after turning power ON.
- ○ If the specified amount of refrigerant can not be charged in stop mode, charge the required refrigerant as per “Additional refrigerant charge total flow” in operation. (Refer to P.123)
- ○ Has the amount of refrigerant charge been recorded on “Record Chart of Additional Refrigerant Charge Amount”?

⇩

Check on stop valves opening

- ○ Check to be sure the stop valves are under the following conditions.

	Discharge gas side	Suction side	Discharge liquid side
Cooling and heating switching operation	Open	Close	Open
Cooling and heating simultaneous operation	Open	Open	Open

1.1.2 Turn Power ON

Turn condensing unit, indoor unit, Branch Selector unit and heat source water pump power ON.

○ Be sure to turn the power ON 6 hours before starting operation to protect compressors. (to power ON crankcase heater)

⇩

Confirm LED display on condensing unit PCB

○ Make sure the display is normal.
Following table shows correct display.

⇩

Carry out field setting on condensing unit PCB

○ For field settings, refer to “Field Setting from Remote Controller” on and after P.89.
After the completion of field settings, set to “Setting mode 1”.
In case of multi condensing units connection, carry out the field settings on master unit. (The setting on slave unit is not effective.)

○: ON ●: OFF ◑: Blink

LED display (Factory setting)		Micro computer normal monitor	MODE	TEST	C/H selection			Low night noise operation	Demand	Multi
					IND	Master	Slave			
		HAP	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
1 condensing unit installation		◑	●	●	○	●	●	●	●	●
Condensing unit multi installation(∗)	Master	◑	●	●	○	●	●	●	●	○
	Slave1	◑	●	●	●	●	●	●	●	◑
	Slave2	◑	●	●	●	●	●	●	●	●

∗ The condensing unit connected the control wires (F1 and F2) for the indoor unit should be designated as master unit. The other condensing unit not connected the control wires will be slave unit.

1. When Turning ON Power First Time

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

Status

Condensing unit

Test lamp H2P .... Blinks

Can also be set during operation described above.

Indoor unit

If ON button is pressed during operation described above, the “UH” error indicator blinks.
(Returns to normal when automatic setting is complete.)

2. When Turning ON Power the Second Time and Subsequent

Tap the RESET button on the condensing unit PCB. Operation becomes possible for about 2 minutes. If you do not press the RESET button, the unit cannot be run for up to 10 minutes to automatically set main power.

Status

Condensing unit

Test lamp H2P .... Blinks

Can also be set during operation described above.

Indoor unit

If ON button is pressed during operation described above, the operation lamp lights but the compressor does not operate. (Returns to normal when automatic setting is complete.)

3. When an Indoor Unit or Condensing Unit has been Added, or Indoor or condensing Unit PCB has been Changed

Be sure to press 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-condensing unit address, etc.)

Status

Condensing unit	Test lamp H2P .... Blinks Can also be set during operation described above.
Indoor unit	If ON button is pressed during operation described above, the "UH" or "UY" error indicator blinks. (Returns to normal when automatic setting is complete.)

Caution When the 400 volt power supply is applied to "N" phase by mistake, replace the Inverter PCB (A2P) and control transformer (T1R) in switch box together.

1.1.3 Check Operation

Be sure to conduct the check operation. If the check operation is not conducted, the error code "U3" will be displayed on the remote controller, thus disabling the normal operation.
Through the following procedure, the check operation is automatically conducted. A period of approximately 20 minutes (approximately 30 minutes at maximum) is required to complete the judgement.

Check Setting mode 1

If the LED "H1P" turns OFF, the system is set to "Setting mode 1".
If the "H1P" turns ON or blinks, pressing the MODE button (BS1) will set the system to "Setting mode 1".

Start the check operation.

Press and hold the TEST OPERATION (BS4) button on the condensing unit PCB for a period of 5 seconds or more.

The following check operation is automatically started.
1 Check the wrong wiring.
2 Check whether or not the stop valve is failed to open.
3 Check the refrigerant for overcharging.
4 Judge the piping length automatically.

*1. The "H2P" blinks during operation, and "TEST OPERATION" and "UNDER CENTRALIZED CONTROL" are displayed on the remote controller.
*2. There may be cases where a period of approximately 10 minutes are required for the compressor to start up, which, however, is not an error but used to ensure even refrigerant conditions.
*3. The check operation will be automatically conducted in cooling mode.
*4. In order to stop the compressor operation, press the RETURN (BS3) button. The compressor will stop after the completion of residual operation for a period of approximately 30 seconds. (The compressor operation cannot be stopped from the remote controller.)

Completion of check operation

After the completion of check operation, check the operation results through the LED displays.

(For normal completion) ● ● ○ ● ● ● ●
(For abnormal completion) ● ○ ○ ● ● ● ● → Check the error code on the remote controller and then rectify the error according to information in the "Troubleshooting".

<Precautions for check operation>

· If the test operation is started within approximately 12 minutes after turning ON the power supply to the indoor and

condensing units, H2P will turn ON and the compressor will not operate. Referring to information in table in “1.1.2 Turn Power ON (on P.85)”, check to be sure the LED displays are normal and then operate the compressor.

· For the condensing multi system, an unit to which the indoor unit connecting wires are connected serves as the master unit. Be sure to make settings with Branch Selector button on the master unit.
· The system may require up to 10 minutes until it can start the compressor after an operation start. This is a normal operation to equalize the refrigerant distribution.
· No errors can be checked on individual indoor unit. After the completion of this test operation, check the individual indoor unit for any errors while in normal operation mode using the remote controller.
· While in check operation mode, the indoor units as well as the condensing units start the operation. Do not attempt to conduct the check operation while working on the indoor unit.
· Work with all the condensing panels closed except for the switch box.
· Close the condensing panel except operating a Branch Selector button or installation a charge hose.
· If you start normal operation without completion of a check operation, an error code "UY" is displayed and cannot conduct a normal operation.

[LED display in the case of multi condensing unit system] (Same as that in emergency operation)

∗ Discriminate the operating status of the master unit/slave units through the following LED display.

LED display (○: ON ●: OFF ◑: Blink)
H1P — — — H7P H8P

Master: ●●○●●●● ○
Slave 1: ●●●●●●● ◑
Slave 2: ●●●●●●● ● (Factory setting)

Error code

In case of an alarm code displayed on remote controller:

Error code	Installation error	Remedial action
E3 E4 F3 F6 UF U2	The stop valve of an condensing unit is not opened.	Open the stop valve. Check referring to the table in "**Additional refrigerant charge**".
U1	The phases of the power to the condensing units are reversed.	Exchange 2 of the 3 phases (L1, L2, L3) to make a positive phase connection.
U1 U2 U4	No power is supplied to an condensing or indoor unit (including phase interruption).	Check if the power wiring for the condensing units are connected correctly. (If the power wire is not connected to L2 phase, no error display will appear and the compressor will not work.) Check if the ground fault circuit interrupter in the condensing unit is ON.
UF	Incorrect transmission between units	Check if the refrigerant piping line and the unit transmission wiring are consistent with each other.
E3 F6 UF U2	Refrigerant overcharge	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge amount by recovering any excessive refrigerant with a refrigerant recovery machine.
E4 F3	Insufficient refrigerant	■ 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.
U7 UF	If an condensing multi terminal is connected when there is 1 condensing unit installed	Remove the line from the condensing multi terminals (Q1 and Q2).
UF E4	The operation mode on the remote controller was changed before the check operation.	Set the operation mode on all indoor unit remote controllers to "cooling."
HJ	The heat source water is not circulating.	Make sure that the water pump is running.
U3	The check operation has not been performed.	Perform the check operation.
E2 E3	E3 is activated, so ON/OFF button is pressed on the remote controller, but this does not turn E3 OFF. Or E2 is activated. In case of above, there is an error of the compressor in the condensing unit.	Measure the insulation resistance of the compressor to check the condition of the compressor.

If any error codes other than the above are displayed, check the service manual for how to respond.

1.1.4 Confirmation on Normal Operation

Conduct normal unit operation after the check operation has been completed.

(1) Confirm that the indoor/condensing 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.)
(2) Operate indoor unit one by one to check that the corresponding condensing unit operates.
(3) Confirm that the indoor unit discharges cold air (or warm air).
(4) Operate the air direction control button and airflow rate control button to check the function of the devices.

Precautions for checking normal operation

For a period of approximately 5 minutes after the compressor stops, even if the ON/OFF button for the indoor units in one and the same system is pressed, the compressor will not operate.

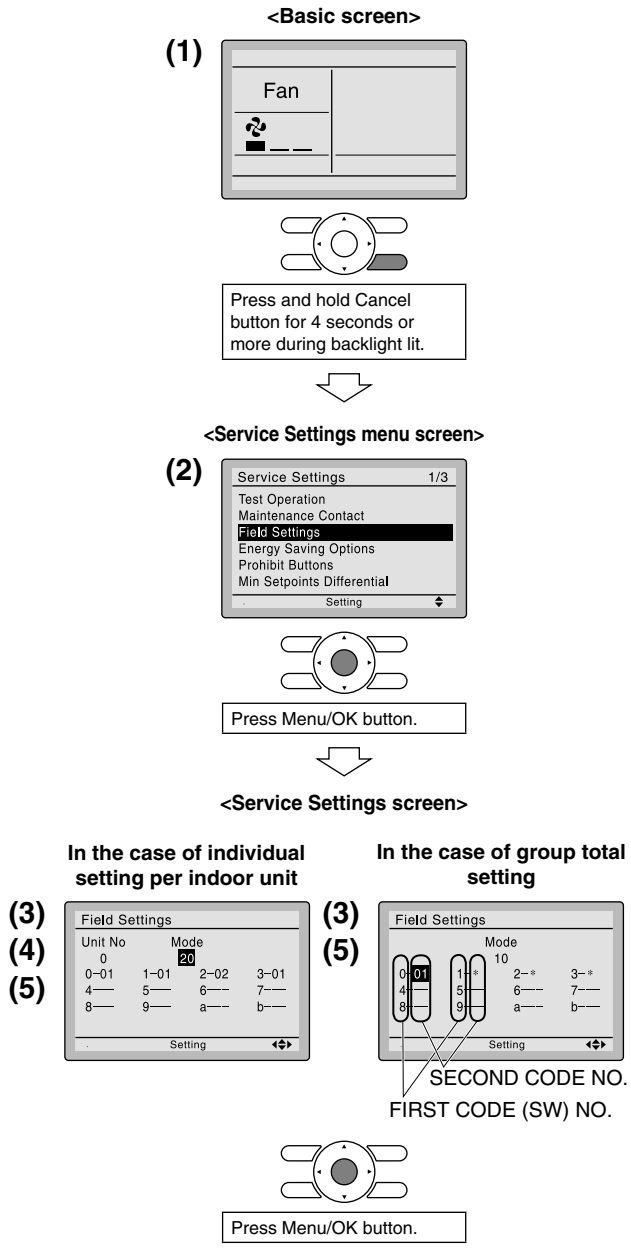
- **After stopping the compressor operation using the remote controller, the condensing unit may conduct the residual operation for a period of 5 minutes at maximum.**
- **When the check operation is not conducted using the TEST OPERATION button at the first test operation after installation, the error code "U3" will be displayed. Be sure to conduct the check operation according to 1.1.3 Check Operation .**
- **After the test operation, when handing the unit over to the customer, make sure the electrical components box lid, the service lid, and the unit casing are all attached.**

2. Field Setting from Remote Controller

Individual function of indoor unit can be changed from the remote controller. At the time of installation or after service inspection / repair, make the field setting in accordance with the following description.
Wrong setting may cause error.
(When optional accessory is mounted on the indoor unit, setting for the indoor unit may be required to change. Refer to information in the option handbook.)

2.1 Wired Remote Controller

2.1.1 BRC1E71/72



1. Press and hold Cancel button for 4 seconds or more.
Service settings menu is displayed.

2. Select Field Settings in the Service Settings menu, and press Menu/OK button.
Field settings screen is displayed.

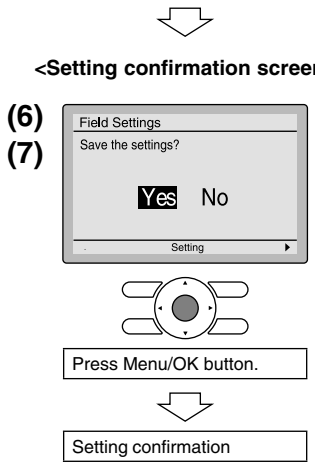
3. Highlight the mode, and select desired “Mode No.” by using ▲▼ (Up/Down) button.

4. In the case of setting per indoor unit during group control (When Mode No. such as 20 , 21 , 22 , 23 , 25 are selected), highlight the unit No. and select “Indoor unit No.” to be set by using ▲▼ (Up/Down) button.
(In the case of group total setting, this operation is not needed.)

> In the case of individual setting per indoor unit, current settings are displayed. And, SECOND CODE NO. “ - ” means no function.

5. Highlight SECOND CODE NO. of the FIRST CODE NO. to be changed, and select desired “SECOND CODE NO.” by using ▲▼ (Up/Down) button. Multiple identical mode number settings are available.

> In case of setting for all indoor units in the remote control group, available SECOND CODE NO. is displayed as “ ∗ ” which means it can be changed.
> When SECOND CODE NO. is displayed as “ - ”, there is no function.



6. Press Menu/OK button. Setting confirmation screen is displayed.

7. Select Yes and press Menu/OK button. Setting details are determined and field settings screen returns.

8. In the case of multiple setting changes, repeat "**(3)**" to "**(7)**".

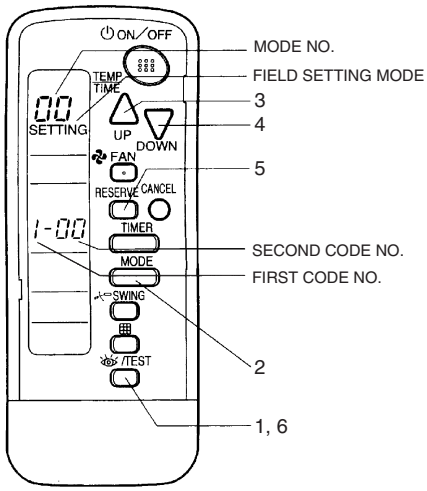
9. After all setting changes are completed, press Cancel button twice.

10. Backlight goes out, and "Checking the connection. Please standby." is displayed for initialization. After the initialization, the basic screen returns.

NOTE

- Installation of optional accessories on the indoor unit may require changes to field settings. See the manual of the optional accessory.
- For field setting details related to the indoor unit, see installation manual shipped with the indoor unit.

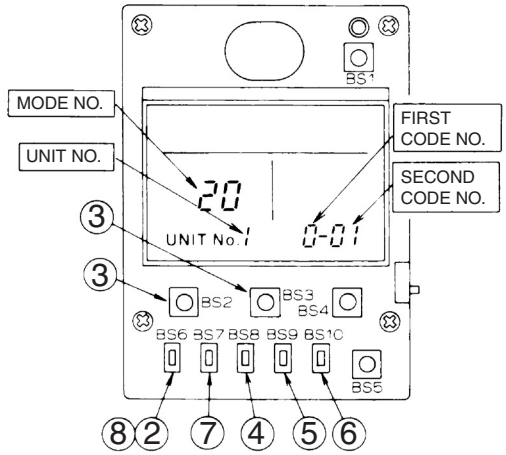
2.2 Wireless Remote Controller



1. When in the normal mode, press the " /TEST " button for 4 seconds or more, and operation then enters the "field setting mode."
2. Select the desired "mode No." with the " MODE " button.
3. Pressing the " UP " button, select the first code No.
4. Pressing the " DOWN " button, select the second code No.
5. Press the timer " RESERVE " button and check the settings.
6. Press the " /TEST " button to return to the normal mode.

(Example)
When setting the filter sign time to "Contamination Heavy" in all group unit setting, set the Mode No. to "10", First code No. to "0" and second code No. to "02".

2.3 Simplified Remote Controller



1. Remove the upper part of remote controller.
2. When in the normal mode, press the [BS6] BUTTON (②) (field setting), and the FIELD SETTING MODE is entered.
3. Select the desired MODE No. with the [BS2] BUTTON (③) (temperature setting ▲) and the [BS3] BUTTON (③) (temperature setting ▼).
4. During group control, when setting by each indoor unit (mode No. 20, 22, and 23 have been selected), press the [BS8] (④) BUTTON (unit No.) and select the INDOOR UNIT NO. to be set. (This operation is unnecessary when setting by group.)
5. Press the [BS9] BUTTON (⑤) (set A) and select FIRST CODE NO.
6. Press the [BS10] BUTTON (⑥) (set B) and select SECOND CODE NO.
7. Press the [BS7] BUTTON (⑦) (set/cancel) once and the present settings are SET.
8. Press the [BS6] BUTTON (⑧) (field setting) to return to the NORMAL MODE.
9. (Example) If during group setting and the time to clean air filter is set to FILTER CONTAMINATION - HEAVY, SET MODE NO. to “10”, FIRST CODE NO. to “0”, and SECOND CODE NO. to “02”.

2.4 Setting Contents and Code No. for Indoor Units

: Factory setting

Mode No. (∗2)	First Code No.	Setting Contents		Second Code No. 01		02		03	04
10(20)	0	Filter contamination heavy/ light (Setting for display time to clean air filter) (Sets display time to clean air filter to half when there is heavy filter contamination.)	Ultra long life filter	Light	Approx. 10,000 hrs.	Heavy	Approx. 5,000 hrs.	—	—
			Long life filter		Approx. 2,500 hrs.		Approx. 1,250 hrs.		
			Standard filter		Approx. 200 hrs.		Approx. 100 hrs.		
	0 (∗6)	Filter dirt		Light		Heavy		—	—
	1	Long life filter type		Long life filter		Ultra long life filter		—	—
	1 (∗6)	Filter cleaning sign time (Light/Heavy)		2,500/1,250		10,000/5,000		—	—
	2	Selection of thermistor		Remote controller + Body thermostat		Only body thermostat		Only remote controller thermostat	—
	2 (∗6)	Remote sensor and remote controller thermistor		Both		Remote thermistor		Remote controller thermistor	—
	3	Display time to clean air filter calculation (Set when filter sign is not to be displayed.)		Display		No display		—	—
	7	4 step thermostat processing		Symbol (∗8): 01 / 02 / 03 / 04 / 05 / 06 Ttson: -7.2°F / -6.3°F / -5.4°F / -4.5°F / -3.6°F / -2.7°F Ttsoff: -3.6°F / -2.7°F / -1.8°F / -0.9°F / 0°F / 0.9°F					
11 (21)	3 (∗6)	Electric heater setting		Heat Pump lockout mode		—		Auxiliary electric heater + Heat Pump lockout mode	—
	4 (∗6)	Electric heater step setting		With heater		—		Without heater	
12(22)	0	Optional accessories output selection (field selection of output for adaptor for wiring)		Indoor unit turned ON by thermostat		—		Operation output	Error output
	1	ON/OFF input from condensing (Set when ON/ OFF is to be controlled from outside.)		Forced OFF		ON/OFF control		External protection device input	—
	2	Thermostat differential changeover (Set when remote sensor is to be used.)		1.8°F		0.9°F (∗7)		—	—
	3	Airflow setting when heating thermostat is OFF		LL		Set fan speed		—	—
	4	Automatic mode differential (automatic temperature differential setting for VRV system heat recovery series cool/heat)		01:0	02:1.8	03:3.6	04:5.4	05:7.2 / 06:9.0	07:10.8 / 08:12.6
	5	Power failure automatic reset		Not equipped		Equipped		—	—
	6	Airflow setting when cooling thermostat is OFF		LL		Set fan speed		—	—
13(23)	0	Setting of normal airflow		N		H		S	—
	1	Selection of airflow direction (Set when a blocking pad kit has been installed.)		F (4 directions)		T (3 directions)		W (2 directions)	—
	3	Operation of downward flow flap: Yes/No		Equipped		Not equipped		—	—
	4	Field setting airflow position setting		Draft prevention		Standard		Ceiling Soiling prevention	—
	5	Setting of static pressure selection		Standard		High static pressure		—	—
14 (24)	4 (∗6)	Setting of humidifier / air purifier fan tap		Remote controller setting		H tap		—	—
	5 (∗6)	Humidifier residual operation time		30 sec.		60 sec.		120 sec.	—
15(25)	1	Thermostat OFF excess humidity		Not equipped		Equipped		—	—
	2	Direct duct connection (when the indoor unit and heat reclaim ventilator unit are connected by duct directly.) (∗5)		Not equipped		Equipped		—	—
	3	Drain pump humidifier interlock selection		Not equipped		Equipped		—	—
	5	Field setting selection for individual ventilation setting by remote controller		Not equipped		Equipped		—	—

Note:

1. Settings are made simultaneously for the entire group, however, if you select the mode No. inside parentheses, you can also set by each individual unit. Setting changes however cannot be checked except in the individual mode for those in parentheses.

∗2. The mode numbers inside parentheses cannot be used by wireless remote controllers, so they cannot be set individually. Setting changes also cannot be checked.

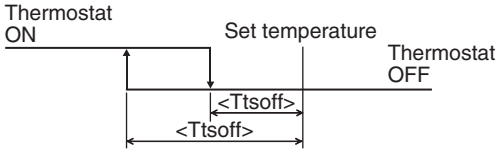
3. Do not make settings other than those described above. Nothing is displayed for functions the indoor unit is not equipped with.
4. “88” may be displayed to indicate the remote controller is resetting when returning to the normal mode.

∗5. If the setting mode to “Equipped”, heat reclaim ventilator fan conducts the fan residual operation by linking to indoor unit.

∗6. Only for FXTQ

∗7. For FXTQ: Factory setting is “02”.

∗8.



2.4.1 Applicable Range of Field setting

Setting Modes	Ceiling mounted cassette type		Slim ceiling mounted duct type	Ceiling mounted duct type	Ceiling suspended type	Wall mounted type	Floor standing type	Concealed floor standing type	Air handling unit
	Round flow	4 way flow							
	FXFQ	FXZQ	FXDQ	FXMQ	FXHQ	FXAQ	FXLQ	FXNQ	FXTQ
Filter sign	○	○	○	○	○	○	○	○	○
Ultra long life filter sign	○	○	—	—	—	—	—	—	○
Remote controller	○	○	○	○	○	○	○	○	○
Set fan speed when thermostat OFF	○	○	○	○	○	○	○	○	○
Airflow adjustment ceiling height	○	—	—	—	○	—	—	—	—
Airflow direction	○	○	—	—	—	—	—	—	—
Airflow direction adjustment (Down flow operation)	—	—	—	—	—	—	—	—	—
Airflow direction adjustment range	○	○	—	—	—	—	—	—	—
Field setting fan speed selection	○	—	○∗1	○∗1	—	—	—	—	

∗1 Static pressure selection

2.4.2 Detailed Explanation of Setting Modes

Filter Sign Setting

If switching the filter sign ON time, set as given in the table below.

Mode No.	First Code No.	Second Code No.	Standard Filter	Long Life Filter	Ultra Long Life Filter	Setting
10 (20)	0	01	200 hrs.	2,500 hrs.	10,000 hrs.	Contamination Light
		02	100 hrs.	1,250 hrs.	5,000 hrs.	Contamination Heavy

■ **FXTQ**

Mode No.	First Code No.	Second Code No.	Setting
10 (20)	0	01	Low
		02	High

Ultra Long Life Filter Sign Setting

When a Ultra long life filter is installed, the filter sign timer setting must be changed.

Mode No.	First Code No.	Second Code No.	Setting
10 (20)	1	01	Long Life Filter
		02	Ultra Long Life Filter

■ **FXTQ**

Mode No.	First Code No.	Second Code No.	Setting
10 (20)	1	01	Display time: 2,500/1,250
		02	Display time: 10,000/5,000

Selection of Thermistor

Select the thermistor to control room temperature.

Mode No.	First Code No.	Second Code No.	Thermistor that controls room temperature
10 (20)	2	01	Room temperature thermistor in remote controller and suction air thermistor for indoor unit
		02	Suction air thermistor for indoor unit
		03	Room temperature thermistor in remote controller

The factory setting for the Second Code No. is "01" and room temperature is controlled by the indoor unit suction air thermistor and room temperature thermistor in remote controller.
When the Second Code No. is set to "02", room temperature is controlled by the suction air thermistor.
When the Second Code No. is set to "03", room temperature is controlled by the room temperature thermistor in remote controller.

"Filter Cleaning" Displayed or Not Displayed

Whether or not to display "Filter Cleaning" after operation of certain duration can be selected.

Mode No.	First Code No.	Second Code No.	"Filter Cleaning" display
10 (20)	3	01	Display
		02	No display

4 Step Thermostat Processing (for FXTQ model)

Auxiliary electric heater ON/OFF temperature setting

Mode No.	First Code No.	Symbol	Second Code No.					
			01	02	03	04	05	06
10 (20)	7	<Ttson>	-7.2°F	-6.3°F	-5.4°F	-4.5°F	-3.6°F	-2.7°F
		<Ttsoff>	-3.6°F	-2.7°F	-1.8°F	-0.9°F	0°F	0.9°F

Electric Heater Setting (for FXTQ model)

Selection of the heater

The capacity of the electric heater should be selected locally/

Mode No.	First Code No.	Second Code No.	Setting
11 (21)	3	01	Heat Pump lockout mode
		03	Auxiliary electric heater + Heat Pump lockout mode

01: When the heating capacity of the heat pump is insufficient during heating, the heat pump is stopped and heating operation is performed with an electric heater. (It is switched by a hot water heating instruction from the condensing unit.)

03: If heating is insufficient in heat pump system alone, an electric heater is used as the auxiliary electric heater.

Electric Heater Step Setting (for FXTQ model)

Mode No.	First Code No.	Second Code No.	Setting
11 (21)	4	01	With heater
		03	Without heater

01: Controls ON/OFF of the heater in accordance with the thermostat step.

03: Without heater

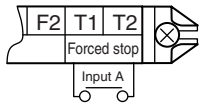
Optional Output Switching

Using this setting, "operation output signal" and "abnormal output signal" can be provided. Output signal is output between terminals X1 and X2 of "adaptor for wiring", an optional accessory.

Mode No.	First Code No.	Second Code No.	Remarks
12 (22)	0	01	Indoor unit thermostat ON/OFF signal is provided.
		03	Output linked with "Start/Stop" of remote controller is provided.
		04	In case of "Error Display" appears on the remote controller, output is provided.

External ON/OFF Input

This input is used for "ON/OFF operation" and "Protection device input" from the condensing. The input is performed from the T1-T2 terminal of the operation terminal block in the **electrical components box** .



Mode No.	First Code No.	Second Code No.	Operation by input of the signal A
12 (22)	1	01	ON: Forced stop (prohibition of using the remote controller) OFF: Permission of using the remote controller
		02	OFF → ON: Permission of operation ON → OFF: Stop
		03	ON: Operation OFF: The system stops, then the applicable unit indicates "A0". The other indoor units indicate "U9".

Thermostat Switching

Differential value during thermostat ON/OFF control can be changed.

Mode No.	First Code No.	Second Code No.	Differential value
12(22)	2	01	1.8°F
		02	0.9°F

Airflow Setting when Heating Thermostat is OFF

This setting is used to set airflow when heating thermostat is OFF.

* When thermostat OFF airflow volume up mode is used, careful consideration is required before deciding installation location.

Mode No.	First Code No.	Second Code No.	Setting
12 (22)	3	01	LL airflow
		02	Preset airflow

Setting of Operation Mode to "AUTO"

This setting makes it possible to change differential values for mode selection while in automatic operation mode.

Mode No.	First Code No.	Second Code No.							
		01	02	03	04	05	06	07	08
12 (22)	4	0°F	1.8°F	3.6°F	5.4°F	7.2°F	9.0°F	10.8°F	12.6°F

The automatic operation mode setting is made by the use of the "Operation Mode Selector" button.

Auto Restart after Power Failure Reset

For the air conditioners with no setting for the function (same as factory setting), the units will be left in the stop condition when the power supply is reset automatically after power failure reset or the main power supply is turned ON again after once turned OFF. However, for the air conditioners with the setting, the units may start automatically after power failure reset or the main power supply turned ON again (return to the same operation condition as that of before power failure).

For the above reasons, when the unit is set enabling to utilize “Auto restart function after power failure reset”, utmost care should be paid for the occurrence of the following situation.

⚠ Caution

1. The air conditioner starts operation suddenly after power failure reset or the main power supply turned ON again. Consequently, the user might be surprised (with question for the reason why).

2. In the service work, for example, turning OFF the main power switch during the unit is in operation, and turning ON the switch again after the work is completed start the unit operation (the fan rotates).

Airflow when Cooling Thermostat is OFF

This is used to set airflow to "LL airflow" when cooling thermostat is OFF.

Mode No.	First Code No.	Second Code No.	Setting
12 (22)	6	01	LL airflow
		02	Preset airflow

Setting of Normal Airflow

Make the following setting according to the ceiling height. The second code No. is set to “01” at the factory.

■ **In the Case of FXAQ, FXHQ**

Mode No.	First Code No.	Second Code No.	Setting
13 (23)	0	01	Standard
		02	Slight increase
		03	Normal increase

■ **In the Case of FXFQ12~30**

Mode No.	First code No.	Second code No.	Setting	Ceiling height		
				4-way Outlets	3-way Outlets	2-way Outlets
13 (23)	0	01	Standard (N)	Lower than 8-29/32 ft	Lower than 9-29/32 ft	Lower than 11-1/2 ft
		02	High Ceiling (H)	Lower than 9-29/32 ft	Lower than 10-27/32 ft	Lower than 12-15/32 ft
		03	Higher Ceiling (S)	Lower than 11-1/2 ft	Lower than 11-1/2 ft	—

■ **In the Case of FXFQ36**

Mode No.	First code No.	Second code No.	Setting	Ceiling height		
				4-way Outlets	3-way Outlets	2-way Outlets
13 (23)	0	01	Standard (N)	Lower than 10-1/2 ft	Lower than 11-12/18 ft	Lower than 13-25/32 ft
		02	High Ceiling (H)	Lower than 11-12/18 ft	Lower than 13-1/8 ft	Lower than 13-25/32 ft
		03	Higher Ceiling (S)	Lower than 13-25/32 ft	Lower than 13-25/32 ft	—

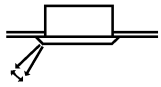
Airflow Direction Setting

Set the airflow direction of indoor units as given in the table below. (Set when optional air outlet blocking pad has been installed.) The second code No. is factory setting to “01.”

Mode No.	First Code No.	Second Code No.	Setting
13 (23)	1	01	F: 4-direction airflow
		02	T: 3-direction airflow
		03	W: 2-direction airflow

Setting of Airflow Direction Adjustment Range

Make the following airflow direction setting according to the respective purpose.



Mode No.	First Code No.	Second Code No.	Setting
13 (23)	4	01	Upward (Draft prevention)
		02	Standard
		03	Downward (Ceiling soiling prevention)

∗Some indoor unit models are not equipped with draft prevention (upward) function.

Setting of the Static Pressure Selection (for FXDQ model)

Model No.	First Code No.	Second Code No.	External static pressure
13 (23)	5	01	Standard (0.002 psi)
		02	High static pressure (0.006 psi)

Setting of Humidifier / Air Purifier Fan Tap (for FXTQ model)

Mode No.	First Code No.	Second Code No.	Setting
14 (24)	4	01	Remote controller setting
		02	H tap

Residual Operation Time (for FXTQ model)

Mode No.	First Code No.	Second Code No.	Setting
14 (24)	5	01	30 seconds
		02	60 seconds
		03	120 seconds

Humidification when Heating Thermostat is OFF

Setting to "Humidification Setting" turns ON the humidifier if suction air temperature is 68°F or above and turns OFF the humidifier if suction air temperature is 64°F or below when the heating thermostat is OFF.

Mode No.	First Code No.	Second Code No.	Setting
15 (25)	1	01	—
		02	Setting of humidifier

Setting of Direct Duct Connection

This is used when "fresh air intake kit equipped with fan" is connected. The indoor fan carries out residual operation for one minute after the thermostat is stopped. (For the purpose of preventing dust on the air filter from falling off.)

Mode No.	First Code No.	Second Code No.	Contents
15 (25)	2	01	Without direct duct connection
		02	With direct duct connection equipped with fan

Interlocked Operation between Humidifier and Drain Pump

This is used to interlock the humidifier with the drain pump. When water is drained out of the unit, this setting is unnecessary.

Mode No.	First Code No.	Second Code No.	Contents
15 (25)	3	01	Individual operation of humidifier
		02	Interlocked operation between humidifier and drain pump

Individual Setting of Ventilation

This is set to perform individual operation of Heat reclaim ventilator using the remote controller/central unit when Heat reclaim ventilator is built in.
(Switch only when Heat reclaim ventilator is built in.)

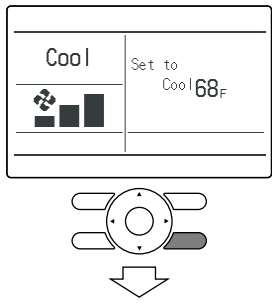
Mode No.	First Code No.	Second Code No.	Contents
15 (25)	5	01	—
		02	Individual operation of ventilation

2.4.3 Centralized Control Group No. Setting

BRC1E Type

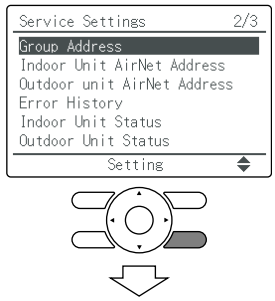
In order to conduct the centralized remote control using the central remote controller and the unified ON/OFF controller, Group No. settings should be made by group using the operating remote controller.
Make Group No. settings for centralized remote control using the operating remote controller.

(1) <Basic screen>



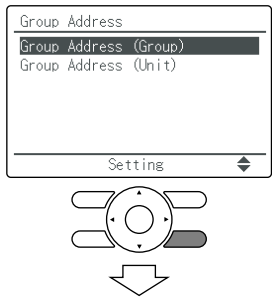
1. Press and hold Cancel button for 4 seconds or more. Service Settings menu in displayed.

(2) <Service Settings menu screen>



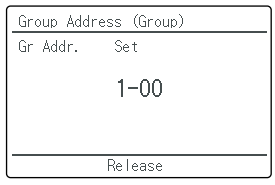
2. Select Group Address , and press Menu/OK button. Group Address screen is displayed.

(3) <Group Address>



3. Select Group Address (Group), and press Menu/OK button. Group Address (Group) screen is displayed.

(3) <Group Address (Group)>



4. Select the group No. by using ▲▼ (Up/Down) button. Press Menu/OK button.

Note:

- For wireless remote controller, see the following.
- For setting group No. of Heat reclaim ventilator and wiring adaptor for other air conditioners, etc., refer to the installation manual attached.

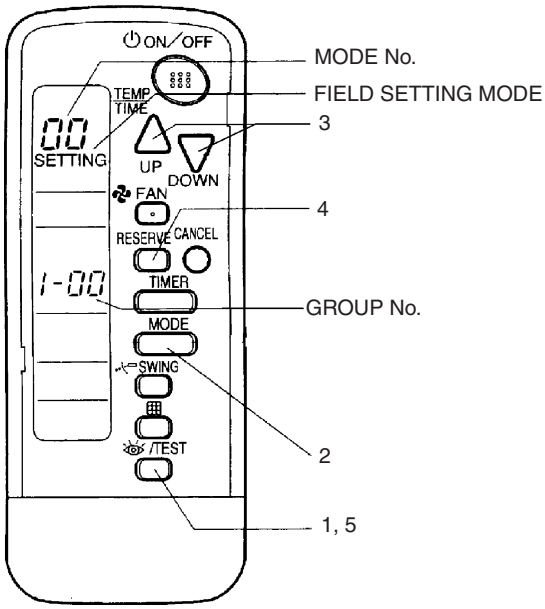
NOTICE

Enter the group No. and installation place of the indoor unit into the attached installation table. Be sure to keep the installation table with the operation manual for maintenance.

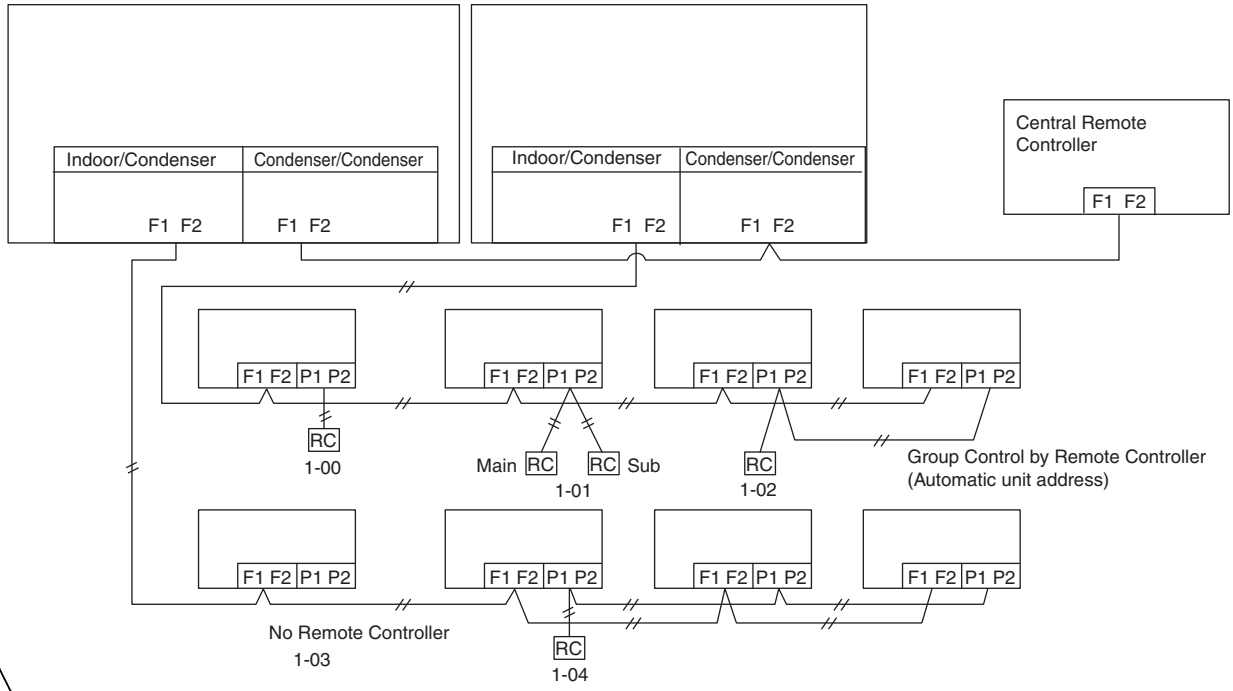
BRC7C Type / BRC7E Type / BRC4C Type

■ Group No. setting by wireless remote controller for centralized control

1. When in the normal mode, press " /TEST " button for 4 seconds or more, and operation then enters the "field setting mode."
2. Set mode No. "00" with " MODE " button.
3. Set the group No. for each group with " UP " " DOWN " button (advance/backward).
4. Enter the selected group numbers by pressing " RESERVE " button.
5. Press " /TEST " button and return to the normal mode.



Group No. Setting Example



Caution:

When turning the power supply ON, the unit may often not accept any operation while "88" is displaying after all indications were displayed once for about 1 minute on the liquid crystal display. This is not an operative fault.

2.4.4 Setting of Operation Control Mode from Remote Controller (Field Setting)

The operation control mode is compatible with a variety of controls and operations by limiting the functions of the operation remote controller. Furthermore, operations such as remote controller ON/OFF can be limited in accordance with the combination conditions. (Refer to information in the table on the next page.)
Centralized controller is normally available for operations. (Except when centralized monitor is connected)

2.4.5 Contents of Control Modes

20 modes consisting of combinations of the following 5 operation modes with temperature and operation mode setting by remote controller can be set and displayed by operation modes 0 through 19.

- ON/OFF control impossible by remote controller
  Used when you want to turn ON/OFF by central remote controller only.
  (Cannot be turned ON/OFF by remote controller.)
- OFF control only possible by remote controller
  Used when you want to turn ON by central remote controller only, and OFF by remote controller only.
- Centralized
  Used when you want to turn ON by central remote controller only, and turn ON/OFF freely by remote controller during set time.
- Individual
  Used when you want to turn ON/OFF by both central remote controller and remote controller.
- Timer operation possible by remote controller
  Used when you want to turn ON/OFF by remote controller during set time and you do not want to start operation by central remote controller when time of system start is programmed.

Selection of Control Mode No.

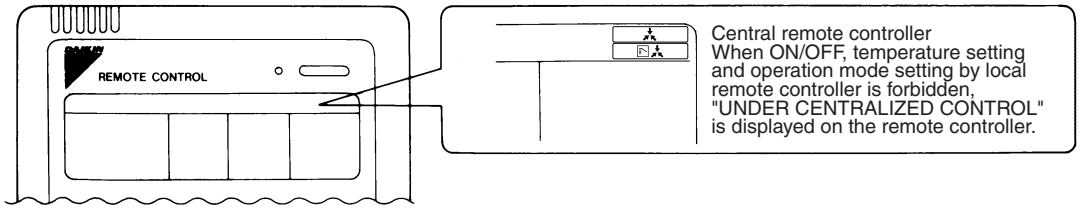
Select whether to accept or to reject the operation from the remote controller regarding the operation, stop, temperature setting and operation mode setting, respectively, and determine the particular control mode from the rightmost column of the table below.

(Example)

Operation by remote controller (at time of unified operation by centralized control)	Operation by remote controller (at time of unified operation by centralized control)	Stop by remote controller	Temperature control by remote controller	Operation mode setting by remote controller
↓	↓	↓	↓	↓
[Rejection]	[Rejection]	[Rejection]	[Acceptance]	[Acceptance]

⇨ The control mode is " 1 ".

Operation mode	Control by remote controller					Control mode
	Operation		Stop	Temperature control	Operation mode setting	
	Unified operation, individual operation by central remote controller, or operation controlled by timer	Unified stop, individual stop by central remote controller, or timer stop				
ON/OFF control impossible by remote controller	Rejection (Example)	Rejection (Example)	Rejection (Example)	Rejection	Acceptance	0
					Rejection	10
				Acceptance (Example)	Acceptance (Example)	1 (Example)
					Rejection	11
Only OFF control possible by remote controller			Acceptance	Rejection	Acceptance	2
					Rejection	12
				Acceptance	Acceptance	3
					Rejection	13
Centralized	Acceptance			Rejection	Acceptance	4
					Rejection	14
				Acceptance	Acceptance	5
					Rejection	15
Individual		Acceptance		Rejection	Acceptance	6
					Rejection	16
				Acceptance	Acceptance	7
					Rejection	17
Timer operation possible by remote controller	Acceptance (During timer at ON position only)	Rejection (During timer at OFF position)		Rejection	Acceptance	8
					Rejection	18
				Acceptance	Acceptance	9
					Rejection	19



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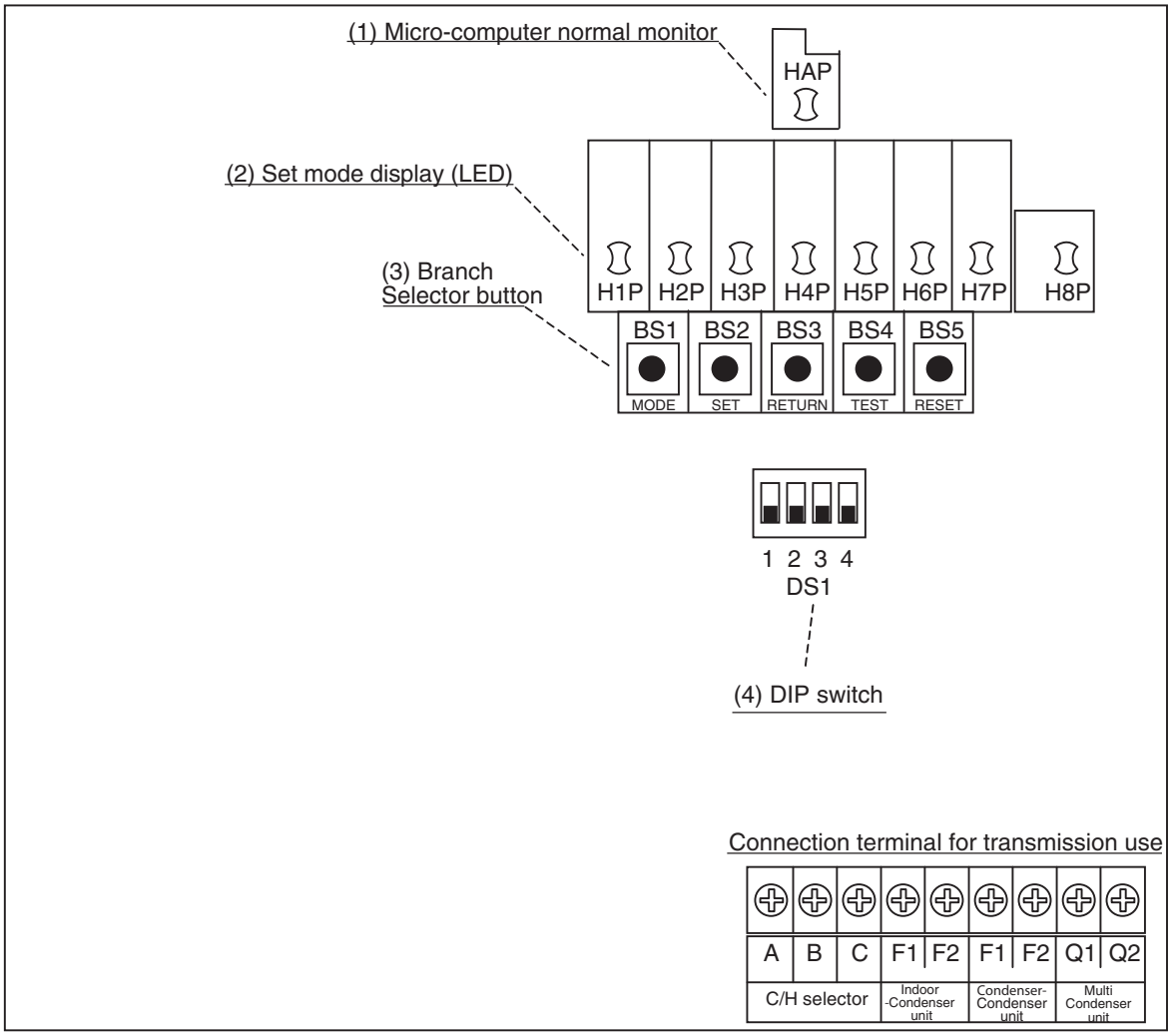
3. Field Setting from Condensing Unit

3.1 Location of DIP Switch and Branch Selector Button

Condensing unit PCB



(1) Micro-computer normal monitor
This monitor blinks while in normal operation, and turns ON or OFF when an error occurs.

(2) Set mode display (LED)
LEDs display mode according to the setting.

(3) Branch Selector button
Used to change mode.

(4) DIP switch
Used to make field settings.

3.2 Setting by DIP Switches

The following field settings are made by DIP switches on PCB.

Dip Switch		Setting Item	Description
No.	Setting		
DS1-1	ON	Cool/Heat select	Used to set cool/heat select by remote controller equipped with condensing unit.
	OFF (Factory setting)		
DS1-2 ~DS1-4	ON	Not used	Do not change the factory settings.
	OFF (Factory setting)		
DS2-1 ~4	ON	Not used	Do not change the factory settings.
	OFF (Factory setting)		

Caution

DIP switch setting after changing the condensing unit main PCB (A1P) to spare PCB

When you change the **condensing** unit main PCB (A1P) to spare PCB, please carry out the following setting.

Initial Condition

DS No.	Item	Contents	
DS1-1	—	—	
DS1-2	Power supply setting	ON	208V/230V
		OFF	460V
DS1-3	—	—	
DS1-4	—	—	
DS2-1	Domestic/ Overseas setting	ON	Overseas
		OFF	Domestic
DS2-2	HP setting (Horse power)		
DS2-3			
DS2-4			

	72	84
DS2-2	ON	OFF
DS2-3	OFF	ON
DS2-4	OFF	OFF

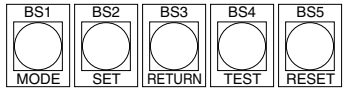
3.3 Setting by Branch Selector Buttons

The following settings are made by Branch Selector buttons on PCB.
In case of multi condensing unit system, various items should be set with the master unit.
(Setting with the slave unit is disabled.)
The master unit and slave unit can be discriminated with the LED indication as shown below.

○: ON ●: OFF ◑: BLINK

	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
Master unit	●	●	○	●	●	●	●	○
Slave unit 1	●	●	●	●	●	●	●	◑
Slave unit 2	●	●	●	●	●	●	●	●

(Factory setting)



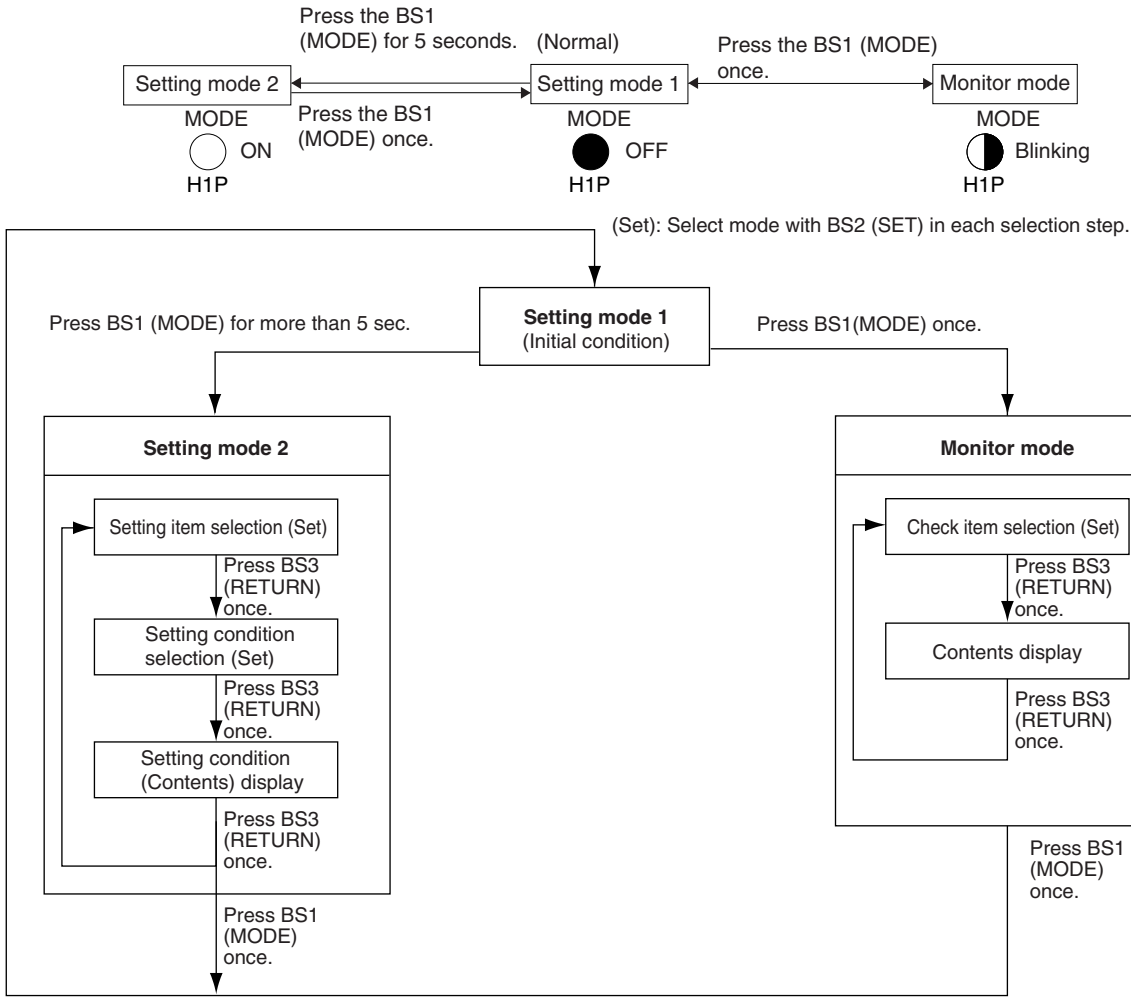
There are the following 3 setting modes.

(1) Setting mode 1 (H1P OFF)
Initial status (when normal) : Used to select the cool/heat setting. Also indicates during “abnormal” and “demand control”.

(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.

■ **Mode changing procedure**
Using the MODE button, the modes can be changed as follows.



3.4 Setting Mode 1

Normally, “Setting mode 1” is set. In case of other status, press MODE button (BS1) once and set to “setting mode 1”.

<Selection of setting items>

Press the SET button (BS2) and set LED display to a setting item you want.

- Regarding setting item No. 1, 5 only the present status is displayed. For the respective description, refer to the table 1.
- The cool/heat selection setting can be changed on setting item 2, 3, 4.
  → After setting, press the RETURN button (BS3) and decide the item.

When the RETURN button (BS3) is pressed, the status becomes the initial status of “setting mode 1”.

Table 1 ○: ON ●: OFF ◑: BLINK

No.	Setting (displaying) Item	LED Display Example						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
1	Display for error / preparing / test operation *	●	●	○	●	●	●	●
2	C/H selector (individual)	●	●	○	●	●	●	●
3	C/H selector (master)	●	●	●	○	●	●	●
4	C/H selector (slave)	●	●	●	●	○	●	●
5	Demand operation *	●	●	○	●	●	●	●

* Setting No. 1, 5 are the present status display only.

Display for error/preparing/test operation

Normal	●	●	○	●	●	●	●
Error	●	○	○	●	●	●	●
Preparing/Test operation	●	◑	○	●	●	●	●

Display during demand operation

Normal	●	●	○	●	●	●	●
During demand operation	●	●	○	●	●	●	○

H3P to H5P LED display changes depending on setting No. 2, 3, 4.

3.5 Setting Mode 2

Press and hold the MODE button (BS1) for 5 seconds and set to "setting mode 2".

↓

<Selection of setting items>

Press the SET button (BS2) and set the LED display to a setting item shown in the table on the right.

↓

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

↓

<Selection of setting conditions>

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

↓

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

↓

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

Note:

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

No.	Setting Item	Description
1	Cool/heat unified address	Sets address for cool/heat unified operation.
2	demand address	Sets address for demand operation
4	Number of units for sequential starting	Sets the number of units for sequential starting.
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 evaporating temperature for cooling
9	Tc setting	Target condensing temperature for heating
12	Demand setting	Reception of demand signal
13	AIRNET address	Sets address for AIRNET.
20	Additional refrigerant charge operation setting	Carries out additional refrigerant charge operation.
21	Refrigerant collection mode setting	Sets to refrigerant collection mode.
26	Interlock error display setting	Sets interlock error display
28	Power transistor check mode ∗Check after disconnection of compressor wires	Used for service 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.
30	Demand setting 1	Changes target value of power consumption when demand control 1 is input.
32	Normal demand setting	Normally 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.)
38	Emergency operation (Setting for the main unit operation prohibition in multi condensing unit system)	Used to temporarily prohibit the applicable condensing unit from operating should there be any defective part in multi condensing unit system. Since the comfortable environment is extremely impaired, prompt replacement of the part is required.
39	Emergency operation (Setting for the slave unit 1 operation prohibition in multi condensing unit system)	
40	Emergency operation (Setting for the slave unit 2 operation prohibition in multi condensing unit system)	

○: ON ●: OFF ◑: BLINK

No.	Setting Item	MODE H1P	TEST H2P	C/H Selection: IND H3P	C/H Selection: Master H4P	C/H Selection: Slave H5P	Low Night Noise Operation H6P	Demand H7P	Setting Condition: Contents		Setting Condition: LED Display (∗ Factory setting)
1	Cool / Heat Unified address	○	●	●	●	●	●	○	Address Binary number (6 digits)	0 1 ~ 31	○●●●●●● ∗ ○●●●●●○ ~ ○●○○○○○
2	Demand address	○	●	●	●	●	○	●	Address Binary number (6 digits)	0 1 ~ 31	○●●●●●● ∗ ○●●●●●○ ~ ○●○○○○○
4	Number of units for sequential starting	○	●	●	●	○	●	●	1 unit 2 units 3 units		○●●●●●○ ○●●●●○● ○●●●●○○
5	Indoor forced fan H	○	●	●	●	○	●	○	Normal operation Indoor forced fan H		○●●●●●○ ∗ ○●●●●○●
6	Indoor forced operation	○	●	●	●	○	○	●	Normal operation Indoor forced operation		○●●●●●○ ∗ ○●●●●○●
8	Te setting	○	●	●	○	●	●	●	Low (“L” tap) Normal (“M” tap) High ① High ② High ③ High ④ High ⑤	(“H” tap)	○●●●●●○ ○●●●●○● ∗ ○●●●●○○ ○●●●○●● ○●●●○●○ ○●●●○○● ○●●●○○○
9	Tc setting	○	●	●	○	●	●	○	Low Normal (factory setting) High		○●●●●●○ ○●●●●○● ∗ ○●●●○●●
12	Demand setting	○	●	●	○	○	●	●	Demand: NO Demand: YES		○●●●●●○ ∗ ○●●●●○●
13	AIRNET address	○	●	●	○	○	●	○	Address Binary number (6 digits)	0 1 ~ 63	○●●●●●● ∗ ○●●●●●○ ~ ○●○○○○○
20	Additional refrigerant operation setting	○	●	○	●	○	●	●	Refrigerant charging: OFF Refrigerant charging: ON		○●●●●●○ ∗ ○●●●●○●
21	Refrigerant recovery mode setting	○	●	○	●	○	●	○	Refrigerant recovery: OFF Refrigerant recovery: ON		○●●●●●○ ∗ ○●●●●○●
26	Interlock error display setting	○	●	○	○	●	○	●	OFF ON		○●●●●●○ ∗ ○●●●●○●
28	Power transistor check mode	○	●	○	○	○	●	●	OFF ON		○●●●●●○ ∗ ○●●●●○●
30	Demand setting 1	○	●	○	○	○	○	●	60 % demand 70 % demand 80 % demand		○●●●●●○ ○●●●●○● ∗ ○●●●○●●
32	Continuous demand setting	○	○	●	●	●	●	●	OFF ON		○●●●●●○ ∗ ○●●●●○●

○: ON ●: OFF ◑: BLINK

No.	Setting Item								Setting Condition	
	Setting Item	MODE H1P	TEST H2P	C/H Selection			Low Night Noise Operation H6P	Demand H7P	Contents	LED Display ✻ Factory setting
				IND H3P	Master H4P	Slave H5P				
38	Emergency operation (Master unit with multi- condensing unit system is inhibited to operate.)	○	○	●	●	○	○	●	OFF	○●●●●●○ ✻
									Master unit operation: Inhibited	○●●●●○●
39	Emergency operation (Slave unit 1 with multi condensing unit system is inhibited to operate.)	○	○	●	●	○	○	○	OFF	○●●●●●○ ✻
									Slave unit 1 operation: Inhibited	○●●●●○●
40	Emergency operation (Slave unit 2 with multi- condensing unit system is inhibited to operate.)	○	○	●	○	●	●	●	OFF	○●●●●●○ ✻
									Slave unit 2 operation: Inhibited	○●●●●○●

3.6 Monitor Mode

To enter the monitor mode, press the MODE button (BS1) when in “Setting mode 1”.

<Selection of setting item>

Press the SET button (BS2) and set the LED display to a setting item.

<Confirmation on setting contents>

Press the RETURN button (BS3) to display different data of set items.

Press the RETURN button (BS3) and switches to the initial status of “monitor mode”.

∗ Press the MODE button (BS1) and returns to “setting mode 1”.

○: ON ●: OFF ◑: BLINK

No.	Setting Item	LED Display							Data Display
		H1P	H2P	H3P	H4P	H5P	H6P	H7P	
0	Various setting	◑	●	●	●	●	●	●	(∗2)
1	C/H unified address	◑	●	●	●	●	●	○	Lower 6 digits (∗3)
2	Demand address	◑	●	●	●	●	○	●	
4	AIRNET address	◑	●	●	●	○	●	●	
5	Number of connected indoor units	◑	●	●	●	○	●	○	
6	Number of connected Branch Selector units	◑	●	●	●	○	○	●	
7	Number of connected zone units (excluding condensing and Branch Selector units unit)	◑	●	●	●	○	○	○	
8	Number of condensing units	◑	●	●	○	●	●	●	
9	Number of connected Branch Selector units	◑	●	●	○	●	●	○	Lower 4 digits: upper (∗4)
10	Number of connected Branch Selector units	◑	●	●	○	●	○	●	Lower 4 digits: lower (∗4)
11	Number of zone units (excluding condensing and Branch Selector units)	◑	●	●	○	●	○	○	Lower 6 digits (∗3)
12	Number of terminal blocks	◑	●	●	○	○	●	●	Lower 4 digits: upper (∗4)
13	Number of terminal blocks	◑	●	●	○	○	●	○	Lower 4 digits: lower (∗4)
14	Contents of error (the latest)	◑	●	●	○	○	○	●	Error code table Refer to P.145~.
15	Contents of error (1 cycle before)	◑	●	●	○	○	○	○	
16	Contents of error (2 cycle before)	◑	●	○	●	●	●	●	
20	Contents of retry (the latest)	◑	●	○	●	○	●	●	
21	Contents of retry (1 cycle before)	◑	●	○	●	○	●	○	
22	Contents of retry (2 cycle before)	◑	●	○	●	○	○	●	

Note:

∗1. The numbers in the "No." column represent the number of times to press the SET (BS2) button.

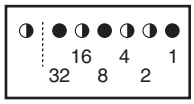
∗2. Display contents of “Various setting”

		LED Display						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
Operation /backup operation setting	ON	◑	●	●	○	●	●	●
	OFF	◑	●	●	●	●	●	●
Te setting	L	◑	●	●	●	●	●	●
	M	◑	●	●	●	●	◑	●
	H ①~⑤	◑	●	●	●	●	○	●
Tc setting	L	◑	●	●	●	●	●	●
	M	◑	●	●	●	●	●	◑
	H	◑	●	●	●	●	●	○

Tc: High pressure equivalent saturation temperature

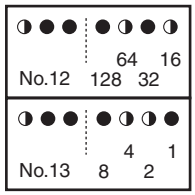
Te: Low pressure equivalent saturation temperature

∗3. Data such as addresses and number of units is expressed as binary numbers.
The No. 1 cool/heat unified address is expressed as a binary number consisting of the lower 6 digits. (0 - 63)
(Example 1)



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

∗4. The number of connected Branch Selector units for No.9 and 10 / the number of terminal blocks for No. 12 and 13 is expressed as an 8-digit binary number, which is the combination of 4 upper, and 4 lower digits respectively. (0 - 128)
(Example 2)



In (Example 2) the address for No. 12 is 0101, the address for No. 13 is 0110, and the combination of the 2 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.

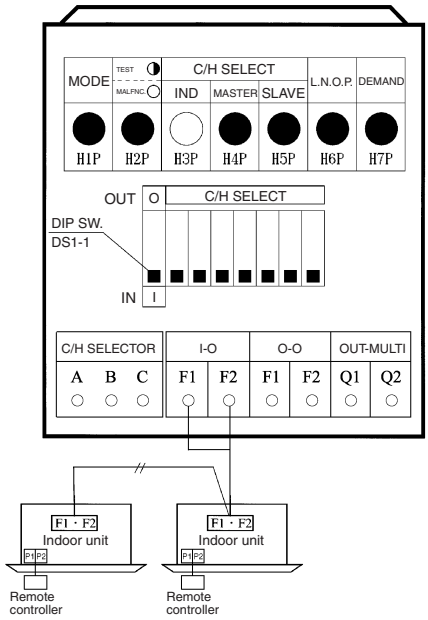
3.7 Detailed Explanation of Setting Modes

3.7.1 Cool/Heat Mode Switching (Heat Pump Connection)

There are the following 5 cool/heat switching modes.
(1) Set cool/heat separately for each condensing unit system by indoor unit remote controller.
(2) Set cool/heat separately for each condensing unit system by cool/heat selector.
(3) Set cool/heat for more than single condensing unit system simultaneously in accordance with unified master condensing unit by indoor unit remote controller.
(4) Set cool/heat for more than single condensing unit system simultaneously in accordance with unified master condensing unit by cool/heat switching remote controller.
(5) Set cool/heat at all condensing unit systems simultaneously for each condensing unit external control adaptor by using the central remote controller.

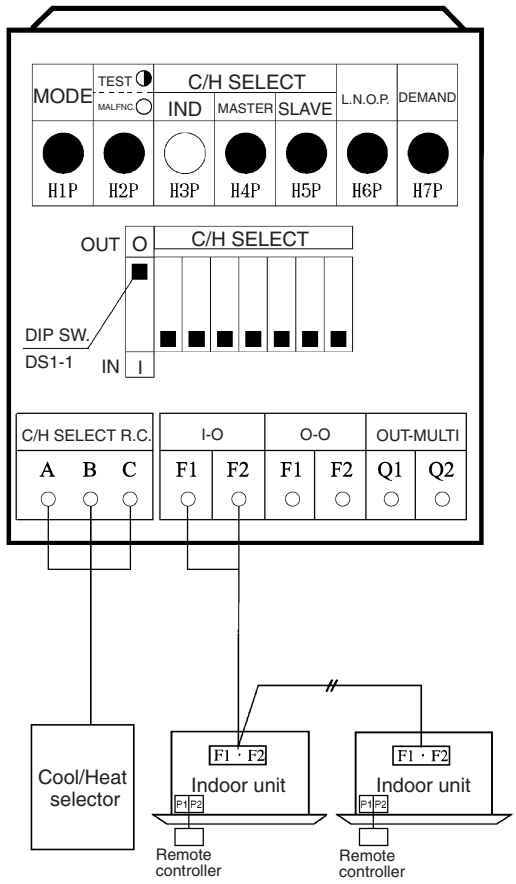
(1) Set Cool / Heat Separately for Each Condensing Unit System by Indoor Unit Remote Controller

- It does not matter whether or not there is condensing - condensing unit wiring.
- Set condensing unit PCB DS1-1 to IN (factory setting).
- Set cool/heat switching to IND (individual) for “Setting mode 1” (factory setting).



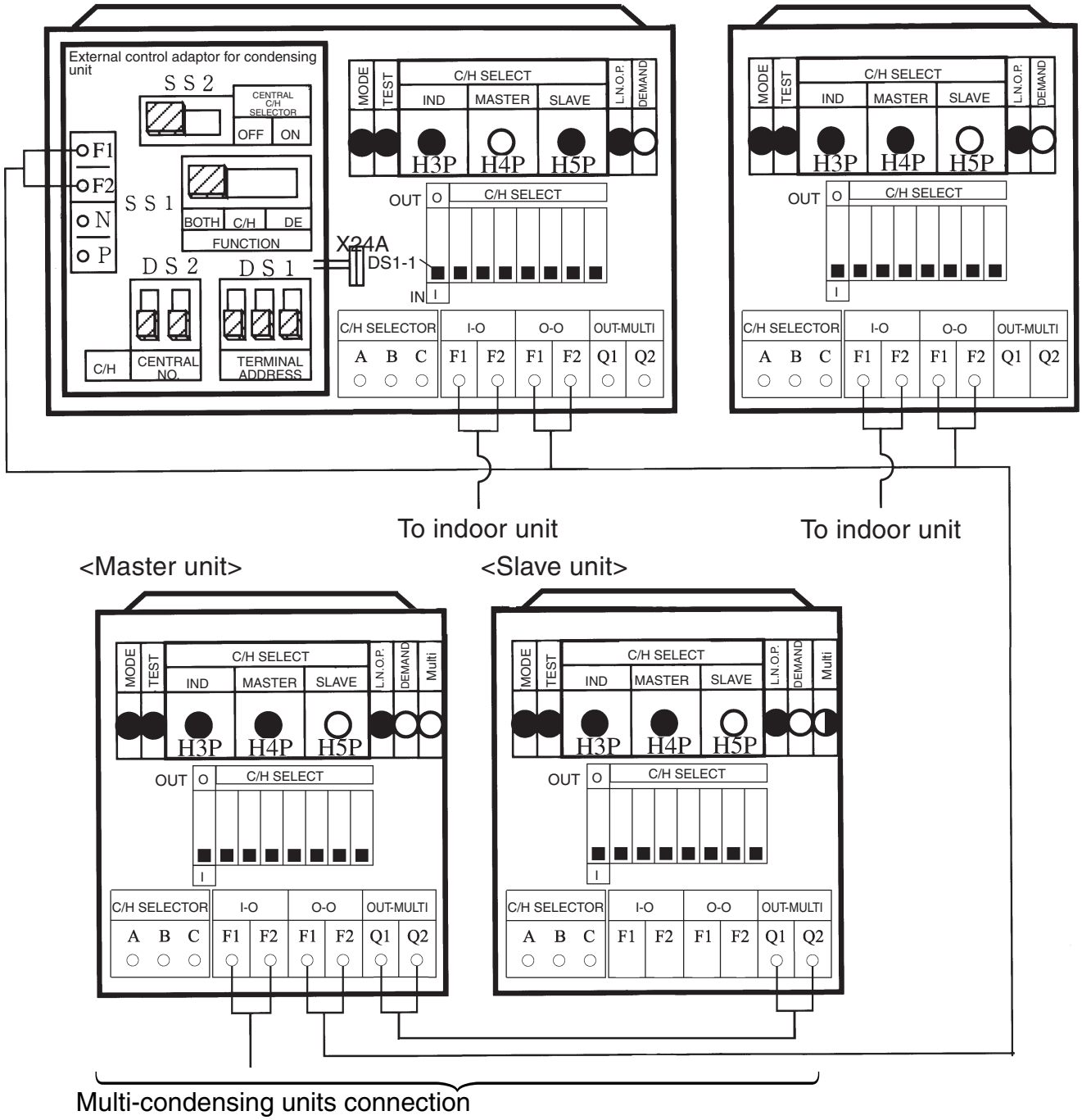
(2) Set Cool/Heat Separately for Each Condensing Unit System by Cool / Heat Selector

- It does not matter whether or not there is condensing - condensing unit wiring.
- Set condensing unit PCB DS1-1 to OUT (factory setting).
- Set cool/heat switching to IND (individual) for “Setting mode 1” (factory setting).



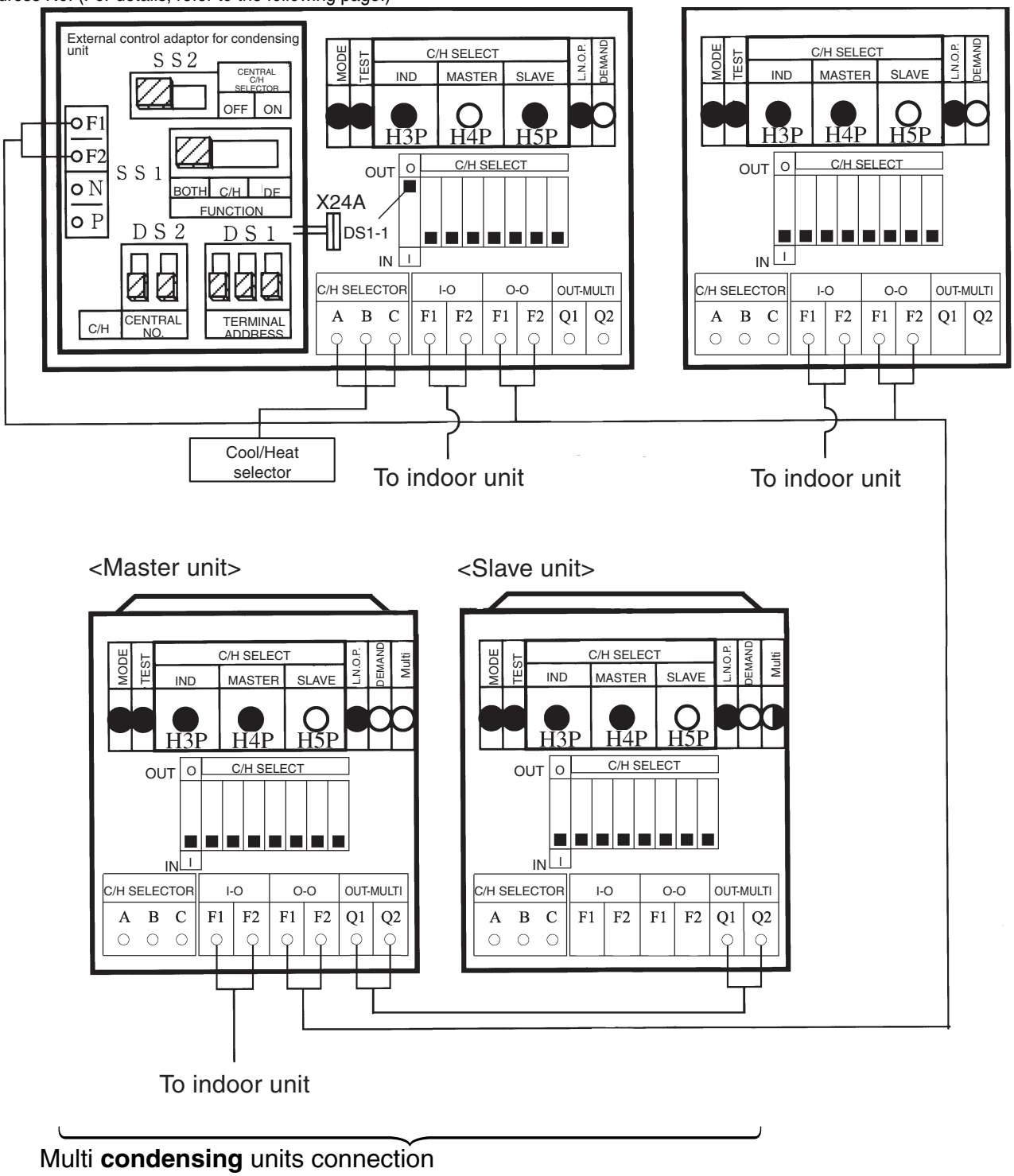
(3) Set Cool / Heat for more than Single Condensing Unit System Simultaneously in Accordance with Unified Master Condensing Unit by Indoor Unit Remote Controller

- Install the external control adaptor for condensing unit on either the condensing-condensing, indoor-condensing transmission line.
- Set condensing unit PCB DS1-1 to IN (factory setting).
- In setting mode 1, set the condensing unit you want to give cool/heat selection permission to as the group master, and set the other condensing units as group slave units.
- Set the condensing unit external control adaptor SS1 to BOTH (factory setting) or C/H, and SS2 to OFF (factory setting).
- When multiple external control adaptors are used and cool/heat is selected for each external control adaptor, use "setting mode 2" and set DS1 and DS2 on the external control adaptors and the unified heat/cool address on the condensing unit main PCB to the same address No. (For details, refer to the following page.)

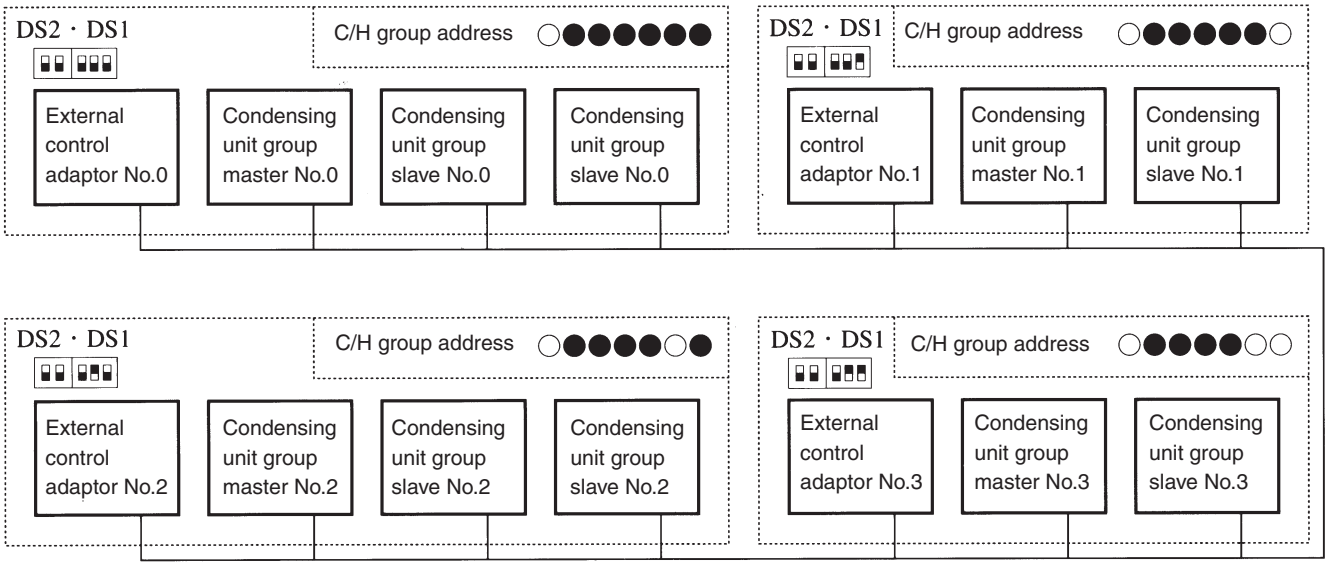


(4) Set Cool/Heat for more than Single condensing Unit System Simultaneously in Accordance with Unified Master condensing Unit by Cool / Heat Selector

- Install the external control adaptor for condensing unit on either the condensing-condensing, indoor-condensing transmission line.
- Mount the COOL/HEAT selector to the master condensing unit for the unified control.
  Set the DS1-1 on the PCB of master condensing unit to OUT.
- In setting mode 1, set the condensing unit you want to give cool/heat selection permission to as the group master, and set the other condensing units as group slave units.
- When multiple external control adaptors are used and cool/heat is selected for each external control adaptor, use "setting mode 2" and set DS1 and DS2 on the external control adaptors and the unified heat/cool address on the condensing unit main PCB to the same address No. (For details, refer to the following page.)



Supplementation on (3) and (4).
When switching cool/heat for each adaptor PCB with the use of more than 1 adaptor PCB, set the address of the external control adaptor for condensing unit PCB DS1 and DS2 so that it matches the unified cool/heat address of condensing unit main PCB.



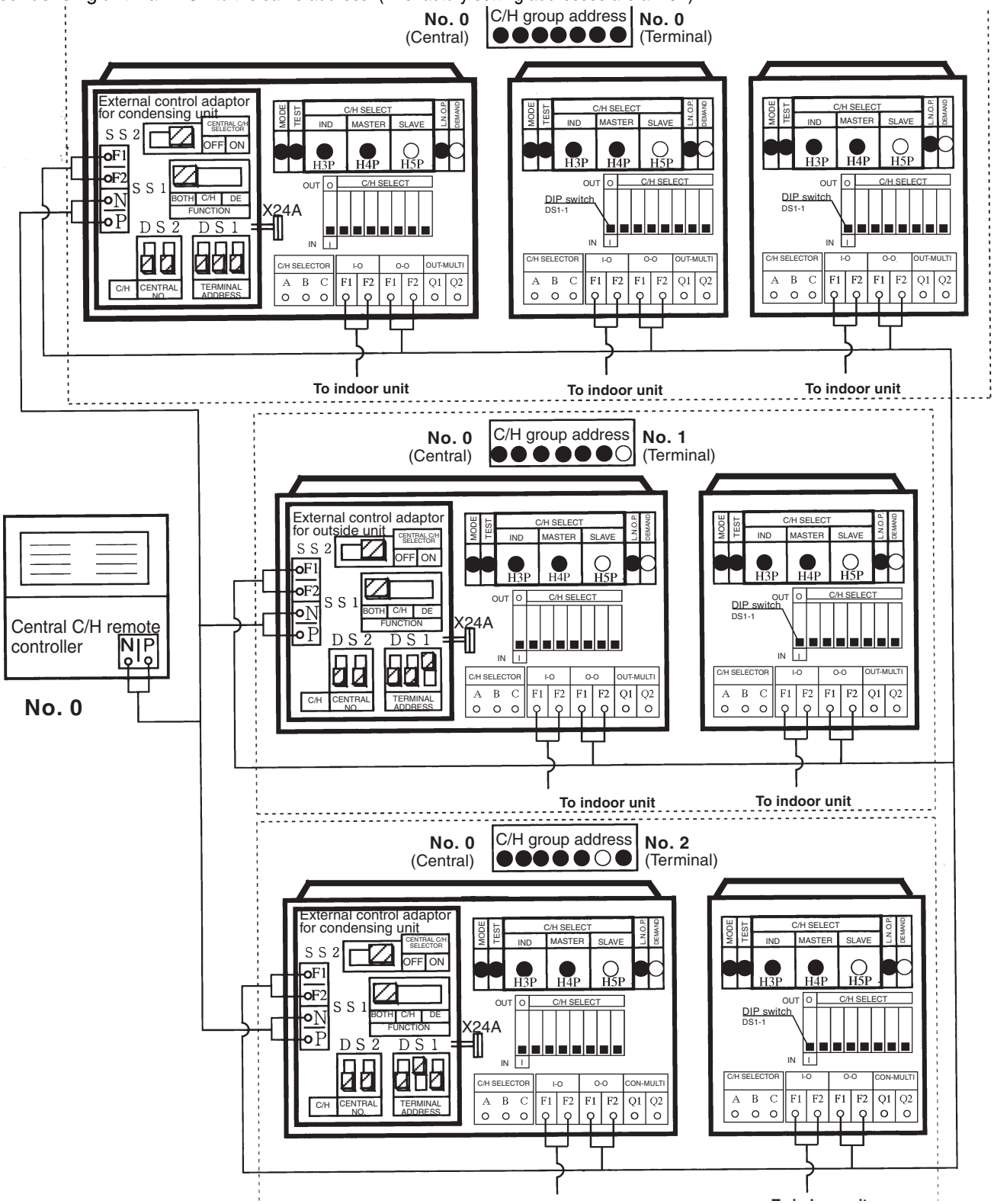
Address setting for (3) and (4) (Set lower 5 digits with binary number.) [No.0 to No.31]

Address No.	Condensing unit PCB LED Set with setting mode 2	External control adaptor for condensing unit DS2 DS1
No 0	○● ●●●●● 0	0
No 1	○● ●●●●○ 1	1
No 2	○● ●●●○● 2	2
No 3	○● ●●●○○ 3	3
No 4	○● ●●○●● 4	4
≀	≀	≀
No 30	○● ○○○○● 30	30
No 31	○● ○○○○○ 31	31

○ ON ● OFF ▩ Upper position (ON) ▯ lower position (OFF)
(The shaded part shows knob)

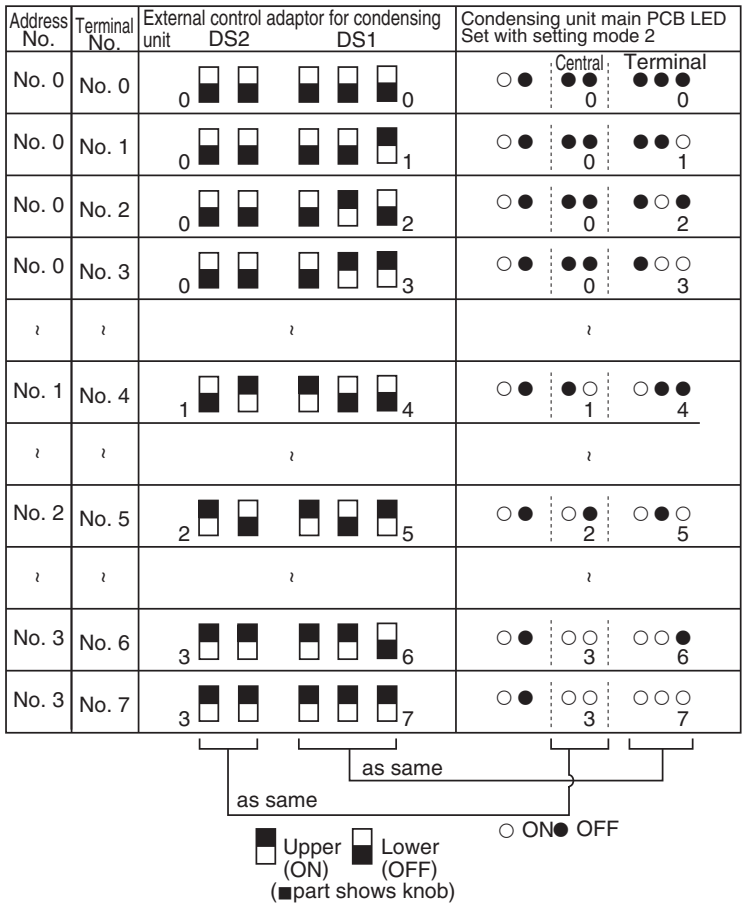
(5) Set cool/heat at all condensing unit systems simultaneously for each condensing unit external control adaptor by using the central remote controller.

- Install the condensing unit external control adaptor (optional accessory) onto the condensing-condensing, indoor-condensing, or indoor-indoor transmission line.
- Use "setting mode 1" and set all condensing units to SLAVE.
- Set the condensing unit external control adaptor SS1 to BOTH (factory setting) or C/H and set SS2 to ON.
- Use "setting mode 2" and set DS1 and DS2 on the condensing unit external control adaptors and the unified heat/cool address on the condensing unit main PCB to the same address. (The factory setting addresses are all "0".)



Setting of Address

In binary, set the address number (middle 2 digits) and terminal No. (last 3 digits) of the external control adaptor (DIP switches) and condensing unit main PCB (LED lamps).

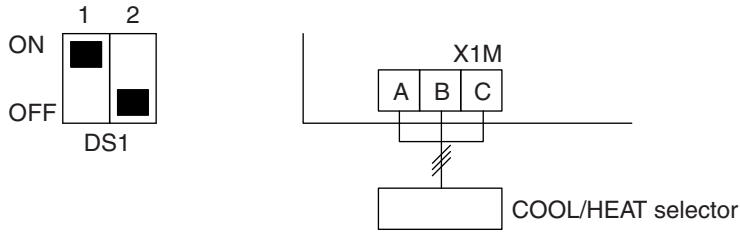


3.7.2 Cool/Heat Mode Switching (Heating and Simultaneous Cooling/Heating Operation Connection)

Set Cool/Heat Separately for Each Branch Selector Unit by Cool/Heat Selector.

(1) Before turning ON the power of the Branch Selector unit, set the DIP switch (DS1-1) on the Branch Selector unit PCB as following.

(2) Then, connect the COOL/HEAT selector to the terminal A, B and C of the terminal block X1M on the Branch Selector unit PCB.



Note:

- This setting is read into the micro-computer when turning ON the power supply.
- Be sure to make the setting before turning ON the power supply.
- Be sure to close the Electrical Components Box lid after setting.

Example of transmission line connection

- Example of connecting transmission wiring.
  Connect the transmission wirings as shown in the Fig. 1.

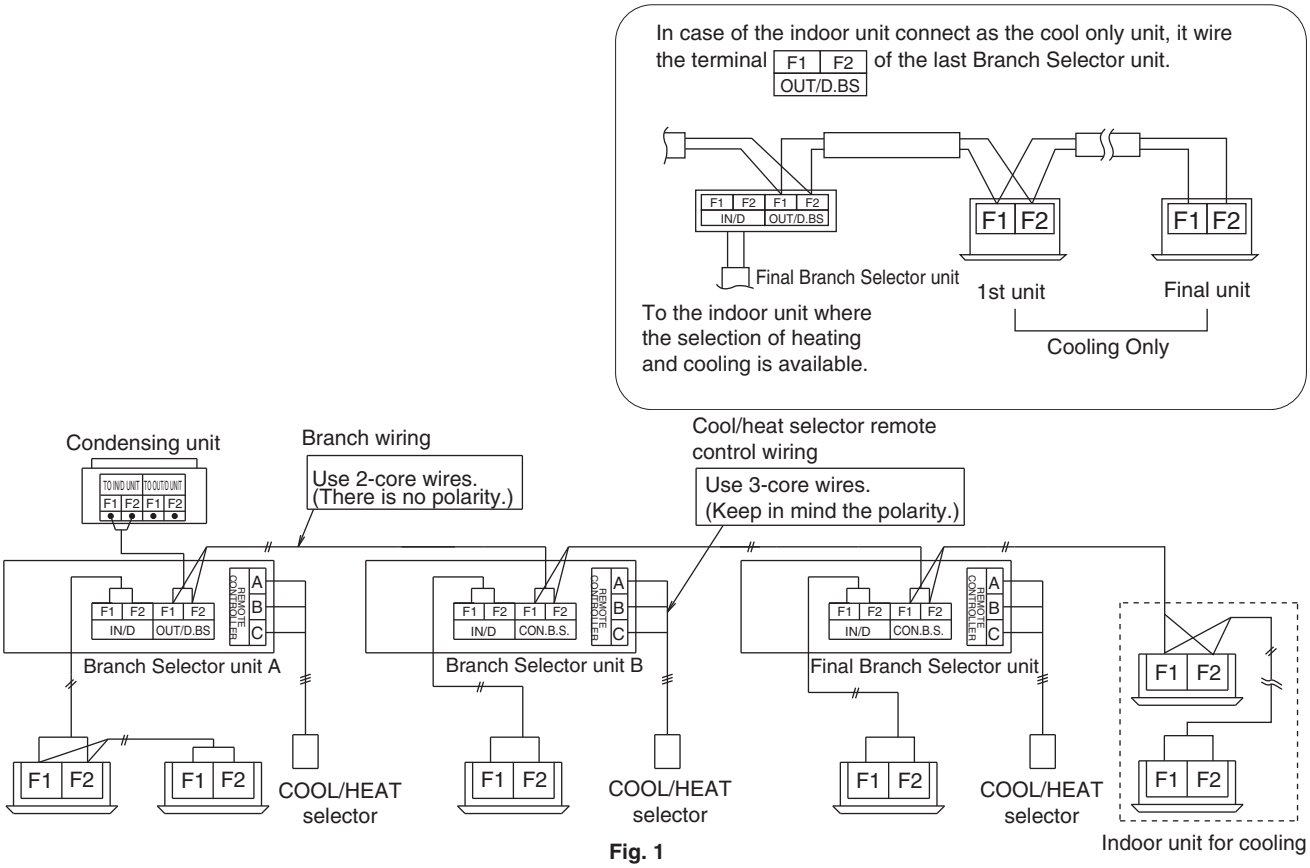


Fig. 1

3.7.3 Setting of Demand Operation

Setting of Demand Operation

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

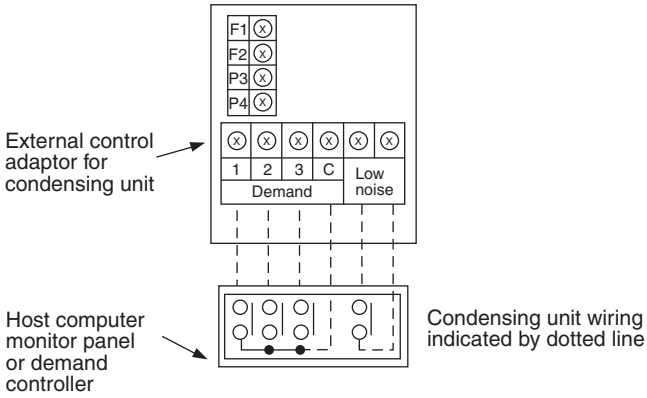
Setting content			Setting method	
Set item	Condition	Content	External control adaptor	Condensing unit PCB
Demand 1	Mode 1	The compressor operates at approx. 60% or less of rating.	Short circuit "1" and "C" on the terminal strip (TeS1).	Set item No. 32 to "Demand 1", and item No. 30 to "Level 1".
	Mode 2	The compressor operates at approx. 70% or less of rating.		Set item No. 32 to "Demand 1", and item No. 30 to "Level 2".
	Mode 3	The compressor operates at approx. 80% or less of rating.		Set item No. 32 to "Demand 1", and item No. 30 to "Level 3".
Demand 2	—	The compressor operates at approx. 40% or less of rating.	Short circuit "2" and "C".	Set item No. 32 to "Demand 2".
Demand 3	—	Forced thermostat OFF.	Short circuit "3" and "C".	—

*: However the demand operation does not occur in the following operation modes.

① Startup control ② Oil return operation

③ Defrosting operation ④ Pump down residual operation

If carrying out demand input, connect the adaptor's terminals as shown below.



A. When the demand operation is carried out by external contact (with the use of the external control adaptor for condensing unit).

1. Connect external control adaptor for condensing unit and short-circuit terminals as required (Refer above figure).
2. While in "Setting mode 2", set the setting condition for set item No. 12 (Setting of demand operation) to "YES".
3. If necessary, 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.

B. When the normal demand operation is carried out. (Use of the external control adaptor for condensing unit is not required.)

1. While in "Setting mode 2", make setting of the set item No. 32 (Setting of alternate 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 in the case of A

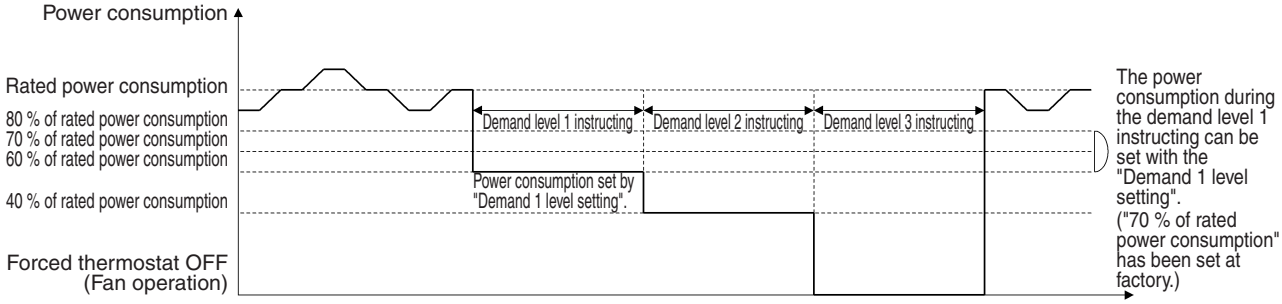


Image of operation in the case of B

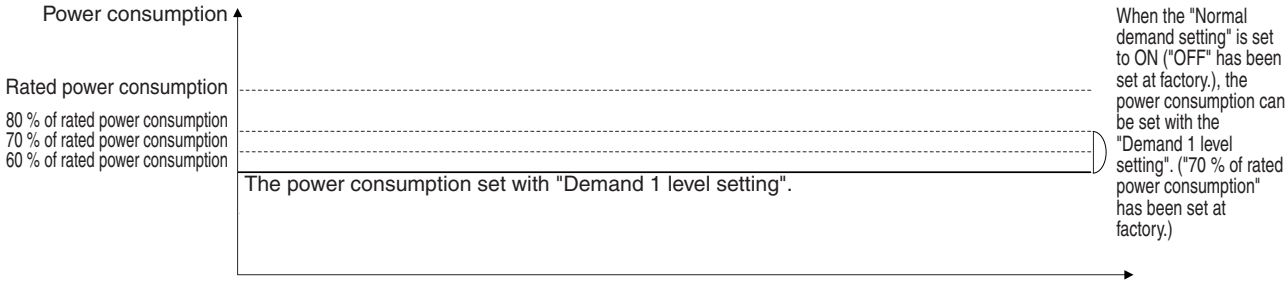
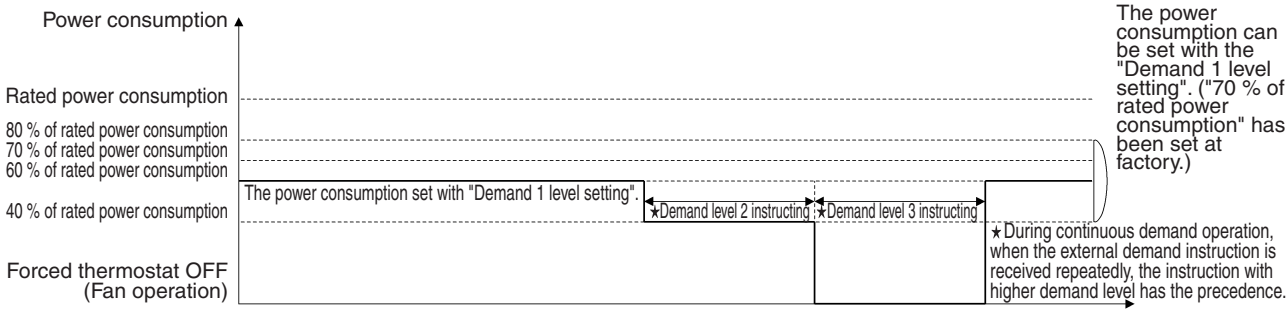


Image of operation in the case of A and B



Detailed Setting Procedure and Demand Control

1. Setting mode 1 (H1P OFF)

(1) In setting mode 2, press the BS1 (MODE button) once. → Setting mode 1 is entered and H1P lights OFF.
During the setting mode 1 is displayed, “In demand control” is displayed.

2. Setting mode 2 (H1P ON)

(1) In setting 1, press the BS1 (MODE button) for 5 seconds or more. → Setting mode 2 is entered and H1P ON.
(2) Press the BS2 (SET button) several times and match the LED display with the setting No. you want.
(3) Press the BS3 (RETURN button) once, and the present setting content is displayed.
→ Press the BS2 (SET button) several times and match the LED display with the setting content (as shown below) you want.
(4) Press the BS3 (RETURN button) twice. → Returns to (1).
(5) Press the BS1 (MODE button) once. → Returns to the setting mode 1 and turns H1P OFF.

(1) (2) (3) ○: ON ●: OFF ◑: BLINK

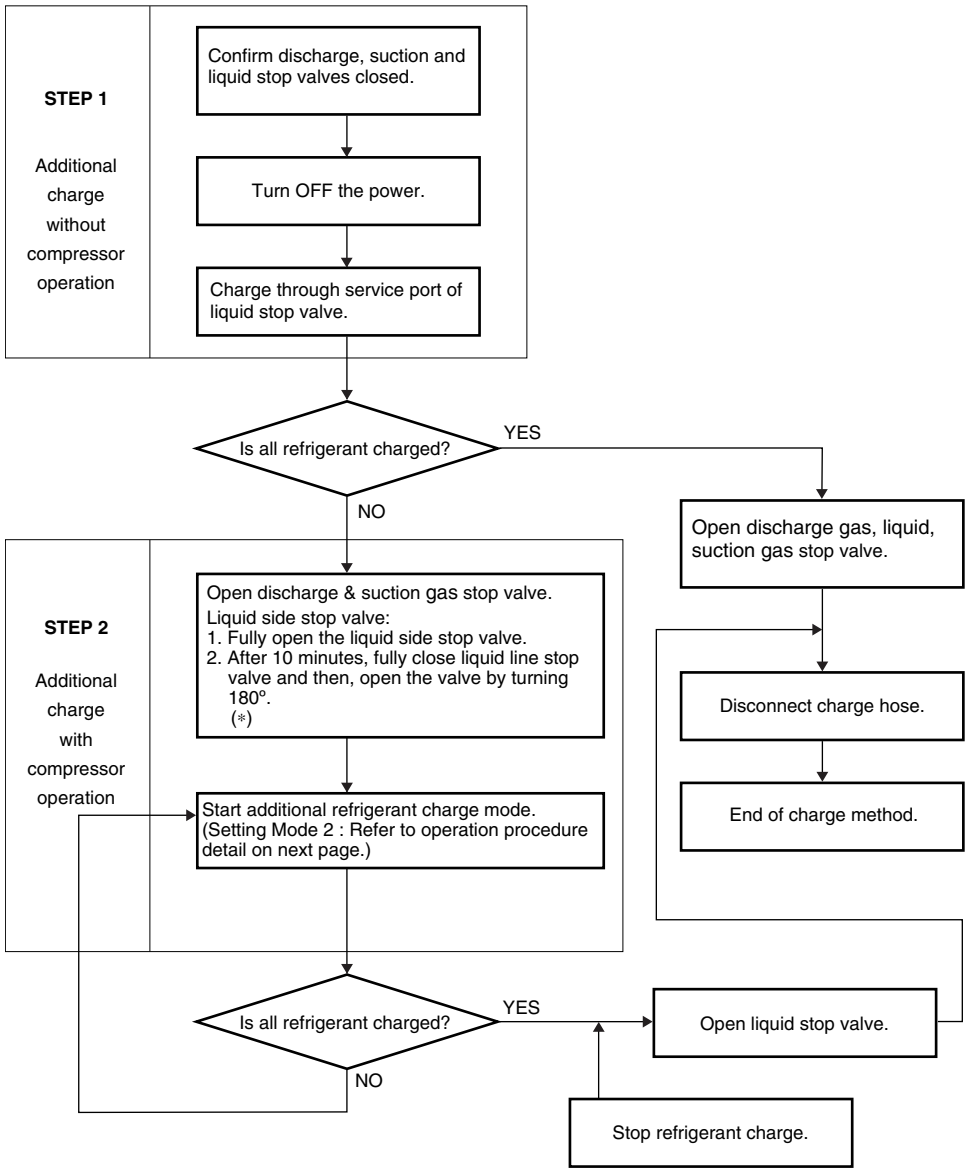
Setting No.	Setting Contents	Setting No. indication (1)							Setting No. indication (2)							Setting contents	Setting contents indication (Initial setting) (3)						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P		H1P	H2P	H3P	H4P	H5P	H6P	H7P
12	Demand setting	○	●	●	●	●	●	●	○	●	●	○	○	●	●	NO (Factory setting)	○	●	●	●	●	●	◑
																YES	○	●	●	●	●	◑	●
30	Demand setting 1								○	●	○	○	○	○	●	60 % of rated power consumption	○	●	●	●	●	●	◑
																70 % of rated power consumption (Factory setting)	○	●	●	●	●	◑	●
																80 % of rated power consumption	○	●	●	●	◑	●	●
32	Normal demand setting								○	●	●	●	●	●	●	OFF (Factory setting)	○	●	●	●	●	●	◑
																Continuous demand 1 fixed	○	●	●	●	●	◑	●

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

3.7.4 Setting of Refrigerant Additional Charging Operation

When additional refrigerant is not charged all with condensing unit in stop mode, operate the condensing unit and charge the liquid refrigerant from the service port of liquid stop valve. The additional charging operation is activated by Branch Selector button switch on the condensing unit PCB.

Additional refrigerant charge total flow



Note:

*
The stop valve operations are different from Heat Pump and Heat Recovery connection, refer to following page for detail.

Caution

Refrigerant cannot be charged until field wiring has been completed.
Refrigerant may only be charged after performing the leak test and the vacuum drying.
When charging a system, care shall be taken that its maximum permissible charge is never exceeded, in view of the danger of liquid hammer.
Charging with an unsuitable substance may cause explosions and accidents, so always ensure that the appropriate refrigerant (R-410A) is charged.
Refrigerant containers shall be opened slowly.
Always use protective gloves and protect your eyes when charging refrigerant.

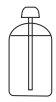
- This condensing unit is factory charged with refrigerant and depending on pipe sizes and pipe lengths some systems require additional charging of refrigerant.
- Determine the amount of refrigerant to be added by referring to the table, write it down on the included “Added Refrigerant” plate and attach it to the rear side of the front cover.
  Note: refer to the example of connection for the amount to be added.

Additional refrigerant charge procedure (1) - normally

- Charge the refrigerant to the liquid pipe in its liquid state. Since R-410A is a mixed refrigerant, its composition changes if charged in a state of gas and normal system operation would no longer be assured.
- Make sure to use installation tools you exclusively use on R-410A installations to withstand the pressure and to prevent foreign materials from mixing into the system.

1. Before charging, check whether the tank has a siphon attached or not.
   How to charge with a siphon attached tank.

Charge with the tank upright.
(There is a siphon tube inside, so there is no need to turn the tank upside-down.)



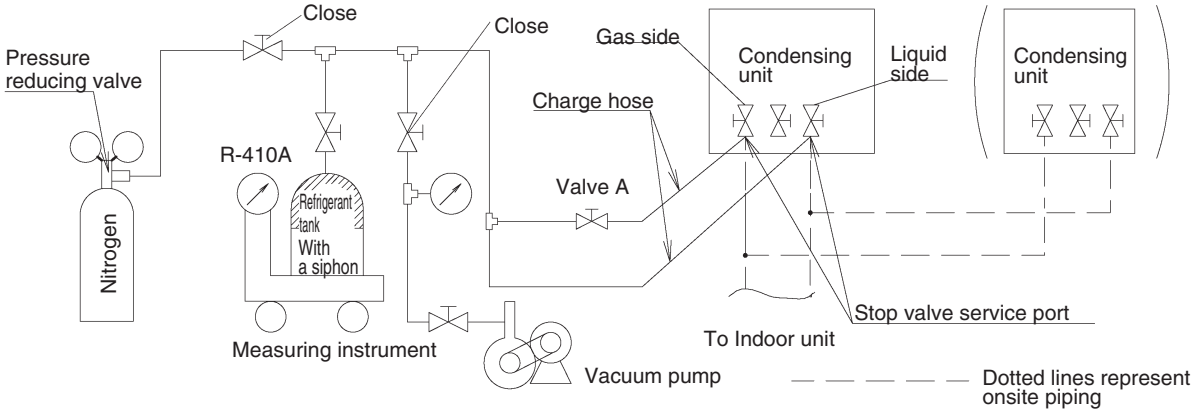
How to charge with other tank.

Charge with the tank upside-down.

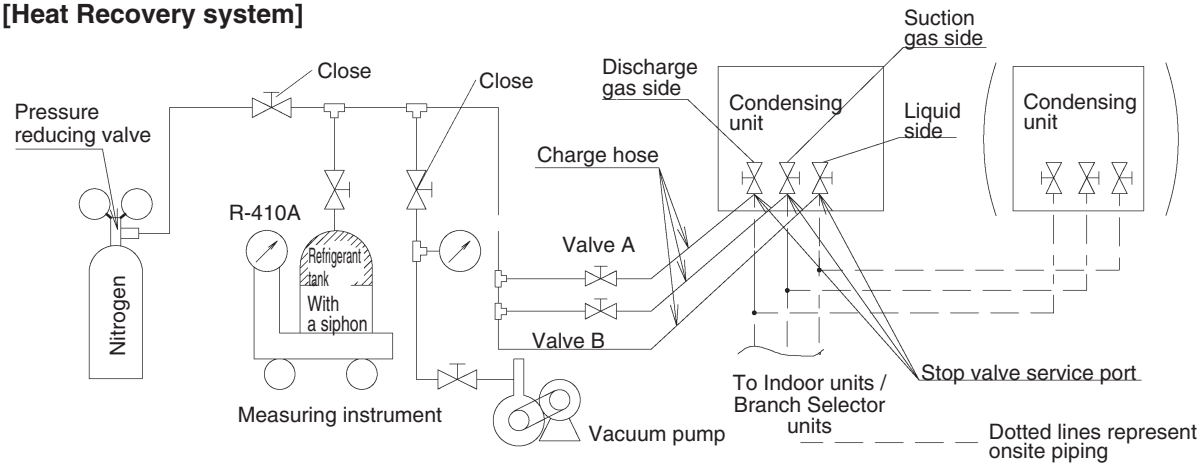
2. After the vacuum drying is finished, charge the additional refrigerant in its liquid state through the liquid stop valve service port.
   Taking into account following instructions:
   - Check that gas and liquid stop valves are closed.
   - Stop the compressor and charge the specified weight of refrigerant.
     (If the condensing unit is not in operation and the total amount cannot be charged, follow the Additional refrigerant charge procedure (2) shown next page.)

■ **Procedures for charging additional refrigerant.**

[Heat Pump system]



[Heat Recovery system]



Additional refrigerant charge procedure (2)-by Additional refrigerant charge operation

About the system settings for additional refrigerant charge operation, refer to the [Service Precaution] label attached on the Electrical Components Box lid in the condensing unit.

1. Fully open all stop valves (valve A and valve B must be left fully closed).
2. After 10 minutes, fully close liquid line stop valve and then,open the valve by turning 180°.
   Start the additional refrigerant charge operation.
   See [Service precautions] Label for detail.
   If it is difficult to charge the refrigerant additionally, decrease the water temperature or warm the refrigerant tank.
   (Warm the refrigerant tank with a stupe or a warm hot water of 40 degrees or less.)
3. After the system is charged with a specified amount of refrigerant, press the RETURN button (BS3) on the PCB (A1P) in the condensing unit to stop the additional refrigerant charge operation.
4. Immediately open both liquid-side and gas-side stop valve.
   (If do not open the stop valve immediately, liquid seal may cause the pipe to burst.)

Stop valve operation procedure

Caution

Do not open the stop valve until checking of device and installation conditions are completed. If the stop valve is left open without turning on power, it may cause refrigerant to buildup in the compressor, leading to insulation degradation.

Opening stop valve

1. Remove the cap and turn the valve counterclockwise with the hexagon wrench (JISB4648).
2. Turn it until the shaft stops.
   Do not apply excessive force to the stop valve. Doing so may break the valve body, as the valve is not a backseat type.
   Always use the hexagon wrench.
3. Make sure to tighten the cap securely.

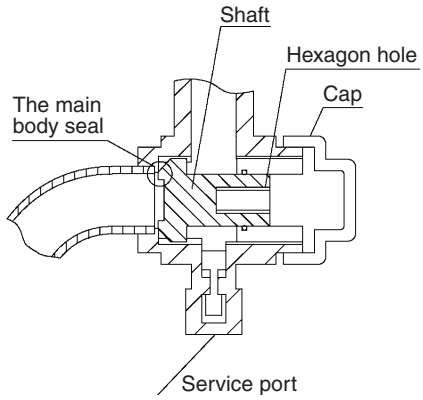
Closing stop valve

1. Remove the cap and turn the valve clockwise with the hexagon wrench (JISB4648).
2. Securely tighten the valve until the shaft contacts the main body seal.
3. Make sure to tighten the cap securely.
   ∗ For the tightening torque, refer to the table on the next page.

Tightening torque

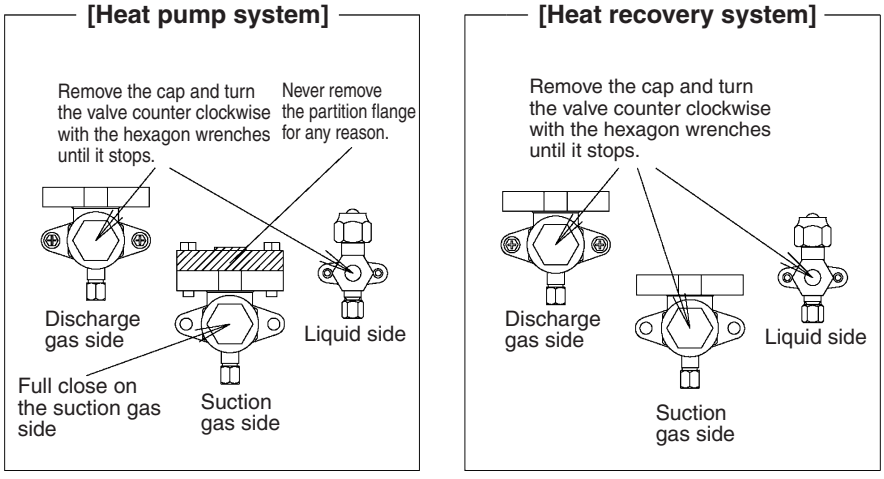
Stop valve size	Tightening torque ft-lbs. (Turn clockwise to close)					
	Shaft (valve body)		Cap (valve lid)	Service port	Flare nut	Gas side accessory pipe (1)
Liquid side	3.98-4.87	Hexagonal wrench 1/8 in.	9.95-12.17	8.48-10.25	24.1-29.4	—
Gas side	19.91-24.33	Hexagonal wrench 3/8 in.	26.54-32.44	8.48-10.25	—	16.22-20.65

(Refer to figure below)



Caution

- Do not damage the cap sealing.
- Always use a charge hose for service port connection.
- After tightening the cap, check that no refrigerant leaks are present.
- After working, securely tighten the cover of service port without fail by specified torque.
- When loosening a flare nut, always use 2 wrenches in combination. When connecting the piping, always use a spanner and torque wrench in combination to tighten the flare nut.
- When connecting a flare nut, coat the flare (inner and outer faces) with ether oil or ester oil and hand-tighten the nut 3 to 4 turns as the initial tightening.
- Do not forget to open the stop valve before starting operation.



[Operation state]

- Compressor frequency: Normal cooling PI control, upper limit 177Hz
- Y5S, Y7S, four way valve: OFF Y1E, electronic expansion valve: Normal cooling control
- Indoor unit electronic expansion valve (All unit): 1024 pulse Y3E: 0 pls
- Indoor unit fan: H tap

3.7.5 Setting of Refrigerant Recovery Mode

When carrying out the refrigerant collection on site, fully open the respective electronic expansion valve of indoor and condensing units

[Operation procedure]

(1) In **setting mode 2** with units in stop mode, set “B Refrigerant Recovery / Vacuuming mode” to ON. The respective electronic expansion valve of indoor and condensing units are fully opened. (H2P turns to display “TEST OPERATION” (blinks), “TEST OPERATION” and “IN CENTRALIZED CONTROL” are displayed on the remote controller, and the operation is prohibited.
(2) Collect the refrigerant using a refrigerant recovery unit. (See the instruction attached to the refrigerant recovery unit for more detail.)
(3) Press Mode button “BS1” once and reset “Setting Mode 2”.

3.7.6 Setting of Vacuuming Mode

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

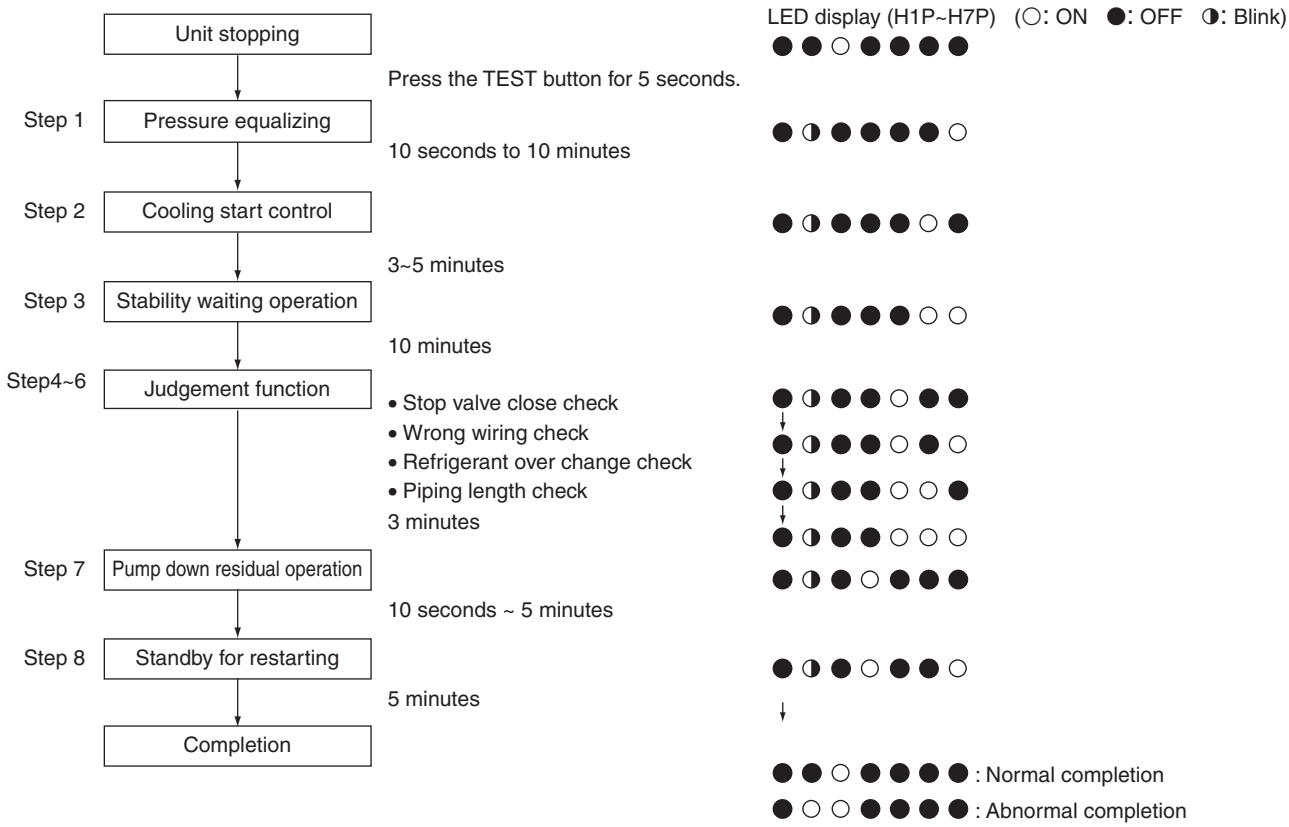
[Operating procedure]

(1) With **Setting Mode 2** while the unit stops, set (B) Refrigerant recovery / Vacuuming mode to ON. The electronic expansion valves of indoor and condensing units fully open and some of solenoid valves open.
(H2P blinks to indicate the test operation, and the remote controller displays "Test Operation" and "In Centralized control", thus prohibiting operation.)
After setting, do not cancel “Setting Mode 2” until completion of Vacuuming operation.
(2) Use the vacuum pump to perform vacuuming operation.
(3) Press Mode button “BS1” once and reset “Setting Mode 2”.

3.7.7 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) of discharge pipe thermistor and judgement of piping length, refrigerant overcharging, and learning for the minimum opening degree of electronic expansion valve.

Check Operation Function



3.7.8 Power Transistor Check Operation

When the inverter system errors (error of inverter, INV. compressor), to locate where the error occurs, switching to the power transistor check mode of inverter in the service mode setting enables not to judge the position detection signal error but to output waveform only during inverter operation. (The waveform can be checked by disconnecting the wiring of compressor.)

After the completion of checks, return the system to the previous mode and wait for 30 seconds or more until the discharge of capacitor is completed. Then, conduct a subsequent work.

Note:

Be sure to disconnect the compressor wiring when conducting the check operation mentioned above.

When the output voltage is approx. 100~200 V (10 Hz) and the voltage balance between phases U-V, V-W, W-U is within ±5%, the inverter PCB is normal.

For details, refer to “Power Transistor Check” on P.244.

4. Emergency Operation

If the compressor cannot operate, this control inhibits any applicable compressor or condensing unit from operating to perform emergency operation only with the operative compressor or condensing unit.

Caution

"For making a compressor unable to operate due to error, etc., be sure to conduct the work with emergency operation setting.
Never execute work such as disconnection of the power cable from magnet contact switch.
(Otherwise, other normal compressors may be defective.)
∗ Because the units will be operated in the combination with which oil pressure equalization between compressors cannot be performed.

4.1 Restrictions for Emergency Operation

If the emergency operation is set while the condensing unit is in operation, the condensing unit stops once after pump down residual operation (a maximum of 5 minutes elapsed).

4.2 In the Case of Multi Condensing Unit System

Automatic backup operation

With multi condensing unit system, if a certain condensing unit system errors (i.e., the system stops and indoor unit remote controller displays the error), by resetting the system with the indoor unit remote controller, the applicable condensing unit is inhibited from operating for 8 hours, thus making it possible to perform emergency operation automatically.

However, in the event any of the following errors occurs, automatic backup operation can be performed.

Errors under which automatic backup operation can be performed:

- E3, E4, E5, E7
- F3
- J2, J3, J5, J6, J7, J9, JA, JC
- L3, L4, L5, L8, L9, LC
- U2, UJ

Emergency operation with settings in service mode

∗ “Inhibition of operation” is set with each condensing unit.

Make the following settings with the master unit. (Setting with the slave unit becomes disabled.)

∗ Discriminate the operating status of the master unit/slave units through the following LED display.

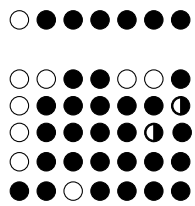
LED display (○: ON ●: OFF ◑: Blink)
H1P — — — H7P H8P

Master: ●●○●●●● ○
Slave 1: ●●●●●●● ◑
Slave 2: ●●●●●●● ● (Factory setting)

• To inhibit the master unit from operating → Set setting mode 2 from No. 38 to No. 2.

(Procedure)
(1) Press and hold the MODE button (BS1) for 5 sec. or more.
(2) Press the SET button (BS2) 38 times.
(3) Press the RETURN button (BS3) once.
(4) Press the SET button (BS2) once.
(5) Press the RETURN button (BS3) twice.
(6) Press the MODE button (BS1) once.

LED display (○: ON ●: OFF ◑: Blink)
H1P — — — H7P

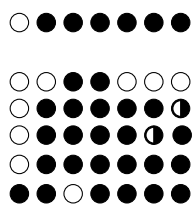


(Factory setting)

• To inhibit the slave unit 1 from operating → Set setting mode 2 from No. 39 to No. 2.

(Procedure)
(1) Press and hold the MODE button (BS1) for 5 sec. or more.
(2) Press the SET button (BS2) 39 times.
(3) Press the RETURN button (BS3) once.
(4) Press the SET button (BS2) once.
(5) Press the RETURN button (BS3) twice.
(6) Press the MODE button (BS1) once.

LED display (○: ON ●: OFF ◑: Blink)
H1P — — — H7P

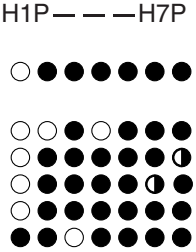


(Factory setting)

• To inhibit the slave unit 2 from operating → Set setting mode 2 from No. 40 to No. 2.

(Procedure)
(1) Press and hold the MODE button (BS1) for 5 sec. or more.
(2) Press the SET button (BS2) 40 times.
(3) Press the RETURN button (BS3) once.
(4) Press the SET button (BS2) once.
(5) Press the RETURN button (BS3) twice.
(6) Press the MODE button (BS1) once.

LED display (○: ON ●: OFF ◑: Blink)
H1P — — — H7P



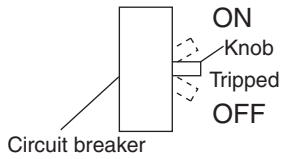
(Factory setting)

• In the case of multi condensing unit system, when the above “Inhibition of operation” is set, condensing unit rotation is not functional.

Note : Reset the power supply during the condensing unit is stopping to cancel the automatic backup operation forcibly.

Part 6
Service Diagnosis

1. Symptom-based Troubleshooting

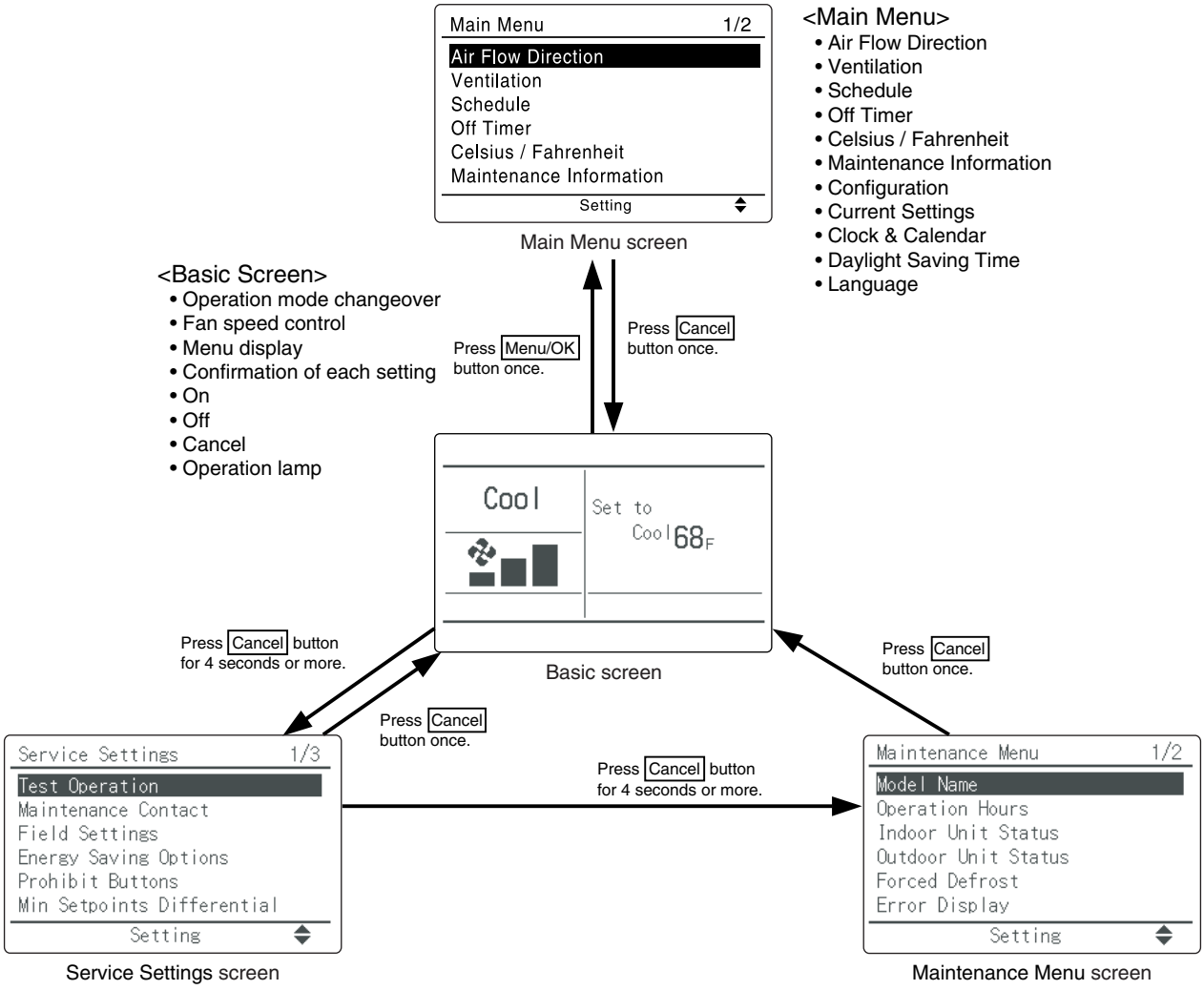
No.	Symptom		Supposed Cause	Countermeasure
1	The system does not start operation at all.		Blowout of fuse(s)	Turn OFF the power supply and then replace the fuse(s).
			Cutout of breaker(s)	• If the knob of any breaker is in its OFF position, turn ON the power supply. • If the knob of any circuit breaker is in its tripped position, do not turn ON the power supply. 
			Power failure	After the power failure is reset, restart the system.
2	The system starts operation but makes an immediate stop.		Blocked air inlet or outlet of indoor or condensing unit	Remove obstacle(s).
			Clogged air filter(s)	Clean the air filter(s).
3	The system does not cool or heat air well.		Blocked air inlet or outlet of indoor or condensing unit	Remove obstacle(s).
			Clogged air filter(s)	Clean the air filter(s).
			Enclosed condensing unit(s)	Remove the enclosure.
			Improper set temperature	Set the temperature to a proper degree.
			Airflow rate set to "LOW"	Set it to a proper airflow rate.
			Improper direction of air diffusion	Set it to a proper direction.
			Open window(s) or door(s)	Shut it tightly.
		[In cooling]	Direct sunlight received	Hang curtains or shades on windows.
		[In cooling]	Too many persons staying in a room	The model must be selected to match the air conditioning load.
		[In cooling]	Too many heat sources (e.g. OA equipment) located in a room	
4	The system does not operate.	The system stops and immediately restarts operation.	If the OPERATION lamp on the remote controller turns ON, the system will be normal. These symptoms indicate that the system is controlled so as not to put unreasonable loads on the system.	Normal operation. The system will automatically start operation after a lapse of 5 minutes.
		Pressing the TEMP ADJUST button immediately resets the system.		
		The remote controller displays "UNDER CENTRALIZED CONTROL", which blinks for a period of several seconds when the OPERATION button is depressed.	The system is controlled with centralized controller. Blinking display indicates that the system cannot be operated using the remote controller.	Operate the system using the COOL/HEAT centralized remote controller.
		The system stops immediately after turning ON the power supply.	The system is in preparation mode of micro-computer operation.	Wait for a period of approximately 1 minute.
5	The system makes intermittent stops.	The remote controller displays error codes "U4" and "U5", and the system stops but restarts after a lapse of several minutes.	The system stops due to an interruption in communication between units caused by electrical noises coming from equipment other than air conditioners.	Remove causes of electrical noises. If these causes are removed, the system will automatically restart operation.

No.	Symptom		Supposed Cause	Countermeasure
6	COOL-HEAT selection is disabled.	The remote controller displays "UNDER CENTRALIZED CONTROL".	This remote controller has no option to select cooling operation.	Use a remote controller with option to select cooling operation.
		The remote controller displays "UNDER CENTRALIZED CONTROL", and the COOL-HEAT selection remote controller is provided.	COOL-HEAT selection is made using the COOL-HEAT selection remote controller.	Use the COOL-HEAT selection remote controller to select cool or heat.
7	The system conducts fan operation but not cooling or heating operation.	This symptom occurs immediately after turning ON the power supply.	The system is in preparation mode of operation.	Wait for a period of approximately 10 minutes.
8	The airflow rate is not reproduced according to the setting.	Even pressing the AIRFLOW RATE SET button makes no changes in the airflow rate.	In heating, when the room temperature reaches the set degree, the condensing unit will stop while the indoor unit is brought to fan LL operation so that no one gets cold air. Furthermore, if fan operation mode is selected when other indoor unit is in heating, the system will be brought to fan LL operation. (The fan LL operation is also enabled while in oil return mode in cooling.)	Normal operation.
9	The airflow direction is not reproduced according to the setting.	The airflow direction is not corresponding to that displayed on the remote controller. The flap does not swing.	Automatic control	Normal operation.
10	A white mist comes out from the system.	<Indoor unit> In cooling, the ambient humidity is high. (This indoor unit is installed in a place with much oil or dust.)	Uneven temperature distribution due to heavy stain of the inside of the indoor unit	Clean the inside of the indoor unit.
		<Indoor unit> Immediately after cooling operation stopping, the outdoor air temperature and humidity are low.	Hot gas (refrigerant) flown in the indoor unit results to be vapor from the unit.	Normal operation.
		<Indoor and condensing units> After the completion of defrosting operation, the system is switched to heating operation.	Defrosted moisture turns to be vapor and comes out from the units.	Normal operation.

No.	Symptom		Supposed Cause	Countermeasure
11	The system produces sounds.	<Indoor unit> Immediately after turning ON the power supply, indoor unit produces "ringing" sounds.	These are operating sounds of the electronic expansion valve of the indoor unit.	Normal operation. This sound becomes low after a lapse of approximately 1 minute.
		<Indoor and condensing units> "Hissing" sounds are continuously produced while in cooling or defrosting operation.	These sounds are produced from gas (refrigerant) flowing respectively through the indoor and condensing units.	Normal operation.
		<Indoor and condensing units> "Hissing" sounds are produced immediately after the startup or stop of the system, or the startup or stop of defrosting operation.	These sounds are produced when the gas (refrigerant) stops or changes flowing.	Normal operation.
		<Indoor unit> Faint sounds are continuously produced while in cooling or after stopping the operation.	These sounds are produced from the drain discharge device in operation.	Normal operation.
		<Indoor unit> "Creaking" sounds are produced while in heating or after stopping the operation.	These sounds are produced from resin parts expanding and contracting with temperature changes.	Normal operation.
		<Indoor unit> Sounds like "trickling" or the like are produced from indoor units in the stopped state.	On VRV systems, these sounds are produced when other indoor units in operation. The reason is that the system runs in order to prevent oil or refrigerant from dwelling.	Normal operation.
		<condensing unit> Pitch of operating sounds changes.	The reason is that the compressor changes the operating frequency.	Normal operation.
12	Dust comes out from the system.	Dust comes out from the system when it restarts after the stop for an extended period of time.	Dust, which has deposited on the inside of indoor unit, is blown out from the system.	Normal operation.
13	Odors come out from the system.	In operation	Odors of room, cigarettes or else adsorbed to the inside of indoor unit are blown out.	The inside of the indoor unit should be cleaned.
14	condensing unit fan does not rotate.	In operation	The reason is that fan revolutions are controlled to put the operation to the optimum state.	Normal operation.
15	LCD display "88" appears on the remote controller.	Immediately after turning ON the power supply	The reason is that the system is checking to be sure the remote controller is normal.	Normal operation. This code is displayed for a period of approximately 1 minute at maximum.
16	The condensing unit compressor or the condensing unit fan does not stop.	After stopping operation	It stops in order to prevent oil or refrigerant from dwelling.	Normal operation. It stops after a lapse of approximately 5 to 10 minutes.
17	The outdoor gets hot.	While stopping operation	The reason is that the compressor is warmed up to provide smooth startup of the system.	Normal operation.
18	Hot air comes out from the system even though it stops.	Hot air is felt while the system stops.	On VRV systems, small quantity of refrigerant is fed to indoor units in the stopped state when other indoor units are in operation.	Normal operation.
19	The system does not cool air well.	The system is in dry operation.	The reason is that the dry operation serves not to reduce the room temperature where possible.	Change the system to cooling operation.

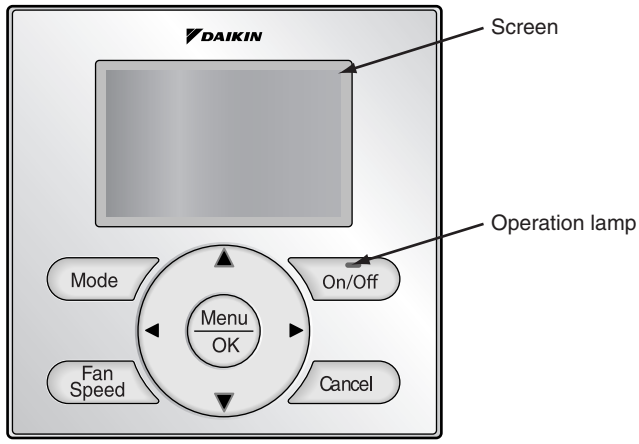
2. Troubleshooting by Remote Controller

On power-up, the message "Checking the connection. Please standby." will be displayed on the remote controller screen. Then that message will disappear and the basic screen will be displayed. To access a mode from the basic screen, refer to the figure below.
When any of the operation buttons is pressed, the backlight will come on and remains lit for about 30 seconds. Be sure to press a button while the backlight is on (this does not apply to the On/Off button.)

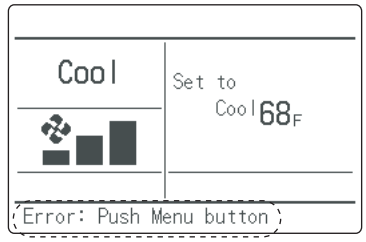
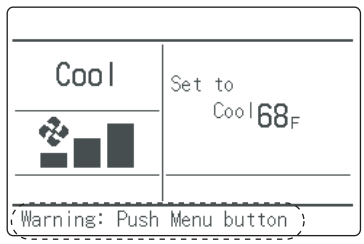


2.1 Self-diagnosis by Wired Remote Controller

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



(1) Checking an error or warning

	Operation Status	Display	
Abnormal shutdown	The system stops operating.	The operation lamp (green) starts to blink. The message "Error: Press Menu button" will appear and blink at the bottom of the screen.	
Warning	The system continues its operation.	The operation lamp (green) remains on. The message "Warning: Press Menu button" will appear and blink at the bottom of the screen.	

2.2 Self-diagnosis by Wireless Remote Controller

In the Case of BRC7C Type / BRC7E Type / BRC4C Type

If equipment stops due to an error, the operation indicating LED on the light reception section flashes.

The error code can be determined by following the procedure described below. (The error code is displayed when an operation error has occurred. In normal condition, the error code of the last problem is displayed.)

1. Press the INSPECTION/TEST button to select “Inspection.”
   The equipment enters the inspection mode. The “Unit” indication lights and the Unit No. display shows flashing “0” indication.
2. Set the Unit No.
   Press the UP or DOWN button and change the Unit No. display until the buzzer (∗1) is generated from the indoor unit.
   ∗1 Number of beeps
   3 short beeps : Conduct all of the following operations.
   1 short beep : Conduct steps 3 and 4.
   Continue the operation in step 4 until a buzzer remains ON. The continuous buzzer indicates that the error code is confirmed.
   Continuous beep : No abnormality.
3. Press the MODE selector button.
   The left “0” (upper digit) indication of the error code flashes.
4. Error code upper digit diagnosis
   Press the UP or DOWN button and change the error code upper digit until the error code matching buzzer (∗2) is generated.

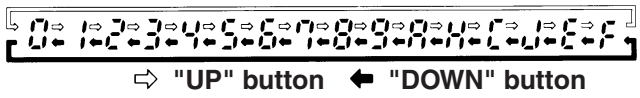
■ The upper digit of the code changes as shown below when the UP and DOWN buttons are pressed.

⇨ **"UP" button** ⇦ **"DOWN" button**

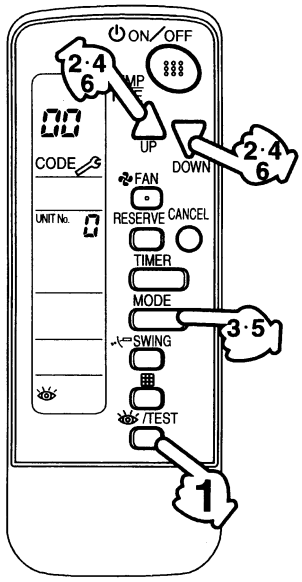
∗2 Number of beeps
Continuous beep : Both upper and lower digits matched. (Error code confirmed)
2 short beeps : Upper digit matched.
1 short beep : Lower digit matched.

5. Press the MODE selector button.
   The right “0” (lower digit) indication of the error code flashes.
6. Error code lower digit diagnosis
   Press the UP or DOWN button and change the error code lower digit until the continuous error code matching buzzer (∗2) is generated.

■ The lower digit of the code changes as shown below when the UP and DOWN buttons are pressed.

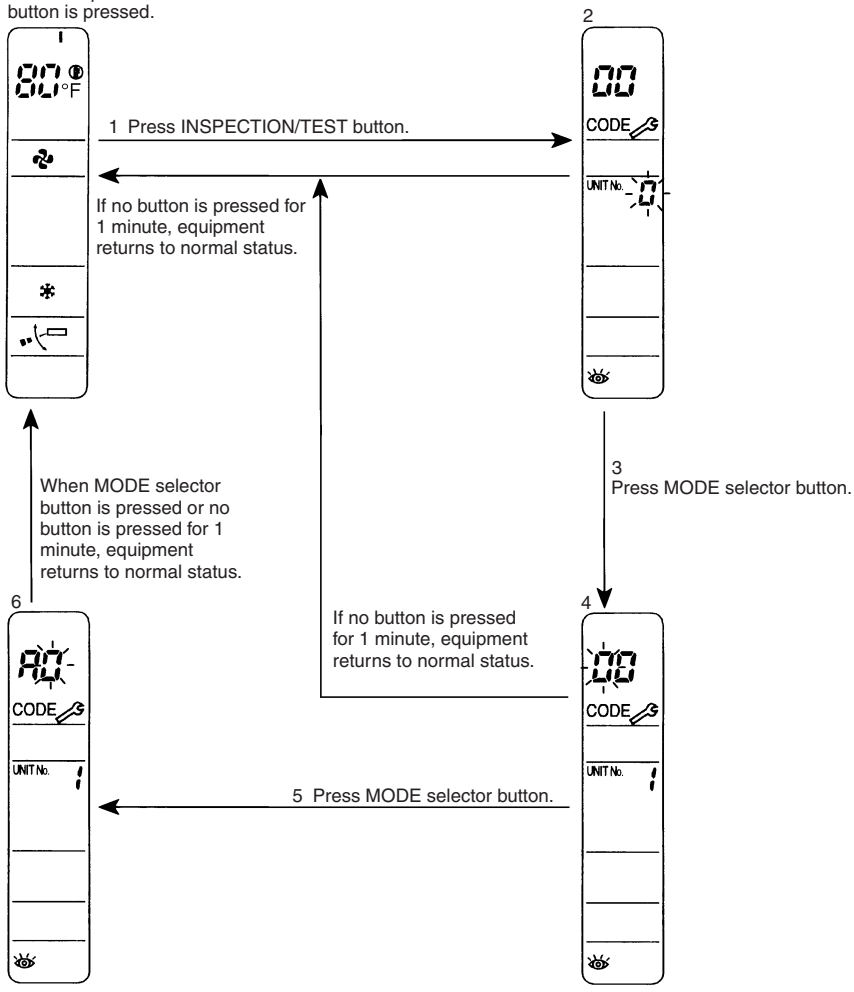


⇨ "UP" button ⇦ "DOWN" button



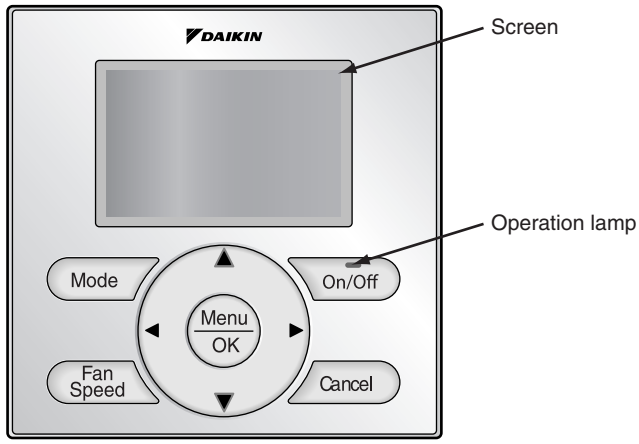
Normal status

Enters inspection mode from normal status when the INSPECTION/TEST button is pressed.

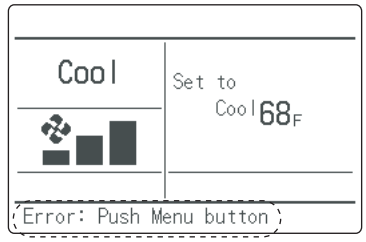
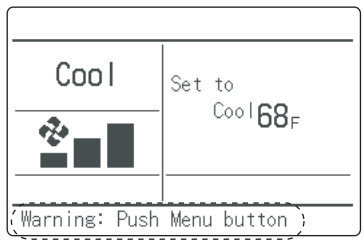


2.3 Remote Controller Self-Diagnosis Function

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



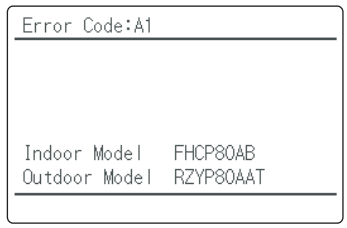
(1) Checking an error or warning

	Operation Status	Display	
Abnormal shutdown	The system stops operating.	The operation lamp (green) starts to blink. The message "Error: Press Menu button" will appear and blink at the bottom of the screen.	
Warning	The system continues its operation.	The operation lamp (green) remains on. The message "Warning: Press Menu button" will appear and blink at the bottom of the screen.	

(2) Taking corrective action

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

· Take the corrective action specific to the model.



2.4 Error Codes - Sub Codes

If an error code like the one shown below is displayed when the navigation remote controller (BRC1E71/72) is in use, make a detailed diagnosis or a diagnosis of the relevant unit referring to the attached list of detailed error codes.

Error code	Troubleshooting	
	Description of error	Description of diagnosis
E3 - 01 E3 - 02	High pressure switch activated (Master)	Refer to the “E3” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
E3 - 03 E3 - 04	High pressure switch activated (Slave 1)	
E3 - 05 E3 - 06	High pressure switch activated (Slave 2)	
E3 - 07	High pressure switch activated (Batch)	
E4 - 01	Low pressure error (Master)	Refer to the “E4” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
E4 - 02	Low pressure error (Slave 1)	
E4 - 03	Low pressure error (Slave 2)	
E5 - 01	INV. compressor lock (Master)	Refer to the “E5” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
E5 - 02	INV. compressor lock (Slave 1)	
E5 - 03	INV. compressor lock (Slave 2)	
E6 - 01	STD compressor 1 OC activated (Master)	Refer to the “E6” flow chart of each manual and make a diagnosis of the relevant compressor of the relevant unit based on the Error code shown to the left.
E6 - 02	STD compressor 2 OC activated (Master)	
E6 - 03	STD compressor 1 OC activated (Slave 1)	
E6 - 04	STD compressor 2 OC activated (Slave 1)	
E6 - 05	STD compressor 1 OC activated (Slave 2)	
E6 - 06	STD compressor 2 OC activated (Slave 2)	
E7 - 01	Fan motor 1 lock (Master)	Refer to the following to make a diagnosis of the fan motor of the relevant unit. ○For fan motor lock, refer to E7-01, -02, -13, -14, -25, and -26. ○For instantaneous overcurrent, refer to E7-05, -06, -17, -18, -29, and -30. ○For IPM error, refer to E7-09, -10, -21, -22, -33, and -34.
E7 - 02	Fan motor 2 lock (Master)	
E7 - 05	Fan motor 1 instantaneous overcurrent (Master)	
E7 - 06	Fan motor 2 instantaneous overcurrent (Master)	
E7 - 09	Fan motor 1 IPM error (Master)	
E7 - 10	Fan motor 2 IPM error (Master)	
E7 - 13	Fan motor 1 lock (Slave 1)	
E7 - 14	Fan motor 2 lock (Slave 1)	
E7 - 17	Fan motor 1 instantaneous overcurrent (Slave 1)	
E7 - 18	Fan motor 2 instantaneous overcurrent (Slave 1)	
E7 - 21	Fane motor 1 IPM error (Slave 1)	
E7 - 22	Fan motor 2 IPM error (Slave 1)	
E7 - 25	Fan motor 1 lock (Slave 2)	
E7 - 26	Fan motor 2 lock (Slave 2)	
E7 - 29	Fan motor 1 instantaneous overcurrent (Slave 2)	
E7 - 30	Fan motor 2 instantaneous overcurrent (Slave 2)	
E7 - 33	Fan motor 1 IPM error (Slave 2)	
E7 - 34	Fan motor 2 IPM error (Slave 2)	
E9 - 01	Electronic expansion valve 1 coil error (Master)	Refer to the “E9” flow chart of each manual and make a diagnosis of the relevant electronic expansion valve of the relevant unit based on the Error code shown to the left.
E9 - 04	Electronic expansion valve 2 coil error (Master)	
E9 - 05	Electronic expansion valve 1 coil error (Slave 1)	
E9 - 07	Electronic expansion valve 2 coil error (Slave 1)	
E9 - 08	Electronic expansion valve 1 coil error (Slave 2)	
E9 - 10	Electronic expansion valve 2 coil error (Slave 2)	

Error code	Troubleshooting	
	Description of error	Description of diagnosis
F3 - 01	Discharge pipe temperature error (Master)	Refer to the “F3” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
F3 - 03	Discharge pipe temperature error (Slave 1)	
F3 - 05	Discharge pipe temperature error (Slave 2)	
F6 - 02	Excess refrigerant charge error	Excess refrigerant charge was detected during test run.
F6 - 03	Excess refrigerant charge warning	Excess refrigerant charge was detected during operation other than test run.
H7 - 01	Fan motor 1 signal error (Master)	Refer to the “H7” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
H7 - 02	Fan motor 2 signal error (Master)	
H7 - 05	Fan motor 1 signal error (Slave 1)	
H7 - 06	Fan motor 2 signal error (Slave 1)	
H7 - 09	Fan motor 1 signal error (Slave 2)	
H7 - 10	Fan motor 2 signal error (Slave 2)	
H9 - 01	Faulty outdoor air thermistor (Master)	Refer to the “H9” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
H9 - 02	Faulty outdoor air thermistor (Slave 1)	
H9 - 03	Faulty outdoor air thermistor (Slave 2)	
J2 - 01	Faulty current sensor (Master: STD compressor 1)	Refer to the “J2” flow chart of each manual and make a diagnosis of the relevant compressor of the relevant unit based on the Error code shown to the left.
J2 - 02	Faulty current sensor (Master: STD compressor 2)	
J2 - 03	Faulty current sensor (Slave 1: STD compressor 1)	
J2 - 04	Faulty current sensor (Slave 1: STD compressor 2)	
J2 - 05	Faulty current sensor (Slave 2: STD compressor 1)	
J2 - 06	Faulty current sensor (Slave 2: STD compressor 2)	
J2 - 07	Current sensor error (System)	
J3 - 01	Faulty discharge pipe thermistor 1 (Master: INV. compressor)	Refer to the “J3” flow chart of each manual and make a diagnosis of the relevant compressor of the relevant unit based on the Error code shown to the left.
J3 - 02	Faulty discharge pipe thermistor 2 (Master: STD compressor 1)	
J3 - 03	Faulty discharge pipe thermistor 3 (Master: STD compressor 2)	
J3 - 04	Faulty discharge pipe thermistor 1 (Slave 1: INV. compressor)	
J3 - 05	Faulty discharge pipe thermistor 2 (Slave 1: STD compressor 1)	
J3 - 06	Faulty discharge pipe thermistor 3 (Slave 1: STD compressor 2)	
J3 - 07	Faulty discharge pipe thermistor 1 (Slave 2: INV. compressor)	
J3 - 08	Faulty discharge pipe thermistor 2 (Slave 2: STD compressor 1)	
J3 - 09	Faulty discharge pipe thermistor 3 (Slave 2: STD compressor 2)	
J5 - 01	Faulty suction pipe thermistor (Master)	Refer to the “J5” flow chart of each manual and make a diagnosis of the relevant thermistor of the relevant unit based on the Error code shown to the left.
J5 - 02	Faulty accumulator inlet thermistor (Master)	
J5 - 03	Faulty suction pipe thermistor (Slave 1)	
J5 - 04	Faulty accumulator inlet thermistor (Slave 1)	
J5 - 05	Faulty suction pipe thermistor (Slave 2)	
J5 - 06	Faulty accumulator inlet thermistor (Slave 2)	

Error code	Troubleshooting	
	Description of error	Description of diagnosis
J6 - 01	Faulty heat exchanger thermistor (Master)	Refer to the “J6” flow chart of each manual and make a diagnosis of the relevant thermistor based on the Error code shown to the left.
J6 - 02	Faulty heat exchanger thermistor (Slave 1)	
J6 - 03	Faulty heat exchanger thermistor (Slave 2)	
J7 - 01	Faulty liquid pipe thermistor (Master)	Refer to the “J7” flow chart of each manual and make a diagnosis of the relevant thermistor based on the Error code shown to the left.
J7 - 02	Faulty liquid pipe thermistor (Slave 1)	
J7 - 03	Faulty liquid pipe thermistor (Slave 2)	
J9 - 01	Faulty subcooling heat exchanger outlet thermistor (Master)	Refer to the “J9” flow chart of each manual and make a diagnosis of the relevant thermistor based on the Error code shown to the left.
J9 - 02	Faulty subcooling heat exchanger outlet thermistor (Slave 1)	
J9 - 03	Faulty subcooling heat exchanger outlet thermistor (Slave 2)	
JA - 01	Faulty high pressure sensor (Master)	Refer to the “JA” flow chart of each manual and make a diagnosis of the relevant sensor based on the Error code shown to the left.
JA - 02	Faulty high pressure sensor (Slave 1)	
JA - 03	Faulty high pressure sensor (Slave 2)	
JC - 01	Faulty low pressure sensor (Master)	Refer to the “JC” flow chart of each manual and make a diagnosis of the relevant sensor based on the Error code shown to the left.
JC - 02	Faulty low pressure sensor (Slave 1)	
JC - 03	Faulty low pressure sensor (Slave 2)	
L1 - 01	Instantaneous overcurrent (Master: Inverter PCB)	The inverter PCB may be faulty. Refer to the “L1” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
L1 - 02	Current sensor error (Master: Inverter PCB)	
L1 - 03	Current offset error (Master: Inverter PCB)	
L1 - 04	IGBT error (Master: Inverter PCB)	The inverter PCB may be faulty or a PCB other than the specified one is mounted. Refer to the “L1” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
L1 - 07	Instantaneous overcurrent (Slave 1: Inverter PCB)	The inverter PCB may be faulty. Refer to the “L1” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
L1 - 08	Current sensor error (Slave 1: Inverter PCB)	
L1 - 09	Current offset error (Slave 1: Inverter PCB)	
L1 - 10	IGBT error (Slave 1: Inverter PCB)	The inverter PCB may be faulty or a PCB other than the specified one is mounted. Refer to the “L1” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
L1 - 12	Instantaneous overcurrent (Slave 2: Inverter PCB)	The inverter PCB may be faulty. Refer to the “L1” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
L1 - 13	Current sensor error (Slave 2: Inverter PCB)	
L1 - 14	Current offset error (Slave 2: Inverter PCB)	
L1 - 15	IGBT error (Slave 2: Inverter PCB)	The inverter PCB may be faulty or a PCB other than the specified one is mounted. Refer to the “L1” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
L4 - 01	Radiation fin temperature rise (Master: Inverter PCB)	Refer to the “L4” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
L4 - 02	Radiation fin temperature rise (Slave 1: Inverter PCB)	
L4 - 03	Radiation fin temperature rise (Slave 2: Inverter PCB)	
L5 - 03	Current offset error (Master)	Refer to the “L5” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
L5 - 05	Current offset error (Slave 1)	
L5 - 07	Current offset error (Slave 2)	

Error code	Troubleshooting	
	Description of error	Description of diagnosis
L8 - 03	INV. compressor instantaneous overcurrent error (Master)	Refer to the “L8” flow chart of each manual and make a diagnosis of the relevant compressor of the relevant unit based on the Error code shown to the left.
L8 - 06	INV. compressor instantaneous overcurrent error (Slave 1)	
L8 - 07	INV. compressor instantaneous overcurrent error (Slave 2)	
L9 - 01	INV. compressor startup failure (Master)	Refer to the “L9” flow chart of each manual and make a diagnosis of the relevant compressor of the relevant unit based on the Error code shown to the left.
L9 - 05	INV. compressor startup failure (Slave 1)	
L9 - 06	INV. compressor startup failure (Slave 2)	
LC - 01	Transmission error [between INV. PCB and main PCB] (Master)	Refer to the “LC1” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
LC - 06	Transmission error [between INV. PCB and main PCB] (Slave 1)	
LC - 08	Transmission error [between INV. PCB and main PCB] (Slave 2)	
P1 - 01	Unbalanced power supply voltage (Master)	Refer to the “P1” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
P1 - 02	Unbalanced power supply voltage (Slave 1)	
P1 - 03	Unbalanced power supply voltage (Slave 2)	
PJ - 04	Faulty combination of INV. PCB (Master)	Refer to the “PJ” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
PJ - 05	Faulty combination of INV. PCB (Slave 1)	
PJ - 06	Faulty combination of INV. PCB (Slave 2)	
U0 - 03	Gas shortage alarm	Refer to the “U0” flow chart.
U1 - 01	Reverse phase/open phase for power supply (Master)	Refer to the “U1” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
U1 - 04	Reverse phase for power supply [with power supply turned ON] (Master)	
U1 - 05	Reverse phase/open phase for power supply (Slave 1)	
U1 - 06	Reverse phase for power supply [with power supply turned ON] (Slave 1)	
U1 - 07	Reverse phase/open phase for power supply (Slave 2)	
U1 - 08	Reverse phase for power supply [with power supply turned ON] (Slave 2)	

2.5 Error Codes and Description

	Error code	Operation lamp	Error contents	Page Referred
Indoor Unit	A0	◑	External Protection Device Abnormality	151
	A1	◑	PCB Abnormality	152
	A3	◑	Drain Level Control System (S1L) Abnormality	153
	A6	◑	Fan Motor (M1F) Lock, Overload Indoor Unit Fan Motor Abnormality Overload / Overcurrent / Lock of Indoor Unit Fan Motor	155 158, 159 163
	A7	○	Swing Flap Motor (M1S) Abnormality	164
	A8	◑	Power Supply Voltage Abnormality	166
	A9	◑	Electronic Expansion Valve Coil Abnormality / Dust Clogging Electronic Expansion Valve Coil Abnormality	167, 168
	AF	○	Drain Level above Limit	169
	AJ	◑	Capacity Determination Device Abnormality	170
	C1	◑	Transmission Abnormality between Indoor Unit PCB and Fan PCB	171
	C4	◑	Thermistor for Liquid Pipe Abnormality	173
	C5	◑	Thermistor for Gas Pipe Abnormality	173
	C6	◑	Combination Error between Indoor Unit PCB and Fan PCB	174
	C9	◑	Thermistor for Suction Air Abnormality Remote Sensor Abnormality	173, 175
	CA	◑	Thermistor Abnormality	176
	CC	○	Humidity Sensor System Abnormality	177
	CJ	○	Room Temperature Thermistor in Remote Controller Abnormality	178
condensing Unit	E1	◑	PCB Abnormality	179
	E2	◑	Ground Leakage by Leak Detection PCB Assy	180
	E3	◑	Actuation of High Pressure Switch	182
	E4	◑	Actuation of Low Pressure Sensor	184
	E5	◑	Inverter Compressor Motor Lock	186
	E9	◑	Electronic Expansion Valve Coil (Y1E ~ Y5E) Abnormality	188
	F3	◑	Abnormal Discharge Pipe Temperature	190
	F6	◑	Refrigerant Overcharged	191
	HJ	◑	Water System Abnormality	193
	J3	◑	Discharge Pipe Thermistor System Abnormality	195
	J4	◑	Heat Exchanger Gas Pipe Thermistor System Abnormality	195
	J5	◑	Suction Pipe Thermistor System Abnormality	195
	J7	◑	Receiver Outlet Liquid Pipe Thermistor System Abnormality	195
	J9	◑	Subcooling Heat Exchanger Outlet Pipe Thermistor System Abnormality	195
	JA	◑	High Pressure Sensor Abnormality	196
	JC	◑	Low Pressure Sensor Abnormality	198
	L4	◑	Inverter Radiation Fin Temperature Rise Abnormality	200
	L5	◑	Momentary Overcurrent of Inverter Compressor	202
	L8	◑	Momentary Overcurrent of Inverter Compressor	204
	L9	◑	Inverter Compressor Startup Error	206
	LC	◑	Transmission Error between Inverter and Condensing Unit Main PCB	208
	P1	◑	Inverter Over-Ripple Protection	210
	P4	◑	Inverter Radiation Fin Temperature Thermistor Rise Abnormality	211
	PJ	◑	Field Setting Abnormality after Replacing condensing Unit Main PCB or Combination of PCB Abnormality	212

	Error code	Operation lamp	Error contents	Page Referred
System	U0	○	Refrigerant Shortage Alert	213
	U1	◑	Open Phase	215
	U2	◑	Power Supply Insufficient or Instantaneous Failure	216
	U3	◑	Check Operation is not Executed	218
	U4	◑	Transmission Error between Indoor Units and Condensing Units	219
	U5	◑	Transmission Error between Remote Controller and Indoor Unit	221
	U7	◑	Transmission Error between Condensing Units	222
	U8	◑	Transmission Error between Main and Sub Remote Controllers	228
	U9	◑	Transmission Error between Indoor and Condensing Units in the Same System	229
	UA	◑	Improper Combination of Indoor, Branch Selector and Condensing Units	230
	UC	○	Address Duplication of Centralized Control Equipment	234
	UE	◑	Transmission Error between Centralized Control Equipment and Indoor Unit	235
	UF	◑	System is not Set yet	238
	UH	◑	System Error, Refrigerant System Address Undefined	239

The system operates for error codes indicated in black squares, however, be sure to check and repair.

2.6 Error Code Indication by Condensing Unit PCB

To enter the monitor mode, press the MODE button (BS1) when in "Setting mode 1".

∗ Refer to P.111 for Monitor mode.

<Selection of setting item>

Press the SET button (BS2) and set the LED display to a setting item.

∗ Refer to P.111 for Monitor mode.

<Confirmation of error 1>

Press the RETURN button (BS3) once to display "First digit" of error code.

<Confirmation of error 2>

Press the SET button (BS2) once to display "Second digit" of error code.

Detail description on next page.

<Confirmation of error 3>

Press the SET button (BS2) once to display "master or slave1 or slave2" and "error location".

Press the RETURN button (BS3) and switches to the initial status of "Monitor mode".

∗ Press the MODE button (BS1) and returns to "Setting mode 1".

Contents of error		Error code
Abnormal discharge pressure	HPS activated	E3
Abnormal suction pressure	Abnormal Pe	E4
Compressor lock	Detection of INV. compressor lock	E5
Over load, overcurrent, abnormal lock of condensing unit fan motor	Instantaneous overcurrent of DC fan motor Detection of DC fan motor lock	E7
Malfunction of electronic expansion valve	EV1	E9
	EV3	
Abnormal position signal of condensing unit fan motor	Abnormal position signal of DC fan motor	H7
Defective sensor of outdoor air temperature	Defective Ta sensor	H9
Abnormality in water system		HJ
Abnormal discharge pipe temperature	Abnormal Td	F3
Abnormal heat exchanger temperature	Refrigerant overcharge	F6
Defective sensor of discharge pipe temperature	Defective Tdi sensor	J3
Defective sensor of heat exchanger gas pipe thermistor	Defective Tg sensor	J4
Defective sensor of suction pipe temperature	Defective Ts sensor	J5
Defective sensor of receiver temperature	Defective Tl sensor	J7
Defective sensor of subcooling heat exchanger temperature	Defective Tsh sensor	J9
Defective sensor of discharge pressure	Defective Pc sensor	JA
Defective sensor of suction pressure	Defective Pe sensor	JC
Defective Inverter PCB	Defective IPM	L1
	Defective Current sensor 1	
	Defective Current sensor 2	
	Abnormal DIP SW setting	
Inverter radiation fin temperature rising	Over heating of inverter radiation fin temperature	L4
DC output overcurrent	Inverter instantaneous overcurrent	L5
Electronic thermal switch	Electronic thermal switch 1	L8
	Electronic thermal switch 2	
	Out-of-step	
	Speed down after startup	
	Lightening detection	
Stall prevention (Limit time)	Stall prevention (Current increasing)	L9
	Stall prevention (Defective startup)	
	Abnormal waveform in startup	
	Out-of-step	
Transmission error between inverter and condensing unit	Inverter transmission error	LC
Open phase/Power supply imbalance	Imbalance of inverter power supply voltage	P1
Defective temperature sensor inside switch box	Defective thermistor of inverter box	P3
Defective temperature sensor of inverter radiation fin	Defective thermistor of radiation fin	P4
Incorrect combination of inverter and fan driver	Incorrect combination of inverter and fan driver	PJ

Error code	Confirmation of error 1							Confirmation of error 2							Confirmation of error 3						
	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED1	LED2	LED3	LED4	LED5	LED6	LED7
E3	◑	●	○	●	●	◑	◑	◑	○	●	●	●	◑	◑	◑	○	○			●	●
E4								◑	○	●	●	◑	●	●	◑	○	○			●	●
E5								◑	○	●	●	◑	●	◑	◑	○	○			●	●
E7								◑	○	●	●	◑	◑	◑	◑	○	○			●	◑
E9								◑	○	●	◑	●	●	◑	◑	○	○			●	◑
															◑	○	○			◑	◑
H7	◑	●	○	●	◑	●	●	◑	○	●	●	◑	◑	◑	◑	○	○			●	◑
H9								◑	○	●	◑	●	●	◑	◑	○	○			●	●
HJ								◑	○	●	◑	◑	●	◑	◑	○	○			●	●
F3	◑	●	○	●	◑	●	◑	◑	○	●	●	●	◑	◑	◑	○	○			●	●
F6								◑	○	●	●	◑	◑	●	◑	○	○			●	●
J3	◑	●	○	●	◑	◑	●	◑	○	●	●	●	◑	◑	◑	○	○			●	◑
J4								◑	○	●	●	○	●	●	◑	○	○			●	◑
J5								◑	○	●	●	◑	●	◑	◑	○	○			●	●
J7								◑	○	●	●	◑	◑	◑	◑	○	○			●	●
J8								◑	○	●	◑	●	●	◑	◑	○	○			●	●
JA								◑	○	●	◑	●	◑	●	◑	○	○			●	●
JE								◑	○	●	◑	◑	●	●	◑	○	○			●	●
L1	◑	●	○	●	◑	◑	◑	◑	○	●	●	●	●	◑	◑	○	○			●	●
								◑	○	●	●	●	●	◑	◑	○	○			●	◑
								◑	○	●	●	●	●	◑	◑	○	○			◑	●
								◑	○	●	●	●	●	◑	◑	○	○			◑	◑
L4	◑	●	○	●	◑	◑	●	◑	○	●	●	◑	●	●	◑	○	○			●	●
L5								◑	○	●	●	◑	●	◑	◑	○	○			●	●
L8								◑	○	●	◑	●	●	●	◑	○	○			●	●
L9								◑	○	●	◑	●	●	◑	◑	○	○			●	●
LC								◑	○	●	◑	◑	●	●	◑	○	○			●	●
P1	◑	●	○	◑	●	●	●	◑	○	●	●	●	●	◑	◑	○	○			●	●
P3								◑	○	●	●	●	◑	◑	◑	○	○			●	●
P4								◑	○	●	●	◑	●	●	◑	○	○			●	●
PJ								◑	○	●	◑	◑	●	◑	◑	○	○			●	●

○: ON
◑: Blink
●: OFF

Error code 1st digit display section

○: ON
◑: Blink
●: OFF

Error code 2nd digit display section

Master	●	●
Slave 1	●	◑
Slave 2	◑	●

Error location

To enter the monitor mode, press the MODE button (BS1) when in “Setting mode 1”.

∗ Refer to P.111 for Monitor mode.

<Selection of setting item>

Press the SET button (BS2) and set the LED display to a setting item.

∗ Refer to P.111 for Monitor mode.

<Confirmation of error 1>

Press the RETURN button (BS3) once to display “First digit” of error code.

<Confirmation of error 2>

Press the SET button (BS2) once to display “Second digit” of error code.

<Confirmation of error 3>

Press the SET button (BS2) once to display “master or slave1 or slave2” and “error location”.

Detail description on next page.

Press the RETURN button (BS3) and switches to the initial status of “Monitor mode”.

∗ Press the MODE button (BS1) and returns to “Setting mode 1”.

Contents of error		Error code
Refrigerant shortage	Refrigerant shortage alarm	U0
Reverse phase	Reverse phase error	U1
Abnormal power supply voltage	Insufficient inverter voltage	U2
	Inverter open phase (phase T)	
	Charging error of capacitor in inverter main circuit	
No implementation of test-run		U3
Transmission error between indoor and condensing unit	I/O transmission error	U4
Transmission error between condensing units, transmission error between thermal storage units, duplication of IC address	O/O transmission error	U7
Transmission error of other system	Indoor unit system error in other system or other unit of own system	U9
Erroneous onsite setting	Abnormal connection with excessive number of indoor units	UA
	Conflict of refrigerant type in indoor units	
Faulty system function	Incorrect wiring (Auto address error)	UH
Transmission error in accessory devices, conflict in wiring and piping, no setting for system	Abnormality multi level converter, abnormality in conflict check	UJ UF

Error code	Confirmation of error 1							Confirmation of error 2							Confirmation of error 3						
	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED1	LED2	LED3	LED4	LED5	LED6	LED7
U0	◑	●	○	◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○			●	●
U1								◑	○	●	●	●	●	◑	◑	○	○			●	●
U2								◑	○	●	●	●	◑	●	◑	○	○			●	◑
U3								◑	○	●	●	●	◑	◑	◑	○	○			●	●
U4								◑	○	●	●	◑	●	●	◑	○	○			●	●
U7								◑	○	●	●	◑	◑	◑	◑	○	○			●	●
U8								◑	○	●	◑	●	●	◑	◑	○	○			●	●
UA								◑	○	●	◑	●	◑	●	◑	○	○			●	●
UH								◑	○	●	◑	●	◑	◑	◑	○	○			●	●
UJ								◑	○	●	◑	◑	●	◑	◑	○	○			●	●
UF								◑	○	●	◑	◑	◑	◑	◑	○	○			●	●

○: ON
◑: Blink
●: OFF

Error code 1st digit display section

○: ON
◑: Blink
●: OFF

Error code 2nd digit display section

Master	●	●
Slave 1	●	◑
Slave 2	◑	●

Error location

3. Troubleshooting by Indication on the Remote Controller

3.1 External Protection Device Abnormality

Error Code

A07

Applicable Models

All indoor models

Method of Error Detection

Detect open or short circuit between external input terminals in indoor unit.

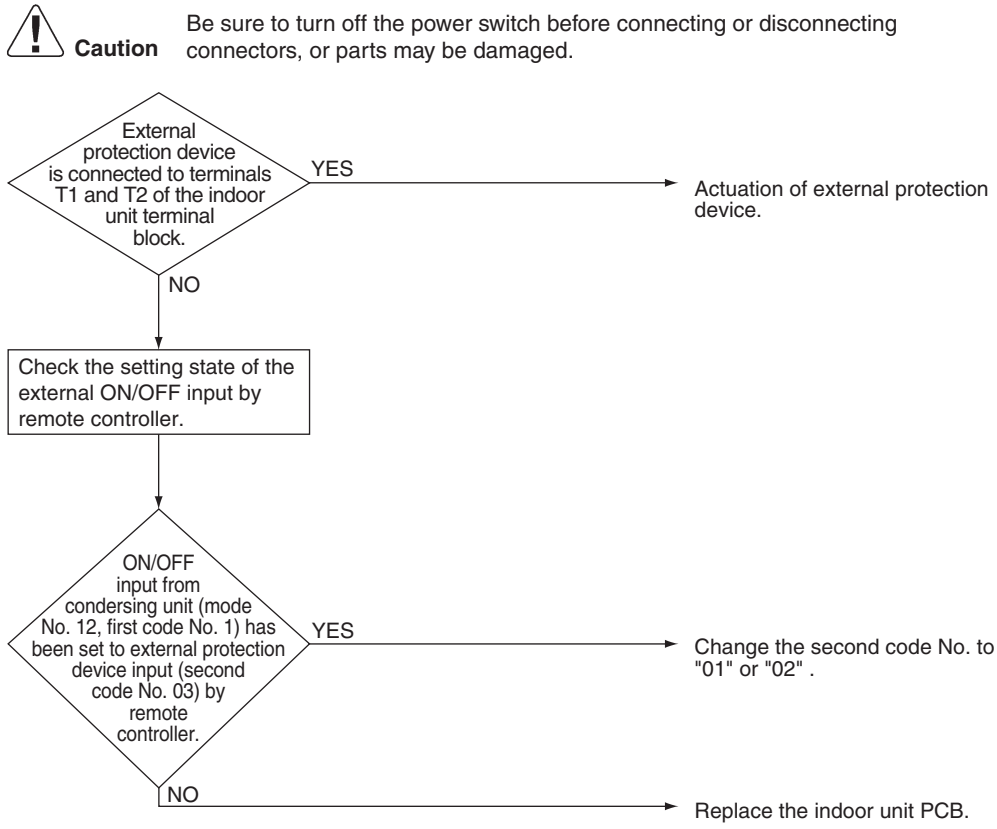
Error Decision Conditions

When an open circuit occurs between external input terminals with the remote controller set to "external ON/OFF terminal".

Supposed Causes

- Actuation of external protection device
- Improper field setting
- Defective of indoor unit PCB

Troubleshooting



3.2 PCB Abnormality

Error Code

A1

Applicable Models

All indoor models

Method of Error Detection

Check data from E²PROM.

Error Decision Conditions

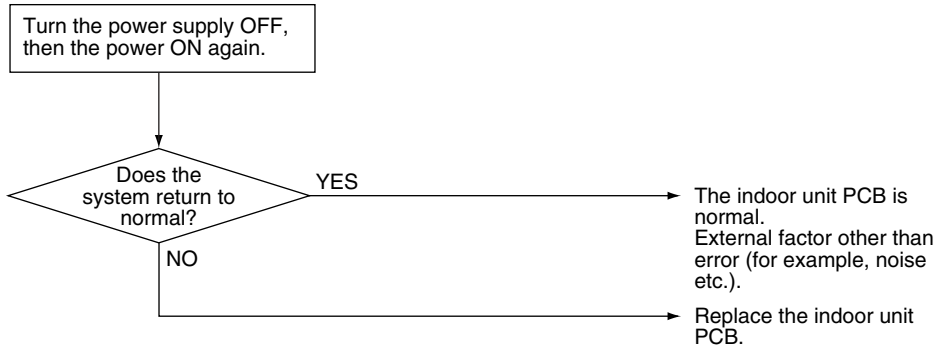
When data could not be correctly received from the E²PROM
E²PROM : Type of nonvolatile memory. Maintains memory contents even when the power supply is turned off.

Supposed Causes

- Defective of indoor unit PCB
- External factor (Noise etc.)

Troubleshooting

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

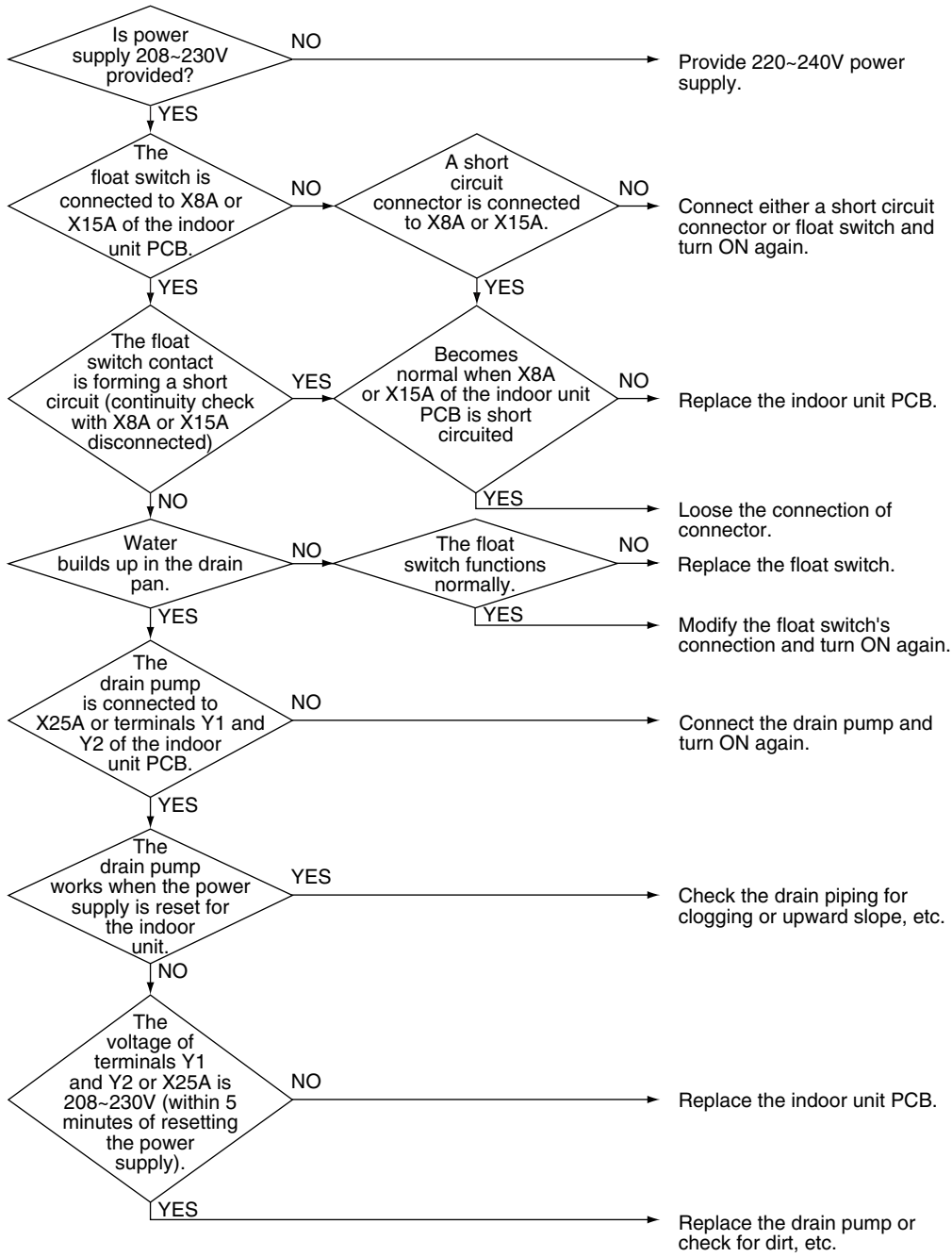


3.3 Drain Level Control System (S1L) Abnormality

Error Code	A3
Applicable Models	FXFQ, FXZQ, FXDQ, FXMQ-P, FXMQ-M (Option), FXHQ (Option), FXAQ (Option)
Method of Error Detection	By float switch OFF detection
Error Decision Conditions	When rise of water level is not a condition and the float switch goes OFF.
Supposed Causes	■ 208~230V power supply is not provided ■ Defective float switch or short circuit connector ■ Defective drain pump ■ Drain clogging, upward slope, etc. ■ Defective indoor unit PCB ■ Loose connection of connector

Troubleshooting

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



3.4 Fan Motor (M1F) Lock, Overload

Error Code

A6

Applicable Models

FXAQ, FXFQ, FXHQ

Method of Error Detection

Abnormal fan revolutions are detected by a signal output from the fan motor.

Error Decision Conditions

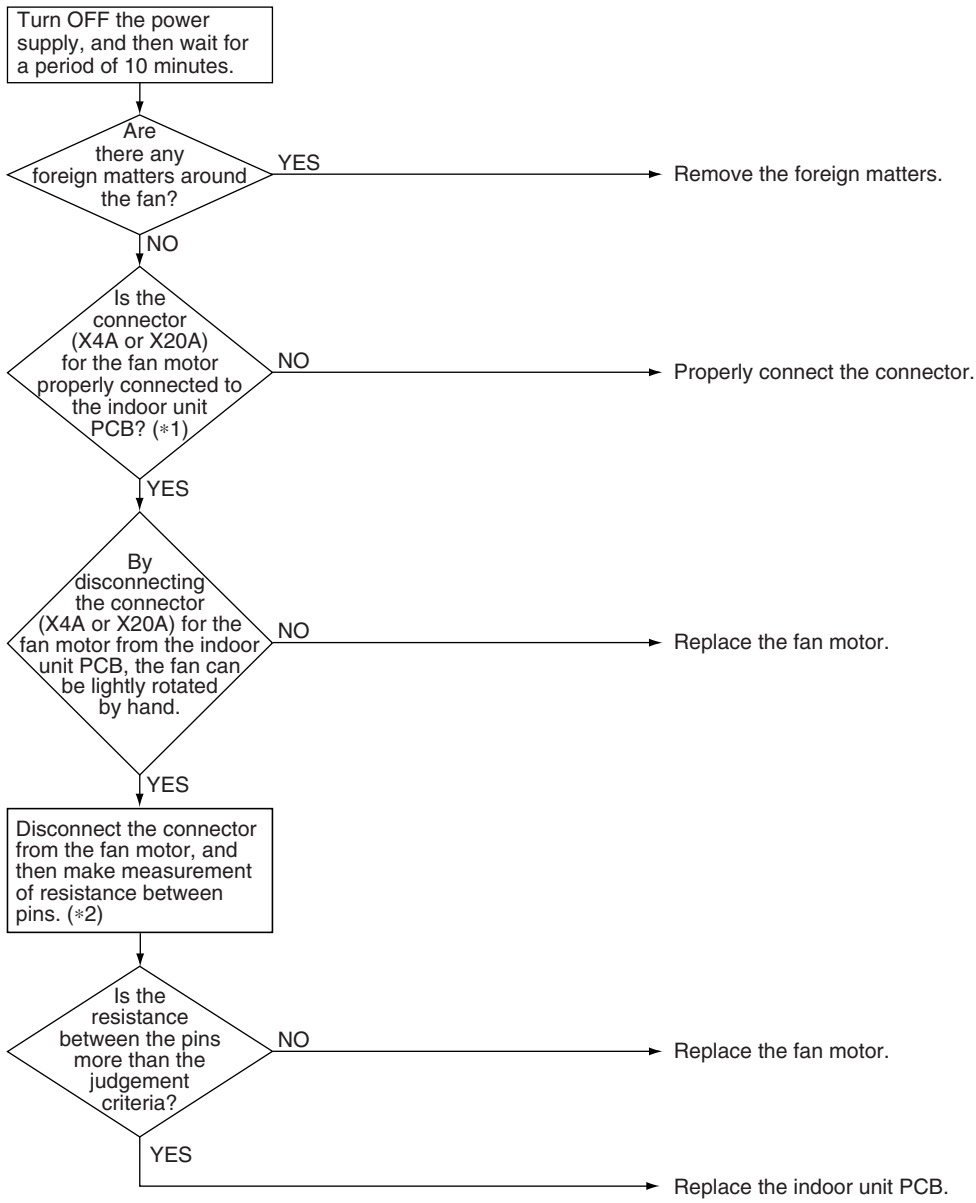
When the fan revolutions do not increase

Supposed Causes

- Broken wires in, short circuit of, or disconnection of connectors from the fan motor harness
- Defective fan motor
  (Broken wires or defective insulation)
- Abnormal signal output from the fan motor (defective circuit)
- Defective PCB
- Instantaneous disturbance in the power supply voltage
- Fan motor lock
  (Due to motor or external causes)
- The fan does not rotate due to foreign matters blocking the fan.
- Disconnection of the connector between the high-power PCB (A1P) and the low-power PCB (A2P).

Troubleshooting

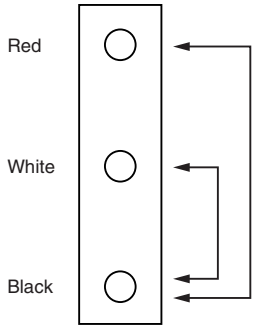
Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

∗1. If any junction connector is provided between the connector (X20A) on the indoor unit PCB and the fan motor, also check whether or not the junction connector is properly connected.

∗2. Check on connector of fan motor (Power supply cable)
Turn OFF the power supply.
Measure the resistance between phases of U, V, W at the motor side connectors (3-core wire) to check that the values are balanced and there is no short circuiting, while connector or relay connector is disconnected.



<FXHQ12PMVJU>

Measuring Points	Judgement
Black-Red	71.0Ω ±10%
Black-White	73.5Ω ±10%

<FXHQ24·36MVJU>

Measuring Points	Judgement
Black-Red	53.5Ω ±10%
Black-White	31.6Ω ±10%

∗3. Check on connector of fan motor is not available for below models.
FXFQ09~48PVJU, FXAQ07~24PVJU

Indoor Unit Fan Motor Abnormality

Error Code A6

Applicable Models FXDQ

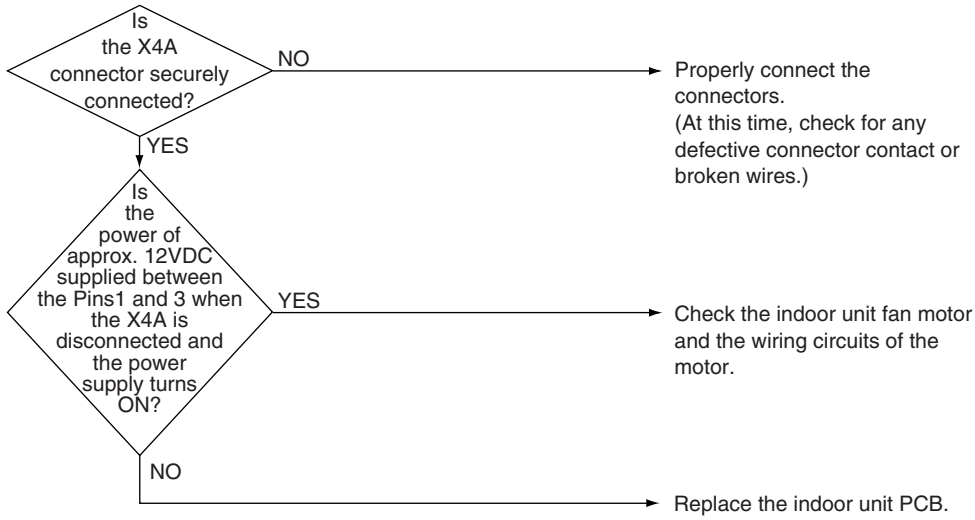
Method of Error Detection This error is detected if there is no revolutions detection signal output from the fan motor.

Error Decision Conditions When no revolutions can be detected even at the maximum output voltage to the fan

Supposed Causes
- Defective indoor fan motor
- Broken wires
- Defective contact

Troubleshooting

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

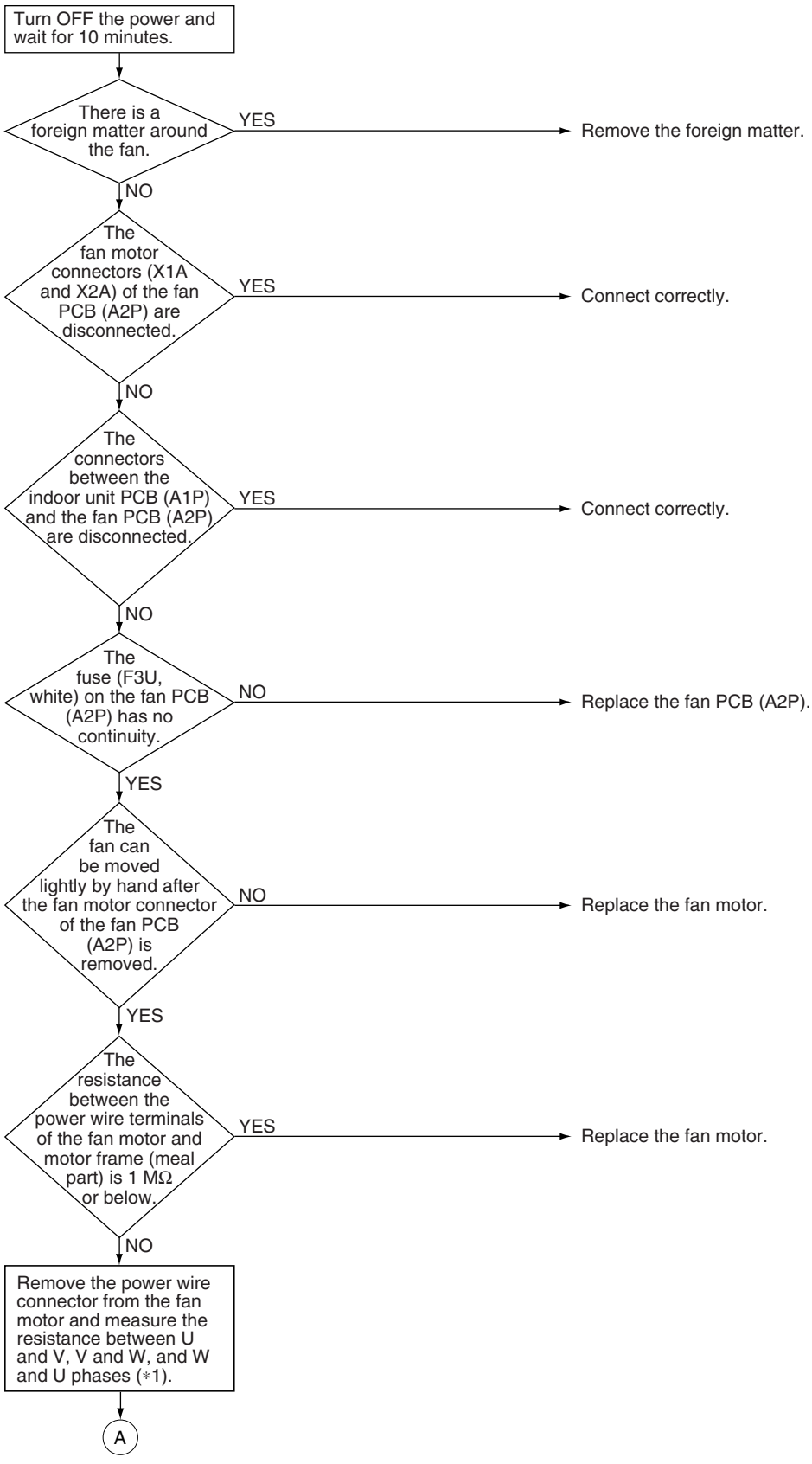


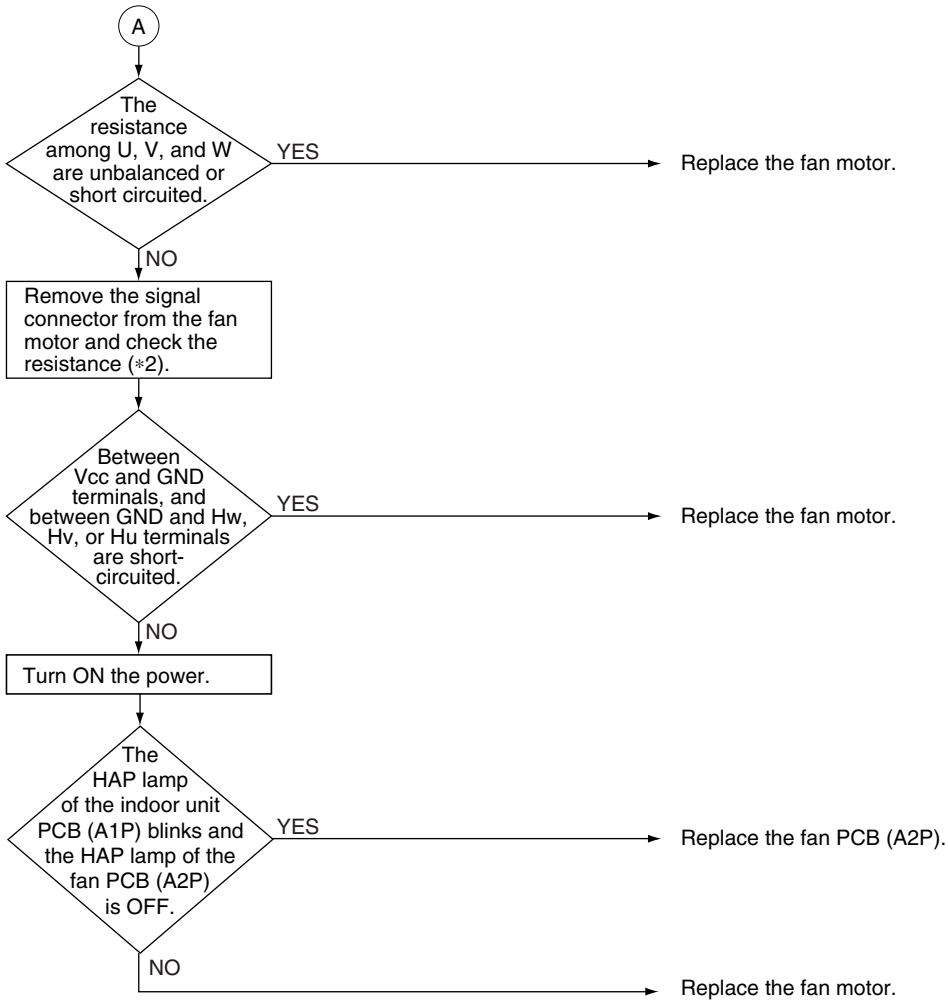
Indoor Unit Fan Motor Abnormality

Error Code	A6
Applicable Models	FXMQ18~48P
Method of Error Detection	Error from the current flow on the fan PCB Error from the RPM of the fan motor in operation Error from the position signal of the fan motor Error from the current flow on the fan PCB when the fan motor starting operation
Error Decision Conditions	■ An overcurrent flows. ■ The RPM is less than a certain level for 6 seconds. ■ A position error in the fan rotor continues for 5 seconds or more.
Supposed Causes	■ The clogging of a foreign matter ■ The disconnection of the fan motor connectors (X1A and X2A) ■ The disconnection of the connectors between the indoor unit PCB (A1P) and fan PCB (A2P) ■ Defective fan PCB (A2P) ■ Defective fan motor

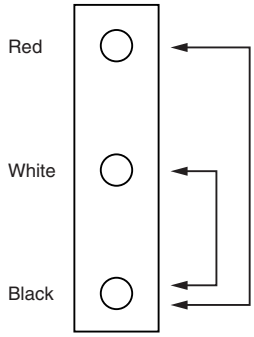
Troubleshooting

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



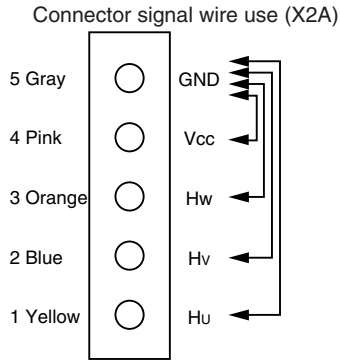

A
The resistance among U, V, and W are unbalanced or short circuited.
YES
Replace the fan motor.
NO
Remove the signal connector from the fan motor and check the resistance (∗2).
Between Vcc and GND terminals, and between GND and Hw, Hv, or Hu terminals are short-circuited.
YES
Replace the fan motor.
NO
Turn ON the power.
The HAP lamp of the indoor unit PCB (A1P) blinks and the HAP lamp of the fan PCB (A2P) is OFF.
YES
Replace the fan PCB (A2P).
NO
Replace the fan motor.

Note: ∗1. Check on connector of fan motor (Power supply cable)
Turn OFF the power supply.
Measure the resistance between phases of U, V, W at the motor side connectors (3-core wire) to check that the values are balanced and there is no short circuiting, while connector or relay connector is disconnected.



Measuring Points	Judgement
Black-Red	3.5Ω ±10%
Black-White	3.5Ω ±10%

∗2. Measurement of signal wire connector.
Remove the X2A connector and measure the resistance between GND and VCC, HW, HV, or HU terminals of the motor connector (with 5 conductors).



∗3. Check on connector of fan motor is not available for below models.
FXMQ40PVET

Overload / Overcurrent / Lock of Indoor Unit Fan Motor

Error Code

A6

Applicable Models

FXMQ-M

Method of Error Detection

This error is detected by detecting that the individual power supply for the fan turns OFF.

Error Decision Conditions

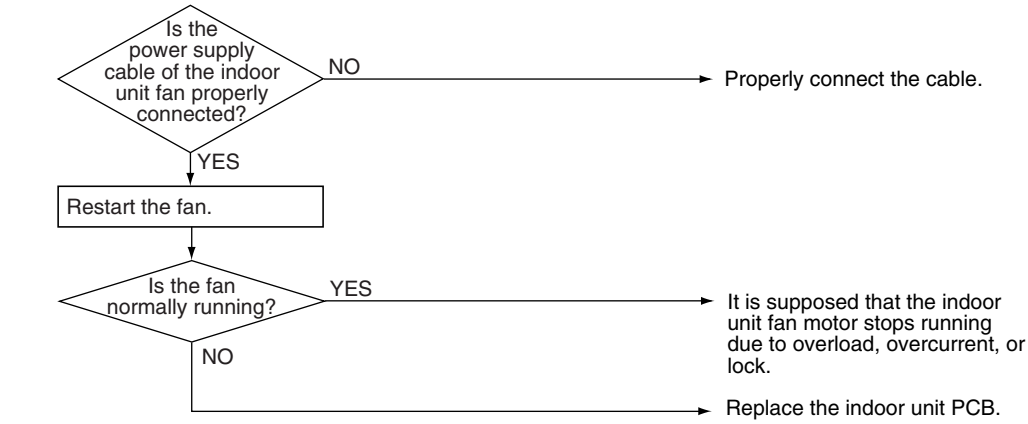
When it is not detected that the individual power supply for the indoor unit fan turns ON while in operation.

Supposed Causes

- Defective power supply for the indoor unit fan motor
- Clogged drain piping
- Actuation of the indoor unit safety device
- Defective contact in the fan wiring circuit

Troubleshooting

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

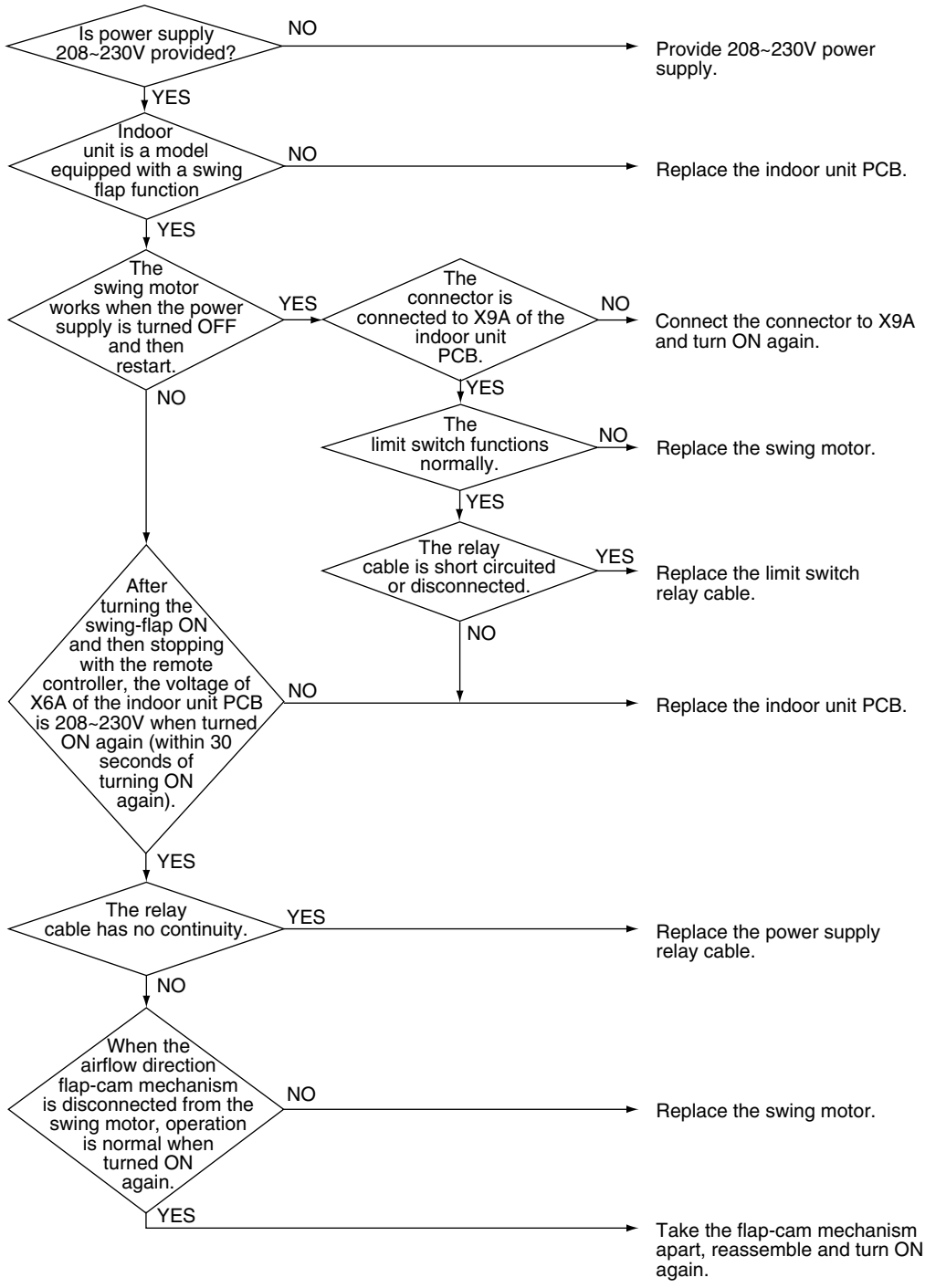


3.5 Swing Flap Motor (M1S) Abnormality

Error Code	A7
Applicable Models	FXHQ
Method of Error Detection	Utilizes ON/OFF of the limit switch when the motor turns.
Error Decision Conditions	When ON/OFF of the micro-switch for positioning cannot be reversed even though the swing flap motor is energized for a specified amount of time (about 30 seconds). ∗ Error code is displayed but the system operates continuously.
Supposed Causes	■ Defective swing motor ■ Defective connection cable (power supply and limit switch) ■ Defective airflow direction adjusting flap-cam ■ Defective indoor unit PCB

Troubleshooting

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



3.6 Power Supply Voltage Abnormality

Error Code A9

Applicable Models FXMQ07~48P

Method of Error Detection Detect error checking the input voltage of fan motor.

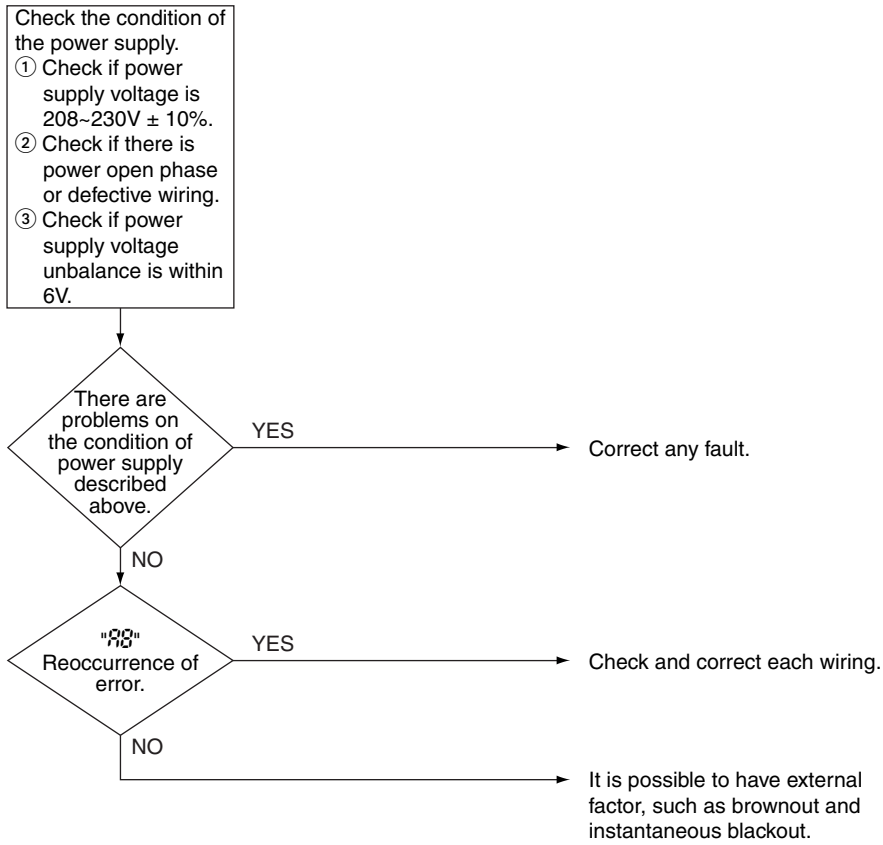
Error Decision Conditions When the input voltage of fan motor is 150V or less, or 386V or more.

Supposed Causes

- Defective power supply voltage.
- Defective connection on signal line.
- Defective wiring.
- Instantaneous blackout, others.

Troubleshooting

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



3.7 Electronic Expansion Valve Coil Abnormality / Dust Clogging

Error Code

A9

Applicable Models

FXFQ

Method of Error Detection

Check coil condition of electronic expansion valve by using micro-computer.
Check dust clogging condition of electronic expansion valve main body by using micro-computer.

Error Decision Conditions

Pin input for electronic expansion valve coil is abnormal when initializing micro-computer.
Either of the following conditions is seen/caused/ occurs while the unit stops operation.

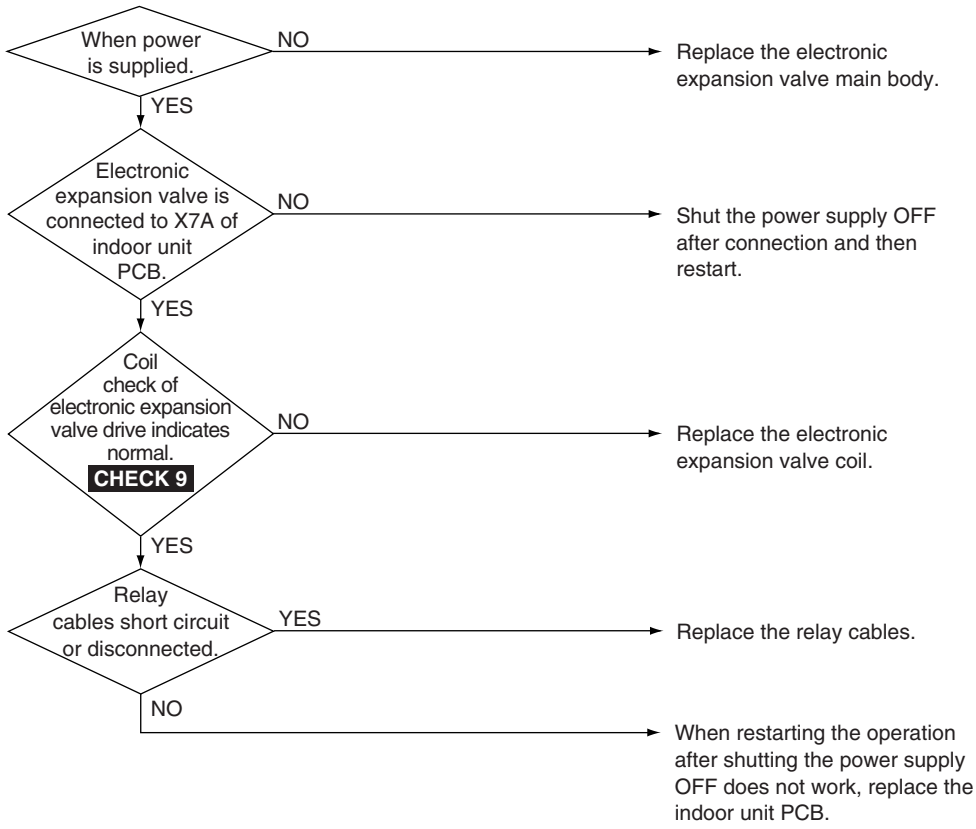
- Temperature of suction air (R1T) – temperature of liquid pipe of heat exchanger (R2T) > 46.4°F.
- Temperature of liquid pipe of heat exchanger (R2T) shows fixed degrees or below.

Supposed Causes

- Defective of electronic expansion valve coil
- Defective PCB indoor unit
- Defective relay cables

Troubleshooting

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



CHECK 9 Refer to P.249.

Electronic Expansion Valve Coil Abnormality

Error Code

A9

Applicable Models

Indoor units except FXFQ models

Method of Error Detection

Check coil condition of electronic expansion valve by using micro-computer.

Error Decision Conditions

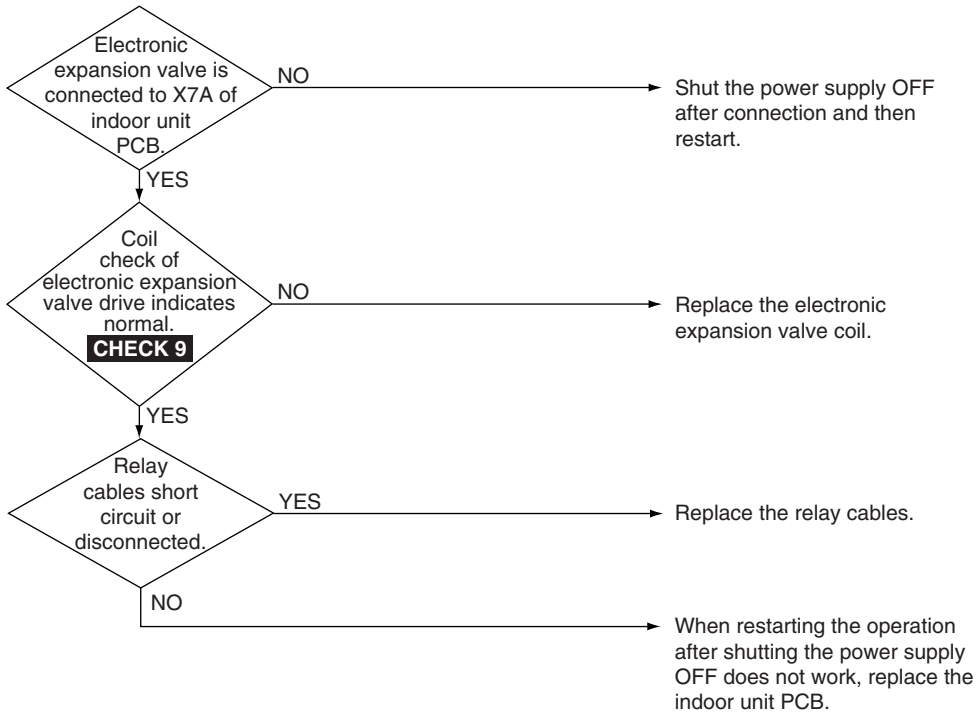
Pin input for electronic expansion valve coil is abnormal when initializing micro-computer.

Supposed Causes

- Defective of electronic expansion valve coil
- Defective PCB indoor unit
- Defective relay cables

Troubleshooting

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



CHECK 9 Refer to P.249.

3.8 Drain Level above Limit

Error Code

Applicable Models

FXFQ, FXZQ, FXMQ, FXDQ

Method of Error Detection

Water leakage is detected based on float switch ON/OFF operation while the compressor is in non-operation.

Error Decision Conditions

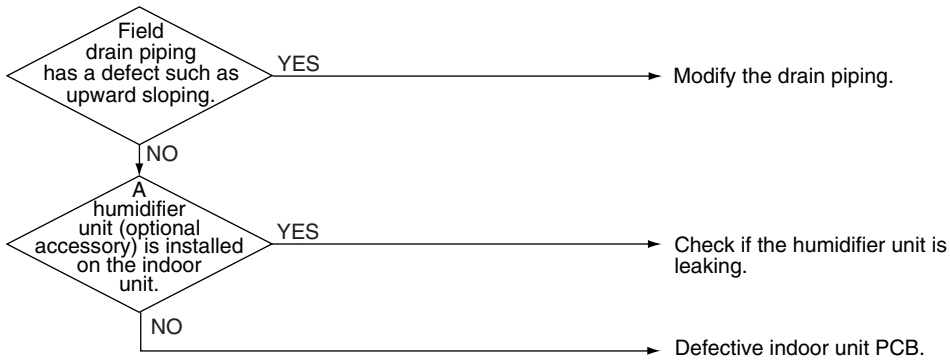
When the float switch changes from ON to OFF while the compressor is in non-operation.
∗ Error code is displayed but the system operates continuously.

Supposed Causes

- Humidifier unit (optional accessory) leaking
- Defective drain pipe (upward slope, 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.



3.9 Capacity Determination Device Abnormality

Error Code

A1

Applicable Models

All indoor models

Method of Error Detection

Capacity is determined according to resistance of the capacity setting adaptor and the memory inside the IC memory on the indoor unit PCB, and whether the value is normal or abnormal is determined.

Error Decision Conditions

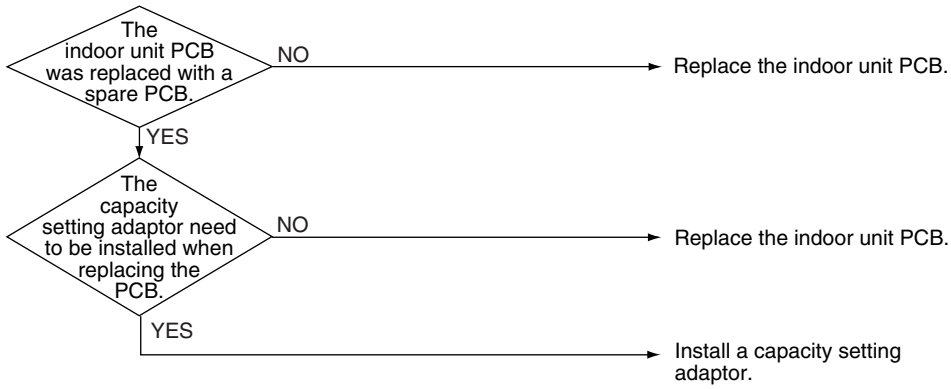
When the capacity code is not saved to the PCB, and the capacity setting adaptor is not connected. When a capacity that does not exist for that unit is set.

Supposed Causes

- The capacity setting adaptor was not installed.
- Defective indoor unit PCB

Troubleshooting

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



3.10 Transmission Abnormality between Indoor Unit PCB and Fan PCB

Error Code C1

Applicable Models FXMQ07~48P

Method of Error Detection Check the condition of transmission between indoor unit PCB (A1P) and fan PCB (A2P) using computer.

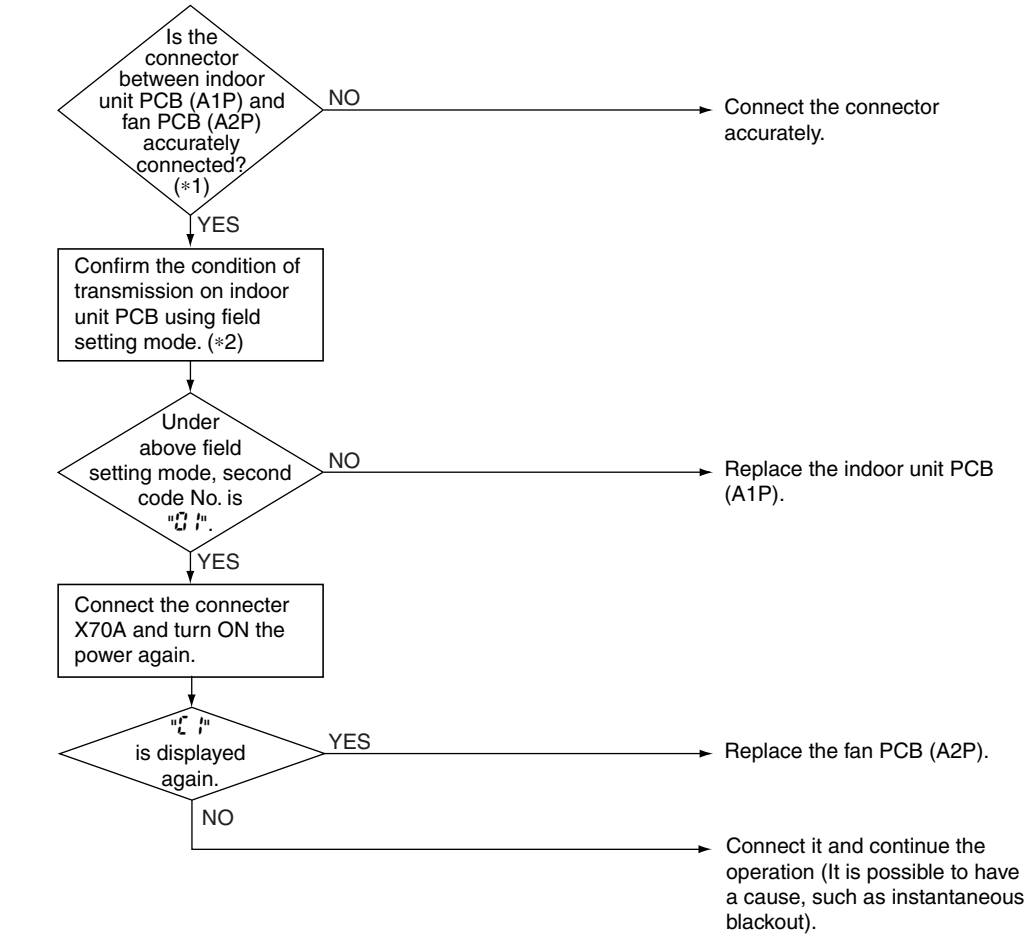
Error Decision Conditions When normal transmission is not conducted for certain duration.

Supposed Causes

- Connection defective the connecter between indoor unit PCB (A1P) and fan PCB (A2P)
- Defective indoor unit PCB (A1P)
- Defective fan PCB (A2P)
- External factor, such as instantaneous blackout

Troubleshooting

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



Note: ∗1. Pull out and insert the connecter once and check it is absolutely connected.

∗2. Method to check transmission part of indoor unit PCB.

① Turn OFF the power and remove the connecter X70A of indoor unit PCB (A1P).

② Short circuit X70A.

③ After turning ON the power, check below numbers under field setting from remote controller.
(Confirmation: Second code No. at the condition of first code No. 21 on mode No. 41)

↓

Determination

01: Normal

Other than 01: Transmission error on indoor unit PCB

∗ After confirmation, turn OFF the power, take off the short circuit and connect X70A back to original condition.

3.11 Thermistor Abnormality

Error Code C4, C5, C9

Applicable Models All indoor models

Method of Error Detection The error is detected by temperature detected by thermistor.

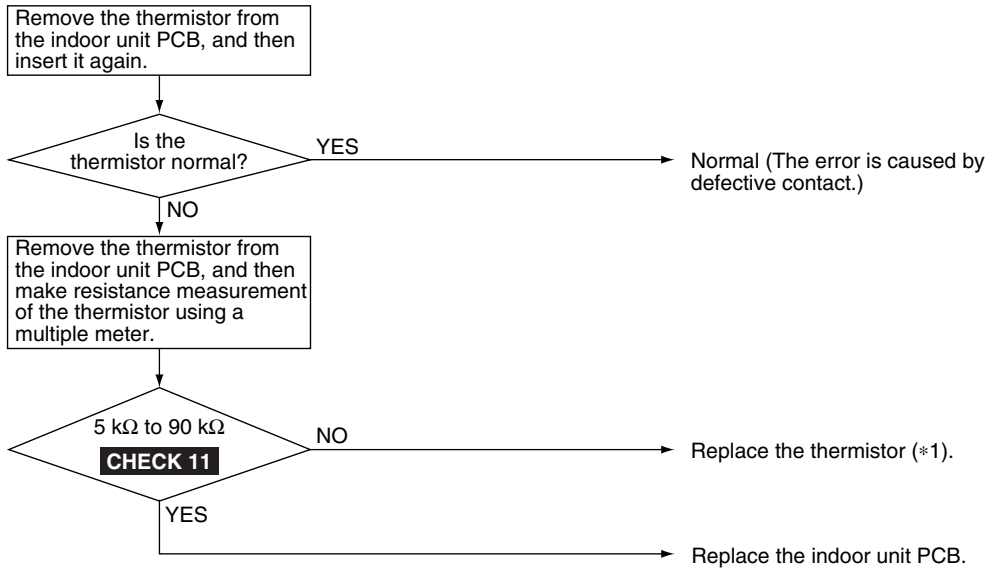
Error Decision Conditions When the thermistor becomes disconnected or shorted while the unit is running.

Supposed Causes

- Defective thermistor
- Defective indoor unit PCB
- Defective connector connection
- Broken or disconnected wire

Troubleshooting

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



Note: ∗1. Error code and thermistor

Error Code	Thermistor	Except FXTQ	FXTQ
C4	Heat exchanger liquid pipe thermistor	R2T	R1T
C5	Heat exchanger gas pipe thermistor	R3T	R2T
C9	Suction air thermistor	R1T	—

CHECK 11 Refer to P.250.

3.12 Combination Error between Indoor Unit PCB and Fan PCB

Error Code C6

Applicable Models FXMQ07~48P

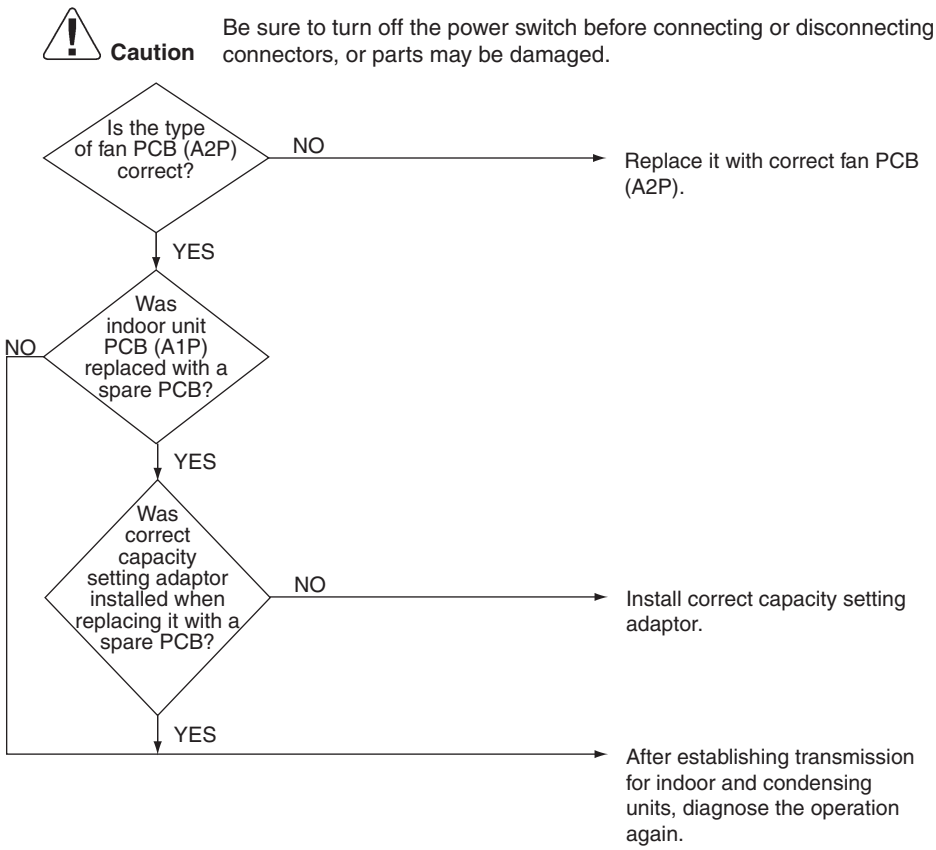
Method of Error Detection Check the condition of transmission with fan PCB (A2P) using indoor unit PCB (A1P).

Error Decision Conditions When the communication data of fan PCB (A2P) is determined as incorrect.

Supposed Causes

- Defective fan PCB (A2P).
- Defective connection of capacity setting adaptor.
- Field setting error

Troubleshooting



3.13 Remote Sensor Abnormality

Error Code C9

Applicable Models FXTQ

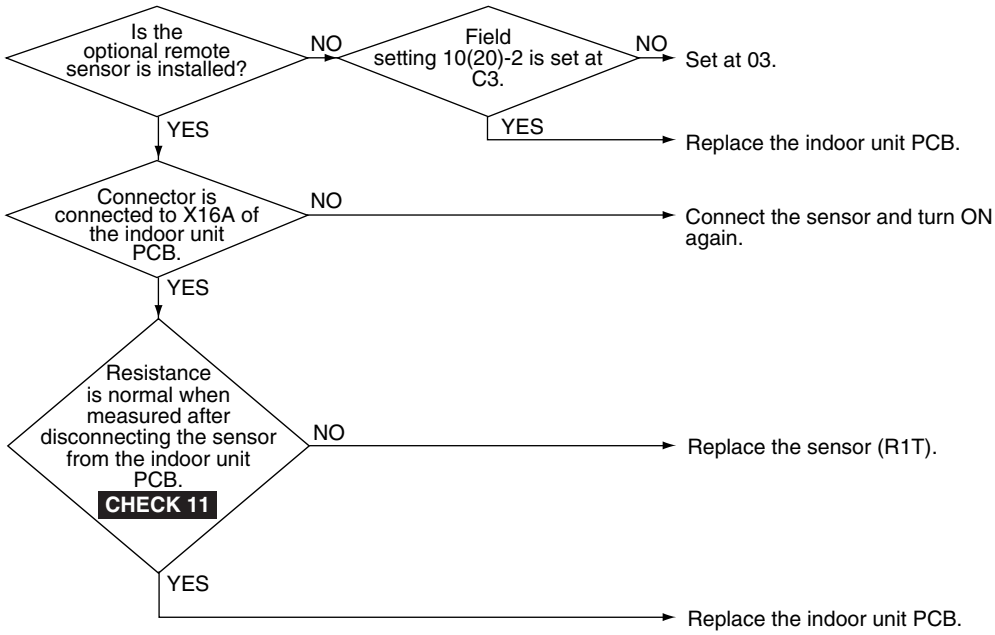
Method of Error Detection The error is detected out by temperature detected by remote sensor.

Error Decision Conditions When the remote sensor becomes disconnected or shorted while the unit is running.

Supposed Causes
- Defective indoor unit thermistor (R1T) for air inlet
- Defective indoor unit PCB

Troubleshooting

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



CHECK 11 Refer to P.250.

3.14 Thermistor Abnormality

Error Code C9

Applicable Models FXMQ07~48P

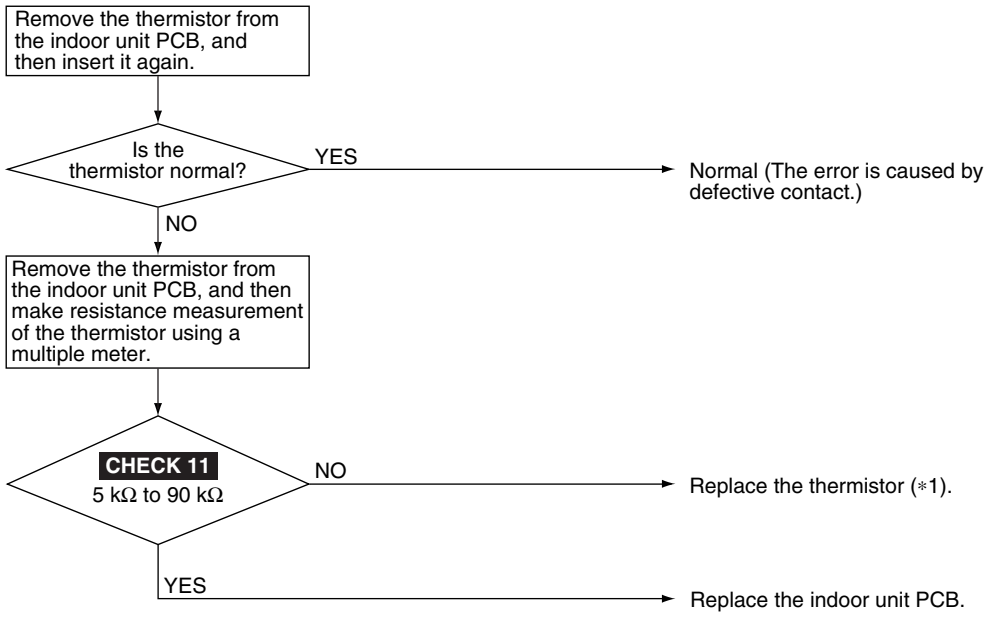
Method of Error Detection The error is detected by temperature detected by thermistor.

Error Decision Conditions When the thermistor becomes disconnected or shorted while the unit is running.

Supposed Causes
- Defective connector connection
- Defective thermistor
- Defective indoor unit PCB

Troubleshooting

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



Note: ∗1. Error code and thermistor

Error code	Thermistor	Electric symbol
C9	Discharge air thermistor	R4T

CHECK 11 Refer to P.250.

3.15 Humidity Sensor System Abnormality

Error Code CC

Applicable Models FXFQ

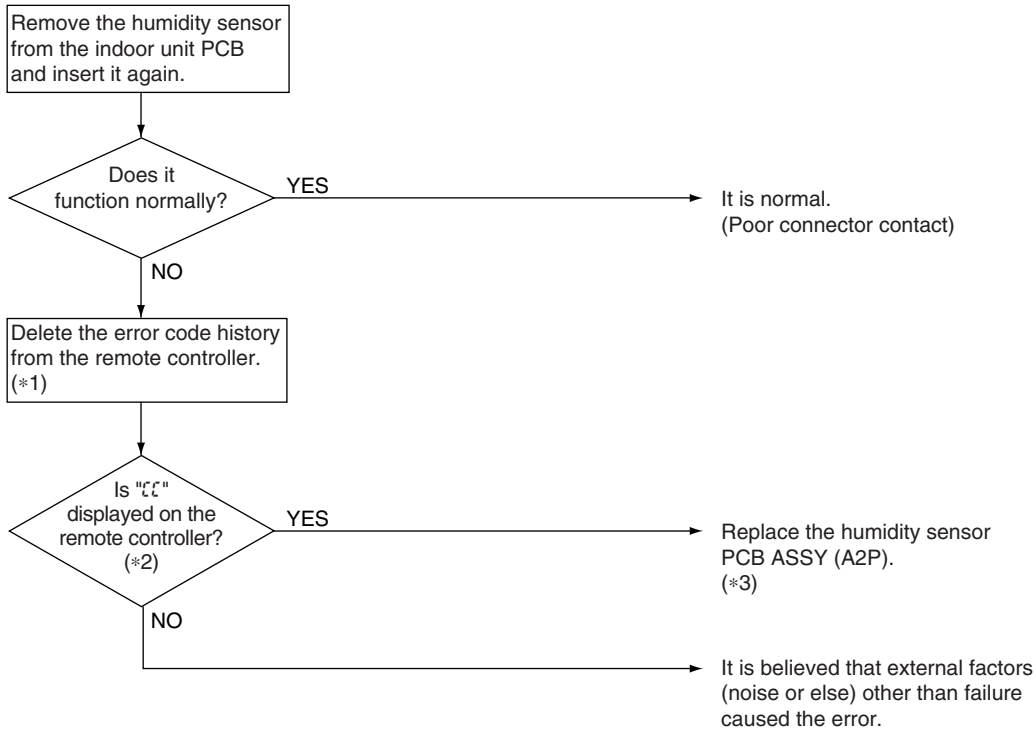
Method of Error Detection Even if an error occurs, operation still continues.
Error is detected according to the moisture (output voltage) detected by the moisture sensor.

Error Decision Conditions When the moisture sensor is disconnected or short circuited

Supposed Causes
- Defective sensor
- Disconnection

Troubleshooting

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



Note:
- ∗1: To delete the history, the ON/OFF button of the remote controller must be pressed and held for 5 seconds in the check mode.
- ∗2: To display the code, the INSPECTION/TEST Operation button of the remote controller must be pressed and held in the normal mode.
- ∗3: If "CC" is displayed even after replacing the humidity sensor PCB assy (A2P) and taking the steps ∗1 and 2, replace the indoor unit PCB assy (A1P).

3.16 Room Temperature Thermistor in Remote Controller Abnormality

Error Code

C.J

Applicable Models

All indoor models

Method of Error Detection

Error detection is carried out by temperature detected by room temperature thermistor in remote controller.

Error Decision Conditions

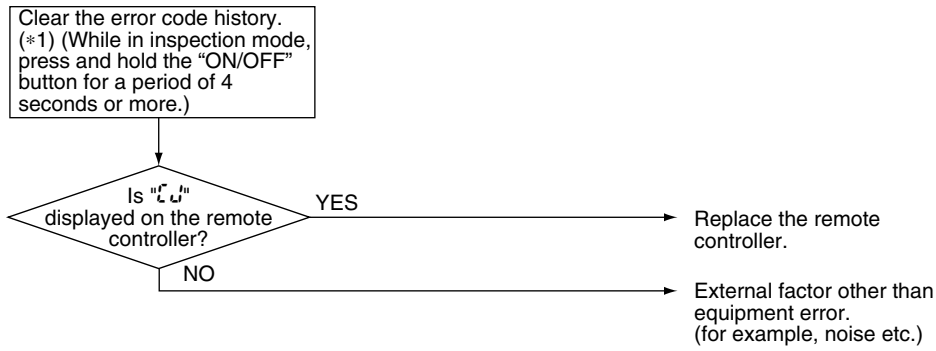
When the room temperature thermistor in remote controller becomes disconnected or shorted while the unit is running.

Supposed Causes

- Defective room temperature thermistor in remote controller
- Defective remote controller PCB

Troubleshooting

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



Note: ∗1: How to delete “the history of error codes”.
Press the “ON/ OFF” button for 4 seconds and more while the error code is displayed in the inspection mode.

3.17 PCB Abnormality

Error Code

E1

Applicable Models

RWEYQ72P, 84P

Method of Error Detection

Abnormality is detected under the communication conditions in the hardware section between the indoor unit and condensing unit.

Error Decision Conditions

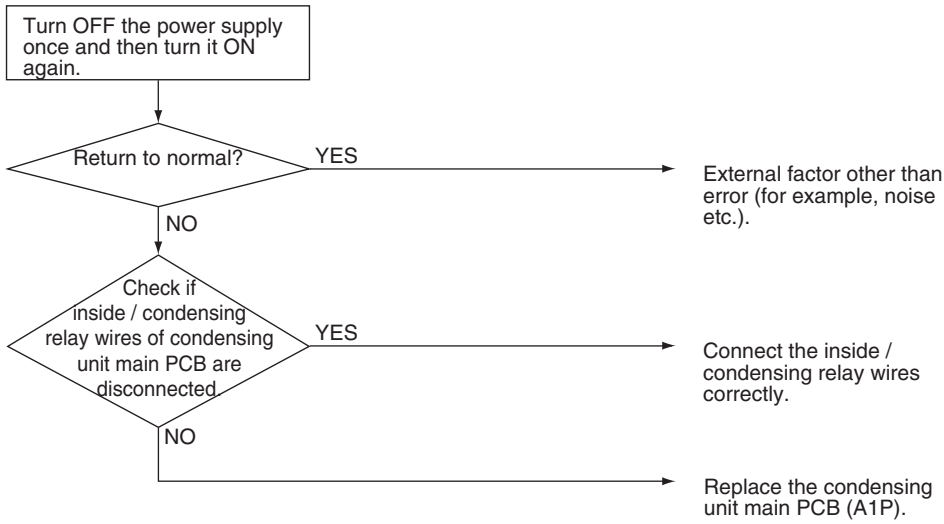
When the communication conditions in the hardware section between the indoor unit and the condensing unit are not normal.

Supposed Causes

- Defective condensing unit PCB (A1P)
- Defective connection of inside / condensing relay wires

Troubleshooting

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



3.18 Ground Leakage by Leak Detection PCB Assy

Error Code E2

Applicable Models RWEYQ72P, 84P

Method of Error Detection Failure is to be detected by using leak detection PCB assy.

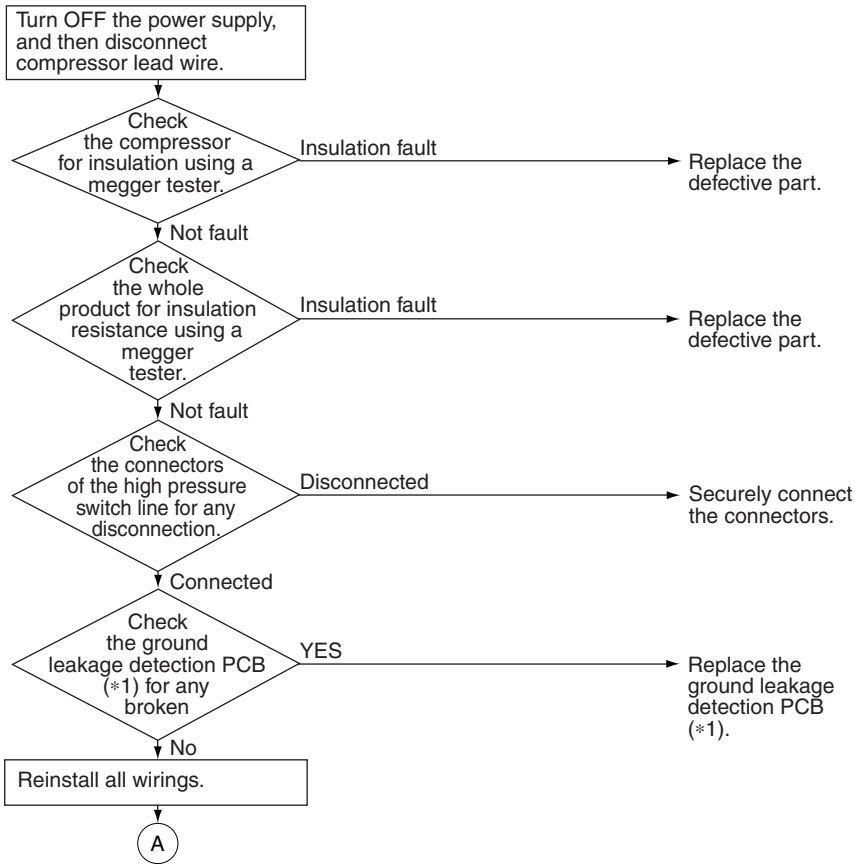
Error Decision Conditions Leakage is detected under the conditions condensing of the scope of high pressure switch operation.

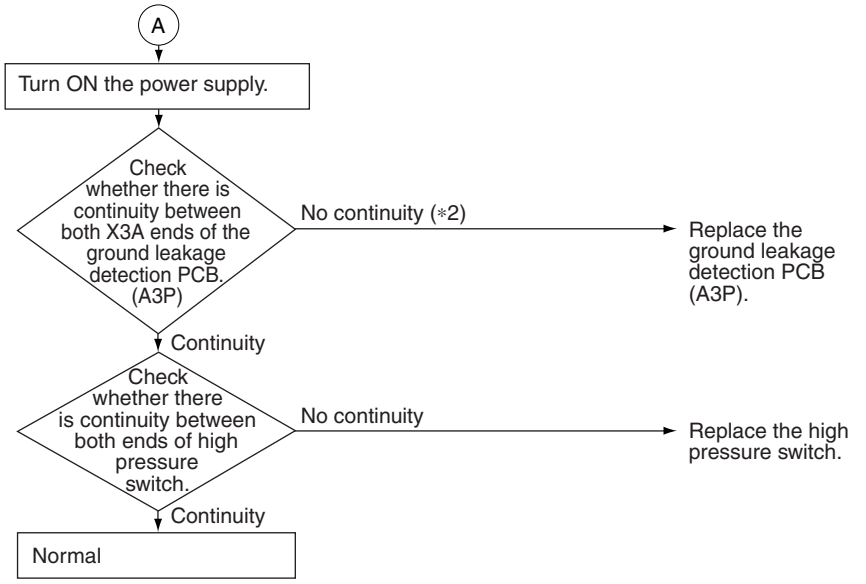
Supposed Causes

- Defective of compressor

Troubleshooting

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





It is supposed that ground leakage occurs due to temporary liquid back or accumulation of refrigerant.
This phenomenon can occur when power fails while in operation or is cut off for an extended period of time.

Note: ∗1. It is normal that there is no continuity between both ends of X3A when the power supply turns OFF and for a period of 9 seconds at maximum after the power supply turns ON.

3.19 Actuation of High Pressure Switch

Error Code

E3

Applicable Models

RWEYQ72P, 84P

Method of Error Detection

The error is detected by the protection device circuit that detects continuity at high pressure switch.

Error Decision Conditions

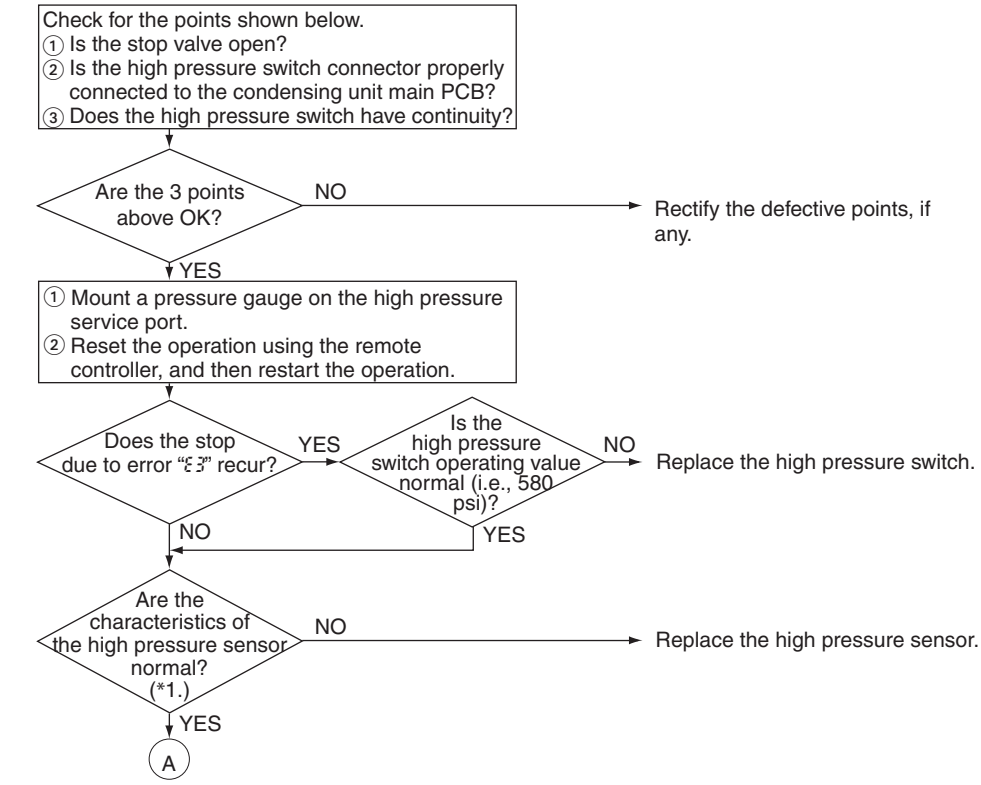
When the protector circuit is partially opened
(Reference) Operating pressure of high pressure switch
Operating pressure: 580 psi
Reset pressure: 435 psi

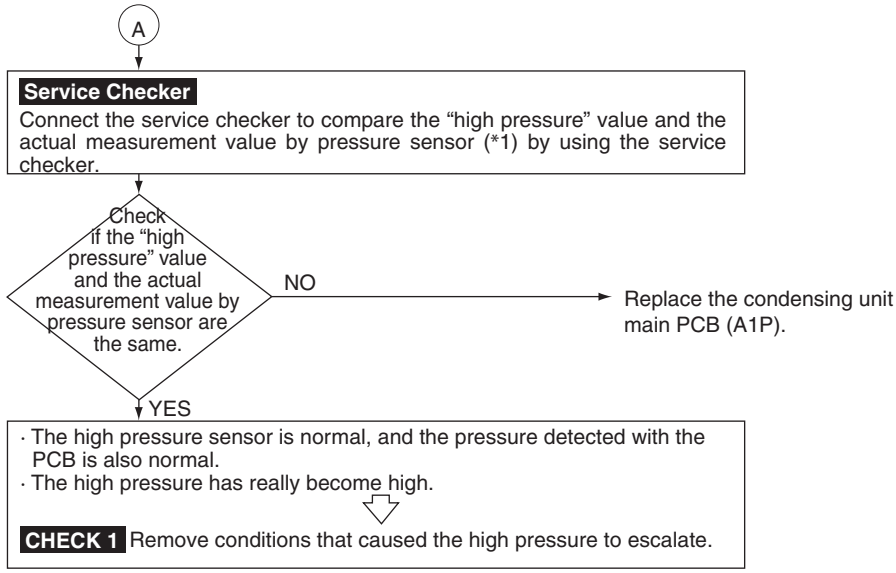
Supposed Causes

- Actuation of condensing unit high pressure switch
- Defective high pressure switch
- Defective condensing unit main PCB (A1P)
- Instantaneous power failure
- Defective high pressure sensor

Troubleshooting

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





Note: ∗1. Make a comparison between the voltage of the pressure sensor and that read by the pressure gauge.
(As to the voltage of the pressure sensor, make measurement of voltage at the connector, and then convert it to pressure according to information on P.251.)

∗2. Make measurement of voltage of the pressure sensor.
CHECK 13

∗3. Connector code

Model name	Connector
RWEYQ72/84PTJU	X46A
RWEYQ72/84PTJU9 RWEYQ72/84PYDN	X32A

CHECK 1 Refer to P.241.

CHECK 13 Refer to P.251.

3.20 Actuation of Low Pressure Sensor

Error Code

E4

Applicable Models

RWEYQ72P, 84P

Method of Error Detection

Abnormality is detected by the pressure value with the low pressure sensor.

Error Decision Conditions

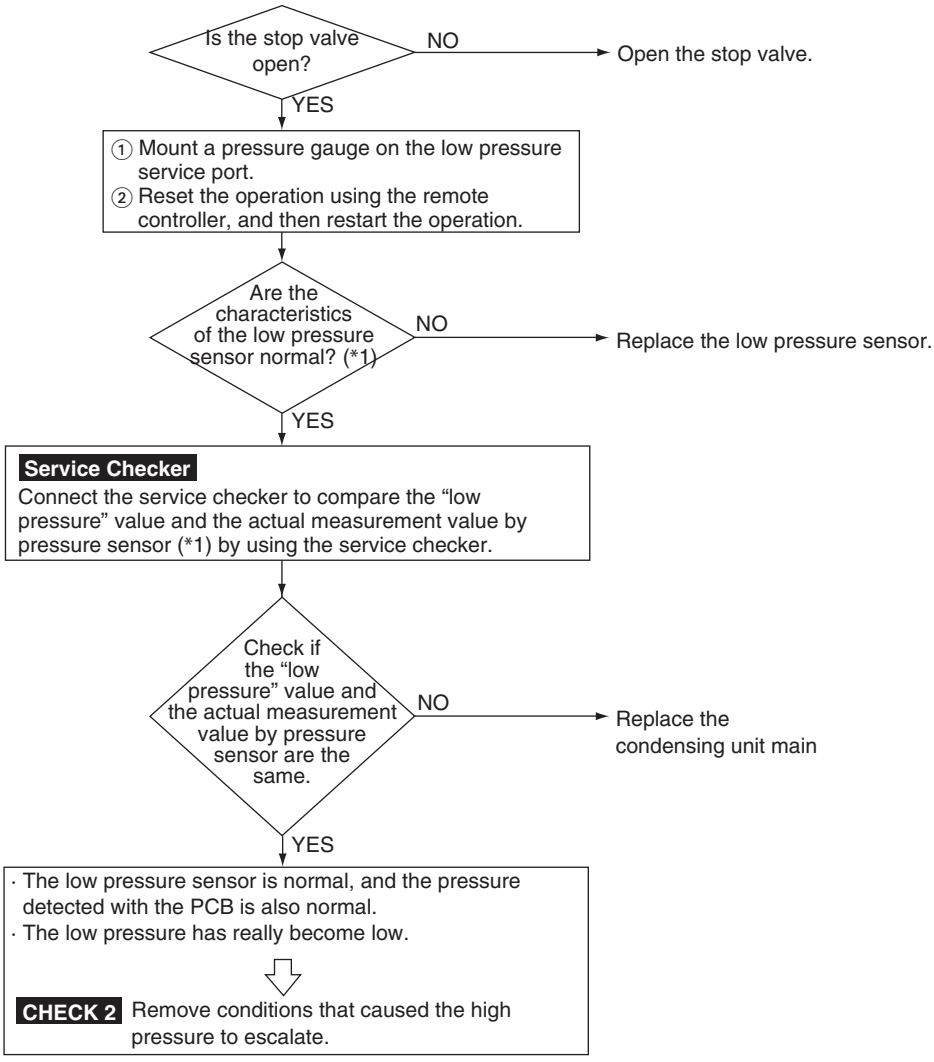
Error is generated when the low pressure is dropped under compressor operation.
Operating pressure: 10.15 psi

Supposed Causes

- Abnormal drop of low pressure (Lower than 10.15 psi)
- Defective low pressure sensor
- Defective condensing unit PCB
- Stop valve is not opened

Troubleshooting

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



Note: ∗1. Make a comparison between the voltage of the pressure sensor and that read by the pressure gauge.
(As to the voltage of the pressure sensor, make measurement of voltage at the connector, and then convert it to pressure according to information on P.251.)
∗2. Make measurement of voltage of the pressure sensor.
CHECK 14
∗3. Connector code

Model name	Connector
RWEYQ72/84PTJU	X45A
RWEYQ72/84PTJU9 RWEYQ72/84PYDN	X31A

CHECK 2 Refer to P.242.

CHECK 14 Refer to P.251.

3.21 Inverter Compressor Motor Lock

Error Code

E5

Applicable Models

RWEYQ72P, 84P

Method of Error Detection

Inverter PCB takes the position signal from UVW line connected between the inverter and compressor, and the error is detected when any abnormality is observed in the phase-current waveform.

Error Decision Conditions

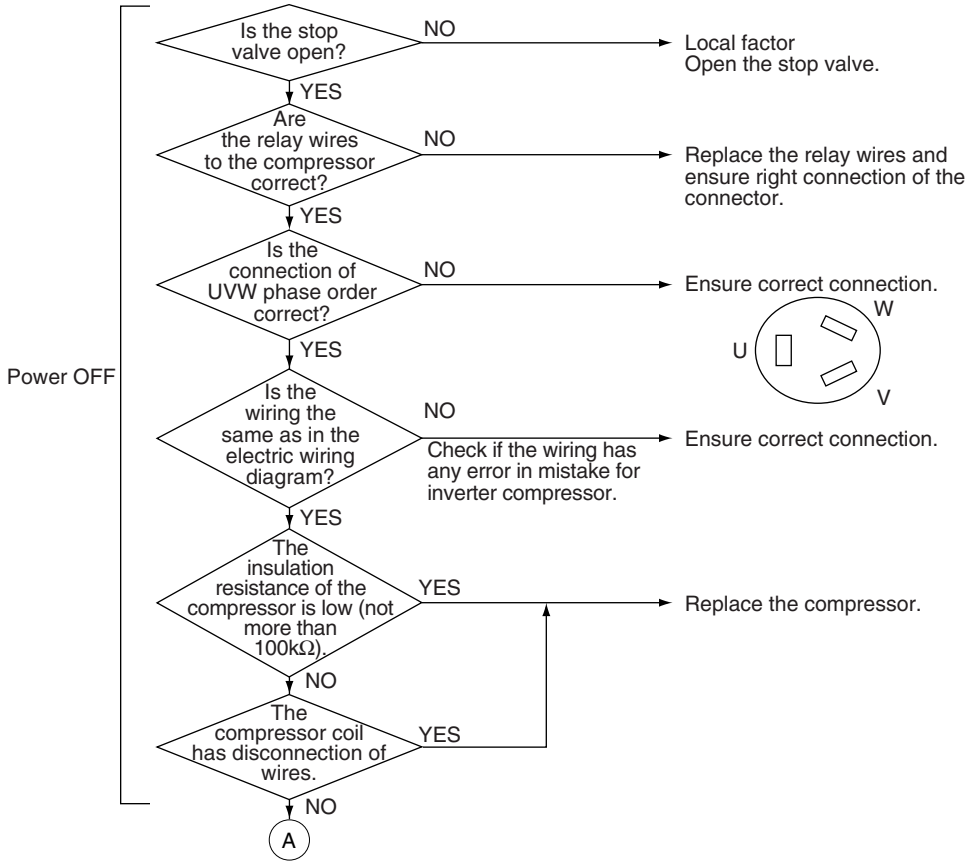
This error will be output when the inverter compressor motor does not start up even in forced startup mode.

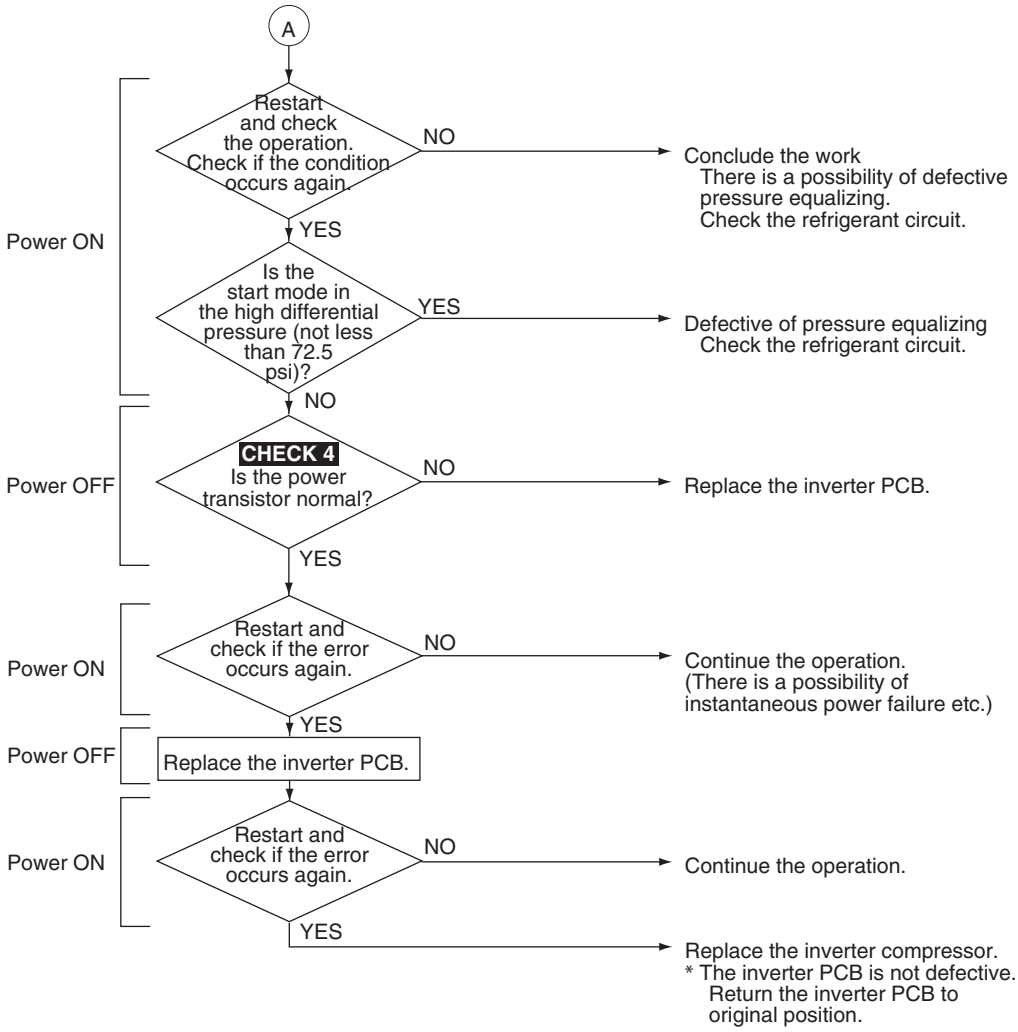
Supposed Causes

- Inverter compressor lock
- High differential pressure (72.5 psi or more)
- Incorrect UVW wiring
- Defective inverter PCB
- Stop valve is not opened

Troubleshooting

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





CHECK 4 Refer to P.244.

3.22 Electronic Expansion Valve Coil (Y1E~Y5E) Abnormality

Error Code E9

Applicable Models RWEYQ72P, 84P

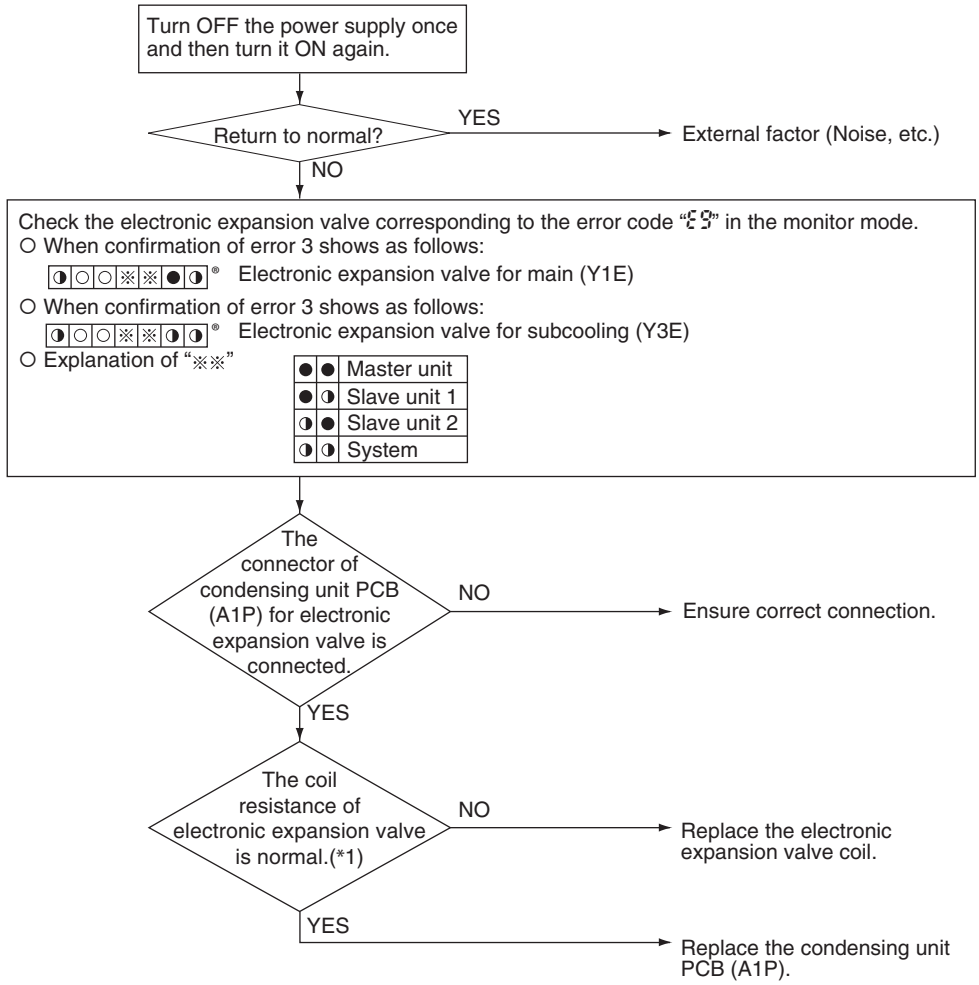
Method of Error Detection Check disconnection of connector
To be detected based on continuity existence of electronic expansion valve coil

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
- Defective electronic expansion valve coil
- Defective condensing unit main PCB (A1P)

Troubleshooting

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

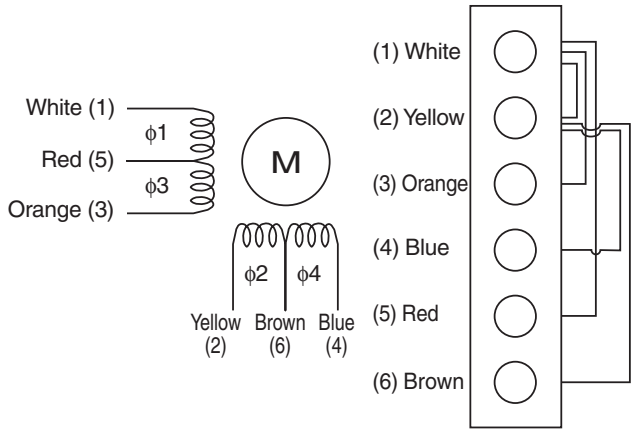


Note: ∗1: Coil check method for the electronic expansion valve coil
Discount the electronic expansion valve from the PCB and check the continuity between the connector pins.

(Normal)

Pin No.	1. White	2. Yellow	3. Orange	4. Blue	5. Red	6. Brown
1. White		×	○ Approx. 300Ω	×	○ Approx. 150Ω	×
2. Yellow			×	○ Approx. 300Ω	×	○ Approx. 150Ω
3. Orange				×	○ Approx. 150Ω	×
4. Blue					×	○ Approx. 150Ω
5. Red						×
6. Brown						

○: Continuity
× : No continuity



3.23 Abnormal Discharge Pipe Temperature

Error Code F3

Applicable Models RWEYQ72P, 84P

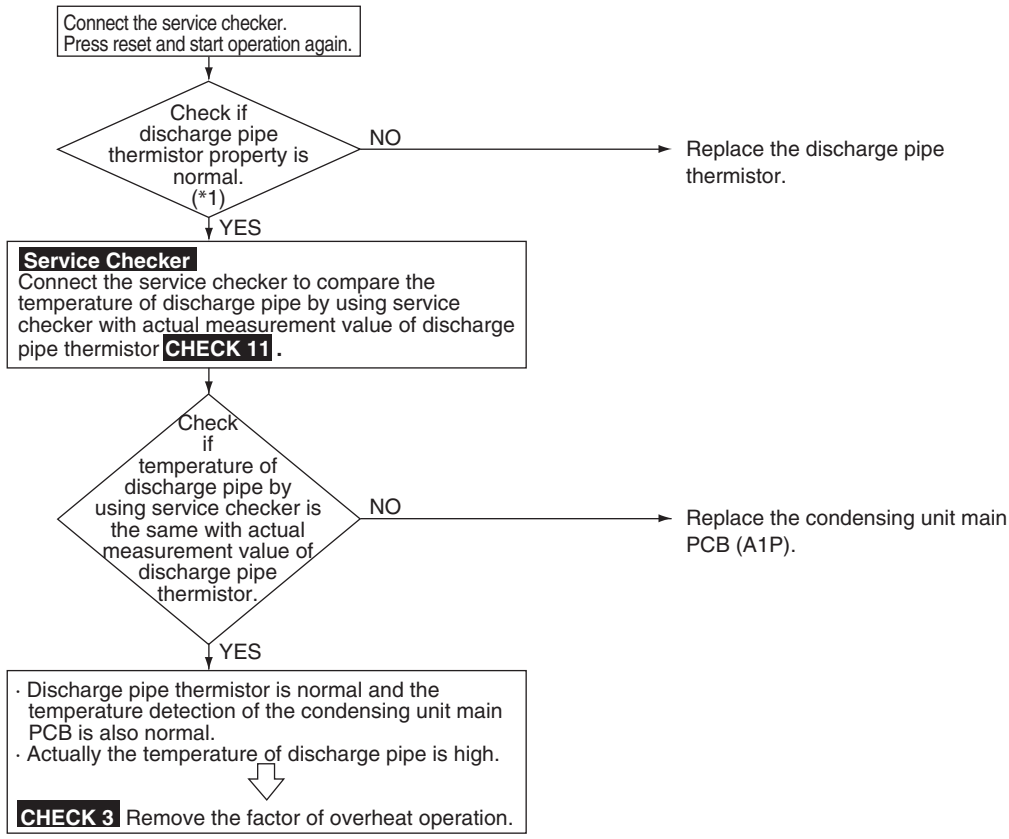
Method of Error Detection Abnormality is detected according to the temperature detected by the discharge pipe temperature thermistor.

Error Decision Conditions When the discharge pipe temperature rises to an abnormally high level (275 °F or more)
When the discharge pipe temperature rises suddenly (248 °F or more for 10 successive minutes)

Supposed Causes
- Defective discharge pipe temperature thermistor
- Defective connection of discharge pipe temperature thermistor
- Defective condensing unit PCB

Troubleshooting

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



Note: ∗1. Compare the resistance value of discharge pipe thermistor and the value based on the surface thermometer.

CHECK 3 Refer to P.243.

CHECK 11 Refer to P.250.

3.24 Refrigerant Overcharged

Error Code F6

Applicable Models RWEYQ72P, 84P

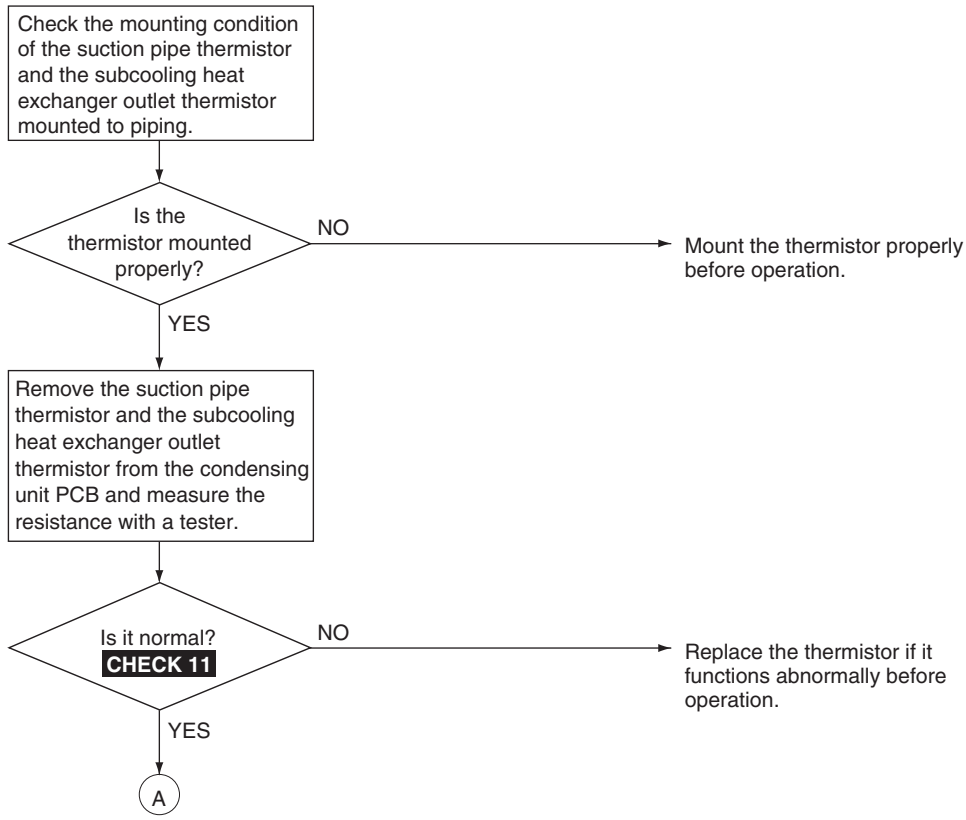
Method of Error Detection The error is detected according to the temperature detected by the discharge pipe temperature during check operation

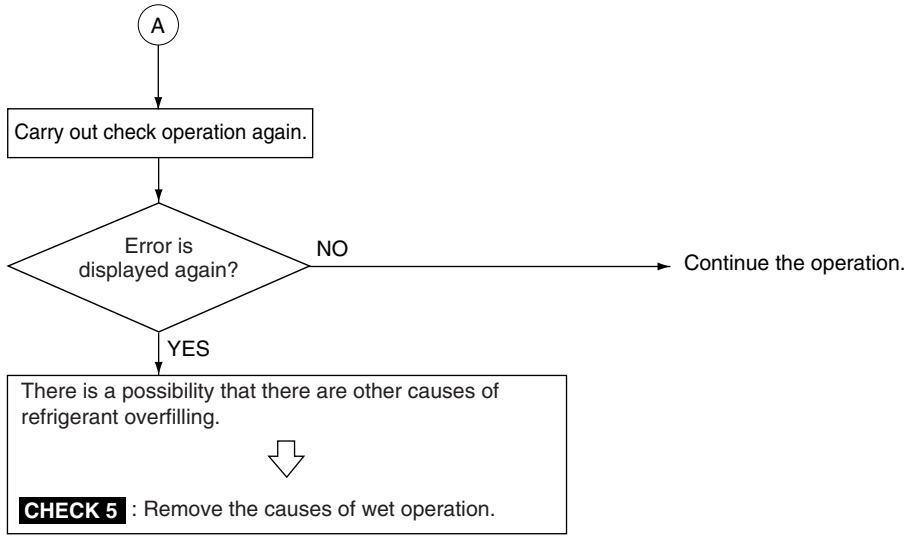
Error Decision Conditions When the discharge pipe temperature drops during check operation

Supposed Causes
- Refrigerant overcharge
- Disconnection of discharge pipe thermistor

Troubleshooting

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





CHECK 5 Refer to P.245.

CHECK 11 Refer to P.250.

3.25 Water System Abnormality

Error Code

H4

Applicable Models

RWEYQ72P, 84P

Method of Error Detection

- Detect abnormalities using the thermistor on the heat exchanger gas side.
- Detect turned OFF interlock circuit.
  (When interlock setting is provided.)

Error Decision Conditions

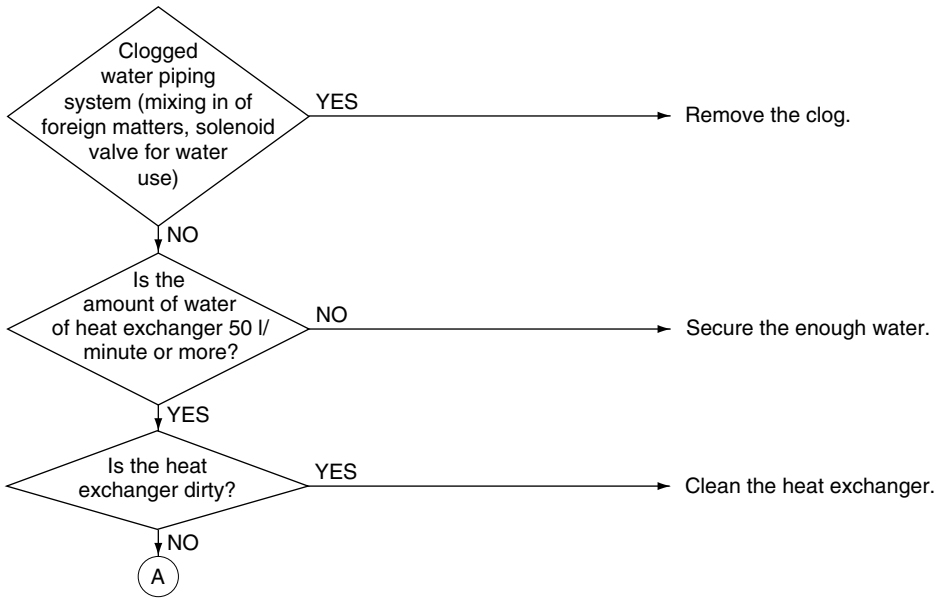
- When temperature on the heat exchanger gas side (R4T) drops remarkably with the minimum operation step (52 Hz) of the compressor
- With interlock setting provided, when interlock circuit is turned OFF

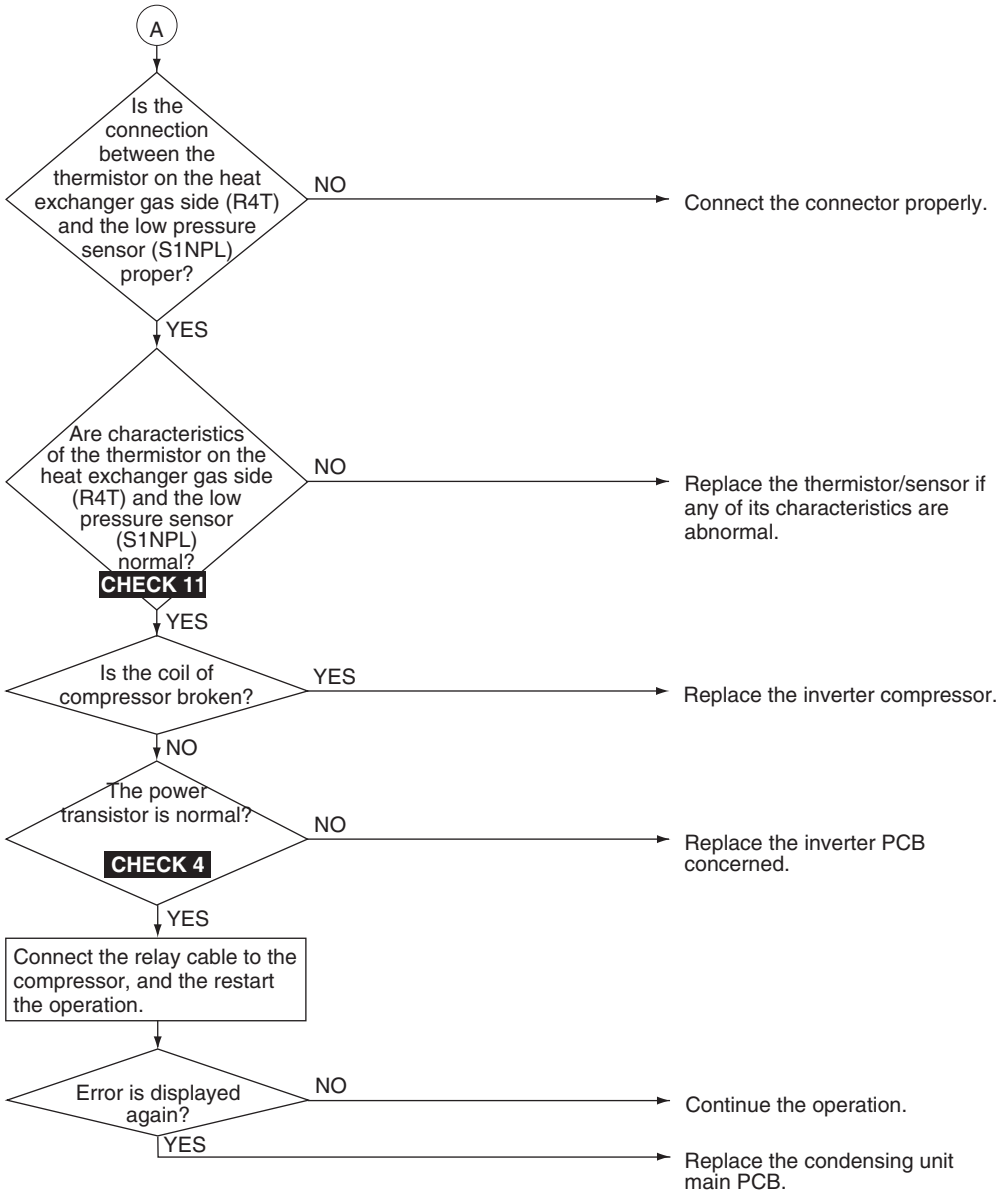
Supposed Causes

- Clogged water piping system
- Insufficient heat exchanger water
- Dirty heat exchanger
- Disconnected connector
- Defective thermistor on the heat exchanger gas side
- Defective low pressure sensor

Troubleshooting

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





CHECK 4 Refer to P.244.

CHECK 11 Refer to P.250.

3.26 Thermistor System Abnormality

Error Code J3, J4, J5, J7, J9

Applicable Models RWEYQ72P, 84P

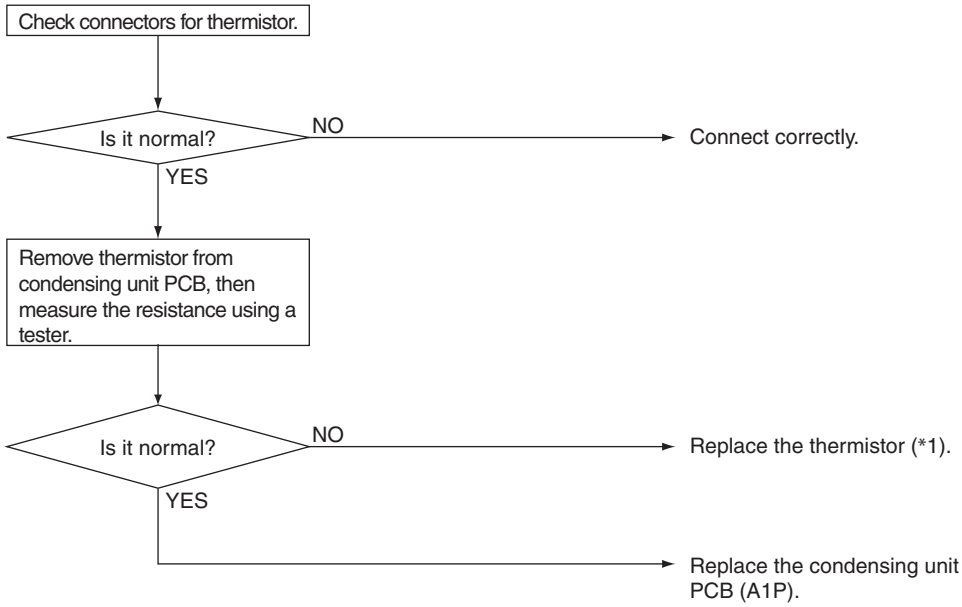
Method of Error Detection The error is detected according to the temperature detected by each individual thermistor.

Error Decision Conditions When thermistor is disconnected or short-circuited during operation

Supposed Causes
- Defective connection of thermistor
- Defective thermistor
- Defective condensing unit PCB

Troubleshooting

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



Note: ∗1.Error code and thermistor

Error Code	Thermistor	Electric Symbol	Connector	
			RWEYQ72/84PTJU	RWEYQ72/84PTJU9 RWEYQ72/84PYDN
J3	Discharge pipe thermistor	R3T	X34A	X29A
J4	Heat exchanger gas pipe thermistor	R4T	X37A	X30A
J5	Suction pipe thermistor	R2T	X37A	X30A
J7	Receiver outlet liquid pipe thermistor	R6T	X37A	X30A
J9	Subcooling heat exchanger outlet pipe thermistor	R5T	X37A	X30A

CHECK 11 Refer to P.250.

3.27 High Pressure Sensor Abnormality

Error Code

Applicable Models

RWEYQ72P, 84P

Method of Error Detection

Error is detected from the pressure detected by the high pressure sensor.

Error Decision Conditions

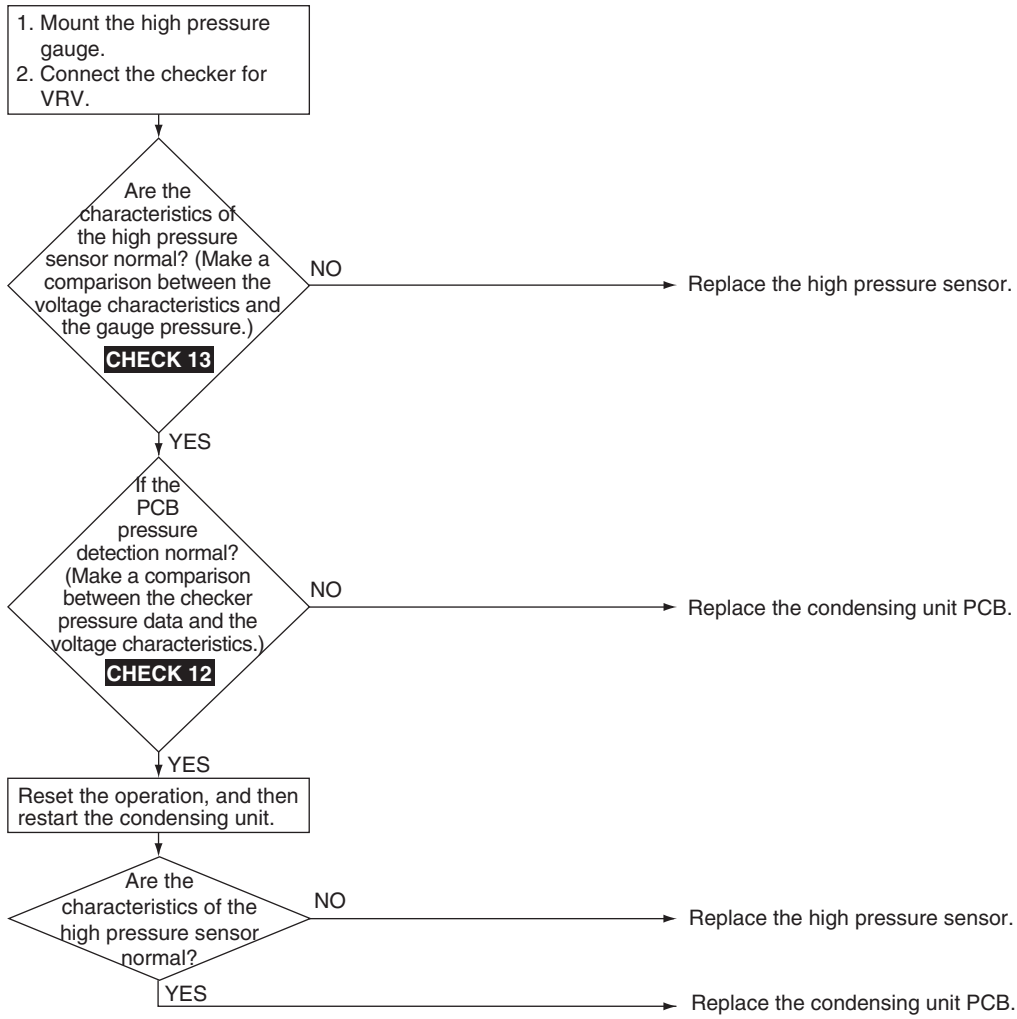
When the high pressure sensor is short circuit or open circuit
(Not less than 611.9 psi, or 1.45 psi and below)

Supposed Causes

- Defective high pressure sensor system
- Connection of low pressure sensor with wrong connection
- Defective condensing unit PCB.
- Defective connection of high pressure sensor

Troubleshooting

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



Note: ∗1. Connector code

Model name	Connector
RWEYQ72/84PTJU	X46A
RWEYQ72/84PTJU9 RWEYQ72/84PYDN	X32A

CHECK 12 Refer to P.251.

CHECK 13 Refer to P.251.

3.28 Low Pressure Sensor Abnormality

Error Code

Applicable Models

RWEYQ72P, 84P

Method of Error Detection

Error is detected from pressure detected by low pressure sensor.

Error Decision Conditions

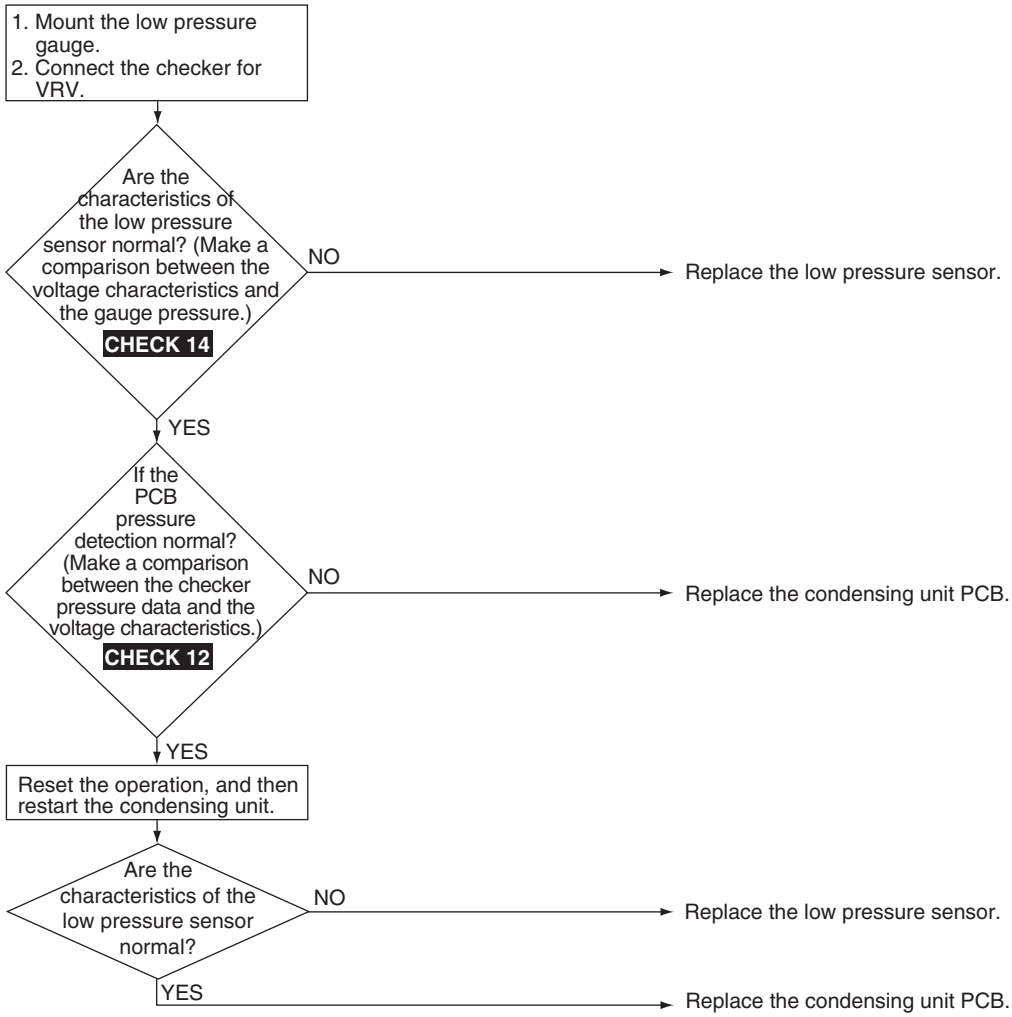
When the low pressure sensor is short circuit or open circuit
(Not less than 256.65 psi, or -1.45 psi and below)

Supposed Causes

- Defective low pressure sensor system
- Connection of high pressure sensor with wrong connection
- Defective condensing unit PCB
- Defective connection of low pressure sensor

Troubleshooting

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



Note: ∗1. Connector code

Model name	Connector
RWEYQ72/84PTJU	X45A
RWEYQ72/84PTJU9 RWEYQ72/84PYDN	X31A

CHECK 12 Refer to P.251.

CHECK 14 Refer to P.251.

3.29 Inverter Radiation Fin Temperature Rise Abnormality

Error Code L4

Applicable Models RWEYQ72P, 84P

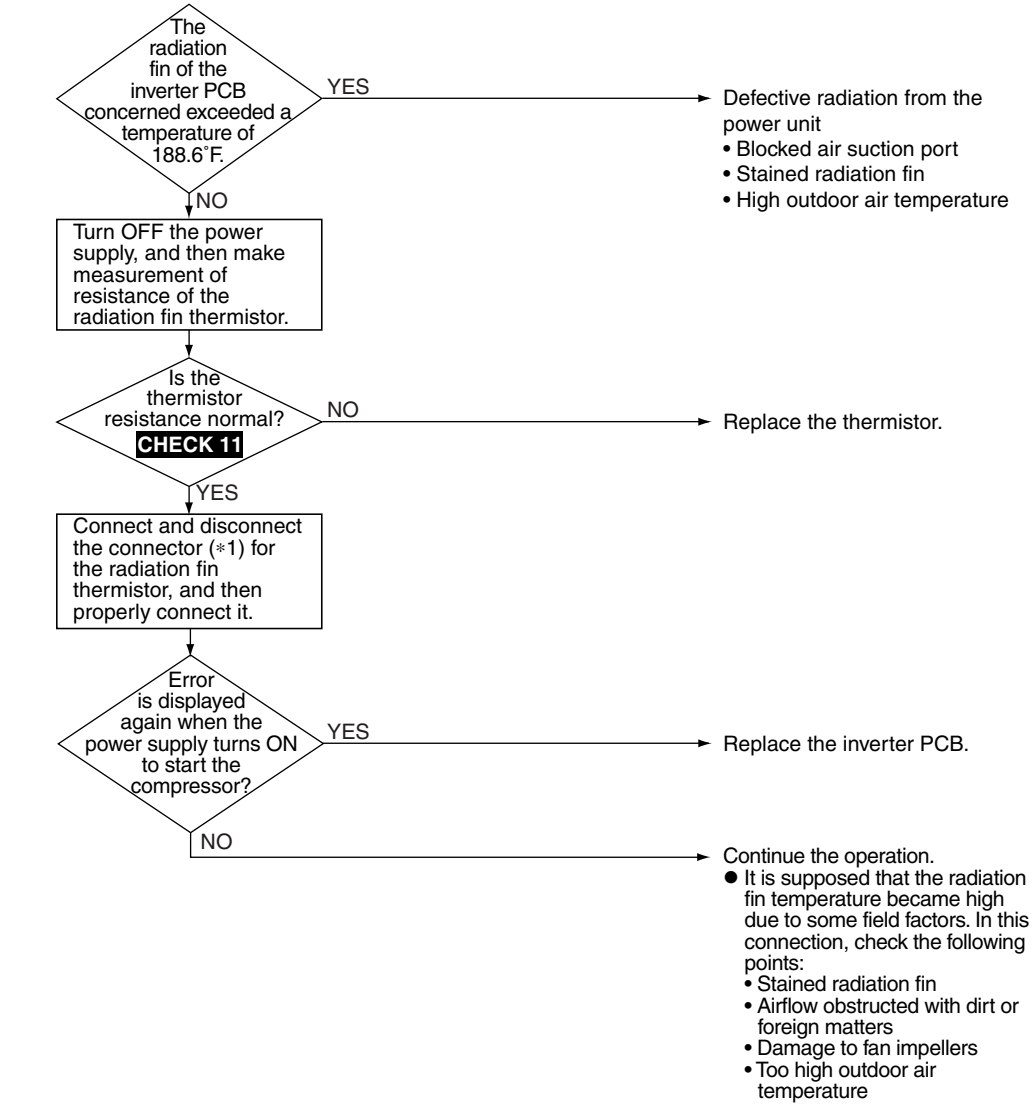
Method of Error Detection Fin temperature is detected by the thermistor of the radiation fin.

Error Decision Conditions When the temperature of the inverter radiation fin increases 188.6°F or more

Supposed Causes
- Actuation of radiation fin thermal (Actuates 188.6°F or more)
- Defective inverter PCB
- Defective radiation fin thermistor

Troubleshooting

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



Note: ∗1 Connector code

Model name	Connector
RWEYQ72/84PTJU	X7A
RWEYQ72/84PTJU9	X7A
RWEYQ72/84PYDN	X111A

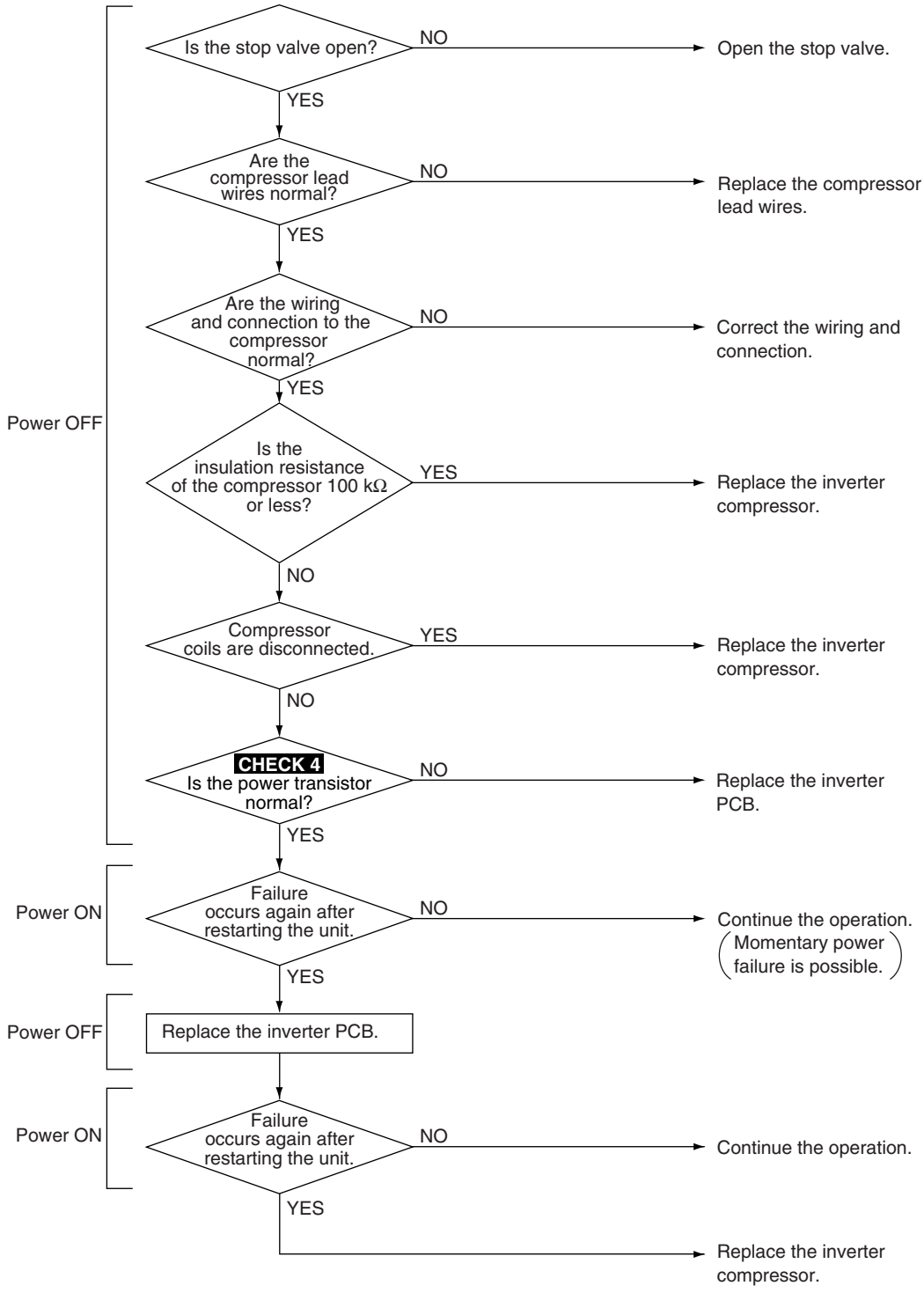
CHECK 11 Refer to P.250.

3.30 Momentary Overcurrent of Inverter Compressor

Error Code	L5
Applicable Models	RWEYQ72P, 84P
Method of Error Detection	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 startup error (mechanical lock) ■ Defective inverter PCB

Troubleshooting Compressor inspection

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



CHECK 4 Refer to P.244.

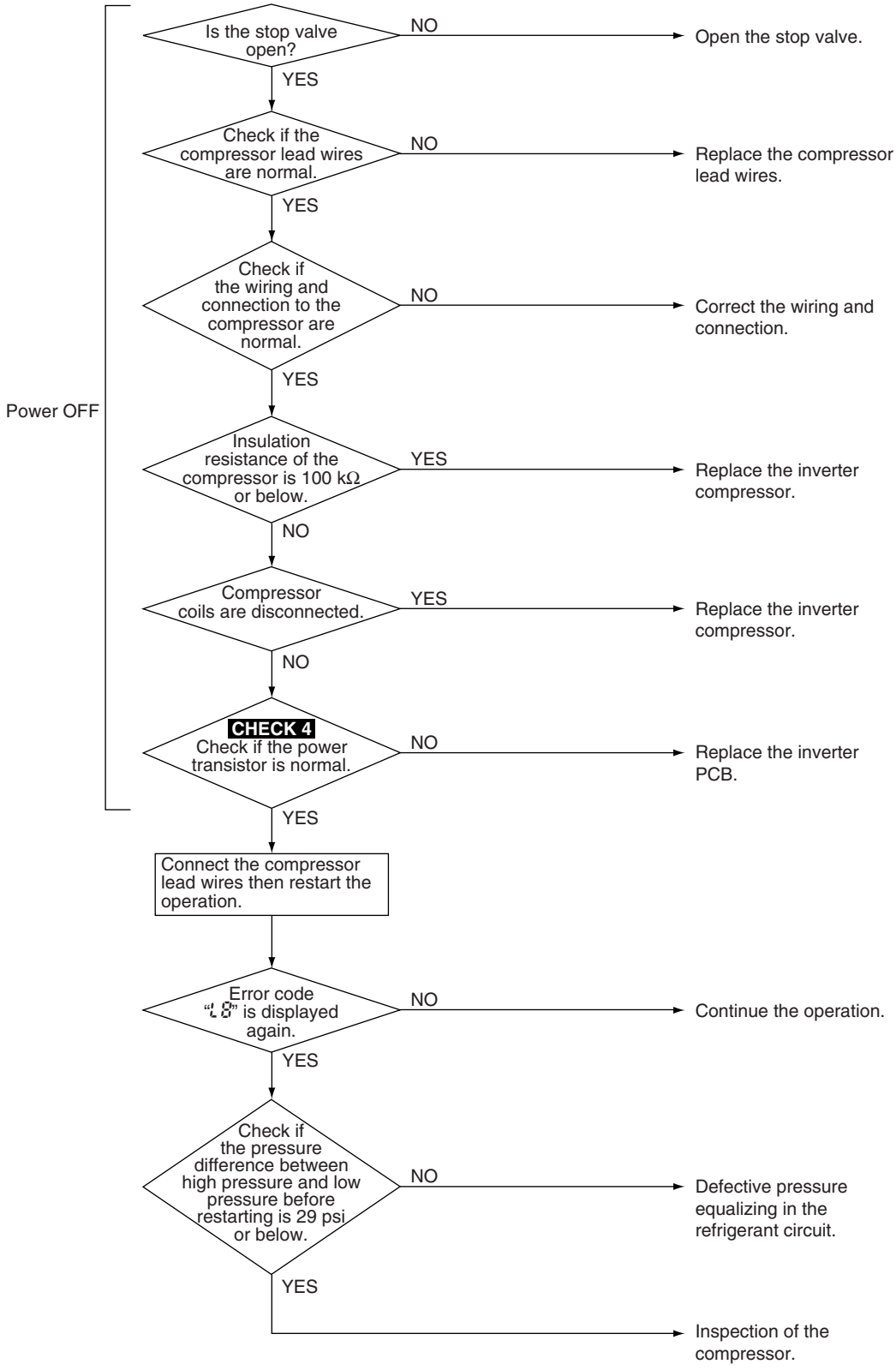
3.31 Momentary Overcurrent of Inverter Compressor

Error Code	L8
Applicable Models	RWEYQ72P, 84P
Method of Error Detection	Error is detected by current flowing in the power transistor.
Error Decision Conditions	When overload in the compressor is detected 230V unit: 26.1A for 260 sec. or 31.0A for 5 sec. 460V unit: 14.5A for 260 sec. or 17.0A for 5 sec.
Supposed Causes	■ Compressor overload ■ Compressor coil disconnected ■ Defective inverter PCB ■ Defective compressor

Troubleshooting

Output current check

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



CHECK 4 Refer to P.244.

3.32 Inverter Compressor Startup Error

Error Code L9

Applicable Models RWEYQ72P, 84P

Method of Error Detection Detect the failure based on the signal waveform of the compressor.

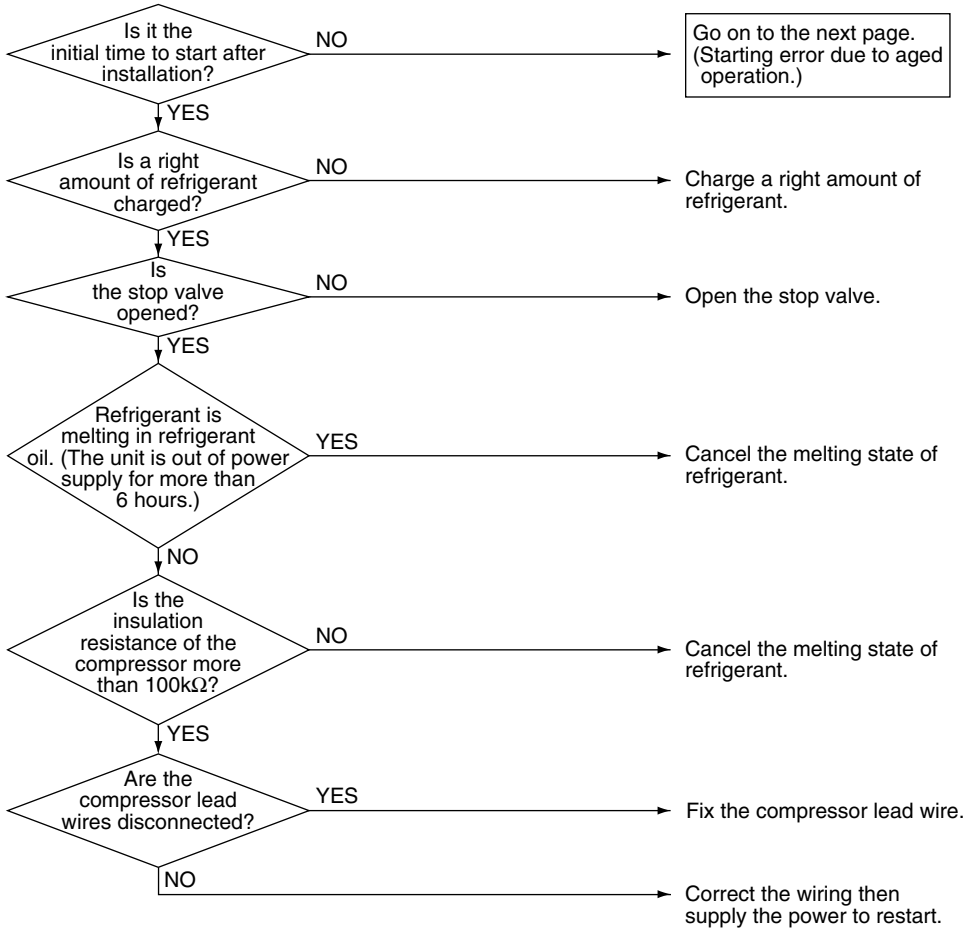
Error Decision Conditions Starting the compressor does not complete.

Supposed Causes

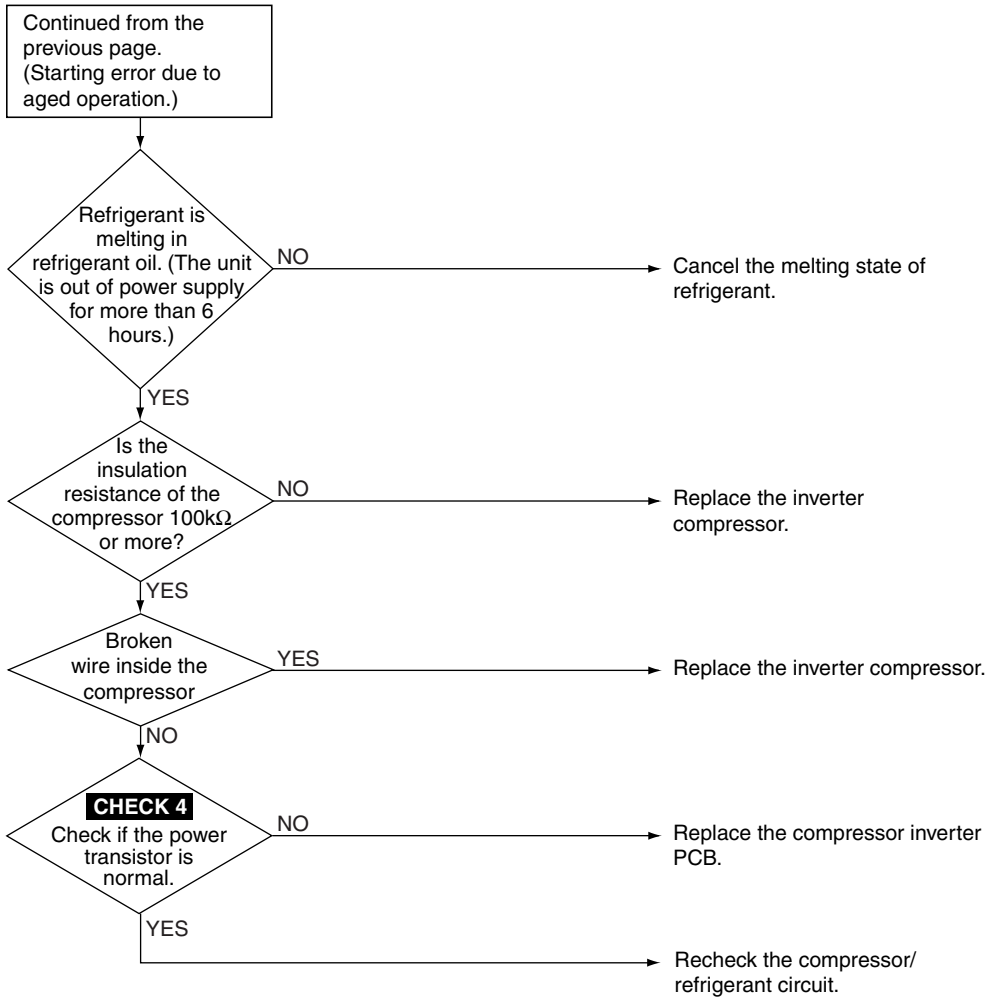
- Stop valve is not opened
- Defective compressor
- Defective compressor connection
- Large pressure difference before startup the compressor
- Defective inverter PCB

Troubleshooting

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



Troubleshooting



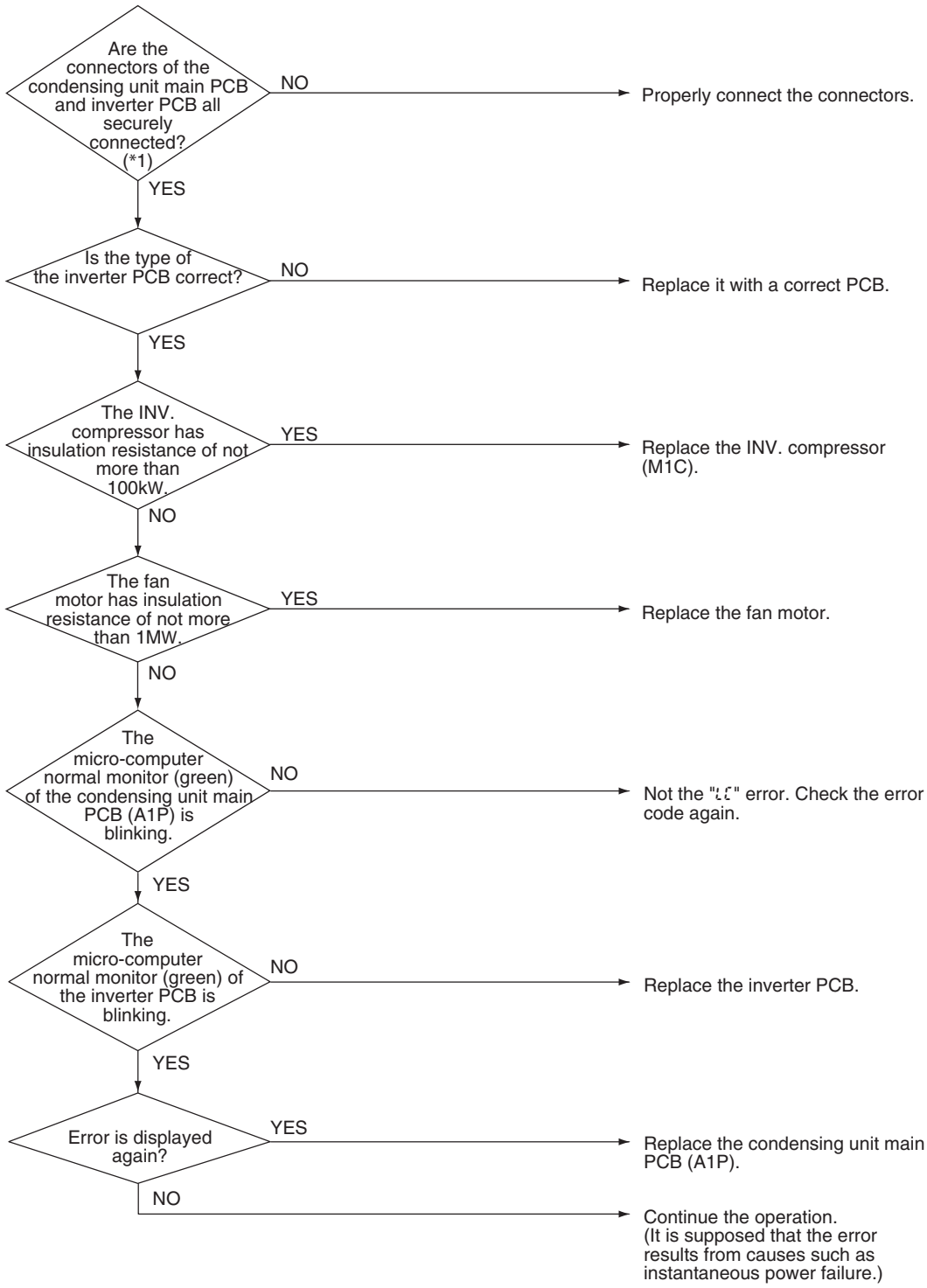
CHECK 4 Refer to P.244.

3.33 Transmission Error between Inverter and Condensing Unit Main PCB

Error Code	LC
Applicable Models	RWEYQ72P, 84P
Method of Error Detection	Check the communication state between inverter PCB and condensing unit main PCB by micro-computer.
Error Decision Conditions	When the transmission is not carried out in a specified period of time or longer
Supposed Causes	■ Incorrect transmission wiring between the inverter PCB and condensing unit main PCB ■ Defective condensing unit main PCB (transmission section) ■ Defective inverter PCB ■ Defective noise filter ■ External factor (Noise, etc.) ■ Defective inverter compressor ■ Defective fan motor

Troubleshooting

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



Note: *1: Disconnect the connector once, then reconnect it and check that it is securely connected.

3.34 Inverter Over-Ripple Protection

Error Code P1

Applicable Models RWEYQ72P, 84P

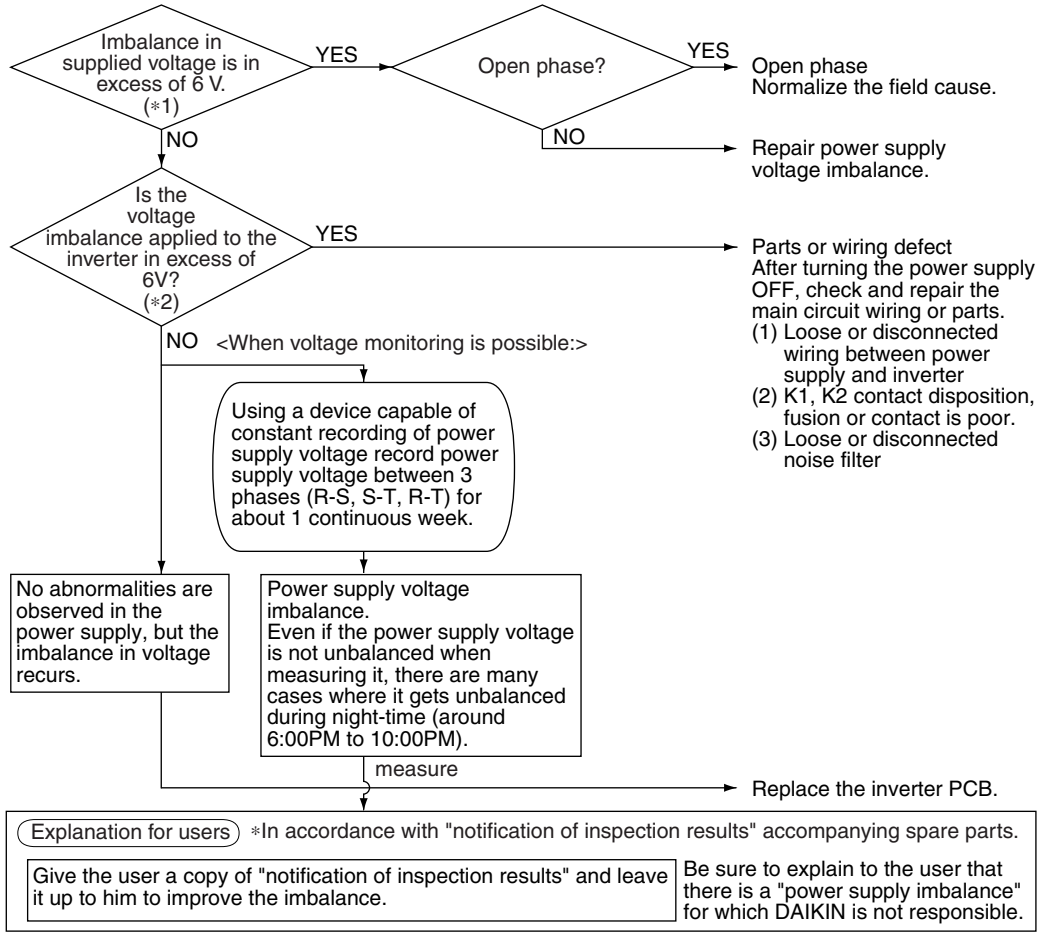
Method of Error Detection Imbalance in supply voltage is detected in PCB.

Error Decision Conditions When the amplitude of the ripple exceeding 6V is detected
- Error is not decided while the unit operation is continued.
  "P1" will be displayed by pressing the inspection button.

Supposed Causes
- Open phase
- Voltage imbalance between phases
- Defective main circuit capacitor
- Defective inverter PCB
- Defective K1, K2
- Improper main circuit wiring

Troubleshooting

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



Note:
- *1: Measure voltage at the X1M power supply terminal block.
- *2: Measure voltage at terminals R, S and T of the diode module inside the inverter PCB while the compressor is running.

3.35 Inverter Radiation Fin Temperature Thermistor Rise Abnormality

Error Code

P4

Applicable Models

RWEYQ72P, 84P

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 circuited or short circuited status

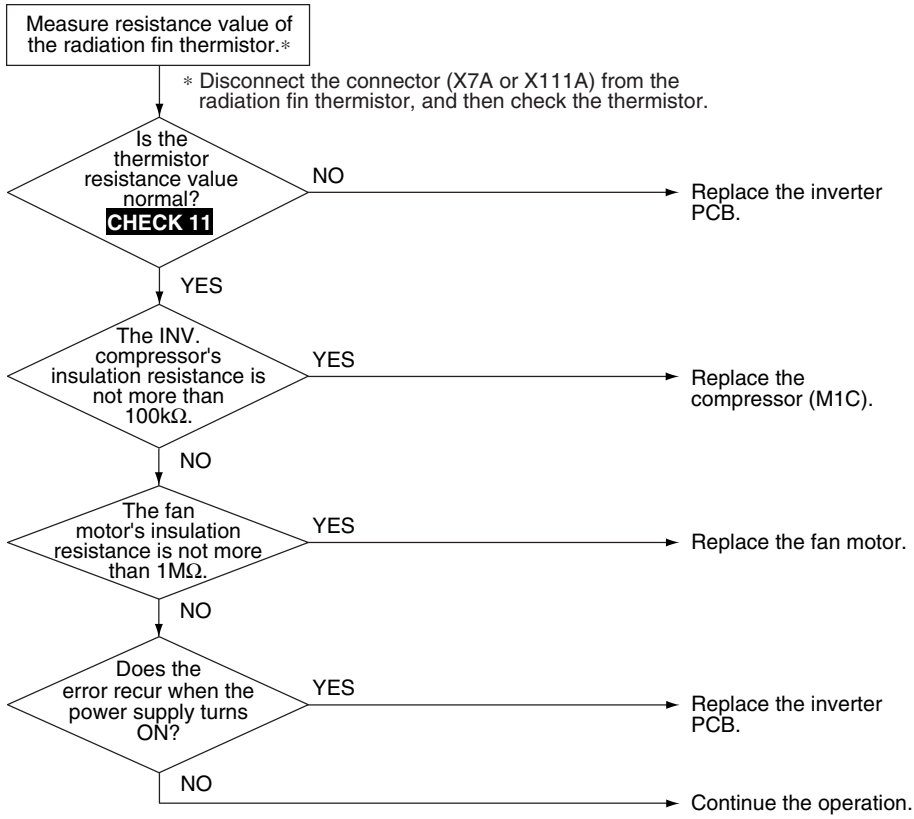
* Error is not decided while the unit operation is continued.
  "P4" will be displayed by pressing the inspection button.

Supposed Causes

- Defective radiation fin temperature thermistor
- Defective inverter PCB
- Defective inverter compressor
- Defective fan motor

Troubleshooting

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



CHECK 11 Refer to P.250.

3.36 Field Setting Abnormality after Replacing Condensing Unit Main PCB or Combination of PCB Abnormality

Error Code

P1

Applicable Models

RWEYQ72P, 84P

Method of Error Detection

This error is detected according to communications with the INV. PCB.

Error Decision Conditions

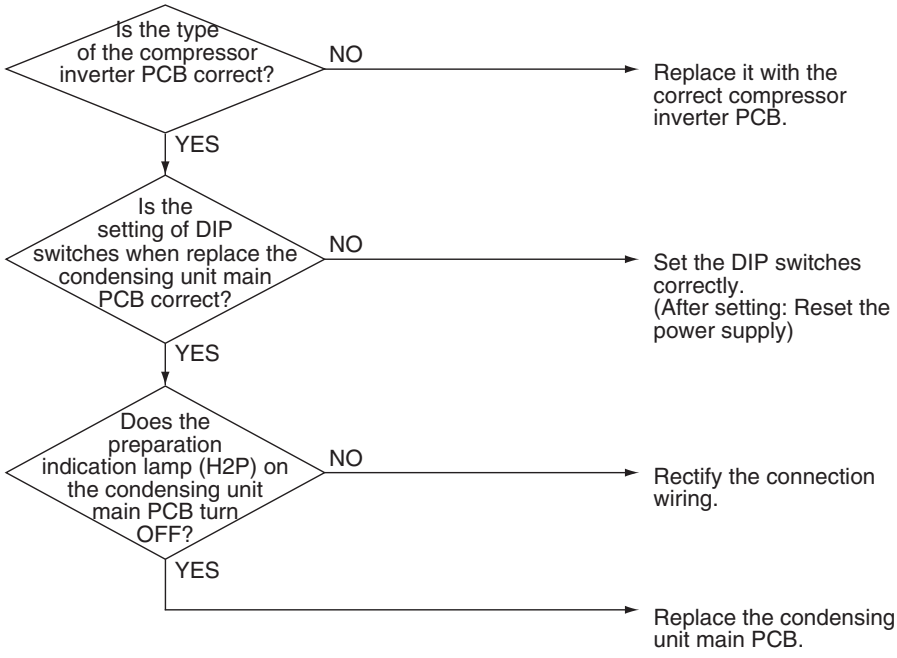
Make judgement according to communication data on whether or not the type of the INV. PCB is correct.

Supposed Causes

- Defective (or no) field setting after replacing condensing unit main PCB
- Mis-matching of type of PCB

Troubleshooting

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

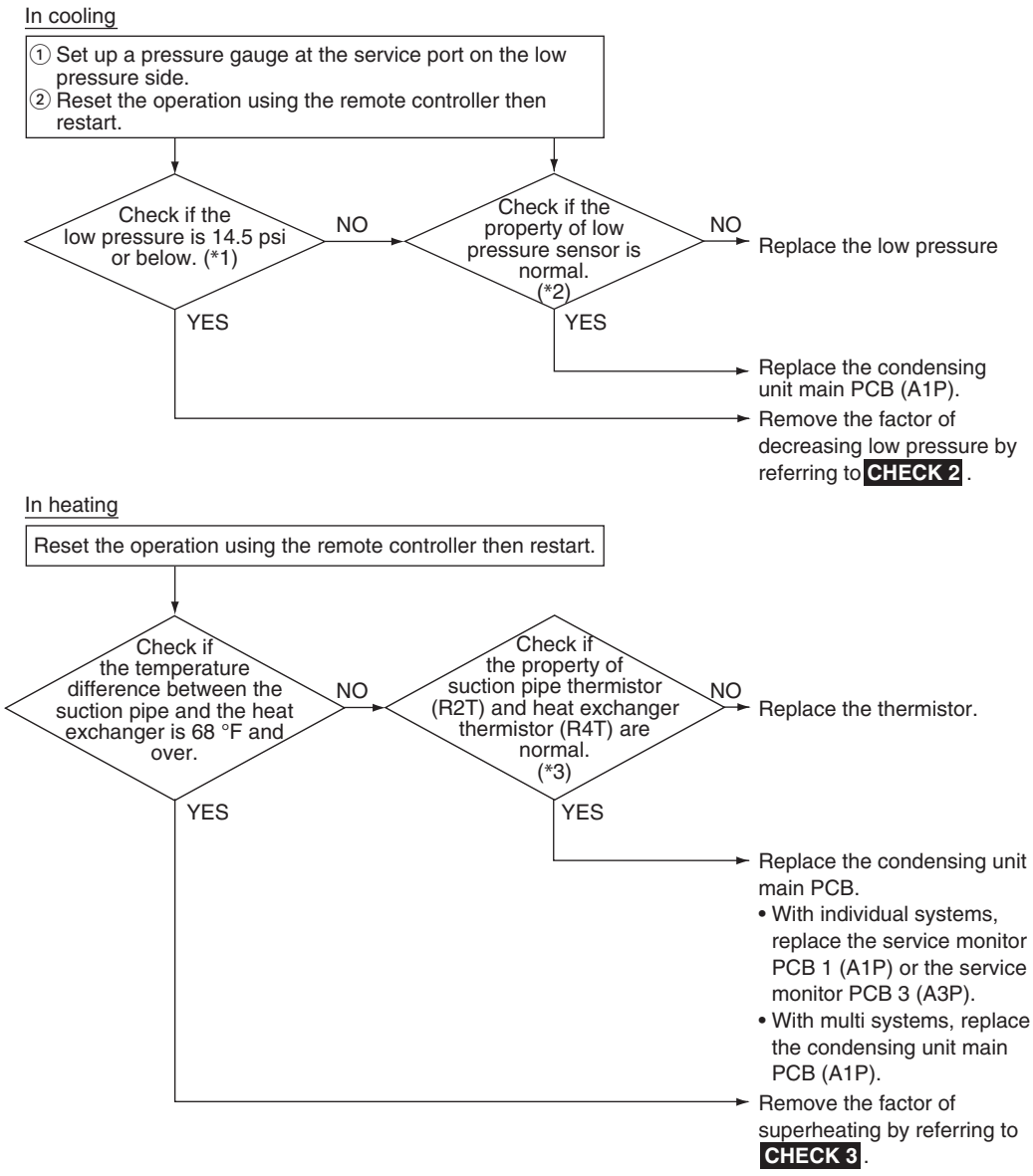


3.37 Refrigerant Shortage Alert

Error Code	U07
Applicable Models	RWEYQ72P, 84P
Method of Error Detection	Detect refrigerant shortage based on the temperature difference between low pressure equivalent saturation temperature or suction pipe and heat exchanger temperature.
Error Decision Conditions	[In cooling] Low pressure becomes 14.5 psi or less. [In heating] The degree of superheat of suction gas becomes 68°F and over. SH = Ts1 –Te Ts1: Suction pipe temperature detected by thermistor Te : Saturated temperature corresponding to low pressure ∗Error is not determined. The unit continues the operation.
Supposed Causes	■ Refrigerant shortage or refrigerant clogging (piping error) ■ Defective thermistor ■ Defective low pressure sensor ■ Defective condensing unit PCB (A1P)

Troubleshooting

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



Note:
- ∗1: Check the low pressure value by using pressure gauge in operation.
- ∗2: Compare the actual measurement value by pressure sensor with the value by the pressure gauge.
  (To gain actual measurement value by pressure sensor, measure the voltage at the connector [between (2)-(3)] and then convert the value into pressure referring to P.251.)
- ∗3: Compare the thermistor resistance value with the value on the surface thermometer.

CHECK 2 Refer to P.242.

CHECK 3 Refer to P.243.

3.38 Open Phase

Error Code

U1

Applicable Models

RWEYQ72P, 84P

Method of Error Detection

The phase of each phase are detected by reverse phase detection circuit and right phase or reverse phase are judged.

Error Decision Conditions

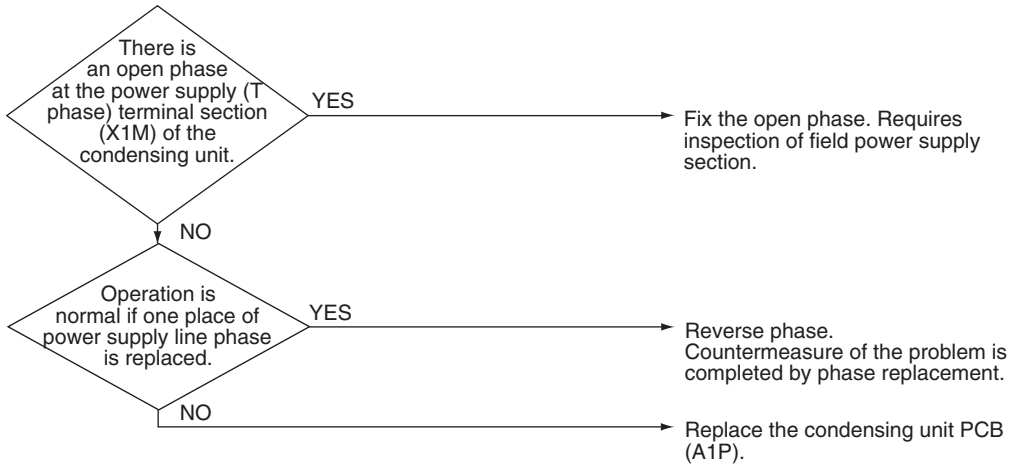
When a power supply is reverse phase, or T phase is open phase

Supposed Causes

- Power supply reverse phase
- T phase open phase
- Defective condensing unit PCB

Troubleshooting

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

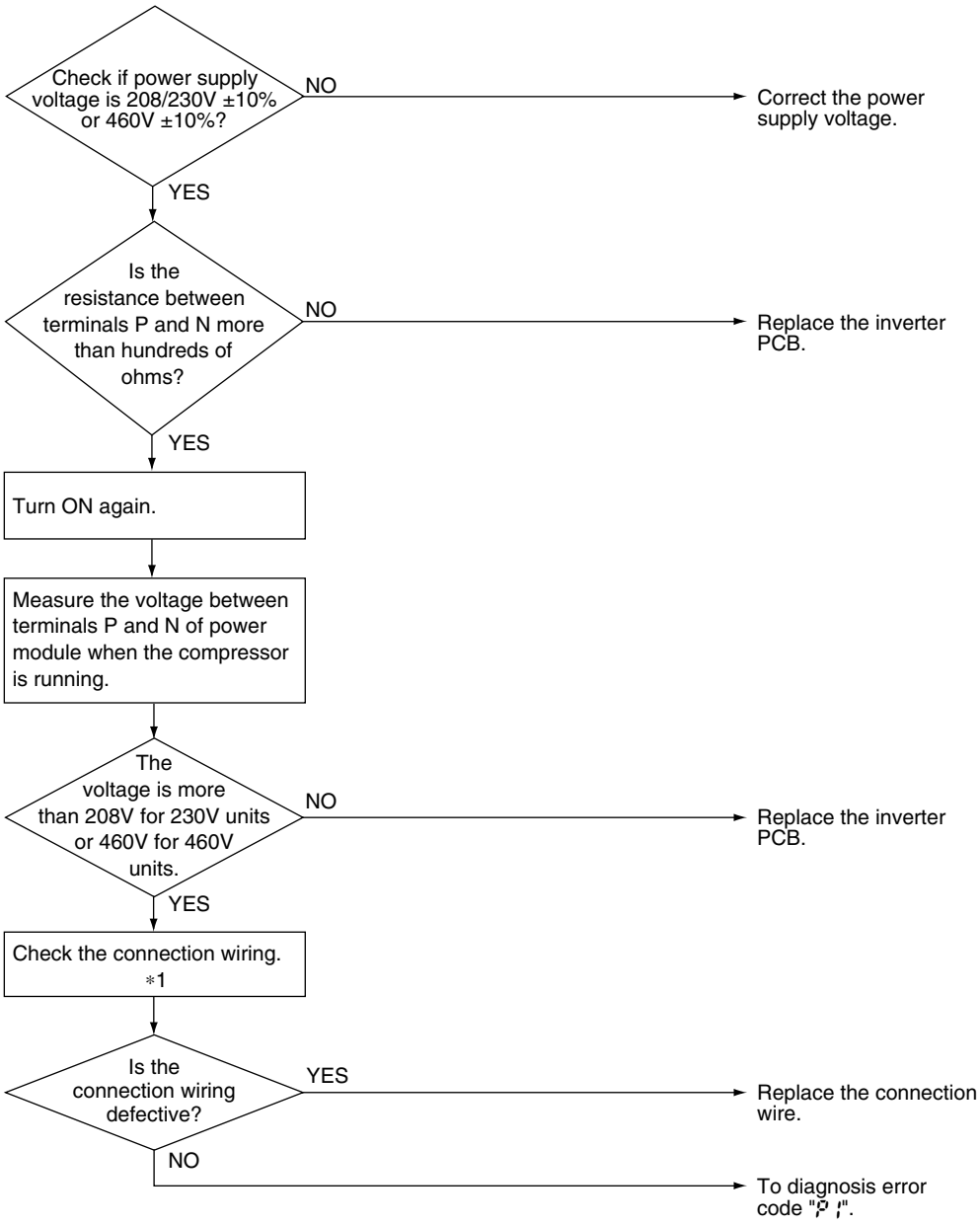


3.39 Power Supply Insufficient or Instantaneous Failure

Error Code	U2
Applicable Models	RWEYQ72P, 84P
Method of Error Detection	Detection of voltage of main circuit capacitor built in the inverter PCB and power supply voltage
Error Decision Conditions	When the voltage aforementioned is not less than 780V or not more than 320V, or when the current-limiting voltage does not reach 200V or more or exceeds 740V For 230V units: When the voltage aforementioned is 190V or less
Supposed Causes	■ Power supply insufficient ■ Instantaneous power failure ■ Open phase ■ Defective inverter PCB ■ Defective condensing unit main PCB ■ Defective K1, K2 ■ Defective main circuit wiring

Troubleshooting

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



Note: ∗1 Connector code

Model name	Connector
RWEYQ72/84PTJU	• X6A(A2P) ↔ X33A(A1P) • X4A(A2P) ↔ X25A(A1P)
RWEYQ72/84PTJU9	• X6A(A2P) ↔ X28A(A1P) • X4A(A2P) ↔ X20A(A1P)
RWEYQ72/84PYDN	• X6A(A3P) ↔ X28A(A1P) • X4A(A3P) ↔ X20A(A1P)

3.40 Check Operation is not Executed

Error Code U3

Applicable Models RWEYQ72P, 84P

Method of Error Detection Check operation is executed or not executed.

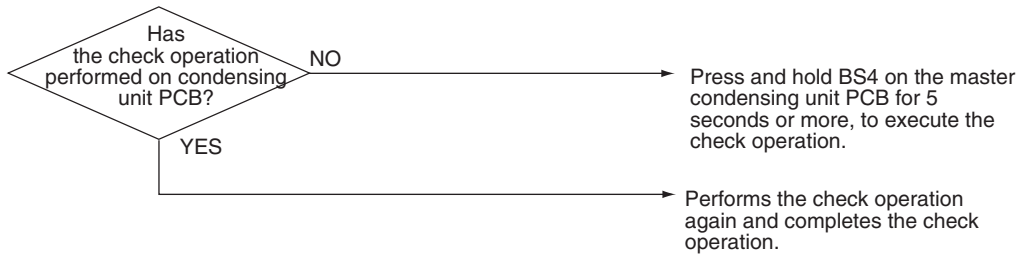
Error Decision Conditions Error is decided when the unit starts operation without check operation.

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.

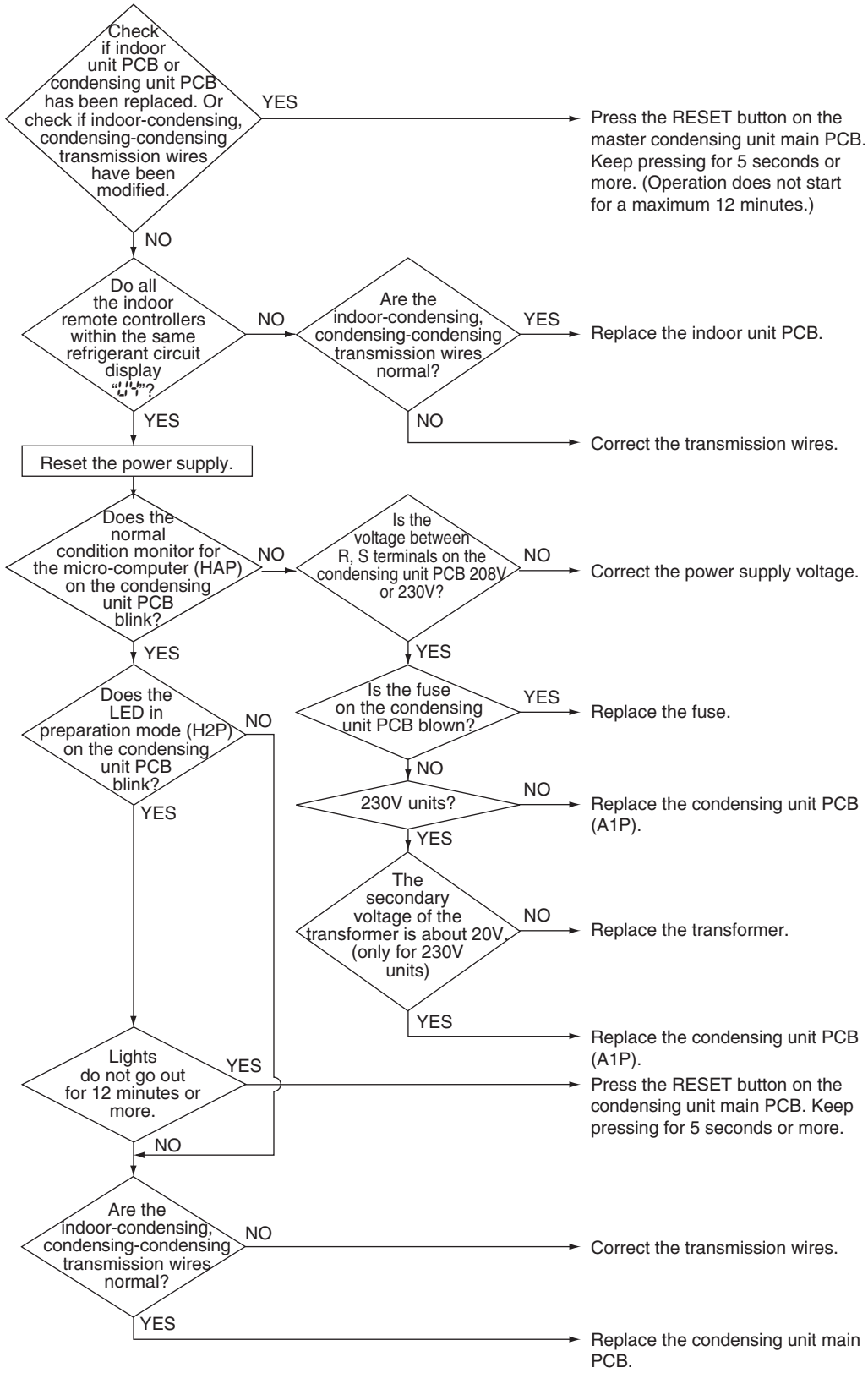


3.41 Transmission Error between Indoor Units and Condensing Units

Error Code	U4
Applicable Models	All indoor models RWEYQ72P, 84P
Method of Error Detection	Micro-computer checks if transmission between indoor and condensing units is normal.
Error Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	■ Indoor to condensing, condensing to condensing transmission wiring F1, F2 disconnection, short circuit or wrong wiring ■ Condensing unit power supply is OFF ■ System address does not match ■ Defective condensing unit main PCB ■ Defective indoor unit PCB

Troubleshooting

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



3.42 Transmission Error between Remote Controller and Indoor Unit

Error Code U5

Applicable Models All indoor models

Method of Error Detection Micro-computer checks if transmission between indoor unit and remote controller is normal.

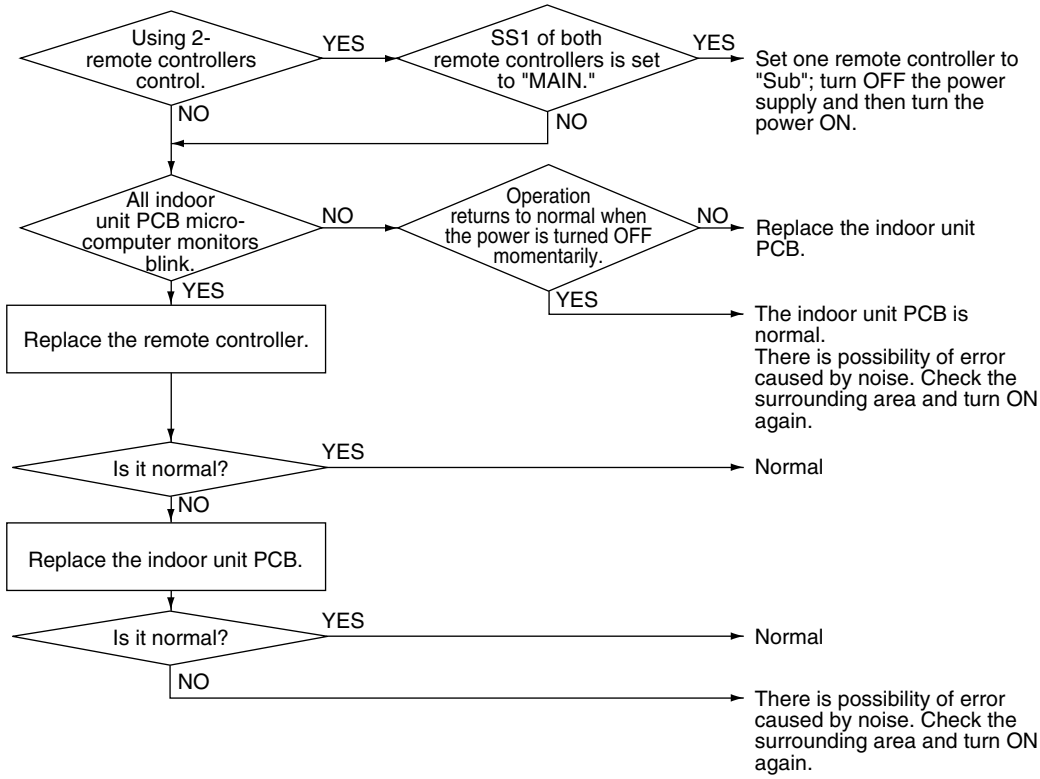
Error Decision Conditions When transmission is not carried out normally for a certain amount of time

Supposed Causes

- Transmission error between indoor unit and remote controller
- Connection of 2 main remote controllers (when using 2 remote controllers)
- Defective indoor unit PCB
- Defective remote controller PCB
- 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.

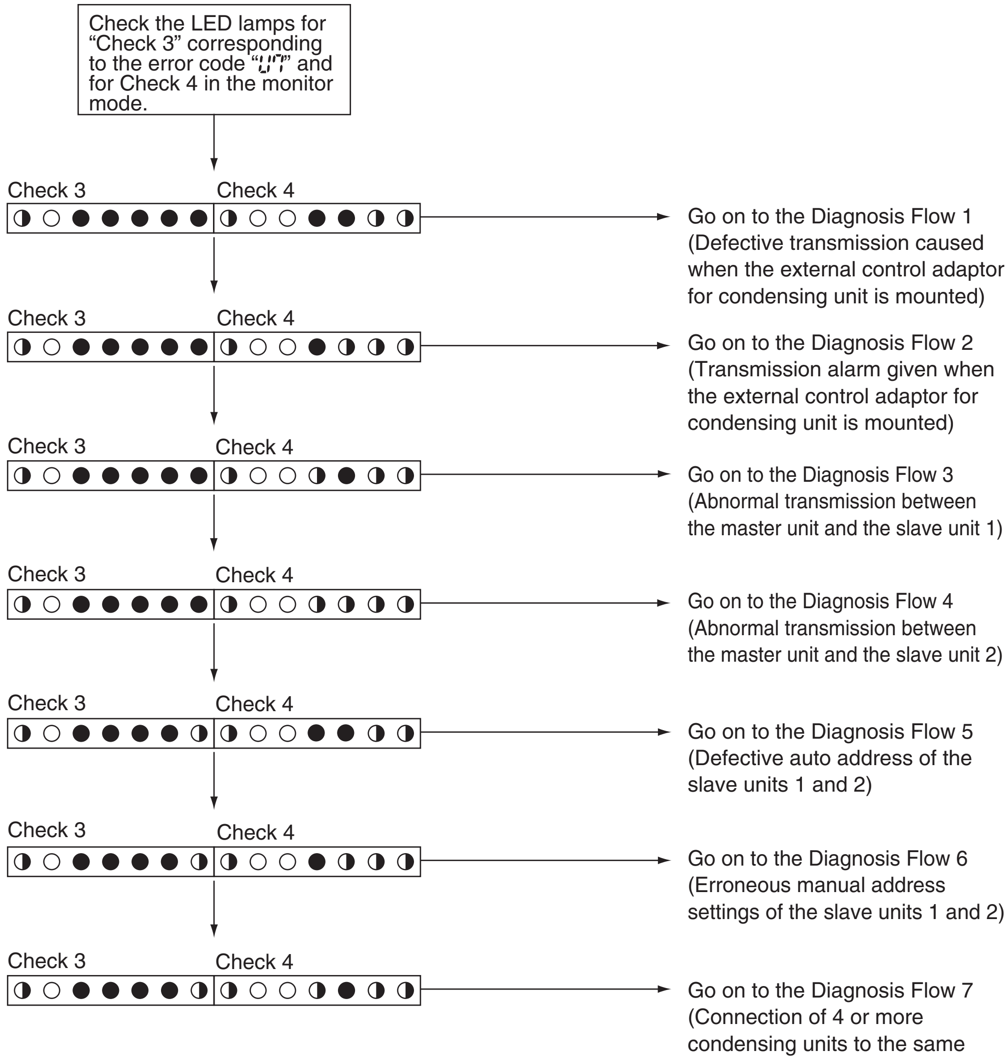


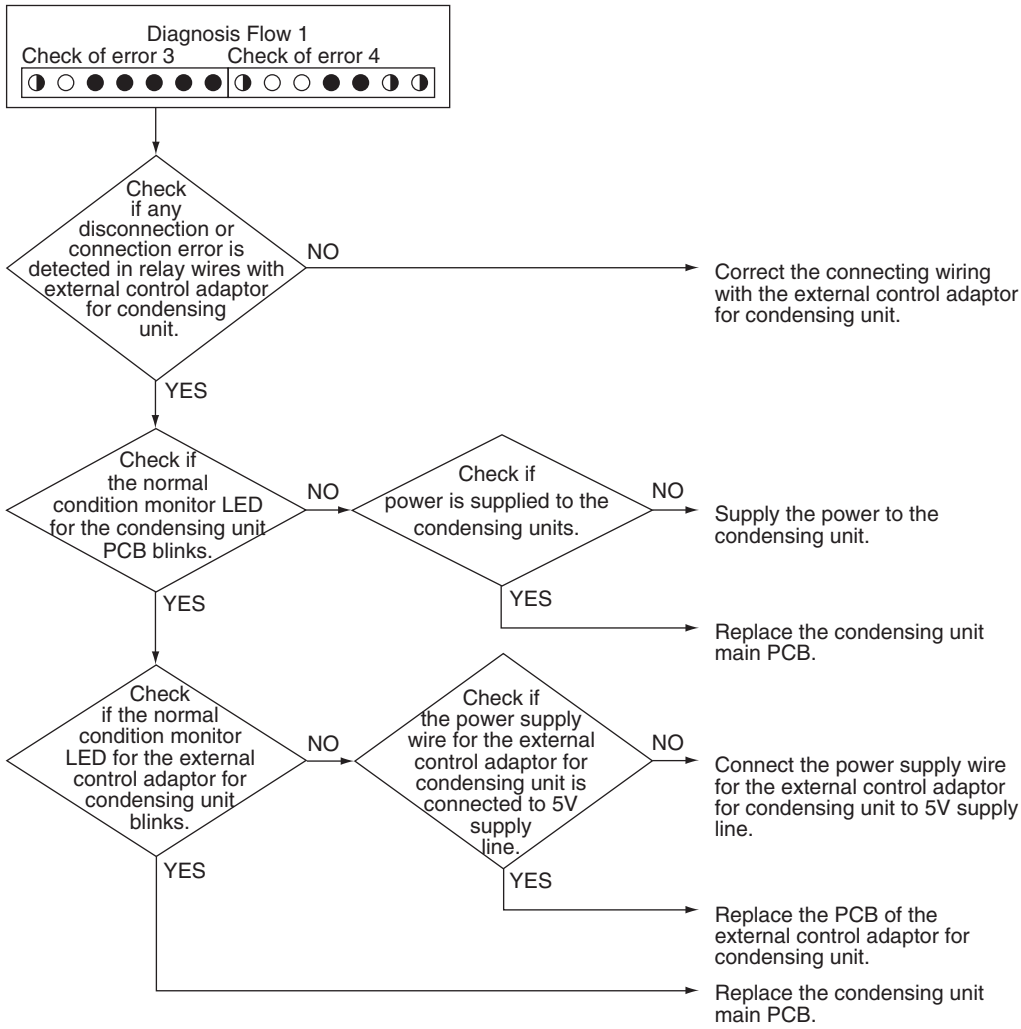
3.43 Transmission Error between Condensing Units

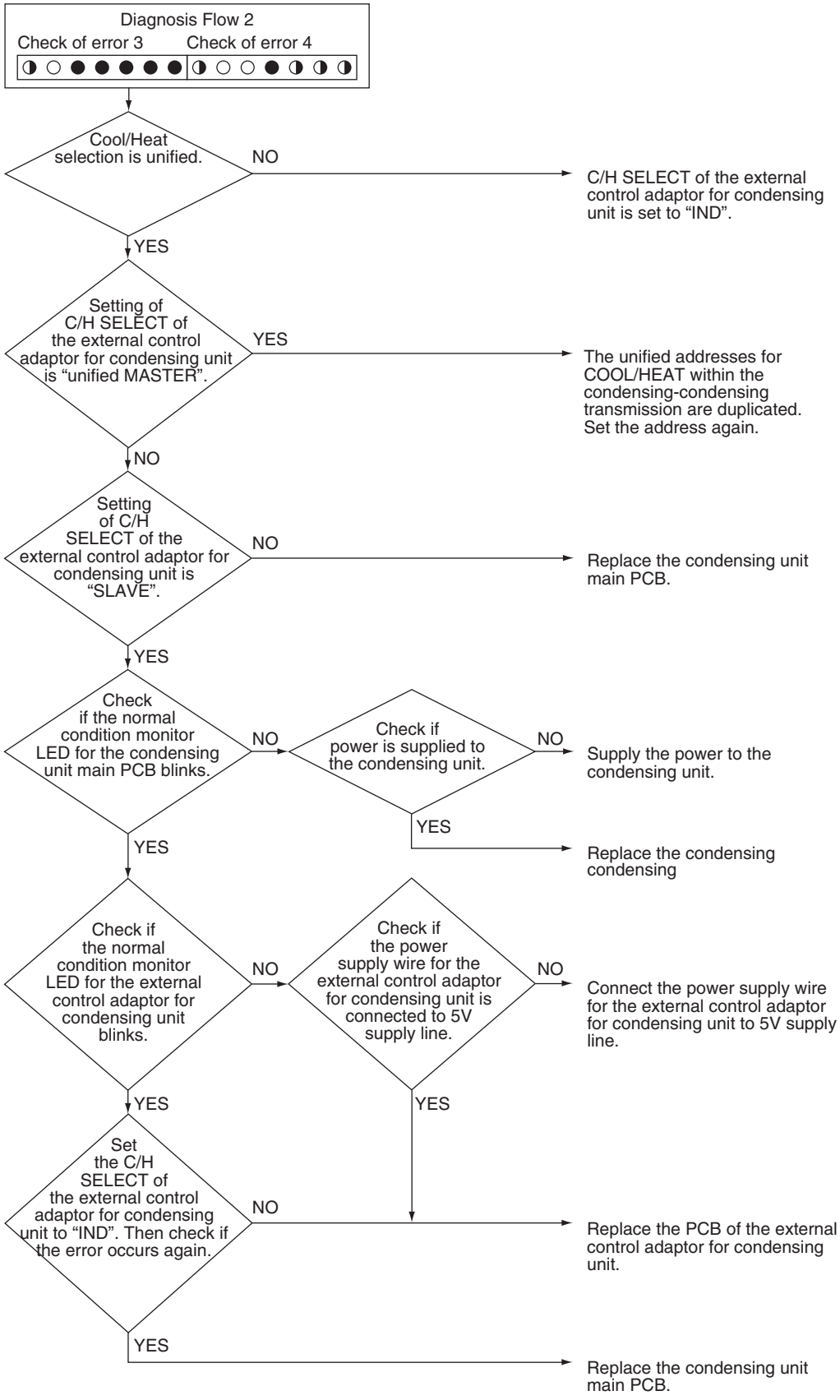
Error Code	U7
Applicable Models	RWEYQ72P, 84P
Method of Error Detection	Micro-computer checks if transmission between condensing units is normal.
Error Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	■ Improper connection of transmission wiring between condensing unit and external control adaptor for condensing unit. ■ Improper connection of transmission wiring between condensing units ■ Improper cool/heat selection ■ Improper cool/heat unified address (condensing unit, external control adaptor for condensing unit) ■ Defective condensing unit PCB (A1P) ■ Defective external control adaptor for condensing unit ■ Defective fuse of condensing unit compressor

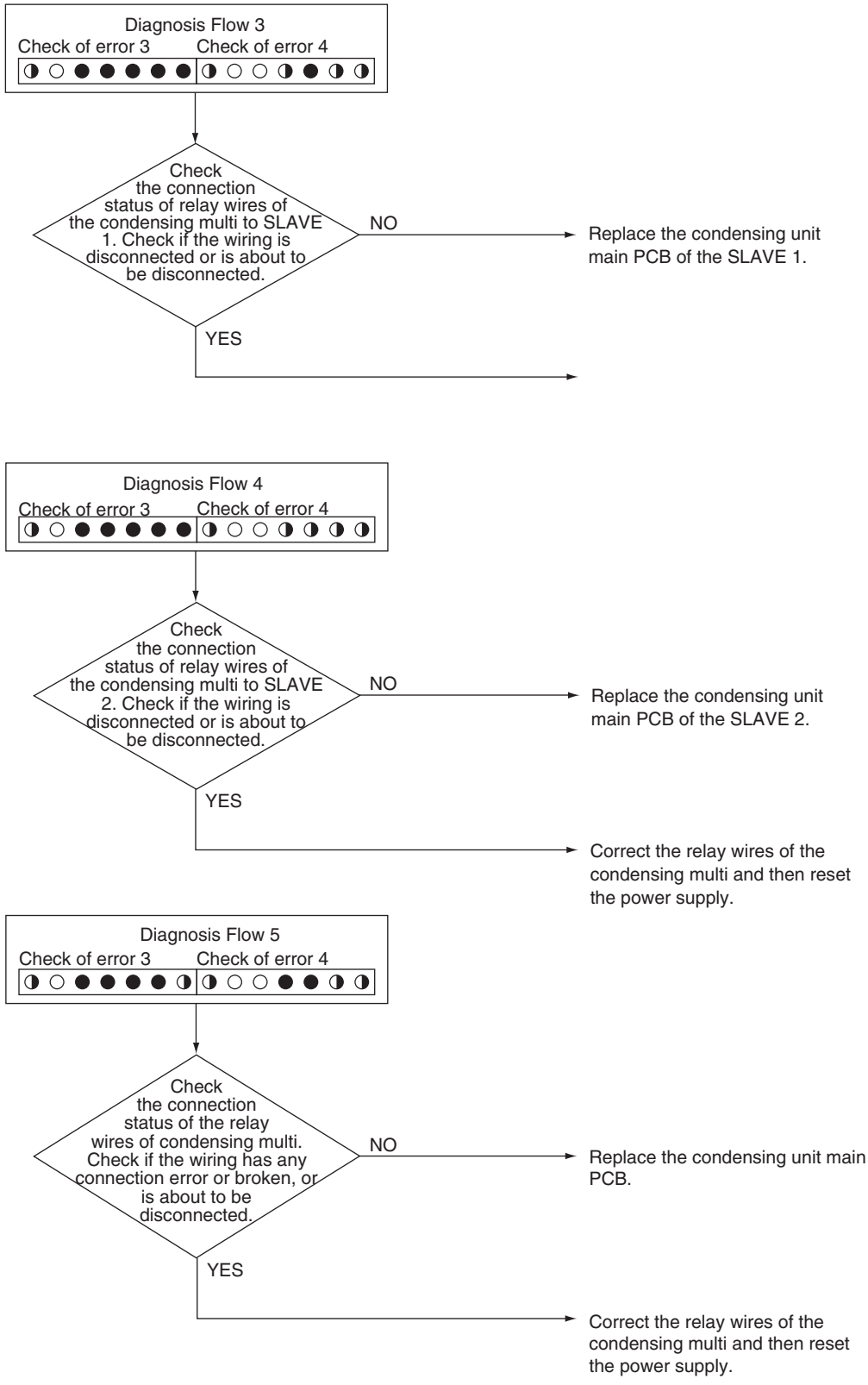
Troubleshooting

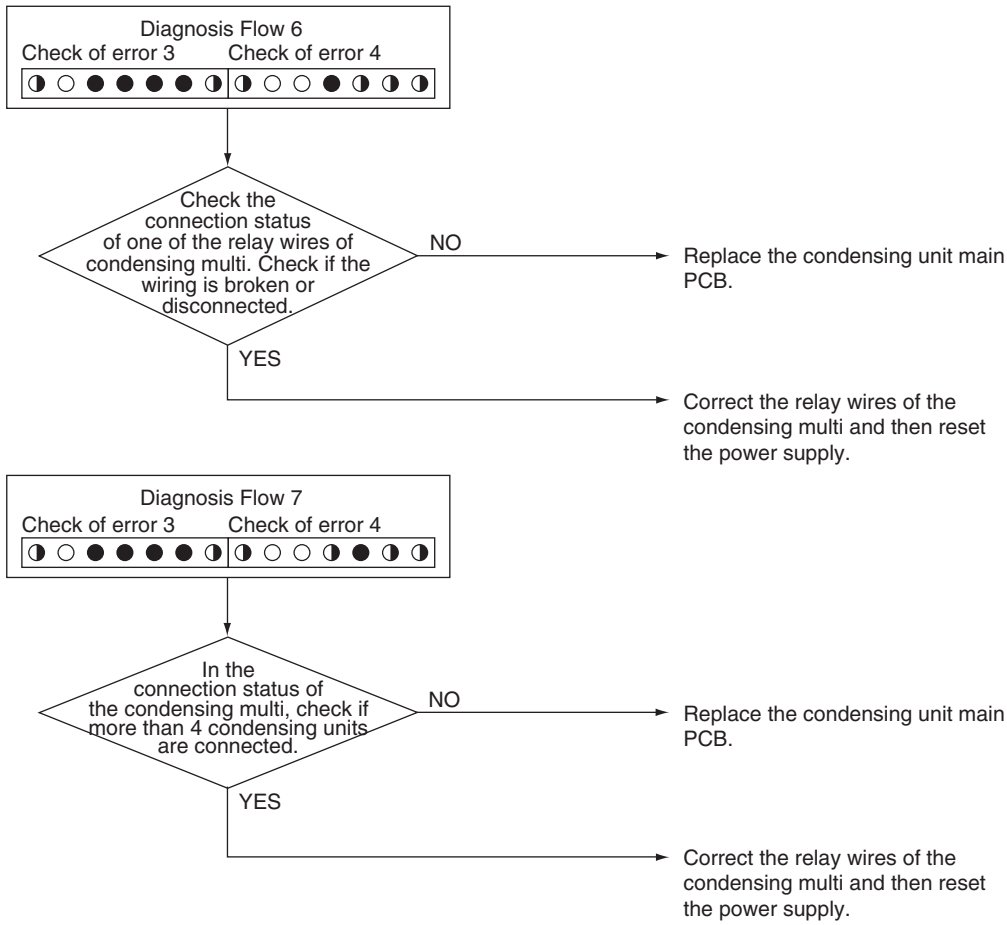
Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.




Diagnosis Flow 1
Check of error 3
Check of error 4
Check if any disconnection or connection error is detected in relay wires with external control adaptor for condensing unit.
NO
Correct the connecting wiring with the external control adaptor for condensing unit.
YES
Check if the normal condition monitor LED for the condensing unit PCB blinks.
NO
Check if power is supplied to the condensing units.
NO
Supply the power to the condensing unit.
YES
YES
Replace the condensing unit main PCB.
Check if the normal condition monitor LED for the external control adaptor for condensing unit blinks.
NO
Check if the power supply wire for the external control adaptor for condensing unit is connected to 5V supply line.
NO
Connect the power supply wire for the external control adaptor for condensing unit to 5V supply line.
YES
YES
Replace the PCB of the external control adaptor for condensing unit.
Replace the condensing unit main PCB.


Diagnosis Flow 2
Check of error 3
Check of error 4
Cool/Heat selection is unified.
NO
C/H SELECT of the external control adaptor for condensing unit is set to “IND”.
YES
Setting of C/H SELECT of the external control adaptor for condensing unit is “unified MASTER”.
YES
The unified addresses for COOL/HEAT within the condensing-condensing transmission are duplicated. Set the address again.
NO
Setting of C/H SELECT of the external control adaptor for condensing unit is “SLAVE”.
NO
Replace the condensing unit main PCB.
YES
Check if the normal condition monitor LED for the condensing unit main PCB blinks.
NO
Check if power is supplied to the condensing unit.
NO
Supply the power to the condensing unit.
YES
Replace the condensing condensing
YES
Check if the normal condition monitor LED for the external control adaptor for condensing unit blinks.
NO
Check if the power supply wire for the external control adaptor for condensing unit is connected to 5V supply line.
NO
Connect the power supply wire for the external control adaptor for condensing unit to 5V supply line.
YES
YES
Set the C/H SELECT of the external control adaptor for condensing unit to “IND”. Then check if the error occurs again.
NO
Replace the PCB of the external control adaptor for condensing unit.
YES
Replace the condensing unit main PCB.


Diagnosis Flow 3
Check of error 3
Check of error 4
Check the connection status of relay wires of the condensing multi to SLAVE 1. Check if the wiring is disconnected or is about to be disconnected.
NO
Replace the condensing unit main PCB of the SLAVE 1.
YES
Diagnosis Flow 4
Check of error 3
Check of error 4
Check the connection status of relay wires of the condensing multi to SLAVE 2. Check if the wiring is disconnected or is about to be disconnected.
NO
Replace the condensing unit main PCB of the SLAVE 2.
YES
Correct the relay wires of the condensing multi and then reset the power supply.
Diagnosis Flow 5
Check of error 3
Check of error 4
Check the connection status of the relay wires of condensing multi. Check if the wiring has any connection error or broken, or is about to be disconnected.
NO
Replace the condensing unit main PCB.
YES
Correct the relay wires of the condensing multi and then reset the power supply.


Diagnosis Flow 6
Check of error 3
Check of error 4
Check the connection status of one of the relay wires of condensing multi. Check if the wiring is broken or disconnected.
NO
Replace the condensing unit main PCB.
YES
Correct the relay wires of the condensing multi and then reset the power supply.
Diagnosis Flow 7
Check of error 3
Check of error 4
In the connection status of the condensing multi, check if more than 4 condensing units are connected.
NO
Replace the condensing unit main PCB.
YES
Correct the relay wires of the condensing multi and then reset the power supply.

3.44 Transmission Error between Main and Sub Remote Controllers

Error Code

U8

Applicable Models

All indoor models

Method of Error Detection

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

Error Decision Conditions

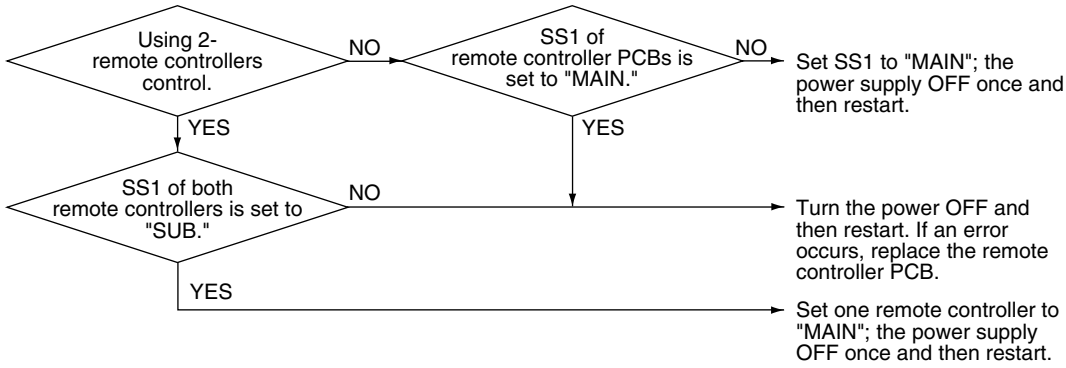
Normal transmission does not continue for specified period.

Supposed Causes

- Transmission error between main and sub remote controller
- Connection between sub 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.



3.45 Transmission Error between Indoor and Condensing Units in the Same System

Error Code U9

Applicable Models All indoor models
RWEYQ72P, 84P

Method of Error Detection Detect the error signal for the other indoor units within the circuit by condensing unit PCB.

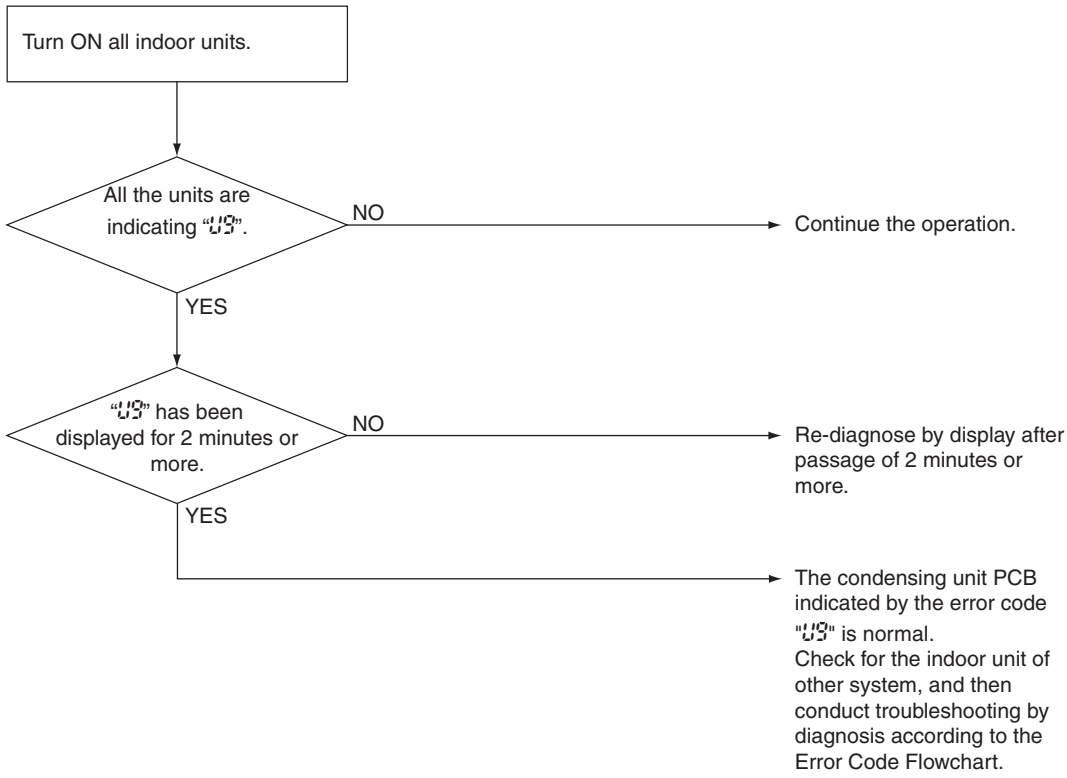
Error Decision Conditions When the error decision is made on any other indoor unit within the system concerned.

Supposed Causes

- Transmission error within or condensing of other 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 condensing unit

Troubleshooting

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



3.46 Improper Combination of Indoor, Branch Selector and Condensing Units

Error Code

U9

Applicable Models

All indoor models
Branch Selector unit
RWEYQ72P, 84P

Method of Error Detection

- A difference occurs in data by the type of refrigerant between indoor, Branch Selector and condensing units.
- The number of indoor units is out of the allowable range.
- Signal transmission between indoor, Branch Selector and condensing units is abnormal.

Error Decision Conditions

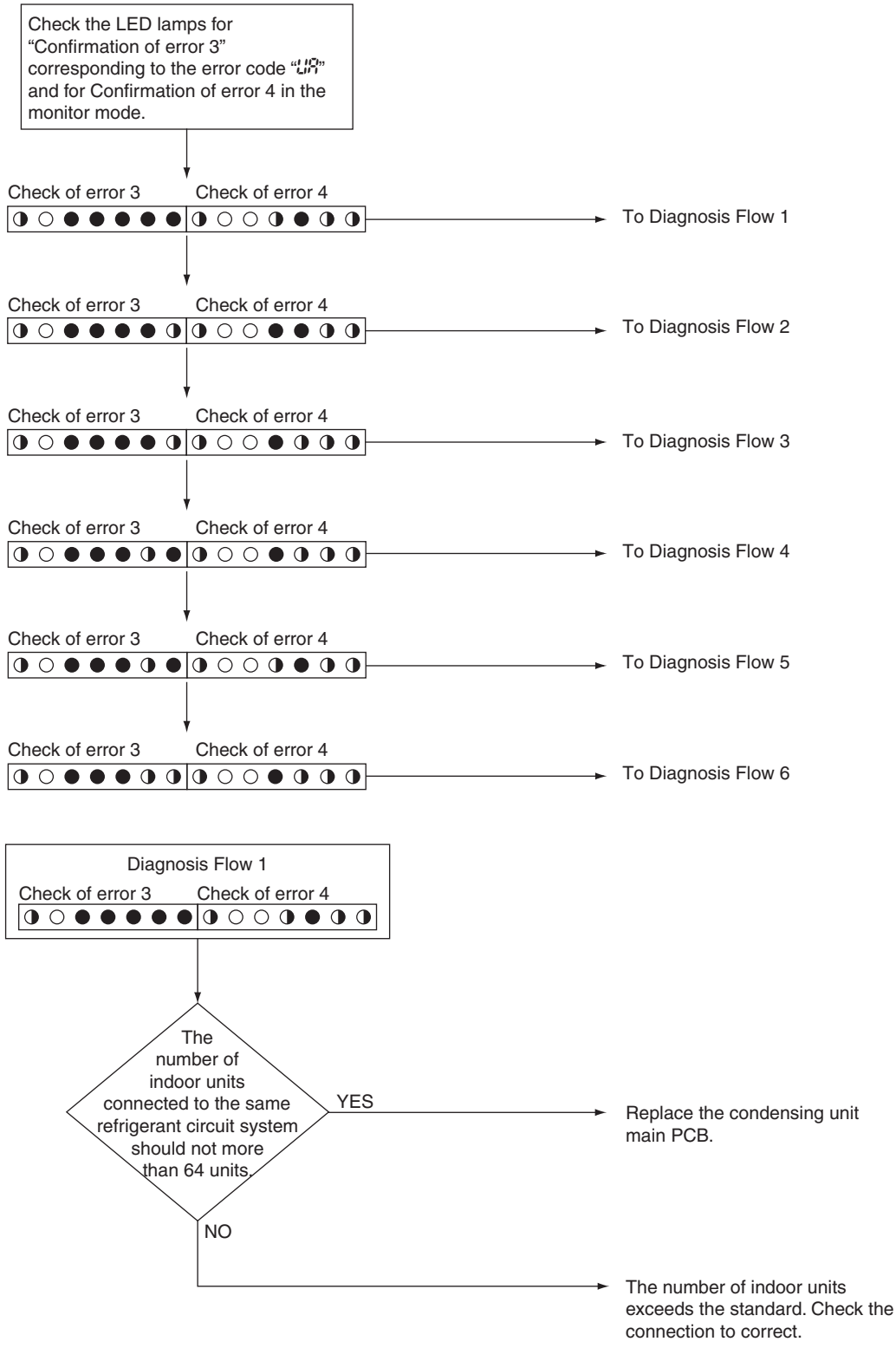
The error decision is made as soon as either of the abnormalities aforementioned is detected.

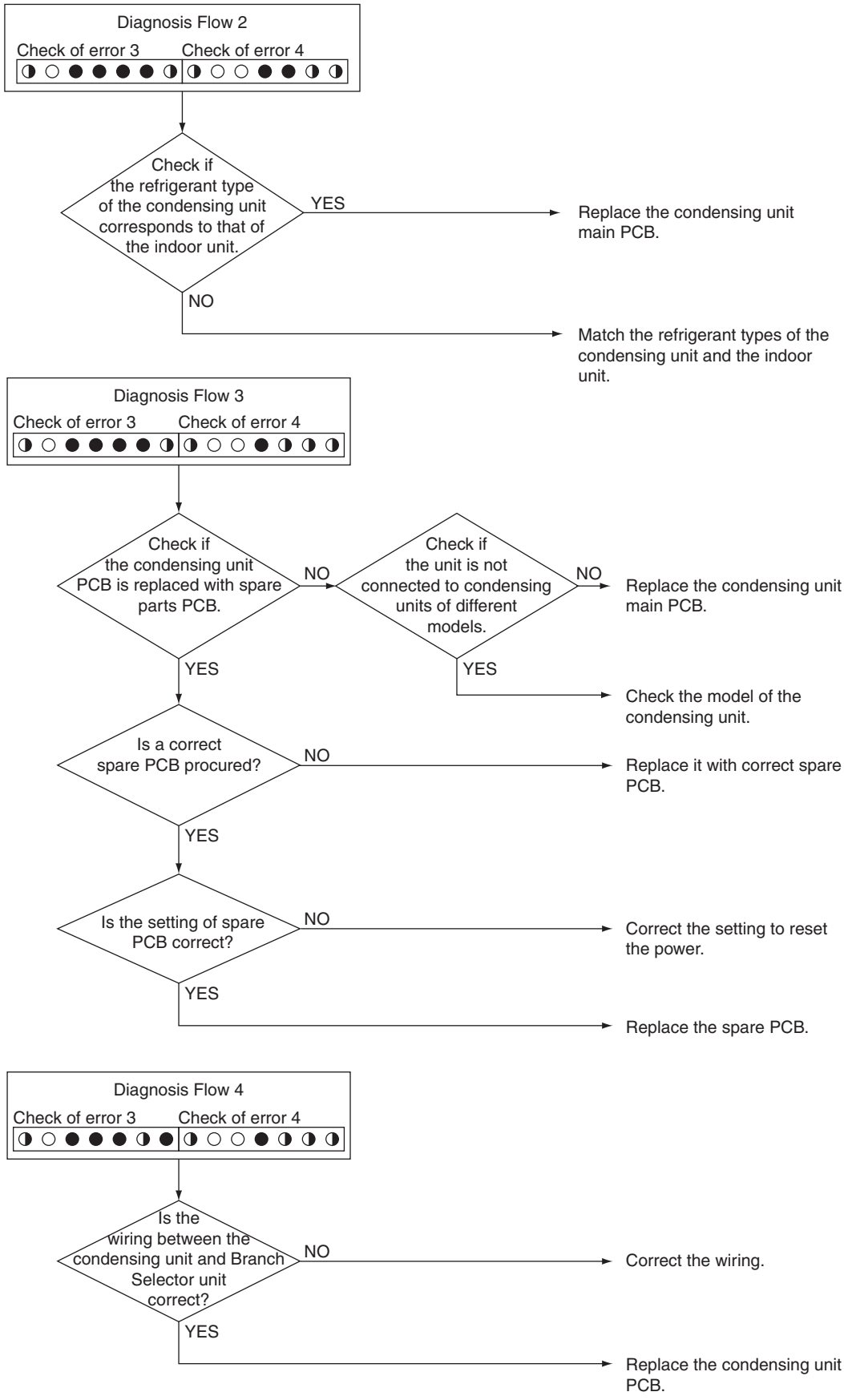
Supposed Causes

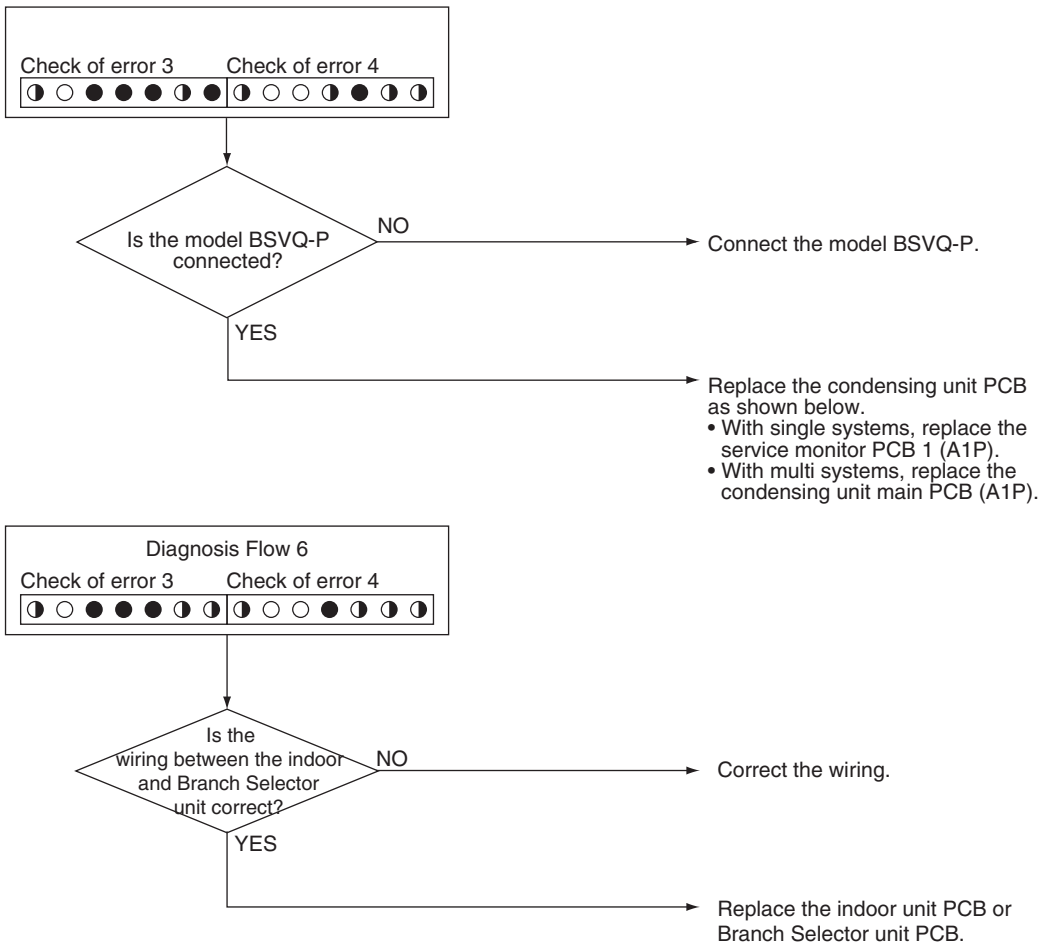
- Excess of connected indoor units
- Defective condensing unit PCB (A1P)
- Mismatch of the refrigerant type of indoor and condensing unit.
- Setting condensing unit PCB was not carried out after replacing to spare PCB.

Troubleshooting

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




Diagnosis Flow 2
Check of error 3
Check of error 4
Check if the refrigerant type of the condensing unit corresponds to that of the indoor unit.
YES
Replace the condensing unit main PCB.
NO
Match the refrigerant types of the condensing unit and the indoor unit.
Diagnosis Flow 3
Check of error 3
Check of error 4
Check if the condensing unit PCB is replaced with spare parts PCB.
NO
Check if the unit is not connected to condensing units of different models.
NO
Replace the condensing unit main PCB.
YES
YES
Check the model of the condensing unit.
Is a correct spare PCB procured?
NO
Replace it with correct spare PCB.
YES
Is the setting of spare PCB correct?
NO
Correct the setting to reset the power.
YES
Replace the spare PCB.
Diagnosis Flow 4
Check of error 3
Check of error 4
Is the wiring between the condensing unit and Branch Selector unit correct?
NO
Correct the wiring.
YES
Replace the condensing unit PCB.


Check of error 3
Check of error 4
Is the model BSVQ-P connected?
NO
Connect the model BSVQ-P.
YES
Replace the condensing unit PCB as shown below.
• With single systems, replace the service monitor PCB 1 (A1P).
• With multi systems, replace the condensing unit main PCB (A1P).
Diagnosis Flow 6
Check of error 3
Check of error 4
Is the wiring between the indoor and Branch Selector unit correct?
NO
Correct the wiring.
YES
Replace the indoor unit PCB or Branch Selector unit PCB.

3.47 Address Duplication of Centralized Control Equipment

Error Code

Applicable Models

All indoor models
Central remote controller

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 error decision is made as soon as the abnormality aforementioned is detected.

Supposed Causes

- Address duplication of centralized control equipment
- Defective indoor unit PCB

Troubleshooting

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

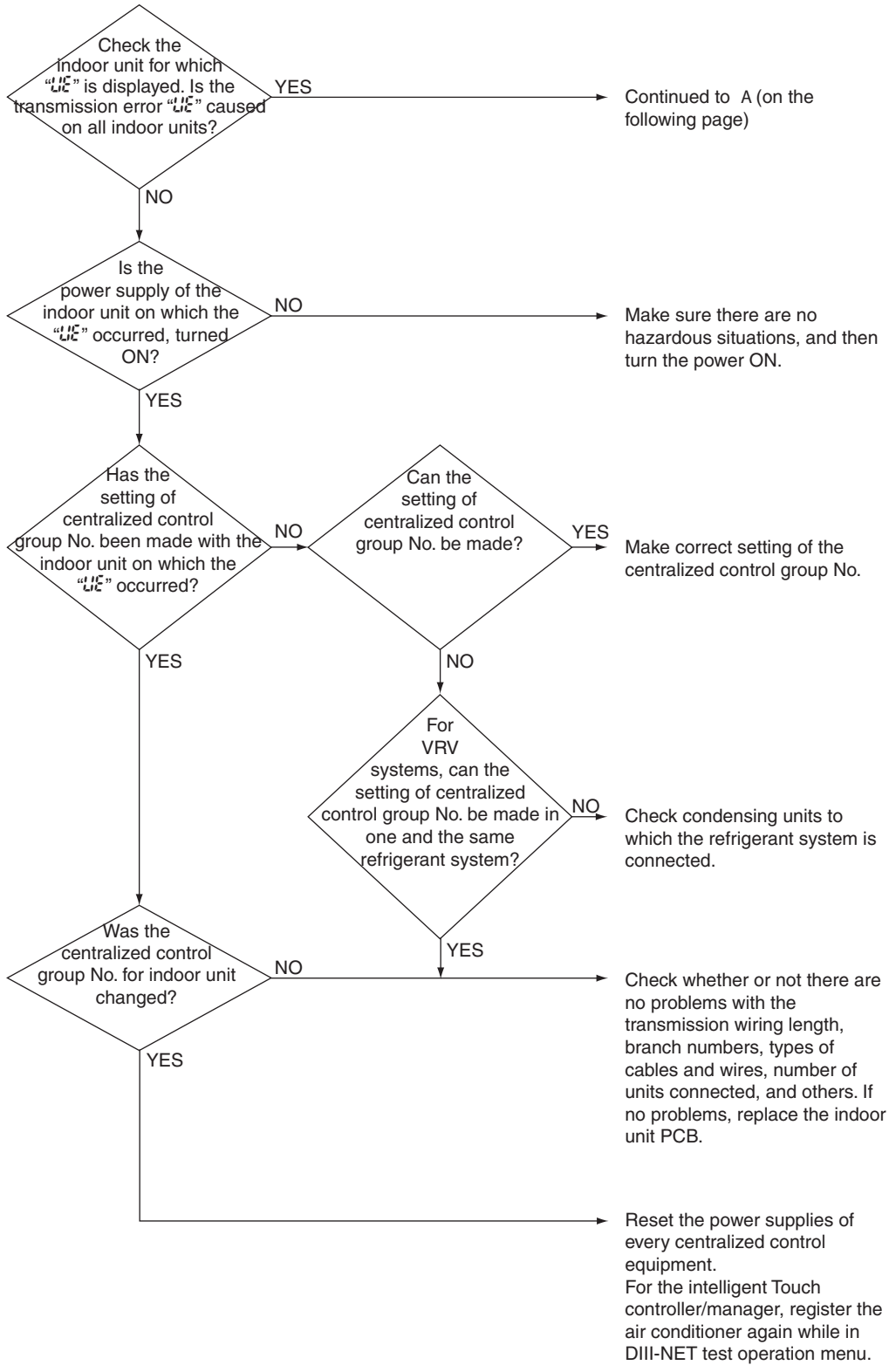
The centralized address is duplicated. → Make setting change so that the centralized address will not be duplicated.

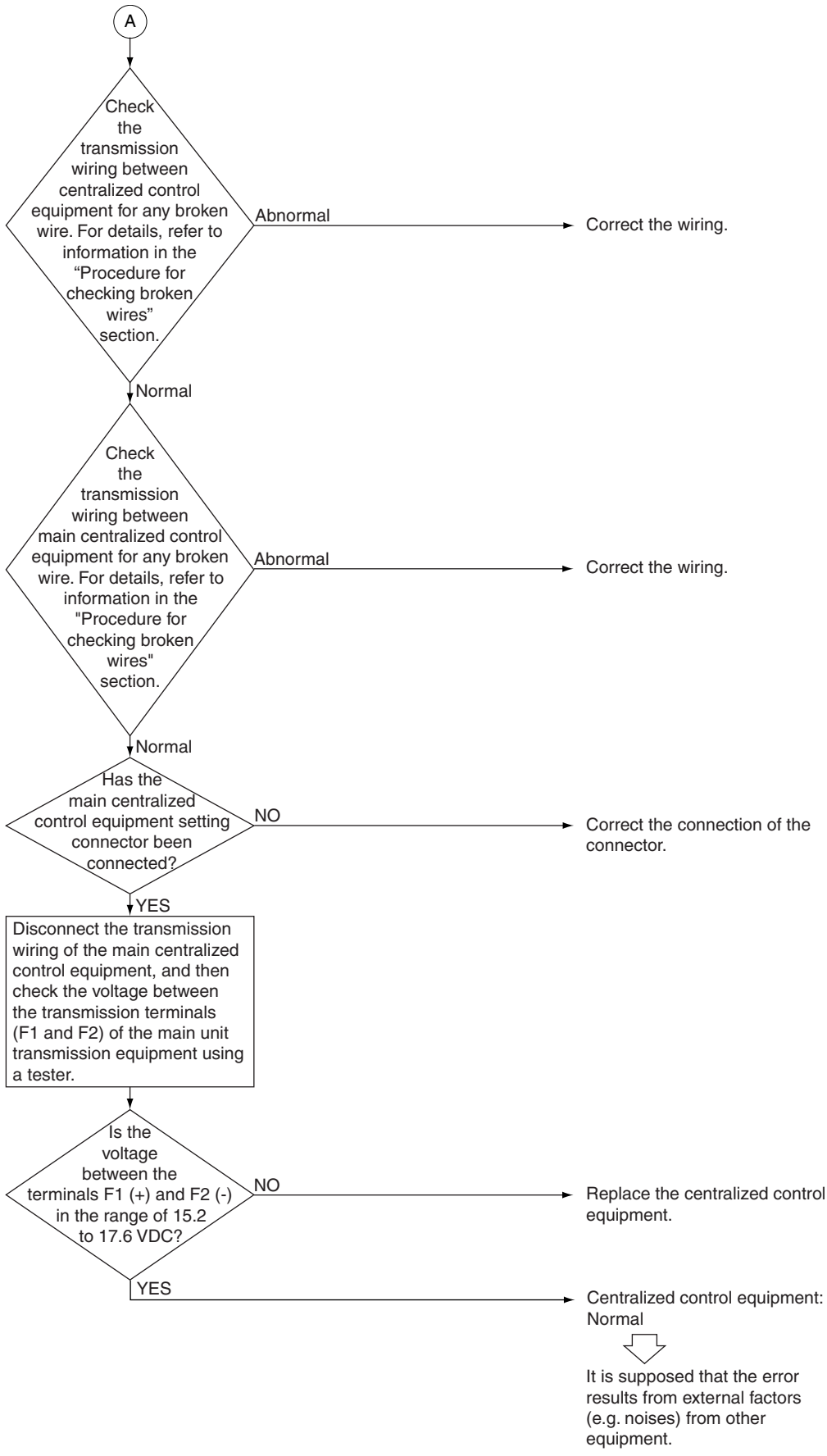
3.48 Transmission Error between Centralized Control Equipment and Indoor Unit

Error Code	UE
Applicable Models	All indoor models intelligent Touch Controller intelligent Touch Manager Central remote controller Schedule timer
Method of Error Detection	Micro-computer checks if transmission between indoor unit and centralized control equipment 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 main controller is disconnected. (or disconnection of connector for independent / combined use changeover switch.) ■ Defective PCB for centralized control equipment ■ Defective indoor unit PCB

Troubleshooting

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




A
Check the transmission wiring between centralized control equipment for any broken wire. For details, refer to information in the "Procedure for checking broken wires" section.
Abnormal
Correct the wiring.
Normal
Check the transmission wiring between main centralized control equipment for any broken wire. For details, refer to information in the "Procedure for checking broken wires" section.
Abnormal
Correct the wiring.
Normal
Has the main centralized control equipment setting connector been connected?
NO
Correct the connection of the connector.
YES
Disconnect the transmission wiring of the main centralized control equipment, and then check the voltage between the transmission terminals (F1 and F2) of the main unit transmission equipment using a tester.
Is the voltage between the terminals F1 (+) and F2 (-) in the range of 15.2 to 17.6 VDC?
NO
Replace the centralized control equipment.
YES
Centralized control equipment: Normal
It is supposed that the error results from external factors (e.g. noises) from other equipment.

3.49 System is not Set yet

Error Code

UF

Applicable Models

All indoor models
RWEYQ72P, 84P

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

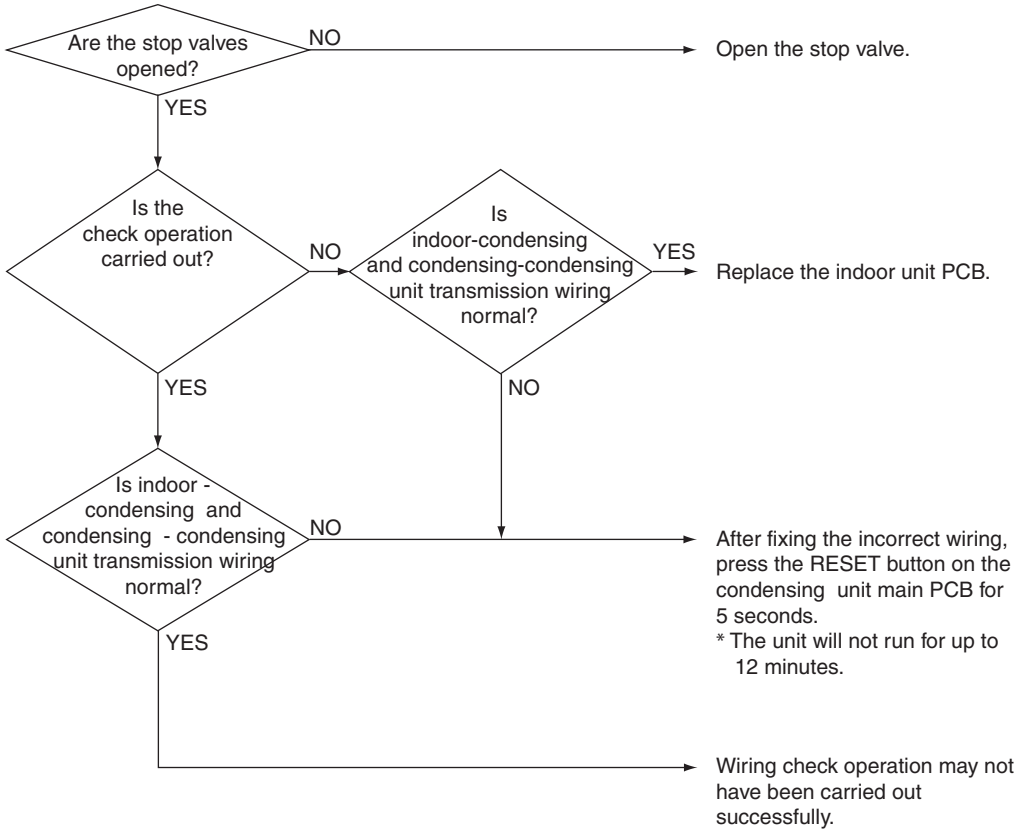
The error is determined as soon as the abnormality aforementioned is detected through checking the system for any erroneous connection of units on the check operation.

Supposed Causes

- Improper connection of transmission wiring between indoor-condensing units and condensing-condensing units
- Failure to execute check operation
- Defective indoor unit PCB
- Stop valve is not opened

Troubleshooting

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

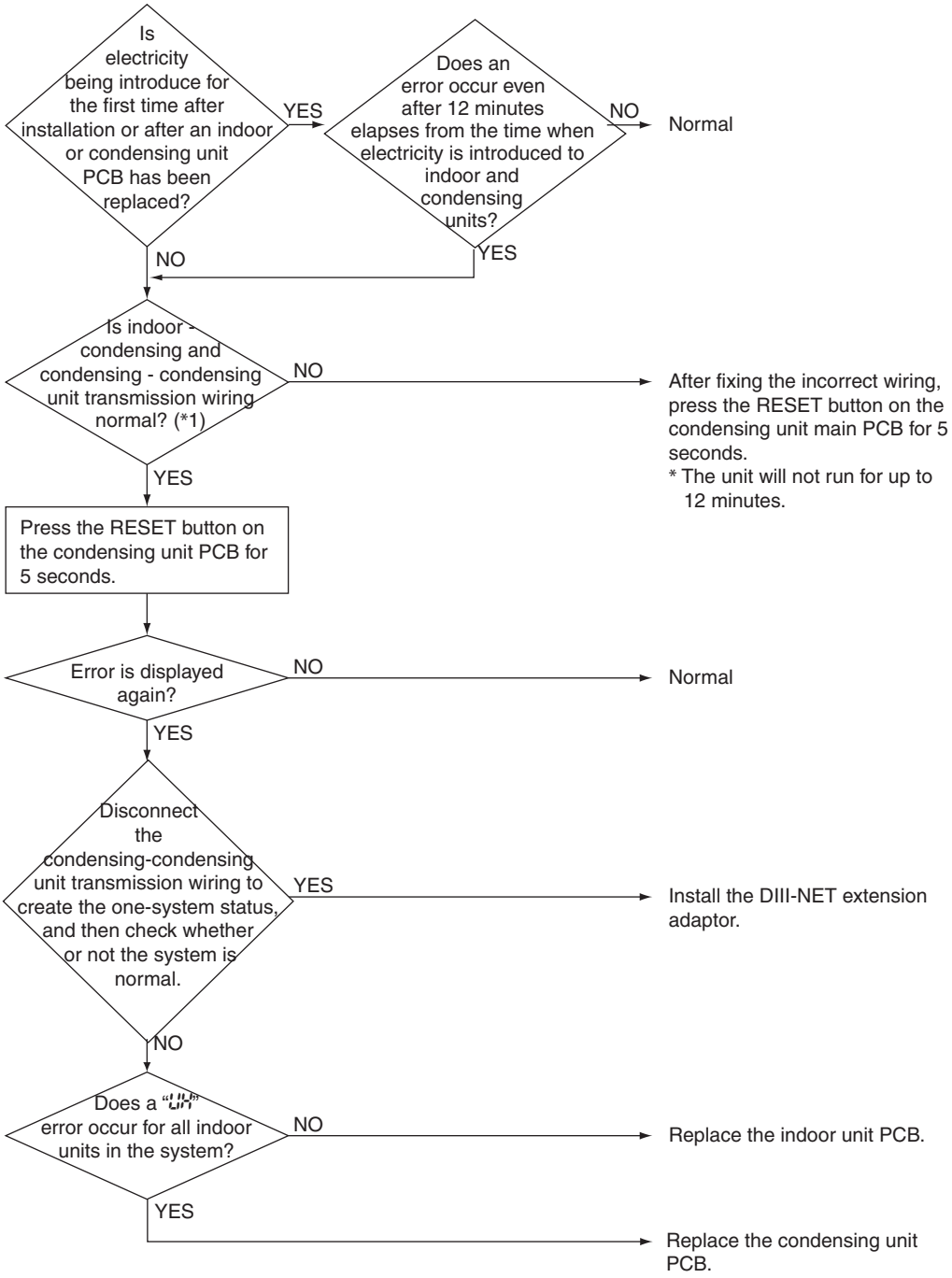


3.50 System Error, Refrigerant System Address Undefined

Error Code	LH
Applicable Models	All indoor models RWEYQ72P, 84P
Method of Error Detection	Detect an indoor unit with no auto address setting.
Error Decision Conditions	The error decision is made as soon as the abnormality aforementioned is detected.
Supposed Causes	■ Improper connection of transmission wiring between indoor-condensing units and condensing-condensing units ■ Defective indoor unit PCB ■ Defective condensing unit main PCB

Troubleshooting

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

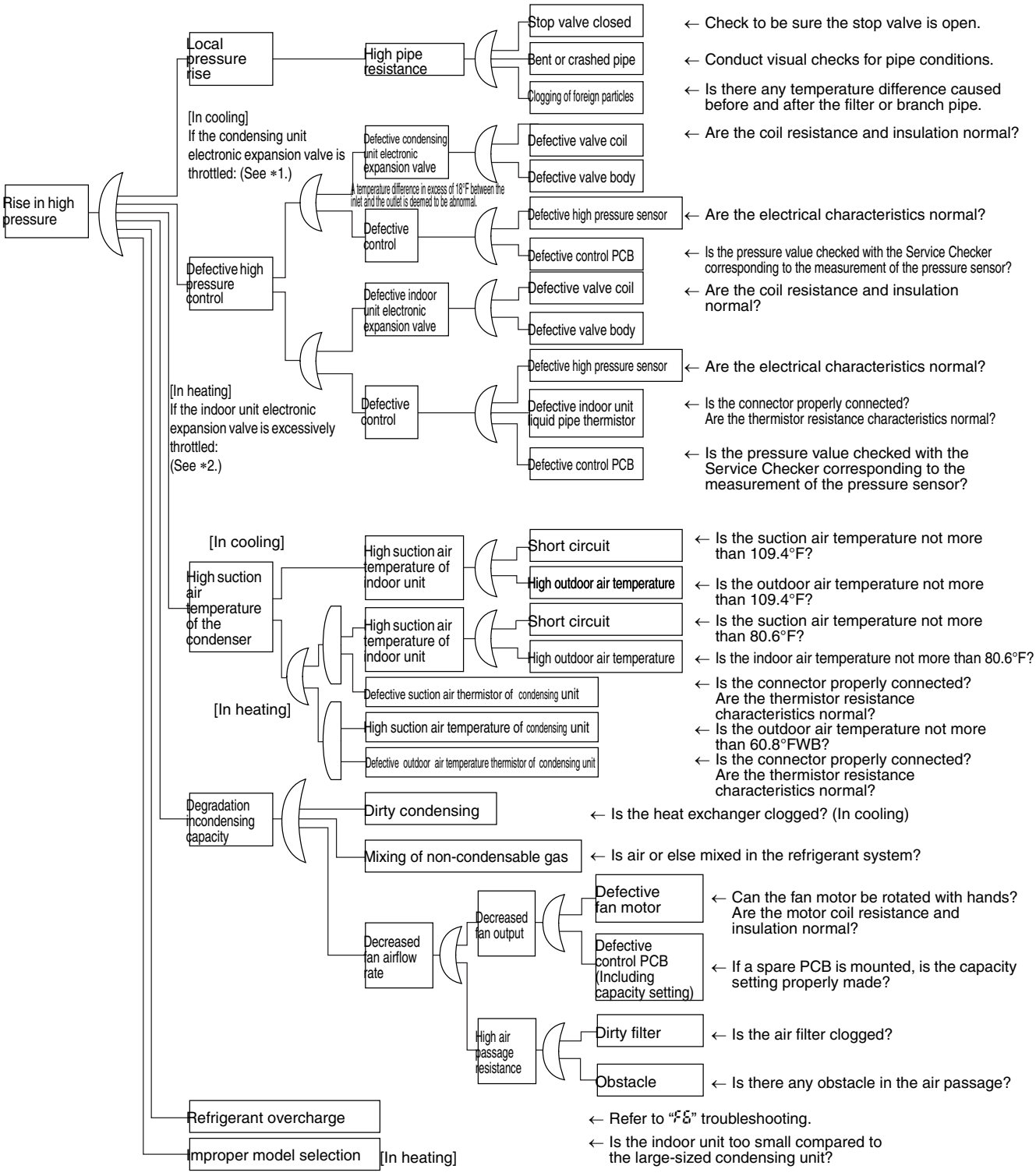


Note:
- ∗1: Check the correct wiring indoor-condensing and condensing-condensing by Installation Manual.
- ∗2: What is Auto Address?
  This is the address automatically assigned to indoor units and condensing units after initial power supply upon installation, or after executing rewiring (Keep pressing the RESET button for more than 4 seconds).

3.51 Check

CHECK 1 **Check for Causes of Rise in High Pressure**

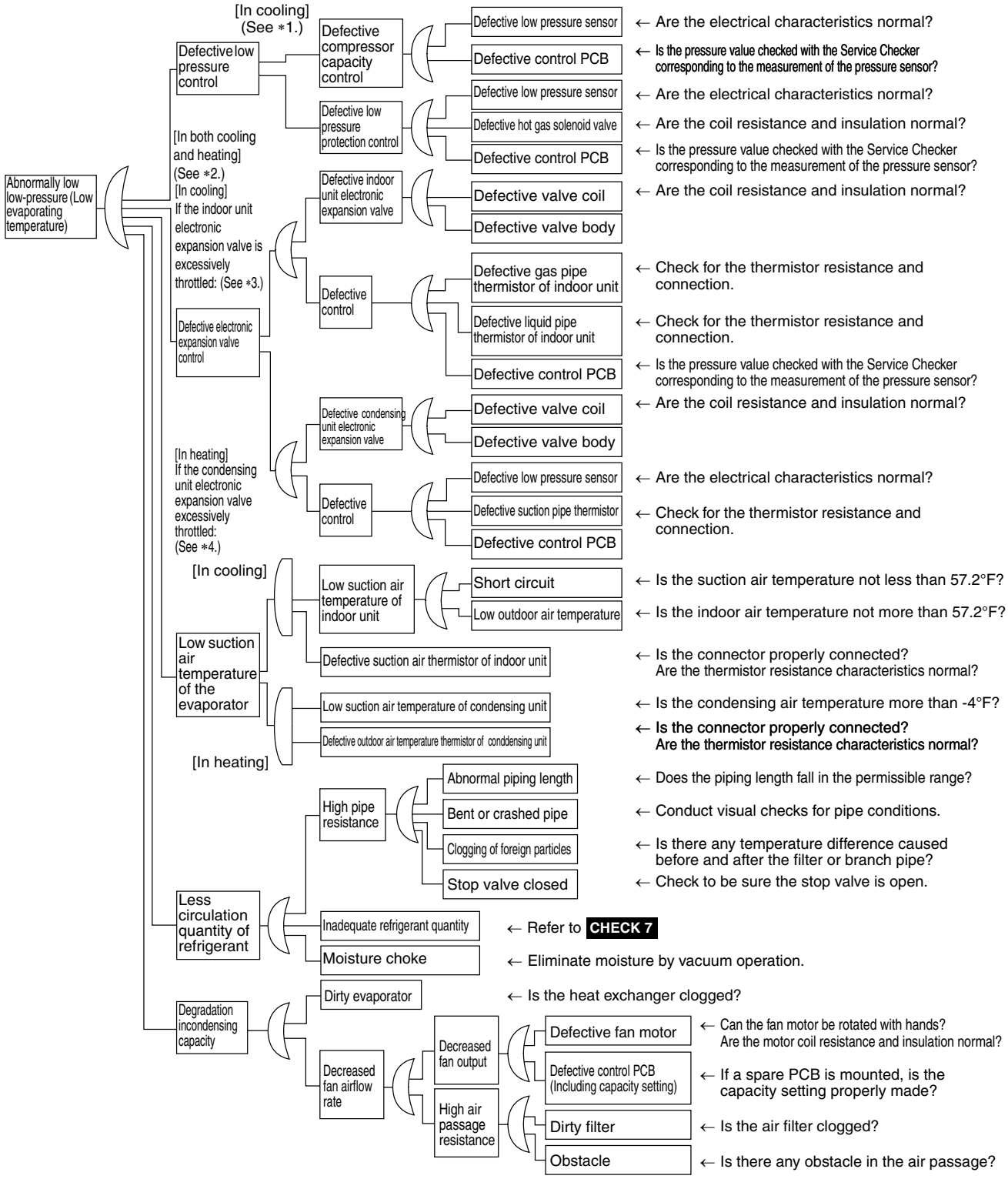
Referring to the Fault Tree Analysis (FTA) shown below, probe the defective points.



Note: ∗1: In cooling, it is normal if the condensing unit electronic expansion valve is fully open.
∗2: In heating, the indoor unit electronic expansion valve is used for **Subcooling Degree Control**. (For details, refer to **Electronic Expansion Valve Control**.)

CHECK 2 Check for Causes of Drop in Low Pressure

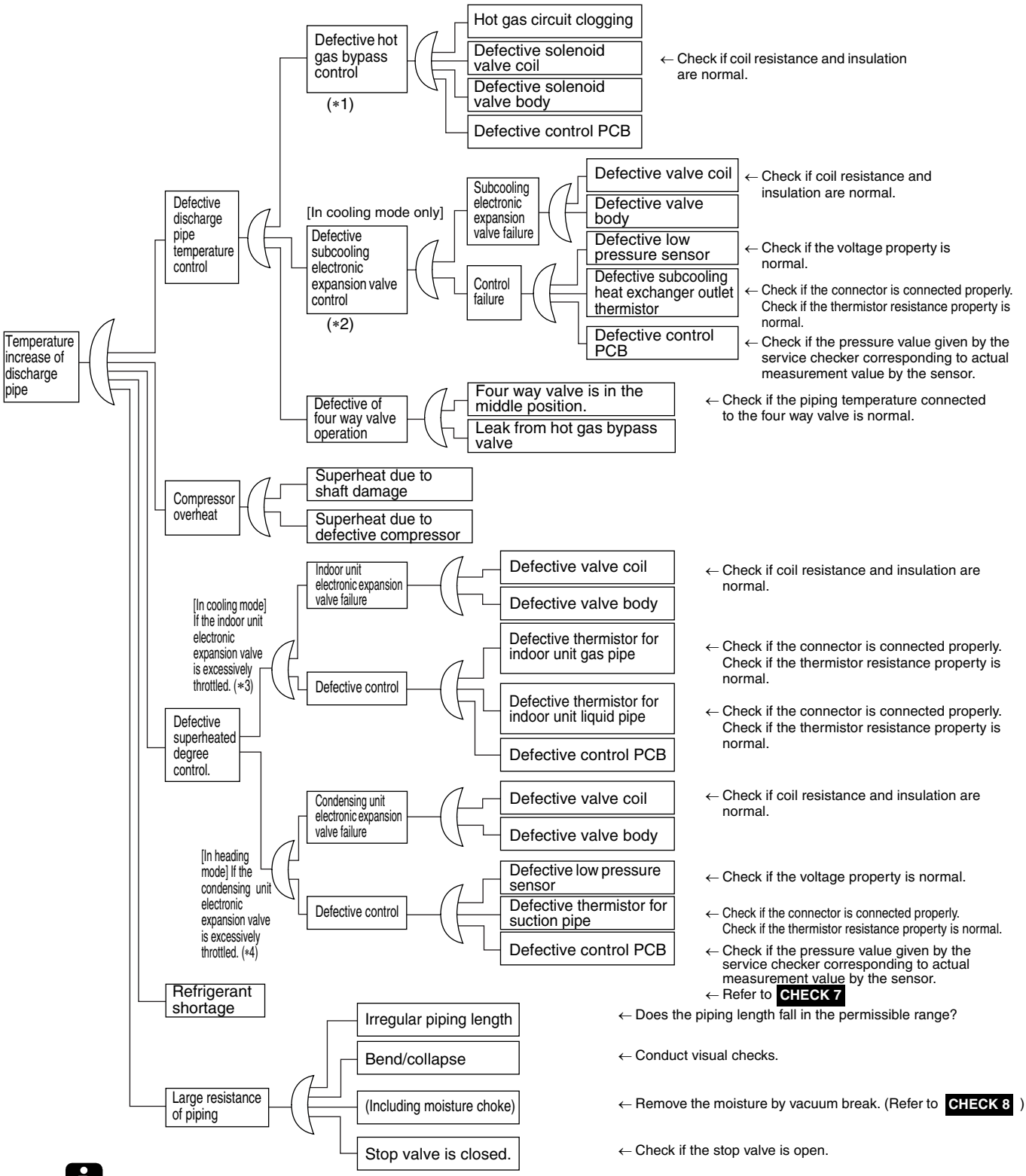
Referring to the Fault Tree Analysis (FTA) shown below, probe the defective points.



Note: ∗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 cooling, the indoor unit electronic expansion valve is used for **superheated degree control**.
∗4: In heating, the condensing unit electronic expansion valve (EVM) is used for **superheated degree control of condensing unit heat exchanger**.

CHECK 3 Check the Factors of Overheat Operation

Identify the defective points referring to the defective factor analysis (FTA) as follows.



Note:

∗1: Refer to “Low pressure protection control” for hot gas bypass control.
∗2: Refer to “Subcooling electronic expansion valve control”.
∗3: “Superheating temperature control” in cooling mode is conducted by indoor unit electronic expansion valve.
∗4: Superheating temperature control in heating mode is conducted by condensing unit electronic expansion valve (EVM).
∗5: Judgement criteria of superheat operation:
(1) Suction gas superheating temperature: 10 degrees and over. (2) Discharge gas superheating temperature: 45 degrees 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.)

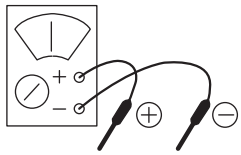
CHECK 4 Power Transistor Check

Perform the following procedures prior to check.

(1) Power OFF.
(2) Remove all the wiring connected to the PCB where power transistors are mounted on.

[Preparation]

· Tester



* Preparing a tester in the analog system is recommended. A tester in the digital system with diode check function will be usable.

[Point of Measurement and Judgement Criteria]

· Measure the resistance value using a tester at each point of measurement below, after 10 minutes after power OFF.

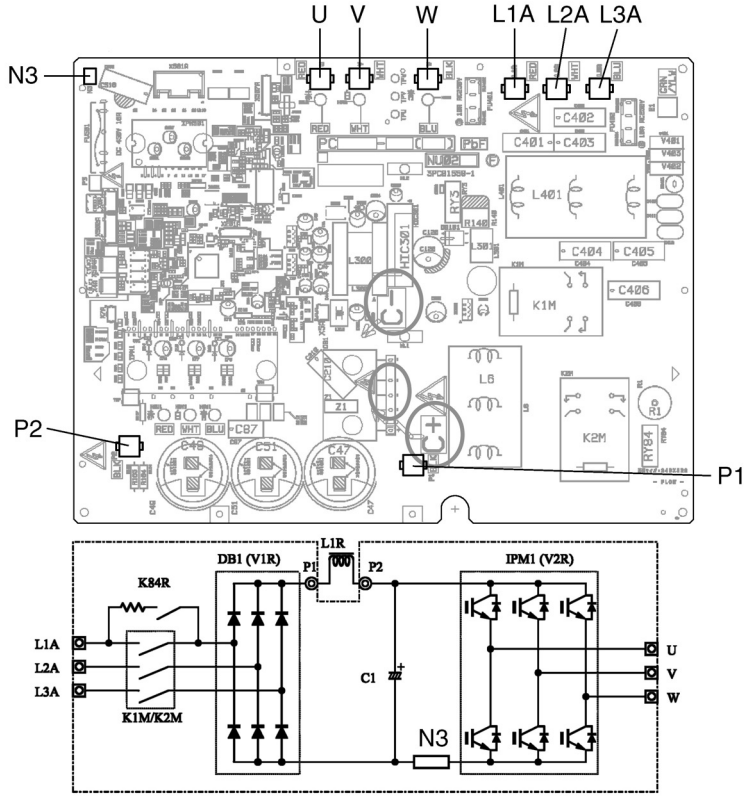
To use analog tester:
Measurement in the resistance value mode in the range of multiplying 1kΩ.

No.	Point of Measurement		Judgement Criteria	Remarks
	+	–		
1	P2	U	2 ~ 15kΩ	
2	P2	V		
3	P2	W		
4	U	P2	15kΩ or more (including ∞)	Due to condenser charge and so on, resistance measurement may require some time.
5	V	P2		
6	W	P2		
7	N3	U		
8	N3	V		
9	N3	W		
10	U	N3	2 ~ 15kΩ	
11	V	N3		
12	W	N3		

To use digital tester:
Measurement is executed in the diode check mode. (→|—)

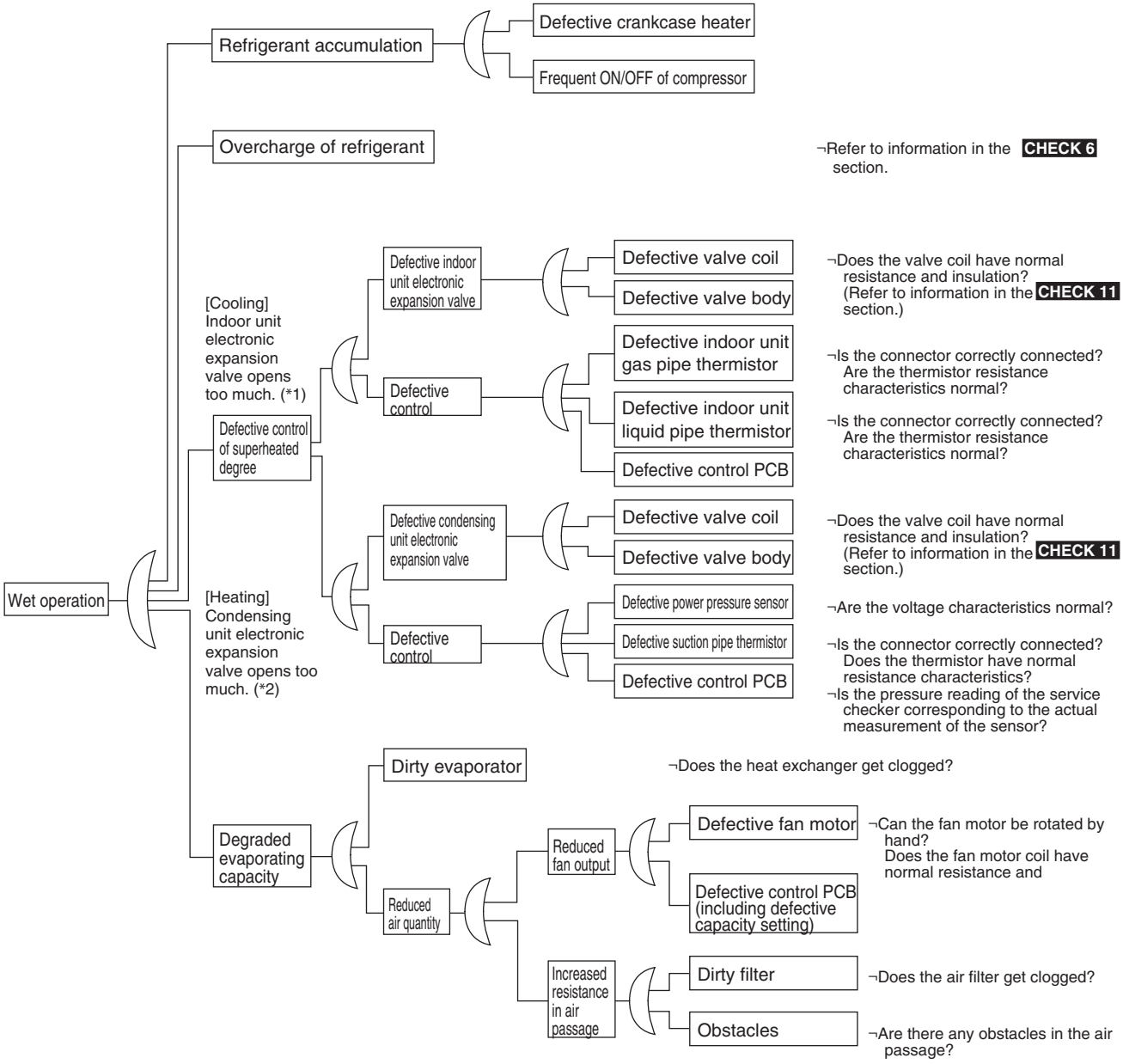
No.	Point of Measurement		Judgement Criteria	Remarks
	+	–		
1	P2	U	1.2V and over	Due to condenser charge and so on, resistance measurement may require some time.
2	P2	V		
3	P2	W		
4	U	P2	0.3 ~ 0.7V	
5	V	P2		
6	W	P2		
7	N3	U		
8	N3	V		
9	N3	W		
10	U	N3	1.2V and over	Due to condenser charge and so on, resistance measurement may require some time.
11	V	N3		
12	W	N3		

[PCB and Circuit Diagram]



CHECK 5 Check for Causes of Wet Operation.

Referring to the Fault Tree Analysis (FTA) shown below, identify defective points.



Note: ∗1: "Superheated degree control" in cooling is exercised with the indoor unit electronic expansion valve.

∗2: "Superheated degree control" in heating is exercised with the condensing unit electronic expansion valve (EV1).

∗3: Guideline of superheated degree to judge as wet operation

1 Suction gas superheated degree: Not more than 37.4°F; 2 Discharge gas superheated degree: Not more than 59°F, except immediately after compressor starts up or is running under drooping control.

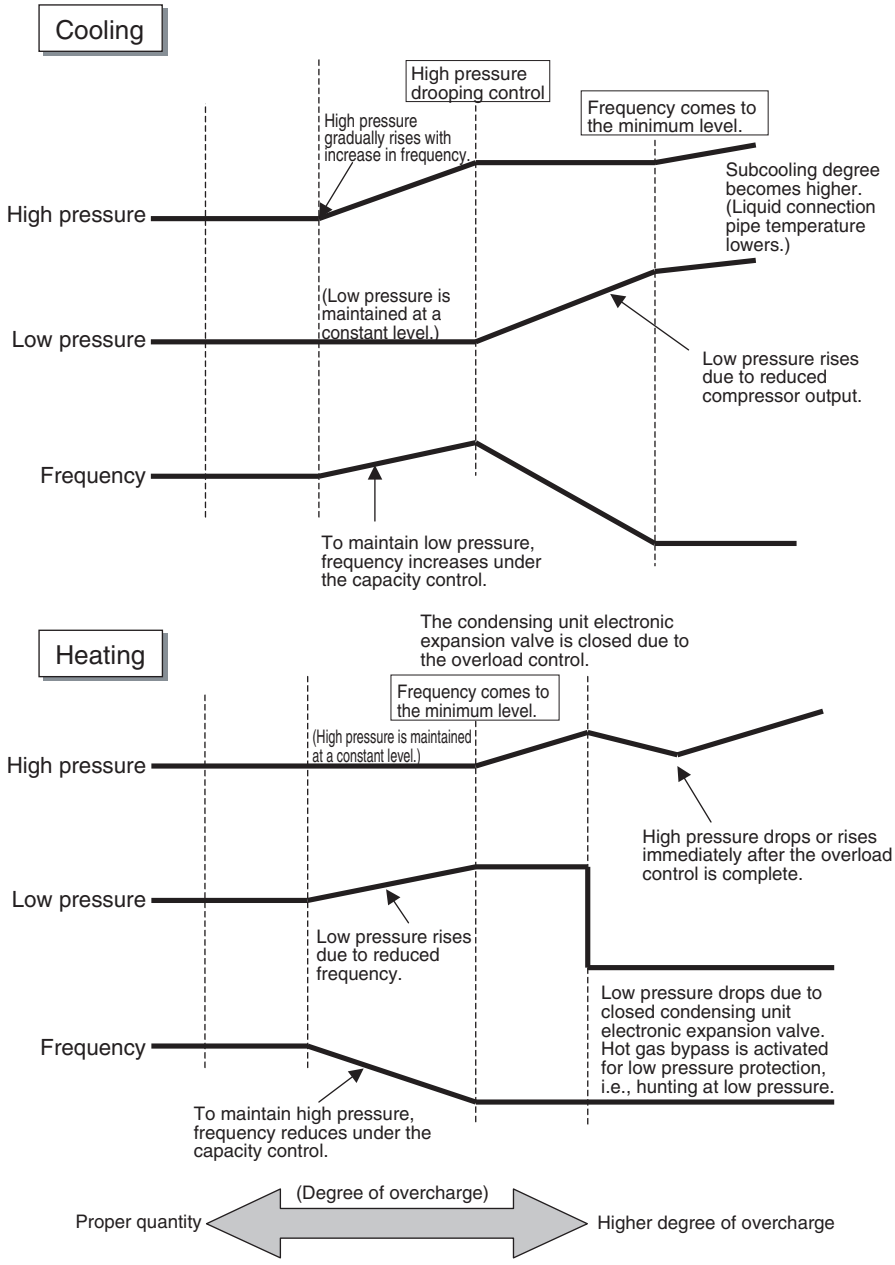
(Use the values shown above as a guideline. Even if the superheated degree falls in the range, the compressor may be normal depending on other conditions.)

CHECK 6 Check for Overcharge of Refrigerant.

In case of VRV Systems, the only way to judge as the overcharge of refrigerant is with operating conditions due to the relationship to pressure control and electronic expansion valve control. As information for making a judgement, refer to information provided below.

Diagnosis of overcharge of refrigerant

1. High pressure rises. Consequently, overload control is exercised to cause scant cooling capacity.
2. The superheated degree of suction gas lowers (or the wet operation is performed). Consequently, the compressor becomes lower in discharge pipe temperature despite of pressure loads.
3. The subcooling degree of condensing rises. Consequently, in heating, the temperature of outlet air passing through the subcooling section becomes lower.

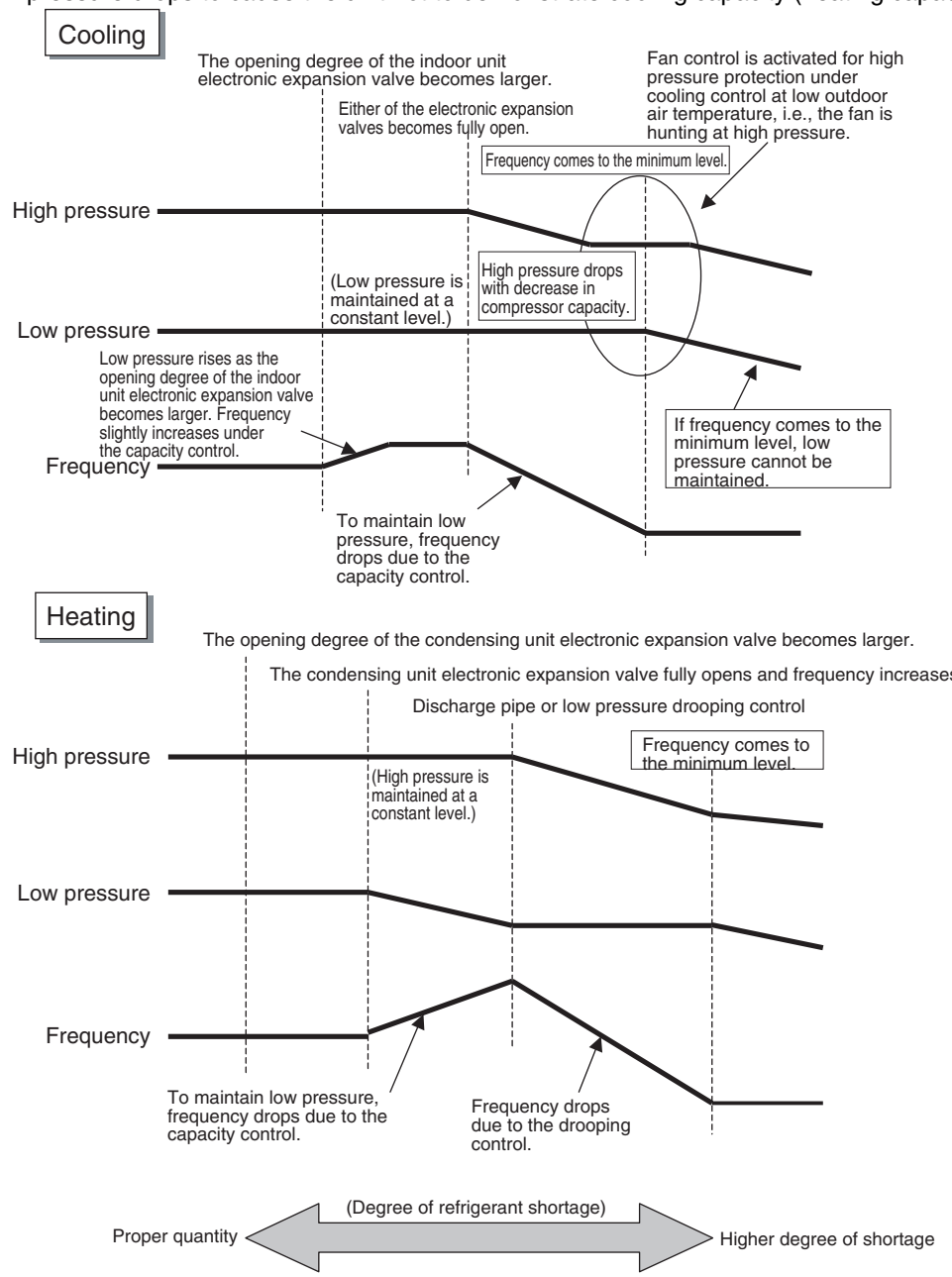


CHECK 7 **Check for Refrigerant Shortage.**

In case of VRV Systems, the only way to judge as the refrigerant shortage is with operating conditions due to the relationship to pressure control and electronic expansion valve control. As information for making a judgement, refer to information provided below.

Diagnosis of refrigerant shortage

1. The superheated degree of suction gas rises. Consequently, the compressor discharge gas temperature becomes higher.
2. The superheated degree of suction gas rises. Consequently, the electronic expansion valve turns open.
3. Low pressure drops to cause the unit not to demonstrate cooling capacity (heating capacity).



CHECK 8 Vacuuming and Dehydration Procedure

Conduct vacuuming and dehydration in the piping system following the procedure for <Normal vacuuming and dehydration> described below.
Furthermore, if moisture may get mixed in the piping system, follow the procedure for <Special vacuuming and dehydration> described below.

<Normal vacuuming and dehydration>

① Vacuuming and dehydration
- Use a vacuum pump that enables vacuuming up to 14.60 psi (5 torr, -755 mmHg).
- Connect manifold gauges to the service ports of liquid pipe and gas pipe and run the vacuum pump for a period of 2 or more hours to conduct evacuation to -14.60 psi or less.
- If the degree of vacuum does not reach -14.60 psi or less even though evacuation is conducted for a period of 2 hours, moisture will have entered the system or refrigerant leakage will have been caused. In this case, conduct evacuation for a period of another 1 hour.
- If the degree of vacuum does not reach -14.60 psi or less even though evacuation is conducted for a period of 3 hours, conduct leak tests.

② Leaving in vacuum state
- Leave the compressor at the degree of vacuum of -14.60 psi or less for a period of 1 hour or more, and then check to be sure that the vacuum gauge reading does not rise. (If the reading rises, moisture may have remained in the system or refrigerant leakage may have been caused.)

③ Refrigerant charge
- Purge air from the manifold gauge connection hoses, and then charge a necessary quantity of refrigerant.

<Special vacuuming and dehydration> - In case moisture may get mixed in the piping *

① Vacuuming and dehydration
- Follow the same procedure as that for 1) Normal vacuuming and dehydration described above.

② Vacuum break
- Pressurize with nitrogen gas up to 7.25 psi.

③ Vacuuming and dehydration
- Conduct vacuuming and dehydration for a period of 1 hour or more. If the degree of vacuum does not reach -14.60 psi or less even though evacuation is conducted for a period of 2 hours or more, repeat vacuum break - vacuuming and dehydration.

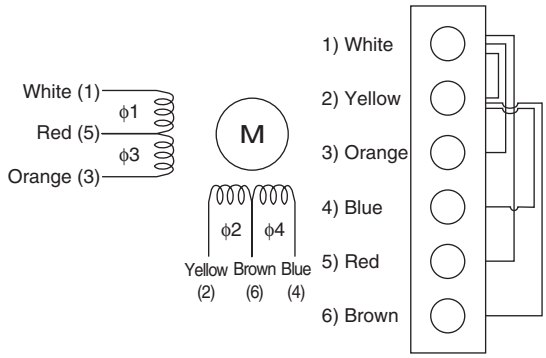
④ Leaving in vacuum state
- Leave the compressor at the degree of vacuum of -14.60 psi or less for a period of 1 hour or more, and then check to be sure that the vacuum gauge reading does not rise.

⑤ Refrigerant charge
- Purge air from the manifold gauge connection hoses, and then charge a necessary quantity of refrigerant.

* In case of construction during rainy reason, if dew condensation occurs in the piping due to extended construction period, or rainwater or else may enter the piping during construction work:

CHECK 9 **How to Check the Electronic Expansion Valve Coil**

Remove the connector for electronic expansion valve (X7A) from PCB. Measure the resistance value between pins and check the continuity to judge the condition.



The normal products will show the following conditions:

1 No continuity between (1) and (2)
2 Resistance value between (1) and (3) is approx. 300 Ω
3 Resistance value between (1) and (5) is approx. 150 Ω
4 Resistance value between (2) and (4) is approx. 300 Ω
5 Resistance value between (2) and (6) is approx. 150 Ω

CHECK 11 Thermistor Resistance / Temperature Characteristics

Condensing unit
For radiation fin R1T

Indoor unit
For suction air R1T
For liquid pipe R2T
For gas pipe R3T

Condensing unit
For suction pipe R2T
For heat exchanger gas pipe R4T
For subcooling heat exchanger outlet pipe R5T
For receiver outlet liquid pipe R6T

Indoor unit
For discharge pipe R4T

Condensing unit
For discharge pipe R3T

T°F	kΩ
-22	354.1
-13	259.7
-4	192.6
5	144.2
14	109.1
23	83.25
32	64.10
41	49.70
50	38.85
59	30.61
68	24.29
77	19.41
86	15.61
95	12.64
104	10.30
113	8.439
122	6.954
131	5.761
140	4.797
149	4.014
158	3.375
167	2.851
176	2.418
185	2.060
194	1.762
203	1.513
212	1.304
221	1.128
230	0.9790
239	0.8527
248	0.7450
257	0.6530
266	0.5741

3PA61998L (AD92A057)

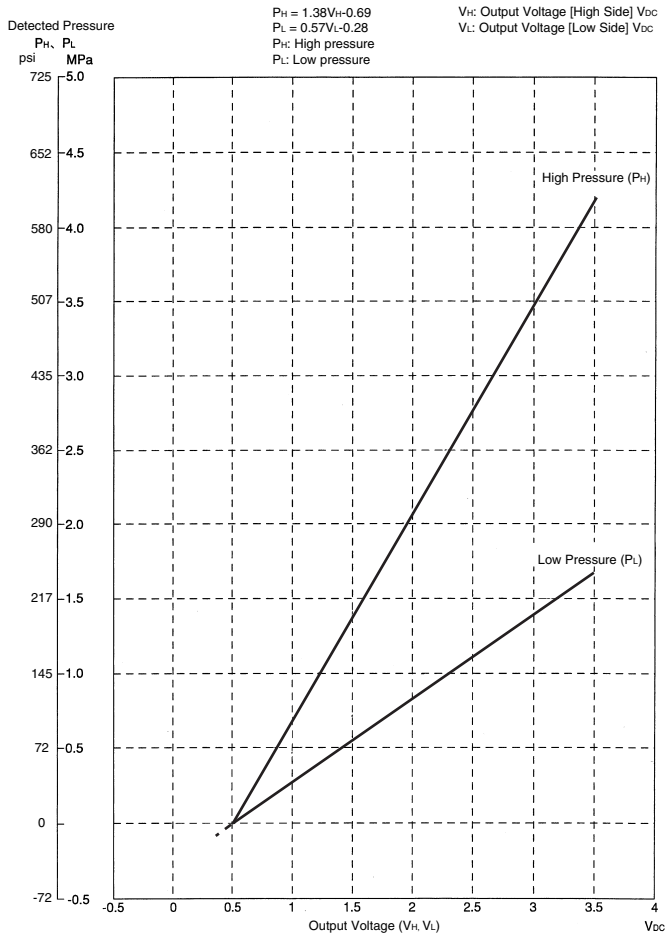
T°F	kΩ
-22	361.7719
-13	265.4704
-4	196.9198
5	147.5687
14	111.6578
23	85.2610
32	65.6705
41	50.9947
50	39.9149
59	31.4796
68	25.0060
77	20.0000
86	16.1008
95	13.0426
104	10.6281
113	8.7097
122	7.1764
131	5.9407
140	4.9439
149	4.1352
158	3.4757
167	2.9349
176	2.4894
185	2.1205
194	1.8138
203	1.5575
212	1.3425
221	1.1614

3SA48001 (AD87A001J)

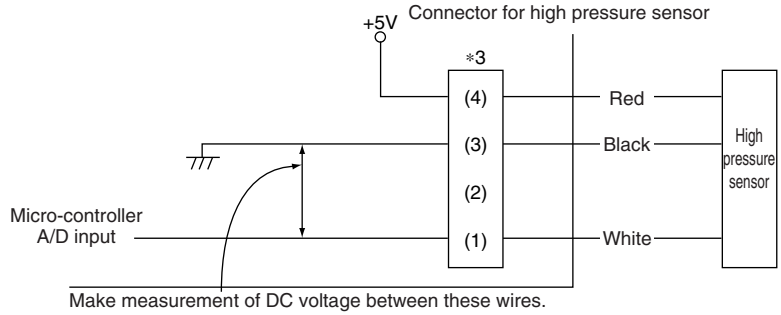
T°F	kΩ
-22	3257.371
-13	2429.222
-4	1827.883
5	1387.099
14	1061.098
23	817.9329
32	635.0831
41	496.5712
50	391.0070
59	309.9511
68	247.2696
77	198.4674
86	160.2244
95	130.0697
104	106.1517
113	87.0725
122	71.7703
131	59.4735
140	49.5180
149	41.4168
158	34.7923
167	29.3499
176	24.8586
185	21.1360
194	18.0377
203	15.4487
212	13.2768
221	11.4395
230	9.8902
239	8.5788
248	7.4650
257	6.5156
266	5.7038
275	5.0073
284	4.4080
293	3.8907
302	3.4429

3SA48006 (AD87A001J)

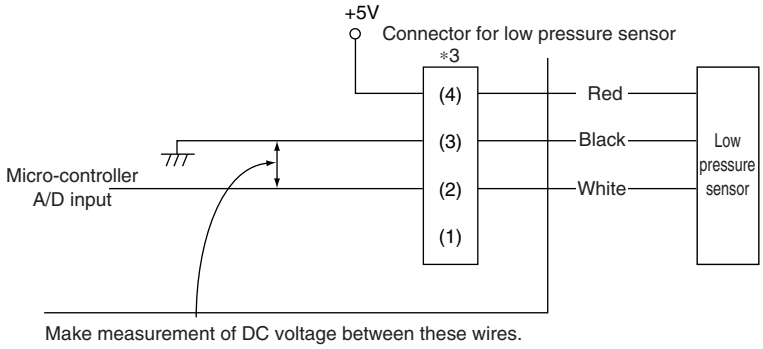
CHECK 12 Pressure Sensor



CHECK 13 Measurement of Voltage of the High Pressure Sensor.



CHECK 14 Measurement of Voltage of the Low Pressure Sensor.

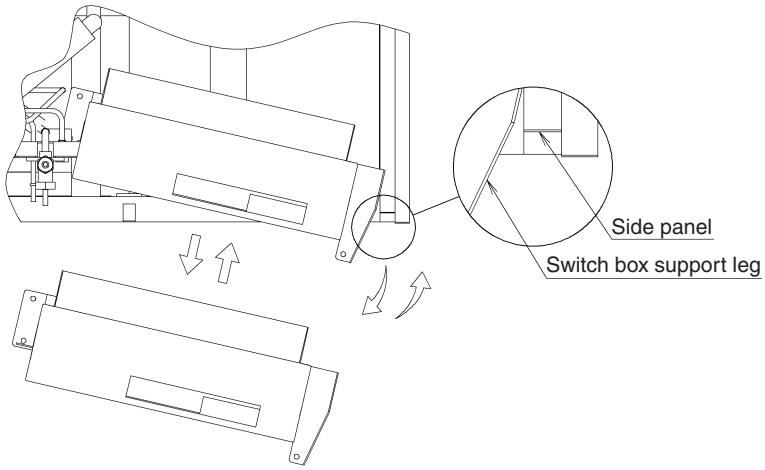


Part 7
Procedure for Mounting / Dismounting of Switch Box

1. Procedure for Mounting / Dismounting of Switch Box

1.1 Procedure for Dismounting

1. Dismount the lid from the switch box.
2. Disconnect high voltage and low voltage wirings from the PCB and the terminal blocks, referring to Figure below.
3. Unscrew mounting screws from the top plate, the stop valve mounting plate, and the bottom frame in a total of 6 places.
4. With attention paid not to make the switch box support leg into contact with the side panel, rotate the switch box to pull out it, while referring to Figure below.
   In order to pull out the switch box, check to be sure no wirings get stuck with the switch box.

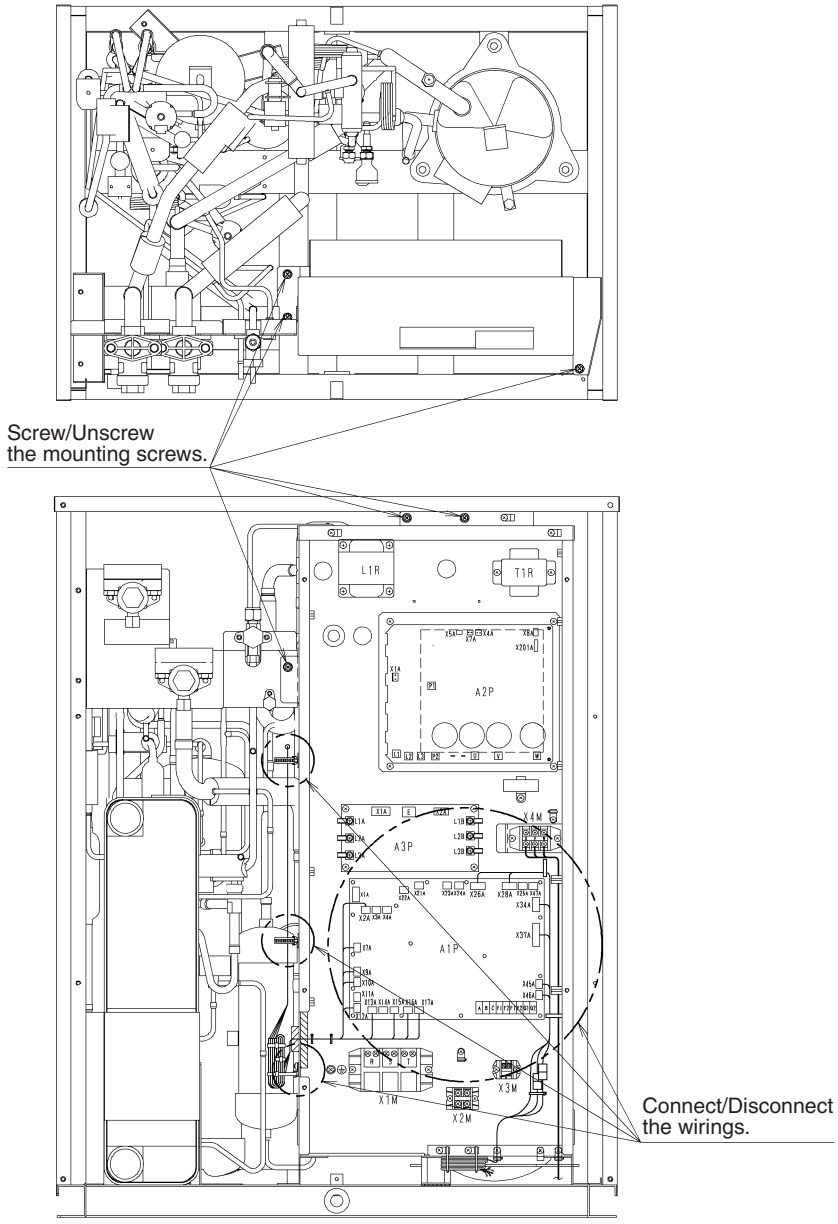


Procedure for Mounting/Dismounting of Switch Box

1.2 Procedure for Mounting

■ Mount the switch box, following the procedure for dismounting in reverse.
After the completion of mounting, check to be sure connectors are all properly connected.

List of Detachable Connectors						
		RWEYQ72/84PTJU	RWEYQ72/84PTJU9	RWEYQ72/84PYDN		
High voltage wiring	A1P	X7A	X13A	X13A	White (WHT)	Y1S
		X9A	X7A	X7A	Blue (BLU)	Y3S
		X10A	X8A	X15A	Pink (PNK)	Y4S
		X12A	X15A	X8A	Gray (GRY)	Y6S
		X2A	X2A	X2A	Red (RED)	S1PH
		X17A	X11A	X11A	Gray (GRY)	E1HC
		X13A	X5A	X5A	Green (GRN)	Y2S
		X15A	X9A	X9A	Blue (BLU)	Y5S
		X16A	X10A	X10A	Black (BLK)	Y7S
	X4M	U, V, W	U, V, W	U, V, W		M1C
Low voltage wiring	A1P	X34A	X29A	X29A	Red (RED)	R3T
		X37A	X30A	X30A	White (WHT)	R2T
		X37A	X30A	X30A	White (WHT)	R4T
		X37A	X30A	X30A	White (WHT)	R5T
		X37A	X30A	X30A	White (WHT)	R6T
		X46A	X32A	X32A	Red (RED)	S1NPH
		X45A	X31A	X31A	Blue (BLU)	S1NPL
		X26A	X21A	X21A	White (WHT) *	Y1E
		X28A	X23A	X23A	Blue (BLU) *	Y3E
		* Attach or detach any connector at the relay connector.				

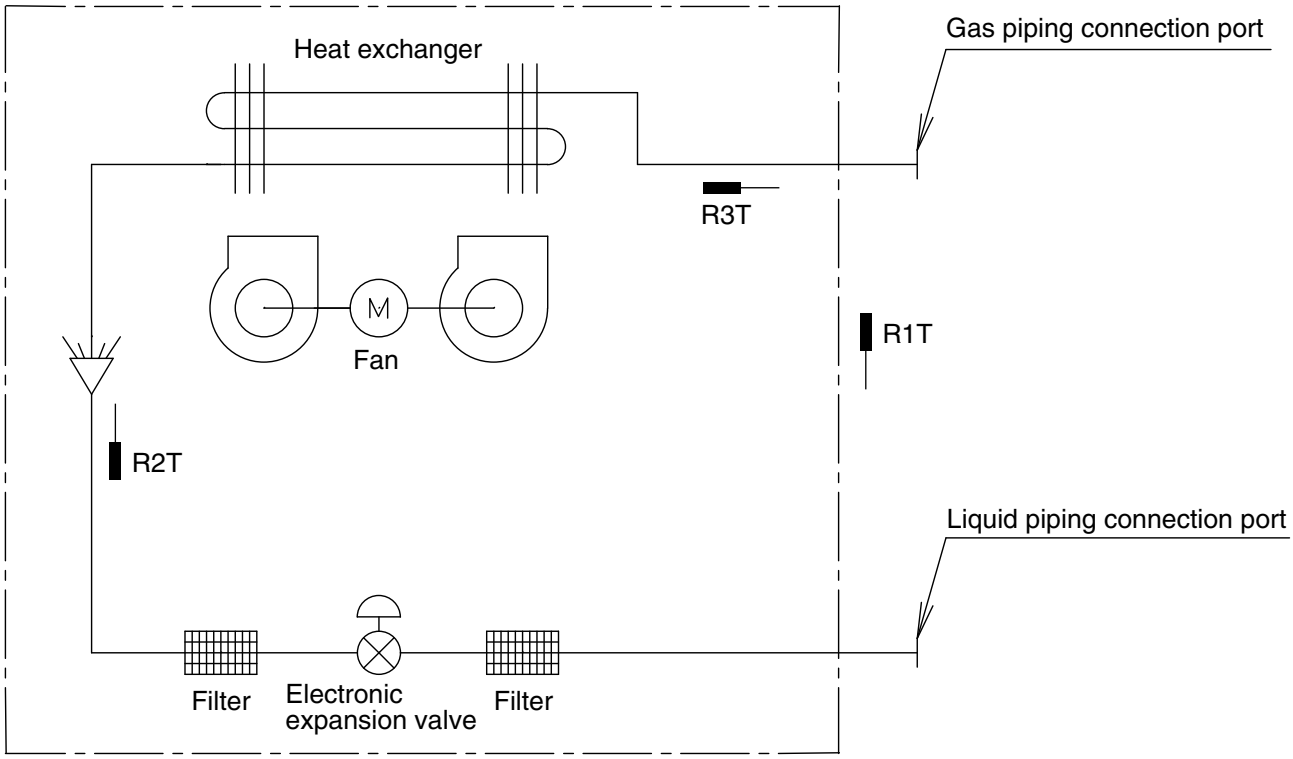

Screw/Unscrew
the mounting screws.
L1R
T1R
A2P
A3P
A1P
X4M
X3M
X1M
X2M
Connect/Disconnect
the wirings.

Part 8
Appendix

1. Piping Diagrams

1.1 Indoor Unit

FXFQ 09P / 12P / 18P / 24P / 30P / 36P / 48PVJU
FXZQ 07M7 / 09M7 / 12M7 / 18M7VJU
FXMQ 07P / 09P / 12P / 18P / 24P / 30P / 36P / 48PVJU
FXMQ72M / 96MVJU
FXHQ 12M / 24M / 36MVJU
FXAQ 07P / 09P / 12P / 18P / 24PVJU
FXLQ 12M / 18M / 24MVJU
FXNQ 12M / 18M / 24MVJU

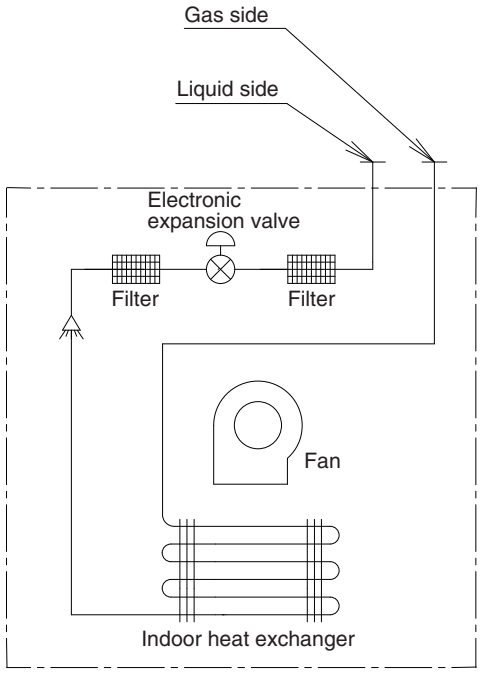


C: DU220-602L

R1T: Thermistor for suction air temperature
R2T: Thermistor for liquid line temperature
R3T: Thermistor for gas line temperature

Capacity	GAS	Liquid
07/09/12/18M7 12/18M 07P/09P/12P/18P	ϕ1/2	ϕ1/4
24/30/36/48M 24/30/36/48P	ϕ5/8	ϕ3/8
72M	ϕ3/4	ϕ3/8
96M	ϕ7/8	ϕ3/8

FXDQ

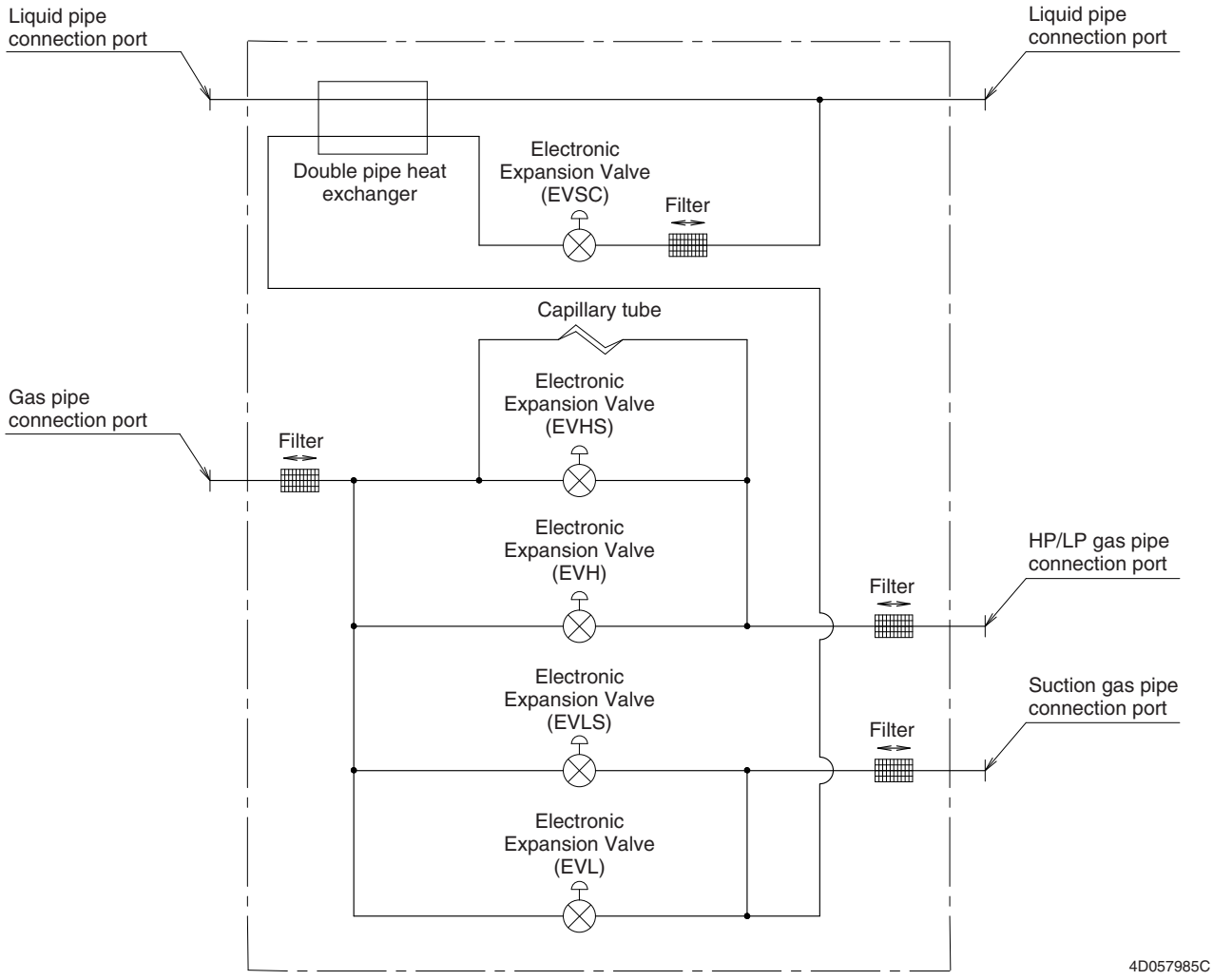


4D043864N

■ Refrigerant pipe connection port diameters

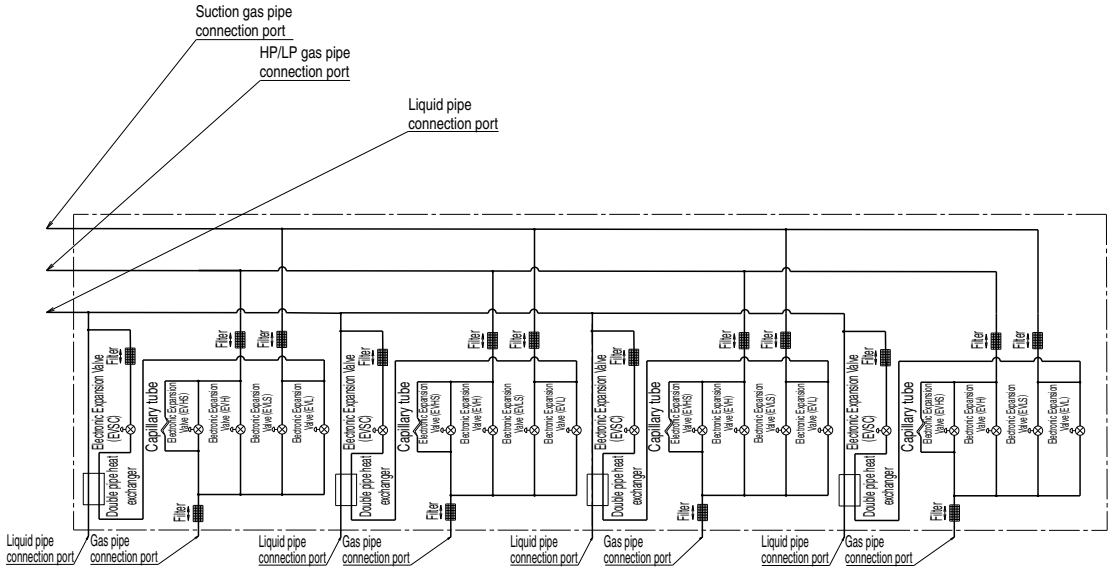
Model	Gas	Liquid
FXDQ07M / 09M / 12M / 18MVJU	ϕ1/2	ϕ1/4
FXDQ24MVJU	ϕ5/8	ϕ3/8

1.2 Branch Selector Unit



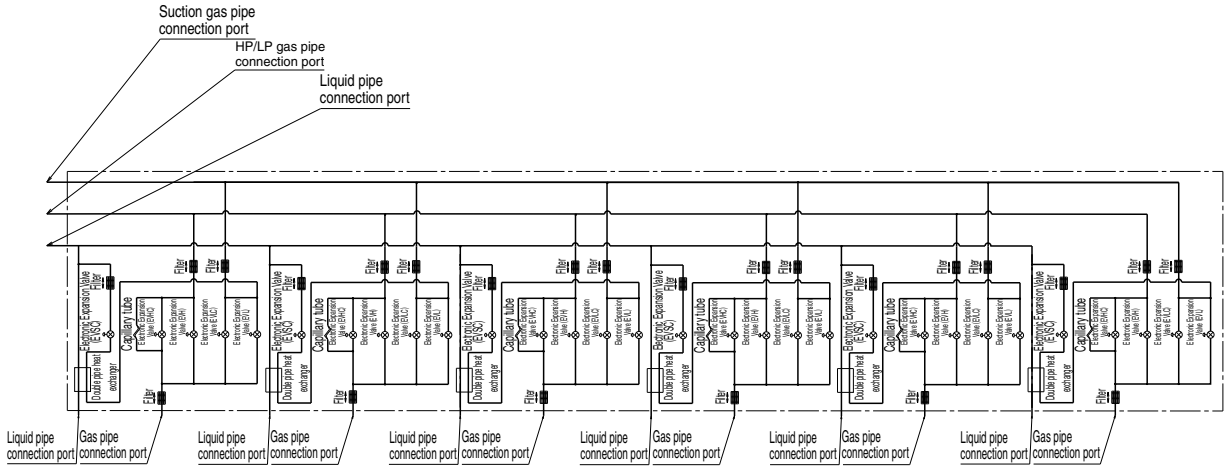
1.3 Centralized Branch Selector Unit

BSV4Q36PVJU



3D064148B

BSV6Q36PVJU

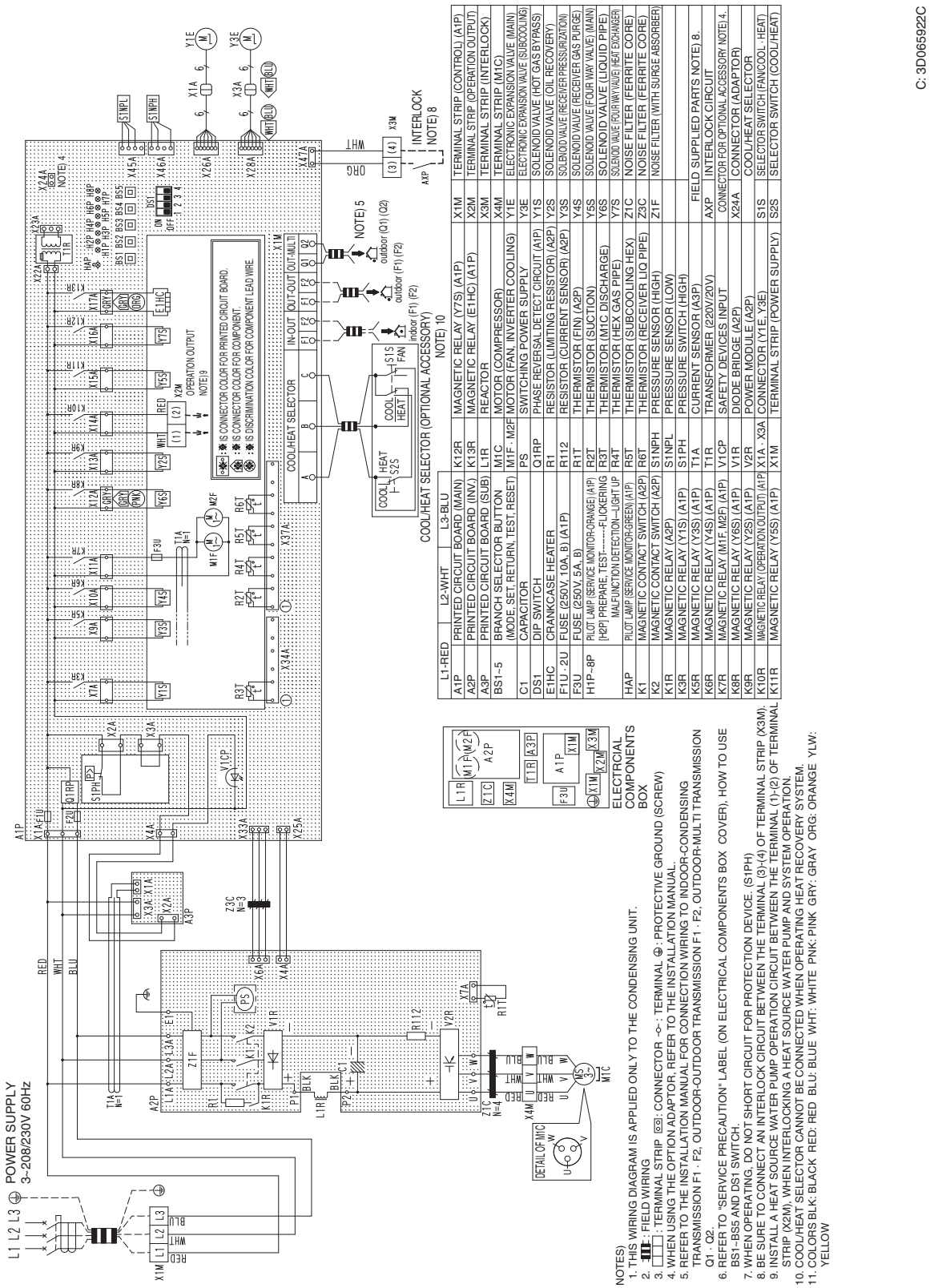


3D064149B

2. Wiring Diagrams for Reference

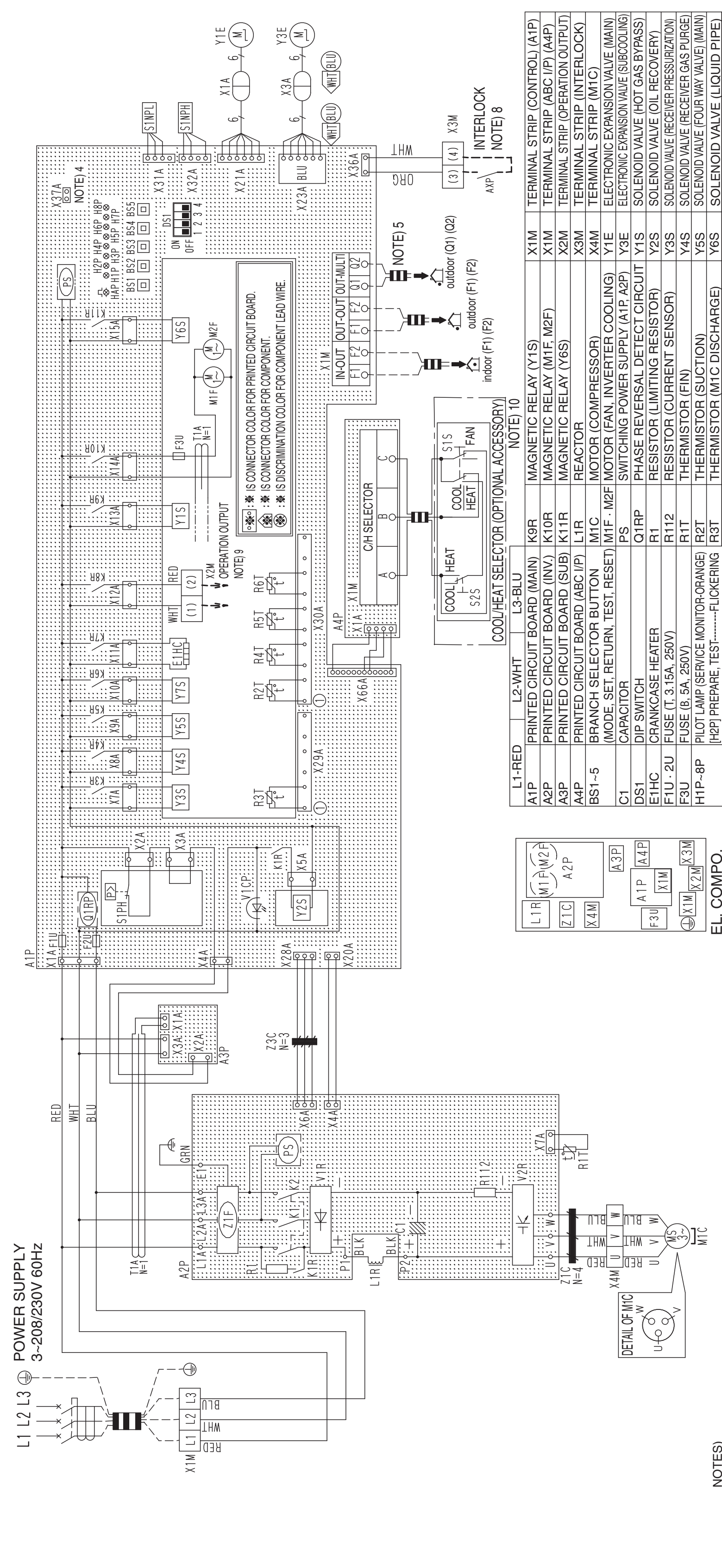
2.1 Condensing Unit

RWEYQ72PTJU / RWEYQ84PTJU



L1-RED	L2-WHT	L3-BLU			
A1P	PRINTED CIRCUIT BOARD (MAIN)		K12R	MAGNETIC RELAY (Y7S) (A1P)	X1M	TERMINAL STRIP (CONTROL) (A1P)
A2P	PRINTED CIRCUIT BOARD (INV.)		K13R	MAGNETIC RELAY (E1HC) (A1P)	X2M	TERMINAL STRIP (OPERATION OUTPUT)
A3P	PRINTED CIRCUIT BOARD (SUB)		L1R	REACTOR	X3M	TERMINAL STRIP (INTERLOCK)
BS1~5	BRANCH SELECTOR BUTTON (MODE, SET, RETURN, TEST, RESET)		M1C	MOTOR (COMPRESSOR)	X4M	TERMINAL STRIP (M1C)
			M1F · M2F	MOTOR (FAN, INVERTER COOLING)	Y1E	ELECTRONIC EXPANSION VALVE (MAIN)
C1	CAPACITOR		PS	SWITCHING POWER SUPPLY	Y3E	ELECTRONIC EXPANSION VALVE (SUBCOOLING)
DS1	DIP SWITCH		Q1RP	PHASE REVERSAL DETECT CIRCUIT (A1P)	Y1S	SOLENOID VALVE (HOT GAS BYPASS)
E1HC	CRANKCASE HEATER		R1	RESISTOR (LIMITING RESISTOR) (A2P)	Y2S	SOLENOID VALVE (OIL RECOVERY)
F1U · 2U	FUSE (250V, 10A, B) (A1P)		R112	RESISTOR (CURRENT SENSOR) (A2P)	Y3S	SOLENOID VALVE (RECEIVER PRESSURIZATION)
F3U	FUSE (250V, 5A, B)		R1T	THERMISTOR (FIN) (A2P)	Y4S	SOLENOID VALVE (RECEIVER GAS PURGE)
H1P~8P	PILOT LAMP (SERVICE MONITOR-ORANGE) (A1P)		R2T	THERMISTOR (SUCTION)	Y5S	SOLENOID VALVE (FOUR WAY VALVE) (MAIN)
	(H2P) PREPARE TEST------FLICKERING		R3T	THERMISTOR (M1C DISCHARGE)	Y6S	SOLENOID VALVE (LIQUID PIPE)
	MALFUNCTION DETECTION--LIGHT UP		R4T	THERMISTOR (HEX GAS PIPE)	Y7S	SOLENOID VALVE (FOUR WAY VALVE, HEAT EXCHANGER)
HAP	PILOT LAMP (SERVICE MONITOR-GREEN) (A1P)		R5T	THERMISTOR (SUBCOOLING HEX)	Z1C	NOISE FILTER (FERRITE CORE)
K1	MAGNETIC CONTACT SWITCH (A2P)		R6T	THERMISTOR (RECEIVER LIQ PIPE)	Z3C	NOISE FILTER (FERRITE CORE)
K2	MAGNETIC CONTACT SWITCH (A2P)		S1NPH	PRESSURE SENSOR (HIGH)	Z1F	NOISE FILTER (WITH SURGE ABSORBER)
K1R	MAGNETIC RELAY (A2P)		S1NPL	PRESSURE SENSOR (LOW)		
K3R	MAGNETIC RELAY (Y1S) (A1P)		S1PH	PRESSURE SWITCH (HIGH)		
K5R	MAGNETIC RELAY (Y3S) (A1P)		T1A	CURRENT SENSOR (A3P)		FIELD SUPPLIED PARTS NOTE) 8.
K6R	MAGNETIC RELAY (Y4S) (A1P)		T1R	TRANSFORMER (220V/20V)	AXP	INTERLOCK CIRCUIT
K7R	MAGNETIC RELAY (M1F, M2F) (A1P)		V1CP	SAFETY DEVICES INPUT		CONNECTOR FOR OPTIONAL ACCESSORY NOTE) 4.
K8R	MAGNETIC CONTACT SWITCH (A2P)		V1R	DIODE BRIDGE (A2P)	X24A	CONNECTOR (ADAPTOR)
K9R	MAGNETIC RELAY (Y2S) (A1P)		V2R	POWER MODULE (A2P)		COOL/HEAT SELECTOR
K10R	MAGNETIC RELAY (OPERATION OUTPUT) (A1P)		X1A · X3A	CONNECTOR (Y1E, Y3E)	S1S	SELECTOR SWITCH (FAN/COOL · HEAT)
K11R	MAGNETIC RELAY (Y5S) (A1P)		X1M	TERMINAL STRIP (POWER SUPPLY)	S2S	SELECTOR SWITCH (COOL/HEAT)

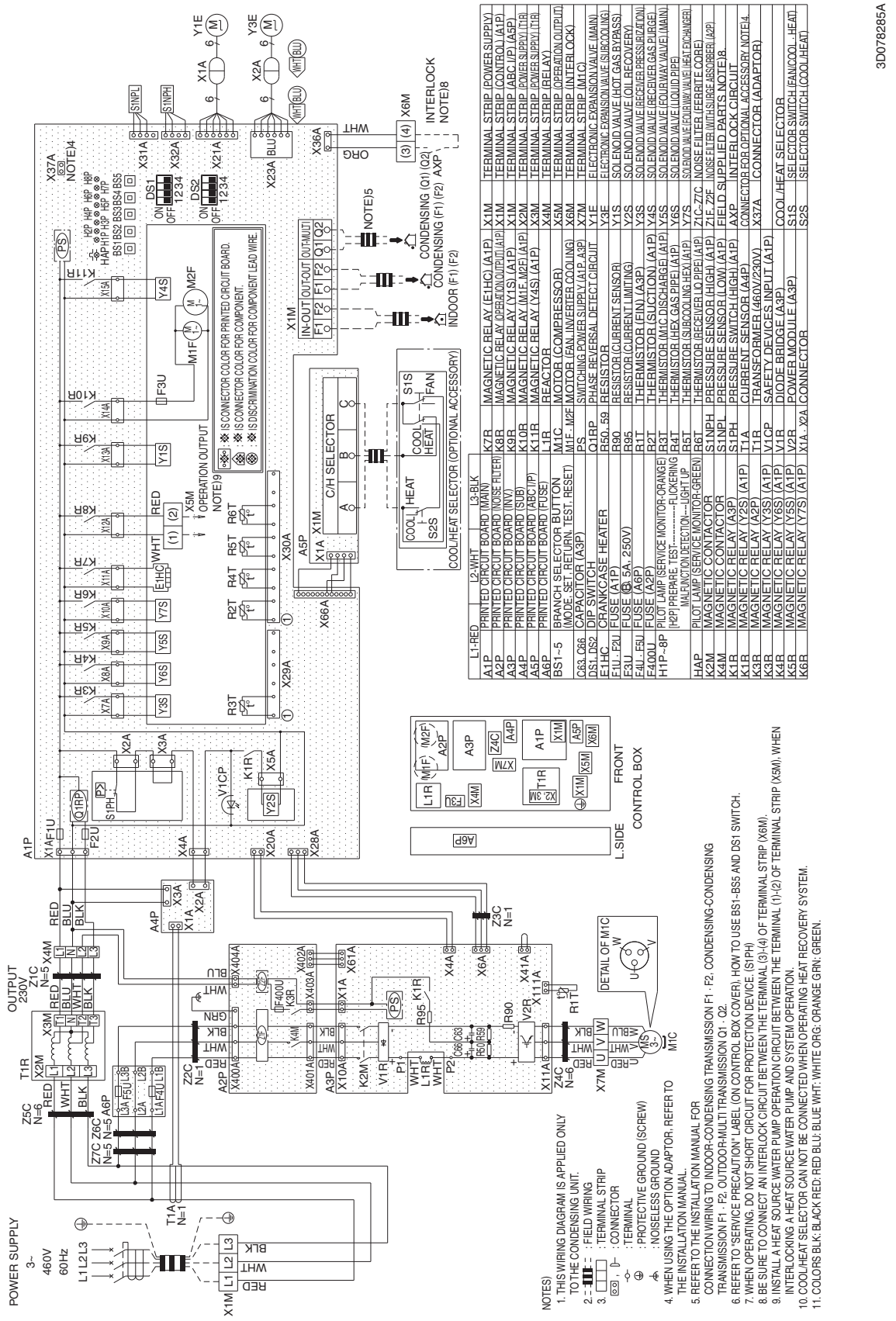
RWEYQ72PTJU / RWEYQ84PTJU (In case of manufacturing code: RWEYQ72PTJU9 / RWEYQ84PTJU9)



L1-RED	L2-WHT	L3-BLU			
A1P	PRINTED CIRCUIT BOARD (MAIN)	K9R	MAGNETIC RELAY (Y1S)	X1M	TERMINAL STRIP (CONTROL) (A1P)
A2P	PRINTED CIRCUIT BOARD (INV.)	K10R	MAGNETIC RELAY (M1F, M2F)	X1M	TERMINAL STRIP (ABC I/P) (A4P)
A3P	PRINTED CIRCUIT BOARD (SUB)	K11R	MAGNETIC RELAY (Y6S)	X2M	TERMINAL STRIP (OPERATION OUTPUT)
A4P	PRINTED CIRCUIT BOARD (ABC I/P)	L1R	REACTOR	X3M	TERMINAL STRIP (INTERLOCK)
BS1~5	BRANCH SELECTOR BUTTON	M1C	MOTOR (COMPRESSOR)	X4M	TERMINAL STRIP (M1C)
	(MODE, SET, RETURN, TEST, RESET)	M1F · M2F	MOTOR (FAN, INVERTER COOLING)	Y1E	ELECTRONIC EXPANSION VALVE (MAIN)
C1	CAPACITOR	PS	SWITCHING POWER SUPPLY (A1P, A2P)	Y3E	ELECTRONIC EXPANSION VALVE (SUBCOOLING)
DS1	DIP SWITCH	Q1RP	PHASE REVERSAL DETECT CIRCUIT	Y1S	SOLENOID VALVE (HOT GAS BYPASS)
E1HC	CRANKCASE HEATER	R1	RESISTOR (LIMITING RESISTOR)	Y2S	SOLENOID VALVE (OIL RECOVERY)
F1U · 2U	FUSE (T, 3.15A, 250V)	R112	RESISTOR (CURRENT SENSOR)	Y3S	SOLENOID VALVE (RECEIVER PRESSURIZATION)
F3U	FUSE (B, 5A, 250V)	R1T	THERMISTOR (FIN)	Y4S	SOLENOID VALVE (RECEIVER GAS PURGE)
H1P~8P	PILOT LAMP (SERVICE MONITOR-ORANGE)	R2T	THERMISTOR (SUCTION)	Y5S	SOLENOID VALVE (FOUR WAY VALVE) (MAIN)
	[H2P] PREPARE, TEST---------FLICKERING	R3T	THERMISTOR (M1C DISCHARGE)	Y6S	SOLENOID VALVE (LIQUID PIPE)
	MALFUNCTION DETECTION---LIGHT UP	R4T	THERMISTOR (HEX GAS PIPE)	Y7S	SOLENOID VALVE (FOUR WAY VALVE) (HEAT EXCHANGER)
HAP	PILOT LAMP (SERVICE MONITOR-GREEN)	R5T	THERMISTOR (SUBCOOLING HEX)	Z1C	NOISE FILTER (FERRITE CORE)
K1	MAGNETIC CONTACT SWITCH	R6T	THERMISTOR (RECEIVER LIQ PIPE)	Z3C	NOISE FILTER (FERRITE CORE)
K2	MAGNETIC CONTACT SWITCH	S1NPH	PRESSURE SENSOR (HIGH)	Z1F	NOISE FILTER (WITH SURGE ABSORBER)
K1R	MAGNETIC RELAY (A2P)	S1NPL	PRESSURE SENSOR (LOW)		
K1R	MAGNETIC RELAY (Y2S) (A1P)	S1PH	PRESSURE SWITCH (HIGH)		FIELD SUPPLIED PARTS NOTE) 8.
K3R	MAGNETIC RELAY (Y3S)	T1A	CURRENT SENSOR (A3P)	AXP	INTERLOCK CIRCUIT
K4R	MAGNETIC RELAY (Y4S)	V1CP	SAFETY DEVICES INPUT		CONNECTOR FOR OPTIONAL ACCESSORY NOTE) 4.
K5R	MAGNETIC RELAY (Y5S)	V1R	DIODE BRIDGE	X37A	CONNECTOR (ADAPTOR)
K6R	MAGNETIC RELAY (Y7S)	V2R	POWER MODULE		COOL/HEAT SELECTOR
K7R	MAGNETIC RELAY (E1HC)	X1A · X3A	CONNECTOR (Y1E, Y3E)	S1S	SELECTOR SWITCH (FAN/COOL · HEAT)
K8R	MAGNETIC RELAY (OPERATION OUTPUT)	X1M	TERMINAL STRIP (POWER SUPPLY)	S2S	SELECTOR SWITCH (COOL/HEAT)

NOTES)
1. THIS WIRING DIAGRAM IS APPLIED ONLY TO THE CONDENSING UNIT.
2. : FIELD WIRING
3. : TERMINAL STRIP : CONNECTOR : TERMINAL : PROTECTIVE EARTH (SCREW)
4. WHEN USING THE OPTION ADAPTOR, REFER TO THE INSTALLATION MANUAL.
5. REFER TO THE INSTALLATION MANUAL FOR CONNECTION WIRING TO INDOOR-OUTDOOR TRANSMISSION F1 · F2, OUTDOOR-OUTDOOR TRANSMISSION F1 · F2, OUTDOOR-MULTI TRANSMISSION Q1 · Q2.
6. REFER TO "SERVICE PRECAUTION" LABEL (ON EL. COMPO. BOX COVER), HOW TO USE BS1~BS5 AND DS1 SWITCH.
7. WHEN OPERATING, DO NOT SHORT CIRCUIT FOR PROTECTION DEVICE. (S1PH)
8. BE SURE TO CONNECT AN INTERLOCK CIRCUIT BETWEEN THE TERMINAL (3)-(4) OF TERMINAL STRIP (X3M).
9. INSTALL A HEAT SOURCE WATER PUMP OPERATION CIRCUIT BETWEEN THE TERMINAL (1)-(2) OF TERMINAL STRIP (X2M), WHEN INTERLOCKING A HEAT SOURCE WATER PUMP AND SYSTEM OPERATION.
10. COOL/HEAT SELECTOR CANNOT BE CONNECTED WHEN OPERATING HEAT RECOVERY SYSTEM.
11. COLORS BLK: BLACK RED: RED BLU: BLUE WHT: WHITE ORG: ORANGE GRN: GREEN

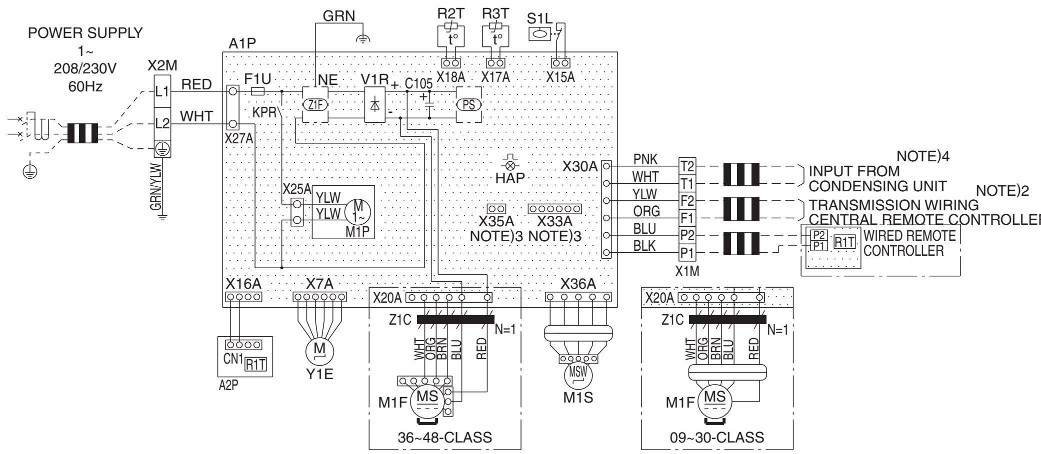
RWEYQ72PYDN / RWEYQ84PYDN

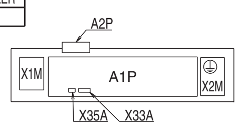


2.2 Indoor Unit

FXFQ09P / 12P / 18P / 24P / 30P / 36P / 48PVJU

INDOOR UNIT	
A1P	PRINTED CIRCUIT BOARD
A2P	PRINTED CIRCUIT BOARD
C105	CAPACITOR
F1U	FUSE (Ⓑ, 5A, 250V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR GREEN)
KPR	MAGNETIC RELAY (M1P)
M1F	MOTOR (INDOOR FAN)
M1P	MOTOR (DRAIN PUMP)
M1S	MOTOR (SWING FLAP)
R1T	THERMISTOR (AIR)
R2T	THERMISTOR (COIL LIQUID)
R3T	THERMISTOR (COIL GAS)
S1L	FLOAT SWITCH
V1R	DIODE BRIDGE
X1M	TERMINAL STRIP
X2M	TERMINAL STRIP
Y1E	ELECTRONIC EXPANSION VALVE
Z1C	FERRITE CORE
Z1F	NOISE FILTER
PS	POWER SUPPLY CIRCUIT
CONNECTOR FOR OPTIONAL ACCESSORIES	
X33A	CONNECTOR (ADAPTOR FOR WIRING)
X35A	CONNECTOR (GROUP CONTROL ADAPTOR)
WIRED REMOTE CONTROLLER	
R1T	THERMISTOR (AIR)





CONTROL BOX

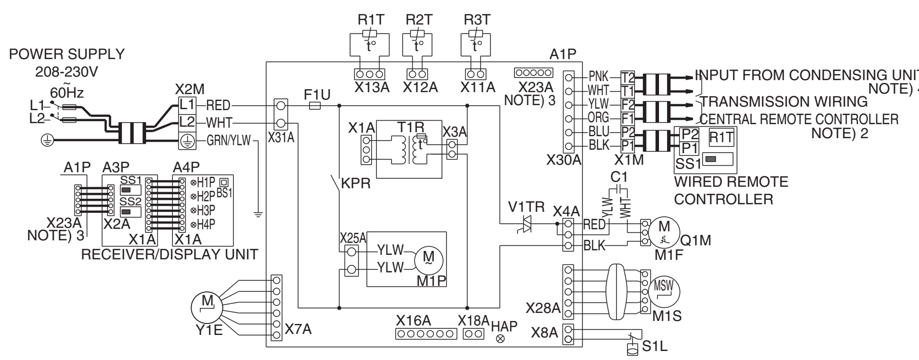
NOTES)

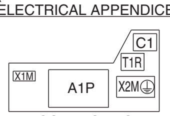
1. ▭▭▭ : TERMINAL, ⊡⊡ · ⊱ : CONNECTOR,
   ▮▮▮ : FIELD WIRING,
   ⏚ : PROTECTIVE GROUND (SCREW) ⏚ : NOISELESS GROUND
2. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
3. X33A AND X35A ARE CONNECTED WHEN THE OPTIONAL ACCESSORIES ARE USED.
4. WHEN CONNECTING THE INPUT WIRES FROM CONDENSING UNIT, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY THE REMOTE CONTROLLER. SEE INSTALLATION MANUAL FOR MORE DETAILS.
5. SYMBOLS SHOW AS FOLLOWS :
   RED : RED BLK : BLACK WHT : WHITE YLW : YELLOW GRN : GREEN ORG : ORANGE BRN : BROWN PNK : PINK GRY : GRAY BLU : BLUE

3D070301F

FXZQ07M / 09M / 12M / 18M7VJU

A1P	PRINTED CIRCUIT BOARD
C1	CAPACITOR (M1F)
F1U	FUSE (Ⓑ, 5A, 250V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR GREEN)
KPR	MAGNETIC RELAY (M1P)
M1F	MOTOR (INDOOR FAN)
M1P	MOTOR (DRAIN PUMP)
M1S	MOTOR (SWING FLAP)
Q1M	THERMAL PROTECTOR (M1F EMBEDDED)
R1T	THERMISTOR (AIR)
R2T	THERMISTOR (COIL-LIQUID)
R3T	THERMISTOR (COIL-GAS)
S1L	FLOAT SWITCH
T1R	TRANSFORMER (208-230V/22V)
V1TR	TRIAC
X1M	TERMINAL BLOCK
X2M	TERMINAL BLOCK
Y1E	ELECTRONIC EXPANSION VALVE
	WIRED REMOTE CONTROLLER
R1T	THERMISTOR (AIR)
SS1	SELECTOR SWITCH (MAIN/SUB)
	WIRELESS REMOTE CONTROLLER (RECEIVER/DISPLAY UNIT)
A3P	PRINTED CIRCUIT BOARD
A4P	PRINTED CIRCUIT BOARD
BS1	PUSH BUTTON (ON/OFF)
H1P	LIGHT EMITTING DIODE (ON-RED)
H2P	LIGHT EMITTING DIODE (TIMER-GREEN)
H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
SS1	SELECTOR SWITCH (MAIN/SUB)
SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
	CONNECTOR FOR OPTIONAL PARTS
X16A	CONNECTOR (ADAPTOR FOR WIRING)
X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRICAL APPENDICES)





CONTROL BOX

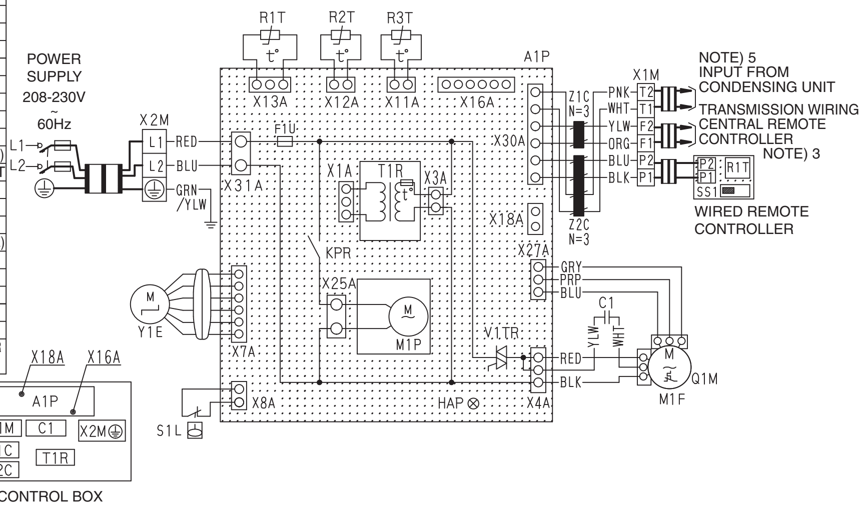
NOTES)

1. ▭▭▭ : TERMINAL
   ⊡⊡ , ⊱ : CONNECTOR
   ▮▮▮ : FIELD WIRING
2. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
3. X23A IS CONNECTED WHEN THE WIRELESS REMOTE CONTROLLER KIT IS BEING USED.
4. WHEN CONNECTING THE INPUT WIRES FROM CONDENSING UNIT, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
5. REMOTE CONTROLLER MODEL VARIES ACCORDING TO THE COMBINATION SYSTEM, CONFIRM ENGINEERING MATERIALS AND CATALOGS, ETC. BEFORE CONNECTING.
6. SYMBOLS SHOW AS FOLLOWS: RED : RED BLK : BLACK WHT : WHITE YLW : YELLOW PNK : PINK ORG : ORANGE GRN : GREEN BLU : BLUE

3D059263

FXDQ07M / 09M / 12M / 18M / 24MVJU

A1P	PRINTED CIRCUIT BOARD
C1	CAPACITOR (M1F)
F1U	FUSE (F5A/250V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR GREEN)
KPR	MAGNETIC RELAY (M1P)
M1F	MOTOR (INDOOR FAN)
M1P	MOTOR (DRAIN PUMP)
Q1M	THERMAL PROTECTOR (M1F EMBEDDED)
R1T	THERMISTOR (AIR)
R2T	THERMISTOR (COIL-1)
R3T	THERMISTOR (COIL-2)
S1L	FLOAT SWITCH
T1R	TRANSFORMER (208-230V/25V)
V1TR	PHASE CONTROL CIRCUIT
X1M	TERMINAL BLOCK
X2M	TERMINAL BLOCK
Y1E	ELECTRONIC EXPANSION VALVE
Z1C · Z2C	NOISE FILTER (FERRITE CORE)
WIRED REMOTE CONTROLLER	
R1T	THERMISTOR (AIR)
SS1	SELECTOR SWITCH (MAIN/SUB)
CONNECTOR FOR OPTIONAL PARTS	
X16A	CONNECTOR (ADAPTOR FOR WIRING)
X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRICAL APPENDICES)

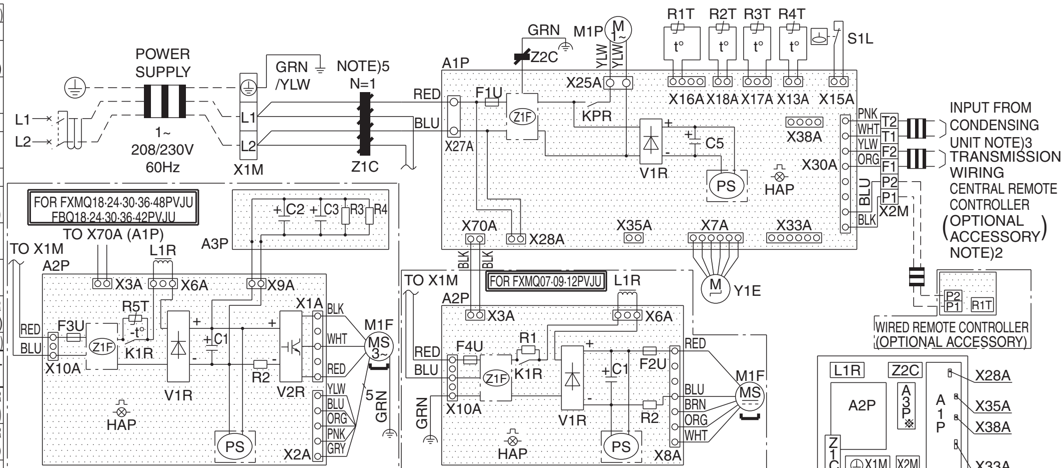


NOTES)
1. ☐☐☐ : TERMINAL
   ⊙⊙ , : CONNECTOR
2. : FIELD WIRING
3. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
4. REMOTE CONTROLLER MODEL VARIES ACCORDING TO THE COMBINATION SYSTEM, CONFIRM ENGINEERING MATERIALS AND CATALOGS, ETC. BEFORE CONNECTING.
5. WHEN CONNECTING THE INPUT WIRES FROM CONDENSING UNIT, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED TO THE UNIT.
6. SYMBOLS SHOW AS FOLLOWS: RED: RED BLK: BLACK WHT: WHITE YLW: YELLOW PRP: PURPLE GRY: GRAY BLU: BLUE PNK: PINK ORG: ORANGE GRN: GREEN

3D050501A

FXMQ07P / 09P / 12P / 18P / 24P / 30P / 36P / 48PVJU

INDOOR UNIT	
A1P	PRINTED CIRCUIT BOARD
A2P	PRINTED CIRCUIT BOARD (FAN)
A3P	PRINTED CIRCUIT BOARD(CAPACITOR)
C1, C2, C3, C5	CAPACITOR
F1U	FUSE (T, 3.15A, 250V)
F2U	FUSE (T, 5A, 250V)
F3U	FUSE (T, 6.3A, 250V)
F4U	FUSE (T, 6.3A, 250V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN) (A1P, A2P)
KPR	MAGNETIC RELAY
K1R	MAGNETIC RELAY
L1R	REACTOR
M1F	MOTOR (FAN)
M1P	MOTOR (DRAIN PUMP)
PS	SWITCHING POWER SUPPLY (A1P, A2P)
R1	RESISTOR (CURRENT LIMITING)
R2	CURRENT SENSING DEVICE
R3, R4	RESISTOR (ELECTRIC DISCHARGE)
R1T	THERMISTOR (SUCTION AIR)
R2T	THERMISTOR (LIQUID)
R3T	THERMISTOR (GAS)
R4T	THERMISTOR (DISCHARGE AIR)
R5T	THERMISTOR NTC (CURRENT LIMITING)
S1L	FLOAT SWITCH
V1R	DIODE BRIDGE (A1P, A2P)
V2R	POWER MODULE
X1M	TERMINAL STRIP (POWER SUPPLY)
X2M	TERMINAL STRIP (CONTROL)
Y1E	ELECTRONIC EXPANSION VALVE
Z1C, Z2C	NOISE FILTER (FERRITE CORE)
Z1F	NOISE FILTER (A1P, A2P)
CONNECTOR OPTIONAL ACCESSORY	
X28A	CONNECTOR (POWER SUPPLY FOR WIRING)
X33A	CONNECTOR (FOR WIRING)
X35A	CONNECTOR (ADAPTOR)
X38A	CONNECTOR (ADAPTOR FOR MULTI TENANT)
WIRED REMOTE CONTROLLER	
R1T	THERMISTOR (AIR)



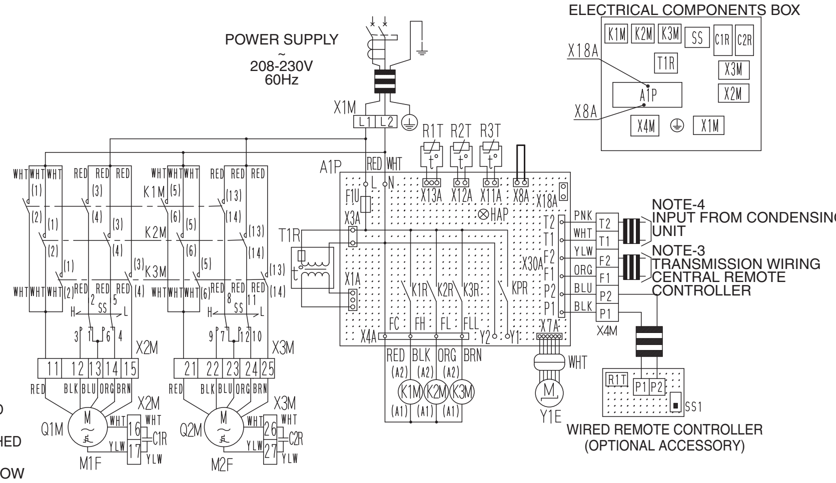
NOTES) 1. ☐☐☐ : TERMINAL, ⊙⊙ : CONNECTOR, : FIELD WIRING, ⏚ : PROTECTIVE GROUND (SCREW), : NOISELESS GROUND
2. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
3. WHEN CONNECTING THE INPUT WIRES FROM CONDENSING UNIT, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED TO THE UNIT.
4. COLORS BLK: BLACK RED: RED BLU: BLUE WHT: WHITE PNK: PINK YLW: YELLOW BRN: BROWN GRY: GRAY GRN: GREEN ORG: ORANGE.

NOTES) 5. FOR FXMQ18·24·30·36·48PVJU, FBQ18·24·30·36·42PVJU ARE N=2

3D065984E

FXMQ72M / 96MVJU

INDOOR UNIT			
A1P	PRINTED CIRCUIT BOARD	R1T	THERMISTOR (AIR)
C1R · C2R	CAPACITOR (M1F · 2F)	R2T · R3T	THERMISTOR (COIL)
F1U	FUSE (B, 5A, 250V)	SS	SELECTOR SWITCH (STATIC PRESSURE)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	T1R	TRANSFORMER (280V/230V 25VA)
		X1M	TERMINAL BLOCK (POWER)
K1M	MAGNETIC CONTACT SWITCH (M1F · 2F)	X2M-X3M	TERMINAL BLOCK
K2M	MAGNETIC CONTACT SWITCH (M1F · 2F)	X4M	TERMINAL BLOCK (CONTROL)
K3M	MAGNETIC CONTACT SWITCH (M1F · 2F)	Y1E	ELECTRONIC EXPANSION VALVE
K1R-K3R	MAGNETIC RELAY (M1F · 2F)		WIRED REMOTE CONTROLLER
KPR	MAGNETIC RELAY (M1P)	R1T	THERMISTOR (AIR)
M1F · M2F	MOTOR (INDOOR FAN)	SS1	SELECTOR SWITCH (MAIN/SUB)
Q1M · Q2M	THERMO SWITCH (M1F · 2F EMBEDDED)		CONNECTOR FOR OPTIONAL PARTS
		X8A	CONNECTOR (FLOAT SWITCH)
		X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRICAL APPENDICES)

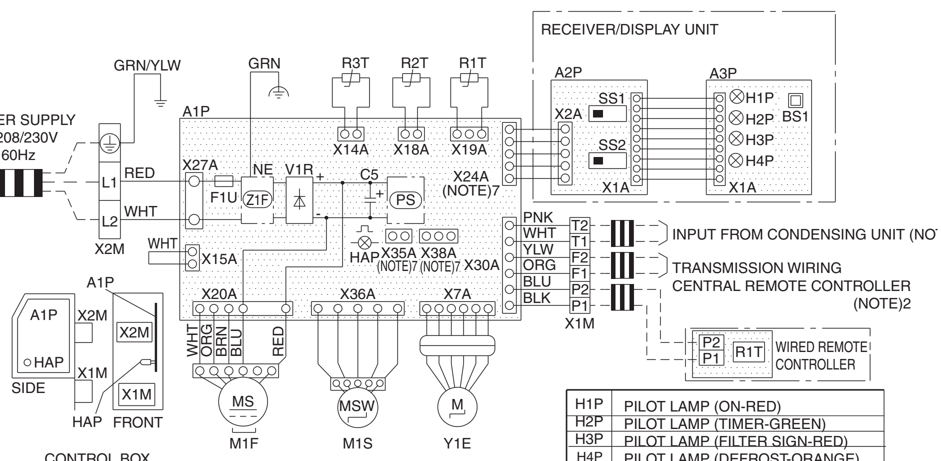


NOTES)
1. : TERMINAL BLOCK
   , : CONNECTOR
   : SHORT CIRCUIT CONNECTOR
   : TERMINAL
2. : FIELD WIRING
3. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
4. WHEN CONNECTING THE INPUT WIRES FROM CONDENSING UNIT, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
5. SYMBOLS SHOW AS FOLLOWS. (PNK: PINK WHT: WHITE YLW: YELLOW ORG: ORANGE BLU: BLUE BLK: BLACK RED: RED BRN: BROWN)
6. USE COPPER CONDUCTORS ONLY.
7. IN CASE HIGH E.S.P. OPERATION, CHANGE THE SWITCH (SS) FOR "H".

3D065414C

FXAQ07P / 09P / 12P / 18P / 24PVJU

(NOTES)
1. : TERMINAL
   : FIELD WIRING
   : CONNECTOR
   : CONNECTOR
   : PROTECTIVE GROUND (SCREW)
   : NOISELESS GROUND
   : SHORT CIRCUIT CONNECTOR
2. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
3. SYMBOLS SHOWS AS FOLLOWS: RED: RED WHT: WHITE GRN: GREEN PNK: PINK YLW: YELLOW BLK: BLACK ORG: ORANGE BRN: BROWN BLU: BLUE
4. WHEN CONNECTING THE INPUT WIRES FROM CONDENSING UNIT, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED TO THE UNIT.
5. REMOTE CONTROLLER MODEL VARIES ACCORDING TO THE COMBINATION SYSTEM, CONFIRM ENGINEERING DATA AND CATALOGS, ETC. BEFORE CONNECTING.
6. CONFIRM THE METHOD OF SETTING THE SELECTOR SWITCH (SS1, SS2) OF WIRELESS REMOTE CONTROLLER BY INSTALLATION MANUAL AND ENGINEERING DATA, ETC.



INDOOR UNIT			
A1P	PRINTED CIRCUIT BOARD	V1R	DIODE BRIDGE
C5	CAPACITOR	X1M	TERMINAL BLOCK (CONTROL)
F1U	FUSE (T3. 15AH 250V)	X2M	TERMINAL BLOCK (POWER)
HAP	FLASHING LAMP (SERVICE MONITOR GREEN)	Y1E	ELECTRONIC EXPANSION VALVE
		Z1F	NOISE FILTER
		PS	SWITCHING POWER SUPPLY
M1F	MOTOR (INDOOR FAN)		RECEIVER/DISPLAY UNIT (ATTACHED TO WIRELESS REMOTE CONTROLLER)
M1S	MOTOR (SWING FLAP)		
R1T	THERMISTOR (AIR)	A2P	PRINTED CIRCUIT BOARD
R2T	THERMISTOR (COIL LIQUID PIPE)	A3P	PRINTED CIRCUIT BOARD
R3T	THERMISTOR (COIL GAS PIPE)	BS1	BRANCH SELECTOR BUTTON (ON/OFF)

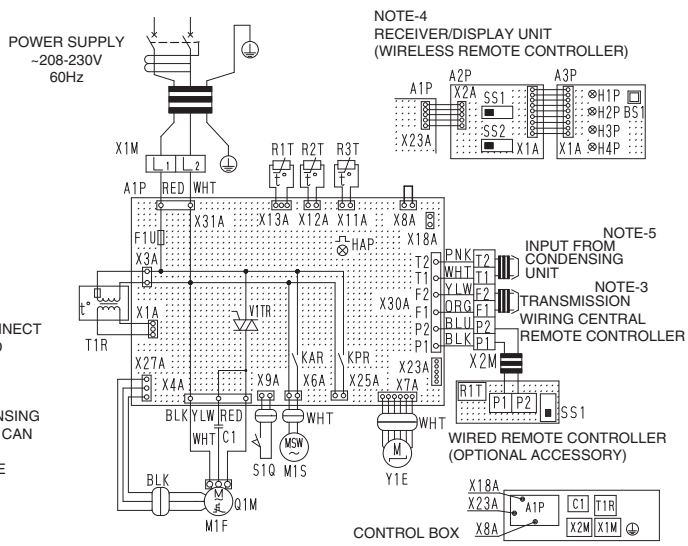
H1P	PILOT LAMP (ON-RED)
H2P	PILOT LAMP (TIMER-GREEN)
H3P	PILOT LAMP (FILTER SIGN-RED)
H4P	PILOT LAMP (DEFROST-ORANGE)
SS1	SELECTOR SWITCH (MAIN/SUB)
SS2	SELECTOR SWITCH (MAIN/SUB)
	SELECTOR SWITCH (WIRELESS ADDRESS SET)
	WIRED REMOTE CONTROLLER
R1T	THERMISTOR (AIR)
	CONNECTOR FOR OPTIONAL PARTS
X15A	CONNECTOR (FLOAT SWITCH)
X24A	CONNECTOR (WIRELESS REMOTE CONTROLLER)
X35A	CONNECTOR (GROUP CONTROL ADAPTOR)
X38A	CONNECTOR (ADAPTOR FOR MULTI TENANT

3D075354A

FXHQ12M / 24M / 36MVJU

INDOOR UNIT	
A1P	PRINTED CIRCUIT BOARD
C1	CAPACITOR (M1F)
F1U	FUSE (Ⓑ5A, 250V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)
KAR	MAGNETIC RELAY (M1S)
KPR	MAGNETIC RELAY
M1F	MOTOR (INDOOR FAN)
M1S	MOTOR (SWING FLAP)
Q1M	THERMO SWITCH (M1F EMBEDDED)
R1T	THERMISTOR (AIR)
R2T	THERMISTOR (COIL LIQUID)
R3T	THERMISTOR (COIL GAS)
S1Q	LIMIT SWITCH (SWING FLAP)
T1R	TRANSFORMER (208-230V/25V)
V1TR	TRIAC
X1M	TERMINAL BLOCK (POWER)
X2M	TERMINAL BLOCK (CONTROL)
Y1E	ELECTRONIC EXPANSION VALVE
WIRED REMOTE CONTROLLER	
R1T	THERMISTOR (AIR)
SS1	SELECTOR SWITCH (MAIN/SUB)
RECEIVER/DISPLAY UNIT (ATTACHED TO WIRELESS REMOTE CONTROLLER)	
A2P	PRINTED CIRCUIT BOARD
A3P	PRINTED CIRCUIT BOARD
BS1	PUSH BUTTON (ON/OFF)
H1P	LIGHT EMITTING DIODE (ON-RED)
H2P	LIGHT EMITTING DIODE (TIMER-GREEN)
H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
SS1	SELECTOR SWITCH (MAIN/SUB)
SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
CONNECTOR FOR OPTIONAL PARTS	
X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRICAL APPENDICES)
X23A	CONNECTOR (WIRELESS REMOTE CONTROLLER)

NOTES)
1. : TERMINAL BLOCK , : CONNECTOR
   : SHORT CIRCUIT CONNECTOR
2. : FIELD WIRING
3. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
4. X23A IS CONNECTED WHEN THE WIRELESS REMOTE CONTROLLER KIT IS BEING USED.
5. WHEN CONNECTING THE INPUT WIRES FROM CONDENSING UNIT, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
6. SYMBOLS SHOW AS FOLLOWS.
   BLU: BLUE BLK: BLACK ORG: ORANGE PNK: PINK
   RED: RED WHT: WHITE YLW: YELLOW
7. USE COPPER CONDUCTORS ONLY.

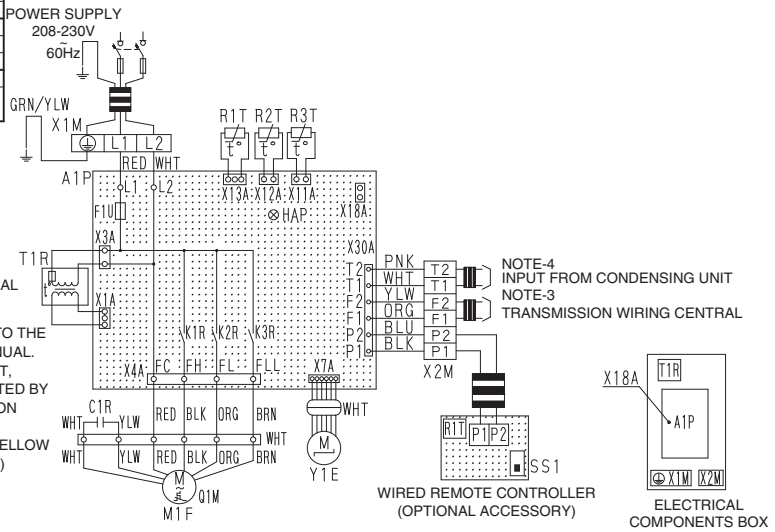


3D048116A

FXLQ12M / 18M / 24MVJU
FXNQ12M / 18M / 24MVJU

INDOOR UNIT	
A1P	PRINTED CIRCUIT BOARD
C1R	CAPACITOR (M1F)
F1U	FUSE (Ⓑ,5A, 250V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)
K1R-K3R	MAGNETIC RELAY (M1F)
M1F	MOTOR (INDOOR FAN)
Q1M	THERMO SWITCH (M1F EMBEDDED)
R1T	THERMISTOR (AIR)
R2T · R3T	THERMISTOR (COIL)
T1R	TRANSFORMER (208-230V/25V)
X1M	TERMINAL BLOCK (POWER)
X2M	TERMINAL BLOCK (CONTROL)
Y1E	ELECTRONIC EXPANSION VALVE
WIRED REMOTE CONTROLLER	
R1T	THERMISTOR (AIR)
SS1	SELECTOR SWITCH (MAIN/SUB)
CONNECTOR FOR OPTIONAL PARTS	
X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRICAL APPENDICES)

NOTES)
1. : TERMINAL BLOCK, , : CONNECTOR, : TERMINAL
2. : FIELD WIRING
3. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
4. WHEN CONNECTING THE INPUT WIRES FROM CONDENSING UNIT, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED TO THE UNIT.
5. SYMBOLS SHOW AS FOLLOWS. (PNK: PINK WHT: WHITE YLW: YELLOW ORG: ORANGE BLU: BLUE BLK: BLACK RED: RED BRN: BROWN)
6. USE COPPER CONDUCTORS ONLY.



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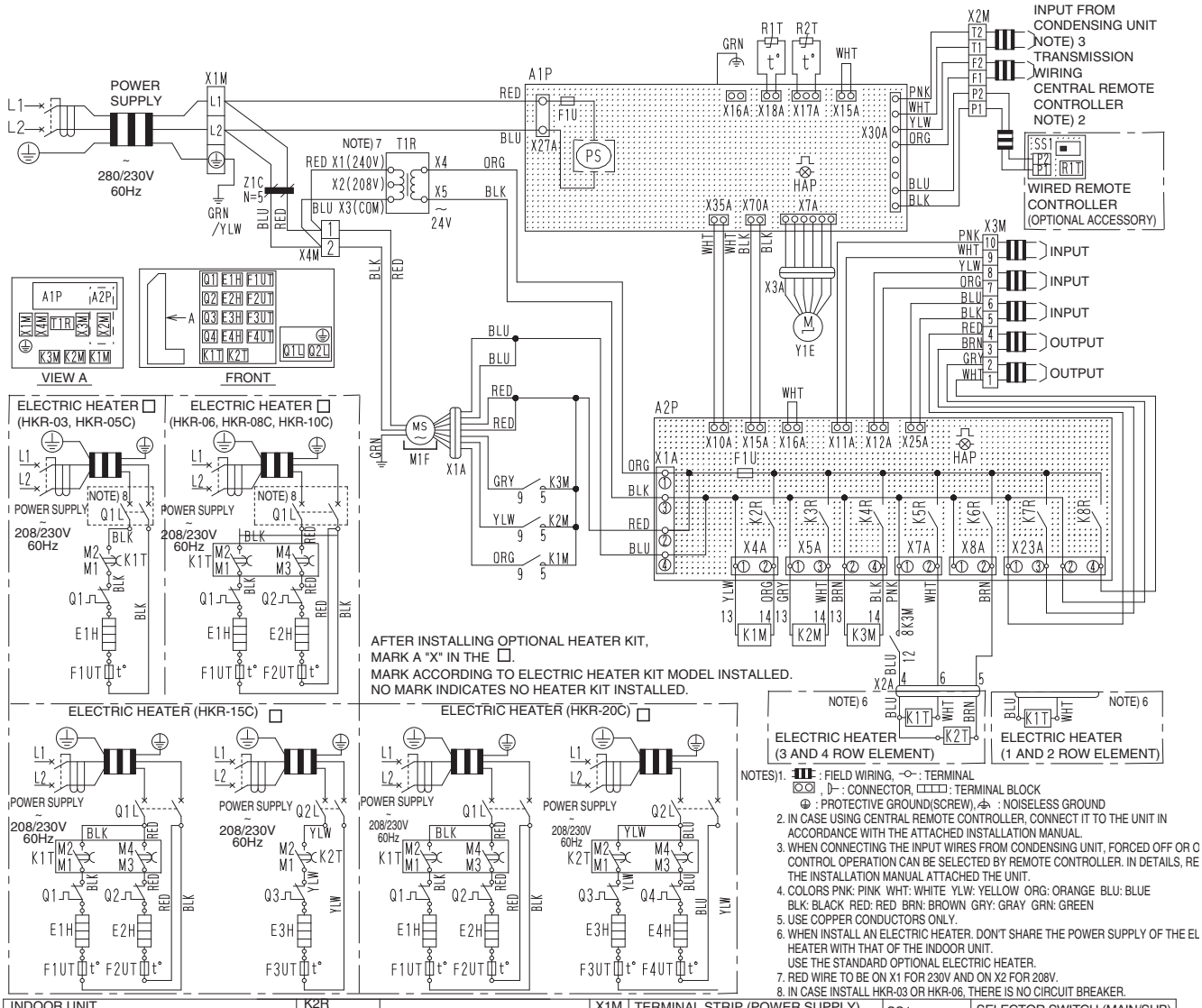
FXTQ12PAVJU / FXTQ18PAVJU / FXTQ24PAVJU / FXTQ30PAVJU / FXTQ36PAVJU / FXTQ42PAVJU / FXTQ48PAVJU / FXTQ54PAVJU



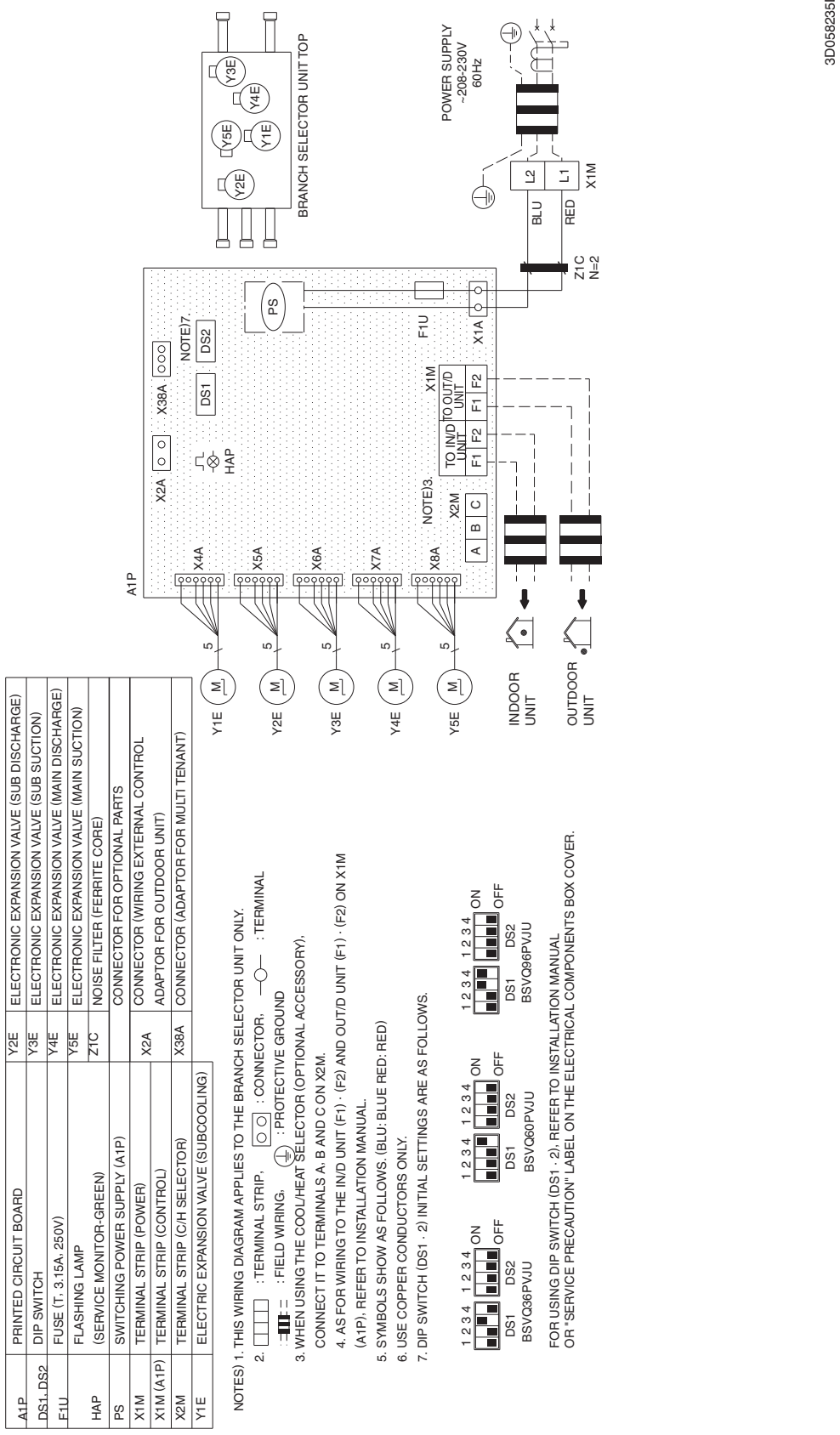
NOTES)1. ▮▮▮ : FIELD WIRING, ⊸ : TERMINAL, ⊃ : CONNECTOR, ▭▭ : TERMINAL BLOCK, ⏚ : PROTECTIVE GROUND(SCREW), ⏚ : NOISELESS GROUND
2. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
3. WHEN CONNECTING THE INPUT WIRES FROM CONDENSING UNIT, FORCED OFF OR C CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, RE THE INSTALLATION MANUAL ATTACHED THE UNIT.
4. COLORS PNK: PINK WHT: WHITE YLW: YELLOW ORG: ORANGE BLU: BLUE BLK: BLACK RED: RED BRN: BROWN GRY: GRAY GRN: GREEN
5. USE COPPER CONDUCTORS ONLY.
6. WHEN INSTALL AN ELECTRIC HEATER, DON'T SHARE THE POWER SUPPLY OF THE EL HEATER WITH THAT OF THE INDOOR UNIT. USE THE STANDARD OPTIONAL ELECTRIC HEATER.
7. RED WIRE TO BE ON X1 FOR 230V AND ON X2 FOR 208V.
8. IN CASE INSTALL HKR-03 OR HKR-06, THERE IS NO CIRCUIT BREAKER.

INDOOR UNIT		K2R ~ K8R	MAGNETIC RELAY (A2P)	X1M	TERMINAL STRIP (POWER SUPPLY)	SS1	SELECTOR SWITCH (MAIN/SUB)
A1P	PRINTED CIRCUIT BOARD (MAIN)	M1F	MOTOR (FAN)	X2M	TERMINAL STRIP (CONTROL)	ELECTRIC HEATER	
A2P	PRINTED CIRCUIT BOARD (SUB)	PS	SWITCHING POWER SUPPLY (A1P)	X3M	TERMINAL STRIP (CONTROL)	E1H~E4H	ELECTRIC HEATER
F1U	FUSE (T, 3.15A, 250V) FOR (A1P, A2P)	R1T	THERMISTOR (LIQUID)	X4M	TERMINAL STRIP (POWER SUPPLY)	F1UT~F4UT	TEMPERATURE FUSE (199.4°F)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN) (A1P, A2P)	R2T	THERMISTOR (GAS)	Y1E	ELECTRONIC EXPANSION VALVE	K1T, K2T	TIME DELAY RELAY
K1M ~ K3M	MAGNETIC RELAY	T1R	TRANSFORMER 208V/24V, 240V/24V	Z1C	NOISE FILTER (FERRITE CORE)	Q1~Q4	THERMAL LIMIT
		X1A~X3A	CONNECTOR	WIRED REMOTE CONTROLLER		Q1L, Q2L	CIRCUIT BREAKERS
				R1T	THERMISTOR (AIR)		

C: 3D065036F

2.3 Branch Selector Unit

BSVQ36P / 60P / 96PVJU



A1P	PRINTED CIRCUIT BOARD	Y2E	ELECTRONIC EXPANSION VALVE (SUB DISCHARGE)
DS1, DS2	DIP SWITCH	Y3E	ELECTRONIC EXPANSION VALVE (SUB SUCTION)
F1U	FUSE (T; 3.15A; 250V)	Y4E	ELECTRONIC EXPANSION VALVE (MAIN DISCHARGE)
HAP	FLASHING LAMP (SERVICE MONITOR-GREEN)	Y5E	ELECTRONIC EXPANSION VALVE (MAIN SUCTION)
		Z1C	NOISE FILTER (FERRITE CORE)
PS	SWITCHING POWER SUPPLY (A1P)		CONNECTOR FOR OPTIONAL PARTS
X1M	TERMINAL STRIP (POWER)	X2A	CONNECTOR (WIRING EXTERNAL CONTROL ADAPTOR FOR OUTDOOR UNIT)
X1M (A1P)	TERMINAL STRIP (CONTROL)		
X2M	TERMINAL STRIP (C/H SELECTOR)	X38A	CONNECTOR (ADAPTOR FOR MULTI TENANT)
Y1E	ELECTRIC EXPANSION VALVE (SUBCOOLING)		

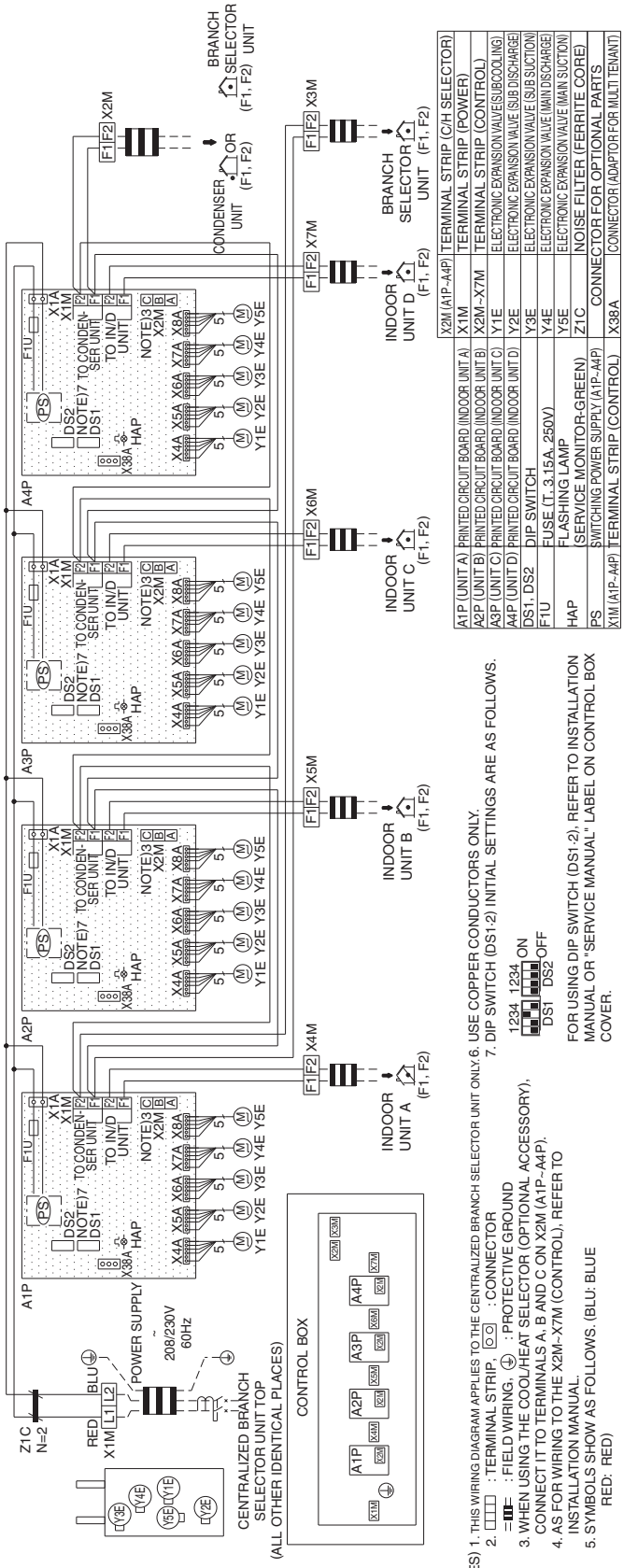
NOTES) 1. THIS WIRING DIAGRAM APPLIES TO THE BRANCH SELECTOR UNIT ONLY.
2. : TERMINAL STRIP, : CONNECTOR, : TERMINAL
: FIELD WIRING, : PROTECTIVE GROUND
3. WHEN USING THE COOL/HEAT SELECTOR (OPTIONAL ACCESSORY),
CONNECT IT TO TERMINALS A, B AND C ON X2M.
4. AS FOR WIRING TO THE IN/D UNIT (F1) · (F2) AND OUT/D UNIT (F1) · (F2) ON X1M (A1P), REFER TO INSTALLATION MANUAL.
5. SYMBOLS SHOW AS FOLLOWS. (BLU: BLUE RED: RED)
6. USE COPPER CONDUCTORS ONLY.
7. DIP SWITCH (DS1 · 2) INITIAL SETTINGS ARE AS FOLLOWS.

DS1	DS2	
1 2 3 4 ON / OFF	1 2 3 4 ON / OFF	BSVQ36PVJU
1 2 3 4 ON / OFF	1 2 3 4 ON / OFF	BSVQ60PVJU
1 2 3 4 ON / OFF	1 2 3 4 ON / OFF	BSVQ96PVJU

FOR USING DIP SWITCH (DS1 · 2), REFER TO INSTALLATION MANUAL.
OR "SERVICE PRECAUTION" LABEL ON THE ELECTRICAL COMPONENTS BOX COVER.

2.4 Centralized Branch Selector Unit

BSV4Q36PVJU



X2M (A1P~A4P)	TERMINAL STRIP (C/H SELECTOR)
A1P (UNIT A)	PRINTED CIRCUIT BOARD (INDOOR UNIT A)
A2P (UNIT B)	PRINTED CIRCUIT BOARD (INDOOR UNIT B)
A3P (UNIT C)	PRINTED CIRCUIT BOARD (INDOOR UNIT C)
A4P (UNIT D)	PRINTED CIRCUIT BOARD (INDOOR UNIT D)
DS1, DS2	DIP SWITCH
F1U	FUSE (T, 3.15A, 250V)
HAP	FLASHING LAMP (SERVICE MONITOR-GREEN)
PS	SWITCHING POWER SUPPLY (A1P~A4P)
X1M (A1P~A4P)	TERMINAL STRIP (CONTROL)
X1M	TERMINAL STRIP (POWER)
X2M~X7M	TERMINAL STRIP (CONTROL)
Y1E	ELECTRONIC EXPANSION VALVE(SUBCOOLING)
Y2E	ELECTRONIC EXPANSION VALVE (SUB DISCHARGE)
Y3E	ELECTRONIC EXPANSION VALVE (SUB SUCTION)
Y4E	ELECTRONIC EXPANSION VALVE (MAIN DISCHARGE)
Y5E	ELECTRONIC EXPANSION VALVE (MAIN SUCTION)
Z1C	NOISE FILTER (FERRITE CORE)
	CONNECTOR FOR OPTIONAL PARTS
X38A	CONNECTOR (ADAPTOR FOR MULTI TENANT)

NOTES) 1. THIS WIRING DIAGRAM APPLIES TO THE CENTRALIZED BRANCH SELECTOR UNIT ONLY.
2. □□□ : TERMINAL STRIP, ○○ : CONNECTOR
=▮▮= : FIELD WIRING, ⏚ : PROTECTIVE GROUND
3. WHEN USING THE COOL/HEAT SELECTOR (OPTIONAL ACCESSORY), CONNECT IT TO TERMINALS A, B AND C ON X2M (A1P~A4P).
4. AS FOR WIRING TO THE X2M~X7M (CONTROL), REFER TO INSTALLATION MANUAL.
5. SYMBOLS SHOW AS FOLLOWS. (BLU: BLUE RED: RED)
6. USE COPPER CONDUCTORS ONLY.
7. DIP SWITCH (DS1:2) INITIAL SETTINGS ARE AS FOLLOWS.

1234 DS1 ON OFF
1234 DS2 ON OFF

FOR USING DIP SWITCH (DS1:2), REFER TO INSTALLATION MANUAL OR "SERVICE MANUAL" LABEL ON CONTROL BOX COVER.

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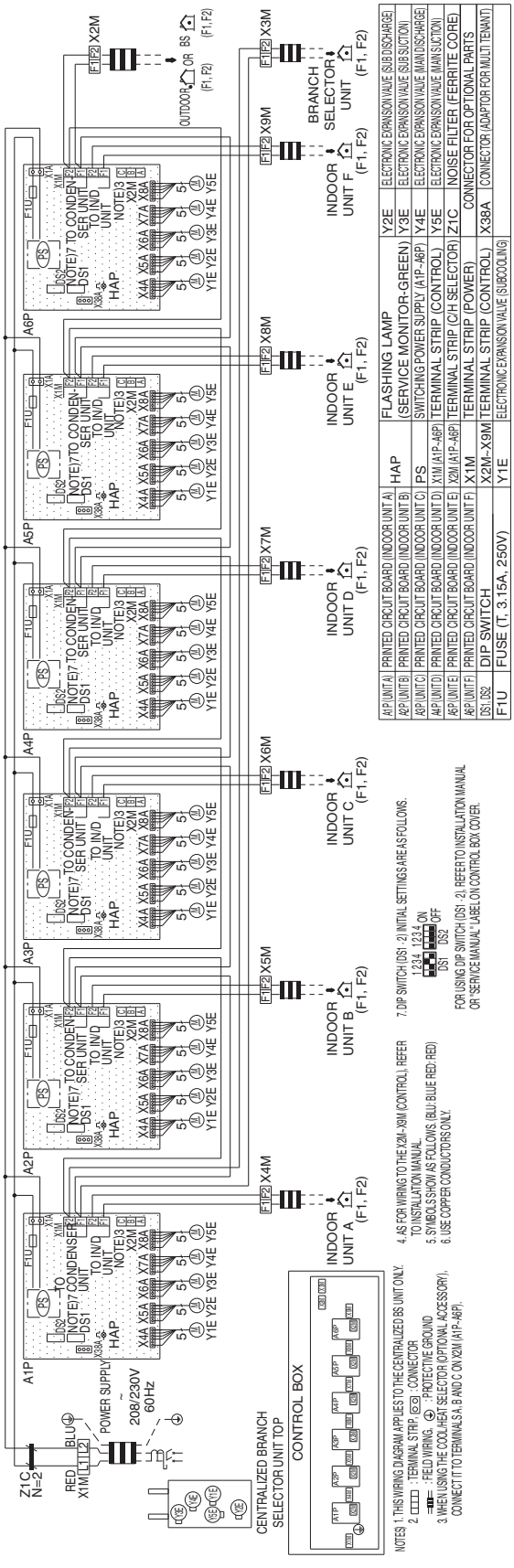
BSV6Q36PVJU



3D072211B

Warning

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

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

C ETL LISTED US
Intertek

Cautions on product corrosion

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

Dealer

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• Specifications, designs and other content appearing in this brochure are current as of July 2013 but subject to change without notice.

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