DAIKIN

ESiE15-09

R-410A

Service Manual

VRV IV W-series

Water Cooled Heat Pump / Heat Recovery R-410A 50

RWEYQ8-30T7Y1B, RWEYQ8-30T8Y1B



Revision History

Month / Year	Version	Revised contents
12/2008	Si30-813	–
08/2011	Si30-813_A	M-09001 Correction of Centralized Control Group No. Setting M-09009 Correction of pressure sensor characteristic M-09012 Correction of refrigerant flow M-11009 Correction of thermistor resistance / Temperature Characteristic in Service manual Modification of PCB (Earth leakage detection PCB)
06/2015	ESiE15-09	RWEYQ8-30T7Y1B RWEYQ8-30T8Y1B

VRV IV W-series Water Cooled Heat Pump/Heat Recovery R-410A 50Hz

ED Reference

For items below, please refer to Engineering Data.

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2	Outside Unit Specification	EEDEN 14-201		

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1. Introduction

1.1 Safety Cautions

Cautions and Warnings

- Be sure to read the following safety cautions before conducting repair work.
- The caution items are classified into "⚠ **Warning**" and "⚠ **Caution**". The "⚠ **Warning**" items are especially important since they can lead to death or serious injury if they are not followed closely. The "⚠ **Caution**" items can also lead to serious accidents under some conditions if they are not followed. Therefore, be sure to observe all the safety caution items described below.
- About the pictograms

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

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

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

- After the repair work is complete, be sure to conduct a test operation to ensure that the equipment operates normally, and explain the cautions for operating the product to the customer.

1.1.1 Cautions Regarding Safety of Workers

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

Warning	
Be sure to wear a safety helmet, gloves, and a safety belt when working at a high place (more than 2 m). Insufficient safety measures may cause a fall accident.	
In case of R-410A refrigerant models, be sure to use pipes, flare nuts and tools for the exclusive use of the R-410A refrigerant. The use of materials for R-22 refrigerant models may cause a serious accident such as a damage of refrigerant cycle as well as an equipment failure.	

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

1.1.2 Cautions Regarding Safety of Users

Warning	
Be sure to use parts listed in the service parts list of the applicable model and appropriate tools to conduct repair work. Never attempt to modify the equipment. The use of inappropriate parts or tools may cause an electrical shock, excessive heat generation or fire.	
If the power cable and lead wires have scratches or deteriorated, be sure to replace them. Damaged cable and wires may cause an electrical shock, excessive heat generation or fire.	
Do not use a joined power cable or extension cable, or share the same power outlet with other electrical appliances, since it may cause an electrical shock, excessive heat generation or fire.	
Be sure to use an exclusive power circuit for the equipment, and follow the local technical standards related to the electrical equipment, the internal wiring regulations, and the instruction manual for installation when conducting electrical work. Insufficient power circuit capacity and improper electrical work may cause an electrical shock or fire.	
Be sure to use the specified cable for wiring between the indoor and outdoor units. Make the connections securely and route the cable properly so that there is no force pulling the cable at the connection terminals. Improper connections may cause excessive heat generation or fire.	
When wiring between the indoor and outdoor units, make sure that the terminal cover does not lift off or dismount because of the cable. If the cover is not mounted properly, the terminal connection section may cause an electrical shock, excessive heat generation or fire.	
Do not damage or modify the power cable. Damaged or modified power cable may cause an electrical shock or fire. Placing heavy items on the power cable, and heating or pulling the power cable may damage the cable.	
Do not mix air or gas other than the specified refrigerant (R-410A / R-22) in the refrigerant system. If air enters the refrigerating system, an excessively high pressure results, causing equipment damage and injury.	
If the refrigerant gas leaks, be sure to locate the leaking point and repair it before charging the refrigerant. After charging refrigerant, make sure that there is no refrigerant leak. If the leaking point cannot be located and the repair work must be stopped, be sure to perform pump down and close the service valve, to prevent the refrigerant gas from leaking into the room. The refrigerant gas itself is harmless, but it may generate toxic gases when it contacts flames, such as fan and other heaters, stoves and ranges.	
When relocating the equipment, make sure that the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength and if the installation work is not conducted securely, the equipment may fall and cause injury.	

Warning	
Check to make sure that the power cable plug is not dirty or loose, then insert the plug into a power outlet securely. If the plug has dust or loose connection, it may cause an electrical shock or fire.	
Be sure to install the product correctly by using the provided standard installation frame. Incorrect use of the installation frame and improper installation may cause the equipment to fall, resulting in injury.	For unitary type only 
Be sure to install the product securely in the installation frame mounted on the window frame. If the unit is not securely mounted, it may fall and cause injury.	For unitary type only 
When replacing the coin battery in the remote controller, be sure to disposed of the old battery to prevent children from swallowing it. If a child swallows the coin battery, see a doctor immediately.	

Caution	
Installation of a leakage breaker is necessary in some cases depending on the conditions of the installation site, to prevent electrical shocks.	
Do not install the equipment in a place where there is a possibility of combustible gas leaks. If the combustible gas leaks and remains around the unit, it may cause a fire.	
Check to see if the parts and wires are mounted and connected properly, and if the connections at the soldered or crimped terminals are secure. Improper installation and connections may cause excessive heat generation, fire or an electrical shock.	
If the installation platform or frame has corroded, replace it. Corroded installation platform or frame may cause the unit to fall, resulting in injury.	
Check the grounding, and repair it if the equipment is not properly grounded. Improper grounding may cause an electrical shock.	

Caution	
Be sure to measure the insulation resistance after the repair, and make sure that the resistance is 1 MΩ or higher. Defective insulation may cause an electrical shock.	
Be sure to check the drainage of the indoor unit after the repair. Defective drainage may cause the water to enter the room and wet the furniture and floor.	
Do not tilt the unit when removing it. The water inside the unit may spill and wet the furniture and floor.	
Be sure to install the packing and seal on the installation frame properly. If the packing and seal are not installed properly, water may enter the room and wet the furniture and floor.	For unitary type only 

1.2 Used Icons

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

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

1.3 Preface

Thank you for your continued patronage of Daikin products.

This is the new service manual for Daikin's water cooled VRV System.
Daikin offers a wide range of models to respond to building and office air conditioning needs.
We are confident that customers will be able to find the models that best suit their needs.

This service manual contains information regarding the servicing of water cooled VRV System.

December, 2015
After Sales Service Division

Part 1
General Information

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1. Model Names of Indoor/Outside Units

1.1 Indoor units

VRV Indoor units

Type		Model Name													Power Supply
Round flow cassette autocleaning function[1] Presence & floor sensor[1]	FXFQ-A		20	25	32	40	50	63		80	100	125				VE
4-way blow ceiling mounted cassette Presence & floor sensor[1]	FXZQ-A	15	20	25	32	40	50								
2-way blow ceiling mounted cassette	FXCQ-A		20	25	32	40	50	63		80		125			
Ceiling mounted corner cassette	FXKQ-MA			25	32	40		63							
Small concealed ceiling unit	FXDQ-M9		20	25											
Slim concealed ceiling unit	FXDQ-A	15	20	25	32	40	50	63							
Conceiled ceiling unit with inverter driven fan	FXSQ-A		20	25	32	40	50	63		80	100	125	140		
Conceiled ceiling unit with inverter driven fan	FXMQ-P7		20	25	32	40	50	63		80	100	125			
Large conceiled ceiling unit	FXMQ-MA													200	250
Wall mounted unit	FXAQ-P	15	20	25	32	40	50	63							
Ceiling suspended unit	FXHQ-A				32			63			100				
4-way blow ceiling suspended unit	FXUQ-A								71		100	125			
Floor standing unit	FXLQ-P		20	25	32	40	50	63							
Conceiled floor standing unit	FXNQ-A		20	25	32	40	50	63							
AHU	EKEQMCBV, EKEQFCBV[2]						50	63		80	100	125	140	200	250

Note:

[1] Optional.

[2] No combination to VRV Indoor.

Heat Reclaim Ventilator (VKM series)

Series		Model name			Power supply
Heat Reclaim Ventilator with DX coil	VKM	50GB	80GB	100GB	V1
Heat Reclaim Ventilator with DX coil and humidifier		50GBM	80GBM	100GBM	

Note: For details, refer to Engineering Data EEDEN13-205

BS units

	VRV III BS		VRV IV BS		Power supply
	BS100, 160, 250P	BS4Q100P BS6Q160P	BS1Q10, 16, 25A	BS4, 6, 8, 10, 12, 16Q14A	
RWEYQ - T7	OK	OK	—	—	V1
RWEYQ - T8	OK	OK	OK	OK	V1

Note: No compatibility between BSVQ and BS..Q..AV1.

1.2 Outside units

Combination of outside units (Heat pump/Heat recovery)

HP	8HP	10HP	16HP	18HP
Model name	**RWEYQ8T**	**RWEYQ10T**	**RWEYQ16T**	**RWEYQ18T**
Outside unit 1	RWEYQ8T	RWEYQ10T	RWEYQ8T	RWEYQ8T
Outside unit 2	–	–	RWEYQ8T	RWEYQ10T

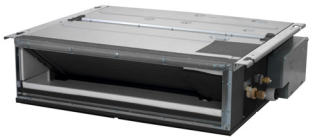
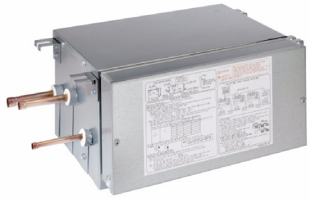
HP	20HP	24HP	26HP	28HP	30HP
Model name	**RWEYQ20T**	**RWEYQ24T**	**RWEYQ26T**	**RWEYQ28T**	**RWEYQ30T**
Outside unit 1	RWEYQ10T	RWEYQ8T	RWEYQ8T	RWEYQ8T	RWEYQ10T
Outside unit 2	RWEYQ10T	RWEYQ8T	RWEYQ8T	RWEYQ10T	RWEYQ10T
Outside unit 3	–	RWEYQ8T	RWEYQ10T	RWEYQ10T	RWEYQ10T

VE: 1 phase, 220-240/220V, 50/60Hz
V1: 1 phase, 220-240V, 50Hz
V3: 1 phase, 230 V, 50 Hz
Y1: 3N, 380-415V, 50Hz

Note: In case of multi combination, it is not possible to combine T7 and T8 together, unless all modules are T7 or T8.

2. External appearance

2.1 Indoor units

Ceiling mounted cassette (Round flow) type FXFQ20A2VEB FXFQ25A2VEB FXFQ32A2VEB FXFQ40A2VEB FXFQ50A2VEB FXFQ63A2VEB FXFQ80A2VEB FXFQ100A2VEB FXFQ125A2VEB 	Wall mounted type FXAQ15PAV1 FXAQ20PAV1 FXAQ25PAV1 FXAQ32PAV1 FXAQ40PAV1 FXAQ50PAV1 FXAQ63PAV1 
Ceiling mounted cassette (Compact multi flow) type FXZQ15A2VEB FXZQ20A2VEB FXZQ25A2VEB FXZQ32A2VEB FXZQ40A2VEB FXZQ50A2VEB 	Floor standing type FXLQ20P2VEB FXLQ25P2VEB FXLQ32P2VEB FXLQ40P2VEB FXLQ50P2VEB FXLQ63P2VEB 
Ceiling mounted cassette (Double flow) type FXCQ20AVEB FXCQ25AVEB FXCQ32AVEB FXCQ40AVEB FXCQ50AVEB FXCQ63AVEB FXCQ80AVEB FXCQ125AVEB 	Concealed floor standing type FXNQ20A2VEB FXNQ25A2VEB FXNQ32A2VEB FXNQ40A2VEB FXNQ50A2VEB FXNQ63A2VEB 
Ceiling mounted cassette corner type FXKQ25MAVE FXKQ32MAVE FXKQ40MAVE FXKQ63MAVE 	Ceiling suspended cassette type FXUQ71AVEB FXUQ100MAVEB 
Slim ceiling mounted duct type FXDQ15A2VEB FXDQ20A2VEB FXDQ25A2VEB FXDQ32A2VEB FXDQ40A2VEB FXDQ50A2VEB FXDQ63A2VEB 	Heat Reclaim Ventilator (VKM series) VKM50GBV1 VKM80GBV1 VKM100GBV1 VKM50GBMV1 VKM80GBMV1 VKM100GBMV1 
Conceiled ceiling unit with inverter driven fan FXSQ15A2VEB FXSQ20A2VEB FXSQ25A2VEB FXSQ32A2VEB FXSQ40A2VEB FXSQ50A2VEB FXSQ63A2VEB FXSQ80A2VEB FXSQ100A2VEB FXSQ125A2VEB FXSQ140A2VEB 	BS units BSVQ100P9V1B BSVQ160P9V1B BSVQ250P9V1B BS1Q10A7V1B BS1Q16A7V1B BS1Q25A7V1B 
Ceiling mounted duct type (Middle and high static pressure) FXMQ20P7VEB FXMQ25P7VEB FXMQ32P7VEB FXMQ40P7VEB FXMQ50P7VEB FXMQ63P7VEB FXMQ80P7VEB FXMQ100P7VEB FXMQ125P7VEB 	BS units BS4Q100PV1 BS6Q100PV1 

Ceiling mounted duct type FXMQ200MBVE FXMQ250MBVE 	Multi BS units A-serie BS4Q14AV1 BS6Q14AV1 BS8Q14AV1 BS10Q14AV1 BS12Q14AV1 BS16Q14AV1 
Ceiling suspended type FXHQ32AVEB FXHQ63AVEB FXHQ100AVEB 	

2.2 Outside Units

RWEYQ8, 10T
 8, 10 HP
RWEYQ16, 18, 20T
 16, 18, 20 HP
RWEYQ24, 26, 28, 30T
 24, 26, 28, 30 HP

3. Combination of Outside Units

50Hz

System capacity	Number of units	Module		Outside unit multi connection piping kit (Option)
		8	10	
8 HP	1	●		–
10 HP	1		●	
16 HP	2	●●		Heat pump: BHFP22MA56 Heat recovery: BHFP26MA56
18 HP	2	●	●	
20 HP	2		●●	
24 HP	3	●●●		Heat pump: BHFP22MA84 Heat recovery: BHFP26MA84
26 HP	3	●●	●	
28 HP	3	●	●●	
30 HP	3		●●●	

Note: For multiple connection of 16~30 HP system, an optional Daikin outside unit multi connection piping kit is required.

4. Capacity Range

Outside Units

50Hz

Combination	Single outside unit		Double outside units			Triple outside units			
Capacity range	8 HP	10 HP	16 HP	18 HP	20 HP	24 HP	26 HP	28 HP	30 HP
RWEYQ	8P	10P	16P	18P	20P	24P	26P	28P	30P
Capacity index	200	250	400	450	500	600	650	700	750
Total capacity index of indoor units to be connected	100 ~ 260	125 ~ 325	200 ~ 520	225 ~ 585	250 ~ 650	300 ~ 780	325 ~ 845	350 ~ 910	375 ~ 975
Connectable capacity	50-130% of the rated capacity of the outside unit								
Max. number of connectable indoor units*	36	36	36	36	36	36	36	36	36
Max. number of connectable BS units	36	36	36	36	36	36	36	36	36

* Indoor unit total connection ratio to be min. 50% to max. 130% of outdoor unit index.

Indoor Units

Type		Model Name														Power Supply
Round flow cassette autocleaning function[1] Presence & floor sensor[1]	FXFQ-A		20	25	32	40	50	63		80	100	125				VE
4-way blow ceiling mounted cassette Presence & floor sensor[1]	FXZQ-A	15	20	25	32	40	50									
2-way blow ceiling mounted cassette	FXCQ-A		20	25	32	40	50	63		80		125				
Ceiling mounted corner cassette	FXKQ-MA			25	32	40		63								
Small concealed ceiling unit	FXDQ-M9		20	25												
Slim concealed ceiling unit	FXDQ-A	15	20	25	32	40	50	63								
Conceiled ceiling unit with inverter driven fan	FXSQ-A		20	25	32	40	50	63		80	100	125	140			
Conceiled ceiling unit with inverter driven fan	FXMQ-P7		20	25	32	40	50	63		80	100	125				
Large conceiled ceiling unit	FXMQ-MB[2]													200	250	
Wall mounted unit	FXAQ-P	15	20	25	32	40	50	63								
Ceiling suspended unit	FXHQ-A				32			63			100					
4-way blow ceiling suspended unit	FXUQ-A								71		100	125				
Floor standing unit	FXLQ-P		20	25	32	40	50	63								
Conceiled floor standing unit	FXNQ-A		20	25	32	40	50	63								
AHU	EKEQMCBV, EKEQFCBV						50	63		80	100	125	140	200	250	
Heat reclaim ventilation with DX coil	VKM-G(M)B				50		80			100						
	EKEQMCBA					50	63	80	100	125	140	200	250	400	500	

Note:

[1] Optional.

Part 2
Refrigerant Circuit

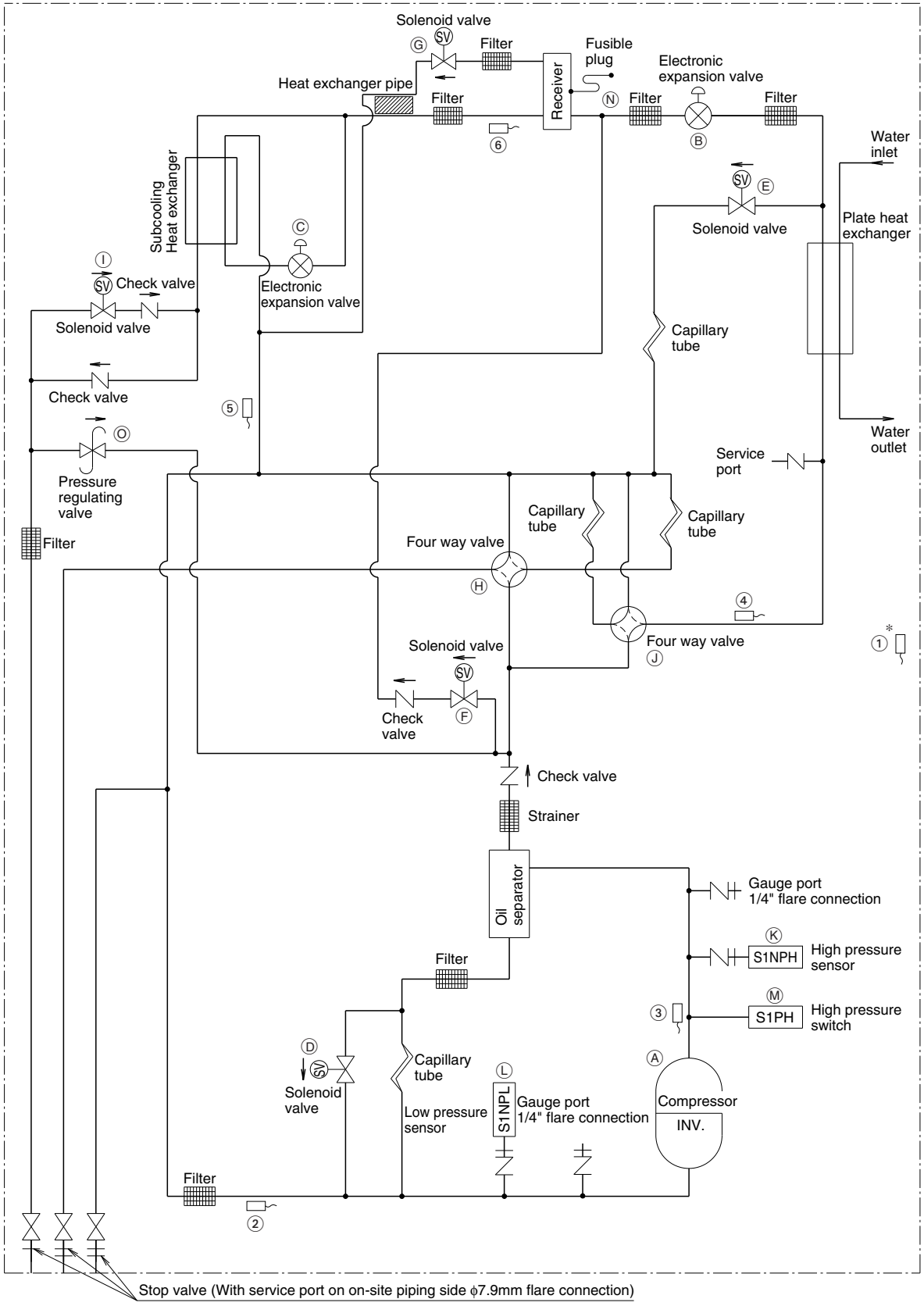
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1. Refrigerant Circuit

1.1 Outside Unit

■ **RWEYQ8T, 10T**

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. RWEYQ8P, 10P: 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 condenser : High pressure control
C	Y3E	Electronic expansion valve (Subcooling)	PI control is applied to keep the outlet superheated degree of subcooling heat exchanger constant.
D	Y1S	Solenoid valve (Hot gas)	Used to prevent the low pressure from transient falling.
E	Y2S	Solenoid valve (Oil return of water heat exchanger)	Used to collect the refrigerant oil from water heat exchanger.
F	Y3S	Solenoid valve (Receiver gas charging)	Used to maintain high pressure while in cooling at low water temperature. And also used to prevent the accumulation of refrigerant in non-operating outside units in the case of multiple outside unit system.
G	Y4S	Solenoid valve (Receiver gas discharging)	Used to collect refrigerant to receiver.
H	Y5S	Four way valve (Main)	Changes the operation into cooling, heating or simultaneous cooling/heating operation.
I	Y6S	Solenoid valve (Non-operating unit liquid pipe closing)	Used to prevent the accumulation of refrigerant in non-operating outside units in the case of multiple outside unit system.
J	Y7S	Four way valve (Sub)	Changes the water heat exchanger into condenser or evaporator.
K	S1NPH	High pressure sensor	Used to detect high pressure.
L	S1NPL	Low pressure sensor	Used to detect low pressure.
M	S1PH	High pressure switch	In order to prevent the increase of high pressure when an error occurs, this switch is activated at high pressure of 4.0 MPa or more to stop the compressor operation.
N	–	Fusible plug	In order to prevent 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 70 - 75°C to release the pressure into the atmosphere.
O	–	Pressure regulating valve (Liquid pipe to discharge pipe)	This valve opens at a pressure of 4.0 MPa 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	• Used for outside unit fan speed control. • Used for inverter radiation fin temperature control. • Used for pressure difference control.
2	R2T	Suction pipe thermistor	Used to detect suction pipe temperature, keep the suction superheated degree constant in heating, and others.
3	R3T	Discharge pipe thermistor	Used to detect discharge pipe temperature, make the temperature protection control of compressor, and others.
4	R4T	Heat exchanger gas pipe thermistor	Used to detect gas pipe temperature of water heat exchanger.
5	R5T	Subcooling heat exchanger outlet pipe thermistor	Used to detect gas pipe temperature on the evaporating side of sub-cooling heat exchanger, keep the superheated degree at the outlet of subcooling heat exchanger constant, and others.
6	R6T	Receiver outlet liquid pipe thermistor	Used to detect receiver outlet liquid pipe temperature, prevent the drift between outside units while in heating in the case of multiple outside unit system, and others.



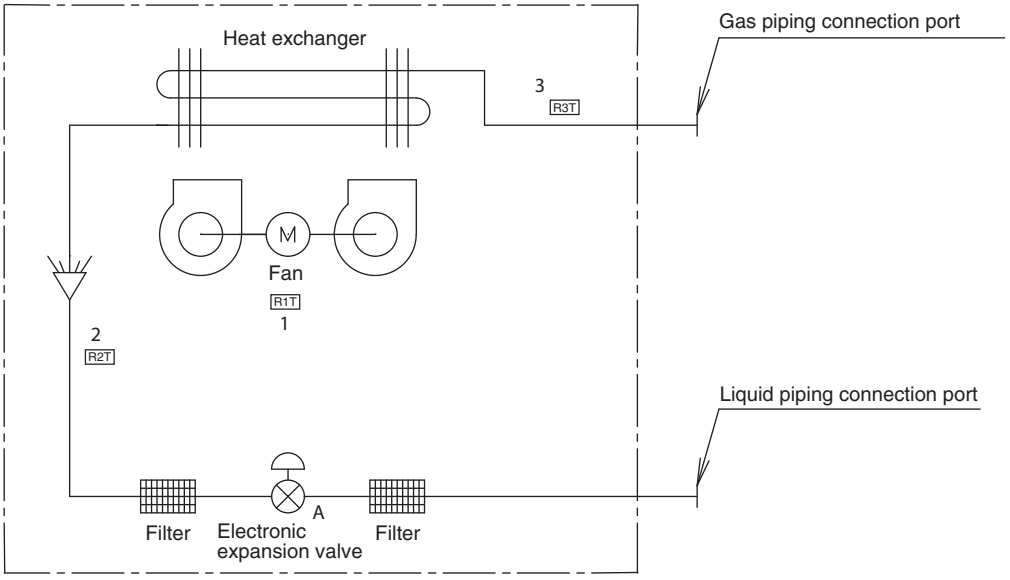
∗ This thermistor is near the el. compo. box.

C: 4D048290C

1.2 Indoor Unit

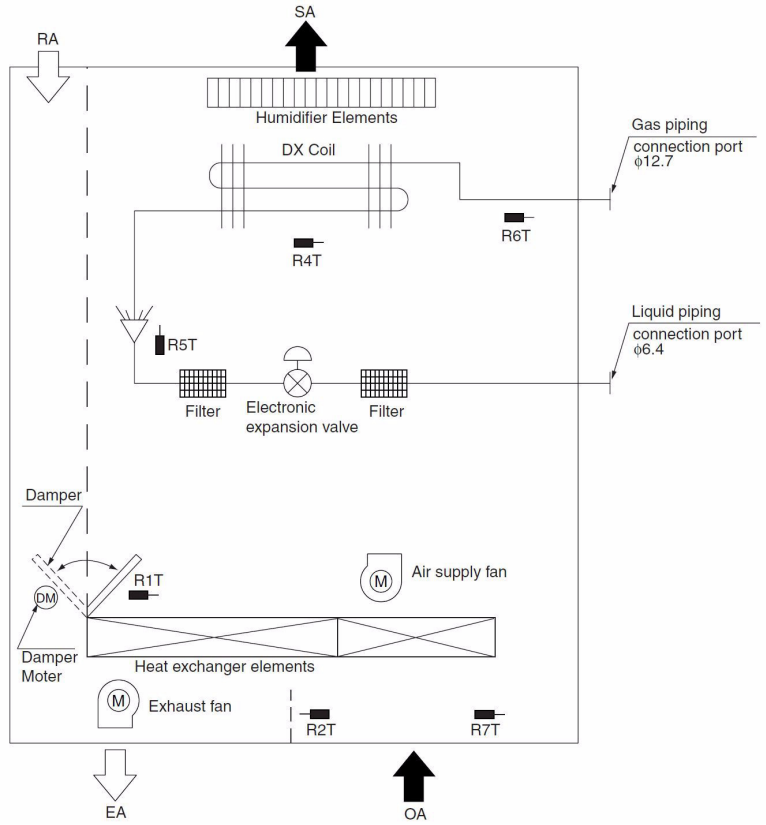
■ **FXFQ, FXZQ, FXCQ, FXKQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ, FXDQ, FXSQ**

No. in Refrigerant System Diagram	Electric Symbol	Name	Major Function
Ⓐ	Y1E	Electronic expansion valve	Used for gas superheated degree control while in cooling or subcooled degree control while in heating.
①	R1T	Suction air thermistor	Used for thermostat control.
②	R2T	Liquid pipe thermistor	Used for gas superheated degree control while in cooling or subcooled degree control while in heating.
③	R3T	Gas pipe thermistor	Used for gas superheated degree control while in cooling.



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■ Piping Diagram VKM - G(M)B



R1T: Thermistor for indoor air
R2T: Thermistor for outdoor air temperature
R4T: Thermistor for coil indoor air
R5T: Thermistor for coil liquid pipe temperature
R6T: Thermistor for coil gas pipe temperature
R7T: Thermistor for coil outdoor air

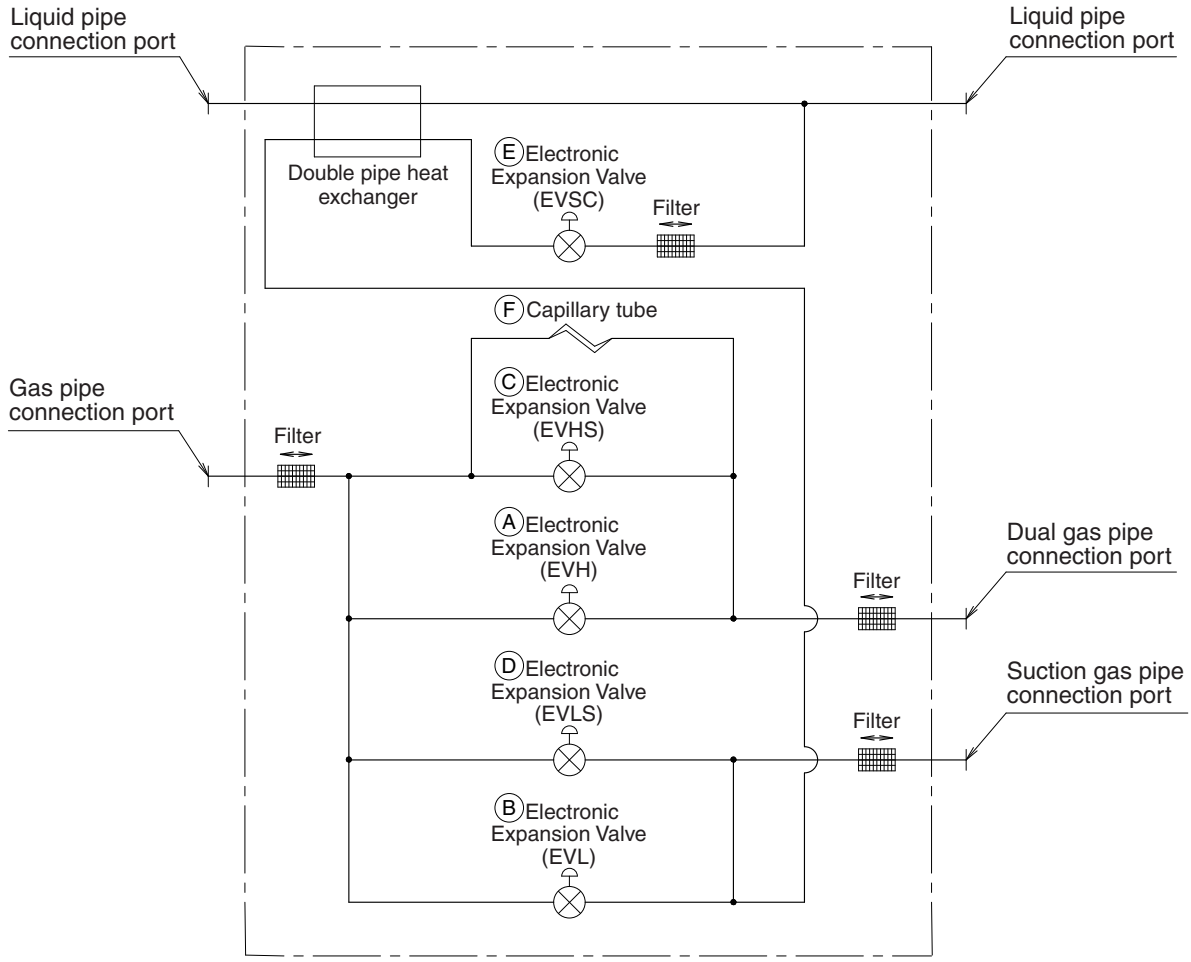
Note: Humidifier element only in VKM-GMB.

1.3 BS Unit VRV IV Heat Recovery

■ **BSVQ100, 160, 250PV1**

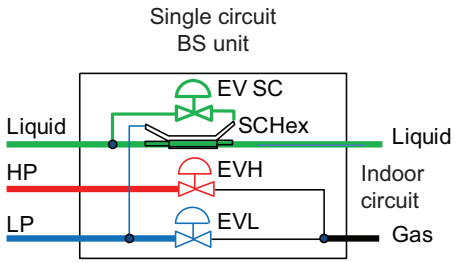
No. in Refrigerant System Diagram	Electric Symbol	Name	Major Function
A	Y4E	Electronic expansion valve	Opens while in heating or all indoor units are in cooling. (Max : 760pls)
B	Y5E	Electronic expansion valve	Opens while in cooling. (Max : 760pls)
C	Y2E	Electronic expansion valve	Opens while in heating or all indoor units are in cooling. (Max : 480pls)
D	Y3E	Electronic expansion valve	Opens while in cooling. (Max : 480pls)
E	Y1E	Electronic expansion valve	In simultaneous cooling and heating, it is used to subcooling liquid refrigerants when an indoor unit downstream of this BS unit is in heating. (Max : 480pls)
F	—	Capillary tube	Used to bypass high pressure gas to low pressure side to protect “Refrigerant accumulation” in dual pressure gas pipes.

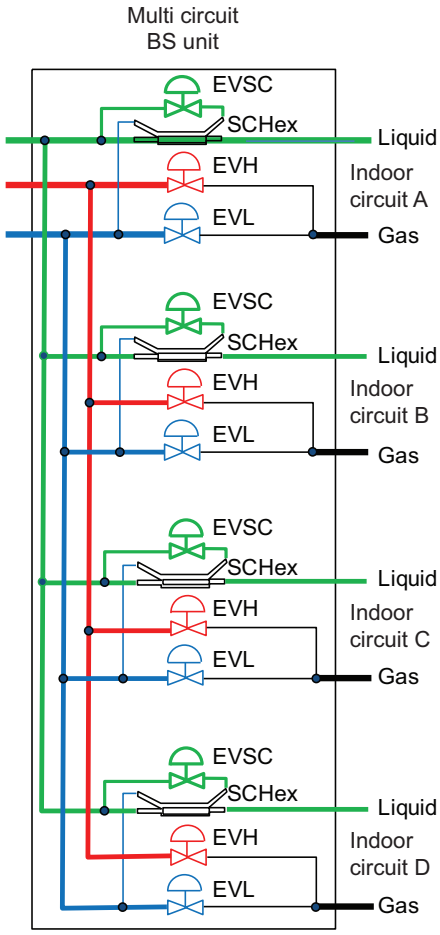
Note: Factory setting of all electronic expansion valve opening : 60pls



Note: BSV4Q100P contains 4 sets of BSVQ100P.
BSV6Q100P contains 6 sets of BSVQ100P.

1.4 General built up VRV IV BS unit





Each indoor circuit offers the possibility to connect the indoor gas pipe:

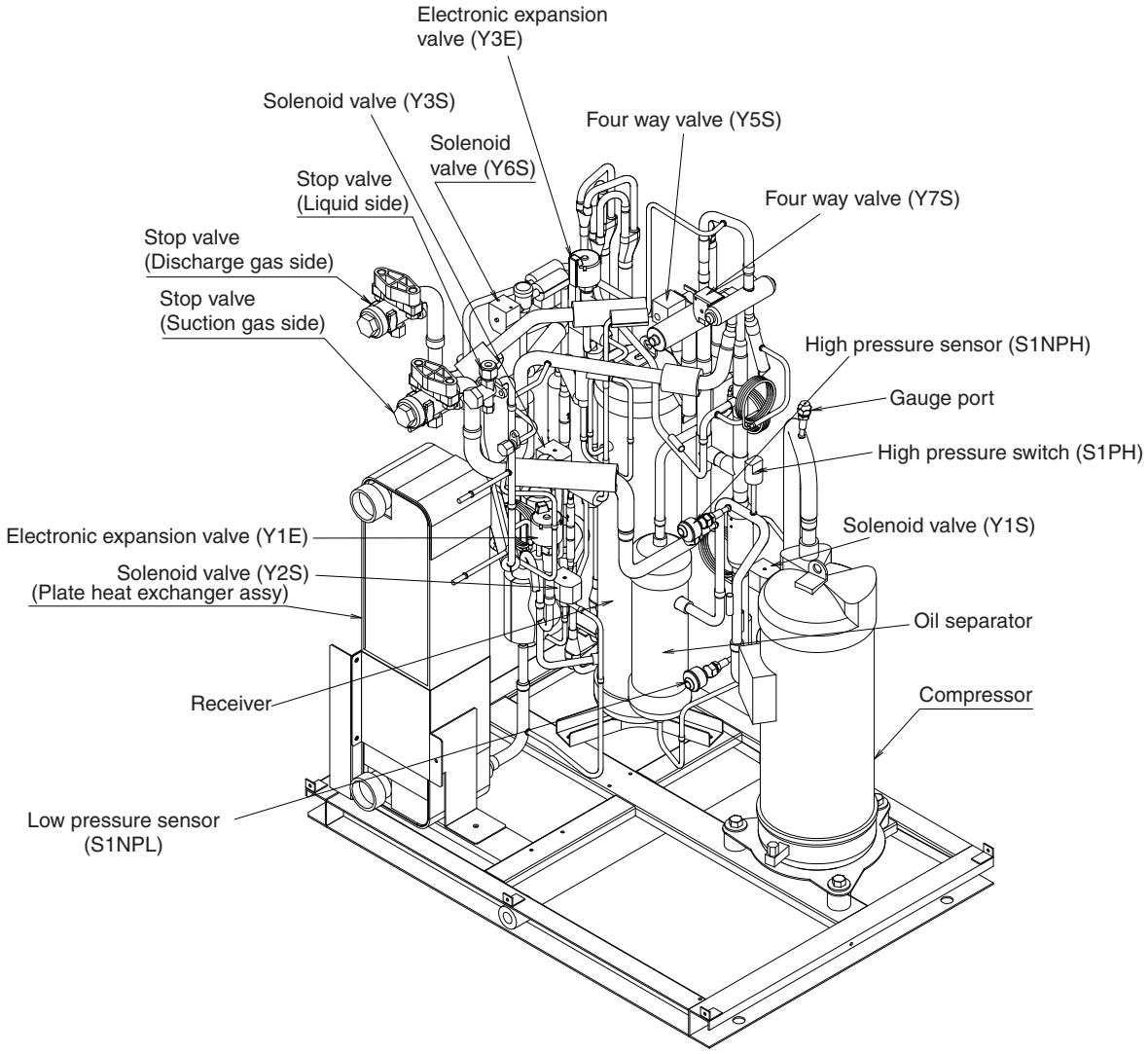
- To the suction side of outdoor unit if indoor unit is set into cooling mode and if the EVL is fully open (after equalization is finished).
- To the discharge side of outdoor unit if indoor unit is set to heating mode and the EVH is fully open (after equalization is finished).
- When indoor unit requires to change over between cooling and heating (by automatic change-over, or by changing on indoor remote controller), the pressure will gradually be changed to the required pressure side; to high pressure if heating is required, to low pressure if cooling is required. The change over is set in the outdoor unit field setting [2-71] (default 5 minutes). Sequence of change over shown by graphs on next page.

The liquid pipe inside the BS unit:

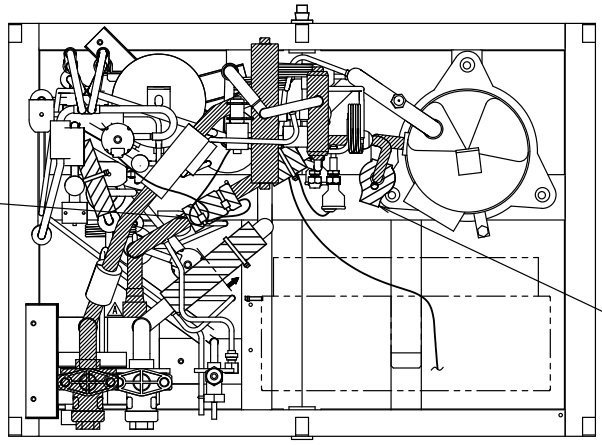
- Is not shut off.
- In specific conditions during heat recovery mode (when simultaneous cooling and heating thermostat-on indoor) the internal SCHex (sub-cool heat exchanger) can be used to use limited amount of liquid returning from indoor unit in heating mode, to produce certain degree of (extra) sub-cool before flowing towards the liquid pipe for indoor in cooling thermostat-on.
  Purpose:
  - To improve cooling capacity.
  - Limit refrigerant noise at indoor unit when expansion valve operating in cooling mode.
- The opening degree of EVSC (expansion valve sub-cool) is controlled by outdoor unit DSH (discharge superheat) = compressor discharge temperature – T_c.

2. Functional Parts Layout

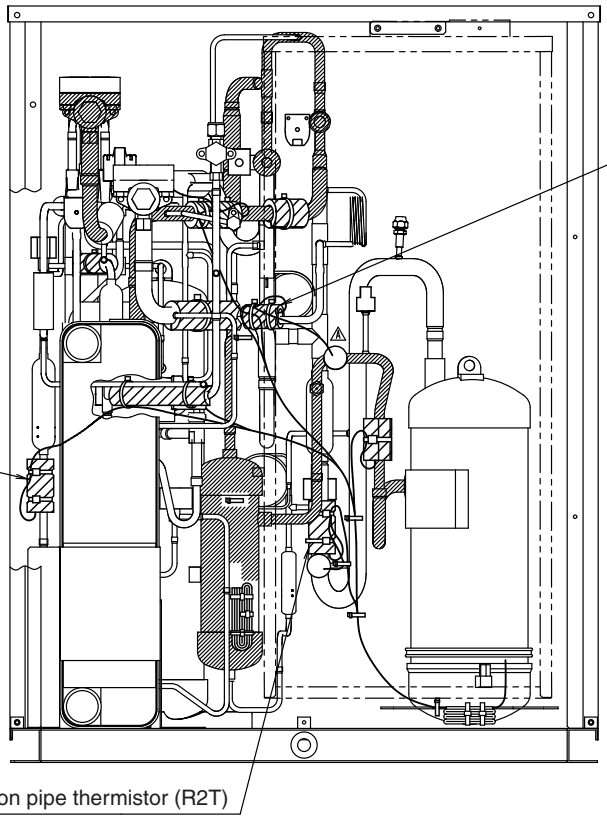
■ **RWEYQ8P, 10T**



Top View



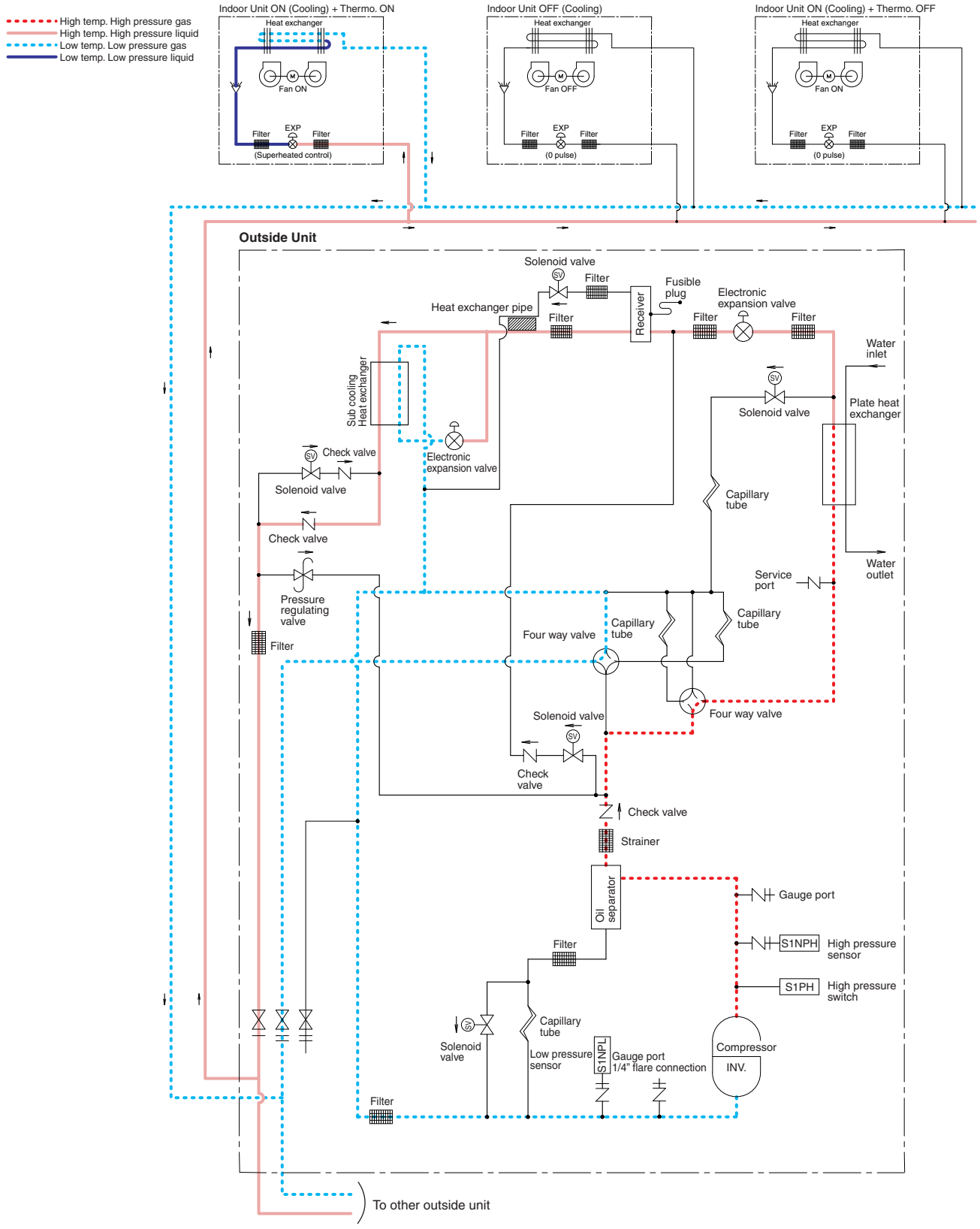
Front View



3. Refrigerant Flow for Each Operation Mode

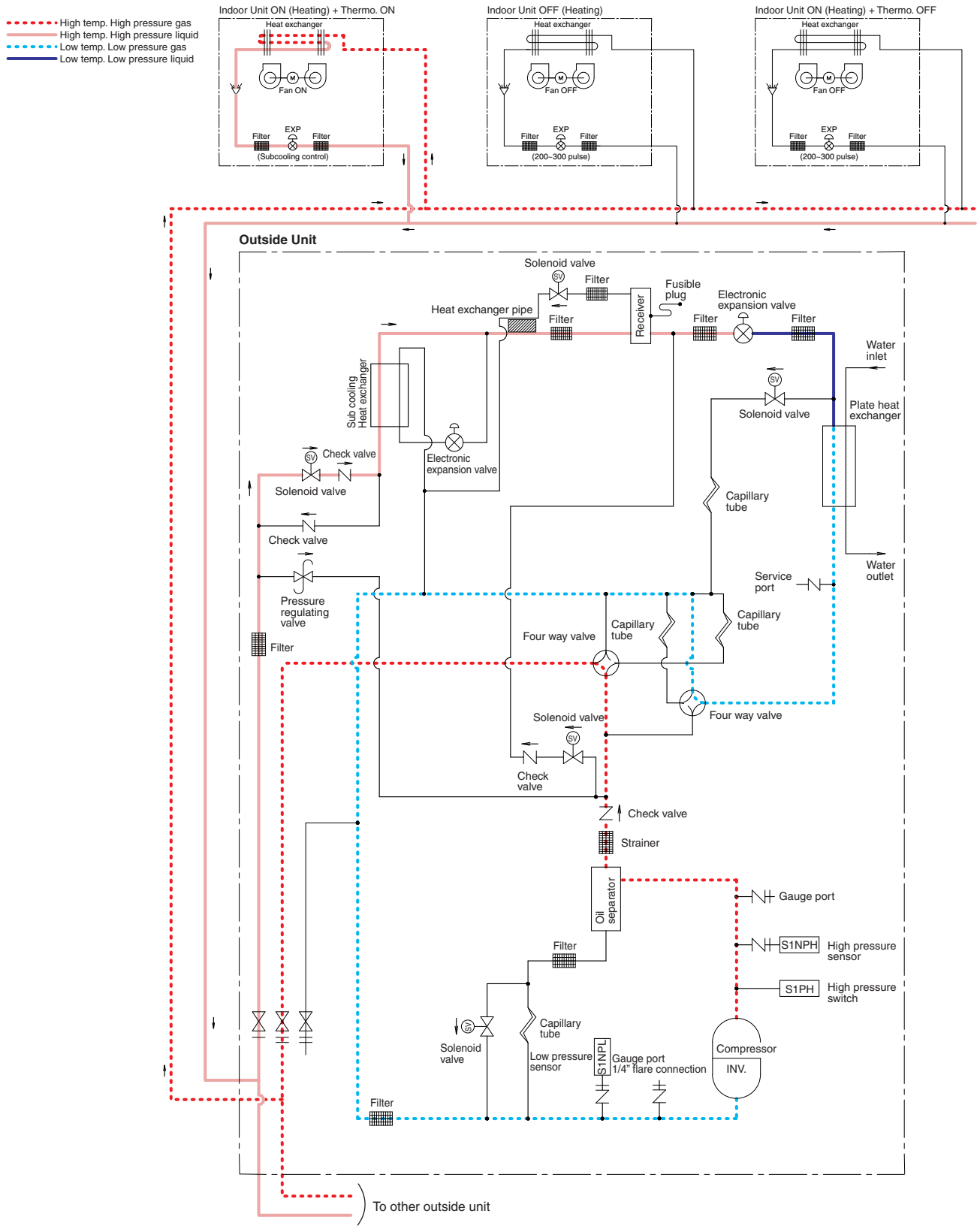
3.1 In Case of Heat Pump Connection

A. Cooling Operation



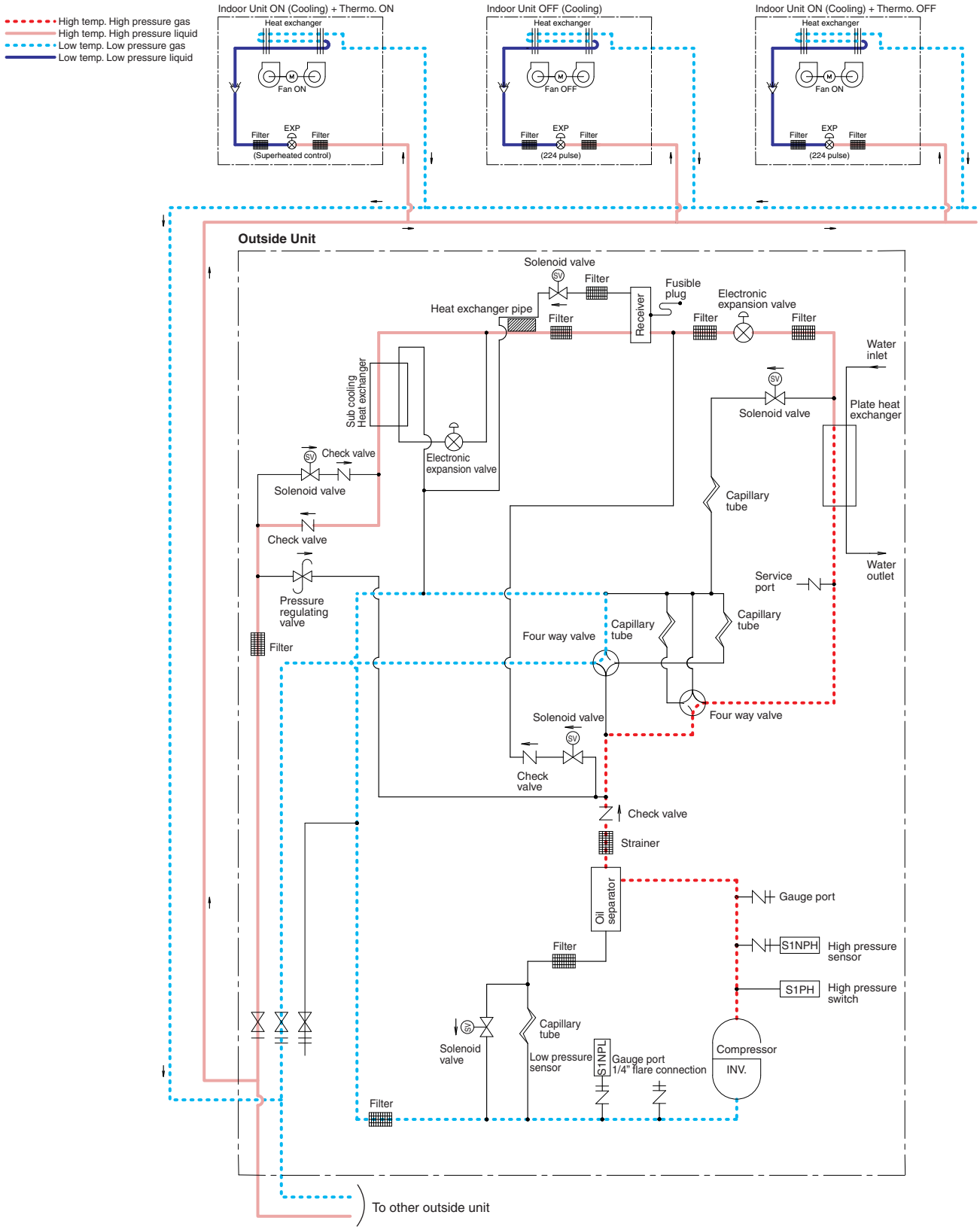
4D048290C

B. Heating Operation



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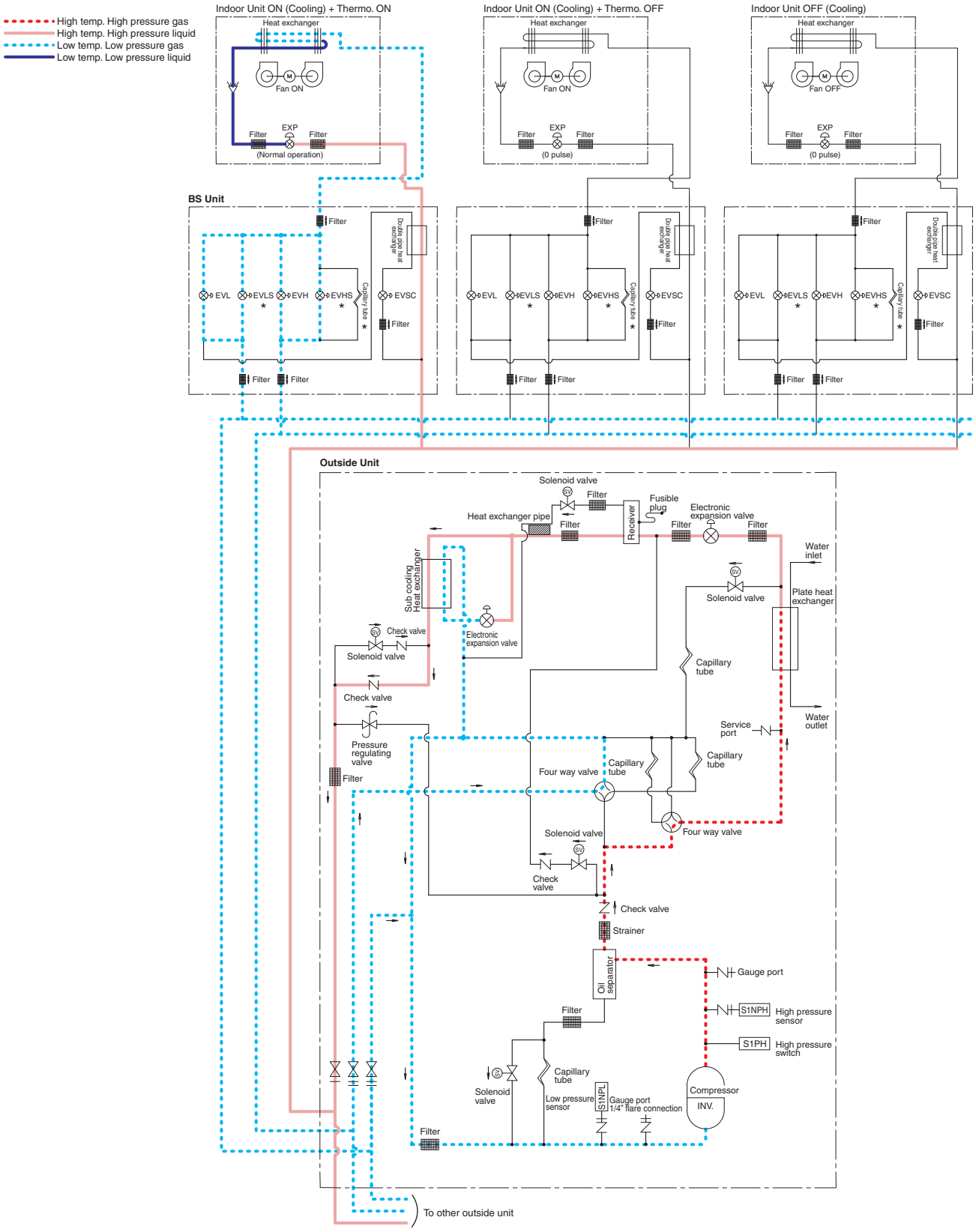
C. Oil Return Operation



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3.2 In Case of Heat Recovery Connection (Single Outside Unit Installation)

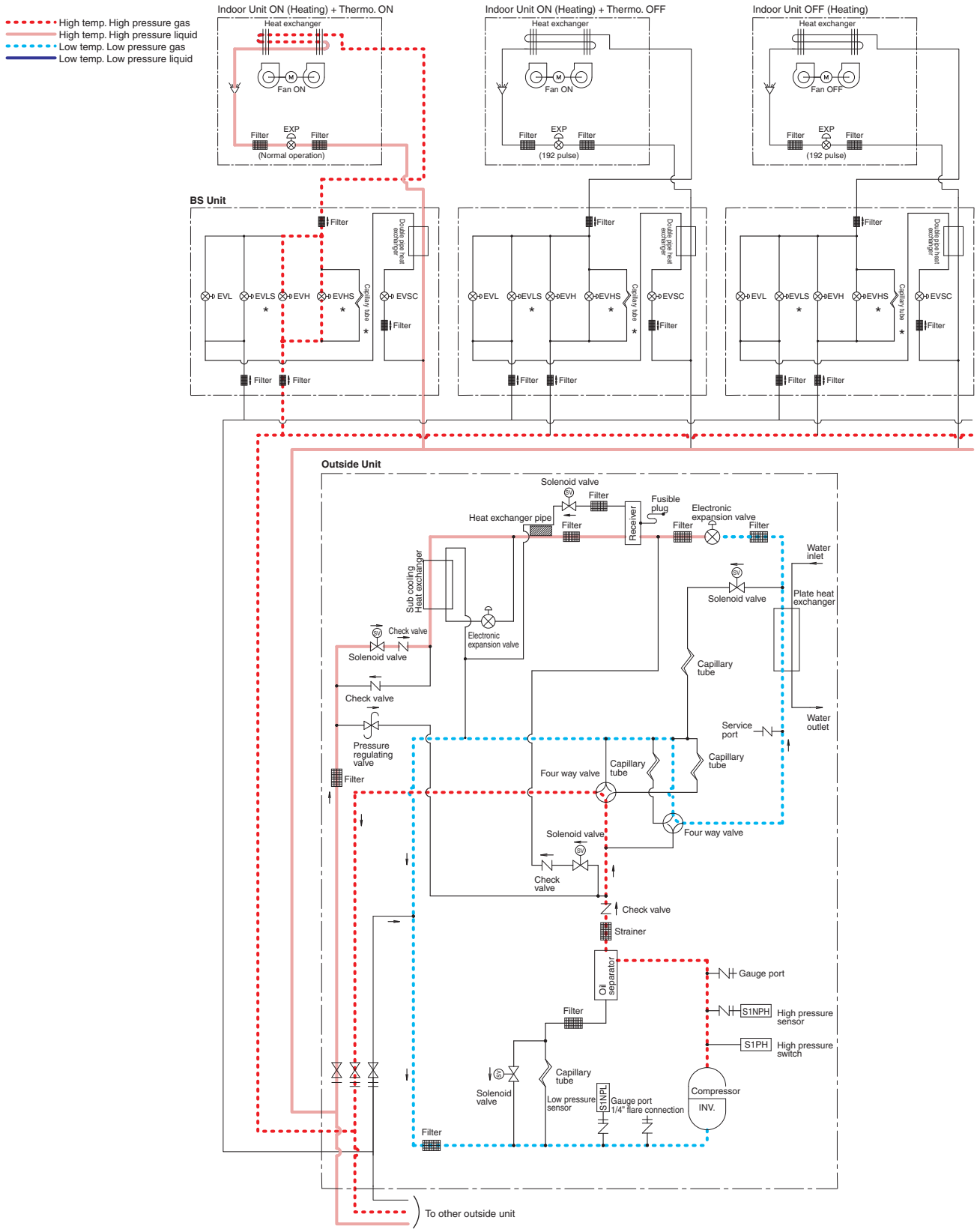
A. Cooling Operation



4D048290C

Note: * Not present in BS..Q..AV1

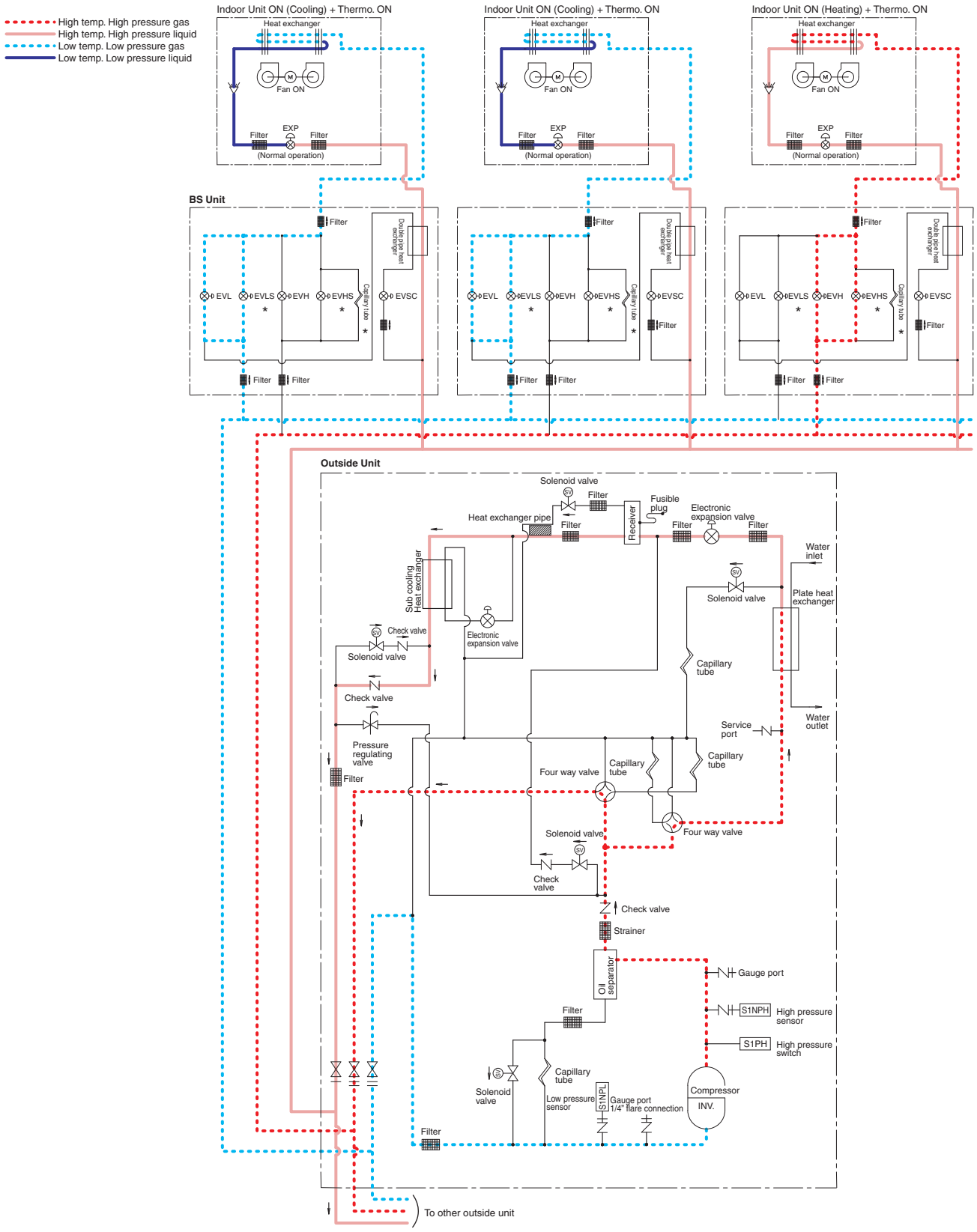
B. Heating Operation



4D048290C

Note: * Not present in BS..Q..AV1

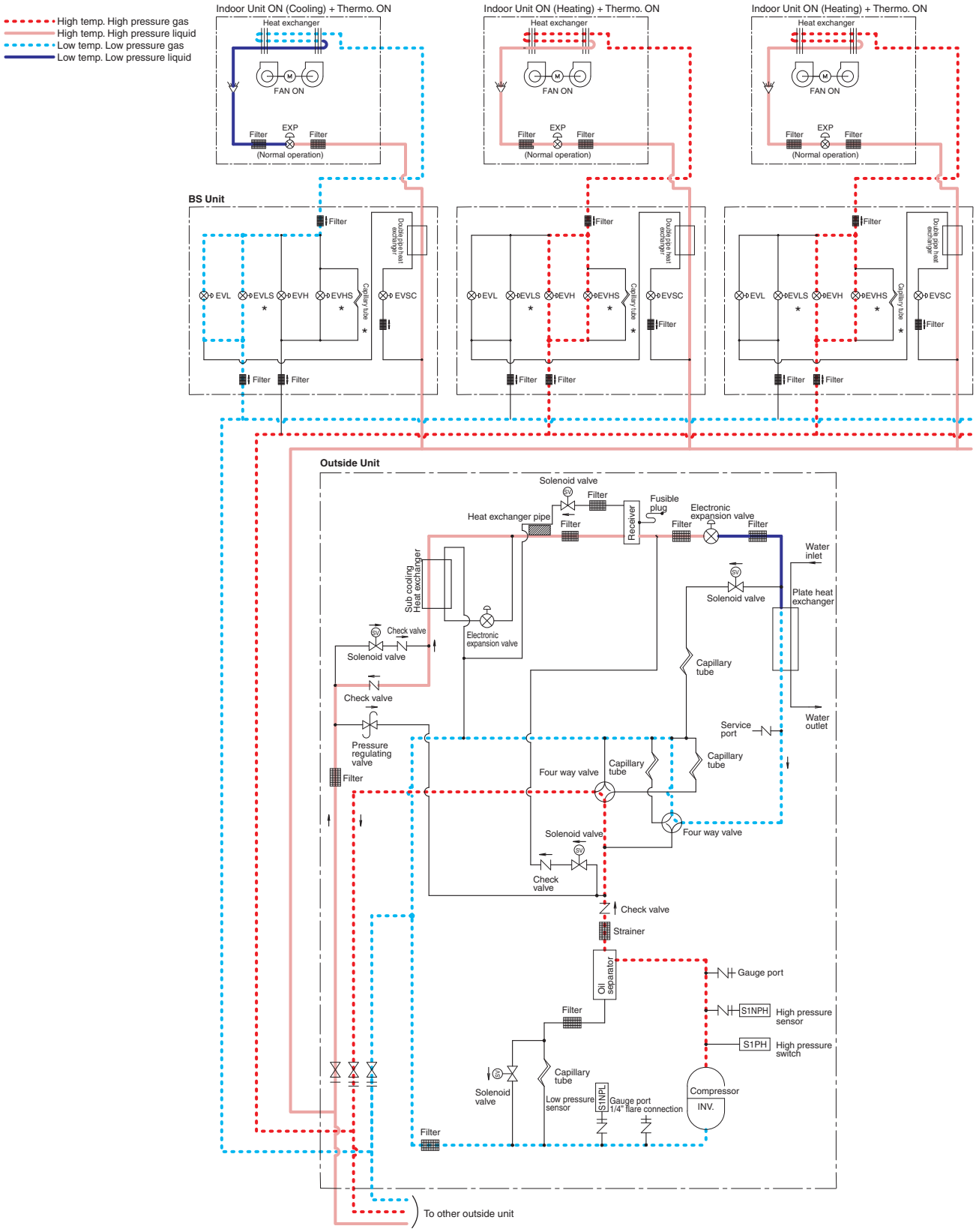
C. Heating and simultaneous cooling/heating operation (When the outside water cooled heat exchanger is used as condenser.)



4D048290C

Note: * Not present in BS..Q..AV1

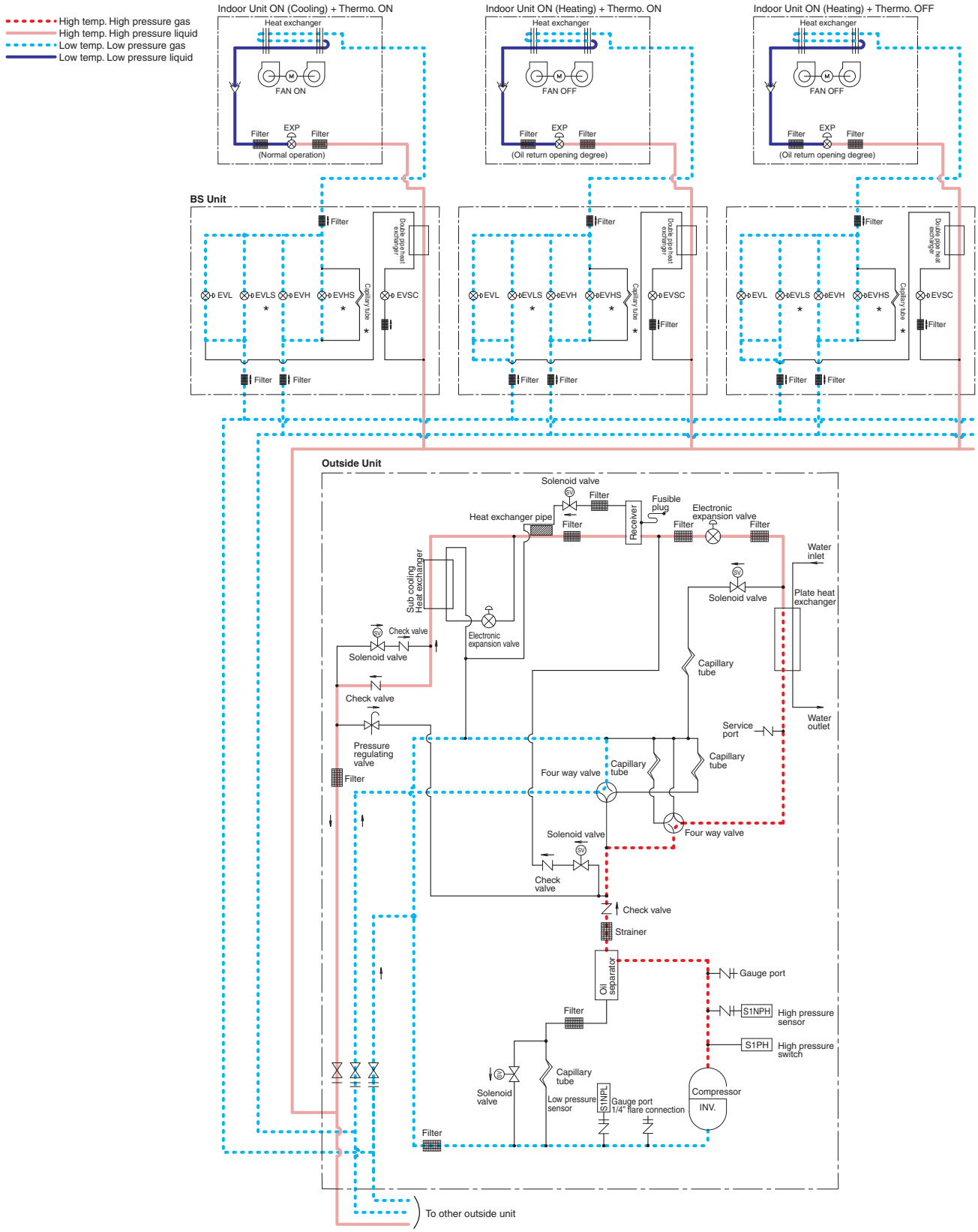
D. Heating and simultaneous cooling/heating operation (When the outside water cooled heat exchanger is used as evaporator.)
(In case there are indoor units operating with cooling thermostat “ON”.)



4D048290C

Note: * Not present in BS..Q..AV1

E. Oil Return Operation at Simultaneous Cooling/Heating Operation



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Note: * Not present in BS..Q..AV1

Part 3
Remote Controller

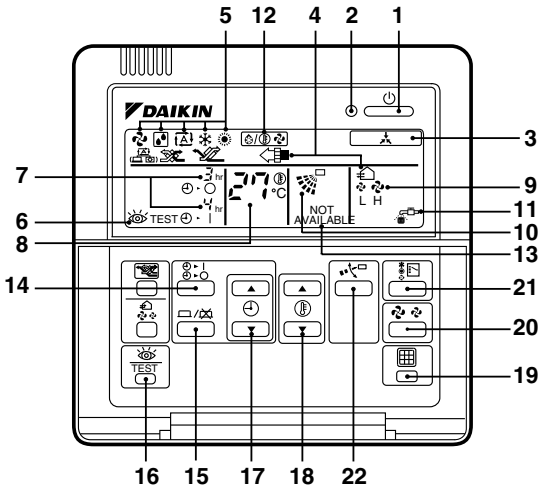
1. Remote Controller 27
1.1 Wired Remote Controller 27
1.2 Wireless Remote Controller 35
1.3 Service Mode 38
1.4 Inspection Mode 42

1. Remote Controller

1.1 Wired Remote Controller

1.1.1 Names and Functions

■ **BRC1C Type**



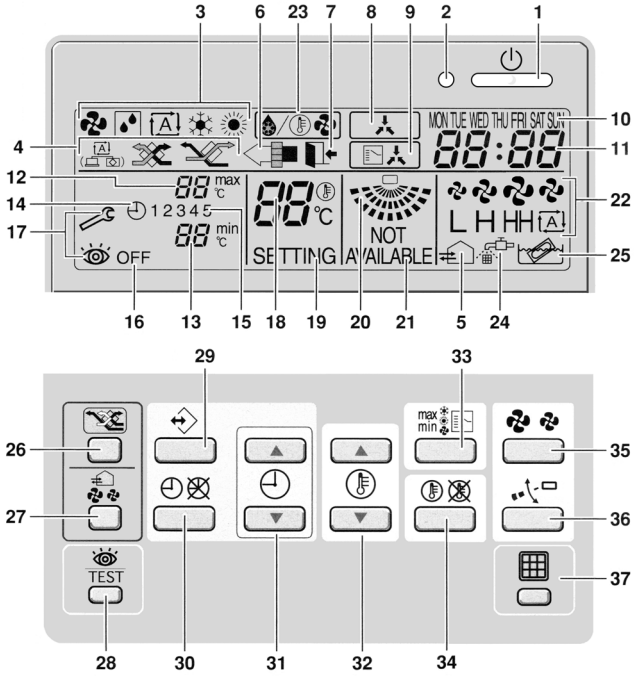
1	**ON/OFF BUTTON** Press the button and the system will start. Press the button again and the system will stop.
2	**OPERATION LAMP (RED)** The lamp lights up during operation.
3	**DISPLAY " " (UNDER CENTRALIZED CONTROL)** When this display shows, the system is UNDER CENTRALIZED CONTROL.
4	**DISPLAY " " " " " " " " (VENTILATION/AIR CLEANING)** This display shows that the total heat exchange and the air cleaning unit are in operation (These are optional accessories).
5	**DISPLAY " " " " " " " " " " (OPERATION MODE)** This display shows the current OPERATION MODE. For cooling only type, " " (Auto) and " " (Heating) are not installed.
6	**DISPLAY " TEST " (INSPECTION/TEST OPERATION)** When the INSPECTION/TEST OPERATION BUTTON is pressed, the display shows the system mode is in.
7	**DISPLAY " " (PROGRAMMED TIME)** This display shows the PROGRAMMED TIME of the system start or stop.
8	**DISPLAY " " (SET TEMPERATURE)** This display shows the set temperature.
9	**DISPLAY " " (FAN SPEED)** This display shows the set fan speed.
10	**DISPLAY " " (AIRFLOW FLAP)**
11	**DISPLAY " "(TIME TO CLEAN AIR FILTER)**
12	**DISPLAY " " (DEFROST)**
13	**NON-FUNCTIONING DISPLAY** If that particular function is not available, pressing the button may display the words "NOT AVAILABLE" for a few seconds. When running multiple units simultaneously the "NOT AVAILABLE" message will only be appear if none of the indoor units is equipped with the function. If even 1 unit is equipped with the function, the display will not appear.
14	**TIMER MODE START/STOP BUTTON**
15	**TIMER ON/OFF BUTTON**
16	**INSPECTION/TEST OPERATION BUTTON** This button is used only by qualified service persons for maintenance purposes.
17	**PROGRAMMING TIME BUTTON** Use this button for programming "START and/or STOP" time.
18	**TEMPERATURE SETTING BUTTON** Use this button for SETTING TEMPERATURE.
19	**FILTER SIGN RESET BUTTON**
20	**FAN SPEED CONTROL BUTTON** Press this button to select the fan speed, HIGH or LOW, of your choice.
21	**OPERATION MODE SELECTOR BUTTON** Press this button to select OPERATION MODE.
22	**AIRFLOW DIRECTION ADJUST BUTTON**

NOTE

- For the sake of explanation, all indications are shown on the display in the above figure contrary to actual running situations.

3PA59583-16Z

■ **BRC1D Type**



1 ON/OFF BUTTON

Press the ON/OFF button to start or stop the system.

2 OPERATION LAMP

The operation lamp lights up during operation or blinks if an error occurs.

3 OPERATION MODE ICON

These icons indicate the current operation mode (FAN, DRY, AUTOMATIC, COOLING, HEATING).

4 VENTILATION MODE ICON

These icons indicate the current ventilation mode (Heat reclaim ventilator only) (AUTOMATIC, HEAT EXCHANGE, BYPASS).

5 VENTILATION ICON

The ventilation icon appears when the ventilation is adjusted with the ventilation amount button (Heat reclaim ventilator only). Simultaneously, the ventilation amount is indicated by the fan speed icon (see 22).

6 AIR CLEANING ICON

This icon indicates that the air cleaning unit (option) is operational.

7 LEAVE HOME ICON

The leave home icon shows the status of the leave home function.

ON	Leave home is enabled
BLINKING	Leave home is active
OFF	Leave home is disabled

8 EXTERNAL CONTROL ICON

This icon indicates that another controller with higher priority is controlling or disabling your installation.

9 CHANGE-OVER UNDER CENTRALISED CONTROL ICON

This icon indicates that the change-over of the installation is under centralised control assigned to another indoor unit or optional cool/heat selector connected to the outside unit (= master remote controller).

10 DAY OF THE WEEK INDICATOR

MON TUE WED THU FRI SAT SUN

The day of the week indicator shows the current week day (or the set day when reading or programming the schedule timer).

11 CLOCK DISPLAY 88:88

The clock display indicates the current time (or the action time when reading or programming the schedule timer).

12 MAXIMUM SET TEMPERATURE 88 max

The maximum set temperature indicates the maximum set temperature when in limit operation.

13 MINIMUM SET TEMPERATURE 88 min

The minimum set temperature indicates the minimum set temperature when in limit operation.

14 SCHEDULE TIMER ICON

This icon indicates that the schedule timer is enabled.

3P107422-3D

15 ACTION ICONS 1 2 3 4 5

These icons indicate the actions for each day of the schedule timer.

16 OFF ICON OFF

This icon indicates that the OFF action is selected when programming the schedule timer.

17 INSPECTION REQUIRED and

These icons indicate that inspection is required. Consult your installer.

18 SET TEMPERATURE DISPLAY

This indicates the current set temperature of the installation (not shown in LIMIT operation or in FAN or DRY mode).

19 SETTING SETTING

Not used, for service purposes only.

20 AIRFLOW DIRECTION ICON

This icon indicates the airflow direction (only for installations with motorised airflow flaps).

21 NOT AVAILABLE NOT AVAILABLE

NOT AVAILABLE is displayed whenever a non-installed option is addressed or a function is not available.

22 FAN SPEED ICON L H HH A

This icon indicates the set fan speed.

23 DEFROST/HOTSTART MODE ICON

This icon indicates that the defrost/hotstart mode is active.

24 AIR FILTER CLEANING TIME ICON

This icon indicates the air filter must be cleaned. Refer to the manual of the indoor unit.

25 ELEMENT CLEANING TIME ICON

This icon indicates the element must be cleaned (Heat reclaim ventilator only).

26 VENTILATION MODE BUTTON

The ventilation mode button operates the Heat reclaim ventilator ; refer to the Heat reclaim ventilator manual for more details.

27 VENTILATION AMOUNT BUTTON

This button sets the ventilation amount; refer to the Heat reclaim ventilator manual for more details.

28 INSPECTION/TEST OPERATION BUTTON TEST

Not used, for service purposes only.

29 PROGRAMMING BUTTON

This button is a multi-purpose button.

Depending on the previous manipulations of the user, the programming button can have various functions.

30 SCHEDULE TIMER BUTTON

This button enables or disables the schedule timer.

31 TIME ADJUST BUTTON

These buttons are used to adjust the clock or, when in programming mode, to adjust the programmed action time. Both buttons have an auto-repeat function.

32 TEMPERATURE ADJUST BUTTONS

These buttons are used to adjust the current setpoint or, when in programming mode, to adjust the programmed setpoint temperature (step = 1˚C). Both buttons are also used to adjust the day of the week.

33 OPERATION CHANGE/MIN-MAX BUTTON max min

This button is a multi-purpose button. Depending on the previous manipulations of the user, it can have following functions.

1 select the operation mode of the installation (FAN, DRY, AUTOMATIC, COOLING, HEATING)

2 toggle between minimum temperature and maximum temperature when in limit operation

34 SETPOINT/LIMIT BUTTON

This button toggles between setpoint, limit operation or OFF (programming mode only).

35 FAN SPEED BUTTON

This button toggles between L (Low), H (High), HH (very High), A (Automatic).

36 AIRFLOW DIRECTION ADJUST BUTTON

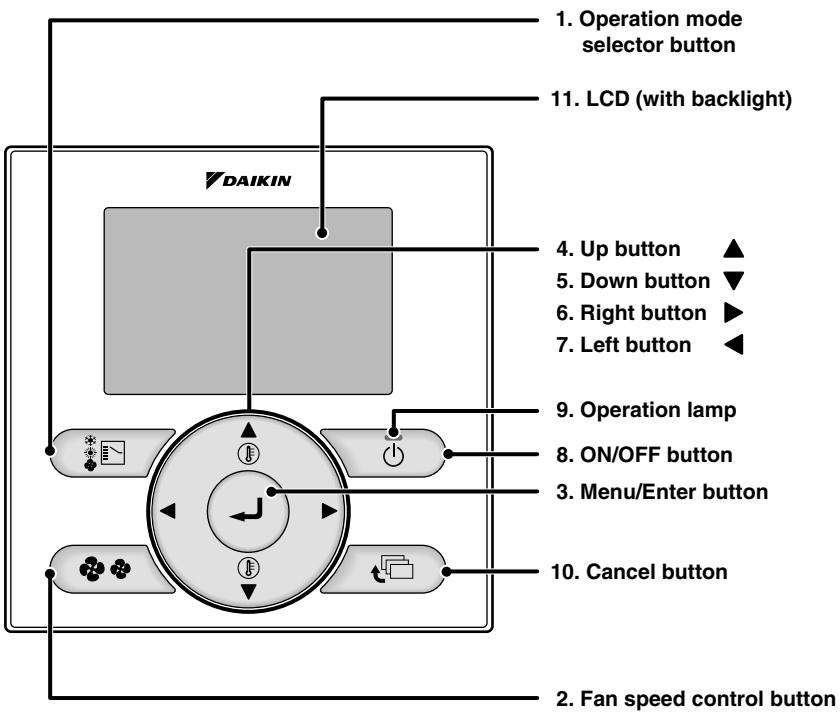
This button enables to adjust the airflow direction.

37 AIR FILTER CLEANING TIME ICON RESET BUTTON

This button is used to reset the air filter cleaning time icon.

3P107422-3D

■ **BRC1E51**



1. Operation mode selector button

■ Press this button to select the operation mode of your preference.
∗Available modes vary with the connecting model.

2. Fan speed control button

■ Press this button to select the fan speed of your preference.
∗Available fan speed vary with the connecting model.

3. Menu/Enter button

■ Used to indicate the main menu.
■ Used to enter the setting item selected.

4. Up button ▲ (Be sure to press the part with the symbol ▲)

■ Used to raise the set temperature.
■ The next items on the upper side will be highlighted.
(The highlighted items will be scrolled continuously when the button is kept pressed.)
■ Used to change the item selected.

5. Down button ▼ (Be sure to press the part with the symbol ▼)

■ Used to lower the set temperature.
■ The next items on the lower side will be highlighted.
(The highlighted items will be scrolled continuously when the button is kept pressed.)
■ Used to change the item selected.

6. Right button ▶ (Be sure to press the part with the symbol ▶)

- Used to highlight the next items on the right-hand side.
- Each screen is scrolled in the right-hand direction.
- Home leave settings are enabled with this button kept pressed for at least 4 seconds.

7. Left button ◀ (Be sure to press the part with the symbol ◀)

- Used to highlight the next items on the left-hand side.
- Each screen is scrolled in the left-hand direction.
- Home leave settings are enabled with this button kept pressed for at least 4 seconds.

8. ON/OFF button

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

9. Operation lamp (Green)

- This lamp lights up during 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 light for approximately 30 seconds by pressing any operation button. Operate buttons excluding the ON/OFF button while the backlight is lit.
- If 2 remote controllers are used to control a single indoor unit, the backlight of the remote controller operated earlier than the other one will be lit.

1.1.2 MAIN/SUB Setting when Using 2 Remote Controllers

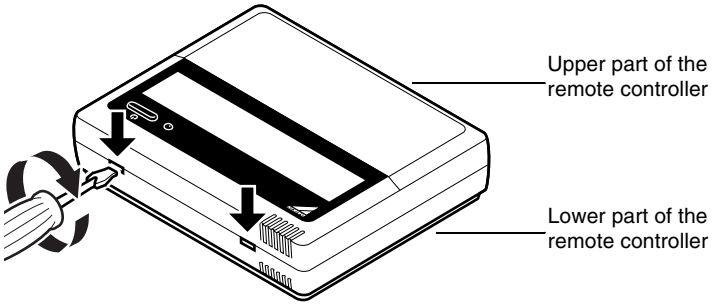
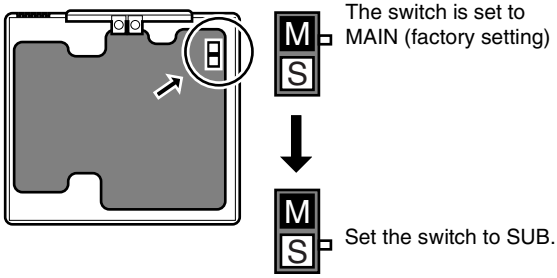
Situation

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

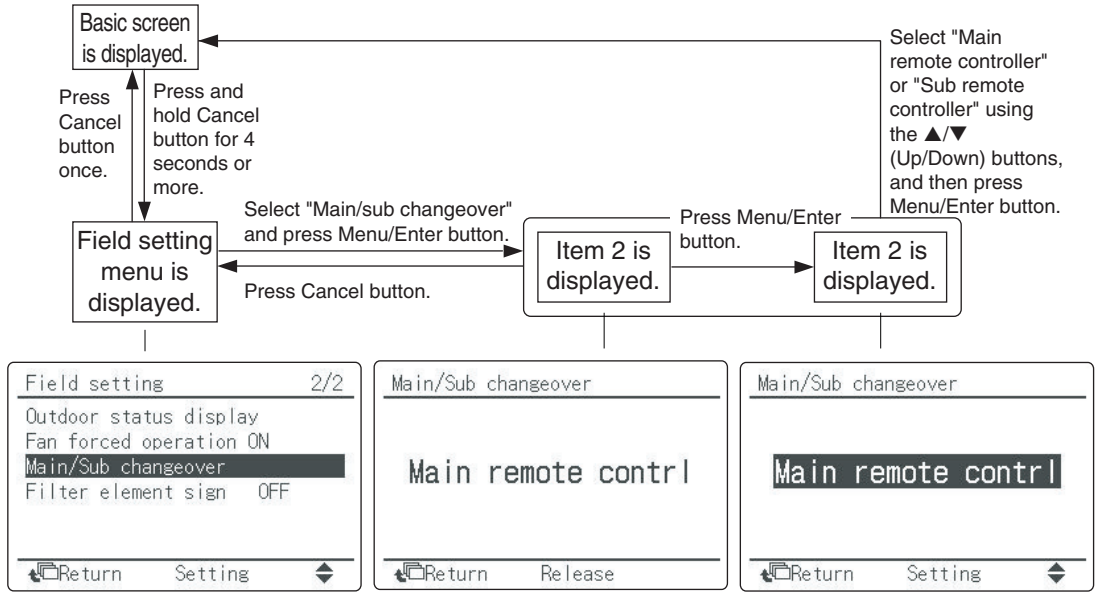
The remote controllers are factory setting to MAIN, so you only have to change 1 remote controller from MAIN to SUB. To change a remote controller from MAIN to SUB, proceed as follows:

■ **BRC1C Type/BRC1D Type**

Step	Action
1	Insert a flathead screwdriver into the recess between the upper and lower part of the remote controller, as shown in the illustration below. Gently pry off the upper part of the controller, working from the 2 possible positions. 
2	Turn the MAIN/SUB changeover switch on the PCB to “S”. 

■ **BRC1E61**

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.



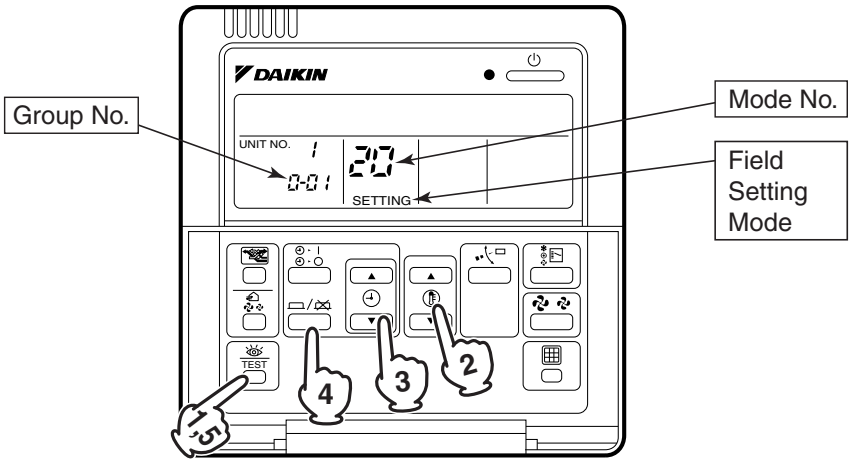
1.1.3 Centralized Control Group No. Setting

■ **BRC1C Type/BRC1D Type**

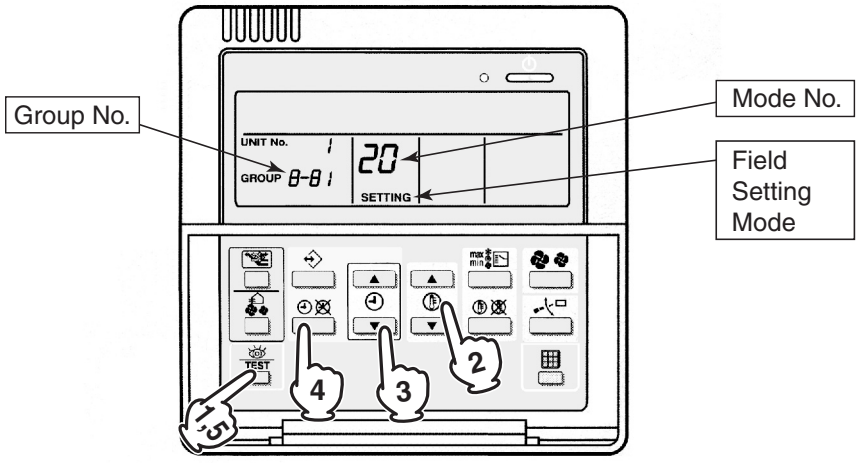
In order to conduct the centralized remote control using the centralized remote controller and the unified ON/OFF controller, Group No. settings should be made by group using the operating remote controller.
Make Group No. settings for centralized remote control using the operating remote controller.

1. While in normal mode, press and hold the " " switch for a period of 4 seconds or more to set the system to "Field setting mode".
2. Select the Mode No. "20" with the " " button.
3. Use the " " button to select the group No. for each group.
   (Group numbers increase in the order of 1-00, 1-01, ... 1-15, 2-00, ... 4-15.)
4. Press " " or " " to set the selected group No.
5. Press " " to return to the Normal Mode.

BRC1C Type



BRC1D Type



Note:

■ For setting group No. of heat reclaim ventilator and wiring adaptor for other air conditioners, etc., refer to the operation manual attached.

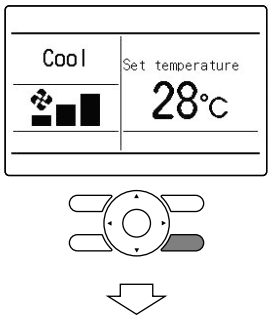
Notice

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.

■ **BRC1E51**

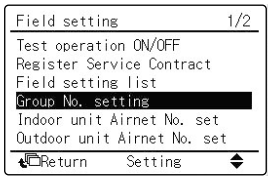
In order to conduct the centralized remote control using the centralized remote controller and the unified ON/OFF controller, Group No. settings should be made by group using the operating remote controller.
Make Group No. settings for centralized remote control using the operating remote controller.

(1) <Basic screen>



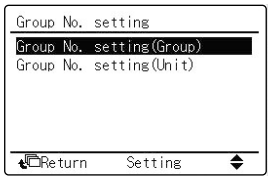
Press and hold Cancel button for 4 seconds or more.
Field setting menu is displayed.

(2) <Field setting menu screen>



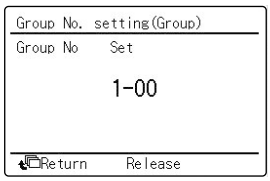
Select Group No. setting in the field setting menu, and press Menu/Enter button.
Group No. setting screen is displayed.

(3) <Group No. setting>



Select Group No. setting (Group), and press Menu/Enter button.
Group No. setting (Group) screen is displayed.

(4) <Group No. setting (Group)>



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

Note:

■ For setting group No. of heat reclaim ventilator and wiring adaptor for other air conditioners, etc., refer to the operation 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.

1.2 Wireless Remote Controller

1.2.1 Names and Functions

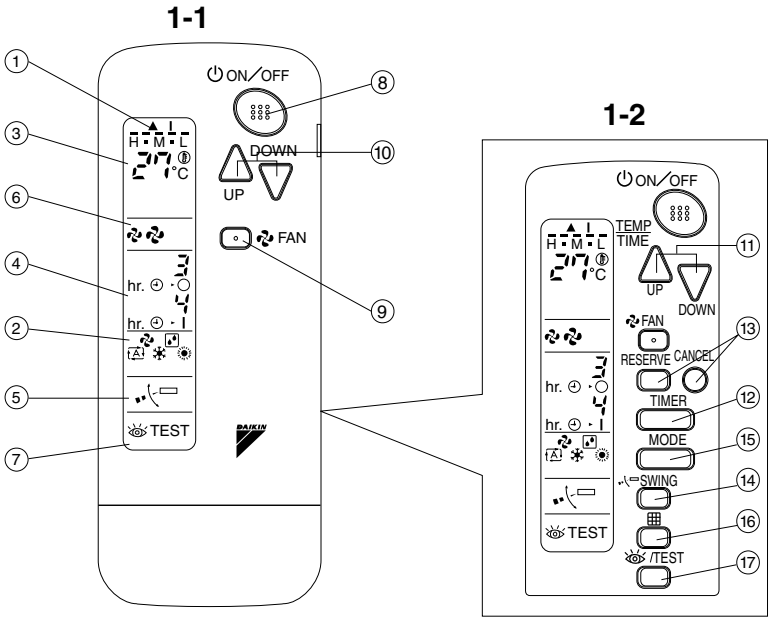


Figure 1

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 flashes when the unit is in trouble.
21	**TIMER INDICATOR LAMP (Green)**
	This lamp stays lit while the timer is set.
22	**AIR FILTER CLEANING TIME INDICATOR LAMP (Red)**
	Lights up when it is time to clean the air filter.
23	**DEFROST LAMP (Orange)**
	Lights up when the defrosting operation has started. (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

1.2.2 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)		

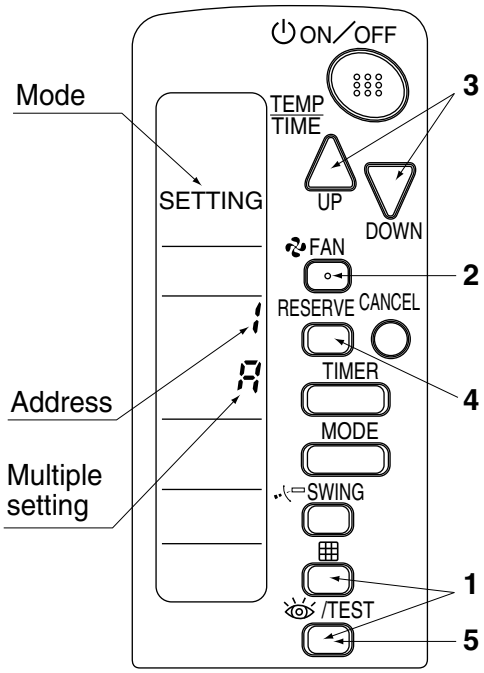
Setting the Address for the Wireless Remote Controller

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

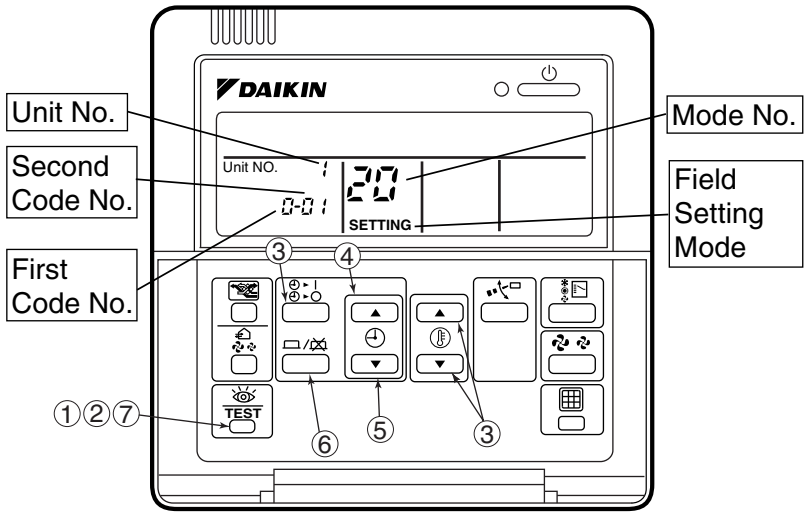
   Address can be set from 1 to 6, but set it to 1 ~ 3 and to same address as the receiver. (The receiver does not work with address 4 ~ 6.)
4. Press the [RESERVE] button to enter the setting.
5. Hold down the [/TEST] button for at least 1 second to quit the Field Setting mode and return to the normal display.



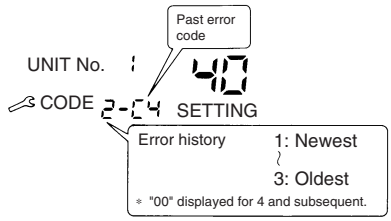
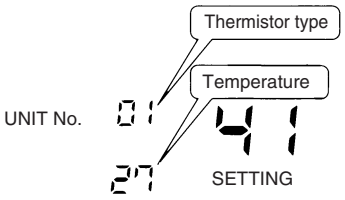
1.3 Service Mode

1.3.1 BRC1C Type/BRC1D Type

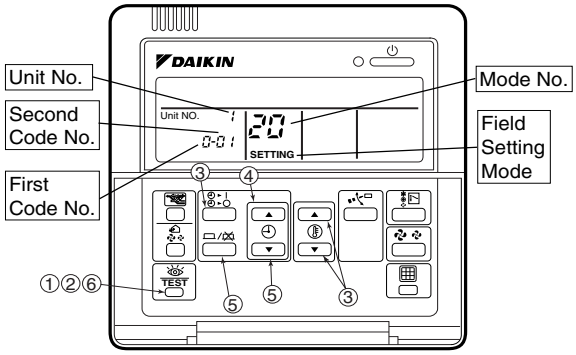
■ **Display Service Data**

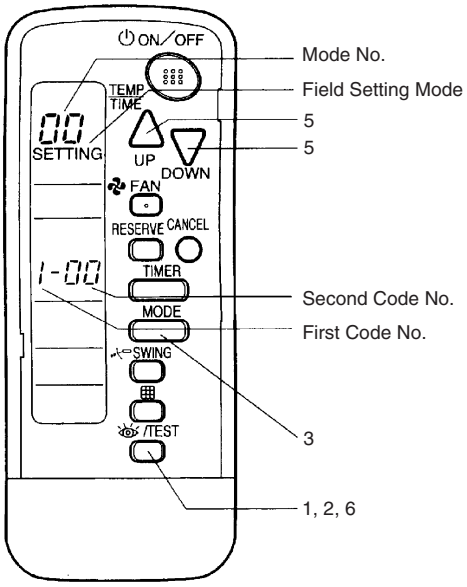


1. Enter the field setting mode.
   Press the inspection / test operation button for 4 seconds or more.
2. Enter the service mode.
   After having entered the field setting mode, press the inspection / test operation button for 4 seconds or more.
3. Select the mode No.
   Set the desired mode No. with the up/down temperature setting button.
4. Select the unit No.
   Select the indoor unit No. set with the time mode START/STOP button.
5. Select the desired error history No. or sensor data No. with "▲" or "▼" button.
6. Each data displays (Refer to the table below display)
7. Return to the normal operation mode.
   Press the inspection / test operation button once.

Mode No.	Function	Content and Operation Method	Example of Remote Controller Display
40	Error History	You can change the history with the programming time up-down button.	
41	Sensor Data Display	Select the display thermistor with the programming time up-down button Display thermistor 00: Room temperature thermistor in remote controller 01: Suction air thermistor 02: Heat exchanger thermistor	

■ **Service Setting**



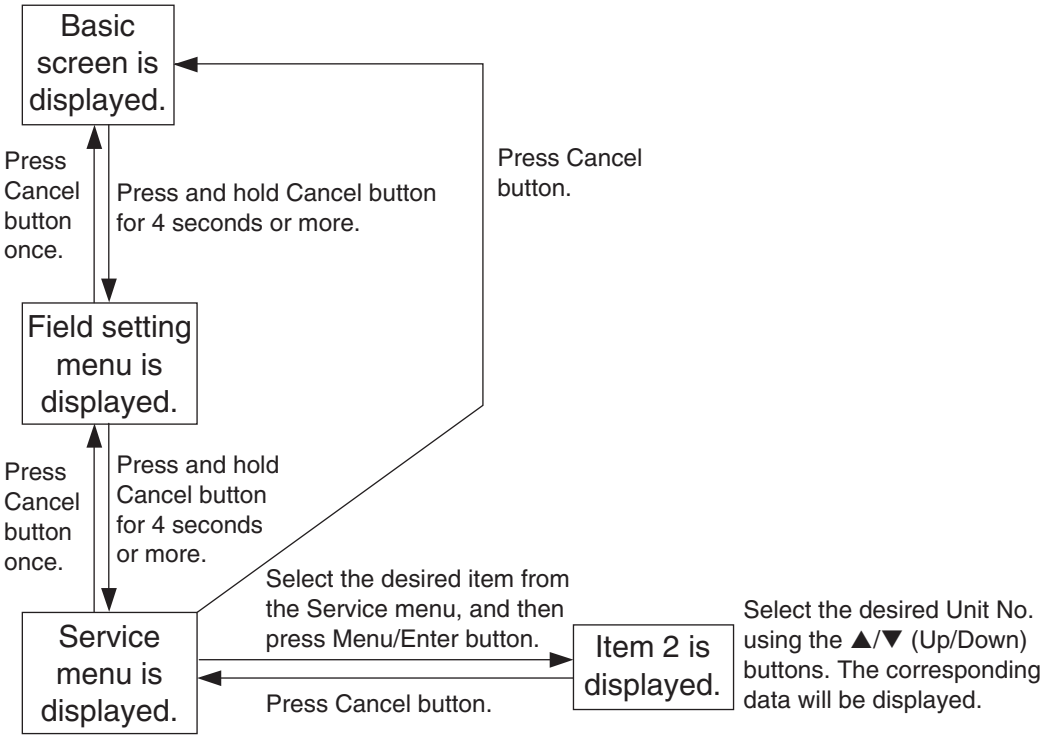


1. Enter the field setting mode.
   Press the inspection / test operation button for 4 seconds or more.
2. Enter the maintenance mode.
   After having entered the field setting mode, press the inspection / test operation button for a minimum of 4 seconds.
3. Select the mode No.
   Set the desired mode No. with the up/down temperature setting button.
4. Select the unit No.
   Select the indoor unit No. set with the time mode START/STOP button.
5. Carry out the necessary settings for each mode. (Mode 43 only possible for wireless remote controller)
   - In case of Mode 43
     Press timer ON/OFF button to decide the forced Fan ON.
   - In case of Mode 44
     Set “Fan speed” with fan speed control button and “Airflow direction” with airflow direction adjusting button, then press timer ON/OFF button to decide.
   - In case of Mode 45
     Select the changed unit No. with “▲” or “▼” button, then press timer ON/OFF button to decide.
6. Return to the normal operation mode.
   Press the inspection / test operation button once.

Mode No.	Function	Content and Operation Method	Example of Remote Controller Display
43	Forced Fan ON	Turns the fan ON for each unit individually.	UNIT No. 43 SETTING
44	Individual Setting	Sets fan speed and airflow direction for each unit individually when using group control. Settings are made using the “airflow direction adjust” and “fan speed adjust” buttons.	Fan speed 1: Low 3: High 0: Upper 4: Lowest UNIT No. CODE 0 44 SETTING
45	Unit No. Change	Changes unit No. Set the unit No. after changing with the programming time up-down button.	Field setting No. No. after change UNIT No. CODE 02 45 SETTING

1.3.2 BRC1E51/52

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

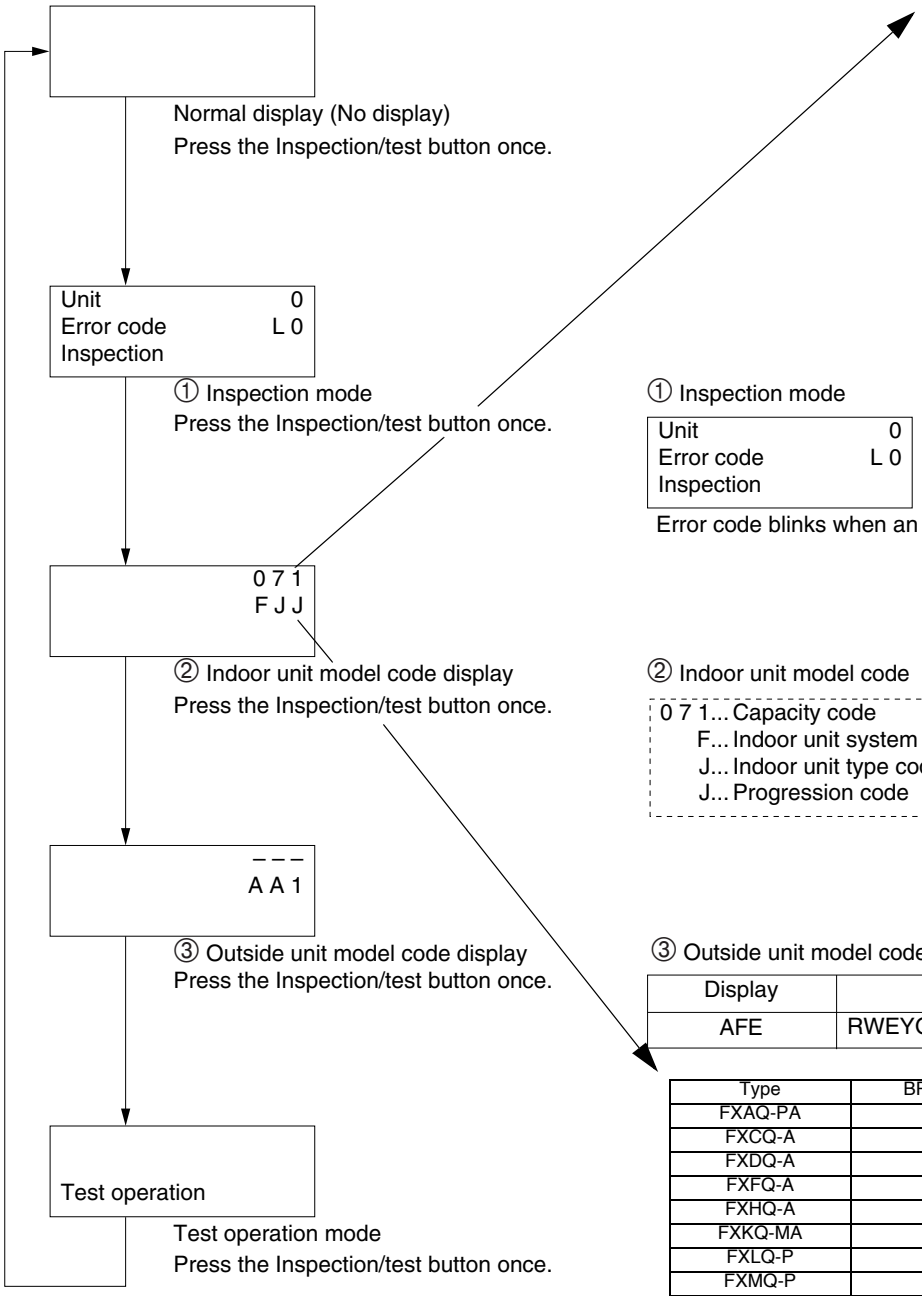


Service Menu	Item 2	Remarks
1. Model Name Display	1. Unit No.	Select the Unit No. you want to check.
	2. Indoor unit	
	3. Outside unit	
2. Operating Hours Display	1. Unit No.	Select the Unit No. you want to check.
	2. Indoor unit operating time	All of these are displayed in hours.
	3. Indoor fan operation	
	4. Indoor unit energized time	
	5. Outdoor operating time	All of these are not valid for VRV indoor units.
	6. Outside unit fan 1 operation	
	7. Outside unit fan 2 operation	
	8. Outdoor comp. 1 operation	
	9. Outdoor comp. 2 operation	
3. Indoor Status Display 1/2 (only A serie VRV indoor)	1. Unit No.	Select the Unit No. you want to check.
	2. FAN	Tap, speed (rpm)
	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. 52H	Electric heater ON/OFF
	8. Hu	Humidifier ON/OFF
	9. Anti-freezing	Anti-freezing control ON/OFF

Service Menu	Item 2	Remarks
3. Indoor Status Display 2/2 (only A-serie VRV indoor)	1. Unit No.	Select the Unit No. you want to check.
	2. Th1	Suction air thermistor
	3. Th2	Heat exchanger thermistor
	4. Th3	—
	5. Th4	Discharge air thermistor
	6. Th5	—
	7. Th6	—
4. Outdoor Status Display (all of these are not valid for VRV indoor units)	1. Unit No.	Select the Unit No. you want to check.
	2. FAN Tap 1	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
	6. Th1	Outdoor air thermistor
	7. Th2	Heat exchanger thermistor
	8. Th3	Discharge pipe thermistor
5. Forced Defrost	1. Forced defrost ON	Enables the forced defrost operation.
	2. Forced defrost OFF	Disables the forced defrost operation.
6. Error Display Selection	1. Warning display ON	Displays a warning on the screen if an error occurs.
	2. Warning display OFF	No warning is displayed.
	3. Error display ON	Displays the error on the screen.
	4. Error display OFF	Displays neither errors nor warnings.
7. Unit No. Transfer	1. Current Unit No.	A unit No. can be transferred to another.
	2. Transfer Unit No.	
8. Sensor Address Display	○ 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 (°C) Suction air thermistor (°C) Heat exchanger liquid pipe thermistor (°C) Heat exchanger gas pipe thermistor (°C) Indoor unit address No. Outside unit address No. BS unit address No. Zone control address No. Cooling/Heating batch address No. Demand address No.
	○ Data	The corresponding data will be displayed, based on the Unit No. and Code selected.

1.4 Inspection Mode

1.4.1 BRC1C Type/BRC1D Type



Size Model name	Indicator
15	22
20	22
25	28
32	36
40	45
50	56
63	71
71	80
80	90
100	112
125	140
140	160
200	212
250	280
400	450
500	560

① Inspection mode

Unit 0
Error code L 0
Inspection

Error code blinks when an error occurs.

② Indoor unit model code

0 7 1... Capacity code
F... Indoor unit system code
J... Indoor unit type code
J... Progression code

③ Outside unit model code

Display	Model
AFE	RWEYQ-T

Type	BRC1CD	BRC1E51/52
FXAQ-PA	FAL	FAL
FXCQ-A	FCF	FXCQ-AVEB
FXDQ-A	-	FXDQ-A2VEB
FXFQ-A	F42	FXFQ-AVEB
FXHQ-A	FHL	FXHQ-AVEB
FXKQ-MA	FEJ	FEJ
FXLQ-P	FPJ	FPJ
FXMQ-P	FU1	FU1
FXNQ-A	F3F	FXNQ-A2VEB
FXSQ-A	FUJ	FUJ
FXUQ-A	F9F	FXUQ-AVEB
FXZQ-A	F6F	F6F
VKM G(M)B	2PU	2PU
EKEQKMCBA	-	-

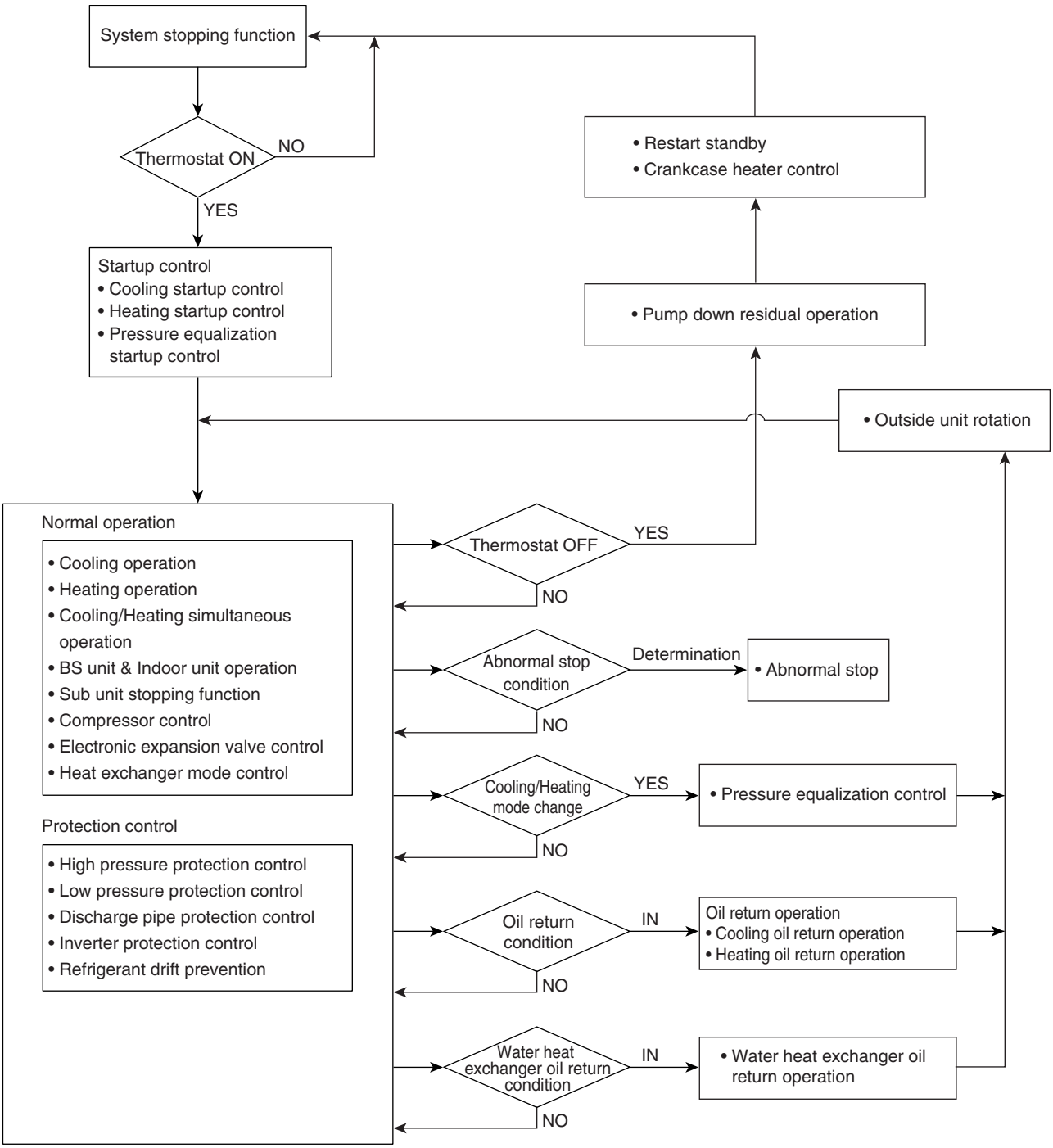
Note:
Inspection mode is not available for BRC1E61.

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Function and Control

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1. Function General

1.1 Operation Mode



2. Basic Control

2.1 Normal Operation

Parts Name	Electric Symbol	Actuator Function	
		Normal cooling	Normal heating or normal cooling/ heating simultaneous operation
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)	Y5S	OFF	ON
Four way valve (for heat exchanger)	Y7S	OFF	Heat exchanger mode control (In case of heating and simultaneous cooling/heating operation)
Electronic expansion valve (Main)	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)	Y3E	Y3E control	Y3E control
Hot gas bypass solenoid valve	Y1S	Protection control	Protection control
Water heat exchanger oil return solenoid valve	Y2S	OFF	Water heat exchanger oil return control
Receiver gas charging solenoid valve	Y3S	Receiver pressurising control	Receiver pressurising control and drift protection control
Receiver gas discharge solenoid valve	Y4S	OFF	Drift protection control
Non-operation unit liquid pipe stop solenoid valve	Y6S	ON	ON
Indoor unit fan	—	Refer to following page for detail. (BS unit & Indoor unit operation mode detail)	Refer to following page for detail. (BS unit & Indoor unit operation mode detail)
Indoor unit electronic expansion valve	—		
BS unit			

2.2 Indoor Unit Operation Mode Detail

				Outside Unit Operation Mode			
				Cooling mode	Cooling/Heating mode	Heating mode	Stopping
Indoor Unit	Cooling	Thermostat ON	Y3S Y1S Indoor Fan Indoor electronic expansion valve	OFF OFF Depend on remote controller Indoor unit control	OFF OFF Depend on remote controller Indoor unit control		
		Thermostat OFF	Y3S Y1S Indoor Fan Indoor electronic expansion valve	OFF OFF Depend on remote controller 0 pulse	OFF OFF Depend on remote controller 0 pulse	OFF OFF Depend on remote controller 0 pulse	OFF OFF Depend on remote controller 0 pulse
		Stopping	Y3S Y1S Indoor Fan Indoor electronic expansion valve	OFF OFF OFF 0 pulse	OFF OFF OFF 0 pulse	OFF OFF OFF 0 pulse	OFF OFF OFF 0 pulse
	Heating	Thermostat ON	Y3S Y1S Indoor Fan Indoor electronic expansion valve		ON ON Depend on remote controller Indoor unit control	ON OFF Depend on remote controller Indoor unit control	
		Thermostat OFF	Y3S Y1S Indoor Fan Indoor electronic expansion valve	ON OFF LL 0 pulse	ON OFF LL (200 pulse)	ON OFF LL (200 pulse)	ON OFF LL 0 pulse
		Stopping	Y3S Y1S Indoor Fan Indoor electronic expansion valve	ON OFF OFF 0 pulse	OFF (∗1) OFF OFF (∗2)	ON OFF OFF (200 pulse)	ON (∗1) OFF OFF 0 pulse

Note: ∗1: The switch for the BS 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 Y3S: ON, depend on indoor control (200 pulse).
If Y3S: OFF, 0 pulse.

2.3 Compressor Control

2.3.1 Compressor PI Control

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

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 TeS.

Te setting

L	M (Normal) (factory setting)	H				
3	6	7	8	9	10	11

[Heating operation]

Controls compressor capacity to adjust Tc to achieve TcS.

Tc setting

L	M (Normal) (factory setting)	H
43	46	49

[Cooling/Heating simultaneous operation]

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

Te setting

L	M (Normal) (factory setting)	H				
3	6	7	8	9	10	11

Tc setting

L	M (Normal) (factory setting)	H
43	46	49

2.3.2 Compressor Operation Frequency Steps

1. 1 Outside unit installation

Step No.	Main	
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. 2 Outside units connection installation

A : 1 Compressor operation

Step No.	Main
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 : 2 Compressor operation

Step No.	Main	Sub 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. 3 Outside units connection installation

A : 1 Compressor operation

Step No.	Main
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 : 2 Compressor operation

Step No.	Main	Sub 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 : 3 Compressor operation

Step No.	Main	Sub 1	Sub 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	

Note: ∗ Depending on operational conditions, operation pattern may be different from the description above.

2.4 Electronic Expansion Valve Control

SH: Evaporator outlet superheat (°C)
Ts: Suction pipe temperature detected suction pipe thermistor (°C)
Tsh: Temperature detected by gas pipe temperature of subcooling heat exchanger gas side (outlet temperature) (°C)
Te: Low pressure equivalent saturation temperature (°C)

Main Electronic Expansion Valve Control

Carries out the electronic expansion valve (Y1E) PI control to maintain the evaporator outlet superheated degree at constant during heating operation to make maximum use of the outside unit heat exchanger (evaporator)
SH = Ts - Te
The optimum initial value of the evaporator outlet superheated degree is 5°C, but varies depending on the discharge pipe superheated degree of inverter compressor.

Subcooling Electronic Expansion Valve 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

[Heating operation]

To lower the discharge pipe temperature when the discharge pipe temperature is over 95°C, 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 95°C, Y3E opening is 0 pulse.)
SH = Tsh -Te

2.5 Heat Exchange Mode in Heating 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 outside unit into evaporator or condenser with load.

1 outside 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

① ②

	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

2 outside 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

① ②

	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

① ②

① ②

	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

	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

① ②

	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

Note:

1. Tc: High pressure equivalent saturation temperature
   Te: Low pressure equivalent saturation temperature
   ①: Insufficient evaporation (Excessive condensation)
   ②: 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.

3 outside units installation

	Master unit	Slave unit 1	Slave unit 2
Four way valve for heat exchanger (Y7S) (For the application of heat exchanger)	OFF (Condenser)	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	Control of heat exchange capacity balance

①

②

	Master unit	Slave unit 1	Slave unit 2
Four way valve for heat exchanger (Y7S) (For the application of heat exchanger)	OFF (Condenser)	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	0 pulse

①

②

	Master unit	Slave unit 1	Slave unit 2
Four way valve for heat exchanger (Y7S) (For the application of heat exchanger)	OFF (Condenser)	ON (Evaporator)	ON (Evaporator)
Content of the control of electronic expansion valve (Y1E)	Control of heat exchange capacity balance	0 pulse	0 pulse

①

②

	Master unit	Slave unit 1	Slave unit 2
Four way valve for heat exchanger (Y7S) (For the application of heat exchanger)	OFF (Condenser)	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	0 pulse

①

②

	Master unit	Slave unit 1	Slave unit 2
Four way valve for heat exchanger (Y7S) (For the application of heat exchanger)	OFF (Condenser)	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	Control of heat exchange capacity balance

①

②

	Master unit	Slave unit 1	Slave unit 2
Four way valve for heat exchanger (Y7S) (For the application of heat exchanger)	ON (Evaporator)	OFF (Condenser)	OFF (Condenser)
Content of the control of electronic expansion valve (Y1E)	Control of heat exchange capacity balance	0 pulse	0 pulse

①

②

	Master unit	Slave unit 1	Slave unit 2
Four way valve for heat exchanger (Y7S) (For the application of heat exchanger)	ON (Evaporator)	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	0 pulse

①

②

	Master unit	Slave unit 1	Slave unit 2
Four way valve for heat exchanger (Y7S) (For the application of heat exchanger)	ON (Evaporator)	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	Control of heat exchange capacity balance

Note:

1. Tc: High pressure equivalent saturation temperature
   Te: Low pressure equivalent saturation temperature
   ①: Insufficient evaporation (Excessive condensation)
   ②: 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.

3. Special Control

3.1 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.

3.1.1 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	Electric Symbol	Pressure Equalization Control before Startup	Starting Control
Compressor	M1C	0 Hz	52Hz +2 steps/20 sec. (until Pc - Pe > 0.49 MPa)
Inverter cooling fan	M1F, M2F	OFF	Inverter cooling fan control
Four way valve (Main)	Y5S	Holding	OFF
Four way valve (for heat exchanger)	Y7S	Holding	OFF
Electronic expansion valve (Main)	Y1E	0 pulse	2000 pulse
Electronic expansion valve (Subcooling)	Y3E	0 pulse	0 pulse
Hot gas bypass solenoid valve	Y1S	OFF	ON
Water heat exchanger oil return solenoid valve	Y2S	OFF	OFF
Receiver gas charging solenoid valve	Y3S	OFF	OFF
Receiver gas discharge solenoid valve	Y4S	OFF	OFF
Non-operation unit liquid pipe stop solenoid valve	Y6S	ON	ON
Indoor unit fan	M1F, M2F	Indoor unit control	Indoor unit control
Indoor unit electronic expansion valve	Y1E	0 pulse	0 pulse → Initial opening
Ending condition		1 minute	Max. 5 minutes

3.1.2 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	Electric Symbol	Pressure Equalization Control before Start-up	Starting Control
Compressor	M1C	0 Hz	52Hz +2 steps/20 sec. (till Pc - Pe > 0.49 MPa)
Inverter cooling fan	M1F, M2F	OFF	Inverter cooling fan control
Four way valve (Main)	Y5S	Holding	ON
Four way valve (for heat exchanger)	Y7S	Holding	OFF
Electronic expansion valve (Main)	Y1E	0 pulse	180 pulse
Electronic expansion valve (Subcooling)	Y3E	0 pulse	0 pulse
Hot gas bypass solenoid valve	Y1S	OFF	ON
Water heat exchanger oil return solenoid valve	Y2S	OFF	OFF
Receiver gas charging solenoid valve	Y3S	OFF	OFF
Receiver gas discharge solenoid valve	Y4S	OFF	OFF
Non-operation unit liquid pipe stop solenoid valve	Y6S	ON	ON
Indoor unit fan	M1F, M2F	Indoor unit control	Indoor unit control
Indoor unit electronic expansion valve	Y1E	0 pulse	Indoor unit control
Ending condition		1 minute	Max. 6 minutes 40 seconds

3.2 Oil Return Operation

In order to prevent the running-out of refrigerating machine oil in the compressor, the oil flowing out from the compressor to the system side is collected through the oil return operation.

3.2.1 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	Electric Symbol	Preparation	During Oil Return Operation	After Oil Return Operation
Compressor	M1C	Same as normal cooling operation	104 Hz	52 Hz
Four way valve (Main)	Y5S		OFF	OFF
Four way valve (for heat exchanger)	Y7S		OFF	OFF
Electronic expansion valve (Main)	Y1E		2000 pulse	2000 pulse
Electronic expansion valve (Subcooling)	Y3E		0 pulse	0 pulse
Hot gas bypass solenoid valve	Y1S		ON	ON
Water heat exchanger oil return solenoid valve	Y2S		OFF	OFF
Receiver gas charging solenoid valve	Y3S		OFF	OFF
Receiver gas discharge solenoid valve	Y4S		OFF	OFF
Liquid pipe stop solenoid valve	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)	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)	Y1E		—	—
Ending condition		20 seconds	Max. 8 minutes	Max. 3 minutes

3.2.2 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	Electric Symbol	Preparation	During Oil Return Operation	After Oil Return Operation
Compressor	M1C	Same as normal heating operation	104 Hz	74 Hz
Four way valve (Main)	Y5S		OFF	ON
Four way valve (for heat exchanger)	Y7S		OFF	Heat exchanger mode
Electronic expansion valve (Main)	Y1E		2000 pulse	Y7S = OFF: 2000 pulse Y7S = ON : 180 pulse
Electronic expansion valve (Subcooling)	Y3E		0 pulse	0 pulse
Hot gas bypass solenoid valve	Y1S		ON	ON
Water heat exchanger oil return solenoid valve	Y2S		OFF	OFF
Receiver gas charging solenoid valve	Y3S		OFF	OFF
Receiver gas discharge solenoid valve	Y4S		OFF	OFF
Liquid pipe stop solenoid valve	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)	Y1E		320 pulse	Normal control
Indoor unit fan (Heating)	M1F, M2F		OFF	Indoor unit control
Indoor unit electronic expansion valve (Heating)	Y1E		320 pulse	Normal control
Ending condition		2 minutes	Max. 8 minutes	Max. 3 minutes

3.3 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 > 10°C
⎩ • Elapse of a certain period of time

Parts Name	Electric Symbol	Water Heat Exchanger Oil Return Control
Compressor	M1C	52 Hz
Four way valve (Main)	Y5S	ON
Four way valve (for heat exchanger)	Y7S	OFF
Electronic expansion valve (Main)	Y1E	300 pulse
Electronic expansion valve (Subcooling)	Y3E	180 pulse
Hot gas bypass solenoid valve	Y1S	ON
Water heat exchanger oil return solenoid valve	Y2S	ON
Receiver gas charging solenoid	Y3S	OFF
Receiver gas discharge solenoid valve	Y4S	OFF
Non-operation unit liquid pipe stop solenoid valve	Y6S	ON
Indoor unit fan (Cooling)	M1F, M2F	↑
Indoor unit electronic expansion valve (Cooling)	Y1E	Normal control
Indoor unit fan (Heating)	M1F, M2F	↓
Indoor unit electronic expansion valve (Heating)	Y1E	Thermostat ON: Normal control Thermostat OFF/OFF: 500 pulse
Ending condition		Max. 90 seconds

3.4 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 machine oil in the compressor and the degradation of lubricating capacity.
Therefore, before the compressor stops, pump down operation is performed to collect the refrigerant in the heat exchanger.

3.4.1 Cooling Operation Mode

Parts Name	Electric Symbol	Master Unit Operation	Slave Unit Operation
Compressor	M1C	Current step	OFF
Inverter cooling fan	M1F, M2F	Inverter cooling fan control	Inverter cooling fan control
Four way valve (Main)	Y5S	OFF	OFF
Four way valve (for heat exchanger)	Y7S	OFF	OFF
Electronic expansion valve (Main)	Y1E	2000 pulse	0 pulse
Electronic expansion valve (Subcooling)	Y3E	0 pls	0 pulse
Hot gas bypass solenoid valve	Y1S	ON	OFF
Water heat exchanger oil return solenoid valve	Y2S	OFF	OFF
Receiver gas charging solenoid valve	Y3S	OFF	OFF
Receiver gas discharge solenoid valve	Y4S	OFF	OFF
Non-operation unit liquid pipe stop solenoid valve	Y6S	OFF	ON
Indoor unit fan (Cooling)	M1F, M2F	No instruction	
Indoor unit electronic expansion valve (Cooling)	Y1E	All 0 pulse	
Ending condition		Max. 5 minutes	

3.4.2 Heating & Simultaneous Cooling/Heating Mode

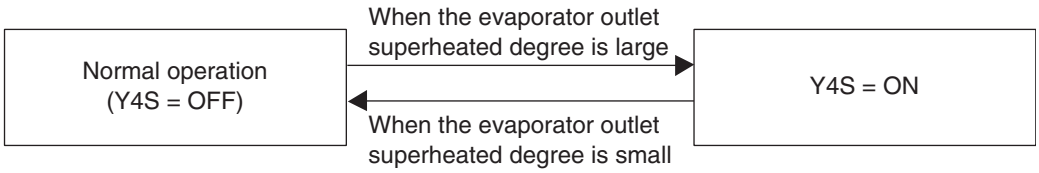
Parts Name	Electric Symbol	Master Unit Operation	Slave Unit Operation
Compressor	M1C	Current step	OFF
Inverter cooling fan	M1F, M2F	Inverter cooling fan control	Inverter cooling fan control
Four way valve (Main)	Y5S	ON	ON
Four way valve (for heat exchanger)	Y7S	Holding	Holding
Electronic expansion valve (Main)	Y1E	Y7S = OFF: 2000 pulse Y7S = ON: 0 pulse	0 pulse
Electronic expansion valve (Subcooling)	Y3E	0 pulse	0 pulse
Hot gas bypass solenoid valve	Y1S	ON	OFF
Water heat exchanger oil return solenoid valve	Y2S	OFF	OFF
Receiver gas charging solenoid valve	Y3S	OFF	OFF
Receiver gas discharge solenoid valve	Y4S	OFF	OFF
Non-operation unit liquid pipe stop solenoid valve	Y6S	OFF	ON
Indoor unit fan (Cooling)	M1F, M2F	No instruction	
Indoor unit electronic expansion valve (Cooling)	Y1E	All 0 pulse	
Indoor unit fan (Heating)	M1F, M2F	No instruction	
Indoor unit electronic expansion valve (Heating)	Y1E	All 500 pulse	
Ending condition		Max. 5 minutes	

3.5 Refrigerant Drift Prevention

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

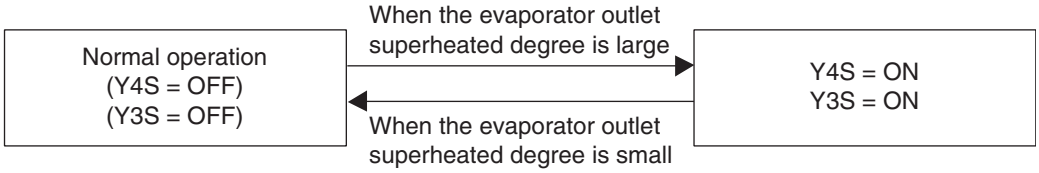
3.5.1 In case of cooling/heating changeover connection

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



3.5.2 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 outside units that are refrigerant shortage and the solenoid valve (Y3S) for pressurizing the receiver of the overcharged outside units.



3.6 Standby

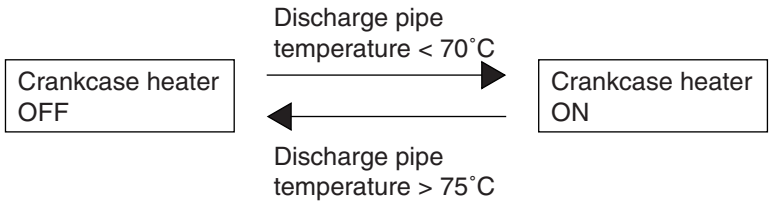
3.6.1 Restart Standby

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

Parts Name	Electric Symbol	Actuator Function
Compressor	M1C	0 Hz
Inverter cooling fan	M1F, M2F	OFF
Four way valve (Main)	Y5S	Holding
Four way valve (for heat exchanger)	Y7S	Holding
Electronic expansion valve (Main)	Y1E	0 pulse
Electronic expansion valve (Subcooling)	Y3E	0 pulse
Hot gas bypass solenoid valve	Y1S	OFF
Water heat exchanger oil return solenoid valve	Y2S	OFF
Receiver gas charging solenoid valve	Y3S	OFF
Receiver gas discharge solenoid valve	Y4S	OFF
Non-operation unit liquid pipe stop solenoid valve	Y6S	ON
Indoor unit fan (Cooling)	M1F, M2F	Remote controller setting
Indoor unit electronic expansion valve (Cooling)	Y1E	All indoor electronic expansion valve : 0 pulse
Indoor unit fan (Heating)	M1F, M2F	Indoor unit control
Indoor unit electronic expansion valve (Heating)	Y1E	All indoor electronic expansion valve : 0 pulse
BS unit		Holding
Ending condition		4 minutes

3.6.2 Crankcase Heater Control

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



3.7 Stopping Operation

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

3.7.1 When System is in Stop Mode (Normal Operation Stop)

Parts Name	Electric Symbol	Actuator Function
Compressor	M1C	OFF
Inverter cooling fan	M1F, M2F	OFF
Four way valve (Main)	Y5S	Holding
Four way valve (for heat exchanger)	Y7S	Holding
Electronic expansion valve (Main)	Y1E	0 pulse
Electronic expansion valve (Subcooling)	Y3E	0 pulse
Hot gas bypass solenoid valve	Y1S	OFF
Water heat exchanger oil return solenoid valve	Y2S	OFF
Receiver gas charging solenoid valve	Y3S	OFF
Receiver gas discharge solenoid valve	Y4S	OFF
Non-operation unit liquid pipe stop solenoid valve	Y6S	ON
Ending conditions	—	Indoor unit thermostat ON

3.7.2 Stopping Operation of Slave Units During Master Unit is in Operation with Multi Outside 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.

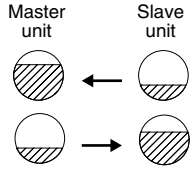
Parts Name	Electric Symbol	Mode A Operation (∗1)	Mode B Operation (∗1)
Compressor	M1C	OFF	OFF
Inverter cooling fan	M1F, M2F	OFF	OFF
Four way valve (Main)	Y5S	Holding	Holding
Four way valve (for heat exchanger)	Y7S	Holding	Holding
Electronic expansion valve (Main)	Y1E	150 to 300 pulse	0 pulse
Electronic expansion valve (Subcooling)	Y3E	0 pulse	0 pulse
Hot gas bypass solenoid valve	Y1S	OFF	OFF
Water heat exchanger oil return solenoid valve	Y2S	ON	OFF
Receiver gas charging solenoid valve	Y3S	OFF	OFF
Receiver gas discharge solenoid valve	Y4S	OFF	OFF
Non-operation unit liquid pipe stop solenoid valve	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.

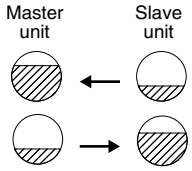
Parts Name	Electric Symbol	Mode A Operation (∗1)	Mode B Operation (∗1)
Compressor	M1C	OFF	OFF
Inverter cooling fan	M1F, M2F	OFF	OFF
Four way valve (Main)	Y5S	Holding	Holding
Four way valve (for heat exchanger)	Y7S	Holding	Holding
Electronic expansion valve (Main)	Y1E	0 pulse	0 pulse
Electronic expansion valve (Subcooling)	Y3E	0 pulse	0 pulse
Hot gas bypass solenoid valve	Y1S	OFF	OFF
Water heat exchanger oil return solenoid valve	Y2S	OFF	OFF
Receiver gas charging solenoid valve	Y3S	ON	OFF
Receiver gas discharge solenoid valve	Y4S	OFF	OFF
Non-operation unit liquid pipe stop solenoid valve	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.

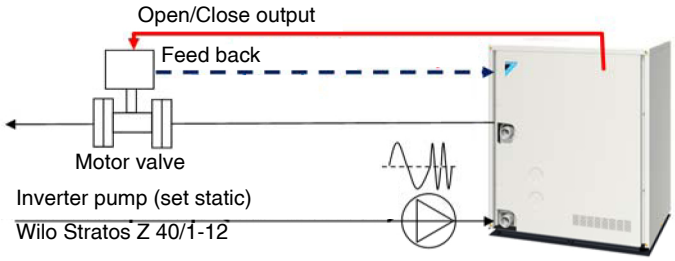
3.7.3 Abnormal Stop

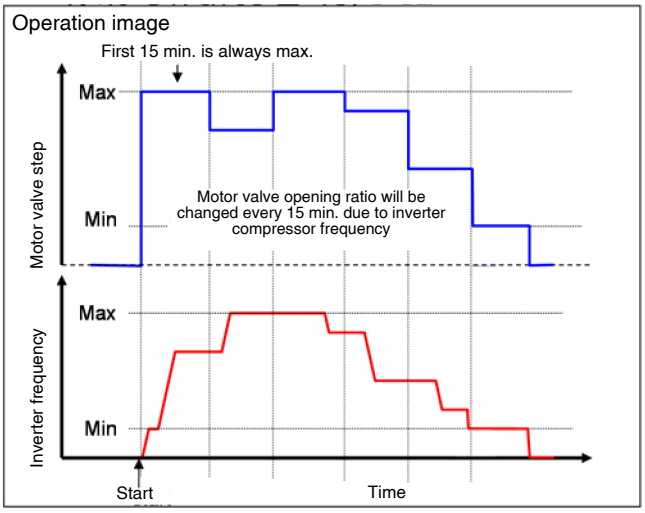
In order to protect compressors, if any of the following items has an abnormal value, the system will make "stop with thermostat OFF" and the error will be determined according to the number of retry times.

Item	Judgement Value	Retry Number	Error Code
Low pressure abnormality	0.07 MPa	3 times in 60 minutes	E4
High pressure abnormality	4.0MPa	2 times in 30 minutes	E3
Discharge pipe temperature abnormality	135°C	2 times in 10 minutes	F3
Power supply abnormality	Reverse phase	No retry	U1
Inverter current abnormality	∗1 for 5 seconds ∗1 PY1: 17A	3 times in 60 minutes	L8
Radiation fin temperature abnormality	87°C	3 times in 60 minutes	L4

3.7.4 Variable water flow control based on compressor capacity step

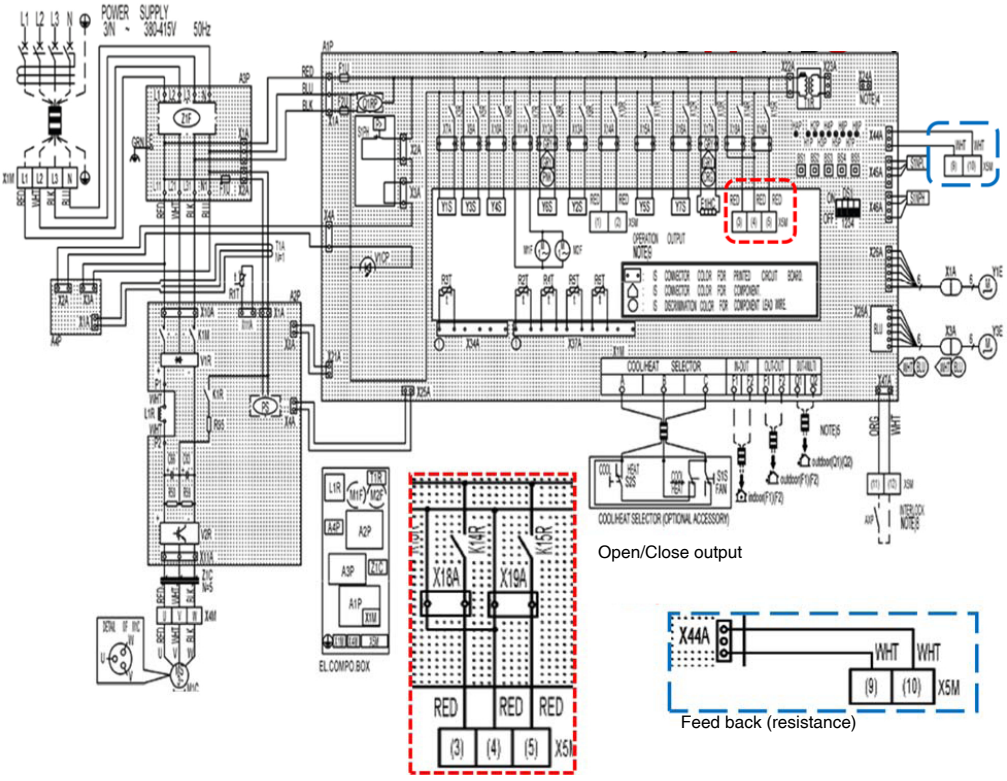
■ **RWEYQ8, 10T7Y1BS - Principle**



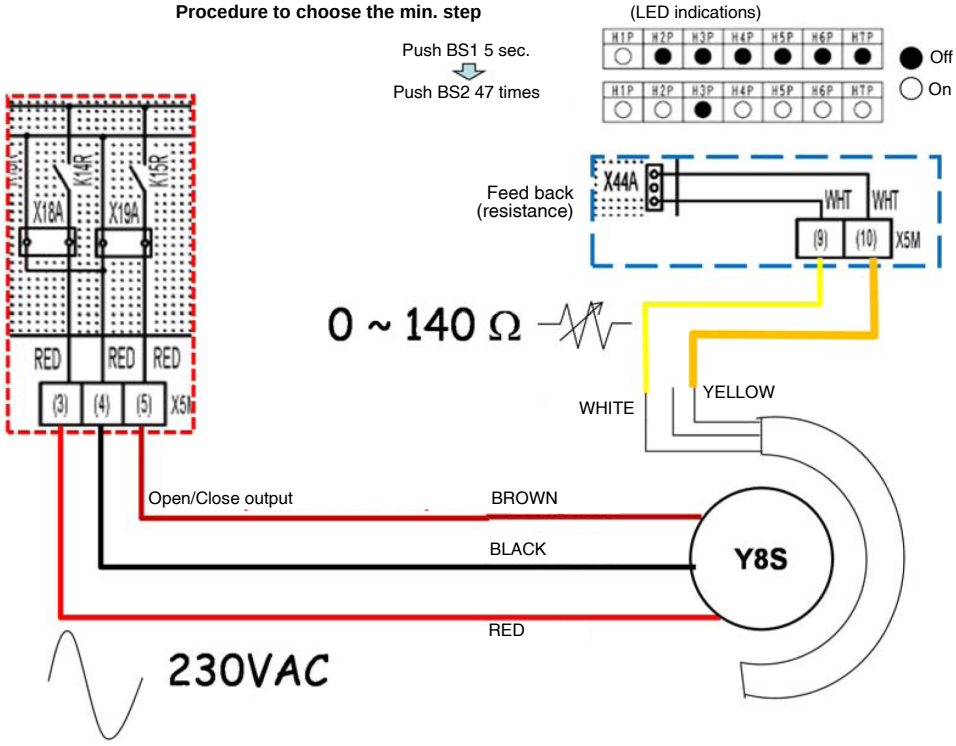


Depending on the capacity step of the compressor, the position of the water flow control valve is adjusted in maximum 13 steps.
The minimum position is to be set based on a minimum water flow of 50l/min minimum compressor capacity step (52 Hz, 26 rps).

■ **RWEYQ8, 10T7Y1BS - Wiring**



■ RWEYQ8, 10T7Y1BS - Field wiring



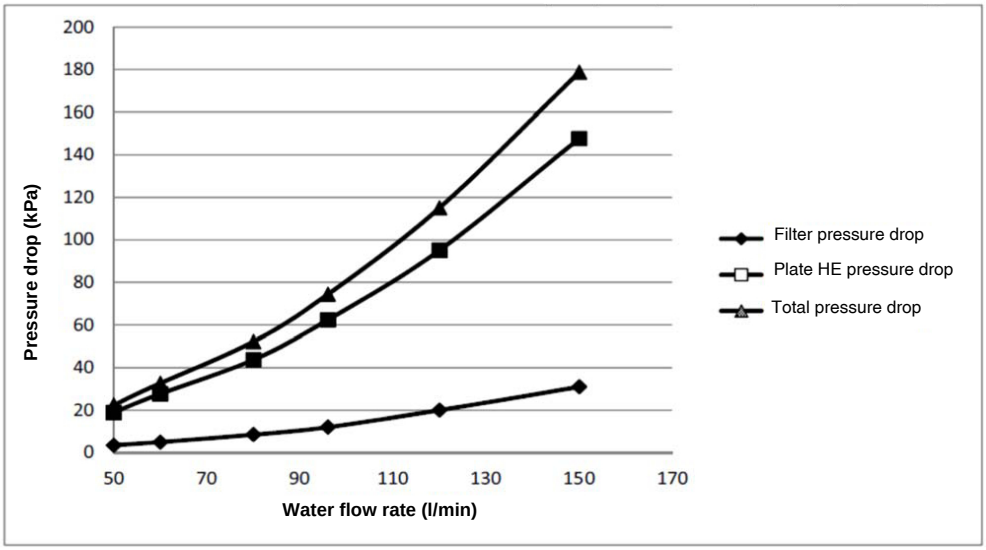
■ RWEYQ8, 10T7Y1BS - Parts

Position detection P140A GR	
Actuator NR230AX 45 sec. Ordernr.: NRA-06001004	
Valve R240P-220	

■ Set up variable waterflow rate valve

	Set 2-47	X44A (DVC)
compr 52 Hz	0	0,9
	1	1,2
	2	1,4
	3	1,6
	4	1,8
	5	1,9
	6	2,1
	7	2,2
	8	2,3
	9	2,4
	10	2,5
	11	2,7
	12	2,7
	13	2,8
compr 0 HZ	NA	0,7

1. Operate pump minimum step.
2. Manual position valve till waterflow rate is 50l/min. or more.
3. Measure voltage at terminals.
4. Set 2-47 according to voltage measured at X2M-9/10 = minimum flow rate 50l/min.



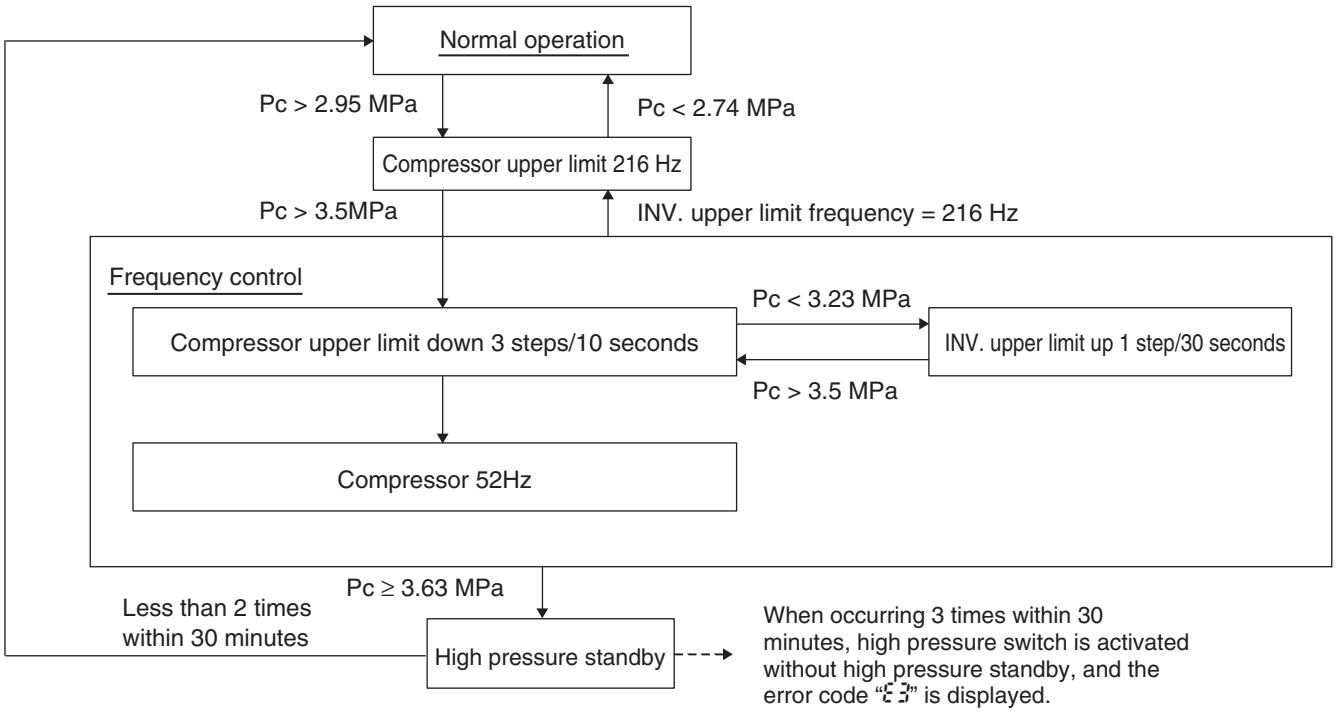
Water flow rate	l/min.	50	60	80	96	120	150
Filter	kPa	3,5	5,0	8,5	12,0	20,0	31,0
	mH_2O	0,36	0,51	0,87	1,22	2,04	3,16
Plate heat exchanger	kPa	19,0	28,0	44,0	62,0	95,0	148,0
	mH_2O	1,94	2,86	4,49	6,32	9,69	15,09
Total system (= filter + plate heat exchanger)	kPa	23,0	33,0	52,0	74,0	115,0	179,0
	mH_2O	2,35	3,37	5,30	7,55	11,73	18,25

4. Protection Control

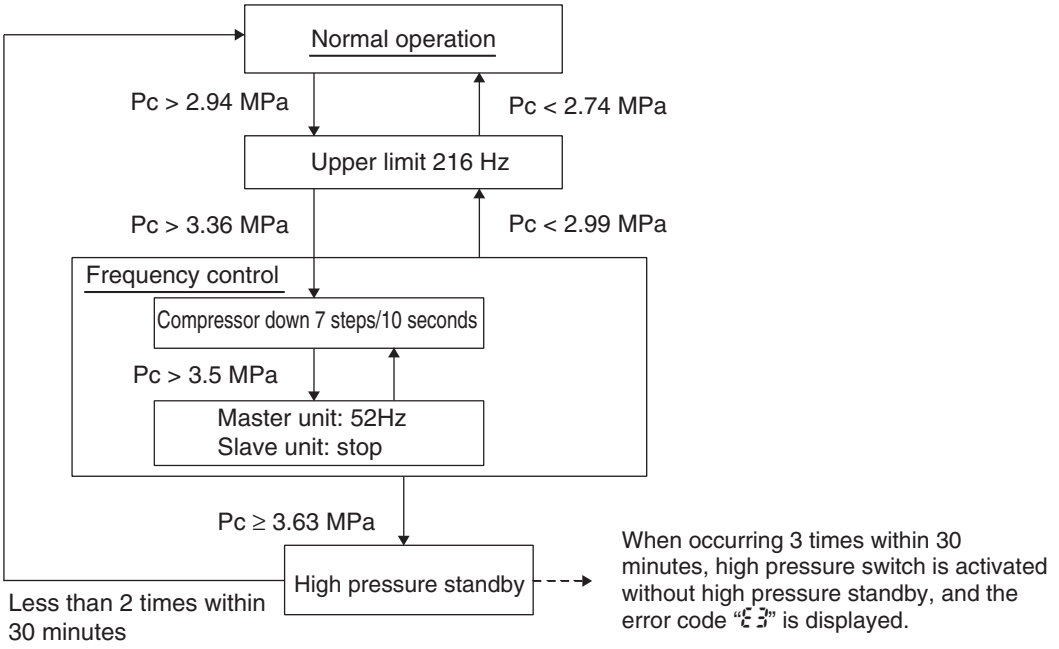
4.1 High Pressure Protection Control

This high pressure protection control prevents the activation of protection devices due to abnormal increase of high pressure and to protect compressors against the transient increase of high pressure.
Pc: High pressure sensor detection value for each outside unit

[In cooling]



[In heating or simultaneous cooling/heating]

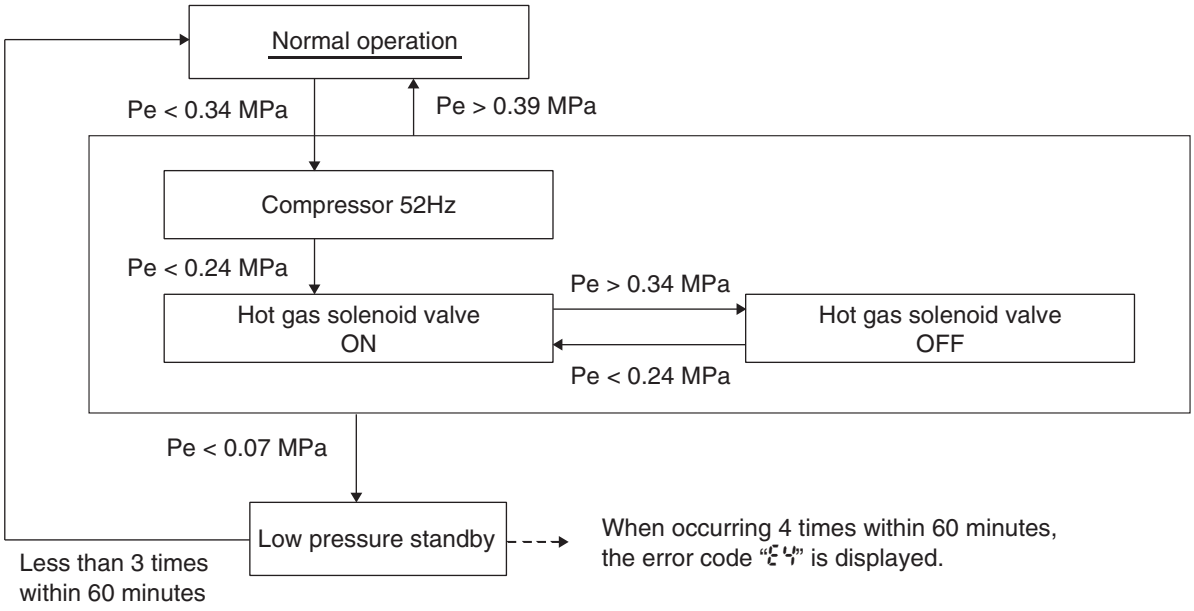


4.2 Low Pressure Protection Control

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

[In cooling]

Pe: Value detected by low pressure sensor

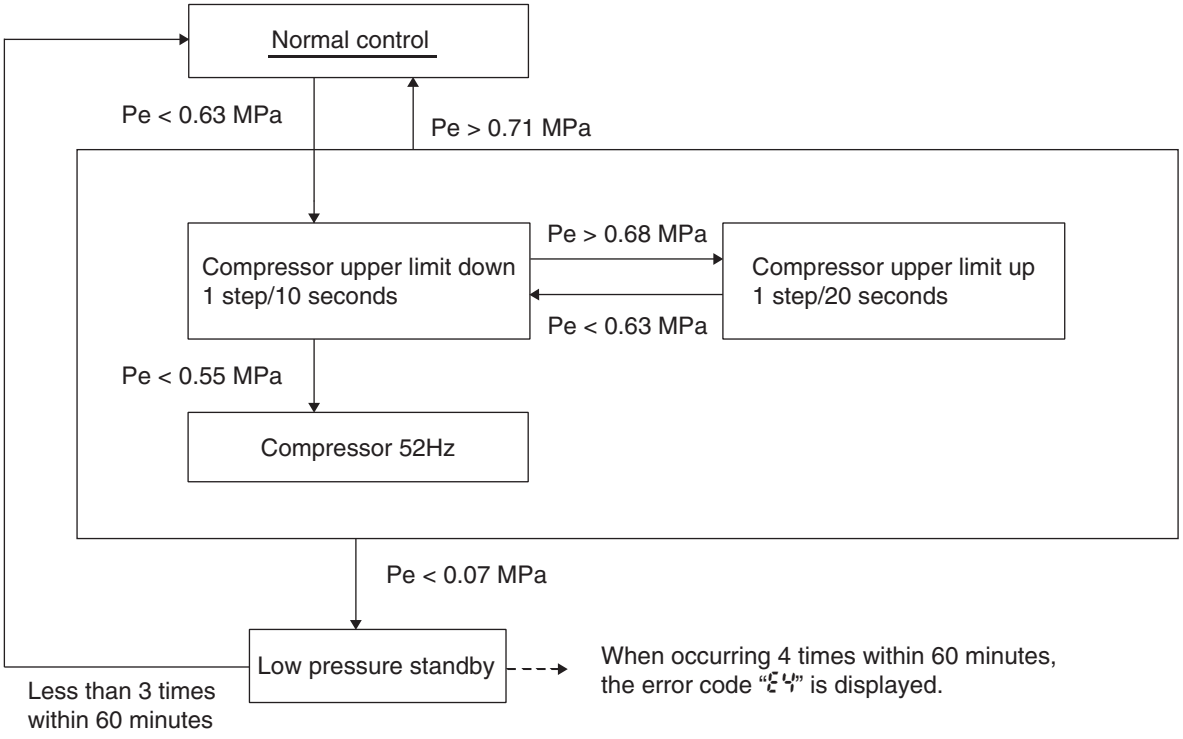


Note: ∗1 This frequency control is carried out in whole system.

[In heating or simultaneous cooling/heating]

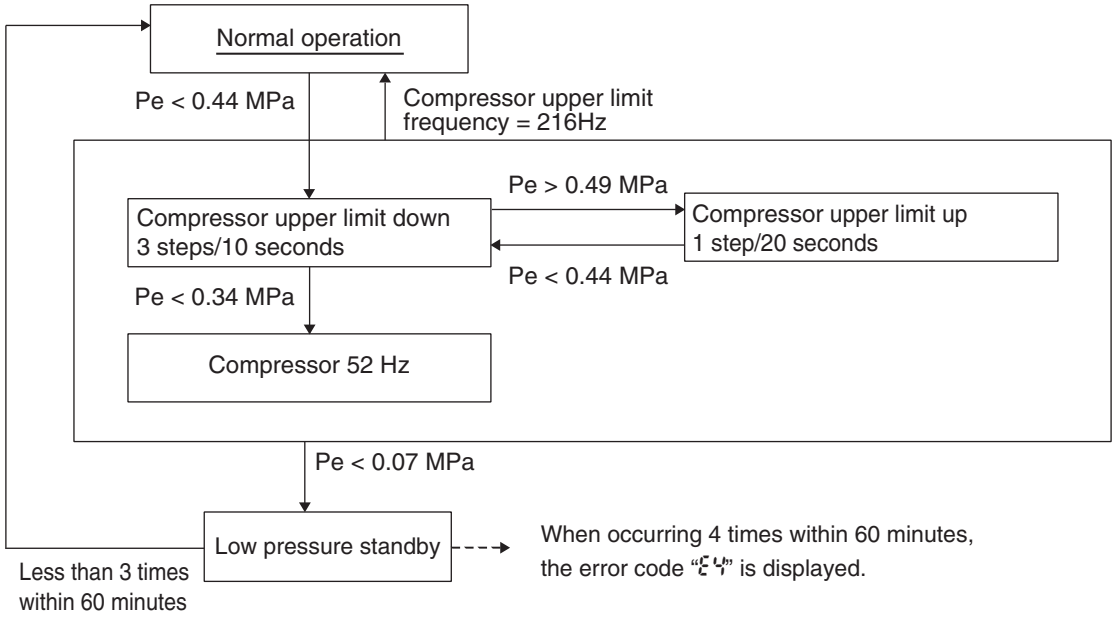
(When the outside unit heat exchanger is used as evaporator.)

Pe: Value detected by low pressure sensor



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

Pe: Value detected by low pressure sensor



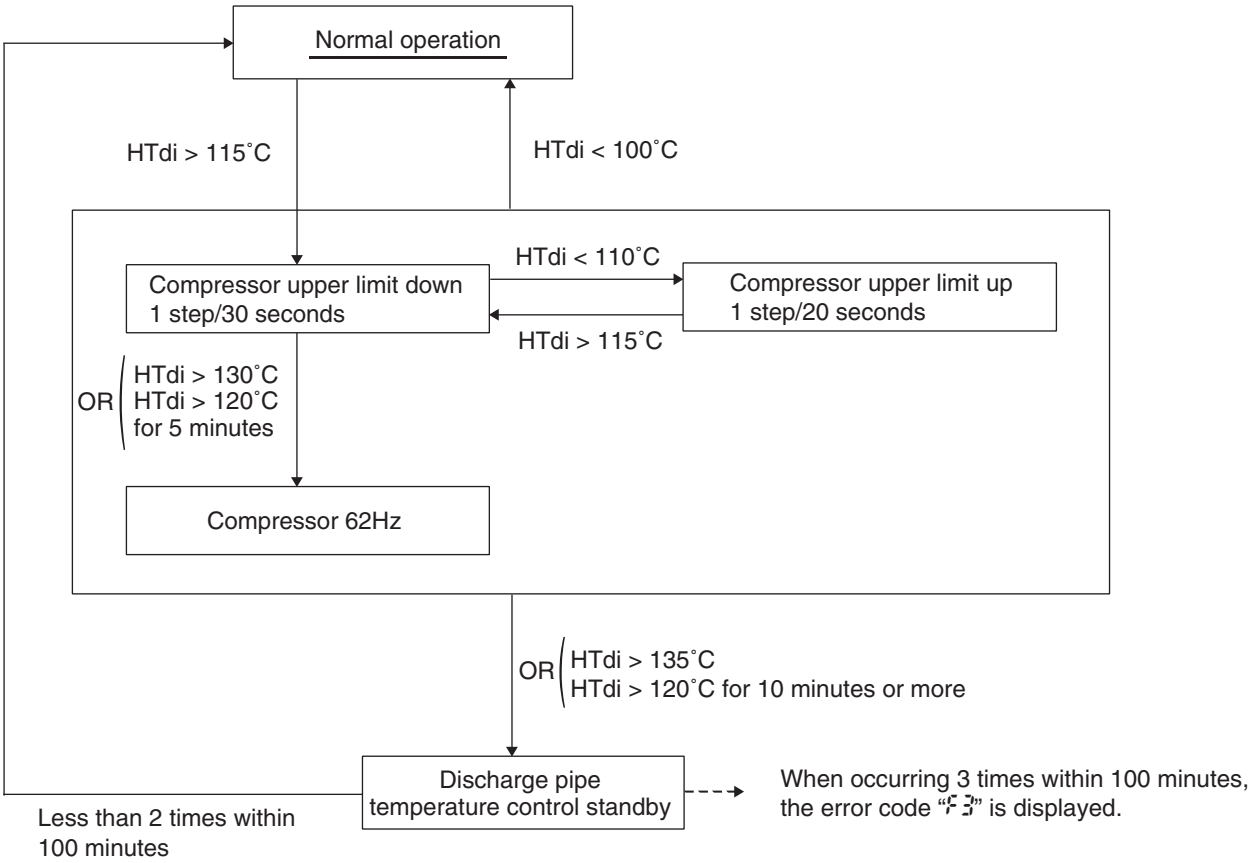
Note: ∗1 This frequency control is carried out in each outside unit.

4.3 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 outside unit.

[INV. compressor]

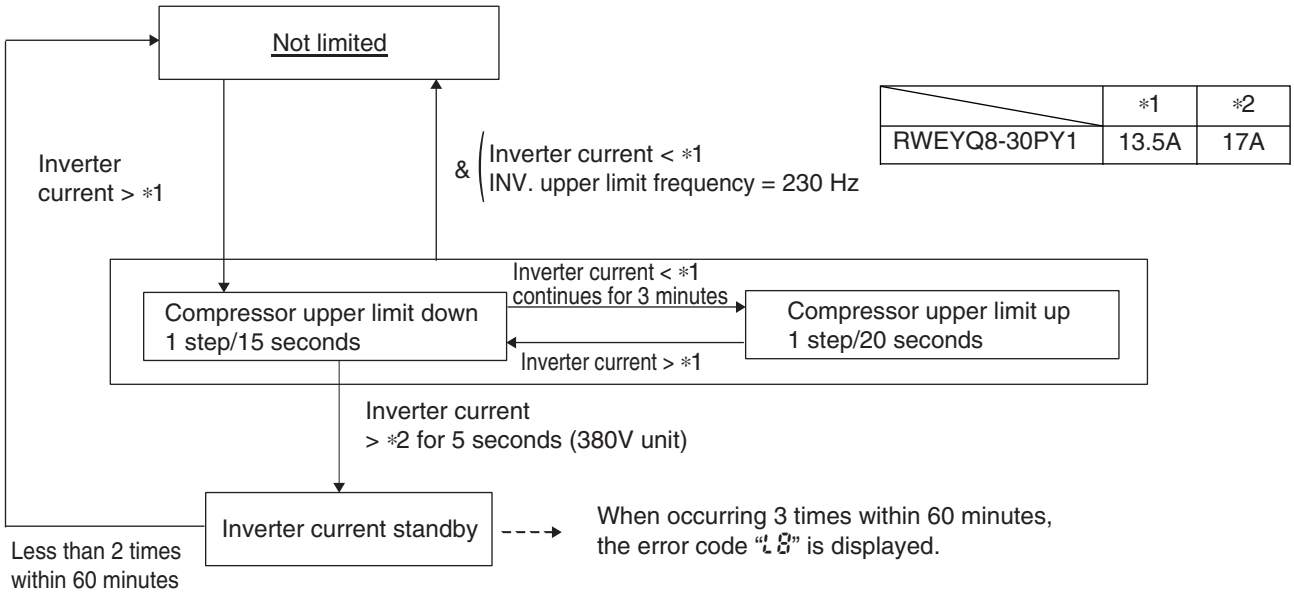
HTdi: Value of INV. compressor discharge pipe temperature compensated with outdoor air temperature



4.4 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 outside unit.

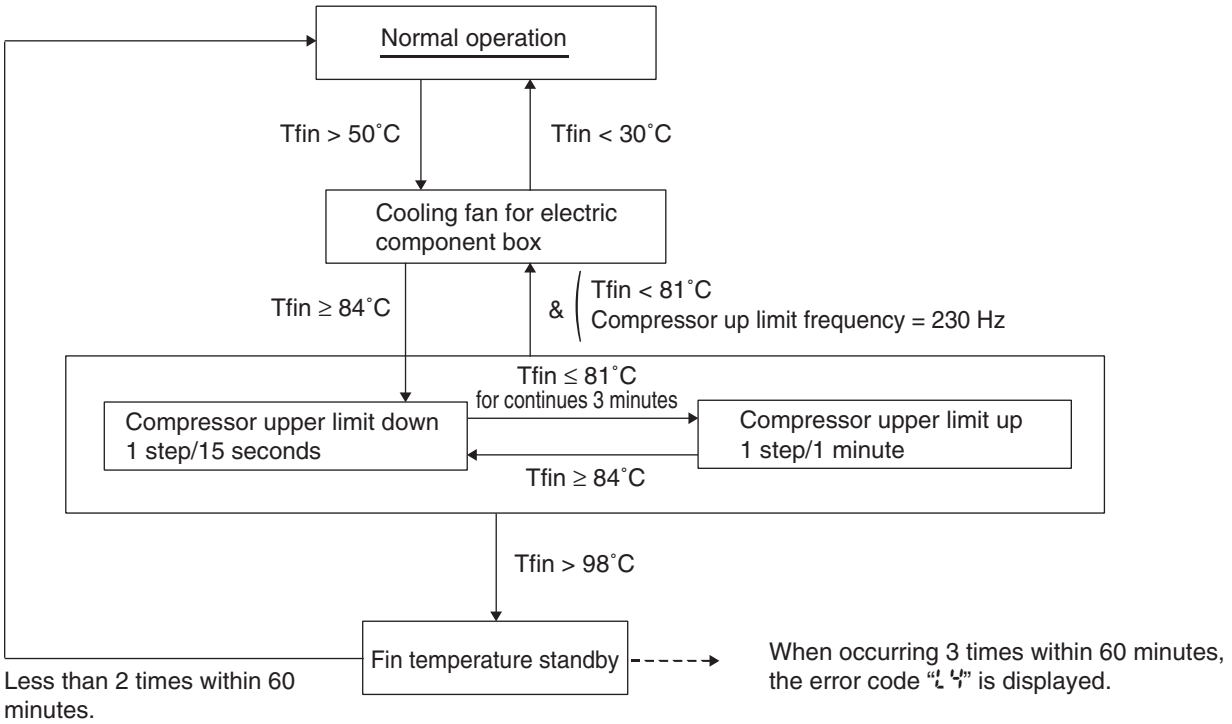
[Inverter overcurrent protection control]



	∗1	∗2
RWEYQ8-30PY1	13.5A	17A

[Radiation fin temperature control]

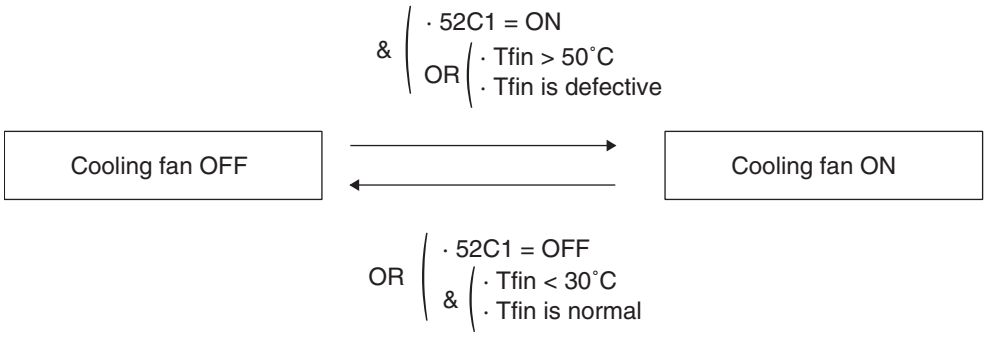
Tfin: Radiation fin temperature



4.5 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 outside unit.



5. Other Control

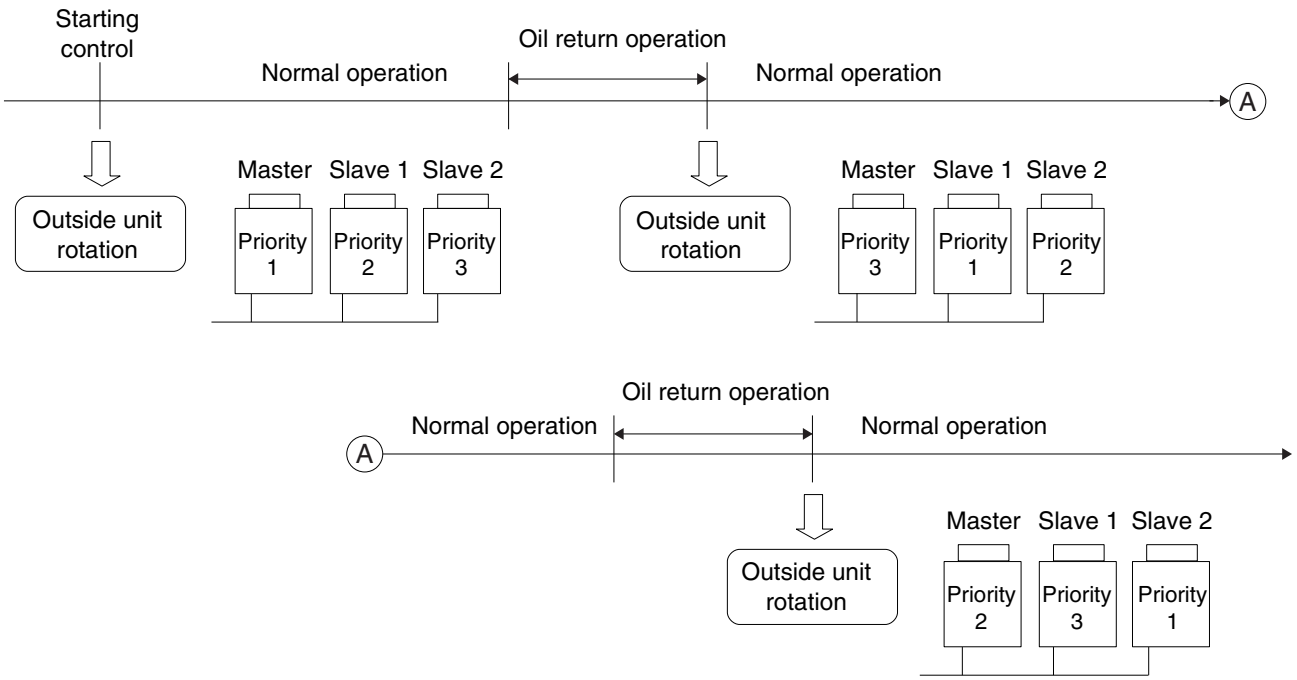
5.1 Outside Unit Rotation

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

[Details of outside unit rotation]
In the case of multi outside unit system, each outside unit is given an operating priority for the control.
Outside unit rotation makes it possible to change the operating priority of outside 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 outside unit rotation]
- After oil return operation
- At the beginning of the starting control

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



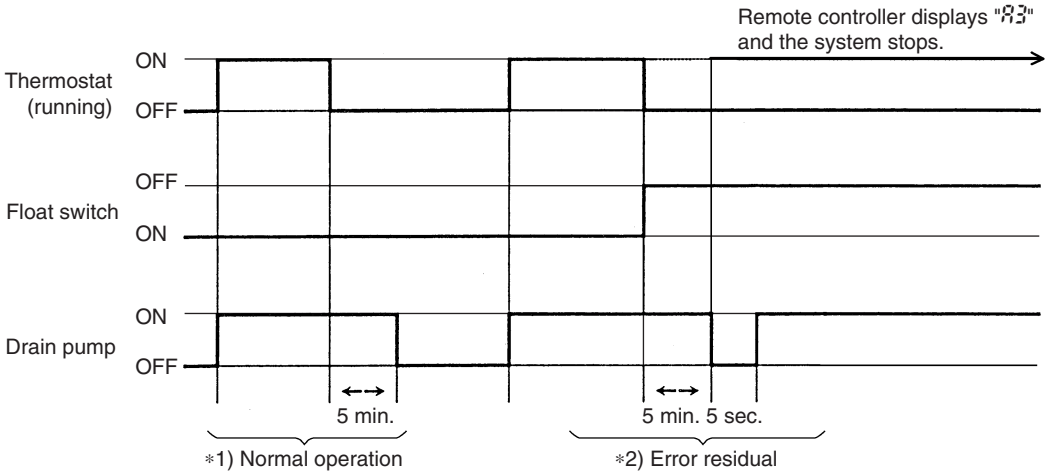
Note: ∗ “Master unit”, “slave unit 1” and “slave unit 2” in this section are the names for installation. They are determined in installation work, and not changed thereafter. (These names are different from “master unit” and “slave unit” for control.)
The outside unit connected the control wires (F1 and F2) for the indoor unit should be designated as master unit.
Consequently, The LED display on the main PCB for “master unit”, “slave unit 1” and “slave unit 2” do not change. (Refer to the P.84.)

6. Outline of Control (Indoor Unit)

6.1 Drain Pump Control

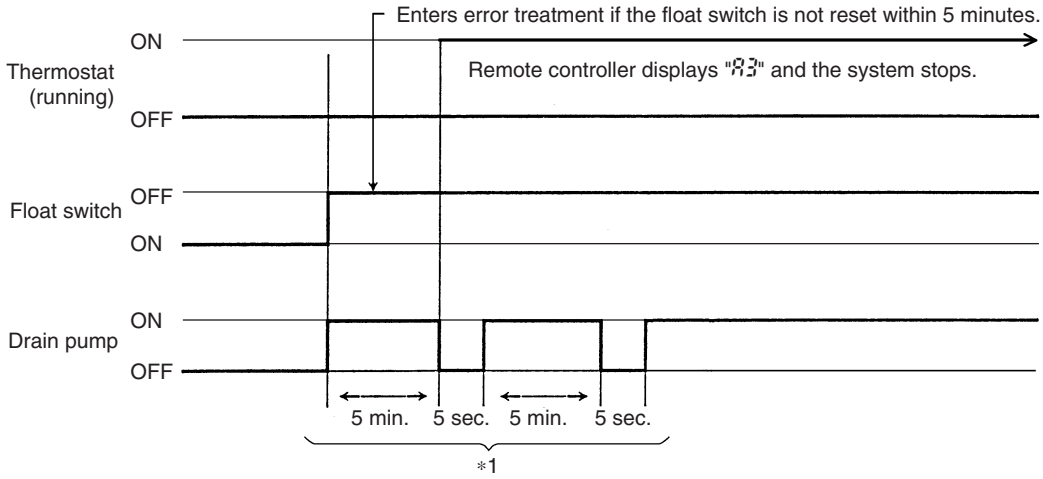
1. The drain pump is controlled by the ON/OFF buttons.

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



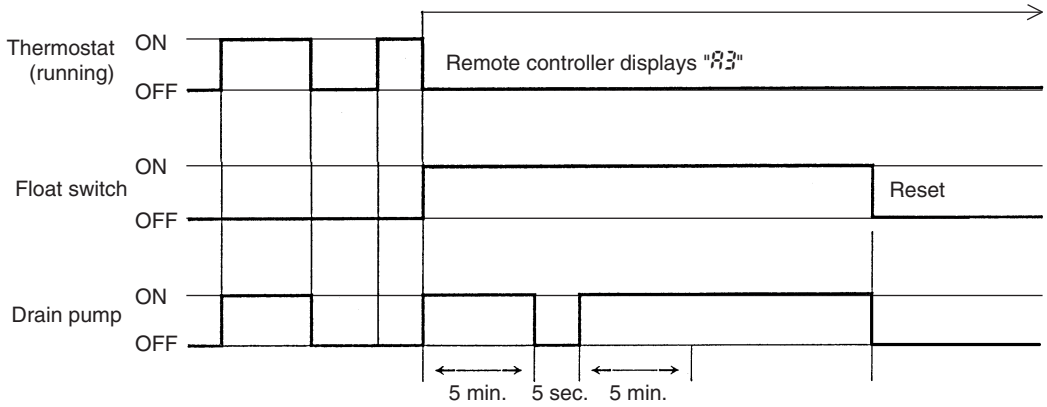
Note: ∗1. (Normal operation):
The objective of residual operation is to completely drain any moisture adhering to the fin of the indoor unit heat exchanger when the cooling thermostat is OFF.
∗2. (Error residual):
The remote controller will display "R3" and the air conditioner will come to an abnormal stop in 5 minutes if the float switch is turned OFF while the cooling thermostat is ON.

6.1.2 When the Float Switch is Tripped during Cooling OFF by Thermostat:



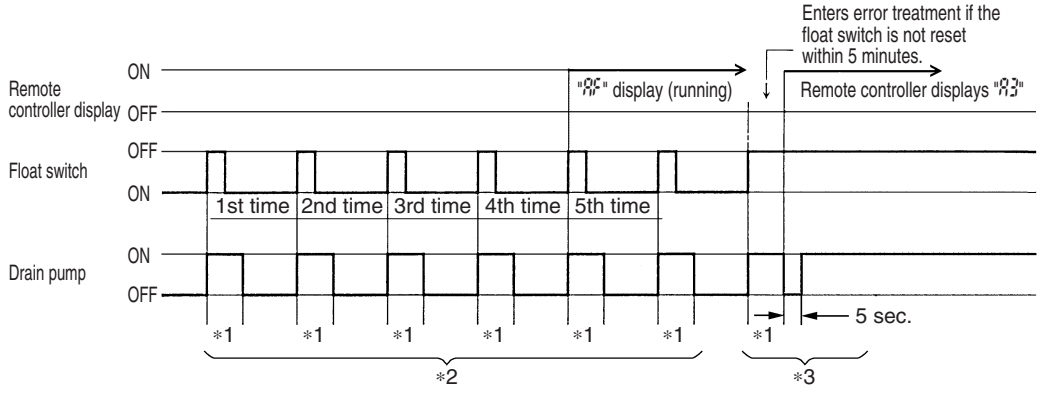
Note: ∗1. Error residual:
The remote controller will display "R3" and the air conditioner will come to an abnormal stop if the float switch is turned OFF and not turned ON again within 5 minutes while the cooling thermostat is OFF.

6.1.3 When the Float Switch is Tripped during Heating Operation:



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

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



Note: ∗1: 5 minutes

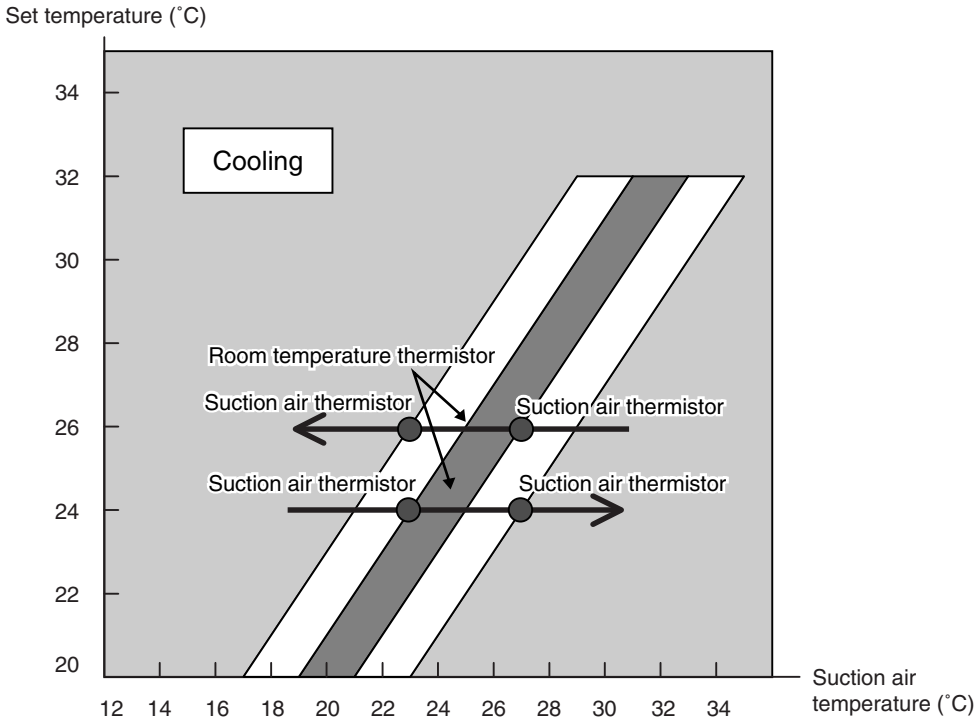
∗2. Error residual:
The remote controller will display "AF" if the float switch is tripped 5 times in succession when the cooling thermostat is OFF.

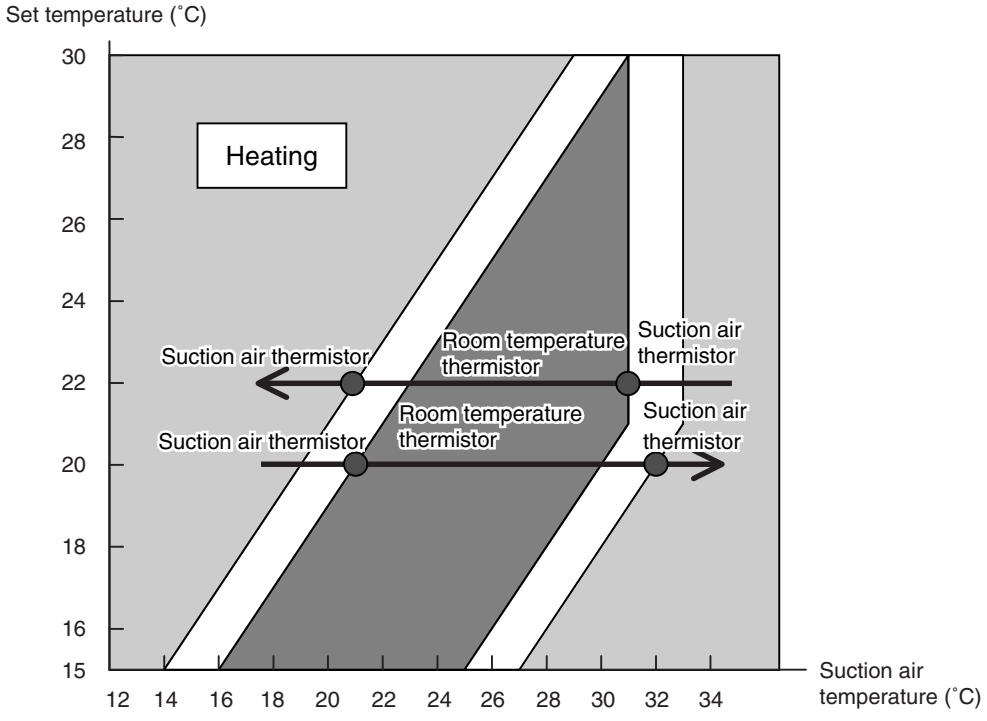
∗3. Error residual:
The remote controller will display "A3" and the air conditioner will come to an abnormal stop if the float switch is OFF for more than 5 minutes in the case of ∗2.

6.2 Thermostat Control

6.2.1 Using Conditions for Room Temperature Thermistor

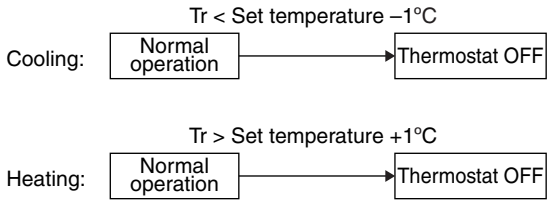
Temperature is controlled by both the room temperature thermistor in remote controller and suction air thermistor in the indoor unit. (This is however limited to when the field setting for the room temperature thermistor in remote controller is set to “Use.”)





6.2.2 Thermostat Control while in Normal Operation

VRV multi systems are set at factory to thermostat control mode using the room temperature thermistor. While in normal thermostat differential control mode (i.e., factory setting mode), the thermostat turns OFF when the system reaches a temperature of –1°C from the set temperature while in cooling or of +1°C from that while in heating.
Tr: Temperature detected with the suction air thermistor

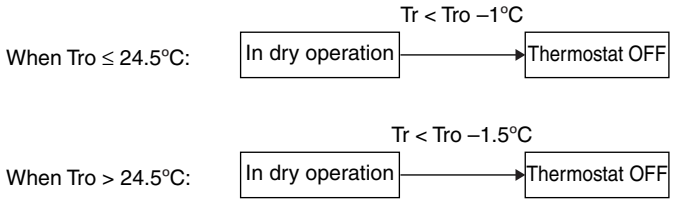


While in a single remote controller group control, the suction air thermistor is only used for this control.
Furthermore, while in heating, cassette-mounted indoor units conduct the thermostat control by a value compensated by –2°C for the value detected with the suction air thermistor. (Through field settings, the thermostat differential setting can be changed from 1°C to 0.5°C. For details on the changing procedure, refer to P.92.)

6.2.3 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.

Tro: Suction air temperature at the time of starting the dry operation
Tr: Temperature detected with the suction air thermistor



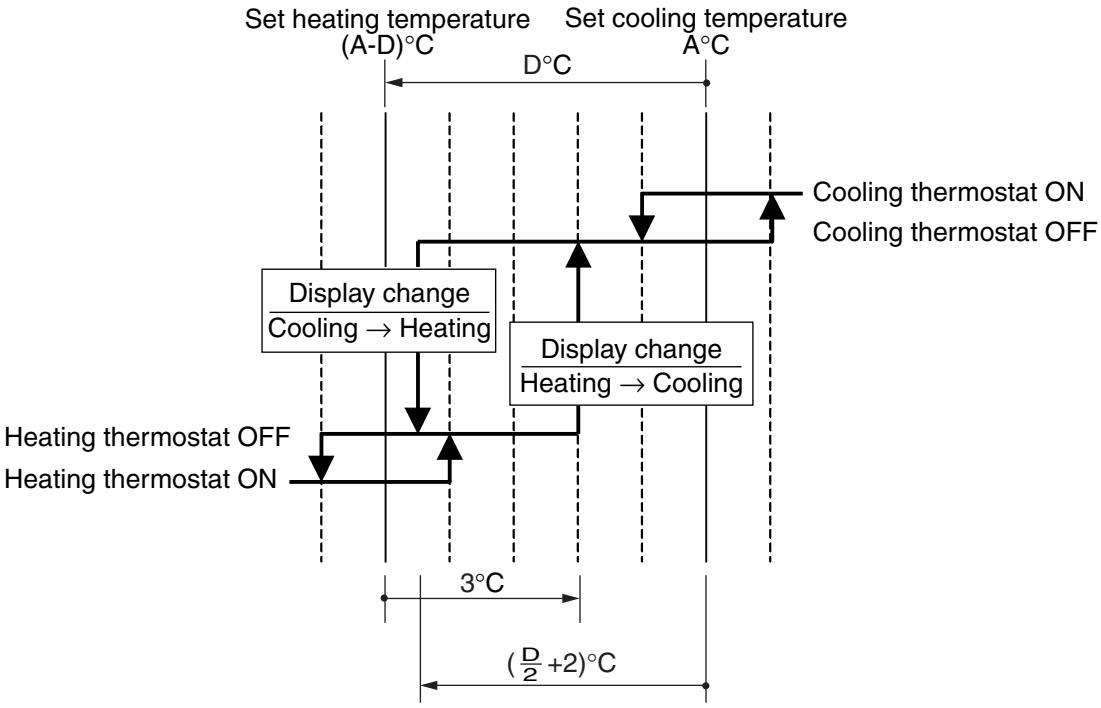
Furthermore, while in dry operation mode, fans operate at "L" tap, stops for a period of 6 minutes while the thermostat is OFF, and then return to operation at "L" tap. (This control prevents a rise in indoor temperature while in thermostat OFF mode.)

6.2.4 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°C) can be made according to information in the "Field settings from remote controller (P.92 and later)" section.

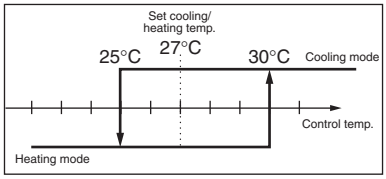
Mode No.	First Code No.	Contents of Setting	Second Code No.							
			01	02	03	04	05	06	07	08
12	4	Differential value while in "AUTO" operation mode	0°C	1°C	2°C	3°C	4°C	5°C	6°C	7°C

: Factory setting

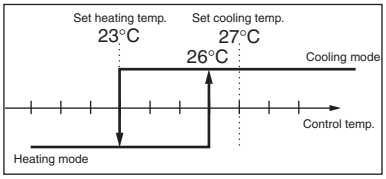


(Example) When automatic cooling temperature is set to 27°C:

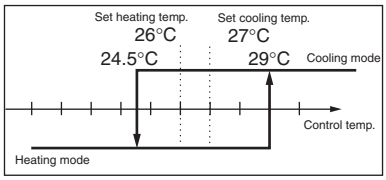
Differential value :0°C



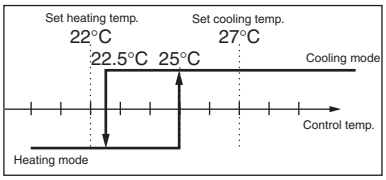
Differential value set to 4°C



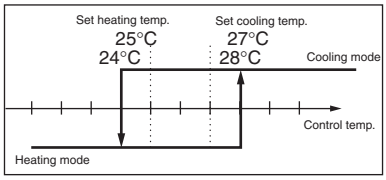
Differential value set to 1°C



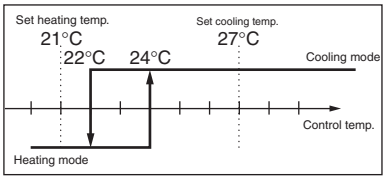
Differential value set to 5°C



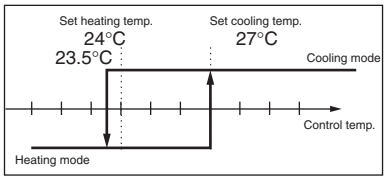
Differential value set to 2°C



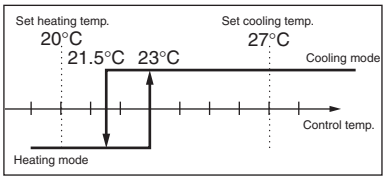
Differential value set to 6°C



Differential value set to 3°C



Differential value set to 7°C



6.3 Electronic Expansion Valve Control

In cooling, to maximize the capacity of indoor unit heat exchanger (evaporator), operate the electronic expansion valve under PI control so that the evaporator outlet superheated degree (SH) will become constant.
In heating, to maximize the capacity of indoor unit heat exchanger (condenser), operate the electronic expansion valve under PI control so that the evaporator outlet superheated degree (Condenser outlet subcooled degree) will become constant.

Cooling SH = TH_1 - TH_2	SH: Evaporator outlet superheated degree
(Heating SC = TC - TH_1)	TH_1: Temperature detected by the liquid pipe thermistor
	TH_2: Temperature detected by the gas pipe thermistor
	SC: Condenser outlet subcooled degree
	TC: High pressure equivalent saturated temperature

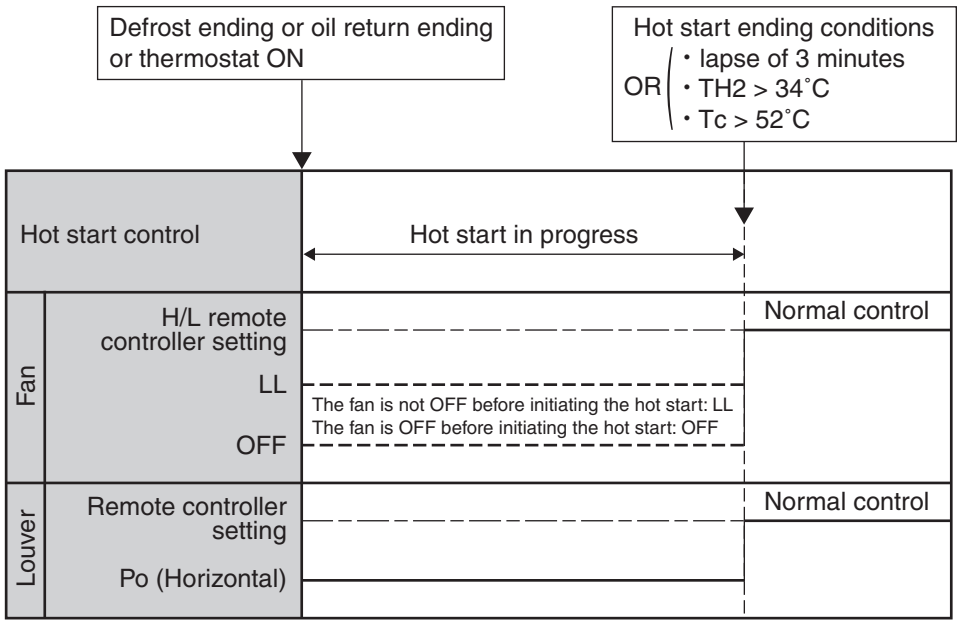
Furthermore, the default value of the optimal evaporator outlet superheated degree (condenser outlet subcooled degree) is 5 deg. However, this default value varies with the operating performance.

6.4 Hot Start Control (In Heating Only)

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

[Detail of operation]

TH2: Temperature detected with the gas pipe thermistor
Tc: High pressure equivalent saturated temperature



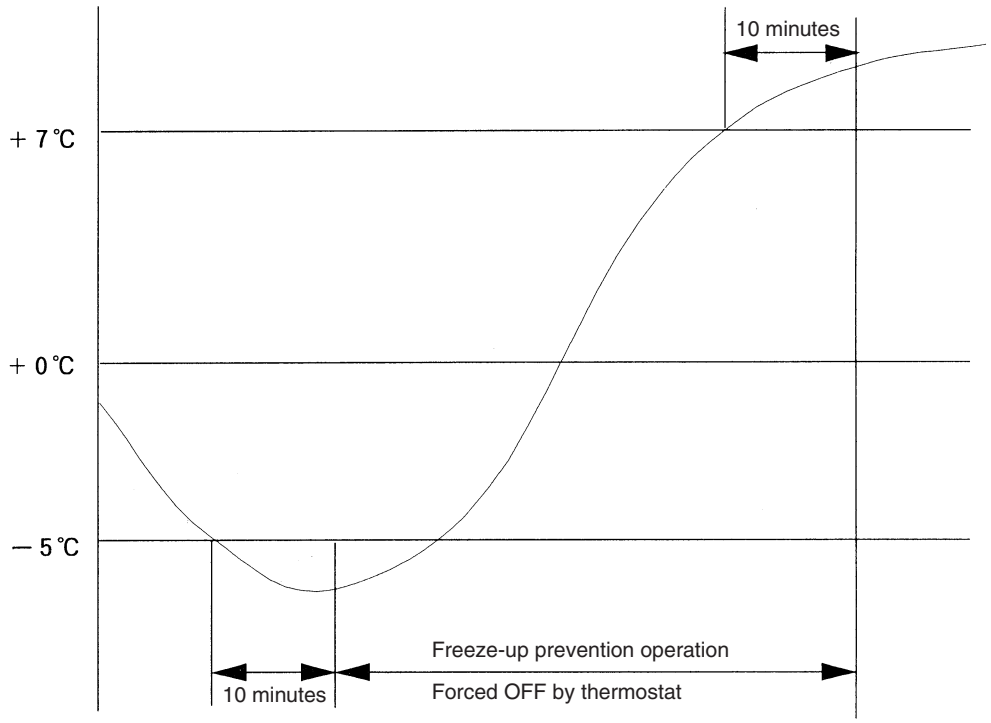
6.5 Freeze-up Prevention

Freeze-up Prevention by OFF Cycle

When the temperature detected by liquid pipe thermistor 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.

Starting condition: Temperature is –1°C or less for total of 40 minutes, or temperature is –5°C or less for total of 10 minutes.
Ending condition: Temperature is +7°C or more for 10 minutes continuously

Example: Case where temperature is –5°C or less for total of 10 minutes.



6.6 List of Swing Flap Operations

Swing flaps operate as shown in the table below.

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

∗1. L or LL only for FXFQ models

Part 5
Test Operation

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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
- Earth wire

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

⇩

Check on refrigerant piping, water piping and piping insulation

- ○ Is pipe size proper? (The design pressure of this product is 4.0MPa.)
- ○ 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 outside 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 outside 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 mode" in operation. (Refer to P.119)
- ○ Has the amount of refrigerant charge been recorded on “Record Chart of Additional Refrigerant Charge Amount”?

⇩

Check on stop valves opening

- ○ Check to make sure the all stop valves on outside units are open.

1.1.2 Turn Power ON

Turn outside unit, indoor unit, BS 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 outside unit's PCB

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

⇩

Carry out field setting on outside unit PCB

- ○ For field settings, refer to “Field Settings” on and after P.98.
  After the completion of field settings, set to “Setting mode 1”.
  In case of multi outside unit 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 noise	Demand	Multi
					IND	Master	Slave			
		HAP	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
1 outside unit installation		◑	●	●	○	●	●	●	●	●
Outside unit multi installation(*)	Master	◑	●	●	○	●	●	●	●	○
	Slave1	◑	●	●	●	●	●	●	●	◑
	Slave2	◑	●	●	●	●	●	●	●	●

* The outside unit connected the control wires (F1 and F2) for the indoor unit should be designated as master unit. The other outside 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-outside unit address, etc.).

Status

Outside 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 outside 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

Outside unit — Test lamp H2P .... Blinks
Can also be set during operation described above.

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

3. When an Indoor Unit or Outside Unit Has Been Added, or Indoor or Outside 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-outside unit address, etc.)

Status

Outside 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 Inverter PCB (A2P) and control transformer (T1R, T2R) in switch box together.

1.1.3 Check Operation

(For the operation to be done for the first time after installation, you need to perform a checking operation according to this guideline without fail. Otherwise, Abnormal Code "U3" appears and normal operation cannot be carried out.)

(1) Check the connection of interlock circuit	The outside unit cannot be operated if the interlock circuit has not been connected.
(2) As necessary, configure the system settings onsite by using the DIP switch (DS1) and BS button switches (BS1 to 5) on the outside unit PCB (A1P). After this, close the el. compo. box lid.	Always perform configuration after turning ON the power. To learn the setting method, refer to the [Service Precautions] label attached at the el. compo. box lid shown in the figure 1. Remember, the actual settings you have made must be recorded on the [Service Precautions] label.
(3) Turn ON the power to the outside units and indoor units.	Make sure to turn ON the power 6 hours before starting the operation. This is necessary to warm the crankcase by the electric heater.
(4) Start the heat source water pump and fill the heat source water in the outside unit.	The outside unit cannot be operated if the heat source water pump is not running.
(5) Make sure that the temperature of heat source water is kept within the operation range (10 - 45°C).	The outside unit cannot be operated at a temperature outside the operation range.

(6) Check the LED on the PCB (A1P) in the outside unit to see if the data transmission is performed normally.

Table 1

LED display (Factory setting)		Micro-computer normal monitor	MODE	TEST	C/H selection			Low noise	Demand	Multi
					IND	Master	Slave			
		HAP	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
1 outside unit installed		◑	●	●	○	●	●	●	●	●
Outside unit multi installation(*)	Master unit	◑	●	●	○	●	●	●	●	○
	Slave unit 1	◑	●	●	●	●	●	●	●	◑
	Slave unit 2	◑	●	●	●	●	●	●	●	●

LED display: ●: OFF ○: ON ◑: Blinking

(*) The master unit is the outside unit to which the transmission wiring for the indoor units is connected. The other outside units are slave units.

(7) • Using the BS button switches (BS1 - 5) on the PCB (A1P) of outside unit, carry out a field setting, if necessary. • In case of an installation of multiple outside units, carry out the setting on the master unit. (Setting on the slave unit becomes invalid.)	Always carry out the setting only after the power supply has been applied. For the method of setting, refer to the label of "Points to be noted when providing services" attached to the el. compo. box lid (shown in the figure 1) of the outside unit. (After setting, record the details of that setting to the label of "Points to be noted when providing services" without fail.)
(8) Check all stop valve is opened. If some stop valve is closed, open them.	**[CAUTION]** Do not leave any stop valve closed. Otherwise the compressor will fail. For Heat Recovery system of cooling and heating: Open all stop valves on the suction side, discharge gas side and liquid side. For cooling and heating switching operation system: Open the stop valves on discharge gas side and liquid side. **(Keep the stop valve on suction side fully closed.)**
(9) Perform the check operation following the instructions printed on the [Service Precautions] label.	If you press the test operation button (BS4) on the PCB (A1P) of the outside unit, for 5 seconds, the test operation starts. If you want to interrupt the test operation, press the RETURN button (BS3) on PCB (A1P) of the outside unit. The system continues residual operation for about 1 minute (maximum 10 minutes) and then stops. (During test operation, you cannot stop it by a command from a remote controller.) **You need to perform the above settings on the PCB by accessing the PCB through the inspection cover on the switch box cover.**

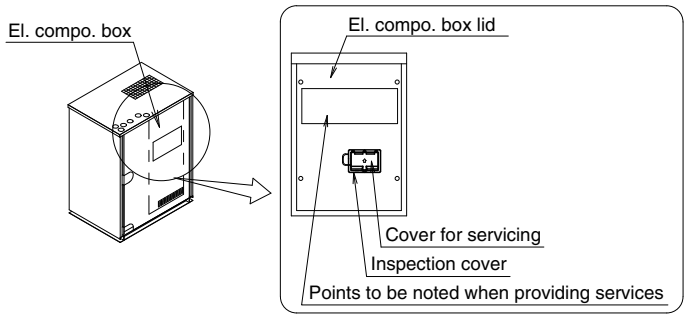


Figure 1

<Cautions for check operation>

- If operated within about 12 minutes after power supply has been applied to the indoor unit and outside unit, H2P will turn ON but the compressor does not start running. Before start operation, make sure that the LED display is correct referring to the table 1.
- 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.
- The check operation does not provide any means of checking the indoor units individually. For that purpose, perform normal operation using the remote controller after the check operation.
- Check operation is not possible in other modes such as collection mode.
- If the setting of indoor remote controller is changed before the check operation, it may not be performed correctly and error code "UF" may be displayed.

Remote controller displays error code

Error Code	Installation Error	Remedial Action
E3 E4 F3 F6 UF U2	The stop valve of an outside unit is not opened.	Open the stop valve.
U1	The phases of the power to the outside units are reversed.	Exchange 2 of the 3 phases (L1, L2, L3) to make a positive phase connection.
U3	The check operation is not completed.	Complete the check operation.
U1 U2 U4	No power is supplied to an outside or indoor unit (including phase interruption).	Check if the power wiring for the outside 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.)
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 overcharged 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 outside multi terminal is connected when there is 1 outside unit installed	Remove the line from the outside 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.
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 outside 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 Check of Normal Operation

After the check operation is completed, operate the unit normally.
(Heating is not possible if the outdoor air temperature is 24°C or higher. Refer to the Operation manual.)
Check the below items.

- Make sure the indoor and outside units are operating normally (If a knocking sound can be heard in the liquid compression of the compressor, stop the unit immediately and then energize the heater for a sufficient length of time before restarting the operation.)
- Run each indoor unit one at a time and make sure the corresponding outside unit is also running.
- Check if cold (or hot) air is coming out of the indoor unit.
- Press the fan direction and fan strength buttons on the indoor unit to check if they operate properly.

Caution **<Cautions for normal operation check>**

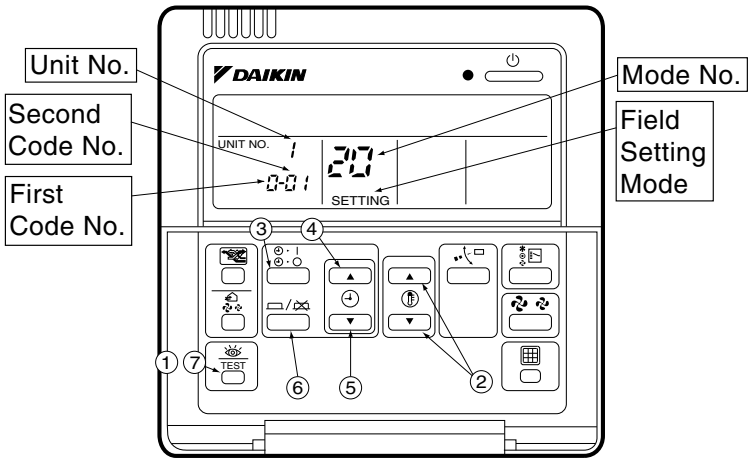
- Once stopping, the compressor will not restart in about 5 minutes even if the ON/OFF button of an indoor unit in the same system is pressed.
- When the system operation is stopped by the remote controller, the outside units may continue operating for further 5 minutes at maximum.
- If the system has not undergone any check operation by the test operation button since it was first installed, an error code "U3" is displayed. In this case, perform check operation referring to "1.1.3 Check Operation".
- After the test operation, when handing the unit over to the customer, make sure the el. compo. box lid, the inspection door, 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 local 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.)

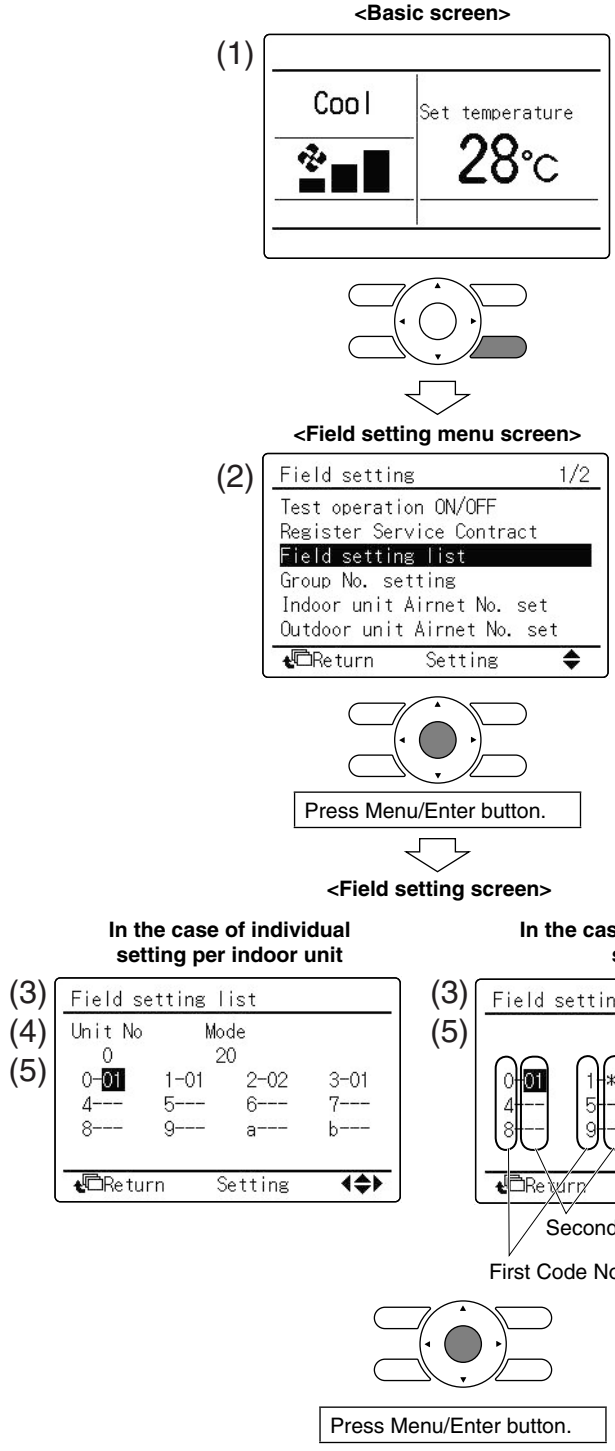
2.1 Wired Remote Controller

2.1.1 BRC1C Type/BRC1D Type



1. When in the normal mode, press the " " button for 4 seconds or more, and the Field Setting Mode is entered.
2. Select the desired Mode No. with the " " button (②).
3. During group control, when setting by each indoor unit (mode No. 20, 22 and 23 have been selected), press the " " button (③) and select the Indoor Unit No. to be set. (This operation is unnecessary when setting by group.)
4. Press the " " upper button (④) and select First Code No.
5. Press the " " lower button (⑤) and select the Second Code No.
6. Press the " " button (⑥) once and the present settings are set.
7. Press the " " button (⑦) to return to the Normal Mode.

2.1.2 BRC1E51/52



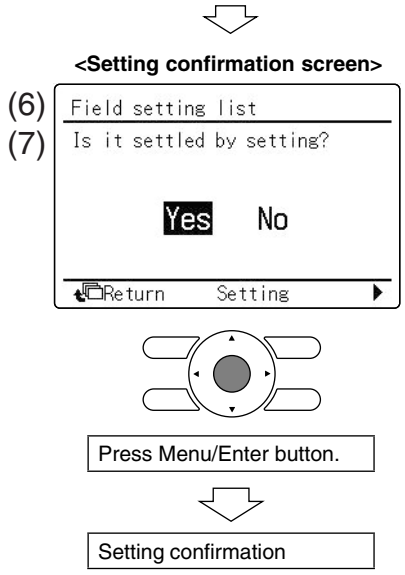
1 Press Cancel button for 4 seconds or more.
Field setting menu is displayed.

2 Select Field setting list in the field setting menu, and press Menu/Enter button.
Field setting list 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 the case of group total setting, all of Second Code No. which may be set are displayed as " ∗ ". " ∗ " is changed to Second Code No. to be set. And, Second Code No. " - " means no function.]



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

7 Select Yes and press Menu/Enter button. Setting details are determined and field setting list screen returns.

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

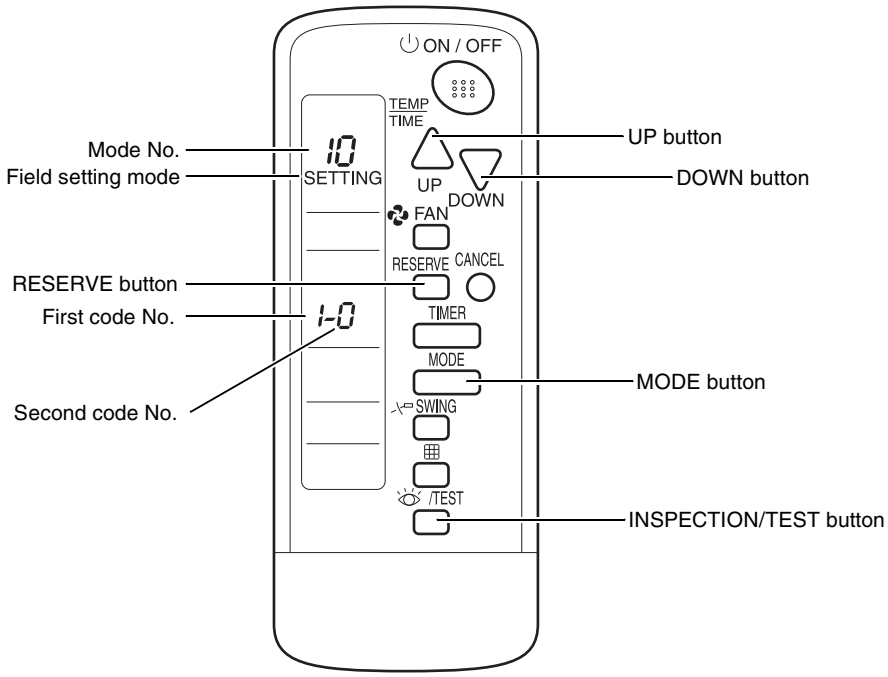
9 After all setting changes are completed, press Cancel button twice.

10 Backlight goes out, and “Connection under check Please wait for a moment” is displayed for initialization. After the initialization, the basic screen returns.

⚠CAUTION

- When an optional accessory is installed on the indoor unit, settings of the indoor unit may be changed. See the manual of the optional accessory.
- For field setting details of the outside unit, see installation manual attached to the outside unit.

2.2 Wireless Remote Controller



Setting

To set the field settings, you have to change:

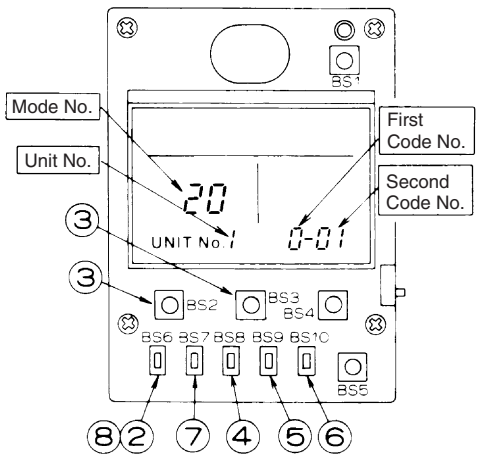
- Mode No.
- First code No.
- Second code No.

To change the field settings, proceed as follows:

Step	Action
1	Hold down the INSPECTION/TEST button for at least 4 seconds during normal mode to enter the “Field setting mode”.
2	Press the MODE button to select the desired “Mode No.”
3	Press the UP button to select the “First code No.”
4	Press the DOWN button to select the “Second code No.”
5	Press the RESERVE button to set the present settings.
6	Press the INSPECTION/TEST button to return to the “Normal mode”.

2.3 Simplified Remote Controller

BRC2A51
BRC2C51



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 cleaning sign interval	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.				
	1	Long life filter type		Long life filter		Ultra long life filter		—		—	
	2	Selection of thermistor		Room temperature thermistor in remote controller and indoor unit suction air thermistor		Indoor unit suction air thermistor		Room temperature thermistor in remote controller		—	
	3	Filter cleaning sign		Display		No display		—		—	
11 (21)	7	Airflow adjustment		OFF		Completion of airflow adjustment		Start of airflow adjustment		—	
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	Forced ON/OFF function		Forced OFF		ON/OFF operation		External protection device input		—	
	2	Thermostat differential changeover (Set when remote sensor is to be used.)		1°C		0.5°C		—		—	
	3	OFF by thermostat fan speed		LL		Set fan speed		—		—	
	4	Automatic mode differential (automatic temperature differential setting for VRV system Heat Recovery series cool/heat)		01:0	02:1	03:2	04:3	05:4	06:5	07:6	08:7
	5	Power failure automatic reset		Not equipped		Equipped		—		—	
	6	Airflow when cooling thermostat is OFF		LL airflow		Preset airflow		—		—	
13 (23)	0	Setting of Normal Airflow (Set when installed in place with ceiling higher than 2.7 m.)		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	Airflow (Set at installation of decoration panel.)		Equipped		Not equipped		—		—	
	4	Airflow direction range setting		Draft prevention		Standard		Ceiling Soiling prevention		—	
	5	Setting of the static pressure selection		Standard		High static pressure		—		—	
	6	External static pressure		01:30	02:50	03:60	04:70	05:80	06:90	07:100	08:110
				09:120	10:130	11:140	12:150	13:160	14:180	15:200	∗6
15 (25)	1	Thermostat OFF excess humidity		Not equipped		Equipped		—		—	
	2	Direct duct connection (when the indoor unit and heat reclaim ventilation unit are connected by duct directly.) ∗5		Not equipped		Equipped		—		—	
	3	Drain pump humidifier interlock selection		Not equipped		Equipped		—		—	
	5	Individual setting of ventilation		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.
- The FXMQ20·25·32PVE cannot be set to 110-200Pa.
- The FXMQ40PVE cannot be set to 180 or 200Pa.
- The FXMQ50·63·80·100·125PVE cannot be set to 30Pa.
- The FXMQ140PVE cannot be set to 30Pa and 150-200Pa.

2.4.1 Detailed Explanation of Setting Modes

Filter Cleaning Sign Interval

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

Set Time

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

Ultra Long Life Filter Type

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

Setting Table

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

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 Sign

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

Airflow Adjustment

Make settings in either method (a) or method (b) as explained below. (FXMQ140PVE cannot be selected method (a). Please select method (b).)

(a) Use the airflow auto adjustment function to make settings.

Airflow auto adjustment: The volume of blow-off air is automatically adjusted to the rated quantity.

(1) Check that power supply wiring to the air conditioner is completed along with duct installation. If a closing damper is installed in the air conditioning system, make sure that the closing damper is opened. Furthermore, check that the air filter as a field supply is attached to the air passage on the suction side.

(2) If there are a number of air outlets and inlets, adjust the throttles so that the airflow rate of each air outlet and inlet will coincide with the designed airflow rate. At that time, operate the air conditioner in “fan operation mode”. To change the airflow rate, press and set the airflow adjustment button of the remote controller to HH, H, or L.

(3) Make settings for airflow automatic adjustment. After setting the air conditioner to “fan operation mode”, stop the air conditioner, go to “field setting mode”, select “mode No. 21” (11 in the case of group settings), set the setting “first code No.” to 7, and set the setting “second code No.” to 03.

Return to normal mode after these settings, and press the ON/OFF operation button. Then the operation lamp will be lit and the air conditioner will go into fan operation for airflow automatic adjustment. Do not adjust the throttles of the air outlets or inlets during automatic adjustment of the air conditioner. After the air conditioner runs approximately 1~8 minutes, the air conditioner will finish airflow adjustment automatically, the operation lamp will be turned OFF, and the air conditioner will come to a stop.

(4) After the air conditioner stops operating, check with “mode No. 21” on an indoor unit basis that 02 is set for the “second code No.” in the table below. If the air conditioner does not stop operating automatically or the “second code No.” is not 02, repeat steps from (3). If the outside unit is not turned ON, U4 or UH will be displayed. This display is not problematic, because this function is set for the indoor unit. Continue setting the function.

After setting this function, be sure to turn ON the outside unit before the test operation of the outside unit.

⚠ CAUTION

- If there is any change after airflow adjustment in the ventilation paths (e.g., the duct and air outlet), be sure to make airflow auto adjustment again.
- Consult your Daikin representative if there is any change in the ventilation paths (e.g., the duct and air outlet) after the test operation of the outside unit is finished or the air conditioner is moved to another place.

(b) Select external static pressure with remote controller check that 01 (OFF) is set for the “second code No.” in “mode No. 21” for airflow adjustment on an indoor unit basis in the table below. The “second code No.” is set to 01 (OFF) at factory setting. Change the “second code No.” as shown in external static pressure settings on P.98 according to the external static pressure of the duct to be connected.

(1) The “second code No.” is set to 07 (an external static pressure of 100 Pa) at factory setting. (FXMQ40 · 50 · 63 · 80 · 100 · 125 · 140PVE)

The “second code No.” is set to 02 (an external static pressure of 50 Pa) at factory setting. (FXMQ20 · 25 · 32PVE)

Mode No.	First Code No.	Second Code No.	Airflow Adjustment
11 (21)	7	01	OFF
		02	Completion of airflow adjustment
		03	Start of airflow adjustment

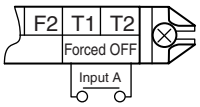
Optional Output Switching

Using this setting, "operation output signal" and "abnormal output signal" can be provided. Output signal is output between terminals 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 "ON/OFF" 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 outside. The input is performed from the T1-T2 terminal of the operation terminal block in the el. compo. box.



Mode No.	First Code No.	Second Code No.	Operation by Input of The Signal A
12 (22)	1	01	Input ON: Forced OFF (prohibition of using the remote controller). Central control ON/OFF enabled. Input OFF: Permission of using the remote controller
		02	Input OFF → ON: Operation Input ON → OFF: OFF
		03	Input ON: Operation Input OFF: The system stops, then the applicable unit indicates "*80*".
		04	Input ON: Forced OFF (prohibition of using the remote controller). Central control ON/OFF disabled.

Thermostat Switching

Differential value during thermostat ON/OFF control can be changed. (For details, refer to "6.2.2 Thermostat Control while in Normal Operation" on P.76.)

Mode No.	First Code No.	Second Code No.	Differential Value
12(22)	2	01	1ºC
		02	0.5ºC

Airflow Setting when Heating Thermostat is OFF

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

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

During heating operation, this setting takes precedence over "Fan stop when thermostat is OFF".

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

Setting of Operation Mode to "AUTO"

This setting changes 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°C	1°C	2°C	3°C	4°C	5°C	6°C	7°C

The automatic operation mode setting is made by the use of the "Operation Mode Selector" button. Only available if heat recovery system indoor unit is connected by BS unit to outdoor.

Auto Restart after Power Failure Reset

For the air conditioners with no setting for the function, 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 (same as factory 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
		03	OFF

Setting of Normal Airflow

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

■ **FXAQ**

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

■ **FXHQ**

Mode No.	First Code No.	Second Code No.	Ceiling Height
13(23)	0	01	≤ 2.7 m
		02	2.7 - 3.5 m

■ **FXFQ25~80 (All Round Outlet)**

Mode No.	First Code No.	Second Code No.	Setting	Ceiling Height
13 (23)	0	01	Standard • All round outlet	≤ 2.7 m
		02	High Ceiling	2.7 - 3 m
		03	Higher Ceiling	3 - 3.5 m

■ **FXFQ100~125 (All Round Outlet)**

Mode No.	First Code No.	Second Code No.	Setting	Ceiling Height
13 (23)	0	01	Standard • All round outlet	≤ 3.2 m
		02	High Ceiling	3.2 - 3.6 m
		03	Higher Ceiling	3.6 - 4.2 m

■ **In the Case of FXFQ25~80 (*2 4-Way, 3-Way, 2-Way Outlets)**

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 3.1 m	Lower than 3.0 m	Lower than 3.5 m
		02	High Ceiling (H)	Lower than 3.4 m	Lower than 3.3 m	Lower than 3.8 m
		03	Higher Ceiling (S)	Lower than 4.0 m	Lower than 3.5 m	—

■ **In the Case of FXFQ100~125 (*2 4-Way, 3-Way, 2-Way Outlets)**

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 3.4 m	Lower than 3.6 m	Lower than 4.2 m
		02	High Ceiling (H)	Lower than 3.9 m	Lower than 4.0 m	Lower than 4.2 m
		03	Higher Ceiling (S)	Lower than 4.5 m	Lower than 4.2 m	—

∗1 “Mode No.” setting is done in a batch for the group. To make or confirm settings for an individual unit, set the internal mode number in parentheses.

∗2 The figure of the ceiling height is for the all round outlet. For the settings for 4-direction (part of corner closed off), 3-direction and 2-direction outlets, see the installation manual and technical guide supplied with the separately sold sealing material kit.

■ **FXUQ**

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	≤ 2.7 m	≤ 3.0 m	≤ 3.5 m
		02	High Ceiling	≤ 3.0 m	≤ 3.5 m	≤ 3.8 m
		03	Higher Ceiling	≤ 3.5 m	≤ 3.8 m	—

Selection of Airflow Direction

Set the airflow direction of indoor units as given in the table below. (Set when sealing material kit of air discharge outlet has been installed.) The second code No. is factory set 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

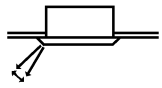
Operation of Downward Flow Flap: Yes/No (Only for FXKQ)

When using only the front-flow, sets yes/no of the swing flap operation of down-flow.

Mode No.	First Code No.	Second Code No.	Setting
13 (23)	3	01	Down-flow operation: Yes
		02	Down-flow operation: No

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

■ **FXDQ**

Mode No.	First Code No.	Second Code No.	External Static Pressure
13 (23)	5	01	Standard (10Pa)
		02	High static pressure (30Pa)

External Static Pressure Settings (for FXMQ-P model)

Mode No.	First Code No.	Second Code No.	External Static Pressure
13 (23)	6	01	30Pa (∗1)(∗4)
		02	50Pa
		03	60Pa
		04	70Pa
		05	80Pa
		06	90Pa
		07	100Pa
		08	110Pa (∗3)
		09	120Pa (∗3)
		10	130Pa (∗3)
		11	140Pa (∗3)
		12	150Pa (∗3) (∗4)
		13	160Pa (∗3) (∗4)
		14	180Pa (∗2) (∗3) (∗4)
		15	200Pa (∗2) (∗3) (∗4)

∗1 FXMQ50 · 63 · 80 · 100 · 125PVE cannot be set to 30 Pa.
∗2 FXMQ40PVE cannot be set to 180 or 200 Pa.
∗3 FXMQ20 · 25 · 32PVE cannot be set to 110-200 Pa.
∗4 FXMQ140PVE cannot be set to 30 Pa and 150-200 Pa.
∗5 FXMQ20 · 25 · 32PVE: Second Code No. is set to 02.
FXMQ40 · 50 · 63 · 80 · 100 · 125 · 140PVE: Second Code No. is set to 07.

Humidification when Heating Thermostat is OFF

Setting to "Humidification Setting" turns ON the humidifier if suction air temperature is 20ºC or above and turns OFF the humidifier if suction air temperature is 18ºC 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 1 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.	Setting
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.	Setting
15 (25)	5	01	Normal
		02	Individual operation of ventilation

2.4.2 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 next page.)
Centralized controller is normally available for operations. (Except when centralized monitor is connected)

2.4.3 Contents of Control Modes

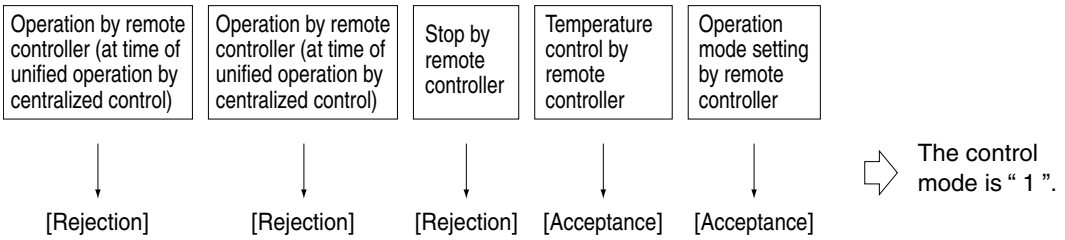
20 modes consisting of combinations of the following 5 operation modes with temperature and operation mode setting by remote controller can be set and displayed by operation modes 0 through 19.

- ON/OFF control impossible by remote controller
  Used when you want to turn ON/OFF by centralized 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 centralized remote controller only, and OFF by remote controller only.
- Centralized
  Used when you want to turn ON by centralized 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 centralized 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 centralized remote controller when time of system start is programmed.

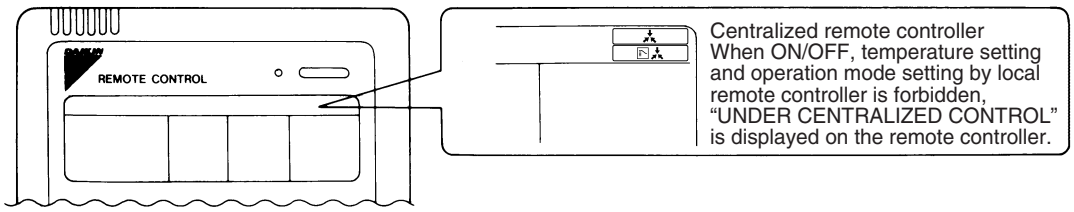
Selection of Control Mode No.

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 Mode	Control by Remote Controller					Control Mode
	Operation		Stop	Temperature control	Operation mode setting	
	Unified operation, individual operation by centralized remote controller, or operation controlled by timer	Unified stop, individual stop by centralized 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 only)		Rejection	Acceptance	8
					Rejection	18
				Acceptance	Acceptance	9
					Rejection	19

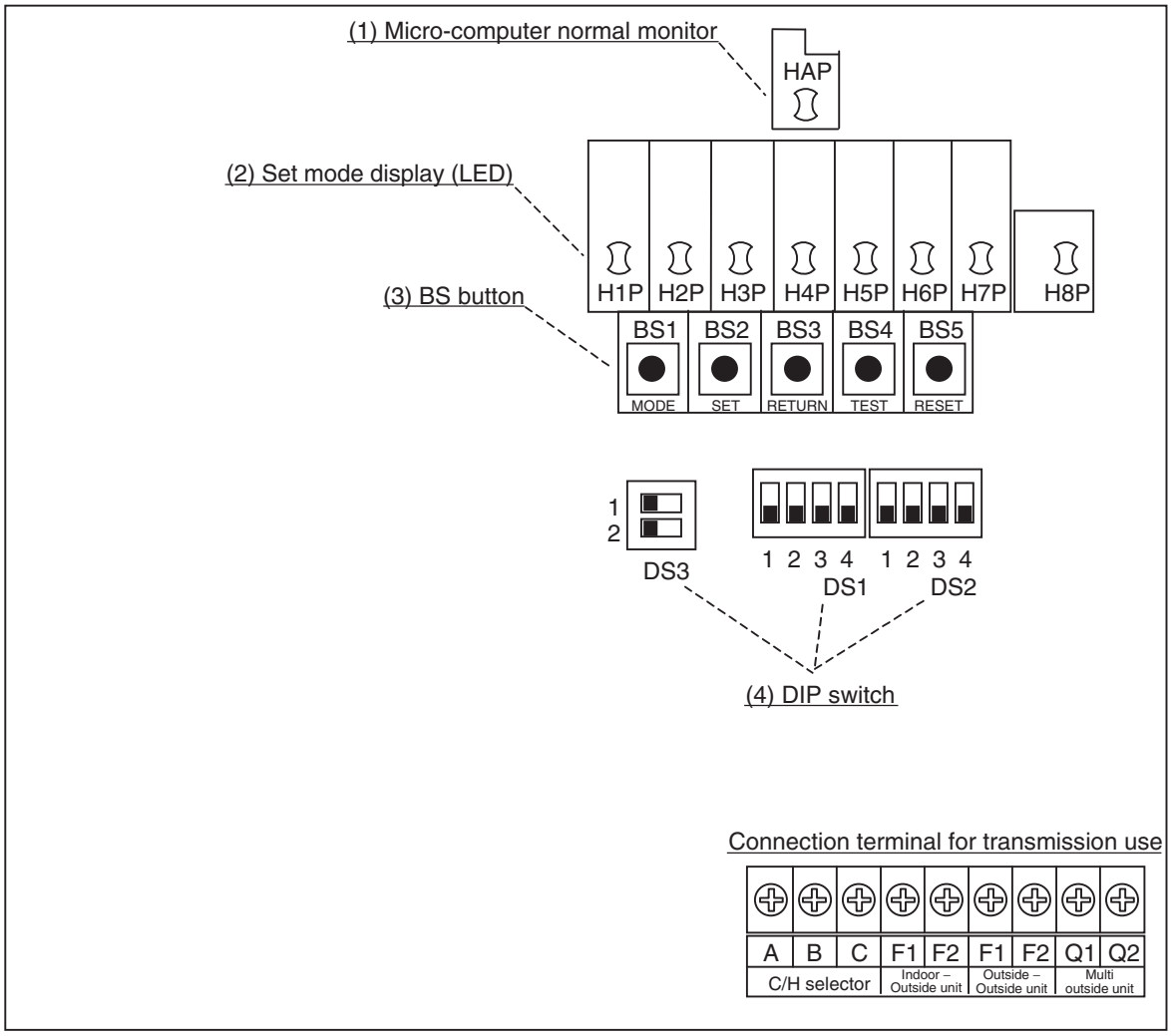


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3. Field Setting from Outside Unit PCB

3.1 Location of DIP Switch and BS Button

Outside 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) BS 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 outside unit. Only Heat pump.
	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)		
DS3-1, 2	ON	Not used	Do not change the factory settings.
	OFF (Factory setting)		

Caution **DIP switch setting after changing the main PCB (A1P) to spare PCB**

When you change the 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	200V
		OFF	400V
DS1-3	—	—	
DS1-4	—	—	
DS2-1	Japan/Except Japan setting	ON	Except Japan
		OFF	Japan
DS2-2	HP setting		
DS2-3			
DS2-4			

	8	10
DS2-2	ON	OFF
DS2-3	OFF	ON
DS2-4	OFF	OFF

Refer to “DS1-1~4, DS2-1~4 setting detail” on next page.

Detail of DS1-1~4, DS2-1~4 setting

Unit	Setting method (■represents the position of switches)	
Heat pump/Recovery (8HP) RWEYQ8T7Y1B RWEYQ8T8Y1B		Set DS2-1 and DS2-2 to ON.
Heat pump/Recovery (10HP) RWEYQ10T7Y1B RWEYQ10T8Y1B		Set DS2-1 and DS2-3 to ON.

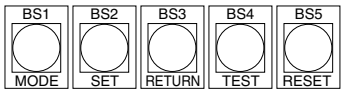
Unit	Setting method (■represents the position of switches)	
BSVQ100PV1 BSVQ100PV18(A)(B) BSVQ100PV19 BS1Q10AV1		Set DS2-1 and DS2-2 to ON.
BSVQ160PV1 BSVQ160PV18(A)(B) BSVQ160PV19 BS1Q16AV1		Set DS2-1 and DS2-3 to ON.
BSVQ250PV1 BSVQ250PV18(A)(B) BSVQ250PV19 BS1Q25AV1		Set DS1-2, DS2-1 and DS2-3 to ON.

3.3 Setting by BS Buttons

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

Factory Setting ○: ON ●: OFF ◑: BLINK

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



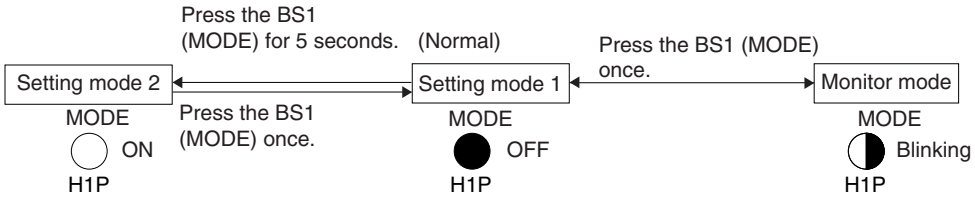
There are the following 3 setting modes.

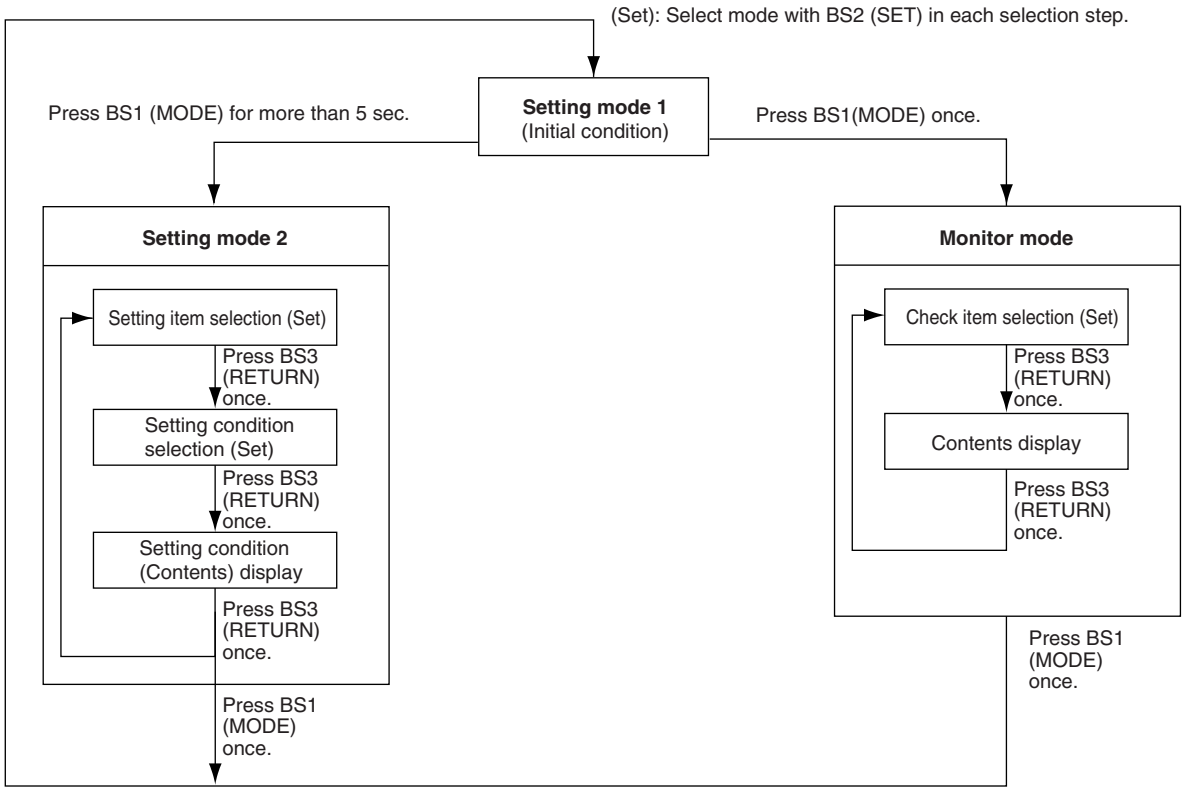
(1) Setting mode 1 (H1P OFF)
Initial status (when normal) : Used to select the cool/heat setting. Also indicates during "abnormal" and "demand control".

(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, 6 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 outside unit system)	Used to temporarily prohibit the applicable outside unit from operating should there be any defective part in multi outside 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 outside unit system)	
40	Emergency operation (Setting for the slave unit 2 operation prohibition in multi outside unit system)	
47	Minimum position variable waterflow valve 50l/min.	During commissioning, prior to test-run: - Operate indoor units in "fan-only" mode. - Pump operates by output signal 230 VPC on terminals 1-2. - Set VWV manualy to reach 50 l/min. - Measure the voltage input at terminals 3-4 to set minimum position at minimum compressor frequency.
50	Standard geothermal	If water inlet temperature will be below +10°C, set geothermal function to "ON". Need to add 30% glycol in water circuit prior to operation of the unit.

○: 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 Noise H6P	Demand H7P	Contents		LED Display ∗ Factory setting
1	Cool / Heat Unified address	○	●	●	●	●	●	○	Address (6 digits)	0 1 ~ 31	○●●●●●● ∗ ○●●●●●○ ○●○○○○○
2	Demand address	○	●	●	●	●	○	●	Address (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 (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 Delay HJ error	 5min. 10min. 15min. 20min. 25min. 30min. 35min.	○●●●●●○ ∗ ●●●○ ●●○● ●●○○ ●○●● ●○●○ ●○○● ●○○○
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	MODE H1P	TEST H2P	C/H Selection IND H3P	C/H Selection Master H4P	C/H Selection Slave H5P	Low Noise H6P	Demand H7P	Setting Condition: Contents	Setting Condition: LED Display ✻ Factory setting
38	Emergency operation (Master unit with multi outside unit system is inhibited to operate.)	○	○	●	●	○	○	●	OFF Master unit operation: Inhibited	○●●●●●○ ✻ ○●●●●○●
39	Emergency operation (Sub unit 1 with multi outside unit system is inhibited to operate.)	○	○	●	●	○	○	○	OFF Slave unit 1 operation: Inhibited	○●●●●●○ ✻ ○●●●●○●
40	Emergency operation (Sub unit 2 with multi outside unit system is inhibited to operate.)	○	○	●	○	●	●	●	OFF Slave unit 2 operation: Inhibited	○●●●●●○ ✻ ○●●●●○●
47	Min. position variable water flow valve (special model)	○	○	●	○	○	○	○	○●●●●● ○●●●●●○ ○●●●●○● ○●●●●○○ ○●●●○●● ○●●●○●○ ○●●●○○○ ○●●○●●● ○●●○●●○ ○●●○●○● ○●●○●○○ ○●●○○●● ○●●○○●○	Min. Step / Volt X44A 1 / 0,9 2 / 1,2 3 / 1,4 4 / 1,6 5 / 1,8 6 / 1,9 7 / 2,1 8 / 2,2 9 / 2,3 10 / 2,4 11 / 2,5 12 / 2,7 13 / 2,8
58	Geothermal	○	○	○	○	●	○	●	OFF ON	○●●●●●● ○●●●●○○

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 BS units	◑	●	●	●	○	○	●	
7	Number of connected zone units (excluding outside and BS unit)	◑	●	●	●	○	○	○	
8	Number of outside units	◑	●	●	○	●	●	●	
9	Number of connected BS units	◑	●	●	○	●	●	○	Lower 4 digits: upper (∗4)
10	Number of connected BS units	◑	●	●	○	●	○	●	Lower 4 digits: lower (∗4)
11	Number of zone units (excluding outside and BS unit)	◑	●	●	○	●	○	○	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.140.
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.

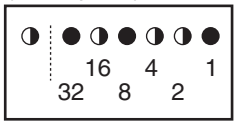
∗2. Display contents of “Various setting”

		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

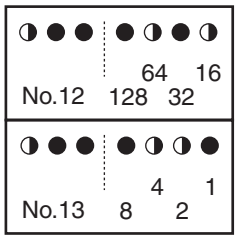
Te: Low pressure equivalent saturation temperature

∗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 BS 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

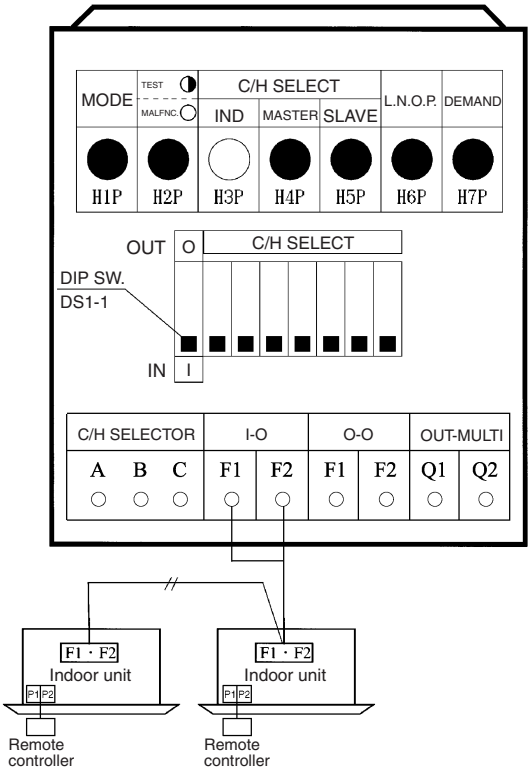
3.7.1 Cool/Heat Mode Switching (Heat Pump Connection)

There are the following 5 cool/heat switching modes.

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

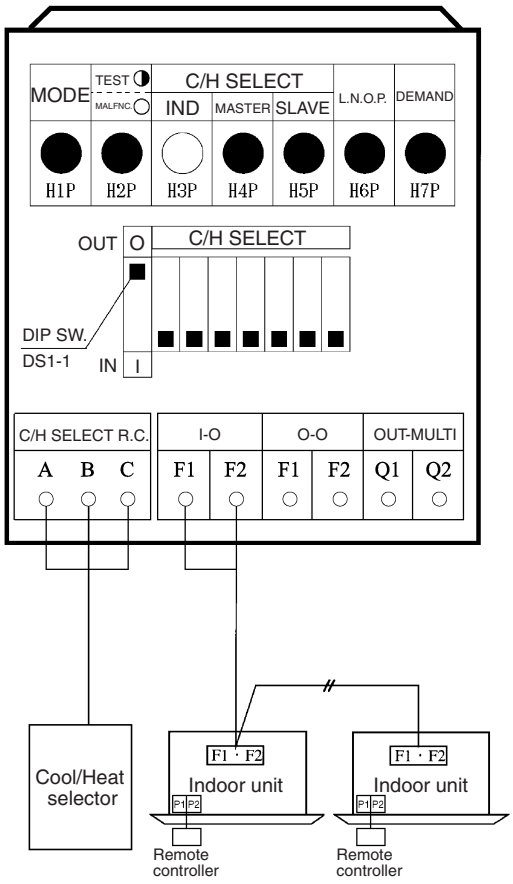
(1) Set Cool / Heat Separately for Each Outside Unit System by Indoor Unit Remote Controller

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



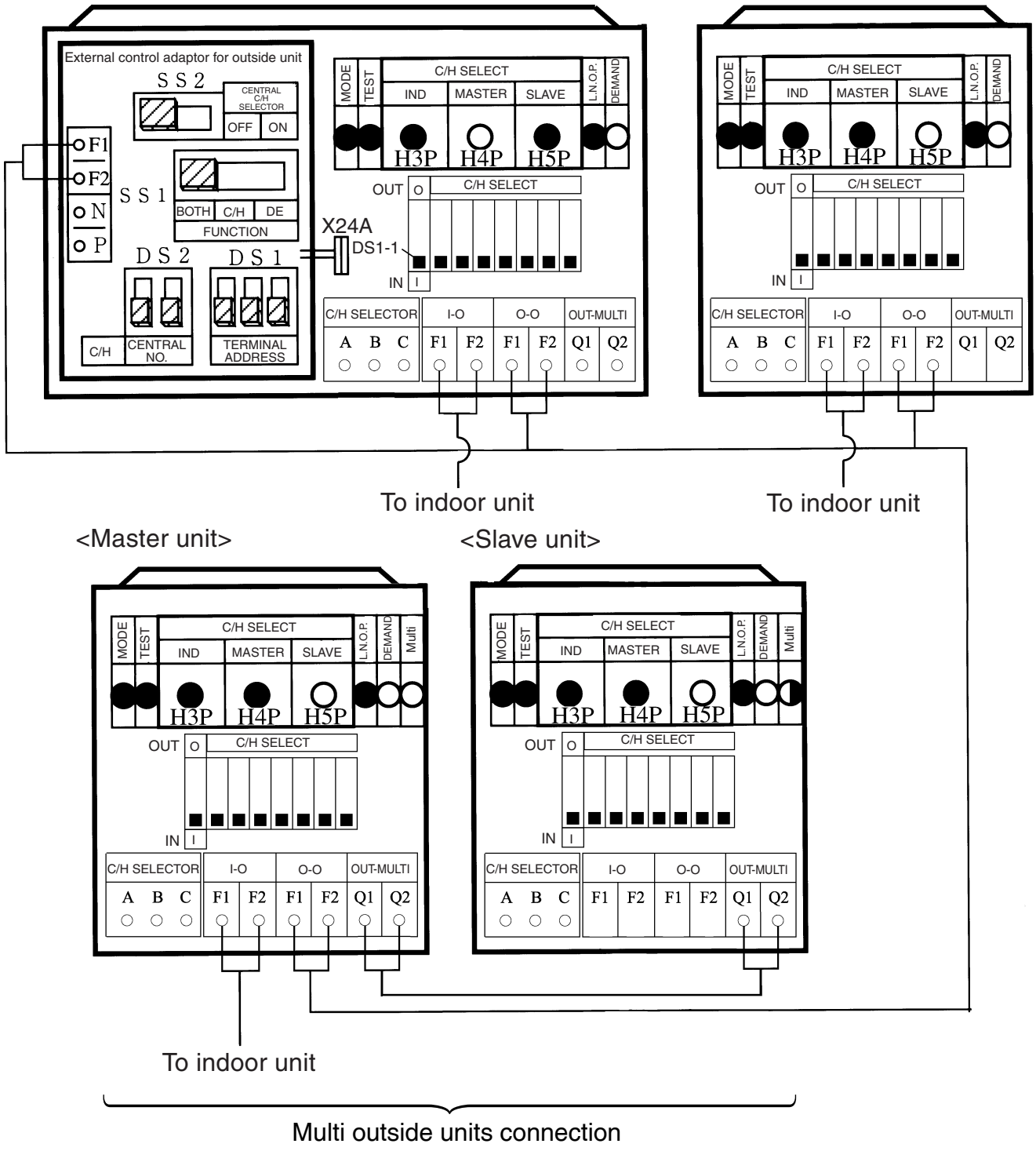
(2) Set Cool/Heat Separately for Each Outside Unit System by Cool / Heat Selector

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



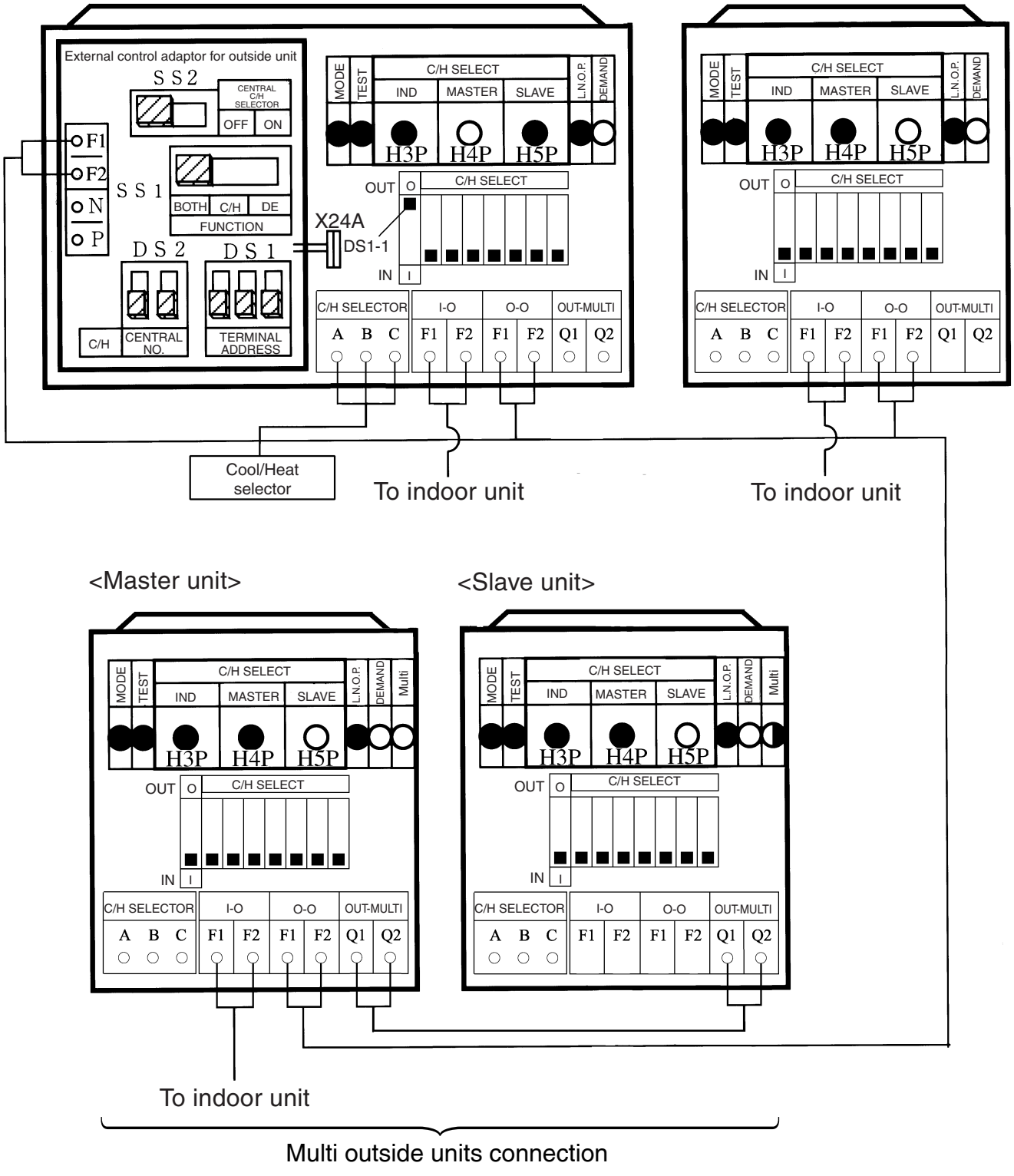
(3) Set Cool / Heat for more than Single Outside Unit System Simultaneously in Accordance with Unified Master Outside Unit by Indoor Unit Remote Controller

- Install the external control adaptor for outside unit on either the outside-outside, indoor-outside transmission line.
- Set outside unit PCB DS1-1 to IN (factory setting).
- In setting mode 1, set the outside unit you want to give cool/heat selection permission to as the group master, and set the other outside units as group slave units.
- Set the outside 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 outside unit main PCB to the same address No. (For details, refer to the following page.)



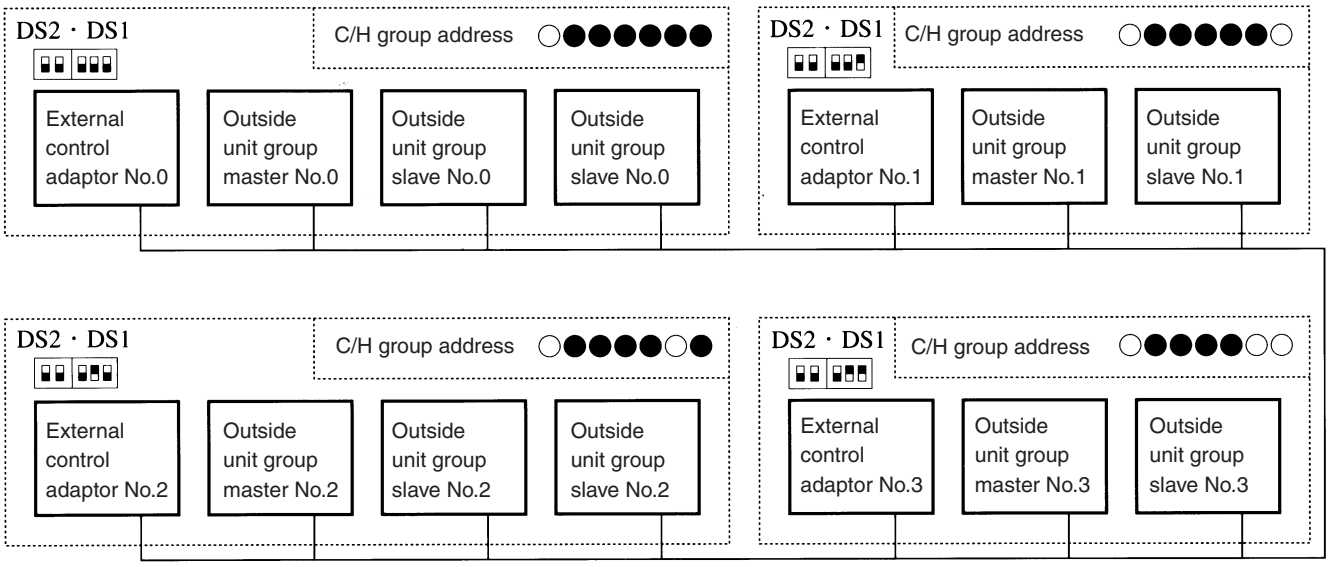
(4) Set Cool/Heat for more than Single Outside Unit System Simultaneously in Accordance with Unified Master Outside Unit by Cool / Heat Selector

- Install the external control adaptor for outside unit on either the outside-outside, indoor-outside transmission line.
- Mount the COOL/HEAT selector to the master outside unit for the unified control. Set the DS1-1 on the PCB of master outside unit to OUT.
- In setting mode 1, set the outside unit you want to give cool/heat selection permission to as the group master, and set the other outside 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 outside 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 outside unit PCB DS1 and DS2 so that it matches the unified cool/heat address of outside unit main PCB.



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

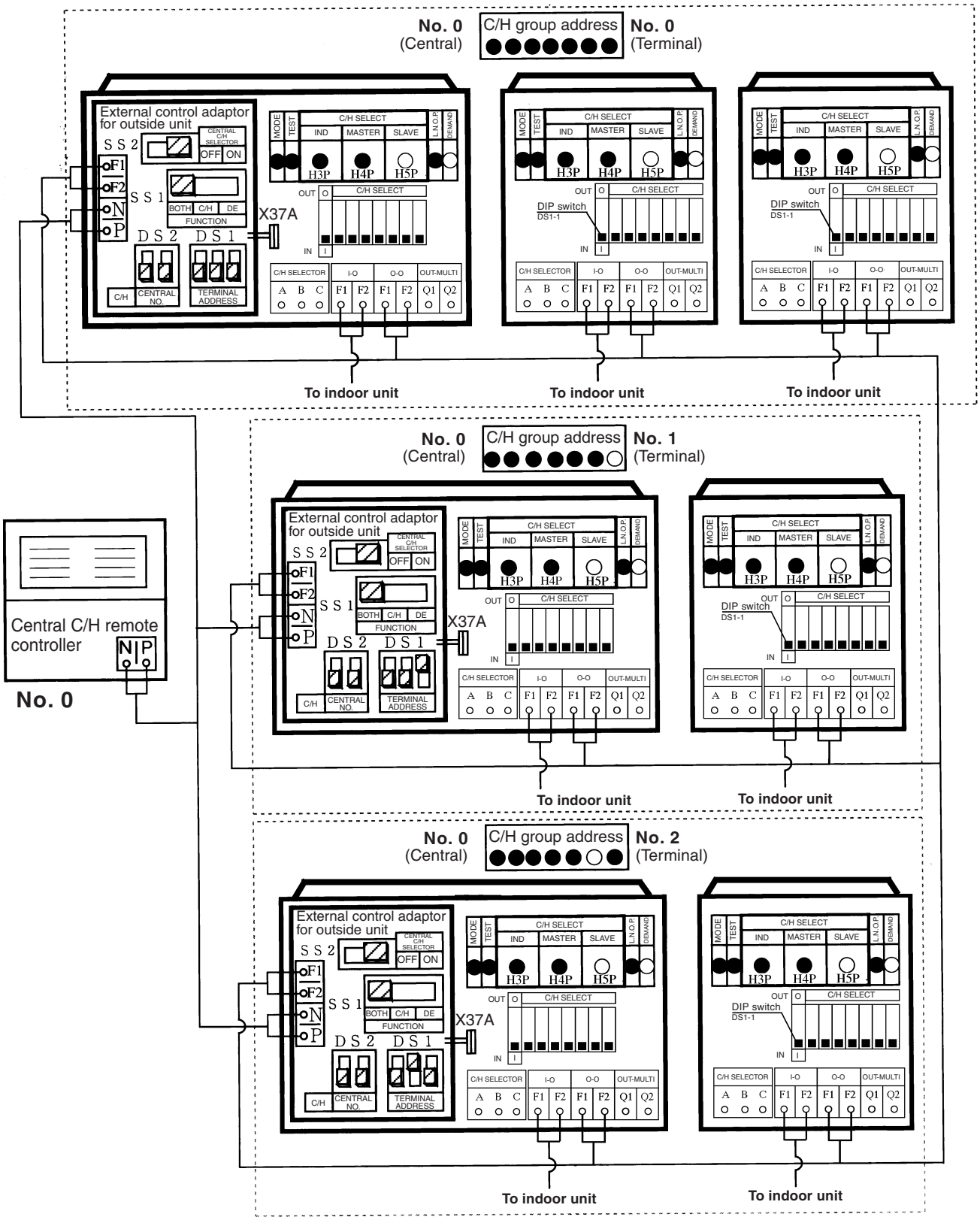
Address No.	Outside unit PCB LED Set with setting mode 2	External control adaptor for outside unit DS2 DS1
No 0	○● ●●●●● 0	0
No 1	○● ●●●●○ 1	1
No 2	○● ●●●○● 2	2
No 3	○● ●●●○○ 3	3
No 4	○● ●●○●● 4	4
≀	≀	≀
No 30	○● ○○○○● 30	30
No 31	○● ○○○○○ 31	31

○ ON ● OFF Upper position (ON) lower position (OFF)

(The shaded part shows knob)

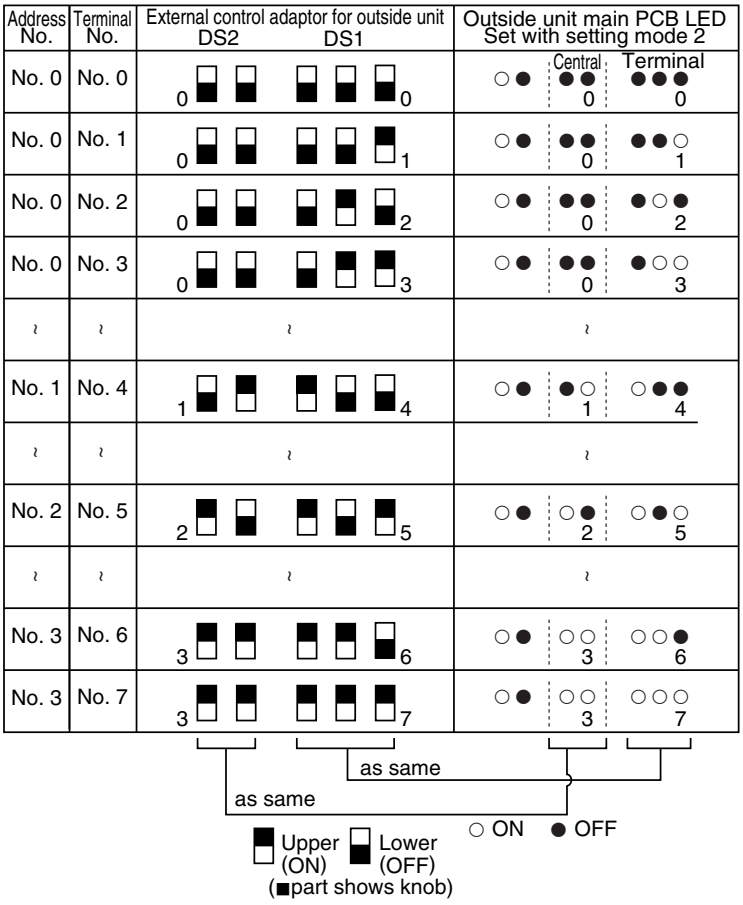
(5) Set cool/heat at all outside unit systems simultaneously for each outside unit external control adaptor by using the centralized remote controller.

- Install the outside unit external control adaptor (optional accessory) onto the outside-outside, indoor-outside, or indoor-indoor transmission line.
- Use "setting mode 1" and set all outside units to SLAVE.
- Set the outside 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 outside unit external control adaptors and the unified heat/cool address on the outside 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 outside unit main PCB (LED lamps).

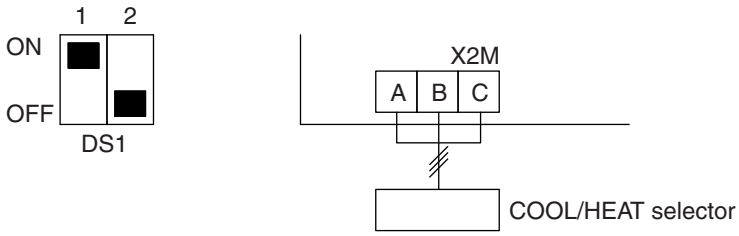


3.7.2 Cool/Heat Mode Switching (Heating and Simultaneous Cooling/ Heating Operation Connection)

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

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

(2) Then, connect the COOL/HEAT selector to the terminal A, B and C of the terminal block X2M on the BS 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 El. compo. box lid after setting.

Example of transmission line connection

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

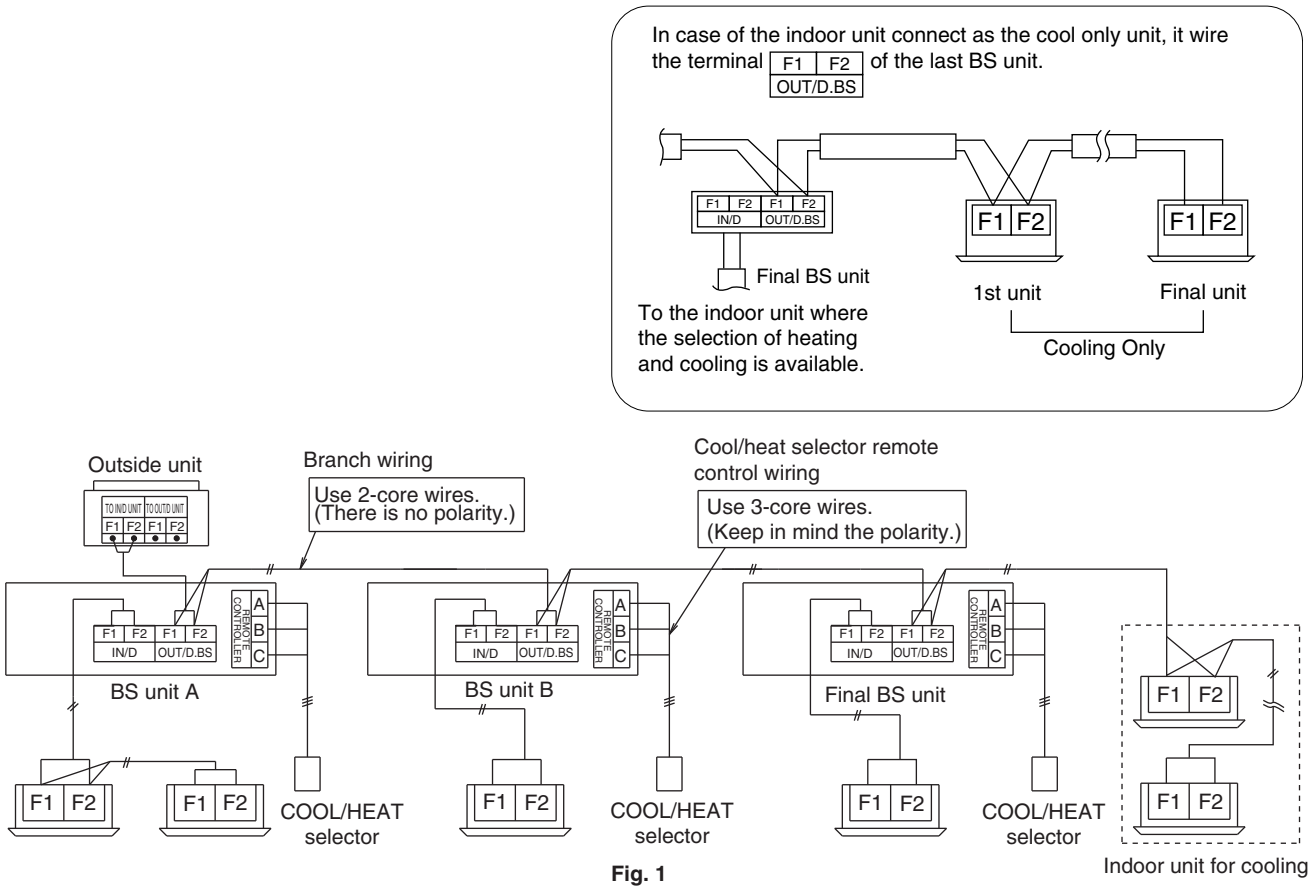


Fig. 1

3.7.3 Setting of Demand Operation

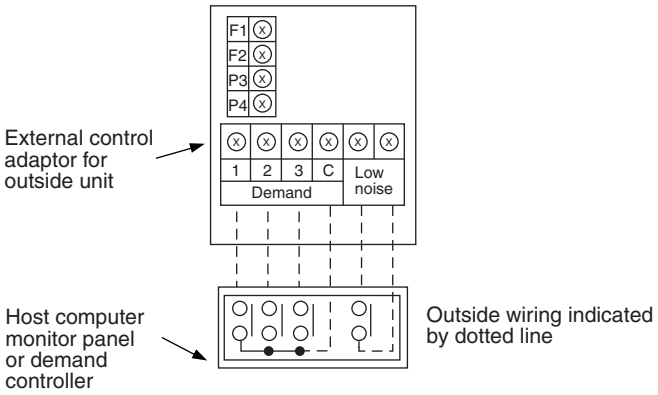
Setting of Demand Operation

By connecting the external contact input to the demand input of the external control adaptor for outside 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	Outside 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 outside unit).

1. Connect external control adaptor for outside 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 outside 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

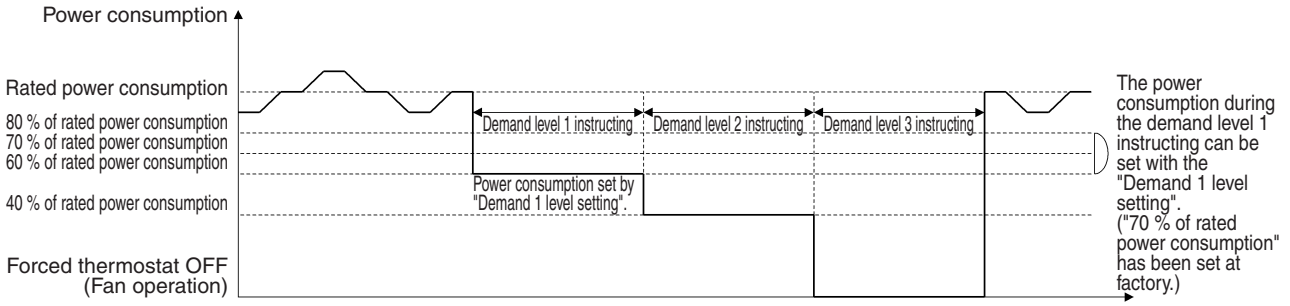


Image of operation in the case of B

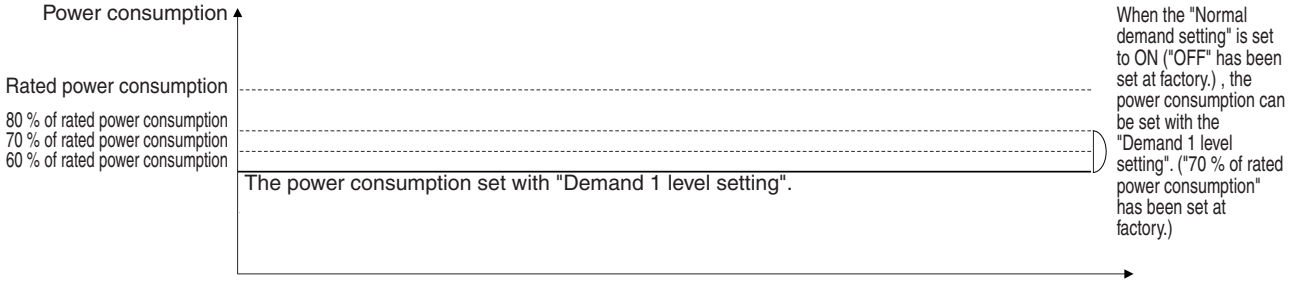
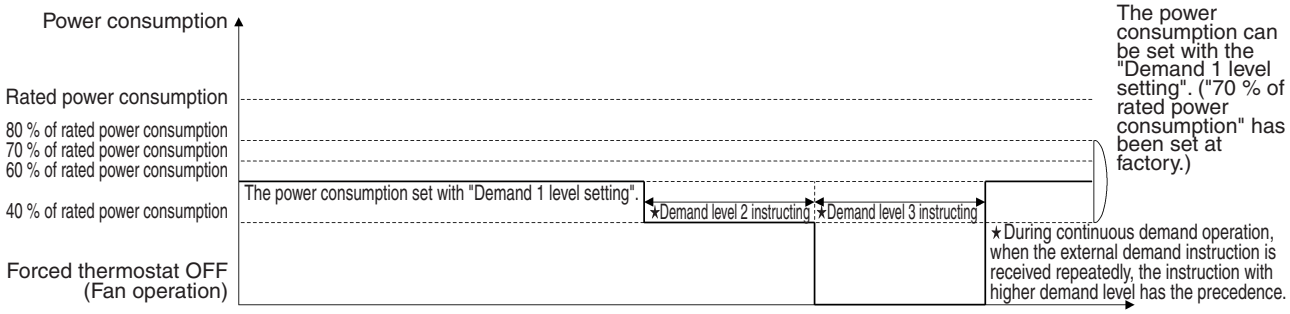


Image of operation in the case of A and B



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

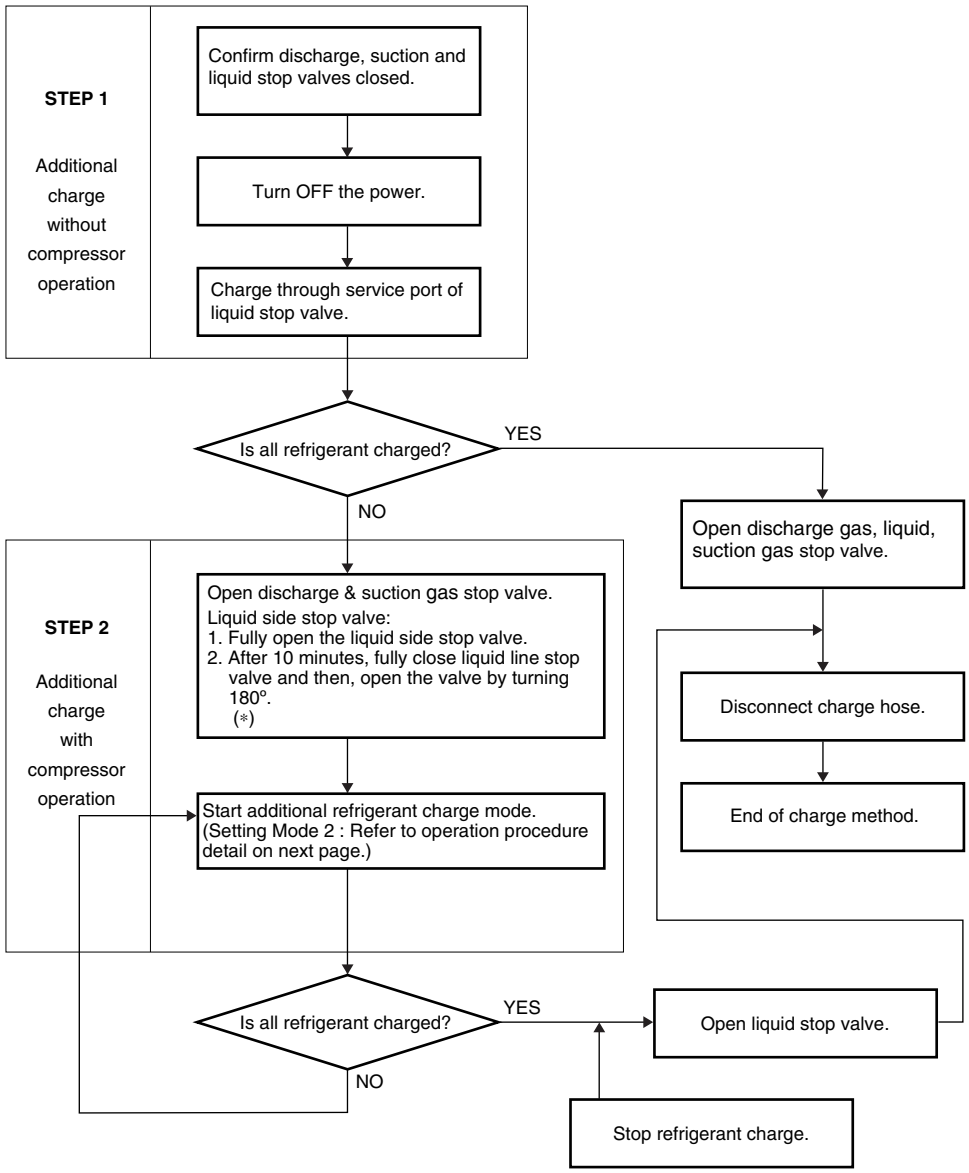
Setting No.	Setting Contents	Setting No. indication (1)							Setting No. indication (2)							Setting contents	Setting contents indication (Initial setting) (3)						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P		H1P	H2P	H3P	H4P	H5P	H6P	H7P
12	Demand setting	○	●	●	●	●	●	●	○	●	●	○	○	●	●	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 outside unit in stop mode, operate the outside unit and charge the liquid refrigerant from the service port of liquid stop valve. The additional charging operation is activated by BS button switch on the outside 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 outside 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.

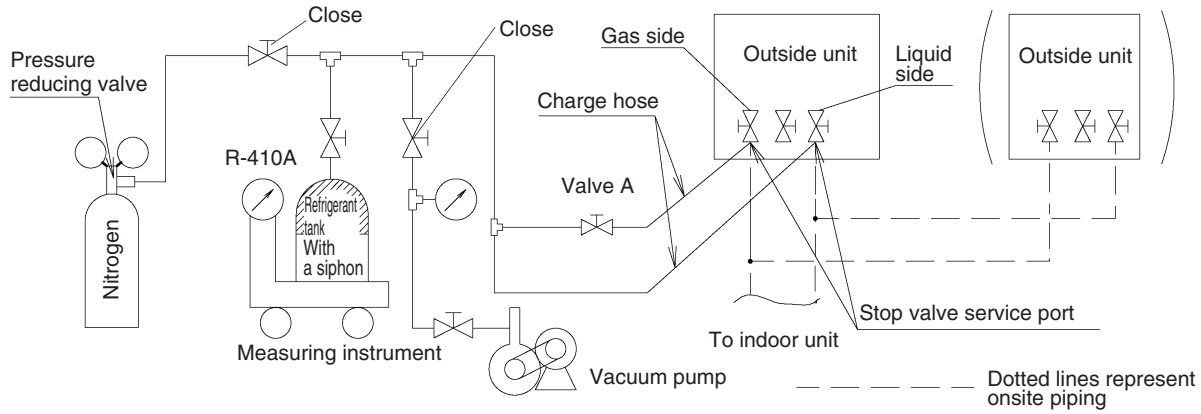
Charge with the tank upside-down.



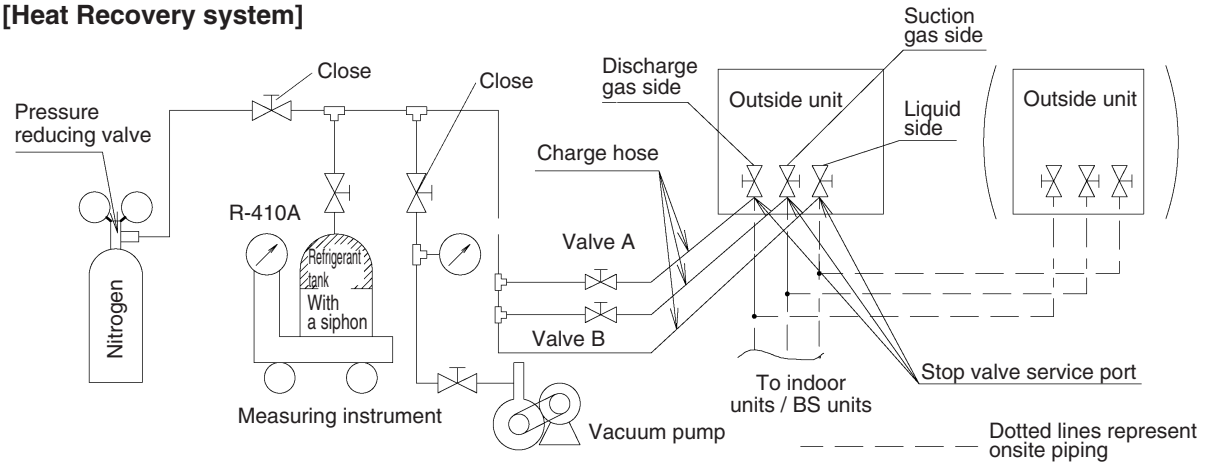
2. After the vacuum drying is finished, charge the additional refrigerant in its liquid state through the liquid stop valve service port.
   Taking into account following instructions:
   - Check that gas and liquid stop valves are closed.
   - Stop the compressor and charge the specified weight of refrigerant.
     (If the outside 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 El. compo. box lid in the outside 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 outside 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.)

Caution

Stop valve operation procedure

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.

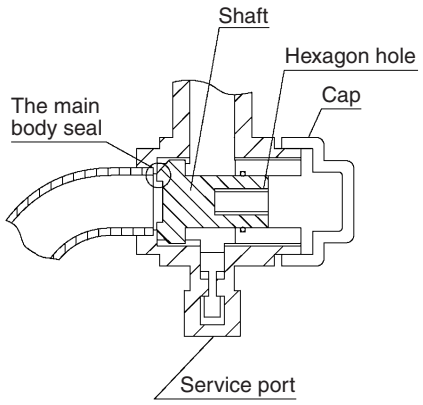
Closing stop valve

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

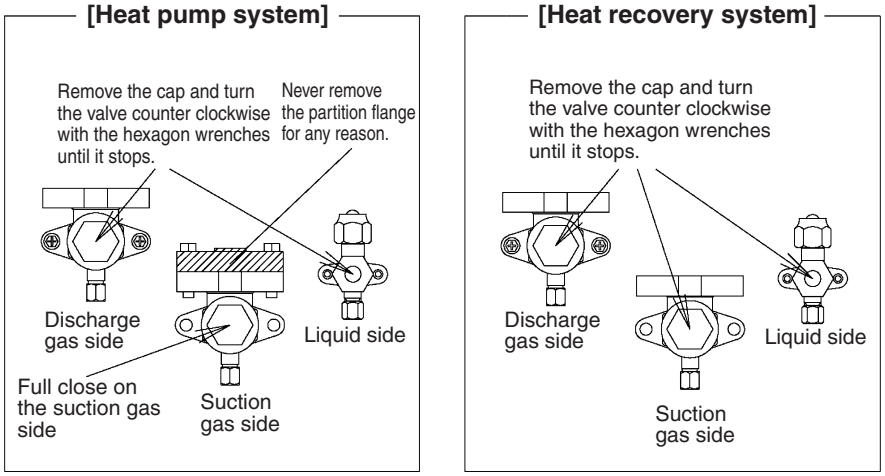
Stop valve size	Tightening torque N-m (Turn clockwise to close)					
	Shaft (valve body)		Cap (valve lid)	Service port	Flare nut	Gas side accessory pipe (1)
Liquid side	5.4-6.6	Hexagonal wrench 4 mm	13.5-16.5	11.5-13.9	32.7-39.9	—
Gas side	27-33	Hexagonal wrench 10 mm	36-44	11.5-13.9	—	22-28

(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 outside 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 outside 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 outside units to turn on some solenoid valves.

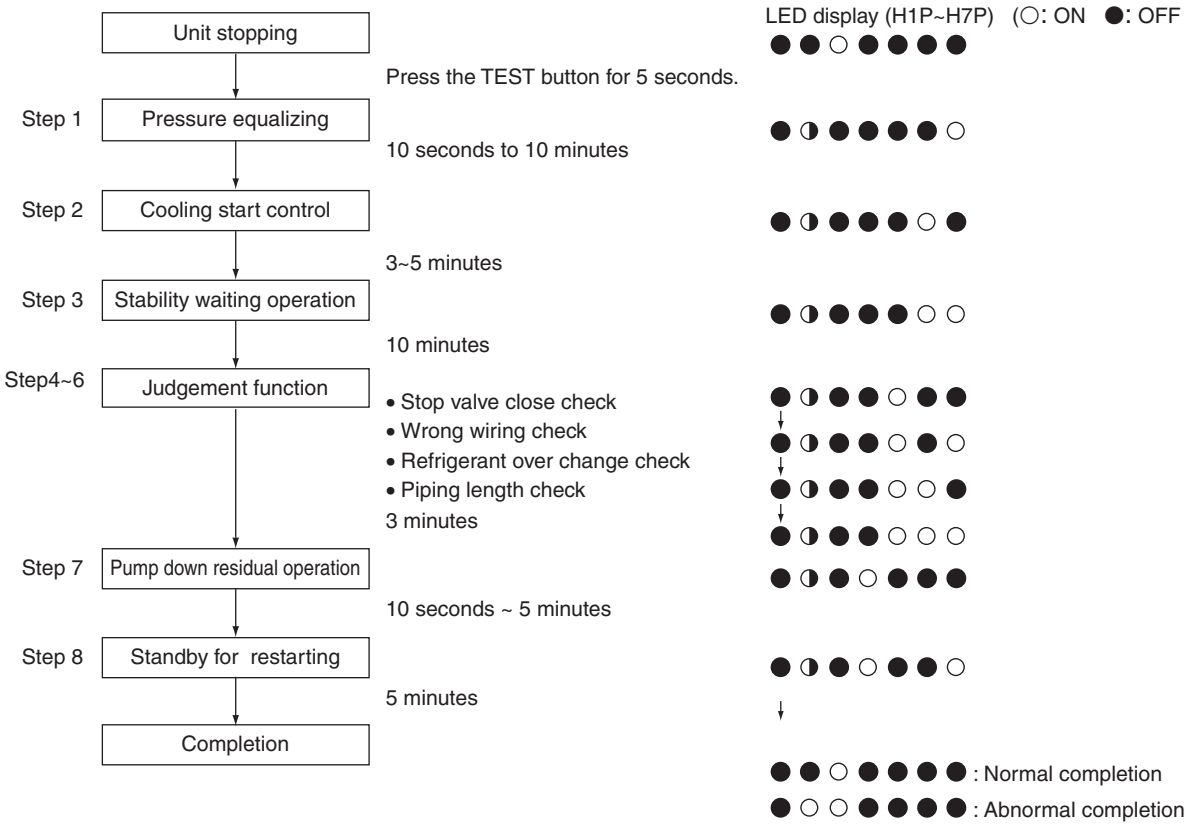
[Operating procedure]

(1) With **Setting Mode 2** while the unit stops, set (B) Refrigerant recovery / Vacuuming mode to ON. The electronic expansion valves of indoor and outside 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.239.

4. Emergency Operation

If the compressor cannot operate, this control inhibits any applicable compressor or outside unit from operating to perform emergency operation only with the operative compressor or outside 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 outside unit is in operation, the outside unit stops once after pump down residual operation (a maximum of 5 minutes elapsed).

4.2 In the Case of Multi Outside Unit System

Automatic backup operation
With multi outside unit system, if a certain outside 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 outside 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
- J3, J5, J6, J7, J9, JA, JC
- L4, L5, L8, L9, LC
- U2, UJ

Emergency operation with settings in service mode

∗ “Inhibition of operation” is set with each outside 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.

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

(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.	○●●●●●◑	(Factory setting)
(4) Press the SET button (BS2) once.	○●●●●◑●	
(5) Press the RETURN button (BS3) twice.	○●●●●●●	
(6) Press the MODE button (BS1) once.	●●○●●●●	

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

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

(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.	○●●●●●◑	(Factory setting)
(4) Press the SET button (BS2) once.	○●●●●◑●	
(5) Press the RETURN button (BS3) twice.	○●●●●●●	
(6) Press the MODE button (BS1) once.	●●○●●●●	

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

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

(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.	○●●●●●◑	(Factory setting)
(4) Press the SET button (BS2) once.	○●●●●◑●	
(5) Press the RETURN button (BS3) twice.	○●●●●●●	
(6) Press the MODE button (BS1) once.	●●○●●●●	

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

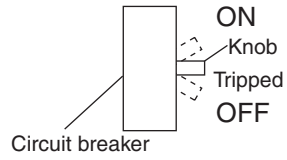
Note : **Reset the power supply during the outside unit is stopping to cancel the automatic backup operation forcibly.**

Part 6
Service Diagnosis

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1. Symptom-based Troubleshooting

	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 outside unit	Remove obstacle(s).
			Clogged air filter(s)	Clean the air filter(s).
3	The system does not cool air well.		Blocked air inlet or outlet of indoor or outside unit	Remove obstacle(s).
			Clogged air filter(s)	Clean the air filter(s).
			Enclosed outside 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 remote 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.
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.

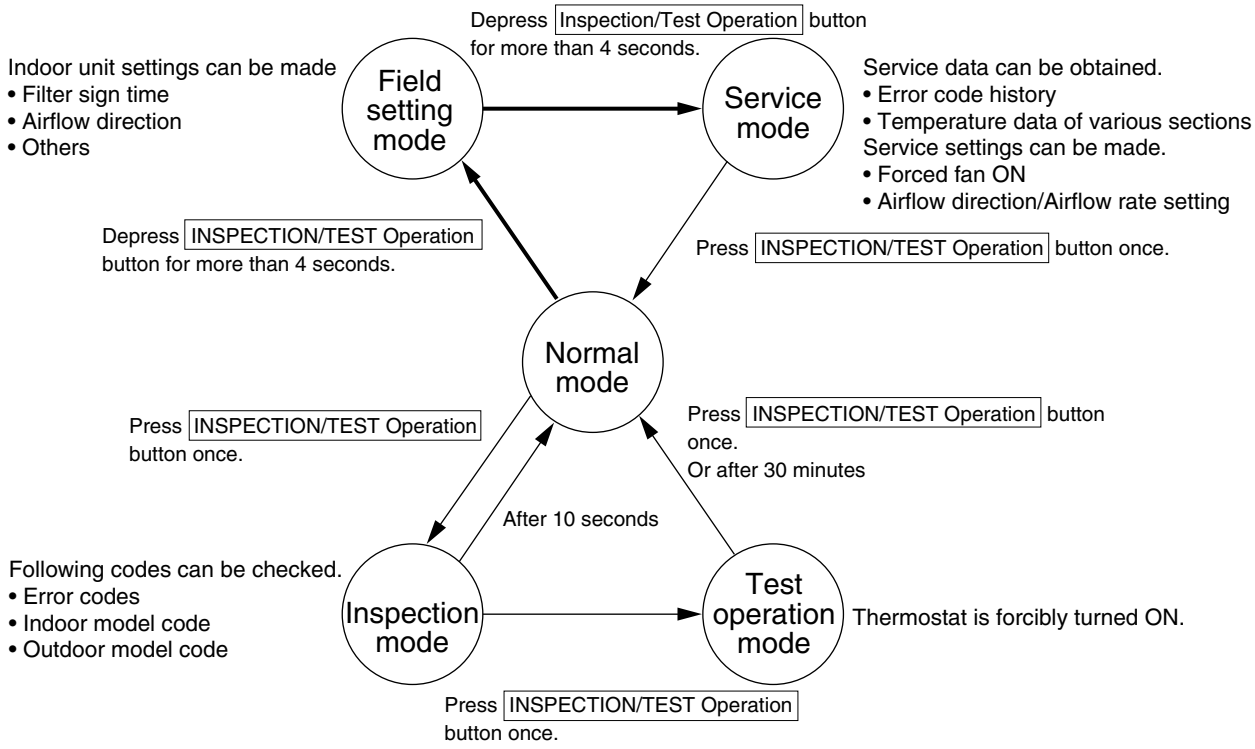
	Symptom		Supposed Cause	Countermeasure
7	The system conducts fan operation but not cooling or heating operation.	This symptom occurs immediately after turning ON the power supply.	The system is in preparation mode of operation.	Wait for a period of approximately 10 minutes.
8	The airflow rate is not 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 outside 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 ambient temperature and humidity are low.	Hot gas (refrigerant) flown in the indoor unit results to be vapor from the unit.	Normal operation.
		<Indoor and outside 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.
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 outside 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 outside units.	Normal operation.
		<Indoor and outside 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 operation 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 operation 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.
		<Outside unit> Pitch of operating sounds changes.	The reason is that the compressor changes the operating frequency.	Normal operation.

	Symptom		Supposed Cause	Countermeasure
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	Outside 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 outside unit compressor or the outside 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 outside 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

2.1 The INSPECTION / TEST Button

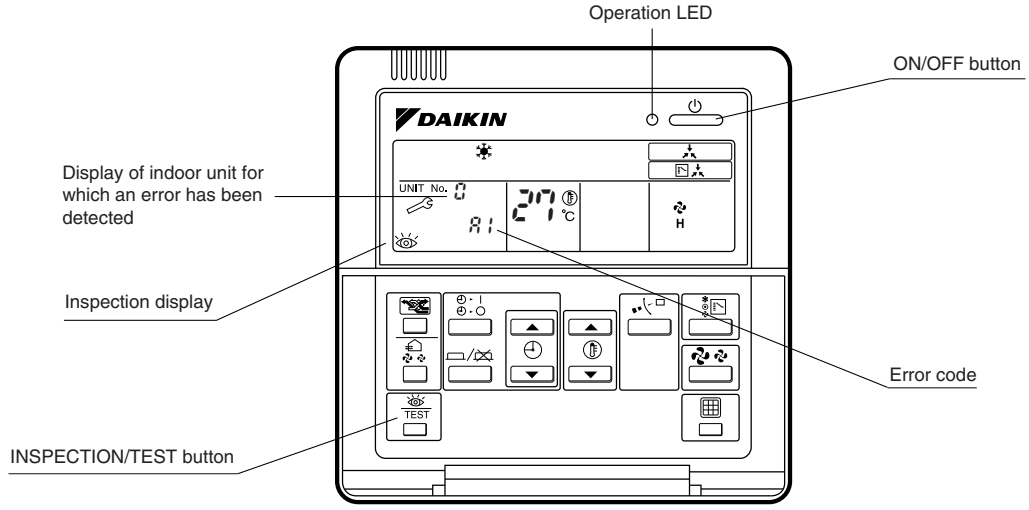
The following modes can be selected by using the [INSPECTION/TEST Operation] button on the remote control.



2.2 Procedure of Self-diagnosis by Remote Controller

2.2.1 Wired Remote Controller — BRC1C Type/BRC1D Type

If operation stops due to error, the remote controller's operation LED blinks, and error code is displayed. (Even if stop operation is carried out, error contents are displayed when the inspection mode is entered.) The error code enables you to tell what kind of error caused operation to stop. Refer to P.140 for error code and error contents.



Note:

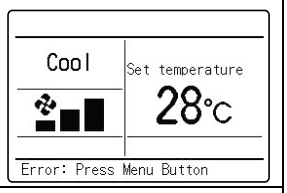
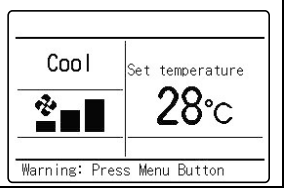
1. Pressing the INSPECTION/TEST button will blink the check indication.
2. While in service mode, holding down the ON/OFF button for a period of 5 seconds or more will clear the error history indication shown above. In this case, on the codes display, the error code will blink twice and then change to "00" (= Normal), the Unit No. will change to "0", and the operation mode will automatically switch from service mode to normal mode (displaying the set temperature).

2.2.2 Wired Remote Controller — BRC1E51/52

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.

BRC1E51 BRC1E52

(1) Checking an error or warning

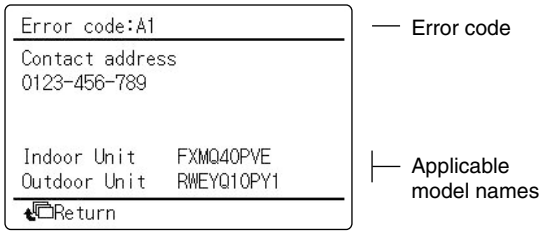
	Operation Status	Display	
Abnormal shutdown	The system stops operating.	The operation lamp (green) starts to blink. The message "Error: Press Menu button" will appear and blink at the bottom of the screen.	
Warning	The system continues its operation.	The operation lamp (green) remains on. The message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

(2) Taking corrective action

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

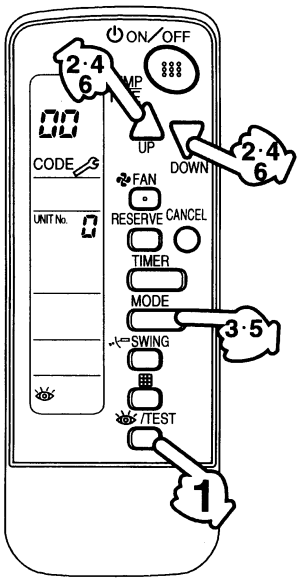
⇩

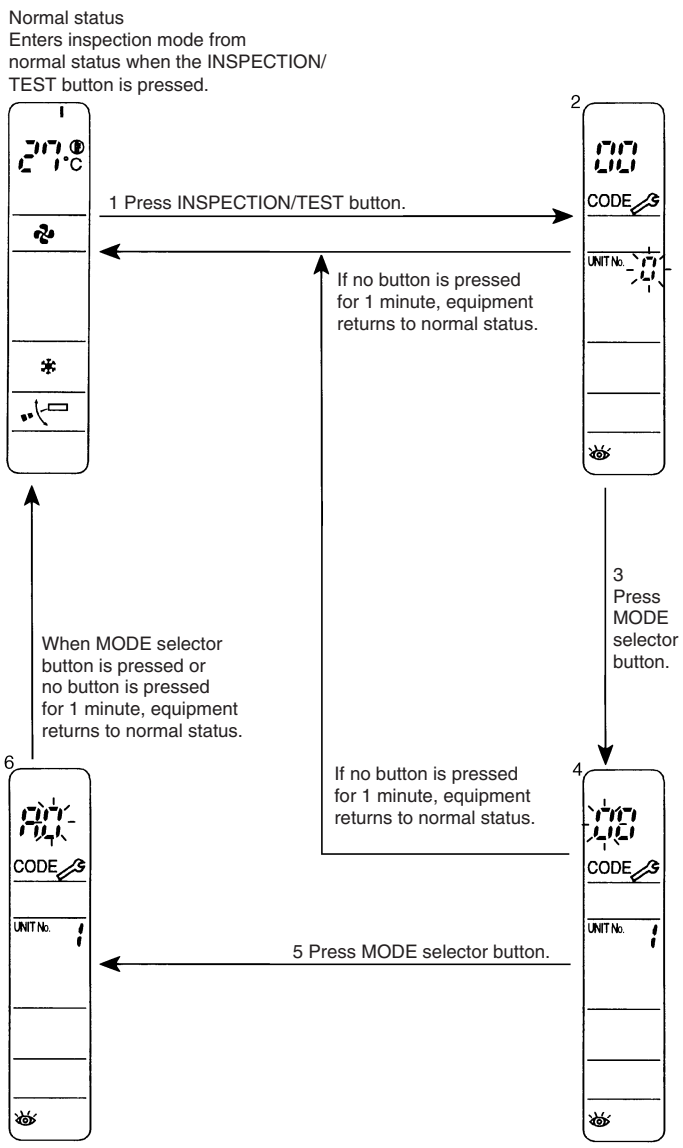
· Take the corrective action specific to the model.



2.2.3 Wireless Remote Controller

If unit stops due to an error, the operation indicating LED on the signal receiving part of indoor unit blinks. 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 is displayed and the Unit No. display shows blinking “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 blinks.	
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. 0⇨1⇨2⇨3⇨4⇨5⇨6⇨7⇨8⇨9⇨A⇨C⇨E⇨F⇨L⇨P⇨U⇨9⇨8⇨7⇨6⇨5⇨4 ⇨ **"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 blinks.	
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. 0⇨1⇨2⇨3⇨4⇨5⇨6⇨7⇨8⇨9⇨A⇨H⇨C⇨L⇨E⇨F ⇨ **"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.	


Normal status
Enters inspection mode from
normal status when the INSPECTION/
TEST button is pressed.
1
2
1 Press INSPECTION/TEST button.
If no button is pressed
for 1 minute, equipment
returns to normal status.
CODE
UNIT No.
3
Press
MODE
selector
button.
When MODE selector
button is pressed or
no button is pressed
for 1 minute, equipment
returns to normal status.
6
4
If no button is pressed
for 1 minute, equipment
returns to normal status.
CODE
UNIT No.
5 Press MODE selector button.

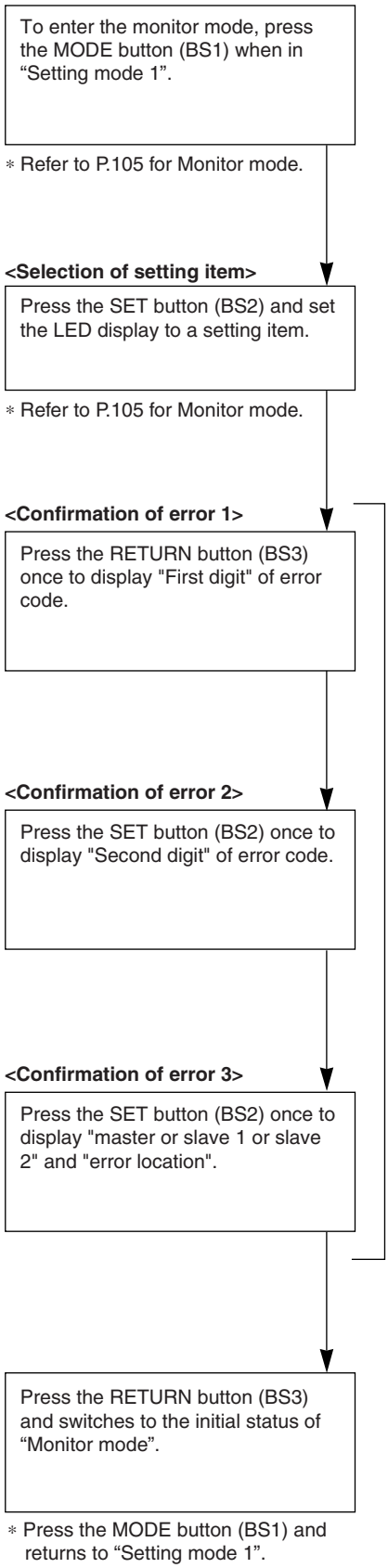
2.3 Error Codes and Description

	Error code	Contents of Error	Page Referred
Indoor Unit	A0	Error of external protection device	144
	A1	PCB abnormality	145
	A3	Drain level control system (S1L) abnormality	146
	A6	Fan motor lock, overload Abnormal indoor fan motor	148 149
	A7	Swing flap motor abnormality	155
	A8	Abnormal power supply voltage	157
	A9	Electronic expansion valve coil abnormality/Dust clogging	158
	AF	Drain level above limit	162
	AJ	Capacity determination device abnormality	163
	C1	Transmission error (between indoor unit PCB and fan PCB)	164
	C4	Heat exchanger liquid pipe thermistor (R2T) abnormality	166
	C5	Heat exchanger gas pipe thermistor (R3T) abnormality	166
	C6	Combination error (between indoor unit PCB and fan PCB)	167
	C9	Suction air thermistor (R1T) abnormality	166
	CA	Discharge air thermistor (R4T) abnormality	168
	CC	Humidity sensor system abnormality	169
	CJ	Abnormal room temperature thermistor in remote controller	170
F9Outside Unit	E1	PCB abnormality	171
	E2	Earth leakage by leak detection PCB assy	172
	E3	High pressure abnormality	174
	E4	Actuation of low pressure sensor	177
	E5	Inverter compressor motor lock	179
	E9	Electronic expansion valve coil abnormality	181
	F3	Discharge pipe temperature abnormality	183
	F6	Refrigerant overcharged	185
	F9	Electronic expansion valve coil abnormality BS Unit	155
	HJ	Water system abnormality	187
	J3	Discharge pipe thermistor (R3T) abnormality	189
	J4	Heat exchanger gas pipe thermistor (R4T) abnormality	189
	J5	Suction pipe thermistor (R2T) abnormality	189
	J7	Receive outlet liquid pipe thermistor (R6T) abnormality	189
	J9	Subcooling heat exchanger outlet pipe thermistor (R5T) abnormality	189
	JA	High pressure sensor abnormality	190
	JC	Low pressure sensor abnormality	192
	L4	Inverter radiation fin temperature rise	194
	L5	Momentary overcurrent of inverter compressor	195
	L8	Overcurrent abnormality of inverter compressor	197
	L9	Inverter compressor startup abnormality	199
	LC	Transmission system abnormality (between inverter PCB and main PCB)	201
	P1	Inverter over-ripple protection	203
	P4	Inverter radiation fin thermistor or related abnormality	205
	PJ	Defective field setting after replacing main PCB or defective combination of PCB	206

	Error code	Contents of Error	Page Referred
System	U0	Refrigerant shortage alert	207
	U1	Reverse phase, open phase	209
	U2	Power supply insufficient or instantaneous failure	210
	U3	Check operation is not executed	212
	U4	Transmission error (between indoor and outside units)	213
	U5	Transmission error (between remote controller and indoor unit)	215
	U7	Transmission error (between outside units)	216
	U8	Transmission error (between main and sub remote controllers)	222
	U9	Transmission error (between indoor and outside units in the same system)	223
	UA	Improper combination of indoor, BS and outside units	224
	UC	Address duplication of centralized control equipment	229
	UE	Transmission error (between centralized control equipment and indoor unit)	230
	UF	System is not set yet	233
	UH	System error, refrigerant system address undefined	234

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

2.4 Error Code Indication by Outside Unit PCB



Contents of Error	Error Code
PCB Abnormality	E1
High pressure abnormality	E3
Actuation of low pressure sensor	E4
Compressor motor lock	E5
Electronic expansion valve coil abnormality (Y1E)	E9
Electronic expansion valve coil abnormality (Y3E)	
Abnormal discharge pipe temperature	F3
Refrigerant overcharged	F6
Electronic expansion valve coil abnormality BS Unit	F9
Water system abnormality	HJ
Discharge pipe thermistor (R3T) abnormality	J3
Heat exchanger gas pipe thermistor (R4T) abnormality	J4
Suction pipe thermistor (R2T) abnormality	J5
Receiver outlet liquid pipe thermistor (R6T) abnormality	J7
Subcooling heat exchanger outlet pipe thermistor (R5T) abnormality	J9
High pressure sensor abnormality	JA
Low pressure sensor abnormality	JC
Inverter radiation fin temperature rise	L4
Momentary overcurrent of inverter compressor	L5
Overcurrent abnormality of inverter compressor	L8
Inverter compressor starting abnormality	L9
Transmission error (between inverter and main PCB)	LC
Inverter over-ripple protection	P1
Inverter radiation fin thermistor or related abnormality	P4
Refrigerant shortage	U0
Reverse phase, open phase	U1
Power supply insufficient or instantaneous failure	U2
Check operation not executed	U3
Transmission error (between indoor and outside units)	U4
Transmission error (between outside units)	U7
Transmission error (between indoor and outside units in the same system)	U9
Improper combination of indoor, BS and outside units	UA
System error, refrigerant system address undefined	UH

○: ON ●: OFF ◑: BLINK

Error	Confirmation of Error 1							Confirmation of Error 2							Confirmation of Error 3						
Code	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED1	LED2	LED3	LED4	LED5	LED6	LED7
E1	◑	●	○	●	●	◑	◑	◑	○	●	●	●	●	◑	◑	○	○			●	●
E3								◑	○	●	●	●	◑	◑	◑	○	○			●	●
E4								◑	○	●	●	◑	●	●	◑	○	○			●	●
E5								◑	○	●	●	◑	●	◑	◑	○	○			●	●
E9								◑	○	●	◑	●	●	◑	◑	○	○			●	◑
															◑	○	○			◑	◑
F3	◑	●	○	●	◑	●	◑	◑	○	●	●	●	◑	●	◑	○	○			●	●
F6								◑	○	●	●	◑	◑	◑	◑	○	○			●	●
HJ	◑	●	○	●	◑	●	●	◑	○	●	◑	◑	●	◑	◑	○	○			●	●
J3	◑	●	○	●	◑	◑	●	◑	○	●	●	●	◑	◑	◑	○	○			●	◑
J4								◑	○	●	●	○	●	●	◑	○	○			●	◑
J5								◑	○	●	●	◑	●	◑	◑	○	○			●	●
J7								◑	○	●	●	◑	◑	◑	◑	○	○			●	●
J9								◑	○	●	◑	●	●	◑	◑	○	○			●	●
JA								◑	○	●	◑	●	◑	●	◑	○	○			●	●
JC								◑	○	●	◑	◑	●	●	◑	○	○			●	●
L4								◑	○	●	●	◑	●	●	◑	○	○			●	●
L5								◑	○	●	●	◑	●	◑	◑	○	○			●	●
L8								◑	○	●	◑	●	●	●	◑	○	○			●	●
L9								◑	○	●	◑	●	●	◑	◑	○	○			●	●
LC								◑	○	●	◑	◑	●	●	◑	○	○			●	●
P1	◑	●	○	◑	●	●	●	◑	○	●	●	●	●	◑	◑	○	○			●	●
P4								◑	○	●	●	◑	●	●	◑	○	○			●	●
U0	◑	●	○	◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○			●	●
U1								◑	○	●	●	●	●	◑	◑	○	○			●	●
U2								◑	○	●	●	●	◑	●	◑	○	○			●	●
U3								◑	○	●	●	●	◑	◑	◑	○	○			●	●
U4								◑	○	●	●	◑	●	●	◑	○	○			●	●
U7								◑	○	●	●	◑	◑	◑	◑	○	○			●	●
U9								◑	○	●	◑	●	●	◑	◑	○	○			●	●
UA								◑	○	●	◑	●	◑	●	◑	○	○			●	●
UH								◑	○	●	◑	●	◑	◑	◑	○	○			●	●

Error code 1st digit display section

Error code 2nd digit display section

Master	●	●
Slave 1	●	◑
Slave 2	◑	●

Error location

2.5 Error of External Protection Device

Remote Controller Display

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

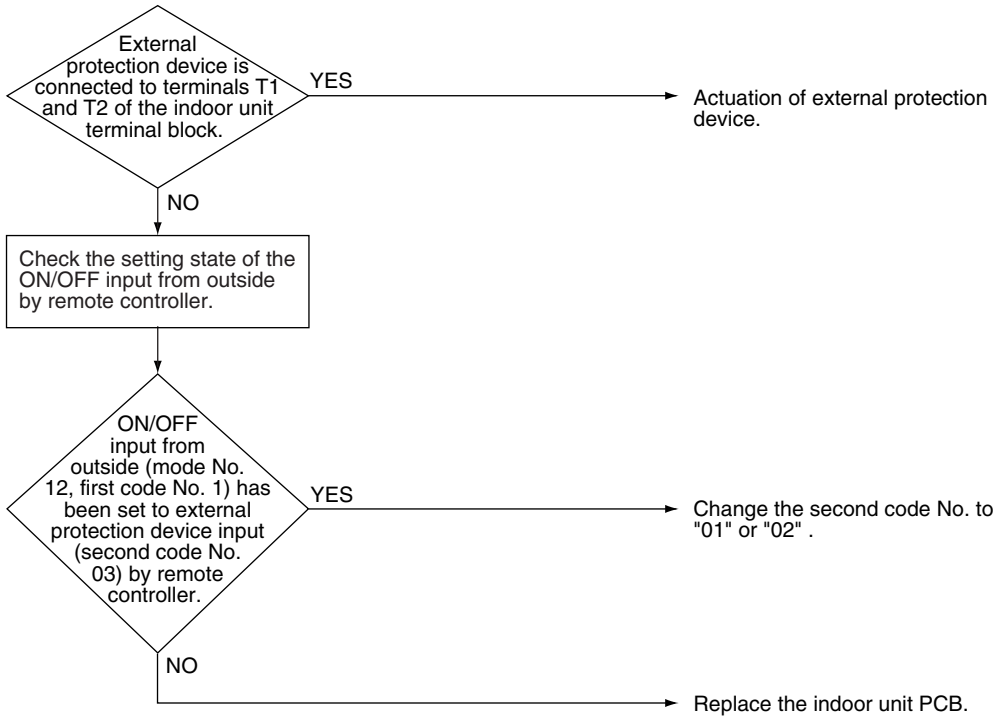
When an open circuit occurs between external input terminals with the remote controller set to "external ON/OFF terminal".

Supposed Causes

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

Troubleshooting

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



2.6 PCB Abnormality

Remote Controller Display

A1

Applicable Models

All indoor models

Method of Error Detection

Check data from E²PROM.

Error Decision Conditions

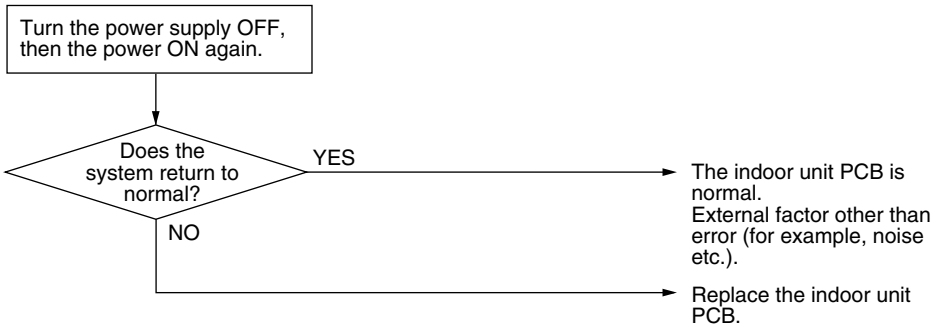
When data could not be correctly received from the E²PROM
E²PROM: Type of nonvolatile memory. Maintains memory contents even when the power supply is turned OFF.

Supposed Causes

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

Troubleshooting

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

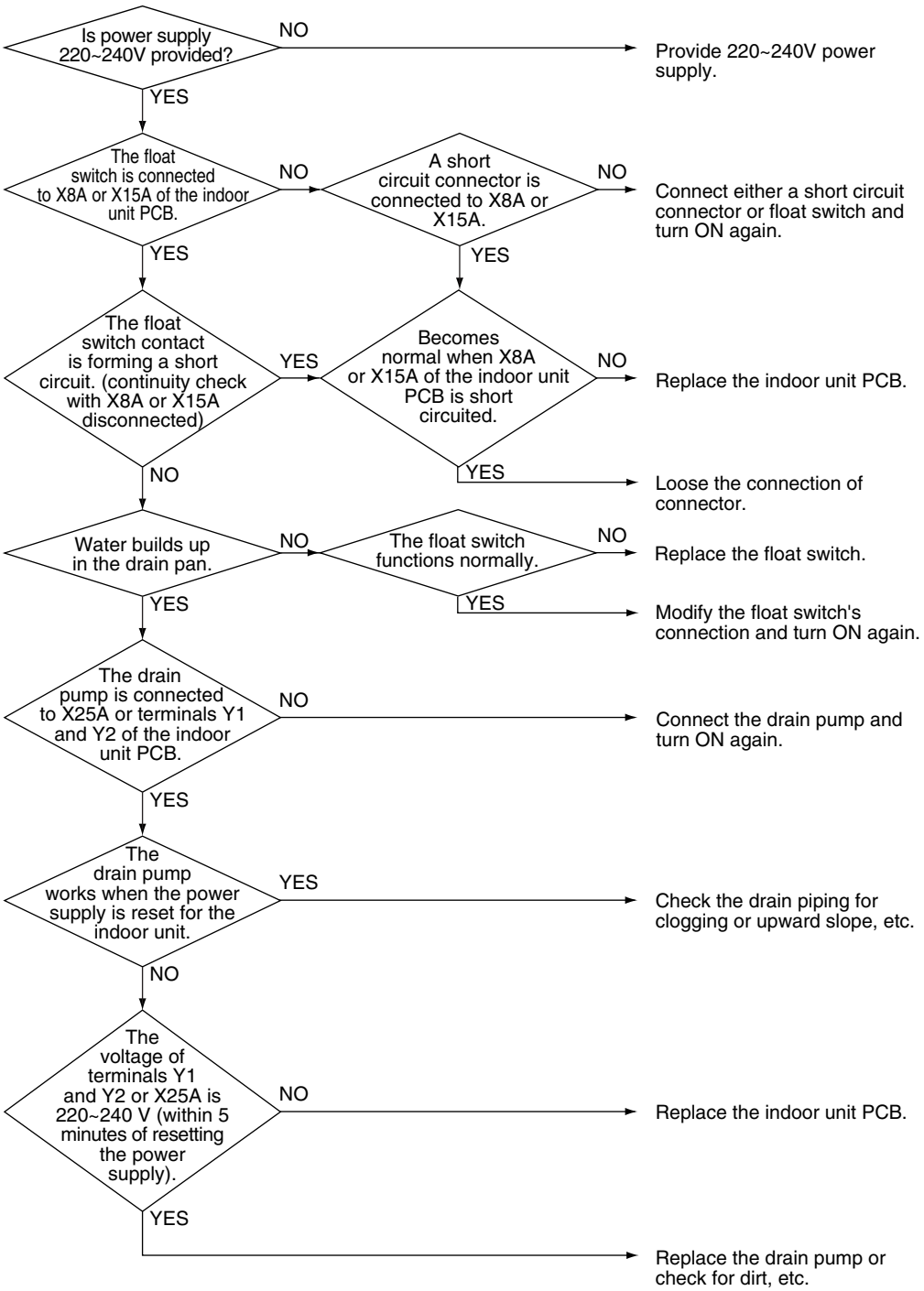


2.7 Drain Level Control System (S1L) Abnormality

Remote Controller Display	A3
Applicable Models	FXFQ, FXZQ, FXCQ, FXKQ, FXDQ, FXMQ, FXHQ (Option), FXMQ200·250MA (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	■ 220~240V 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 power switch before connect or disconnect connector, or parts damage may be occured.



2.8 Fan Motor Lock, Overload

Remote Controller Display

A6

Applicable Models

FXDQ-P, FXHQ-M

Method of Error Detection

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

Error Decision Conditions

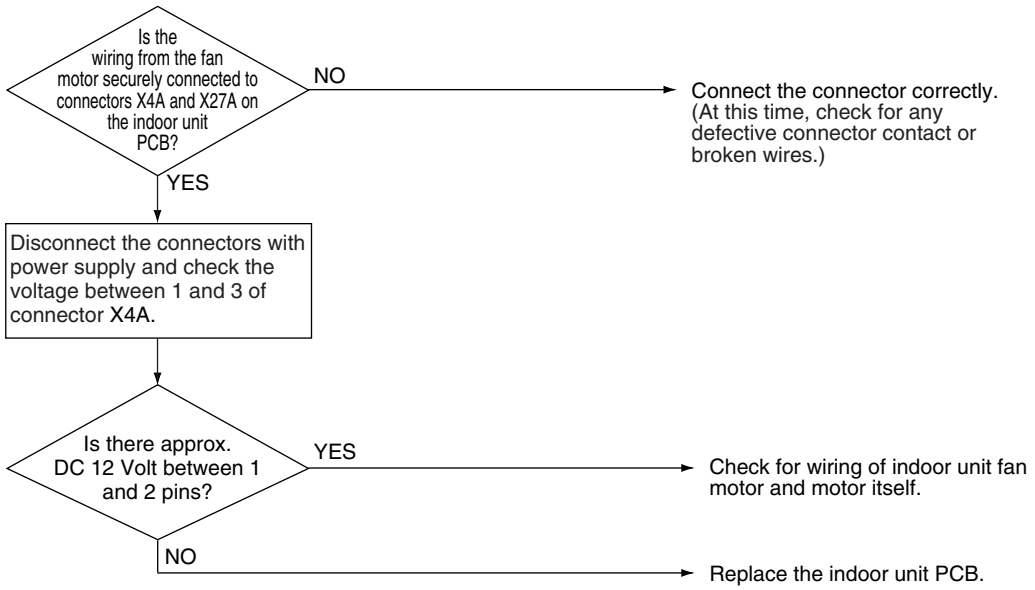
When no revolutions can be detected even at the maximum output voltage to the fan

Supposed Causes

- Fan motor lock
- Broken wires
- Disconnected or defective contact between fan motor and PCB

Troubleshooting

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



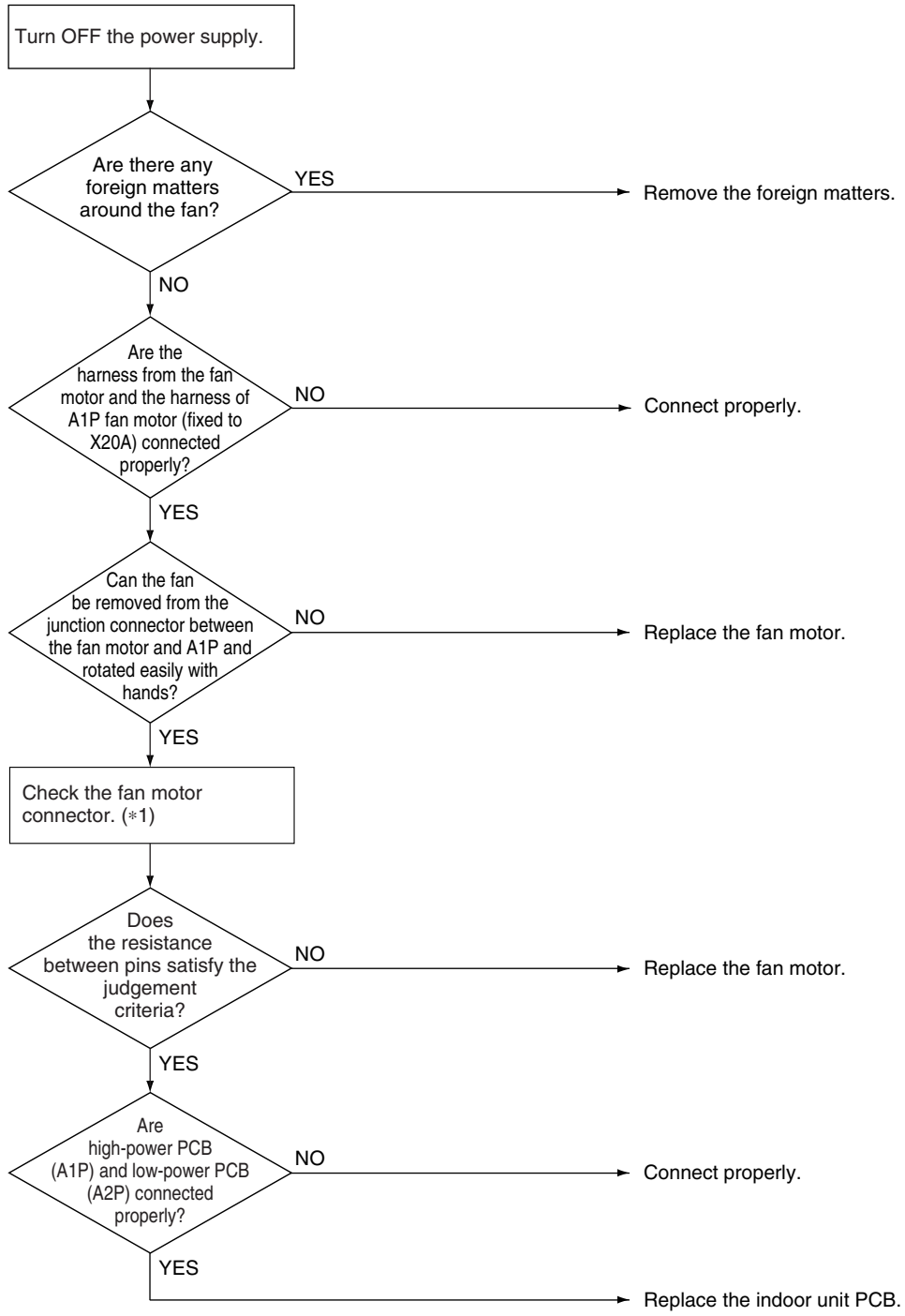
2.9 Abnormal Indoor Fan Motor

2.9.1 FXFQ-P/A, FXAQ-P(A), FXSQ20~63P/A, FXMQ20~50P/A, FXCQ-A, FXDQ-A, FXUQ-A, FXZQ-A

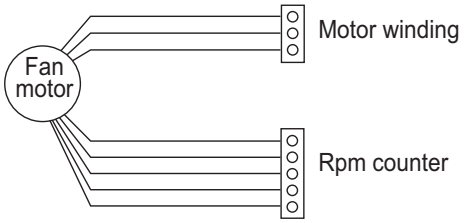
Remote Controller Display	A6
Applicable Models	FXFQ-P/A, FXAQ-P(A), FXSQ20~63P/A, FXMQ20~50P/A, FXCQ-A, FXDQ-A, FXUQ-A, FXZQ-A
Method of Error Detection	Detection of abnormal fan revolutions with the signal from the fan motor.
Error Decision Conditions	When the fan revolutions do not increase
Supposed Causes	■ Disconnected/short-circuited fan motor harnesses or disconnected connectors ■ Defective fan motor (Disconnection and insulation failure) ■ Abnormal signal output from the fan motor (Circuit breakdown) ■ Defective PCB ■ Instantaneous disturbance of power supply voltage ■ Fan motor lock (Caused by the motor or external factors) ■ Fan does not rotate because foreign matters are trapped in it. ■ Disconnected connector between PCB (A1P and A2P)

Troubleshooting

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



Note: ∗1: **Check on connector of fan motor (Power supply cable)**
FXSQ80~140, FXMQ40~140



Motor windings resistance check (at 20°C)

		- lead		
	Wire windings	Red	White	Black
+ lead	Red		3,5Ω	3,5Ω
	White	3,5Ω		3,5Ω
	Black	3,5Ω	3,5Ω	

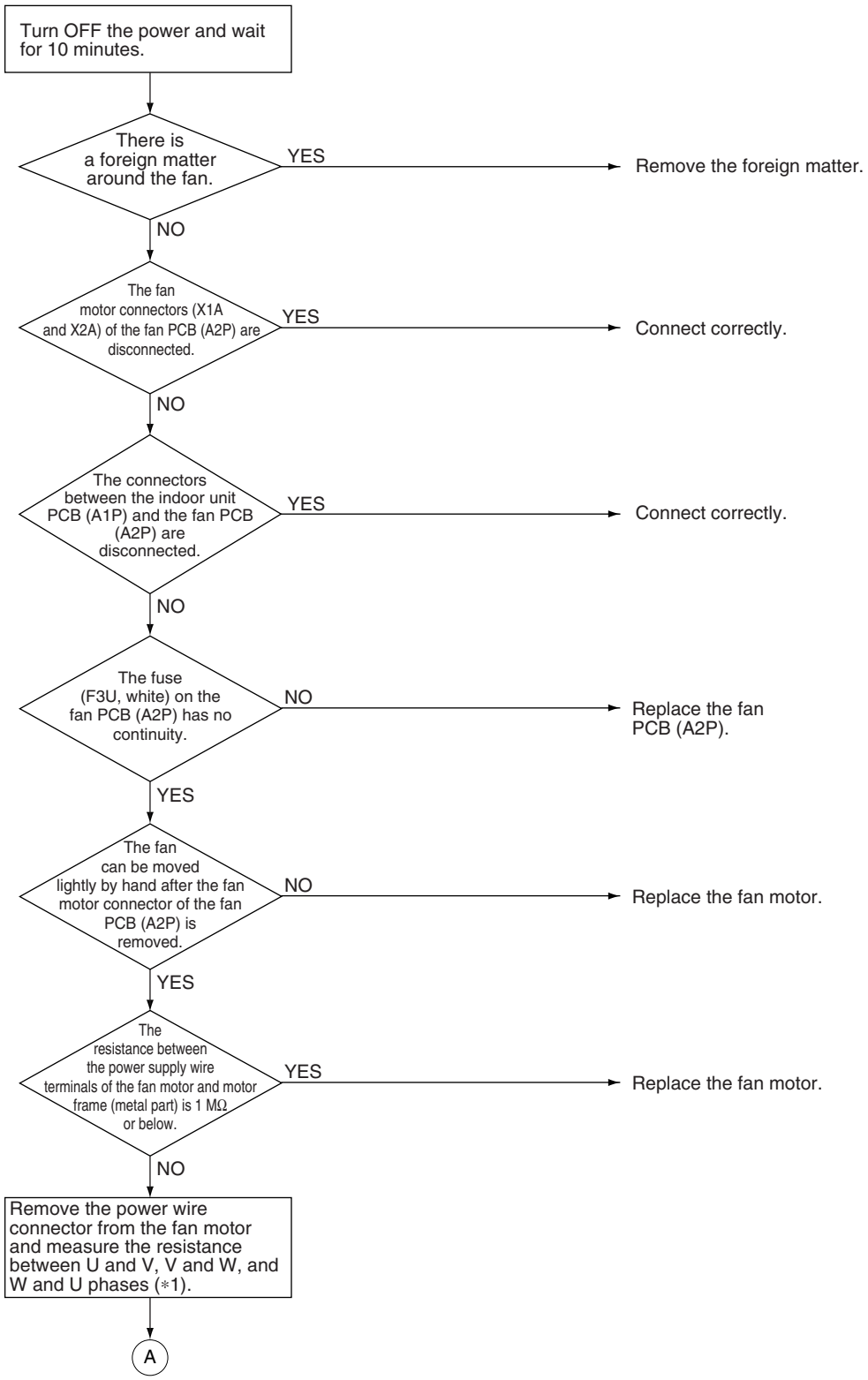
(tolerance resistance ±5%

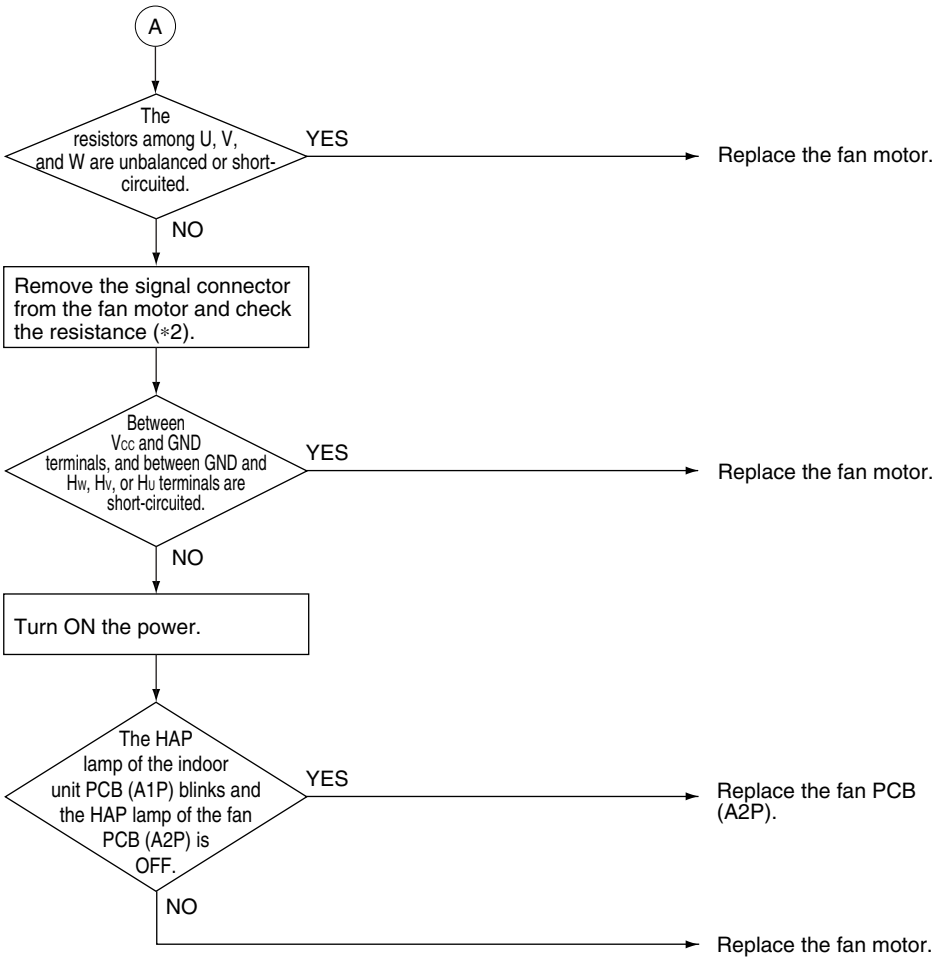
2.9.2 FXMQ50~140P, FXSQ80~125P/A

Remote Controller Display	
Applicable Models	FXMQ50~140P, FXSQ80~125P/A
Method of Error Detection	Detection from the current flow on the fan PCB. Detection from the RPM of the fan motor in operation. Detection from the position signal of the fan motor. Detection 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 the fan motor

Troubleshooting

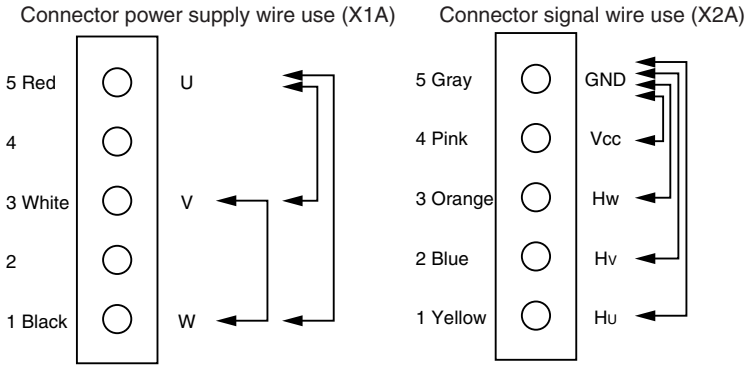
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occured.





Note: ∗1: Measurement of power supply wire connector.
Remove the X1A connector from the fan PCB (A2P) and measure the resistance between the U and V, V and W, and W and U phases of the motor connector (with 5 cores) and check that each phase are balanced (within a permissible dispersion range of ±20%).

∗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 cores).

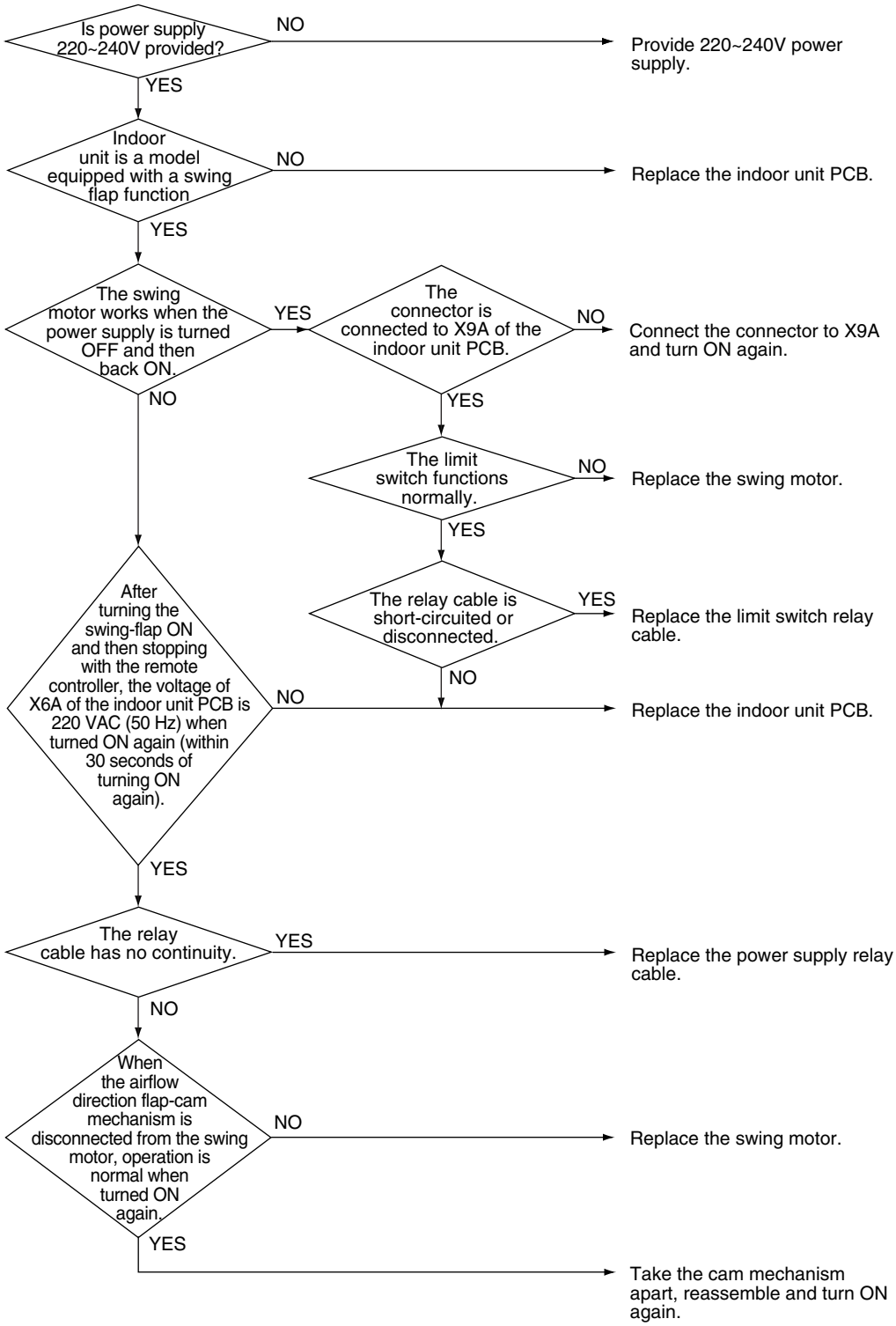


2.10 Swing Flap Motor Abnormality

Remote Controller Display	
Applicable Models	FXCQ-M, FXHQ-M, FXKQ-P(A), FXUQ-M
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 relay cable (power supply and limit switch) ■ Defective airflow direction adjusting flap-cam ■ Defective indoor unit PCB

Troubleshooting

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



2.11 Abnormal Power Supply Voltage

Remote Controller Display

A8

Applicable Models

FXMQ20-140P, FXSQ20-125P/A

Method of Error Detection

The error is detected by checking the input voltage of fan motor.

Error Decision Conditions

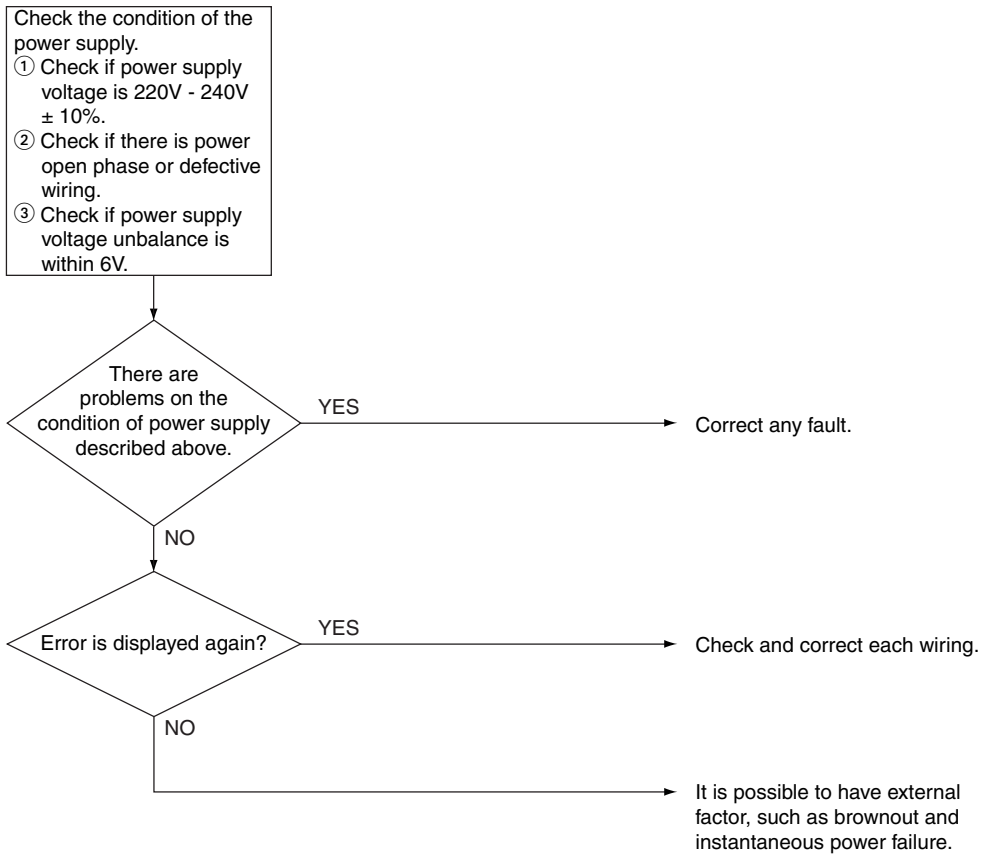
When the input voltage of fan motor is 150V or less, or 386V or more.

Supposed Causes

- Power supply voltage abnormality
- Defective connection on signal line
- Defective wiring
- Instantaneous power failure, others

Troubleshooting

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

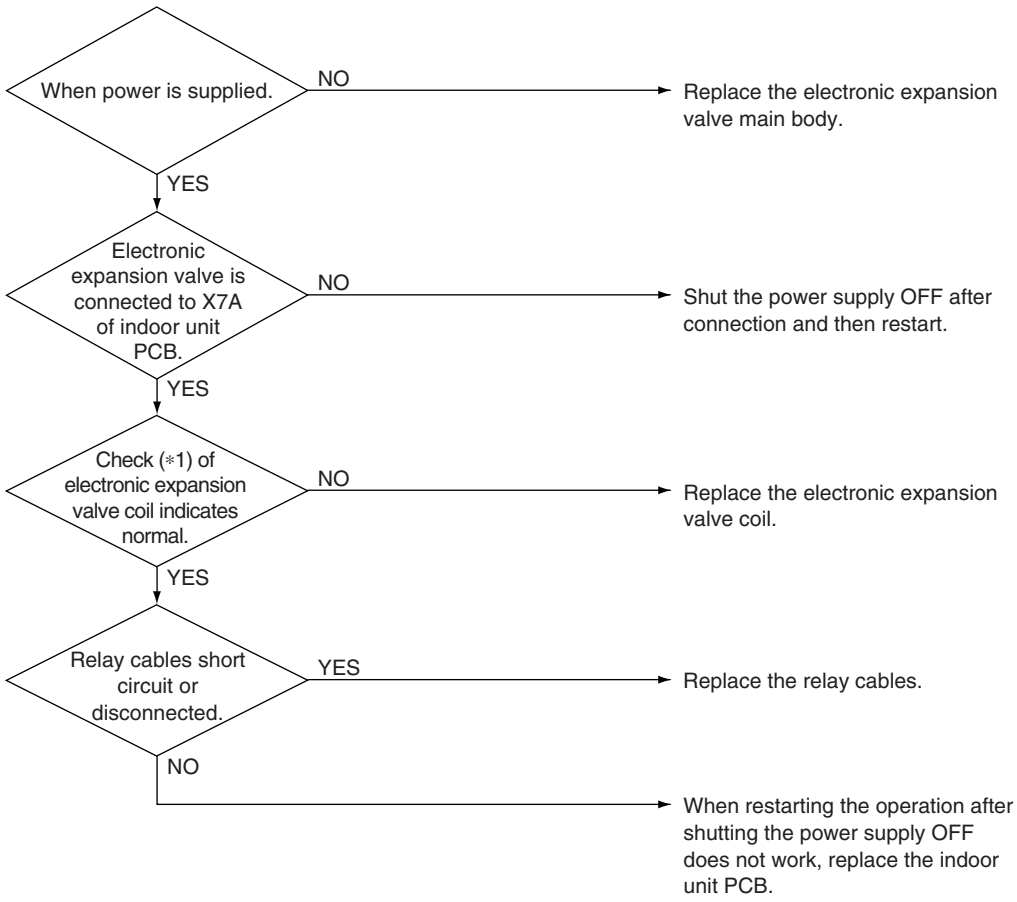


2.12 Electronic Expansion Valve Coil Abnormality / Dust Clogging

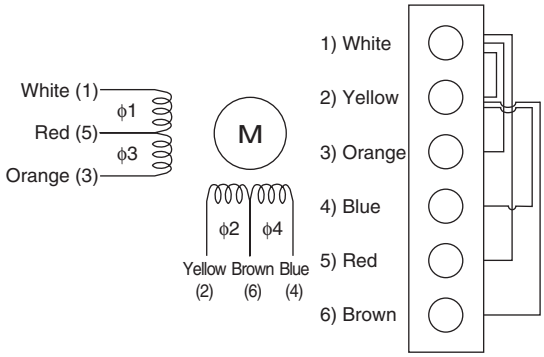
Remote Controller Display	A9
Applicable Models	FXFQ-P
Method of Error Detection	Check the coil condition of electronic expansion valve by using micro-computer. Check the dust clogging condition of electronic expansion valve main body by using micro-computer.
Error Decision Conditions	Pin input for electronic 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) > 8°C. ● Temperature of liquid pipe of heat exchanger (R2T) shows fixed degrees or below.
Supposed Causes	■ Defective electronic expansion valve coil ■ Defective PCB indoor unit ■ Defective relay cables

Troubleshooting

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



Note: *1: 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

2.13 Electronic Expansion Valve Coil Abnormality

Remote Controller Display

A9/F9

Applicable Models

A9: Indoor units except FXFQ-P models
F9: BS Unit

Method of Error Detection

Use a micro-computer to check the electronic expansion valve for coil conditions.

Error Decision Conditions

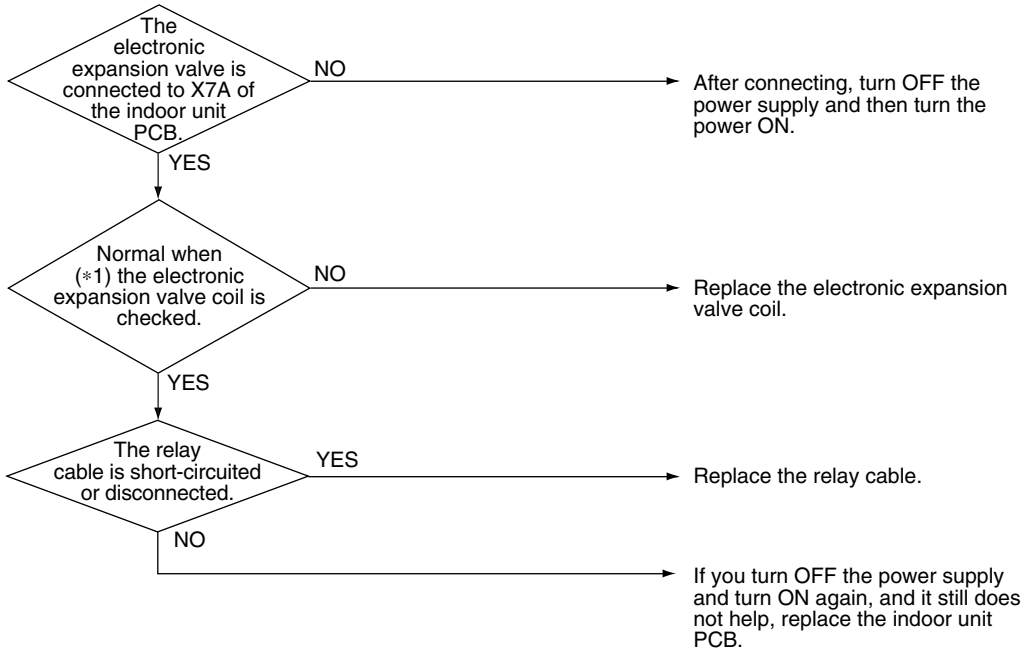
When the pin input of the electronic expansion valve is not normal while in the initialization of the micro-computer.

Supposed Causes

- Defective electronic expansion valve coil
- Defective indoor unit PCB
- Defective relay cable

Troubleshooting

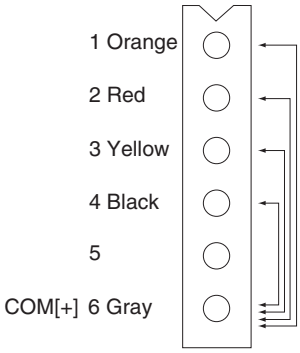
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occured.



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

A-serie

Pin No.	1. Orange	2. Red	3. Yellow	4. Black	5.	6. Gray
1. Orange		40 to 50Ω	40 to 50Ω	40 to 50Ω		40 to 50Ω
2. Red	40 to 50Ω		40 to 50Ω	40 to 50Ω		40 to 50Ω
3. Yellow	40 to 50Ω	40 to 50Ω		40 to 50Ω		40 to 50Ω
4. Black	40 to 50Ω	40 to 50Ω	40 to 50Ω			40 to 50Ω
5.						
6. Gray	40 to 50Ω	40 to 50Ω	40 to 50Ω	40 to 50Ω		



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

2.14 Drain Level above Limit

Remote Controller Display



Applicable Models

FXFQ, FXZQ, FXCQ, FXKQ, FXDQ-P, FXMQ-P, FXMQ-MA, FXUQ, FXSQ
Optional: FXHQ, FXAQ

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

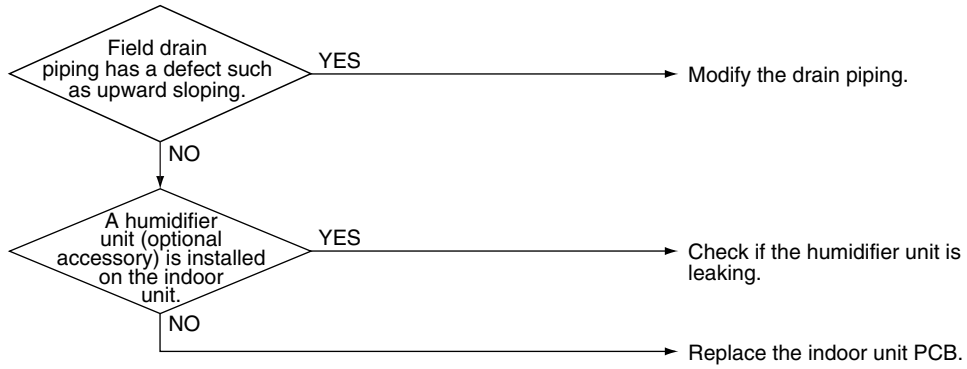
When the float switch changes from ON to OFF while the compressor is in non-operation
∗ Error code is displayed but the system operates continuously.

Supposed Causes

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

Troubleshooting

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



2.15 Capacity Determination Device Abnormality

Remote Controller Display



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

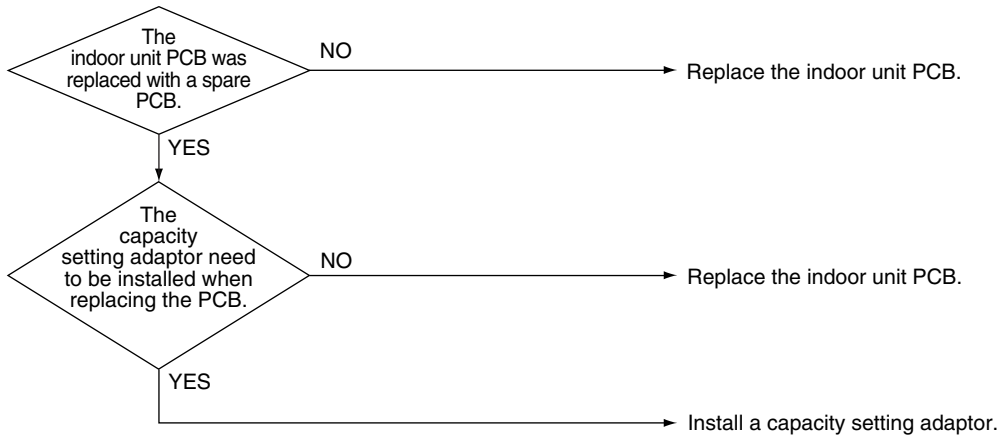
When the capacity code is not saved to the PCB, and the capacity setting adaptor is not connected
When a capacity that does not exist for that unit is set.

Supposed Causes

- Capacity setting adaptor is not installed
- Defective indoor unit PCB

Troubleshooting

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



2.16 Transmission Error (between Indoor Unit PCB and Fan PCB)

Remote Controller Display



Applicable Models

FXMQ20~140P
FXSQ20~125 P/A

Method of Error Detection

Check the condition of transmission between indoor unit PCB (A1P) and fan PCB (A2P) using micro-computer.

Error Decision Conditions

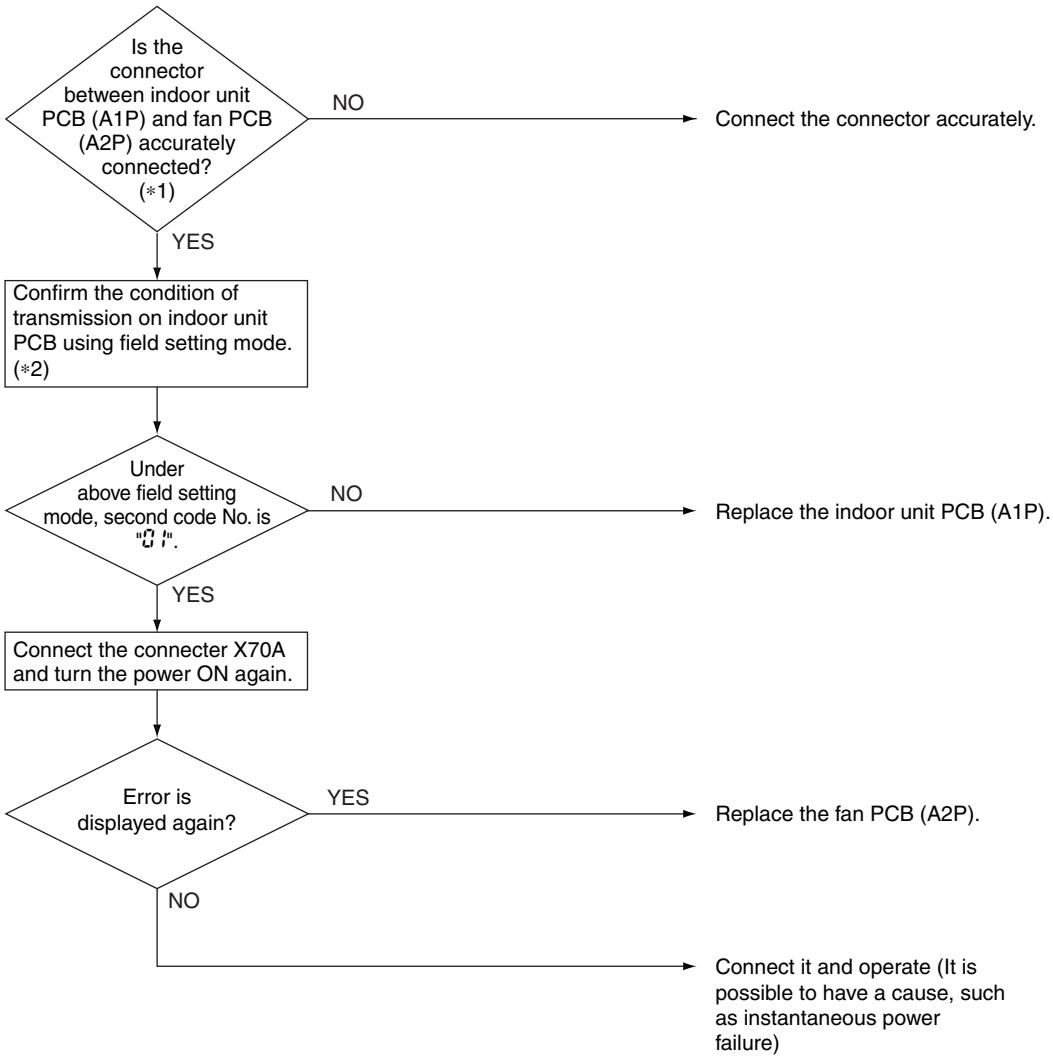
When normal transmission is not carried out for certain amount of time.

Supposed Causes

- Connection error of 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 power failure

Troubleshooting

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



Note:
∗1: Pull out and insert the connecter once and check it is accurately 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 remote control.
(Confirmation: Second code No. at the condition of first code No. 21 on mode No. 41)

↓

Determination
- 01: Normal
- Other than 01: Transmission defect on indoor unit PCB

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

2.17 Thermistor Abnormality

Remote Controller Display

C4, C5, C9

Applicable Models

All indoor models

Method of Error Detection

The error is detected by temperature detected by thermistor.

Error Decision Conditions

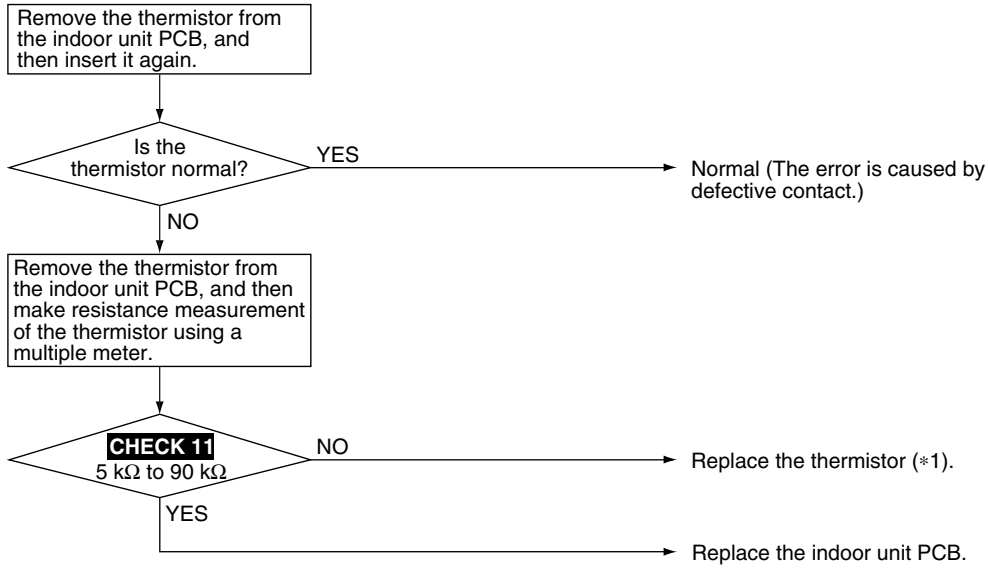
When the thermistor becomes disconnected or shorted while the unit is running.

Supposed Causes

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

Troubleshooting

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



Note: ∗1: Error code and defective thermistor

Error code	Defective thermistor	Electric symbol
C4	Heat exchanger liquid pipe thermistor	R2T
C5	Heat exchanger gas pipe thermistor	R3T
C9	Suction air thermistor	R1T

CHECK 11 Refer to P.244.

2.18 Combination Error (between Indoor Unit PCB and Fan PCB)

Remote Controller Display

C6

Applicable Models

FXMQ20~140P

Method of Error Detection

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

Error Decision Conditions

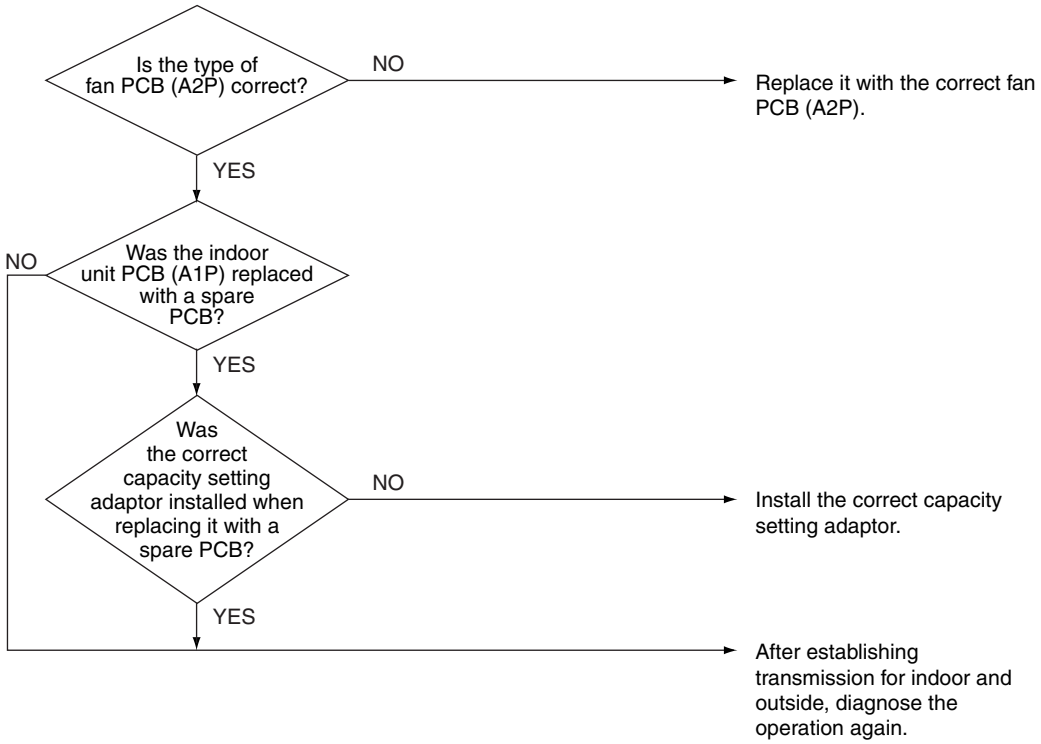
When the communication data of fan PCB (A2P) is determined as incorrect

Supposed Causes

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

Troubleshooting

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



2.19 Thermistor Abnormality

Remote Controller Display

C8

Applicable Models

FXMQ20~140PVE

Method of Error Detection

The error is detected by temperature detected by thermistor.

Error Decision Conditions

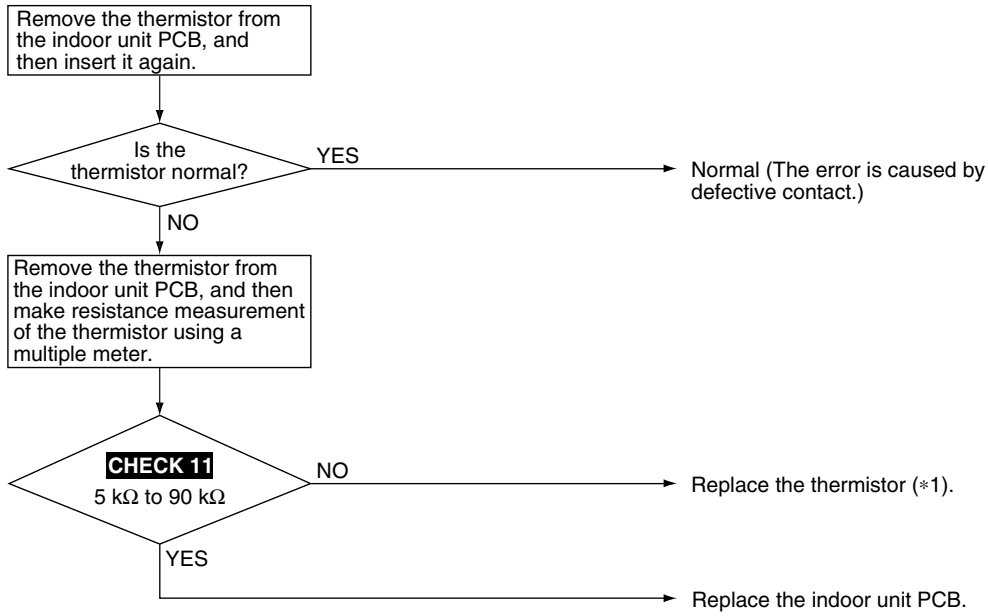
When the thermistor becomes disconnected or shorted while the unit is running.

Supposed Causes

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

Troubleshooting

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



Note: ∗1: Error code and defective thermistor

Error code	Defective thermistor	Electric symbol
C8	Discharge air thermistor	R4T

CHECK 11 Refer to P.244.

2.20 Humidity Sensor System Abnormality

Remote Controller Display

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

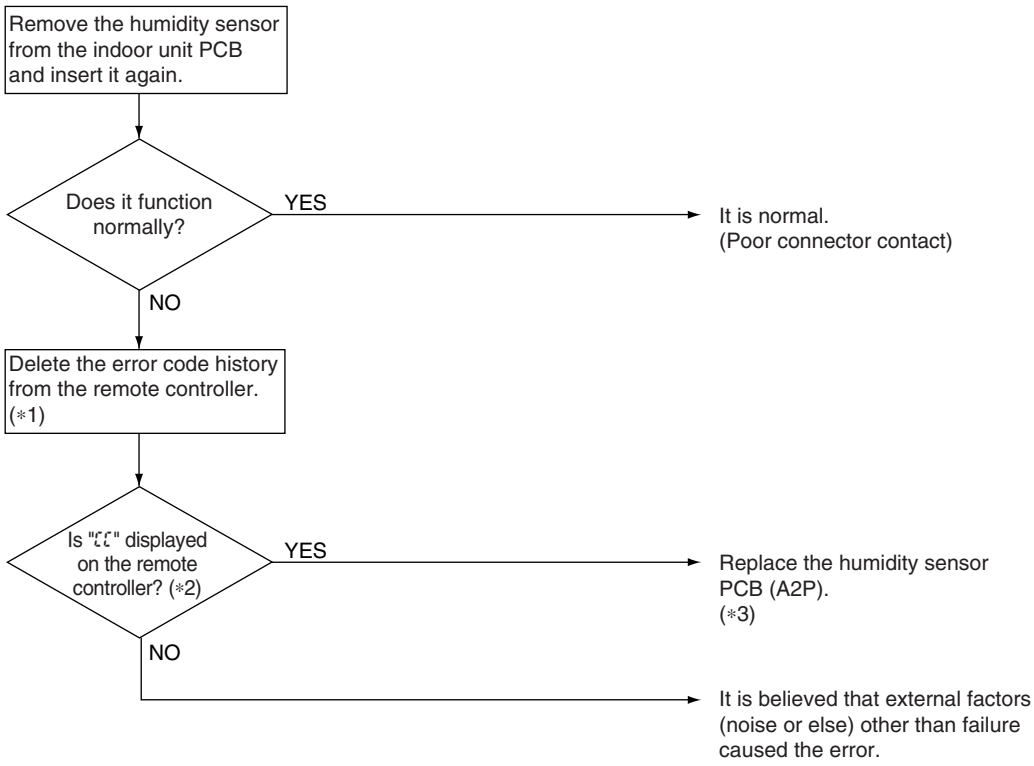
When the moisture sensor is disconnected or short circuited

Supposed Causes

- Defective sensor
- Disconnection

Troubleshooting

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



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).

2.21 Abnormal Room Temperature Thermistor in Remote Controller

Remote Controller Display



Applicable Models

All indoor models

Method of Error Detection

The error is detected by temperature detected by room temperature thermistor in remote controller. (∗1)

Error Decision Conditions

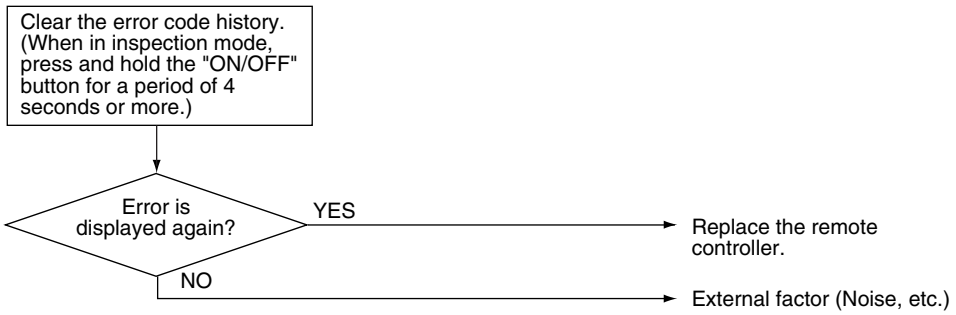
When the room temperature thermistor in remote controller becomes disconnected or shorted while the unit is running
∗ Error code is displayed but the system operates continuously.

Supposed Causes

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

Troubleshooting

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



Note: ∗1: In case of room temperature thermistor in remote controller error, unit is still operable by suction air thermistor on indoor unit.

2.22 PCB Abnormality

Remote Controller Display

E1

Applicable Models

RWEYQ8P, 10T

Method of Error Detection

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

Error Decision Conditions

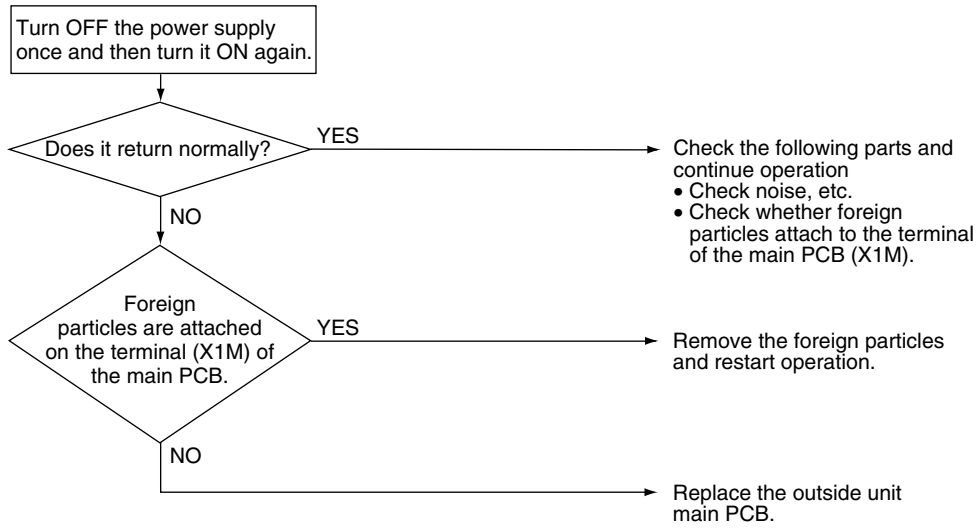
When communication conditions in the hardware section between the indoor unit and heat source unit is abnormal

Supposed Causes

- Defective outside unit main PCB
- Defective communication part on the main PCB

Troubleshooting

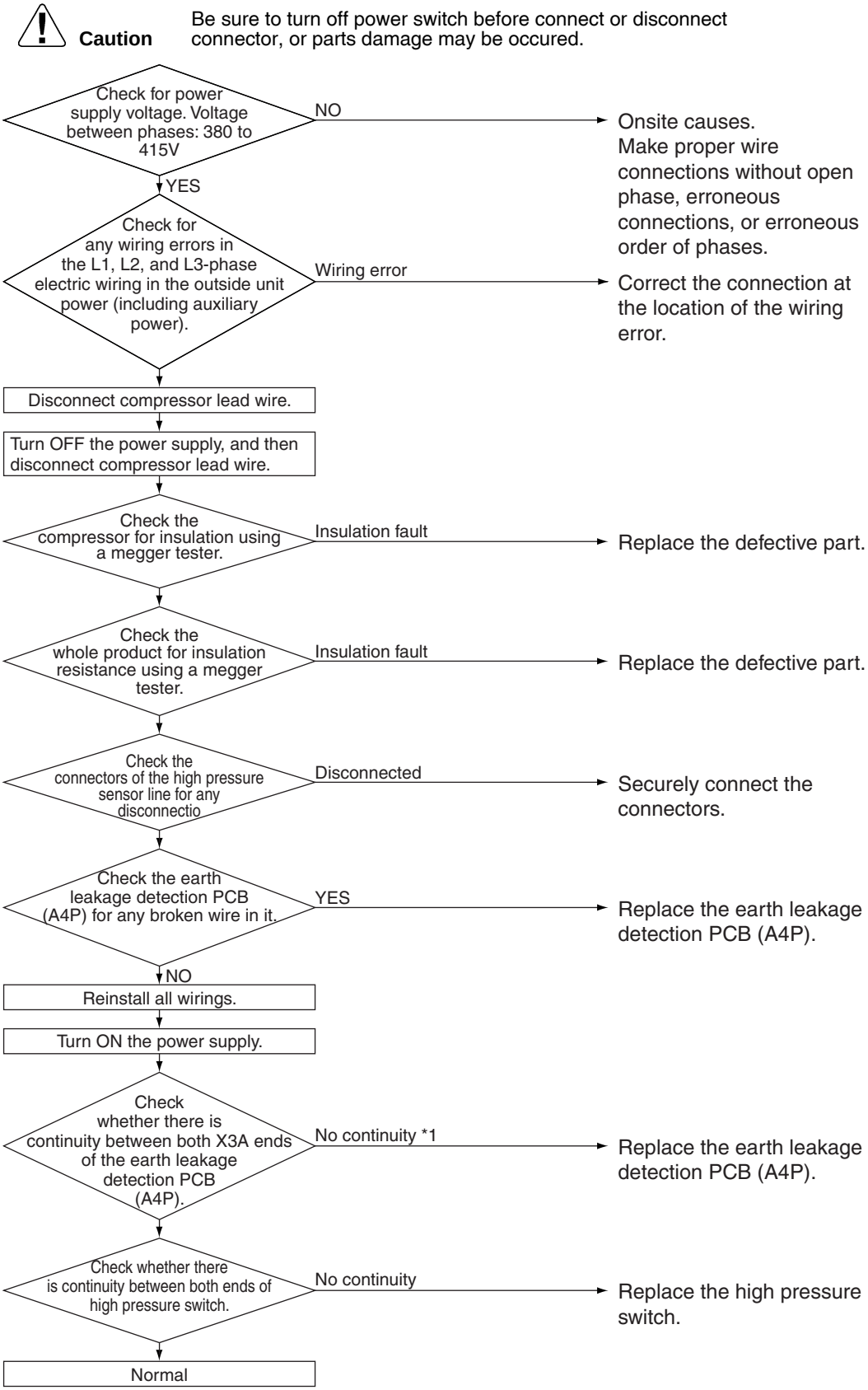
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occured.



2.23 Earth Leakage by Leak Detection PCB Assy

Remote Controller Display	E2
Applicable Models	RWEYQ8P, 10T
Method of Error Detection	Failure is to be detected by using leak detection PCB assy. Reverse phase is to be detected at all times during operation by the reverse protector PCB assy.
Error Decision Conditions	Leakage is detected under the conditions outside of the scope of high pressure sensor operation.
Supposed Causes	■ Defective of compressor

Troubleshooting



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.

*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.

2.24 High Pressure Abnormality (Detected by the High Pressure Switch)

Remote Controller Display

E3

Applicable Models

RWEYQ8T, 10T

Method of Error Detection

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

Error Decision Conditions

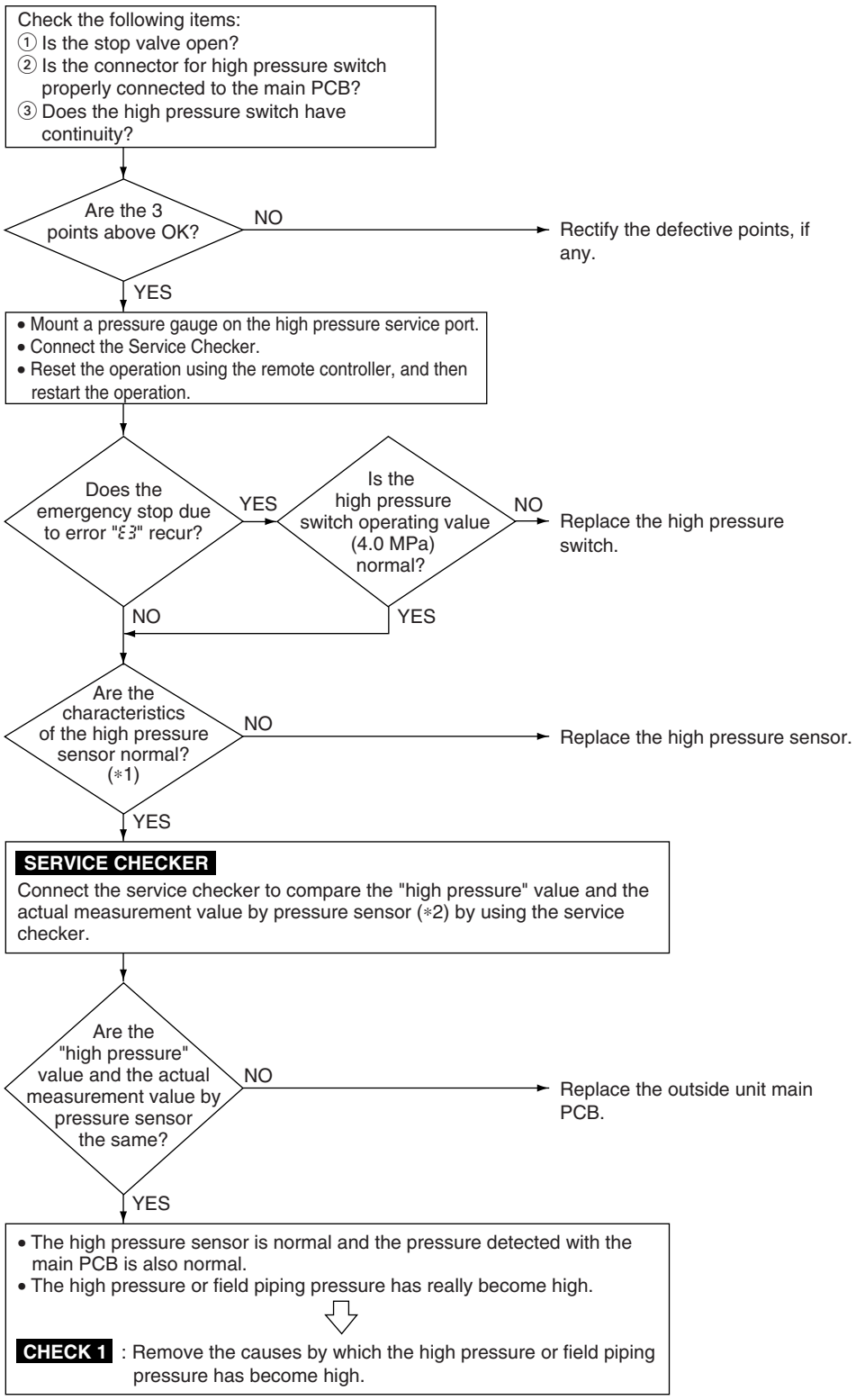
When the protector circuit is partially opened
(For reference) Operating pressure for the high pressure switch
Operating pressure: 4.0 MPa
Reset pressure: 3.0 MPa

Supposed Causes

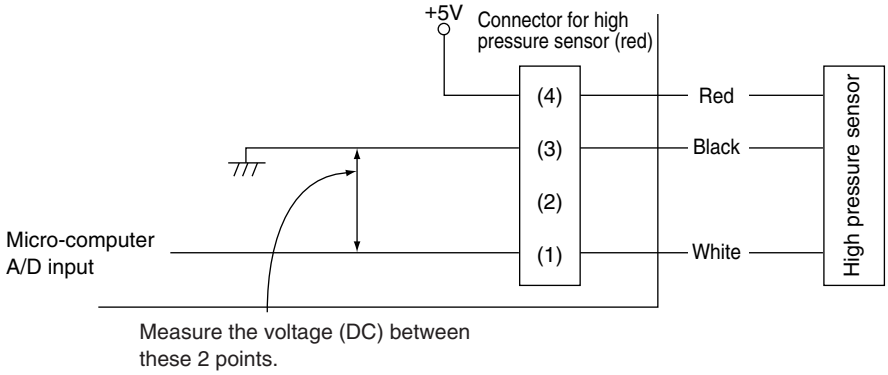
- Actuation of outside unit high pressure switch
- Defective high pressure switch
- Defective outside unit main PCB
- Momentary power failure
- Defective high pressure sensor

Troubleshooting

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



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 pressure.)
∗2: Make measurement of voltage of the pressure sensor.



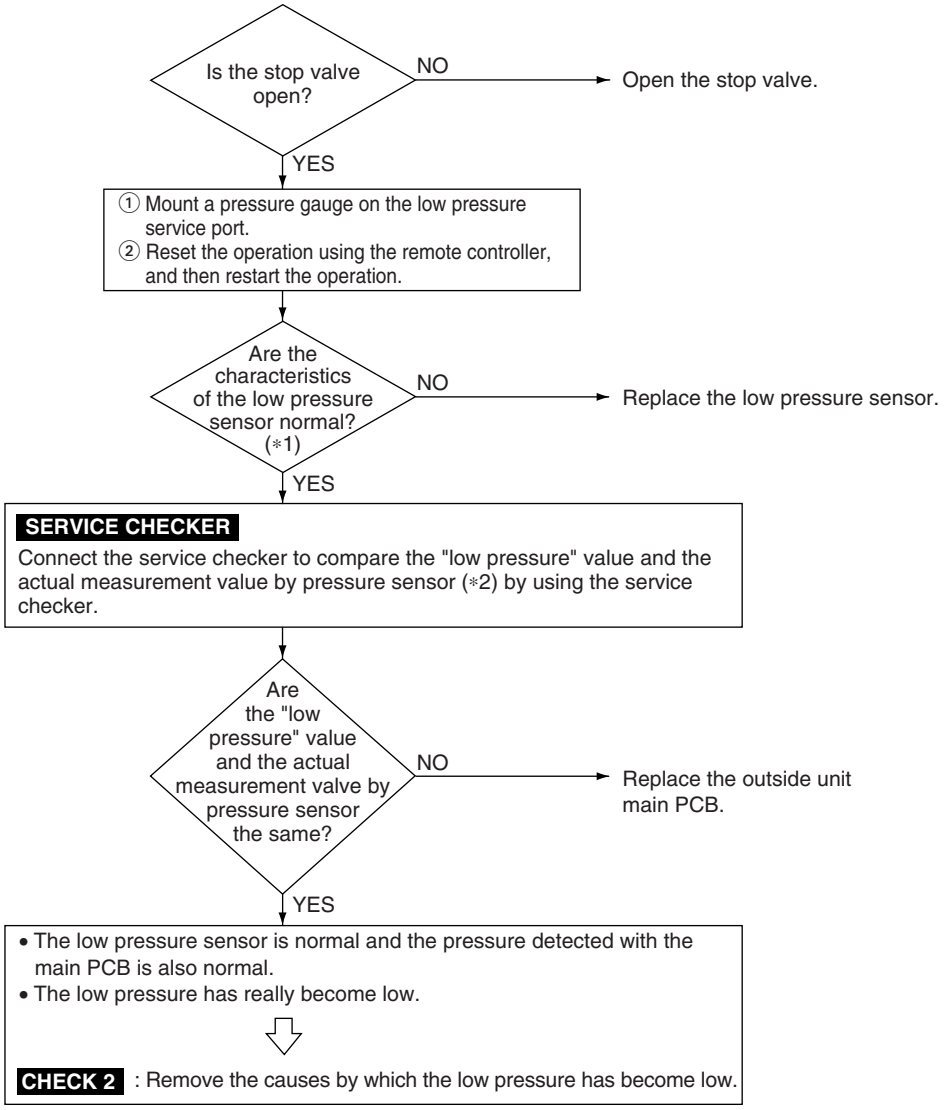
CHECK 1 Refer to P.236.

2.25 Actuation of Low Pressure Sensor

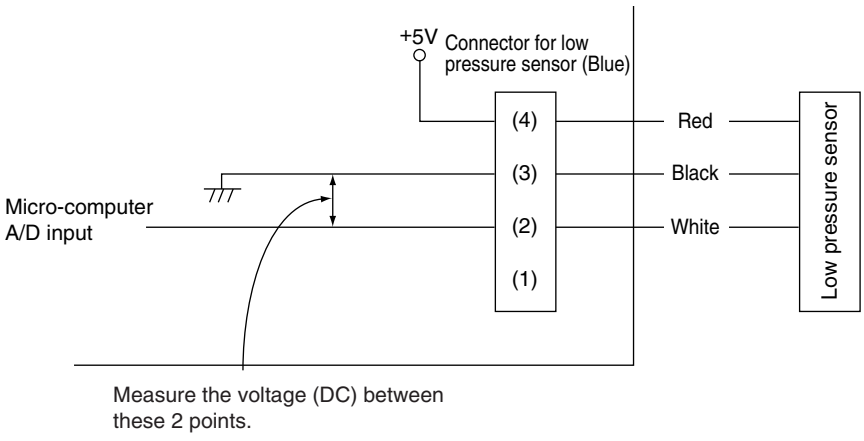
Remote Controller Display	E4
Applicable Models	RWEYQ8T, 10T
Method of Error Detection	Judge the pressure detected by a low pressure sensor with the outside unit main PCB.
Error Decision Conditions	When low pressure drops while the compressor is in operation Operation pressure: 0.07 MPa
Supposed Causes	■ Abnormal drop of low pressure ■ Defective low pressure sensor ■ Defective outside unit main PCB ■ The stop valve is not opened.

Troubleshooting

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



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 pressure.)
∗2: Make measurement of voltage of the pressure sensor.



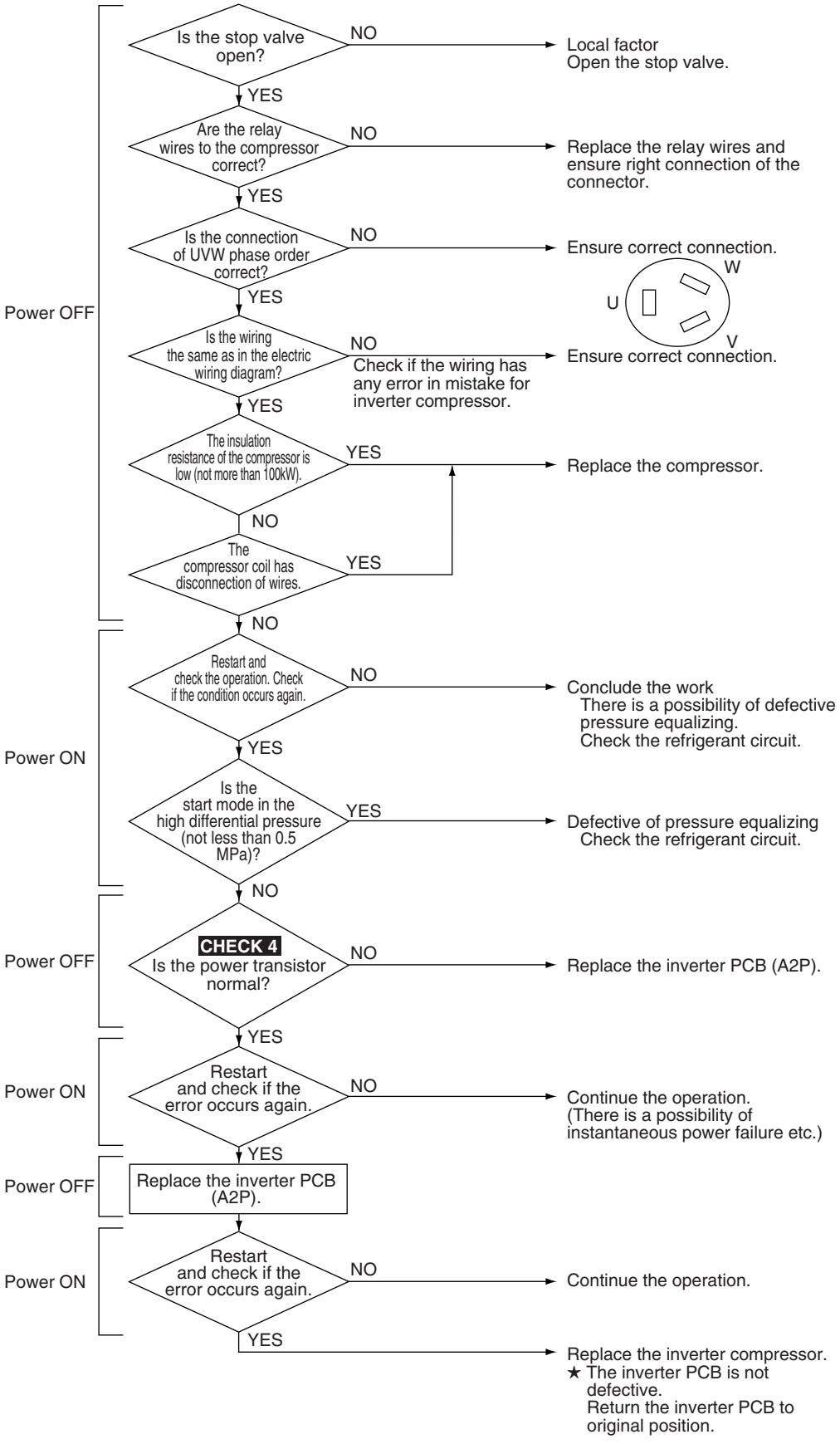
CHECK 2 Refer to P.237.

2.26 Inverter Compressor Motor Lock

Remote Controller Display	E5
Applicable Models	RWEYQ8T, 10T
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 startup even in forced startup mode.
Supposed Causes	■ Inverter compressor lock ■ High differential pressure (0.5 MPa or more) ■ Incorrect UVW wiring ■ Defective inverter PCB ■ Stop valve is not opened

Troubleshooting

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



CHECK 4 Refer to P.239.

2.27 Electronic Expansion Valve Coil Abnormality

Remote Controller Display

E9

Applicable Models

RWEYQ8T, 10T

Method of Error Detection

Check the continuity of electronic expansion valve coil (Y1E)

Error Decision Conditions

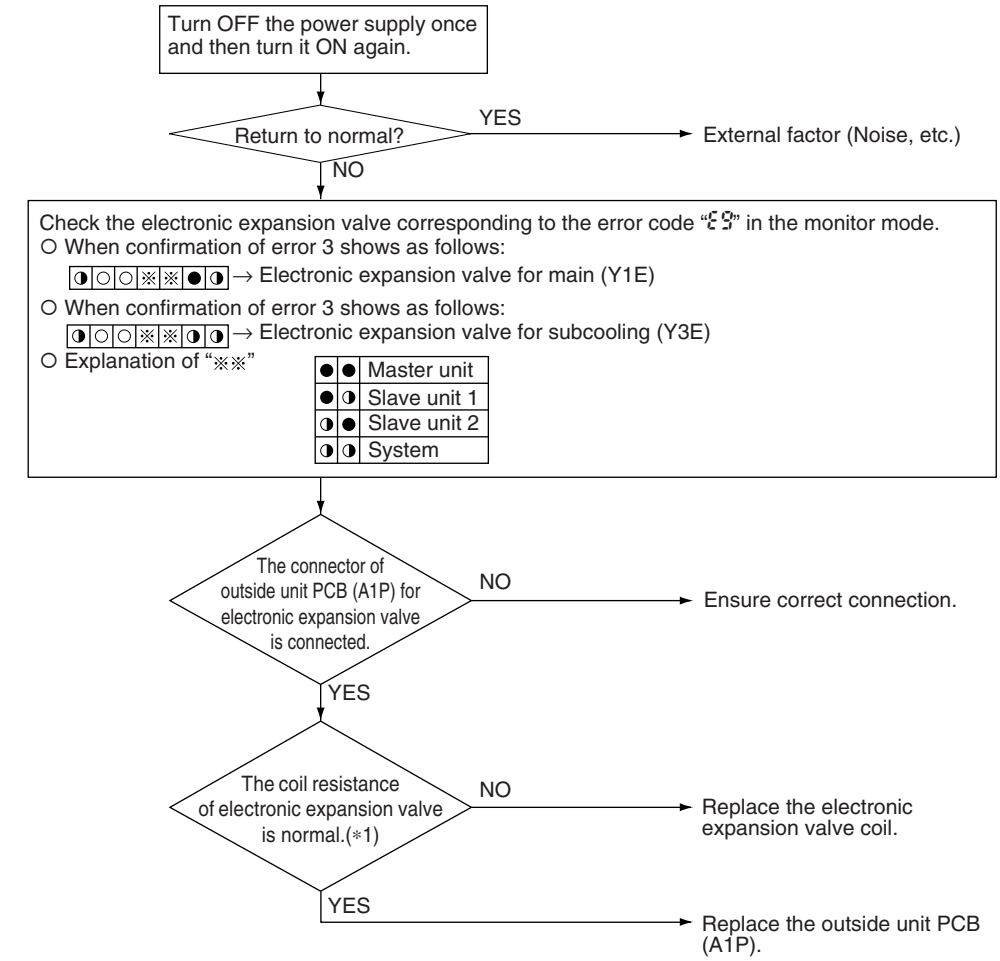
No current is detected in the common (COM [+]) when the power supply is ON.

Supposed Causes

- Disconnection of connectors for electronic expansion valve (Y1E)
- Defective electronic expansion valve coil
- Defective outside unit main PCB (A1P)

Troubleshooting

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

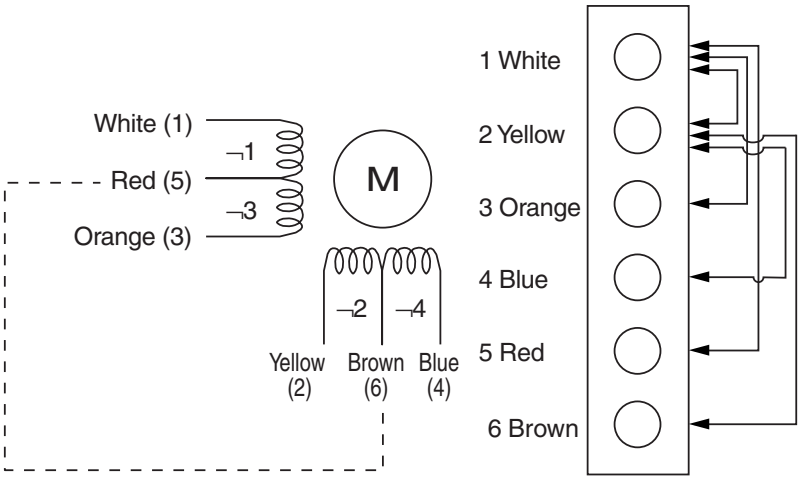


Note: ∗1: Coil check method for the electronic expansion valve
Discount the electronic expansion valve from the PCB and check the continuity between the connector pins.

P-serie

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	300	×		×	○ Approx. 150Ω	×
4. Blue	x	300	×		×	○ Approx. 150Ω
5. Red	150	x	150	×		×
6. Brown	x	150	x	150	×	

○: Continuity
× : No continuity

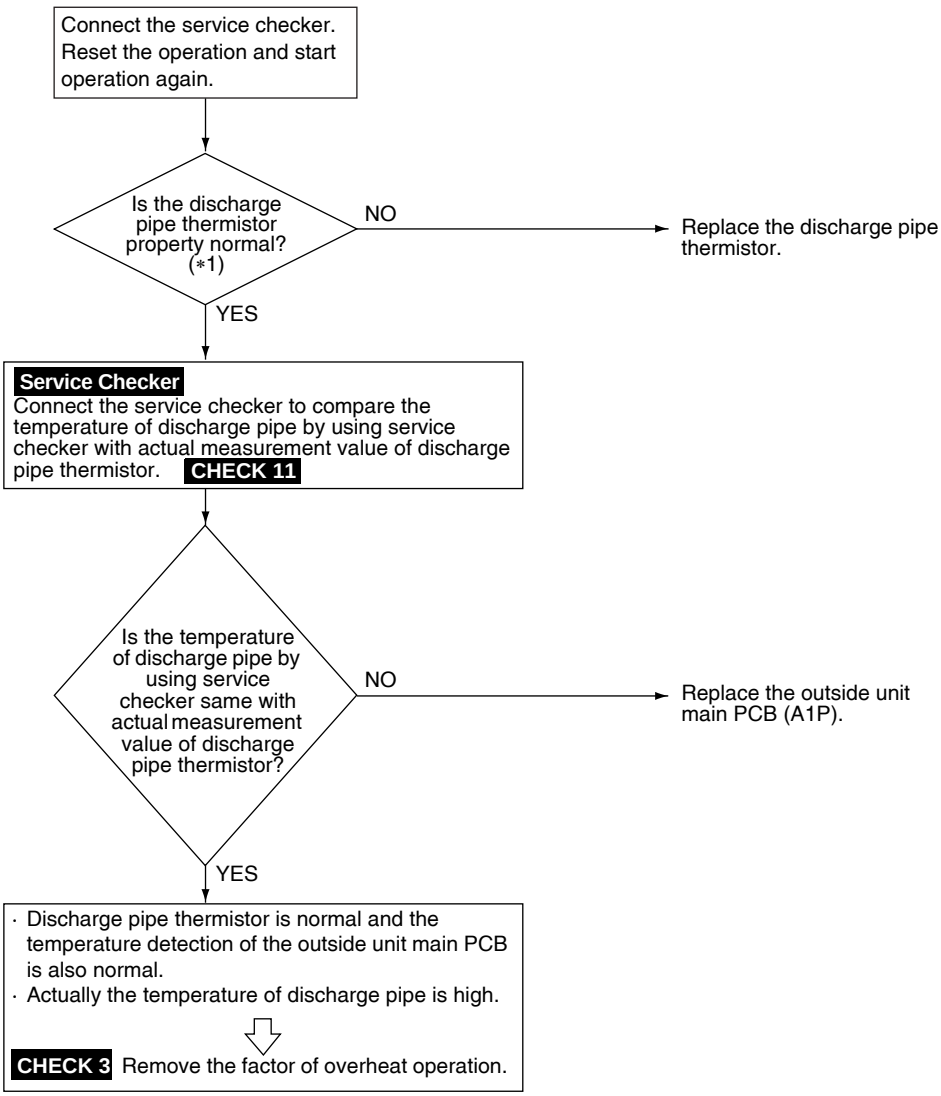


2.28 Discharge Pipe Temperature Abnormality

Remote Controller Display	F3
Applicable Models	RWEYQ8T, 10T
Method of Error Detection	The error is detected according to the temperature detected by the discharge pipe temperature sensor.
Error Decision Conditions	■ When the discharge pipe temperature rises to an abnormally high level (135°C or more) ■ When the discharge pipe temperature rises suddenly (120°C or more continues 10 minutes)
Supposed Causes	■ Defective discharge pipe temperature thermistor ■ Defective outside unit PCB (A1P) ■ Discharge pipe temperature abnormality

Troubleshooting

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



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

CHECK 3 Refer to P.238.

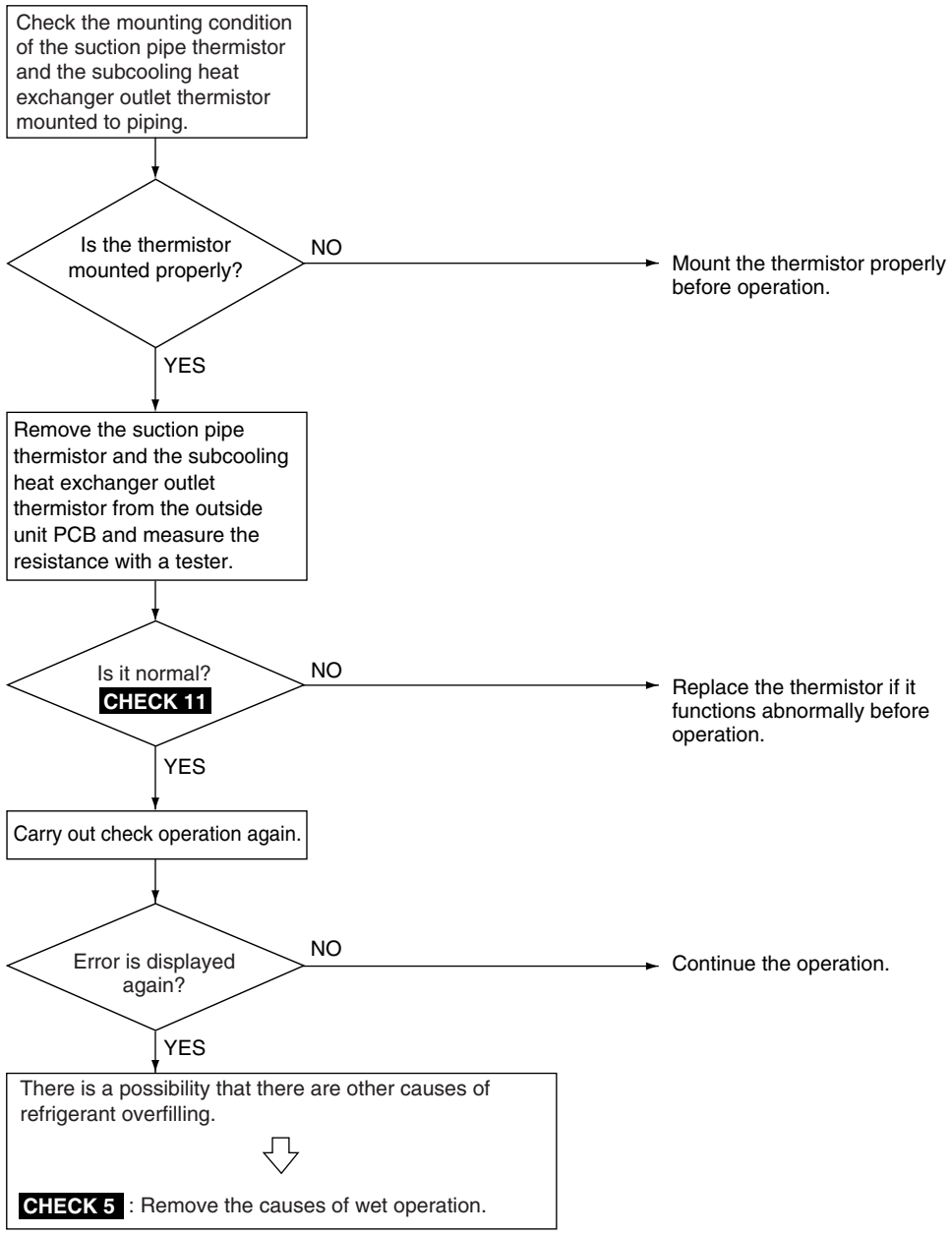
CHECK 11 Refer to P.244.

2.29 Refrigerant Overcharged

Remote Controller Display	F6
Applicable Models	RWEYQ8T, 10T
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 power switch before connect or disconnect connector, or parts damage may be occured.



CHECK 5 Refer to P.240.

CHECK 11 Refer to P.244.

2.30 Water System Abnormality

Remote Controller Display

H01

Applicable Models

RWEYQ8T, 10T

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.)
- Detect wrong signal position detection variable water flow valve.

Error Decision Conditions

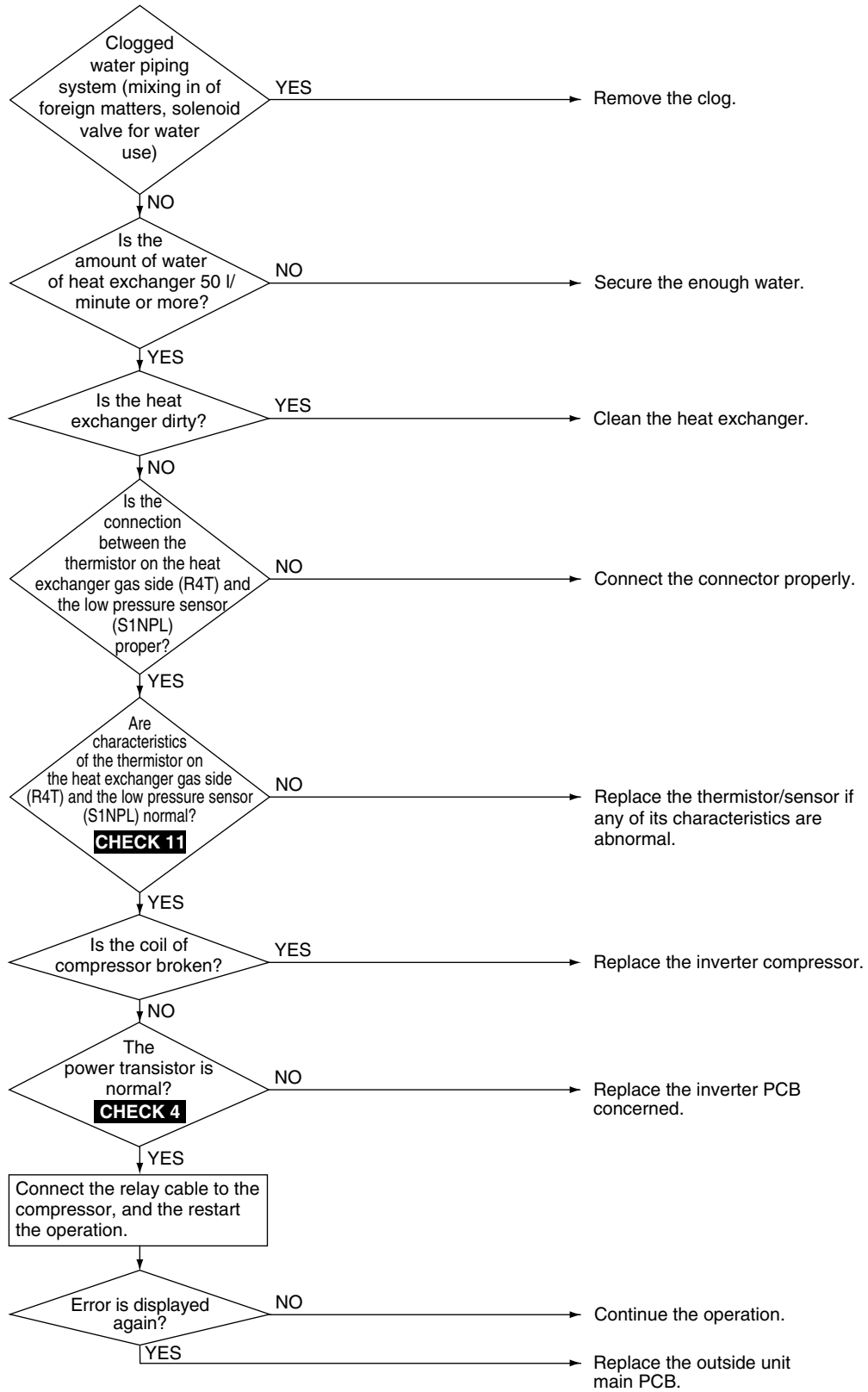
- When temperature on the heat exchanger gas side (R4T) drops remarkably with the minimum operation step (52 Hz) of the compressor
- With interlock setting provided field set (2-26 1~7) (1-2 open), when interlock circuit is turned OFF
- Resistance value input does not correspond to required value. At power ON, valve is opened once to open and back to closed position. Control must detect max. and min. value

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
- Incorrect wiring motor modification water flow valve
- Incorrect wiring position detection modulating water flow valve

Troubleshooting

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



CHECK 4 Refer to P.239.

CHECK 11 Refer to P.244.

2.31 Thermistor System Abnormality

Remote Controller Display

d3, d4, d5, d7, d9

Applicable Models

RWEYQ8T, 10T

Method of Error Detection

The error is detected according to the temperature detected by each individual thermistor.

Error Decision Conditions

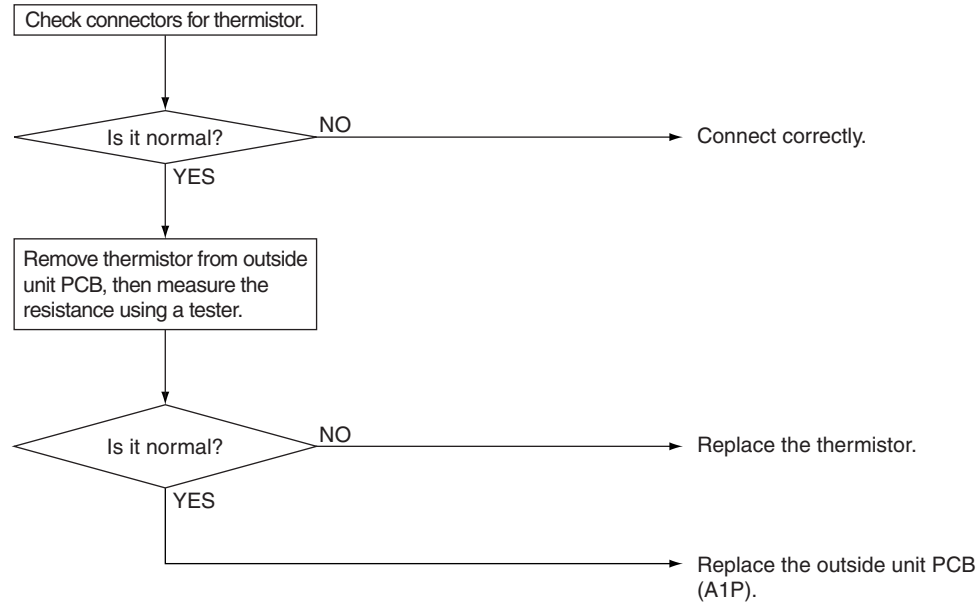
When thermistor is disconnected or short-circuited during operation

Supposed Causes

- Defective thermistor
- Defective connection of thermistor
- Defective outside unit PCB

Troubleshooting

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



Error Code	Defective Thermistor	Electric Symbol	Connector
d3	Discharge pipe thermistor	R3T	X34A
d4	Heat exchanger gas pipe thermistor	R4T	X37A
d5	Suction pipe thermistor	R2T	X37A
d7	Receiver outlet liquid pipe thermistor	R6T	X37A
d9	Subcooling heat exchanger outlet pipe thermistor	R5T	X37A

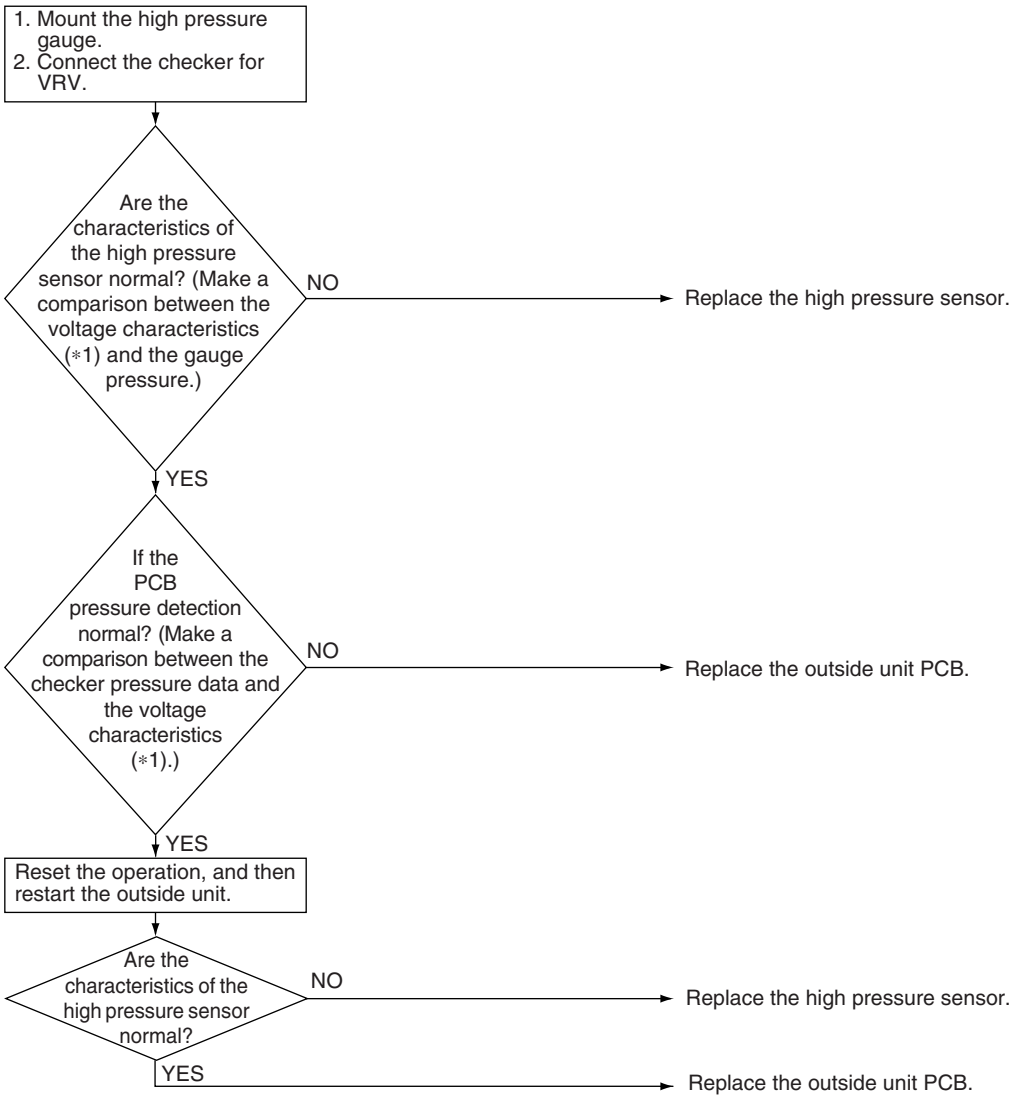
CHECK 11 Refer to P.244.

2.32 High Pressure Sensor Abnormality

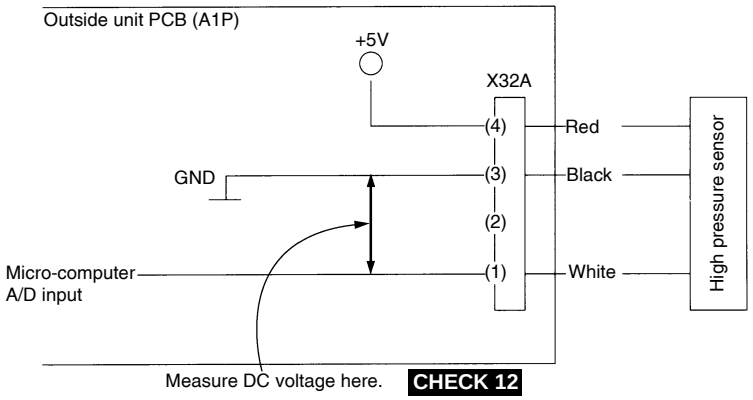
Remote Controller Display	
Applicable Models	RWEYQ8T, 10T
Method of Error Detection	The error is detected from the pressure detected by the high pressure sensor.
Error Decision Conditions	When the high pressure sensor is short-circuit or open circuit (Not less than 4.22MPa or 0.01MPa or less)
Supposed Causes	■ Defective high pressure sensor ■ Connection of low pressure sensor with wrong connection ■ Defective outside unit PCB ■ Defective connection of high pressure sensor

Troubleshooting

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



Note: ∗1: Voltage measurement point



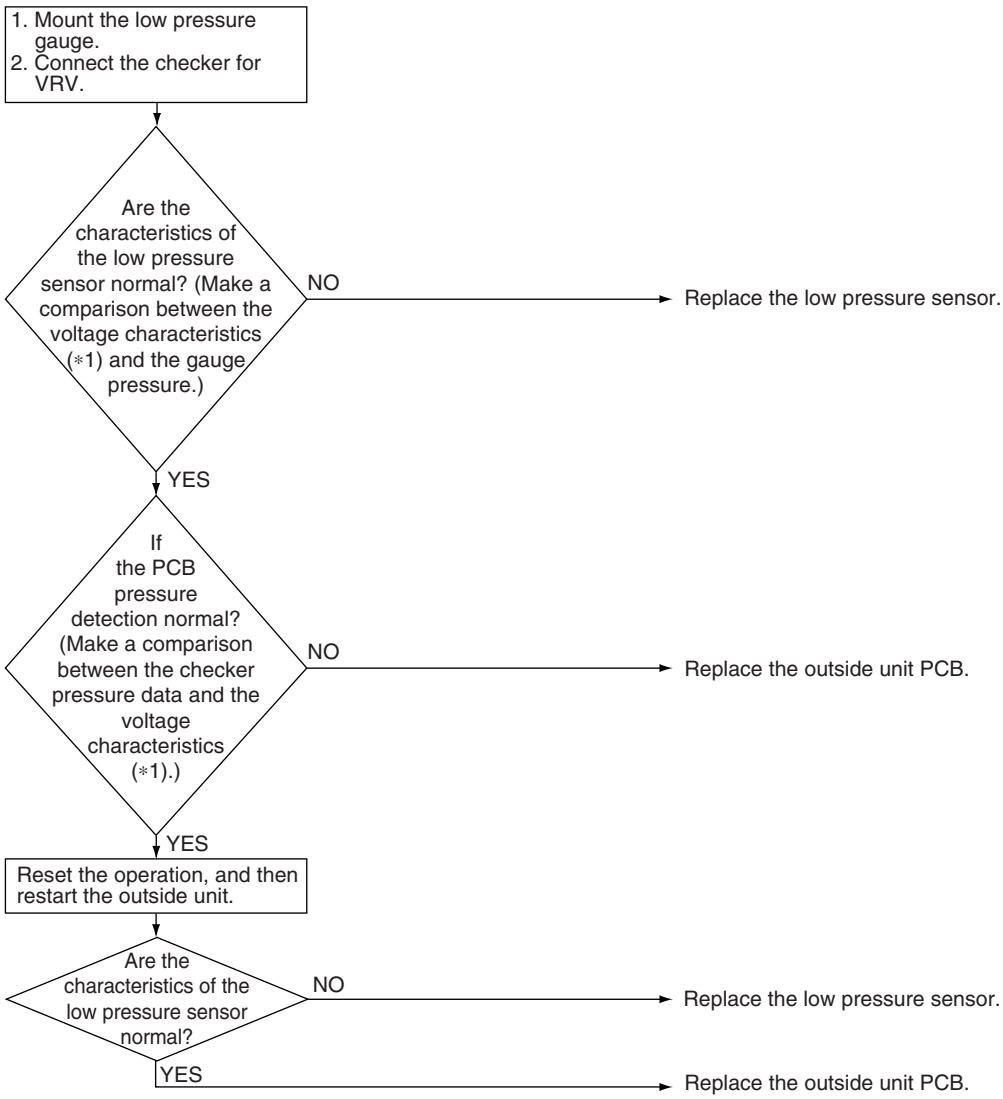
CHECK 12 Refer to P.245.

2.33 Low Pressure Sensor Abnormality

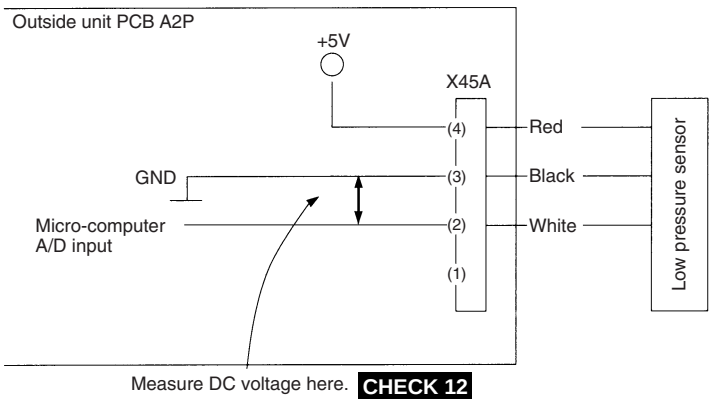
Remote Controller Display	
Applicable Models	RWEYQ8T, 10T
Method of Error Detection	The error is detected from pressure detected by low pressure sensor.
Error Decision Conditions	When the low pressure sensor is short circuit or open circuit (Not less than 1.77MPa or -0.01MPa or less)
Supposed Causes	■ Defective low pressure sensor ■ Connection of high pressure sensor with wrong connection ■ Defective outside unit PCB ■ Defective connection of low pressure sensor

Troubleshooting

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



Note: ∗1: Voltage measurement point



CHECK 12 Refer to P.245.

2.34 Inverter Radiation Fin Temperature Rise Abnormality

Remote Controller Display

L4

Applicable Models

RWEYQ8T, 10T

Method of Error Detection

Radiation of compressor inverter PCB
Fin temperature is detected by the radiation fin thermistor

Error Decision Conditions

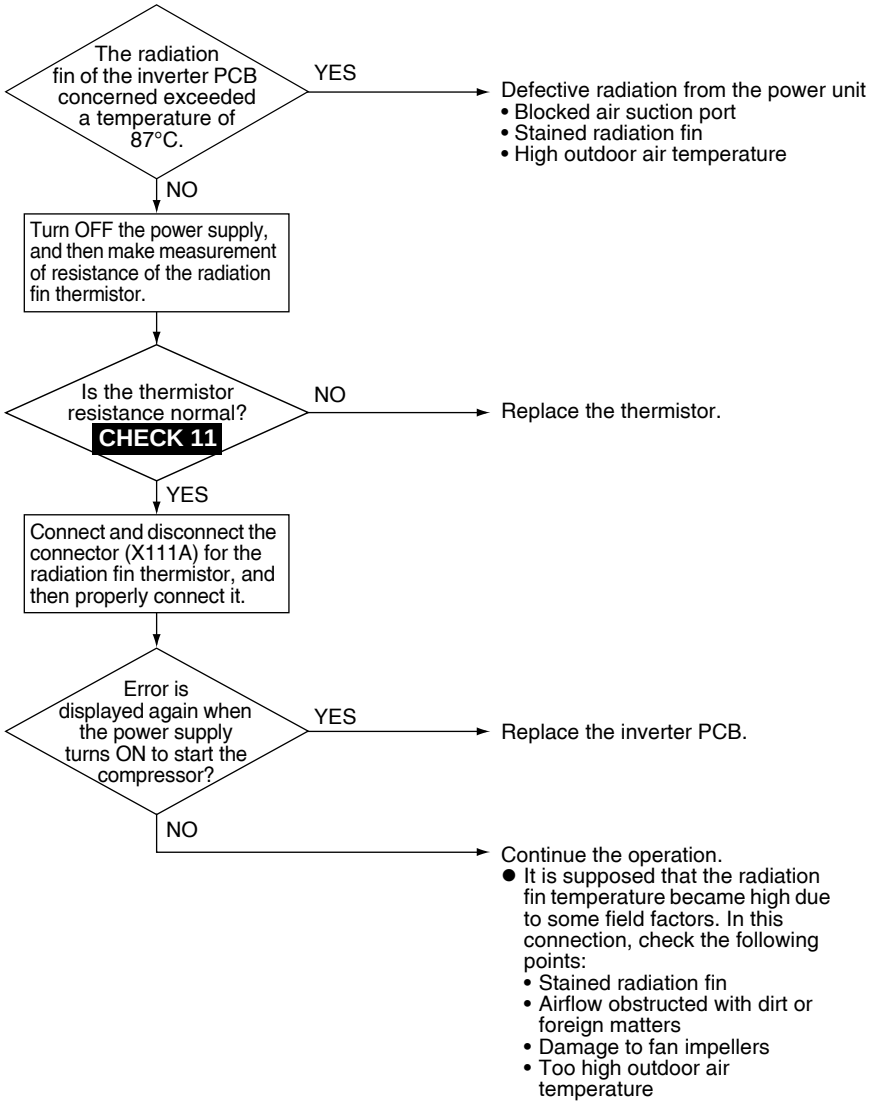
When the temperature of the inverter radiation fin increases above 87°C

Supposed Causes

- Actuation of fin thermal (Actuates above 87°C)
- Defective inverter PCB
- Defective radiation fin thermistor

Troubleshooting

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



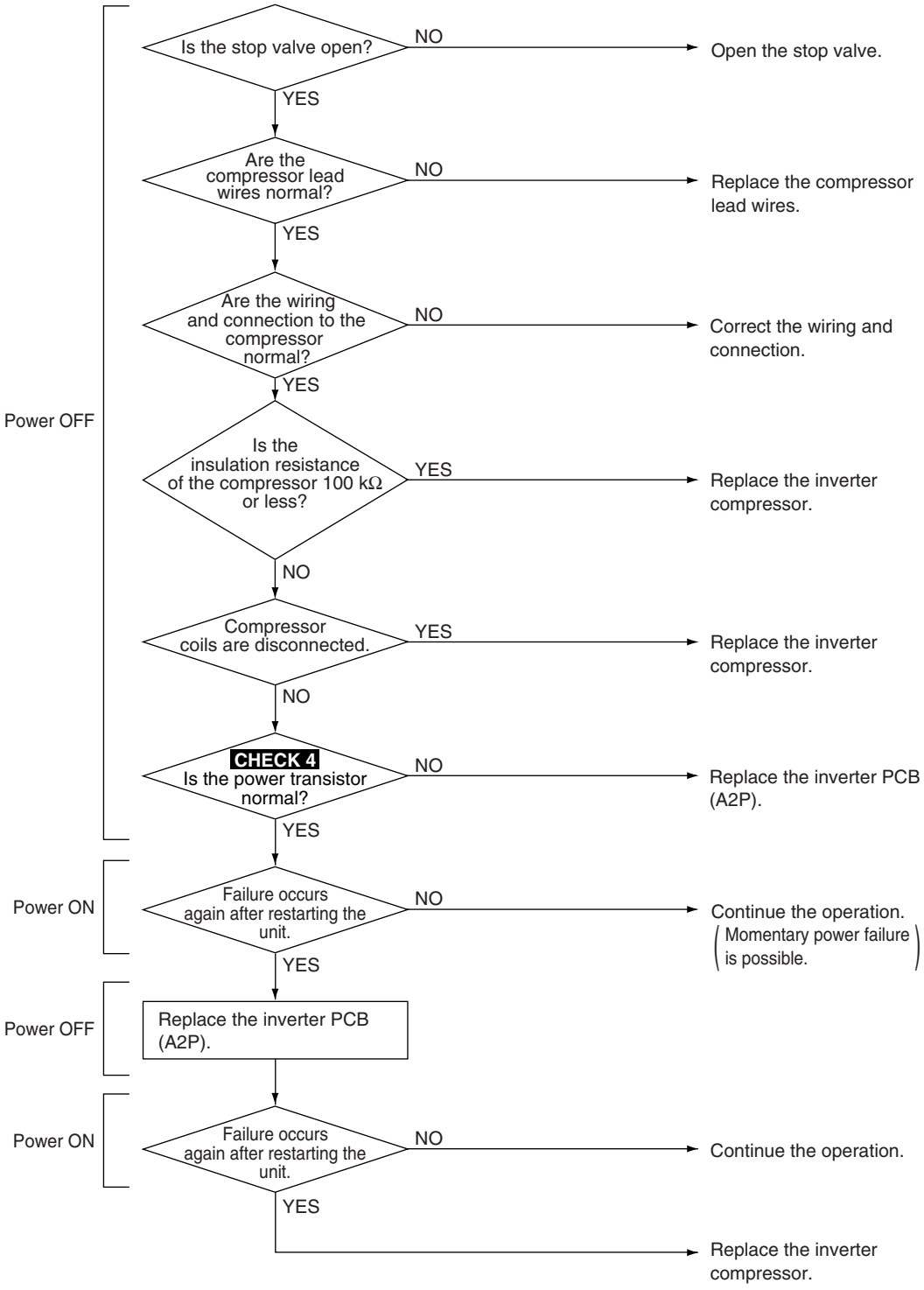
CHECK 11 Refer to P.244.

2.35 Momentary Overcurrent of Inverter Compressor

Remote Controller Display	L5
Applicable Models	RWEYQ8T, 10T
Method of Error Detection	Error is detected from current (∗1) flowing in the power transistor ∗1 T7Y1, T8Y1: 32A
Error Decision Conditions	When an excessive current flows in the power transistor
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 power switch before connect or disconnect connector, or parts damage may be occured.



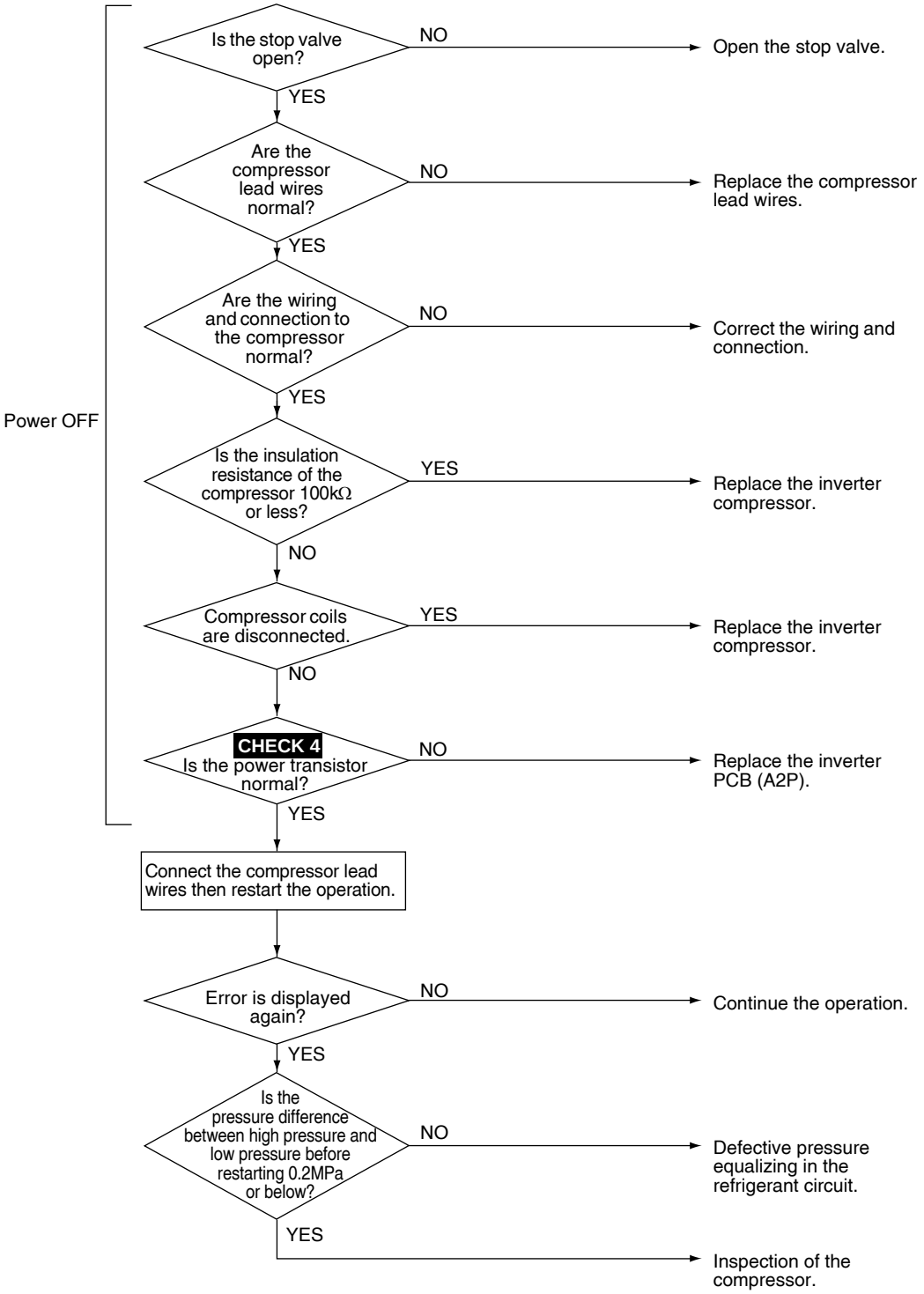
CHECK 4 Refer to P.239.

2.36 Overcurrent Abnormality of Inverter Compressor

Remote Controller Display	L8
Applicable Models	RWEYQ8T, 10T
Method of Error Detection	Error is detected from the current flowing in the power transistor
Error Decision Conditions	When the inverter secondary current value is below (1) ∗1 or more continues for 5 seconds ∗1 T7Y1: 17A (2) ∗2 or more continues for 260 seconds ∗2 T7Y1: 14.5A
Supposed Causes	■ Compressor overload ■ Compressor coil disconnected ■ Defective wiring to the compressor ■ Defective inverter PCB

Troubleshooting Output current check

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



CHECK 4 Refer to P.239.

2.37 Inverter Compressor Startup Error

Remote Controller Display

L9

Applicable Models

RWEYQ8T, 10T

Method of Error Detection

Error is detected based on the signal waveform of the compressor

Error Decision Conditions

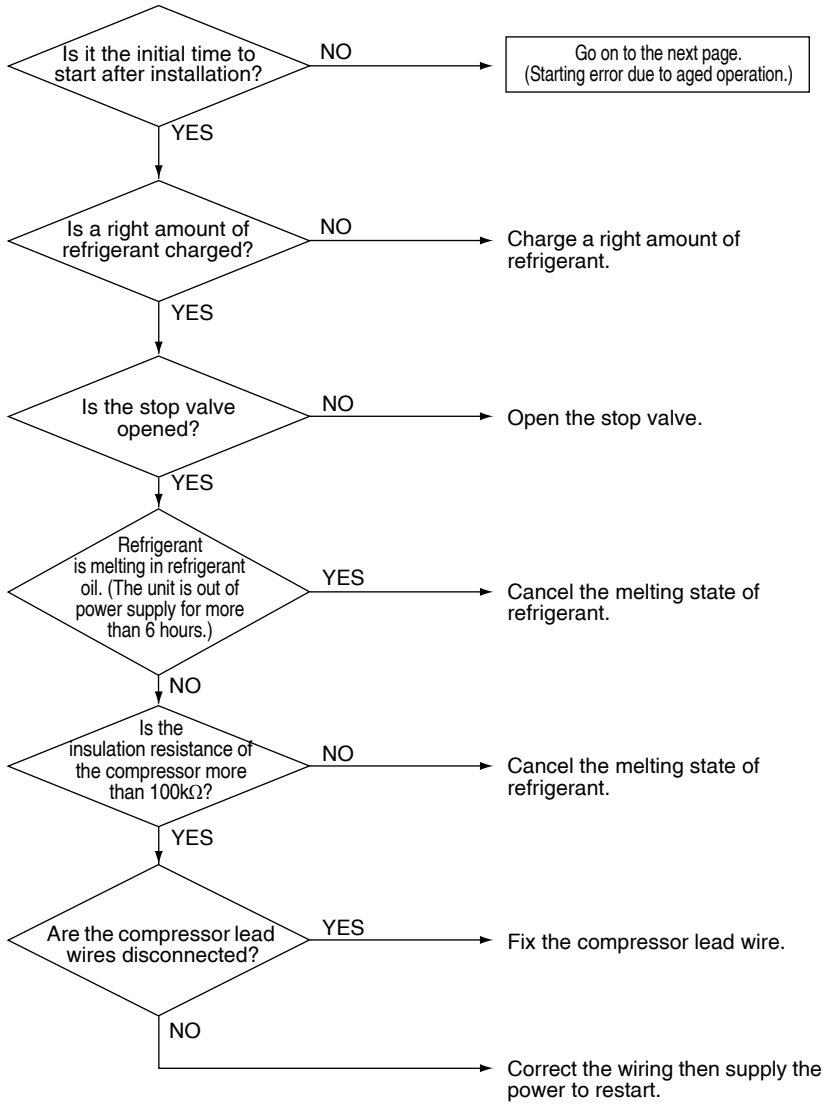
Starting the compressor does not complete

Supposed Causes

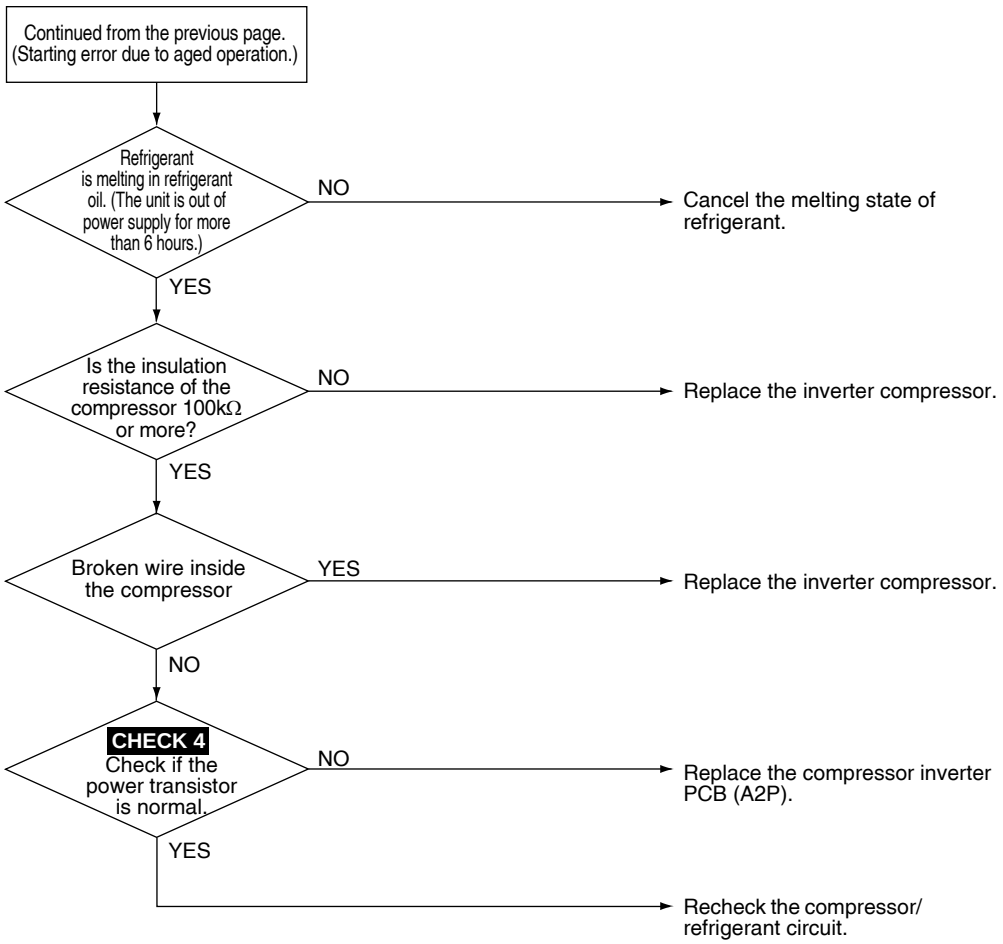
- Stop valve is not opened
- Defective compressor
- Wiring connection error to the compressor
- Large pressure difference before startup the compressor
- Defective inverter PCB

Troubleshooting

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



Troubleshooting



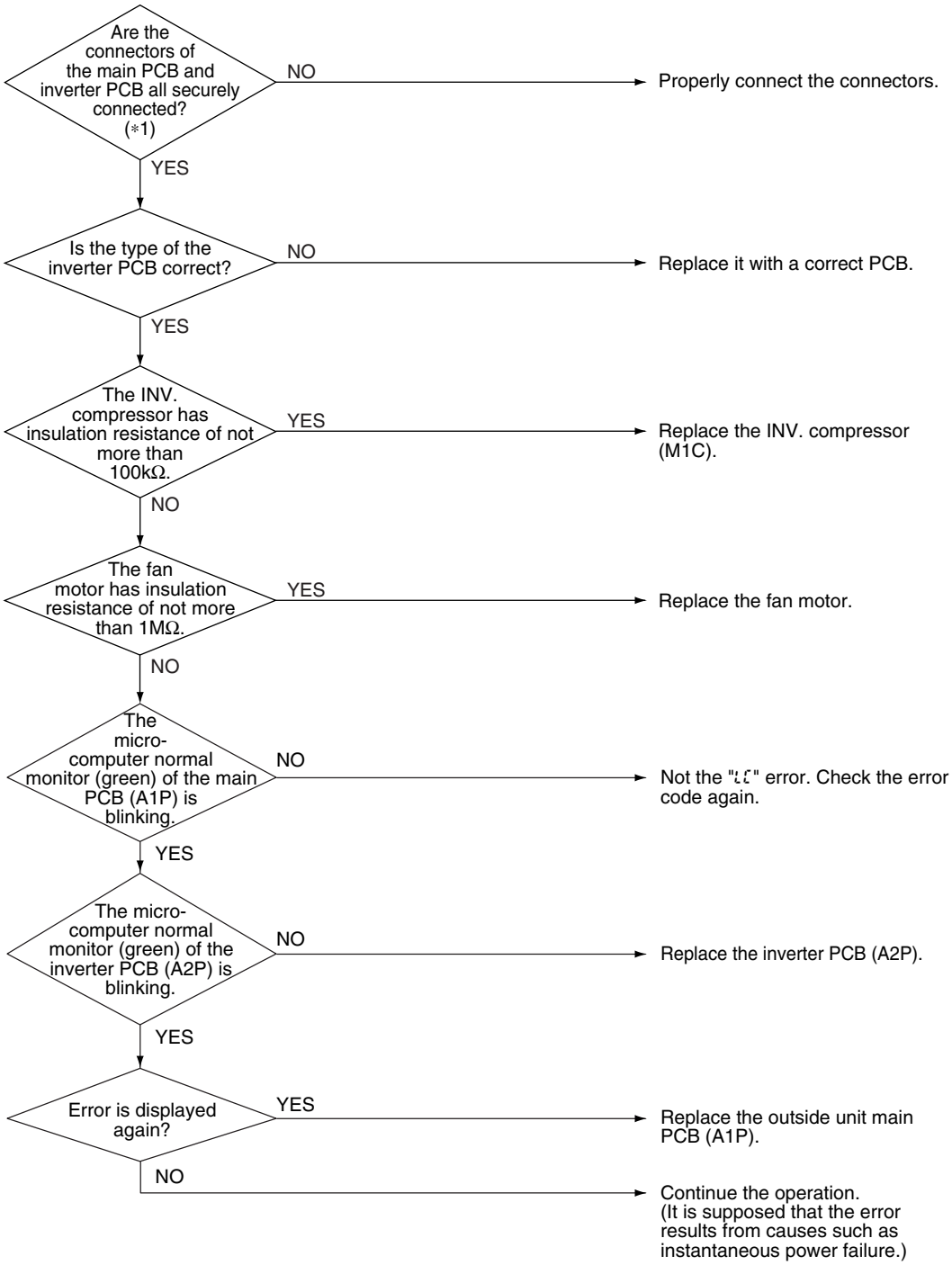
CHECK 4 Refer to P.239.

2.38 Transmission Error (between Inverter and Main PCB)

Remote Controller Display	UF
Applicable Models	RWEYQ8T, 10T
Method of Error Detection	Check the communication state between inverter PCB and 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 outside unit main PCB ■ Defective outside 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 power switch before connect or disconnect connector, or parts damage may be occured.



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

2.39 Inverter Over-Ripple Protection

Remote Controller Display

P1

Applicable Models

RWEYQ8T, 10T

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

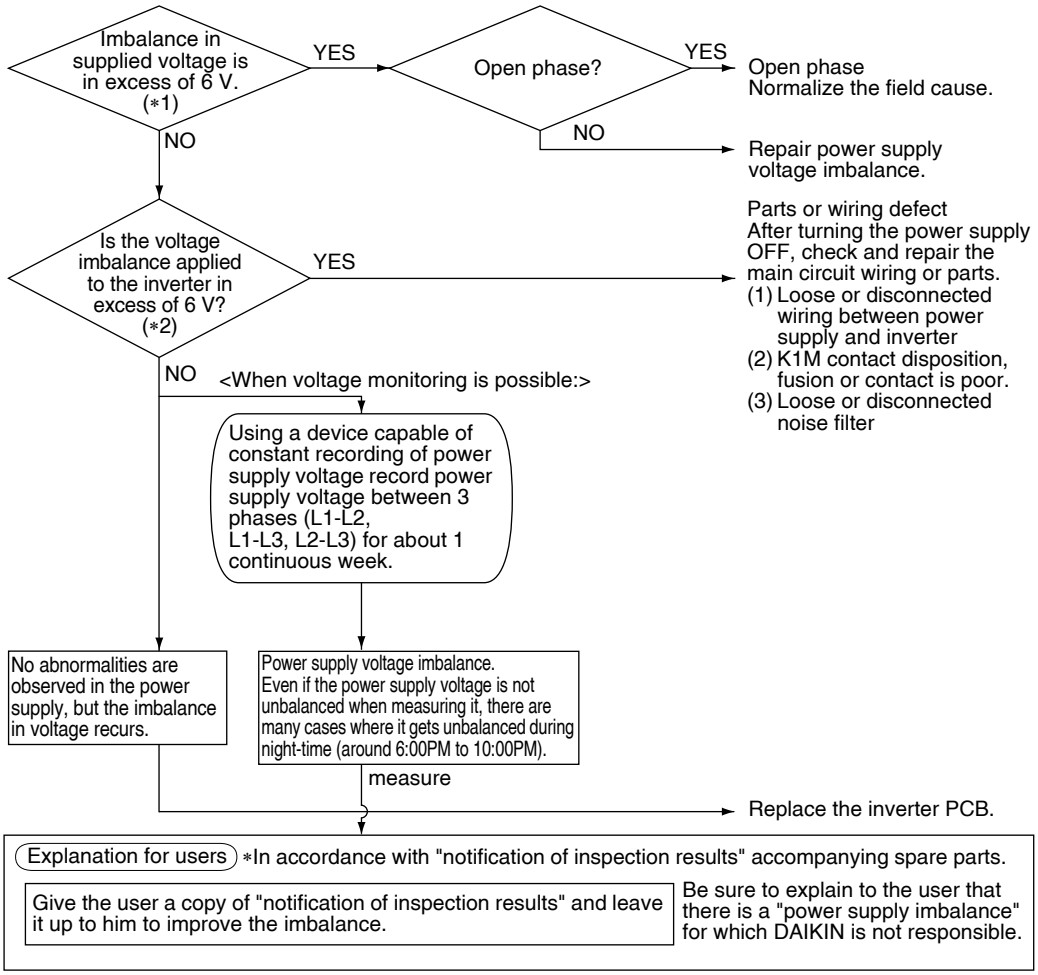
- Error is not decided while the unit operation is continued. "P1" will be displayed by pressing the inspection button.

Supposed Causes

- Open phase
- Voltage imbalance between phases
- Defective main circuit capacitor
- Defective inverter PCB
- Defective K1M
- Improper main circuit wiring

Troubleshooting

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



Note: *1: Measure voltage at the X1M power supply terminal block.
*2: Measure voltage at terminals L1, L2 and L3 of the diode module inside the inverter PCB while the compressor is running.

2.40 Inverter Radiation Fin Thermistor Abnormality

Remote Controller Display

P4

Applicable Models

RWEYQ8T, 10T

Method of Error Detection

Resistance of radiation fin thermistor is detected during the compressor stops.

Error Decision Conditions

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

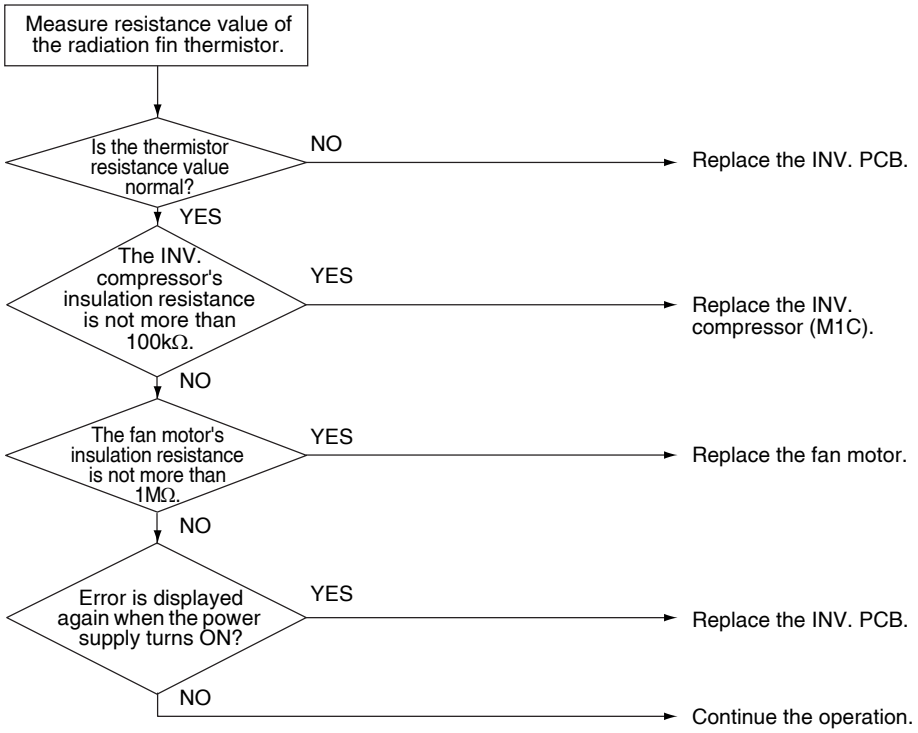
- Error is not decided while the unit operation is continued.
  "P4" will be displayed by pressing the inspection button.

Supposed Causes

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

Troubleshooting

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



2.41 Defective Field Setting after Replacing Main PCB or Defective Combination of PCB

Remote Controller Display

P.1

Applicable Models

RWEYQ8T, 10T

Method of Error Detection

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

Error Decision Conditions

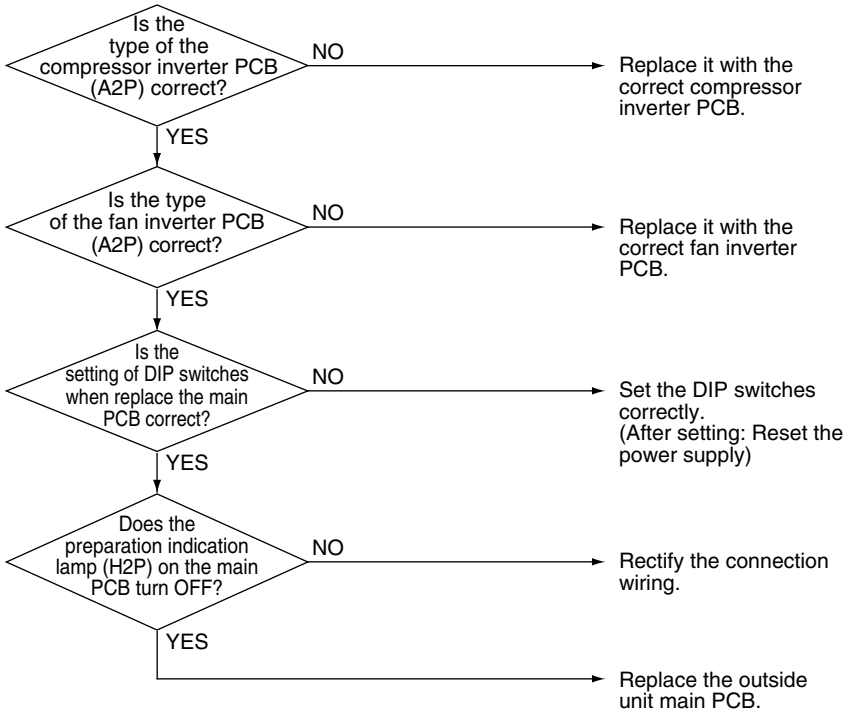
Make judgement according to communication data on whether or not the type of the INV. PCB is correct.

Supposed Causes

- Mis-matching of type of PCB
- Improper (or no) field setting after replacing main PCB

Troubleshooting

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

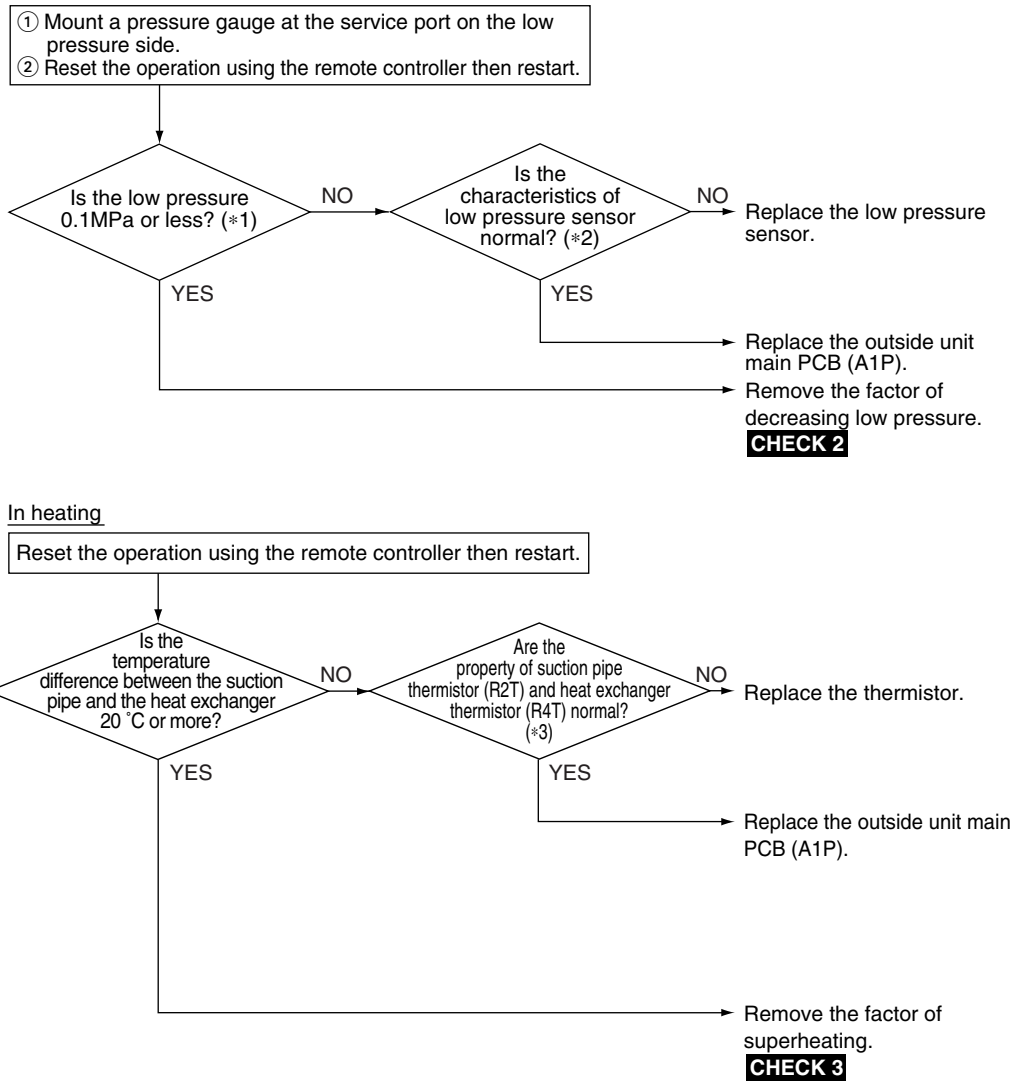


2.42 Refrigerant Shortage Alert

Remote Controller Display	U0
Applicable Models	RWEYQ8T, 10T
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 0.1 MPa or less In heating ■ The degree of superheat of suction gas becomes 20°C or more SH = Ts1 – Te Ts1: Temperature detected by suction pipe thermistor Te: Low pressure equivalent saturation temperature ∗ Error is not determined while the unit continues operation.
Supposed Causes	■ Refrigerant shortage and refrigerant clogging (wrong piping) ■ Defective thermistor (R2T, R4T) ■ Defective low pressure sensor ■ Defective outside unit main PCB

Troubleshooting

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



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.245.)
- ∗3: Compare the thermistor resistance value with the value on the surface thermometer.

CHECK 2 Refer to P.237.

CHECK 3 Refer to P.238.

2.43 Reverse Phase, Open Phase

Remote Controller Display

U1

Applicable Models

RWEYQ8T, 10T

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

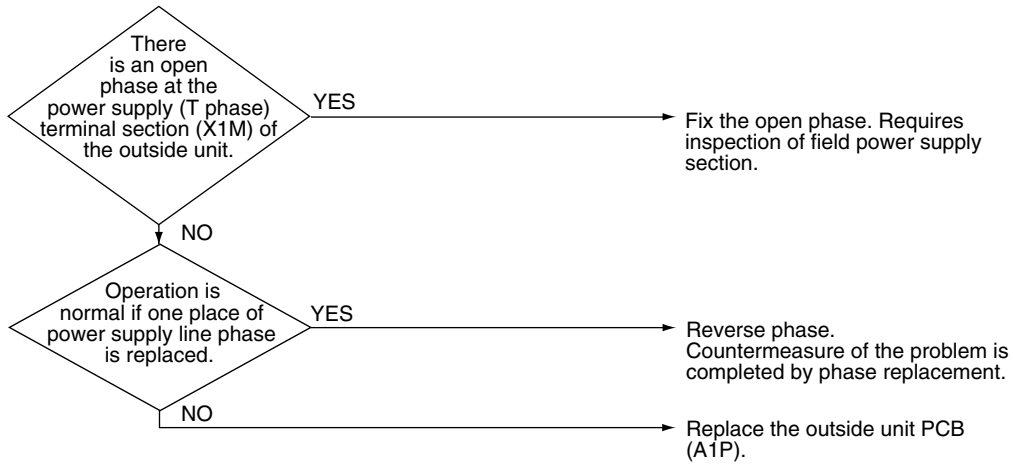
When a power supply is reverse phase, or T phase is open phase

Supposed Causes

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

Troubleshooting

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



2.44 Power Supply Insufficient or Instantaneous Failure

Remote Controller Display

U2

Applicable Models

RWEYQ8T, 10T

Method of Error Detection

Detection of voltage of main circuit capacitor built in the inverter PCB and power supply voltage

Error Decision Conditions

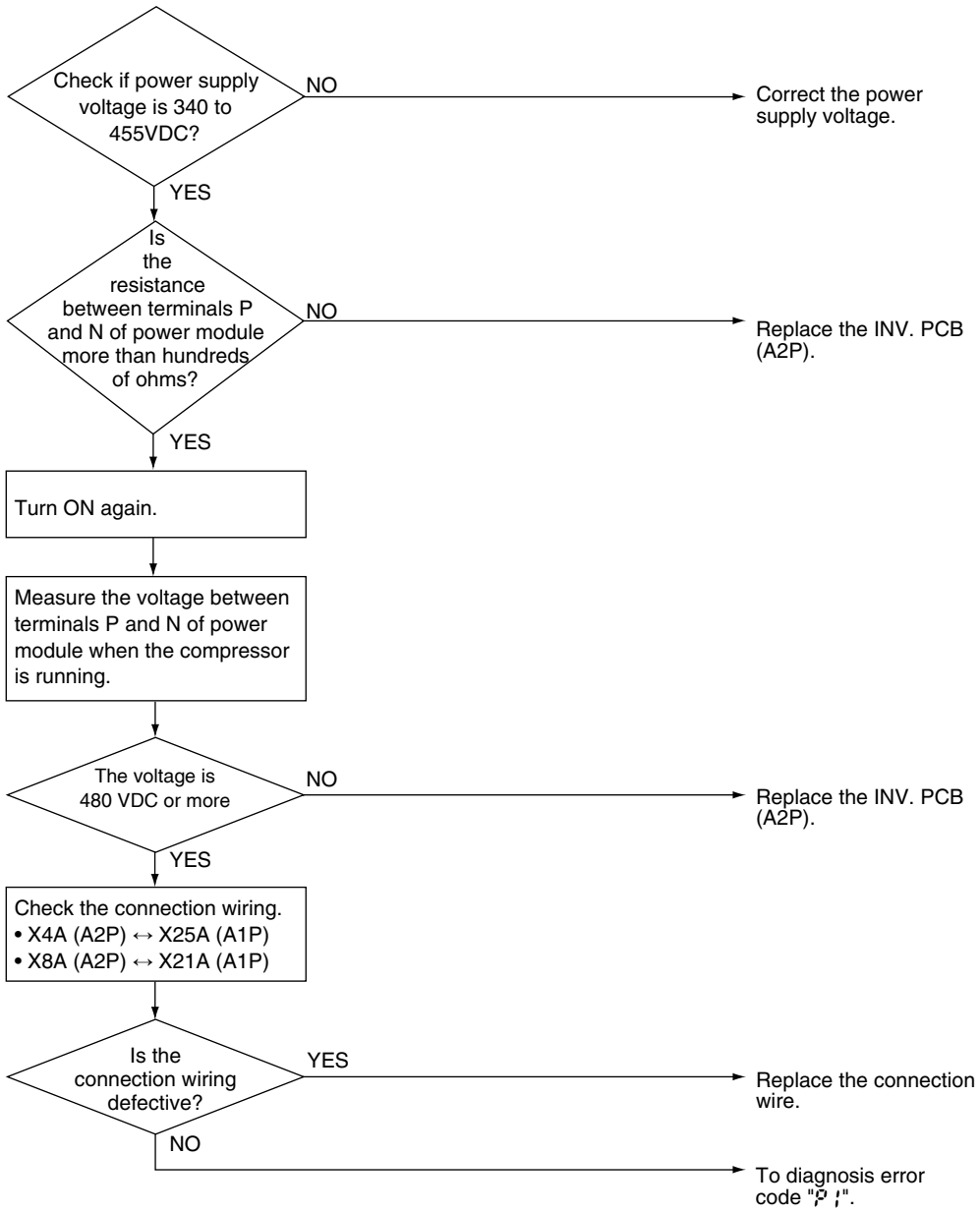
When the voltage aforementioned is 190V or less.

Supposed Causes

- Power supply insufficient
- Instantaneous power failure
- Open phase
- Defective inverter PCB
- Defective outside unit main PCB
- Defective K1M
- Defective main circuit wiring

Troubleshooting

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



2.45 Check Operation is not Executed

Remote Controller Display

U3

Applicable Models

RWEYQ8T, 10T

Method of Error Detection

Check operation is executed or not executed.

Error Decision Conditions

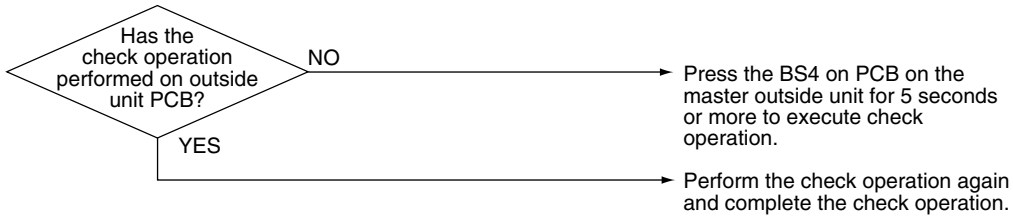
The error is decided when the unit starts operation without check operation.

Supposed Causes

- Check operation is not executed.

Troubleshooting

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

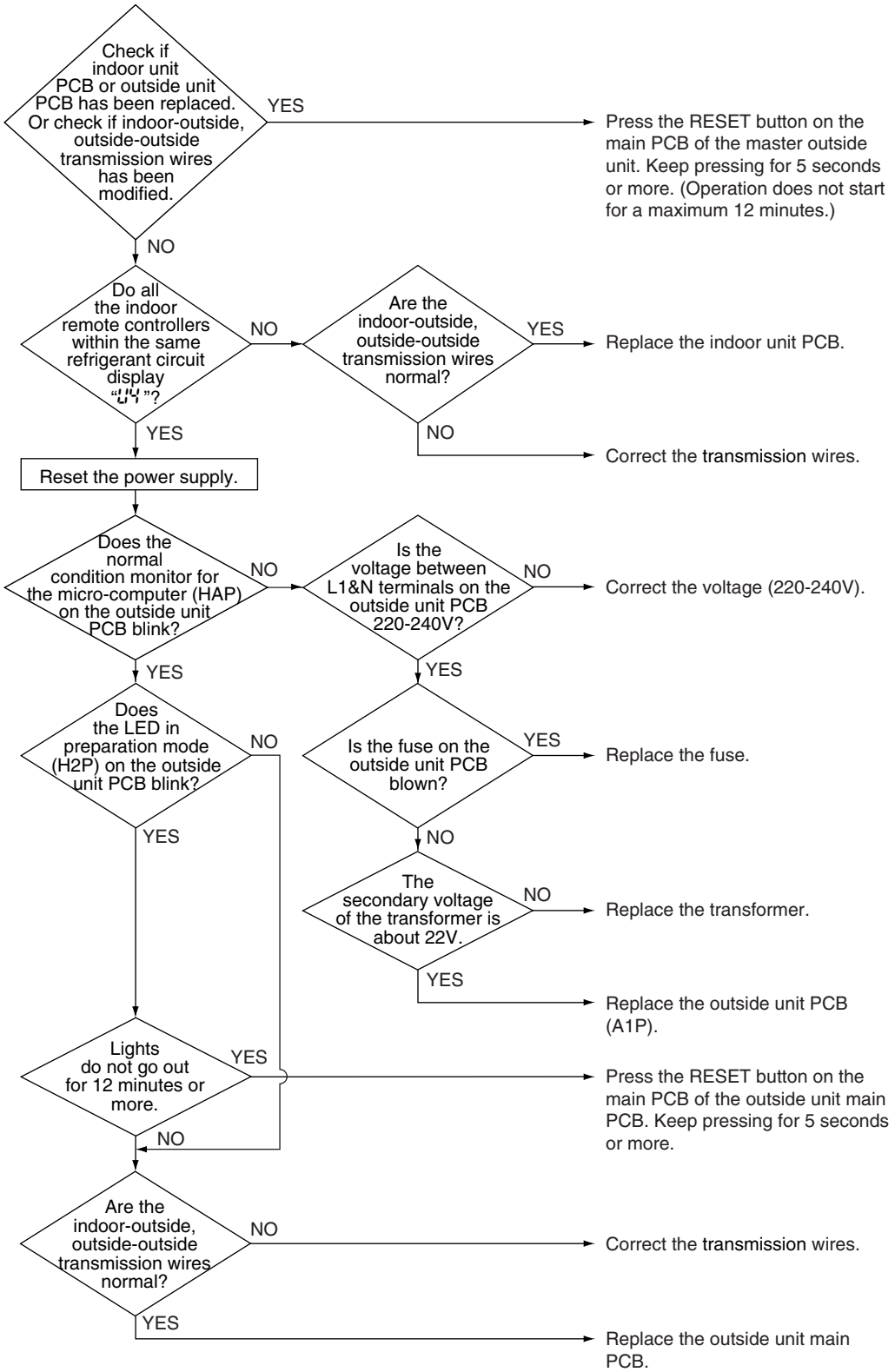


2.46 Transmission Error (between Indoor and Outside Units)

Remote Controller Display	U4
Applicable Models	All indoor models RWEYQ8T, 10T
Method of Error Detection	Micro-computer checks if transmission between indoor and outside units is normal.
Error Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	■ Indoor to outside, outside to outside transmission wiring F1, F2 disconnection, short circuit or wrong wiring ■ Outside unit power supply is OFF ■ System address does not match ■ Defective indoor unit PCB ■ Defective outside unit main PCB

Troubleshooting

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



2.47 Transmission Error (between Remote Controller and Indoor Unit)

Remote Controller Display

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

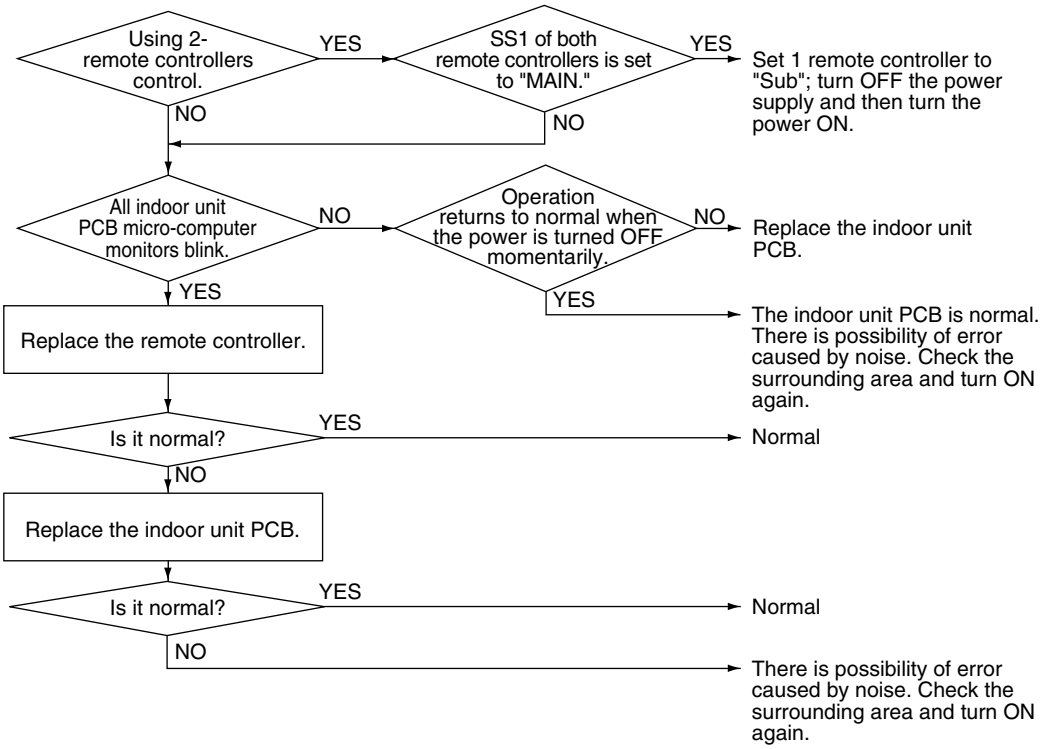
When transmission is not carried out normally for a certain amount of time.

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 power switch before connect or disconnect connector, or parts damage may be occured.



2.48 Transmission Error (between Outside Units)

Remote Controller Display

U7

Applicable Models

RWEYQ8T, 10T

Method of Error Detection

Micro-computer checks if transmission between outside units is normal.

Error Decision Conditions

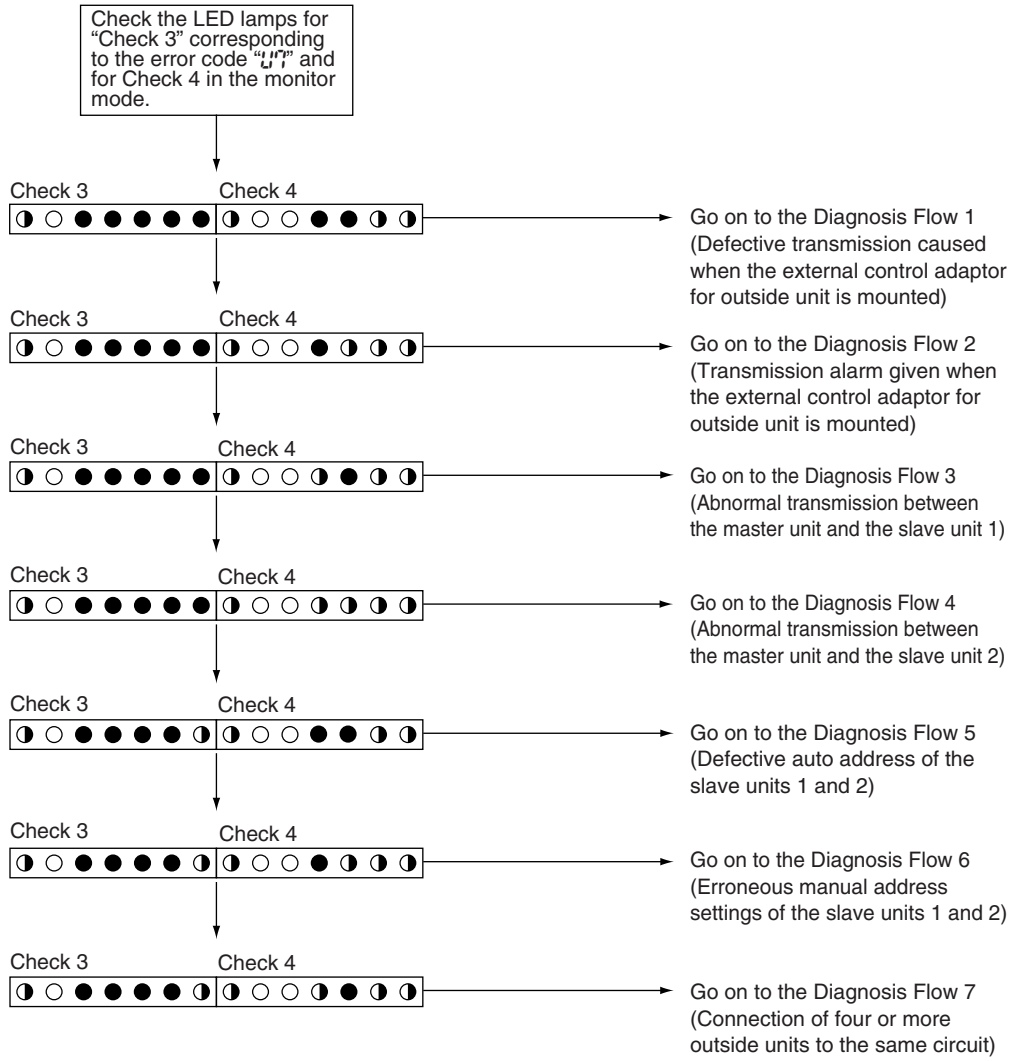
When transmission is not carried out normally for a certain amount of time

Supposed Causes

- Improper connection of transmission wiring between outside unit and external control adaptor for outside unit.
- Improper cool/heat selection (mode 1 set to “M” (LED 4) or “S” (LED 5) without detection option PCB DTAI04A
- Improper cool/heat unified address (outside unit, external control adaptor for outside unit)
- Defective outside unit PCB (A1P)
- Defective external control adaptor for outside unit
- Improper connection of transmission wiring between outside units
- Defective fuse of outside unit compressor

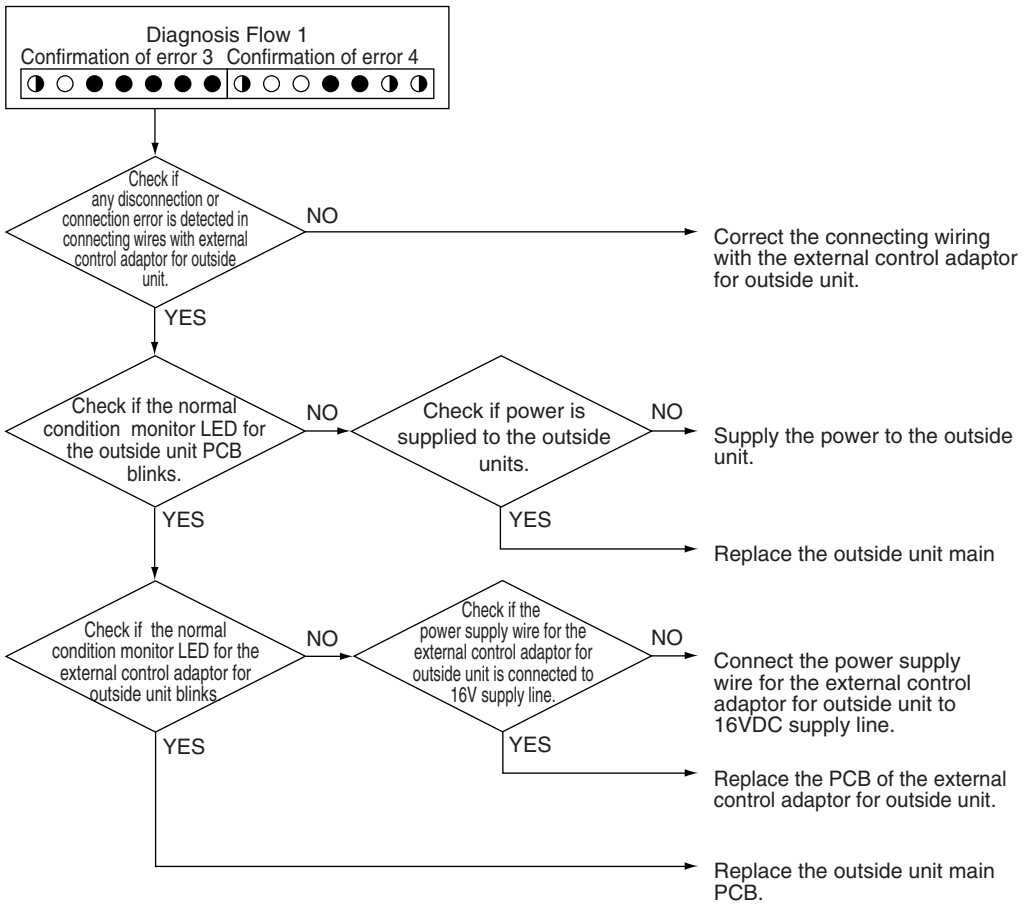
Troubleshooting

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



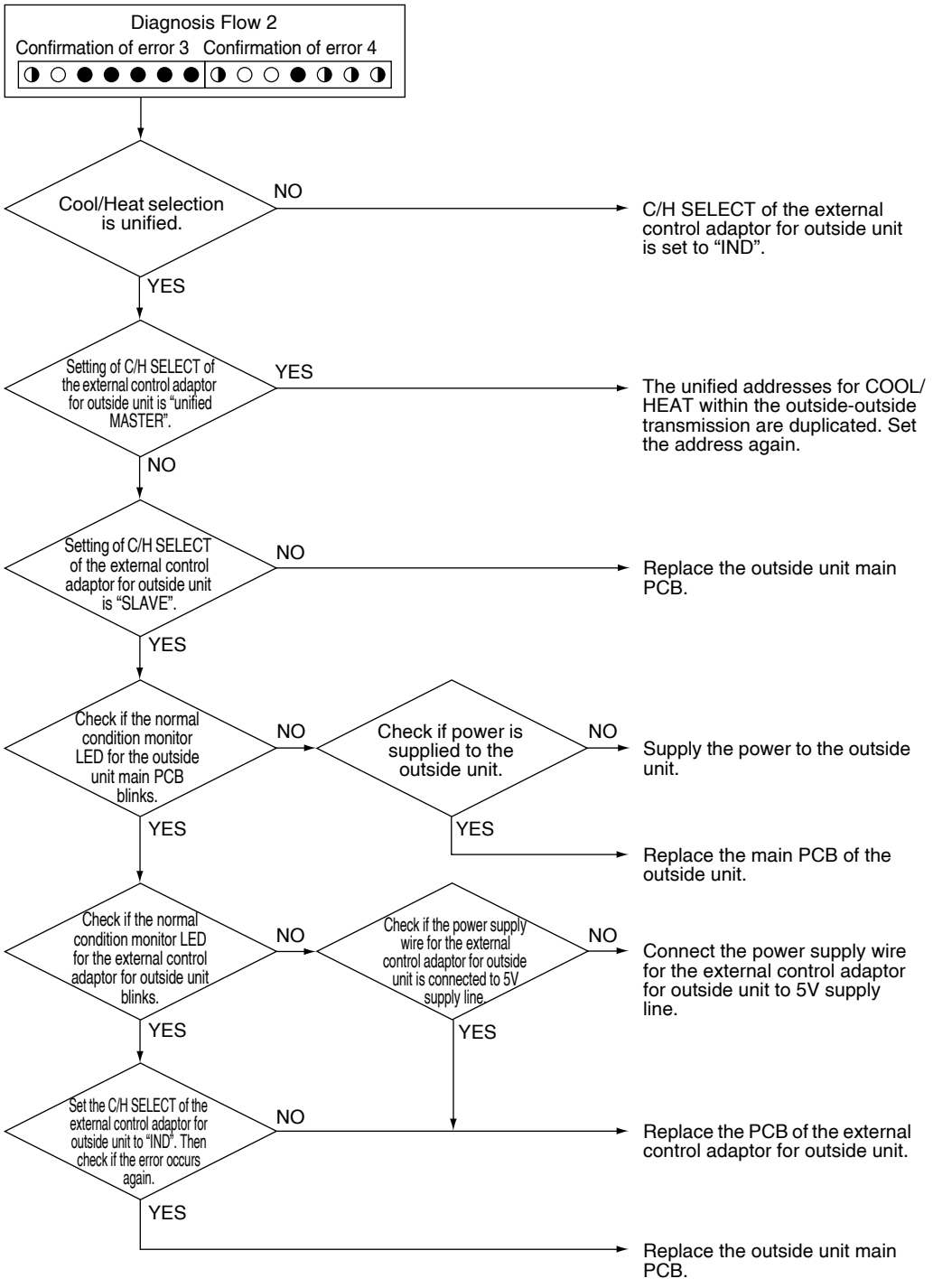
Troubleshooting

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



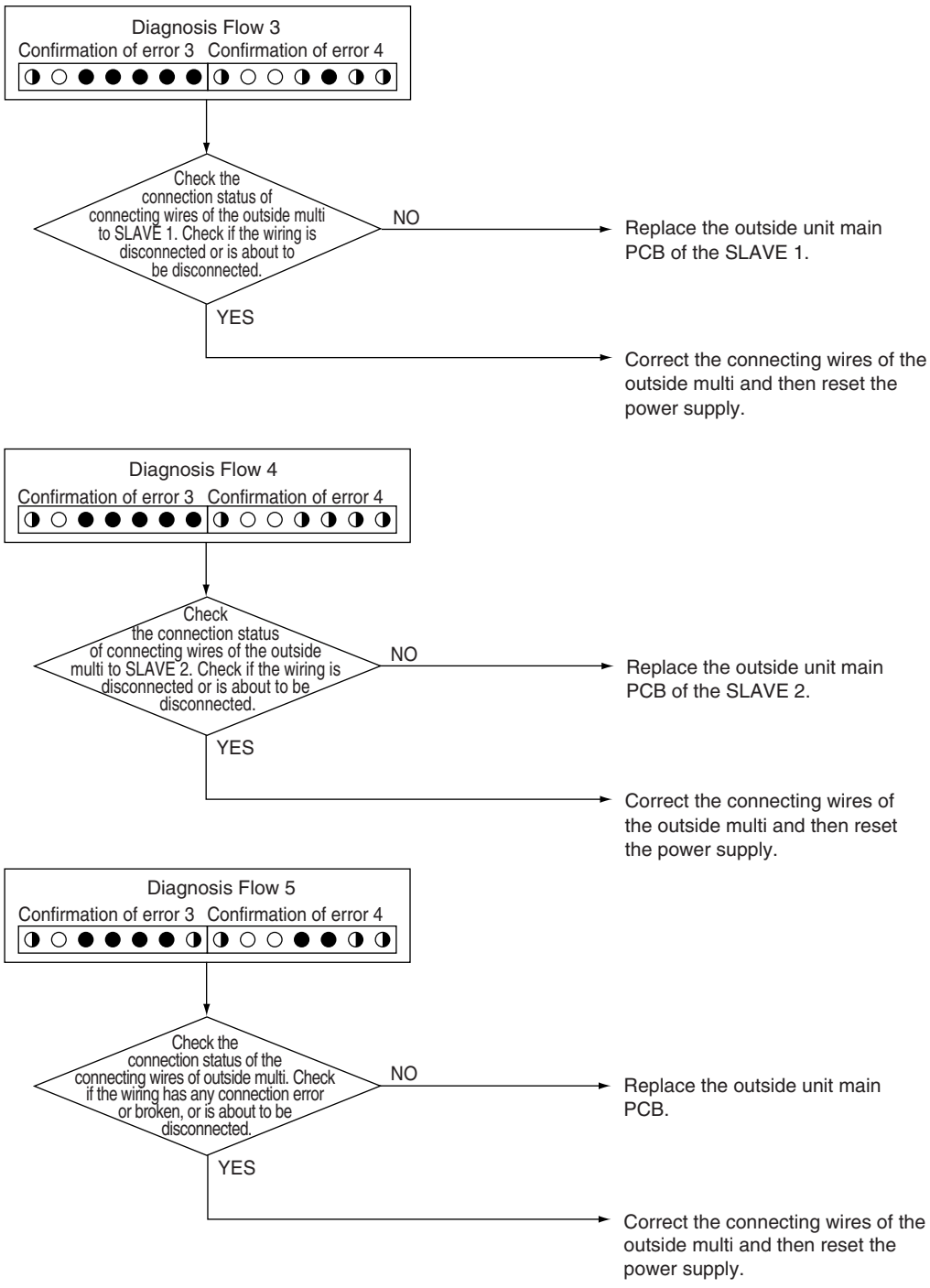
Troubleshooting

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



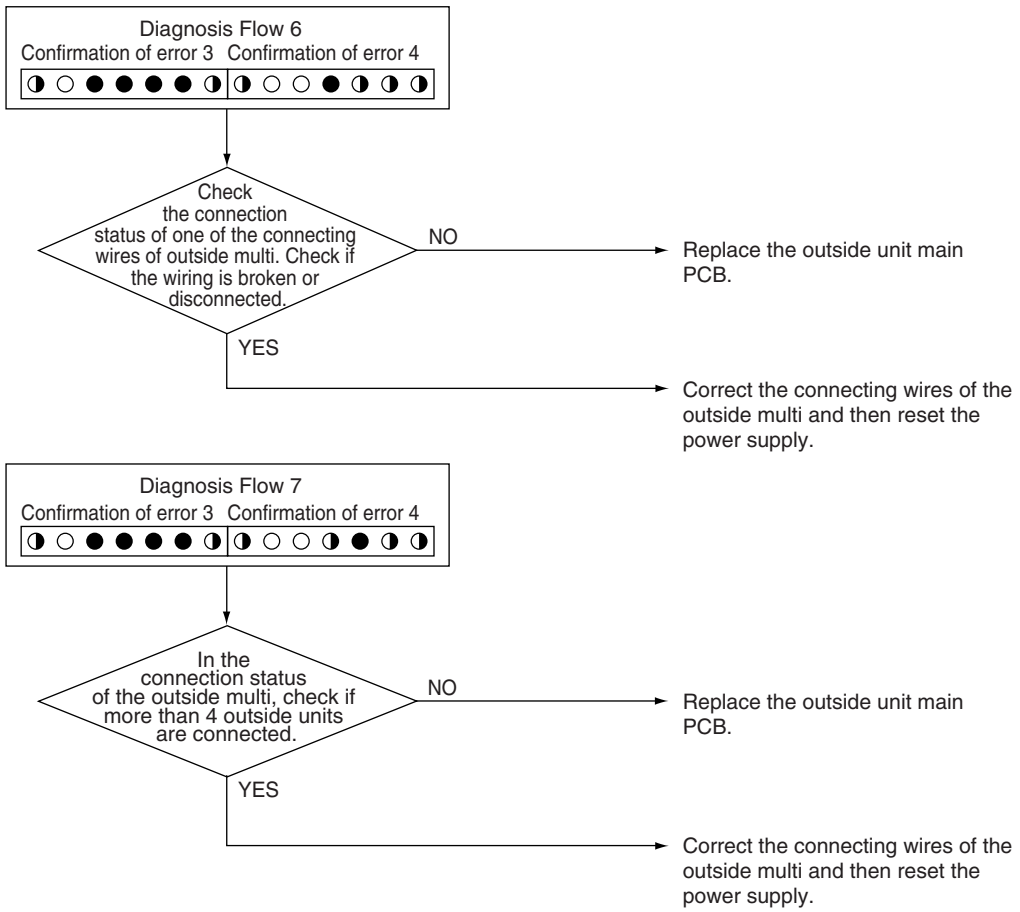
Troubleshooting

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



Troubleshooting

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



2.49 Transmission Error (between Main and Sub Remote Controllers)

Remote Controller Display

U8

Applicable Models

All indoor models

Method of Error Detection

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

Error Decision Conditions

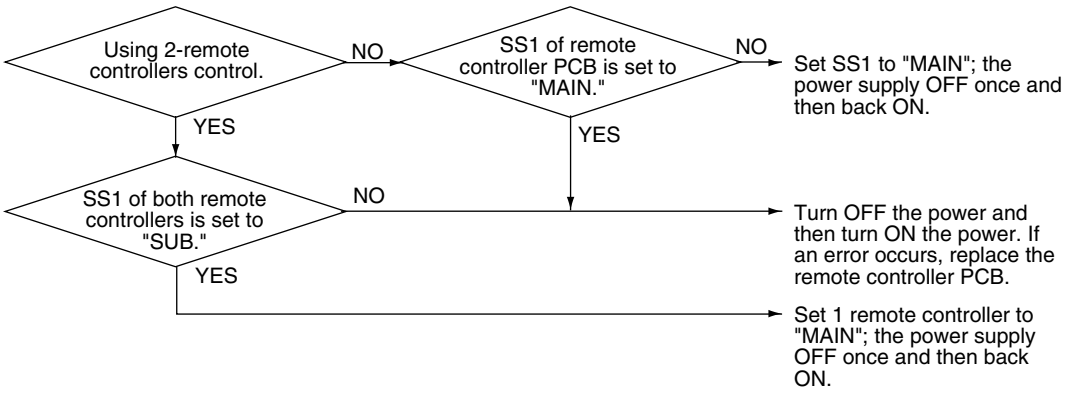
When transmission is not carried out normally for a certain amount of time

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 power switch before connect or disconnect connector, or parts damage may be occured.



2.50 Transmission Error (between Indoor and Outside Units in the Same System)

Remote Controller Display

U9

Applicable Models

All indoor models
RWEYQ8T, 10T

Method of Error Detection

Detect the error signal for the other indoor units within the circuit by outside unit PCB.

Error Decision Conditions

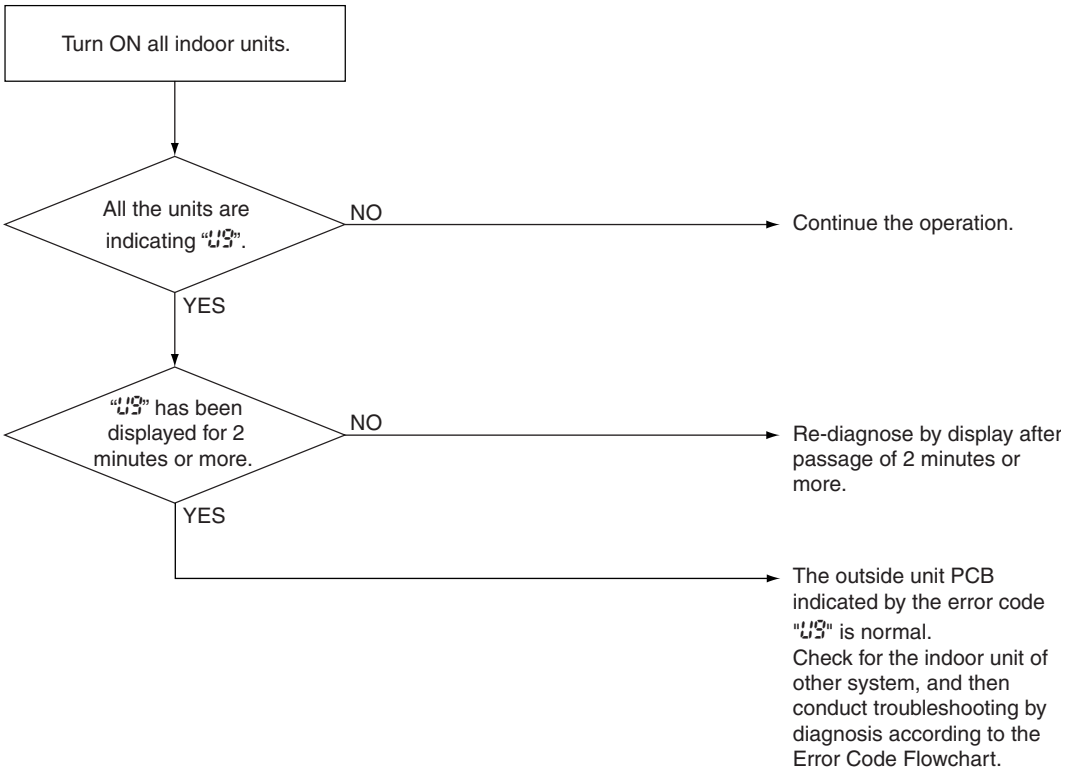
When the error decision is made on any other indoor unit within the system concerned.

Supposed Causes

- Transmission error within or outside 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 outside unit

Troubleshooting

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



2.51 Improper Combination of Indoor, BS and Outside Units

Remote Controller Display



Applicable Models

All indoor models
BS unit
RWEYQ8T, 10T

Method of Error Detection

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

Error Decision Conditions

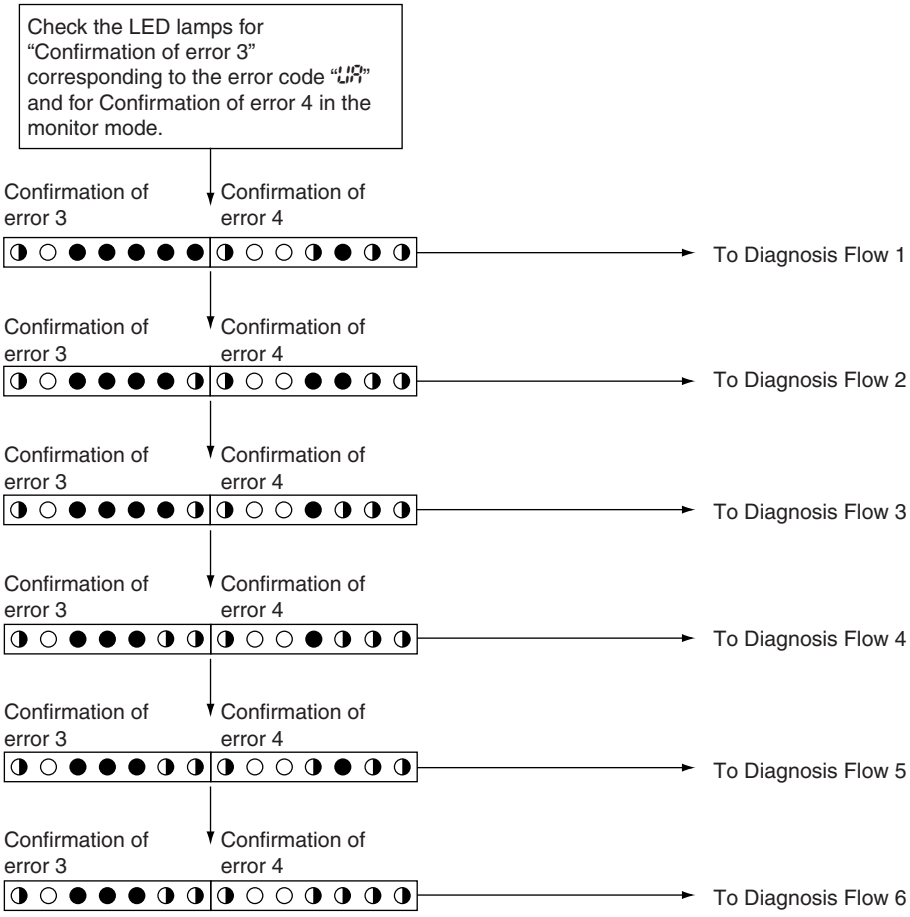
The error decision is made as soon as either of the abnormalities aforementioned is detected.

Supposed Causes

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

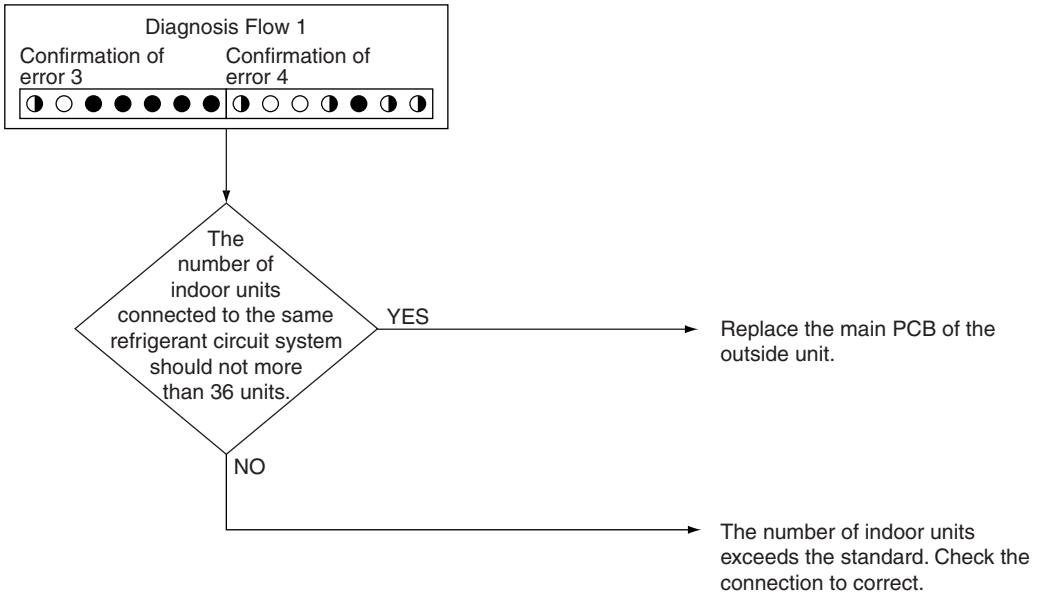
Troubleshooting

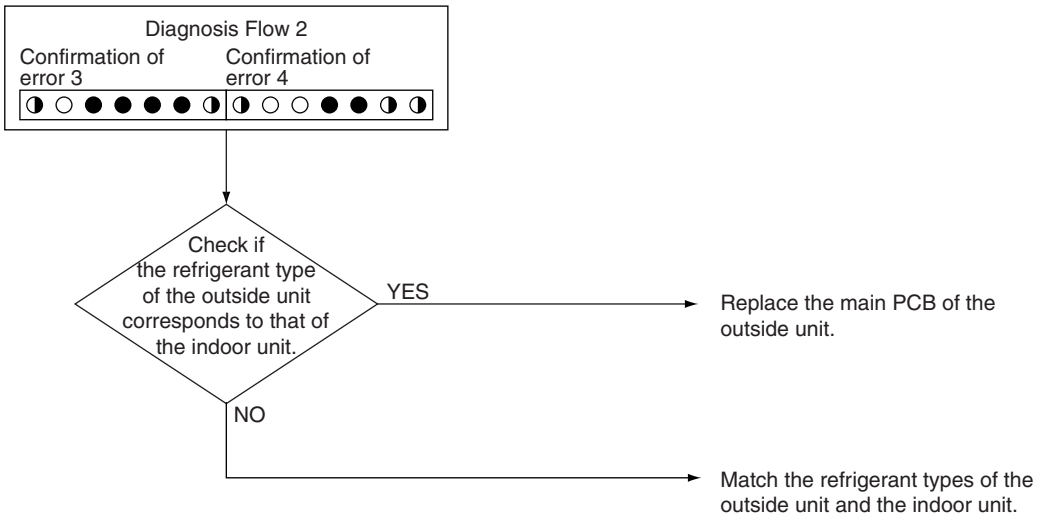
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occured.



Troubleshooting

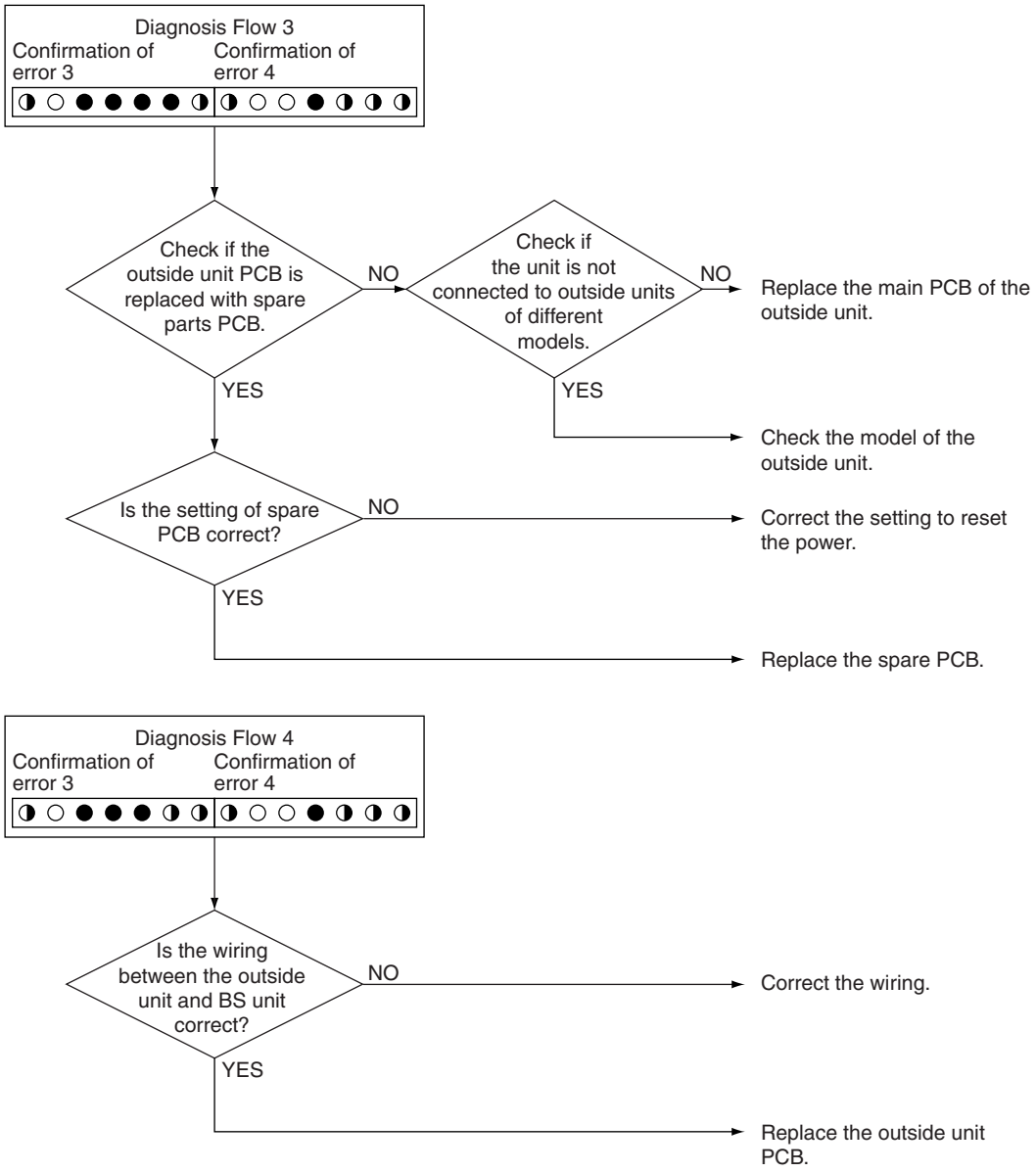
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occured.





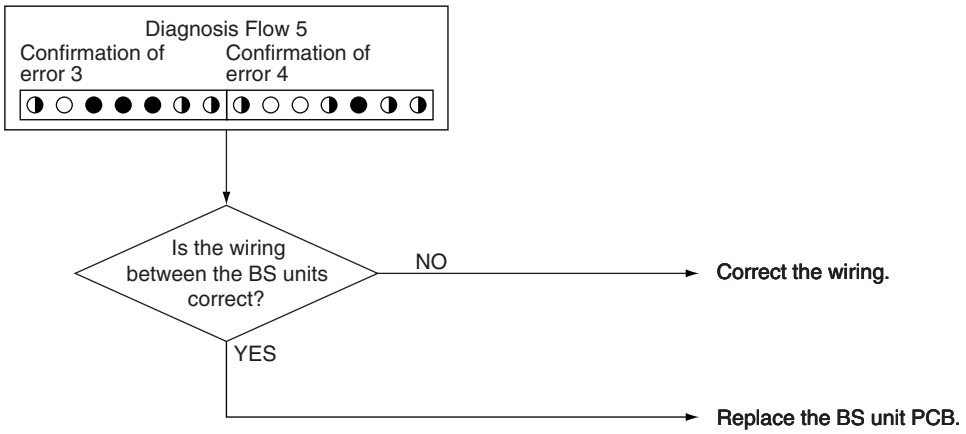
Troubleshooting

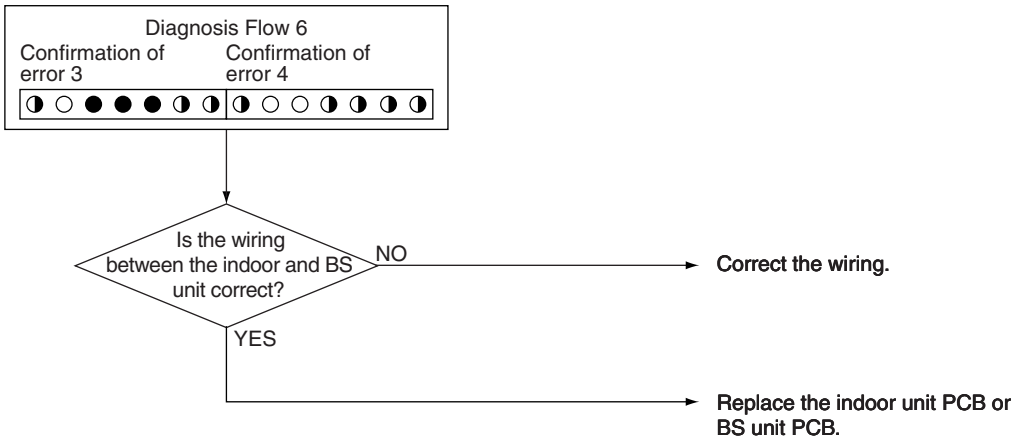
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occured.



Troubleshooting

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





2.52 Address Duplication of Centralized Control Equipment

Remote Controller Display

LIC

Applicable Models

All indoor models
Centralized 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 power switch before connect or disconnect connector, or parts damage may be occured.

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

2.53 Transmission Error (between Centralized Control Equipment and Indoor Unit)

Remote Controller Display



Applicable Models

All indoor models intelligent Touch Controller
Centralized 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

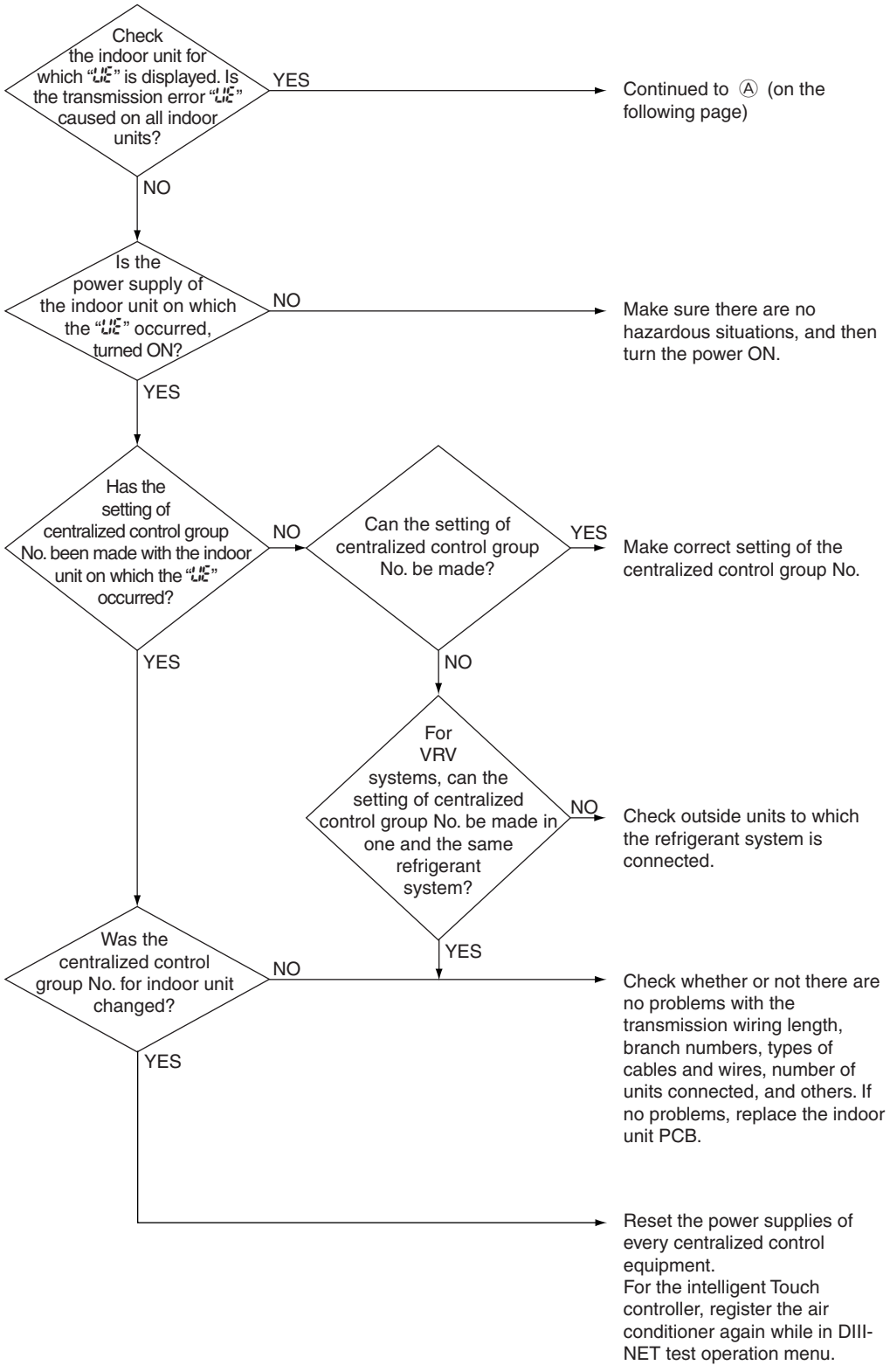
When transmission is not carried out normally for a certain amount of time

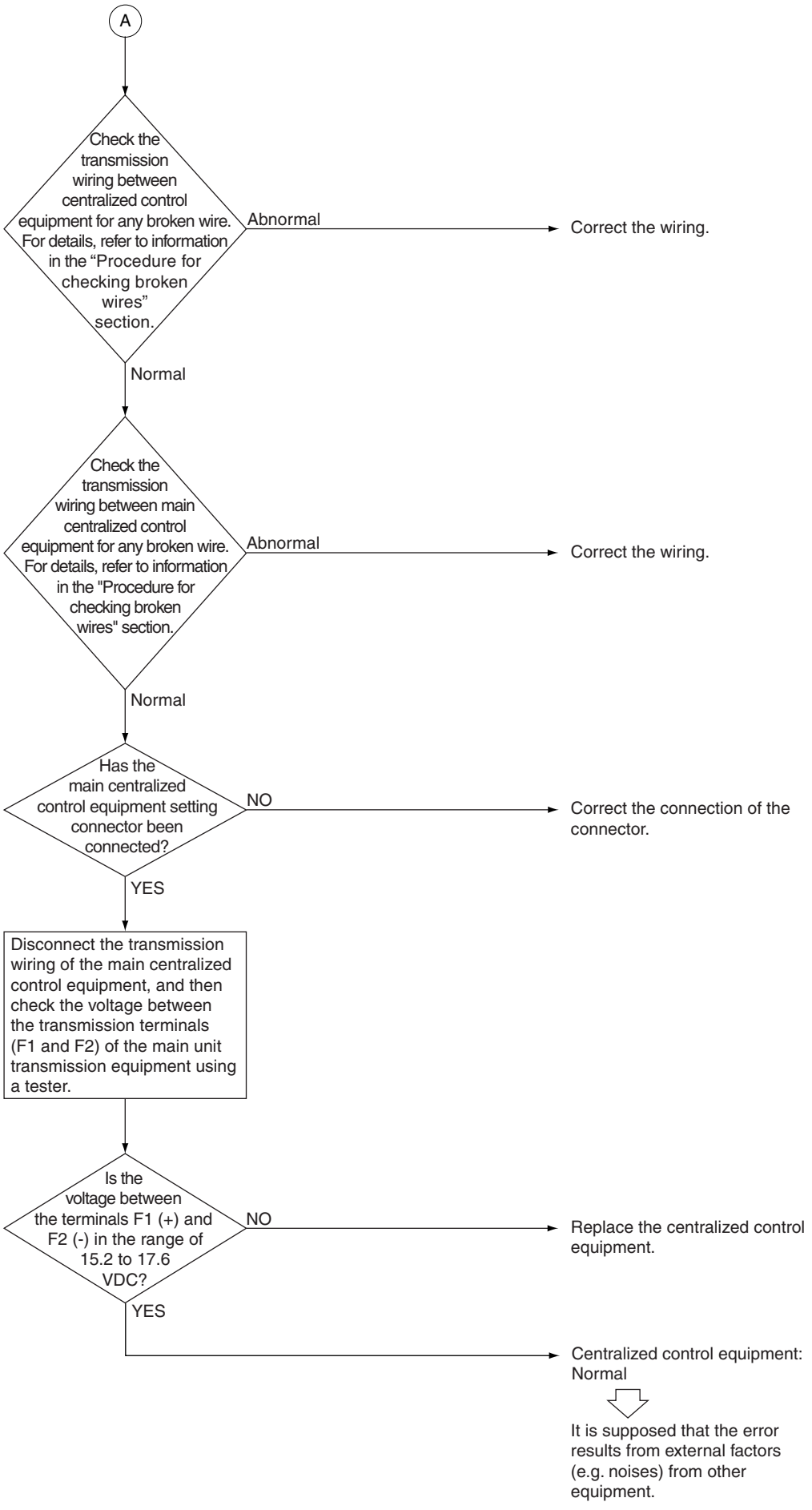
Supposed Causes

- 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 remote controller
- Defective indoor unit PCB

Troubleshooting

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




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.

2.54 System is not Set yet

Remote Controller Display

UF

Applicable Models

All indoor models
RWEYQ8T, 10T

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

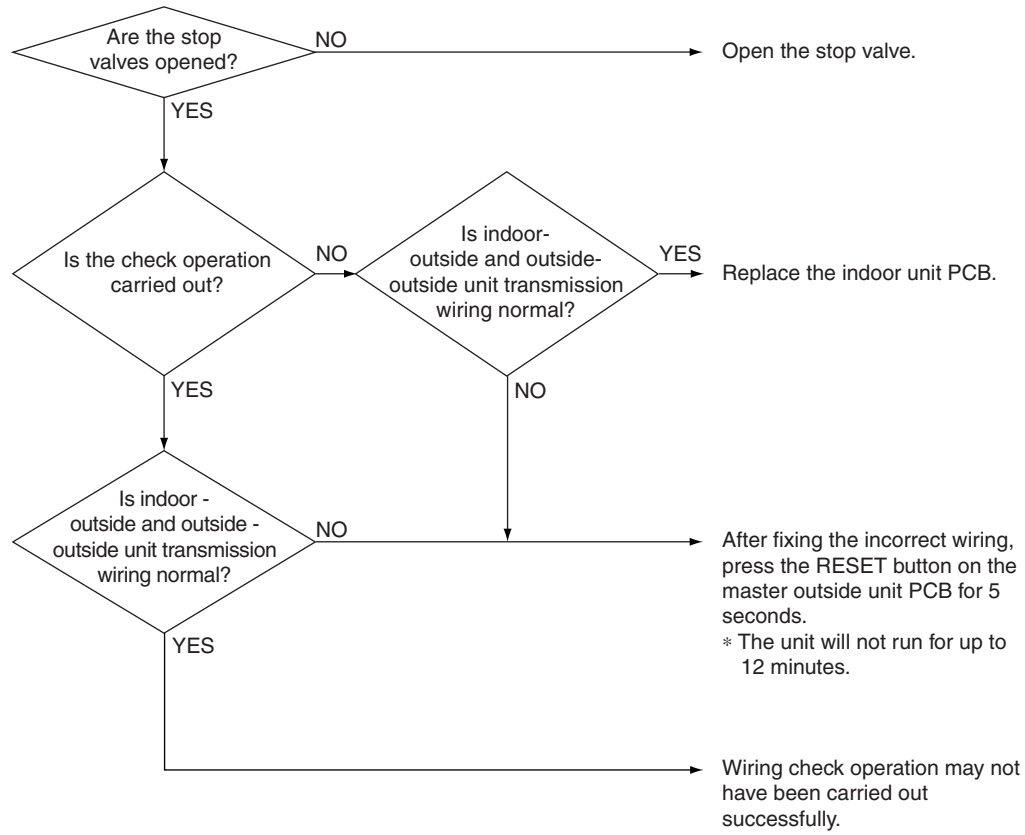
The error is determined as soon as the abnormality aforementioned is detected through checking the system for any erroneous connection of units on the check operation.

Supposed Causes

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

Troubleshooting

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



2.55 System Error, Refrigerant System Address Undefined

Remote Controller Display



Applicable Models

All indoor models
RWEYQ8T, 10T

Method of Error Detection

Detect an indoor unit with no auto address setting.

Error Decision Conditions

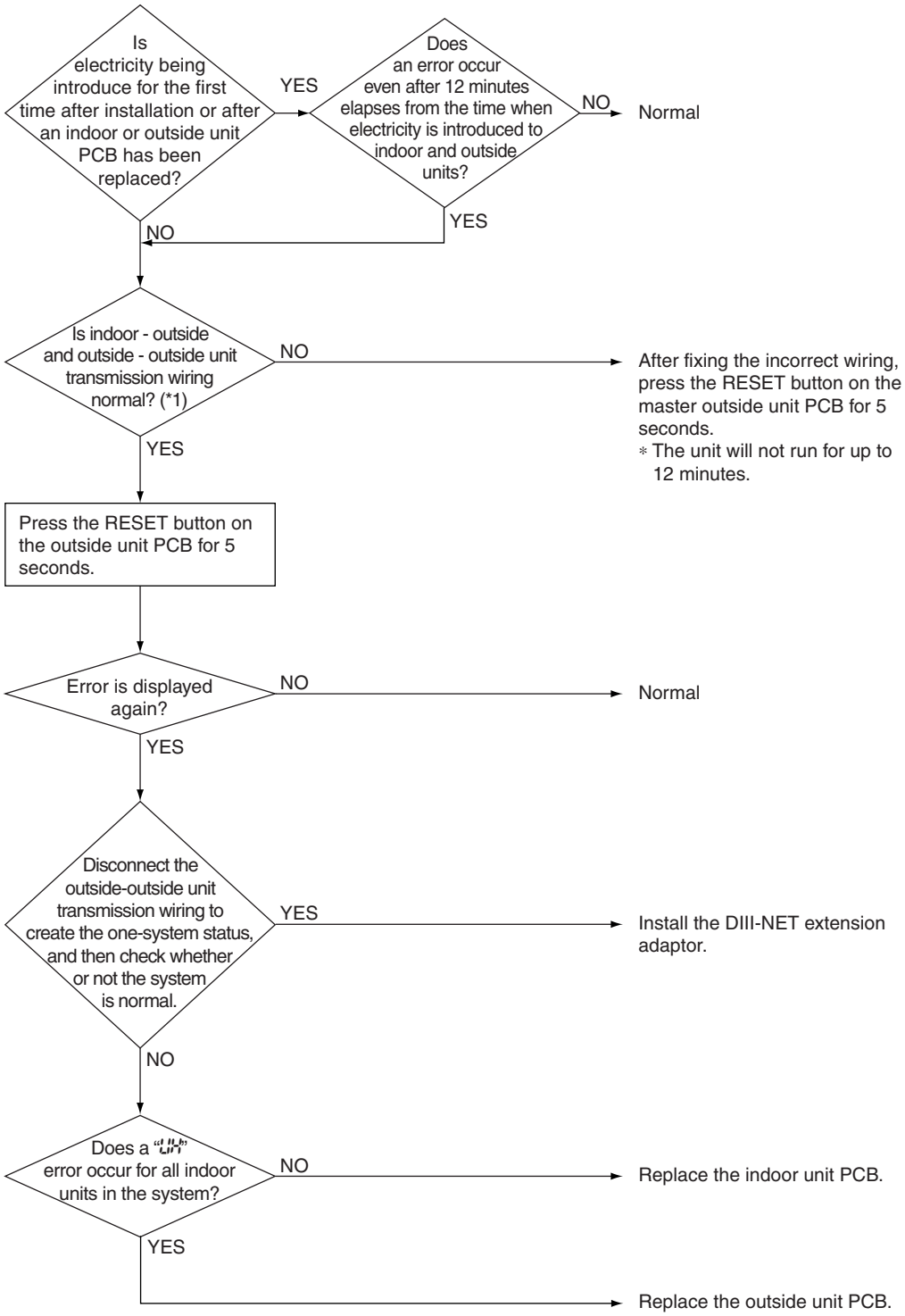
The error decision is made as soon as the abnormality aforementioned is detected.

Supposed Causes

- Improper connection of transmission wiring between indoor-outside units and outside-outside units
- Defective of indoor unit PCB
- Defective of outside unit main PCB

Troubleshooting

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

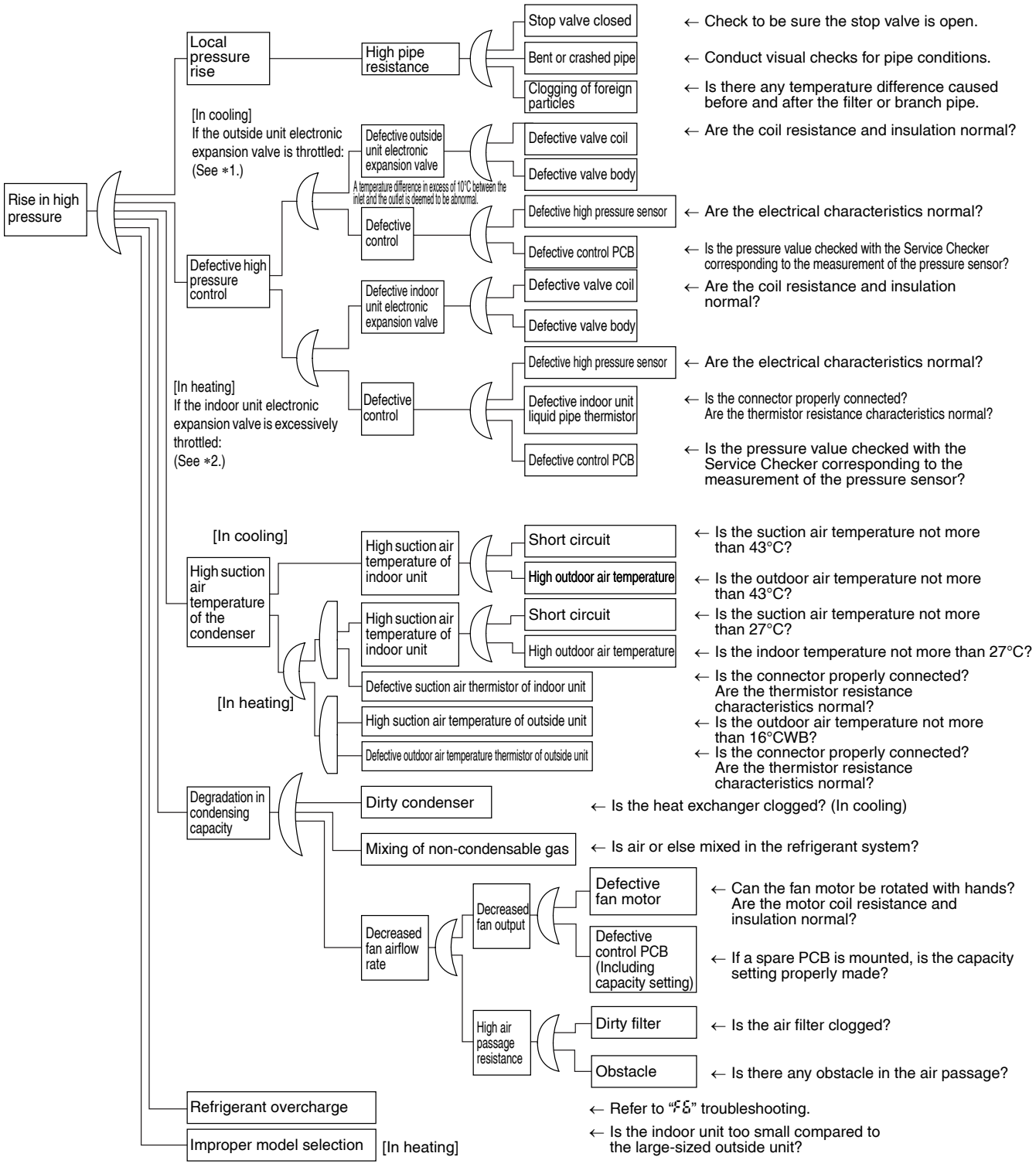


Note: ∗1: Check the correct wiring "indoor-outside" and "outside-outside" by Installation Manual.
∗2: What is Auto Address?
This is the address automatically assigned to indoor units and outside units after initial power supply upon installation, or after executing rewiring (Keep pressing the RESET button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

2.56 Check

CHECK 1 **Check for causes of rise in high pressure**

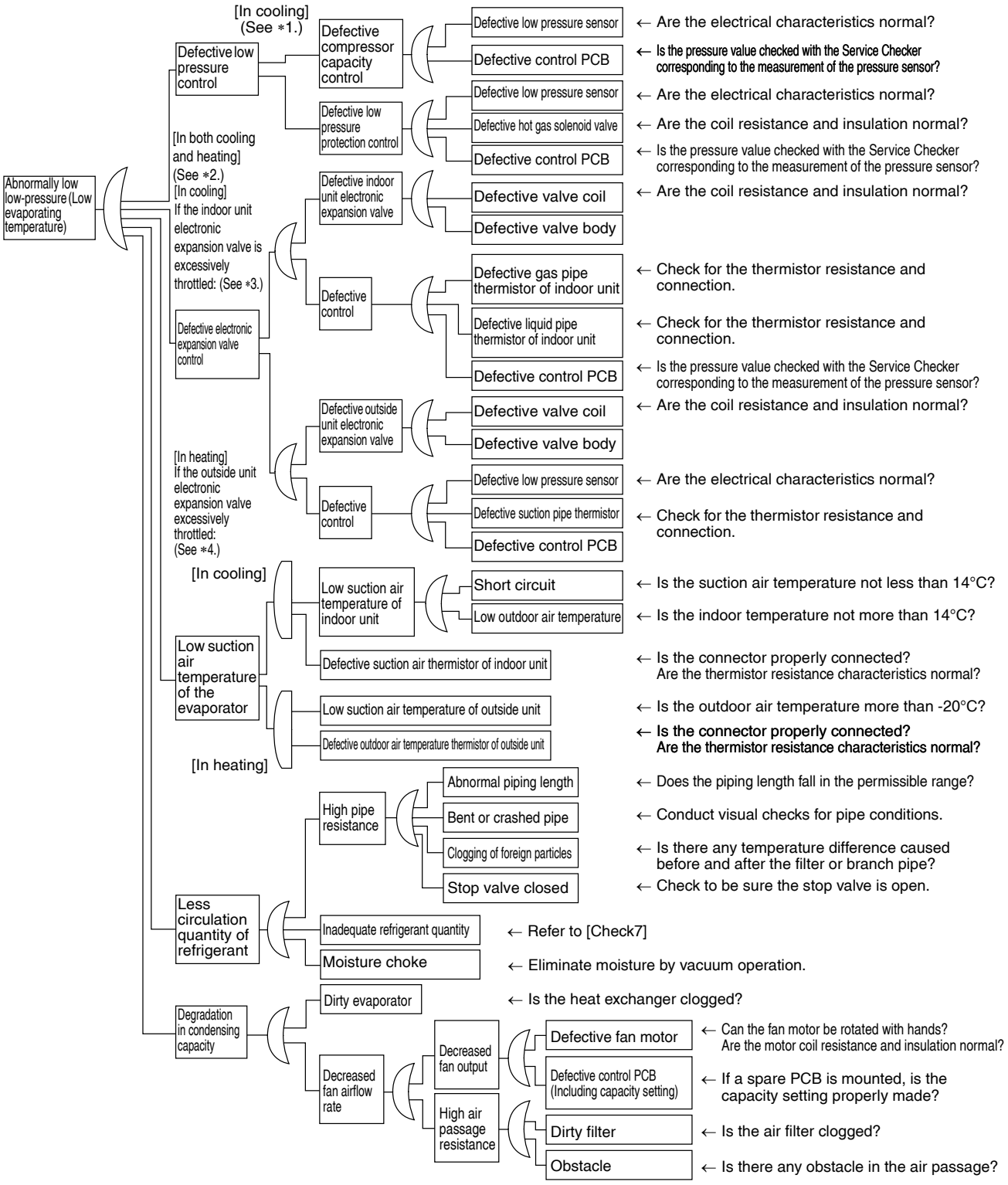
Referring to the Fault Tree Analysis (FTA) shown below, probe the defective points.



∗1: In cooling, it is normal if the outside unit electronic expansion valve is fully open.
∗2: In heating, the indoor unit electronic expansion valve is used for "subcooled degree control".
(For details, refer to "Electronic Expansion Valve Control".)

CHECK 2 Check for causes of drop in low pressure

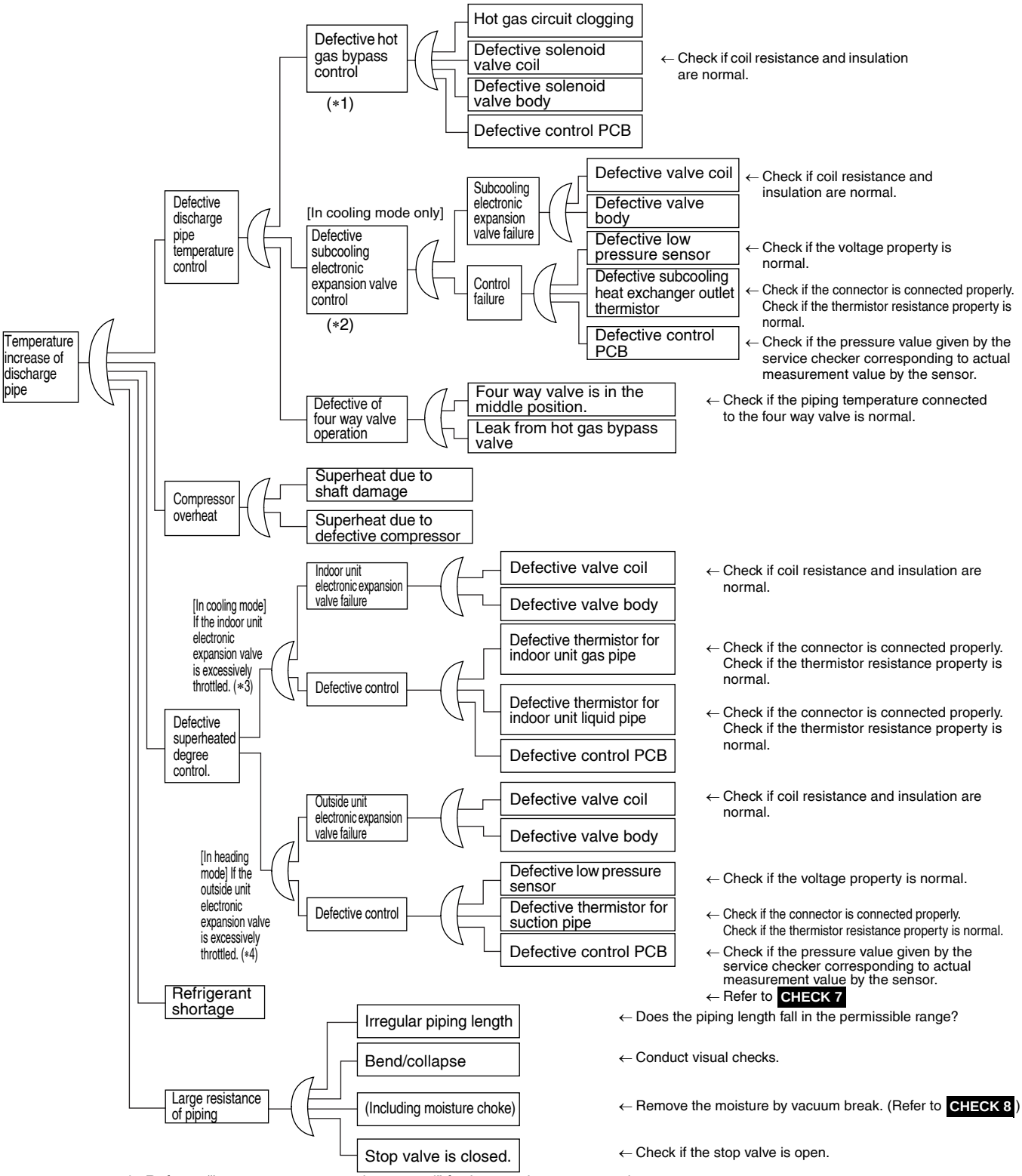
Referring to the Fault Tree Analysis (FTA) shown below, probe the defective points.



∗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 outside unit electronic expansion valve (EVM) is used for “superheated degree control of outside unit heat exchanger”.

CHECK 3 Check the Factors of Overheat Operation

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



∗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 outside 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.)

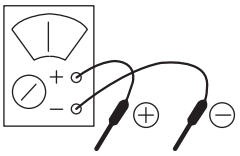
CHECK 4 Power Transistor Check

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, 10 minutes later after power OFF.

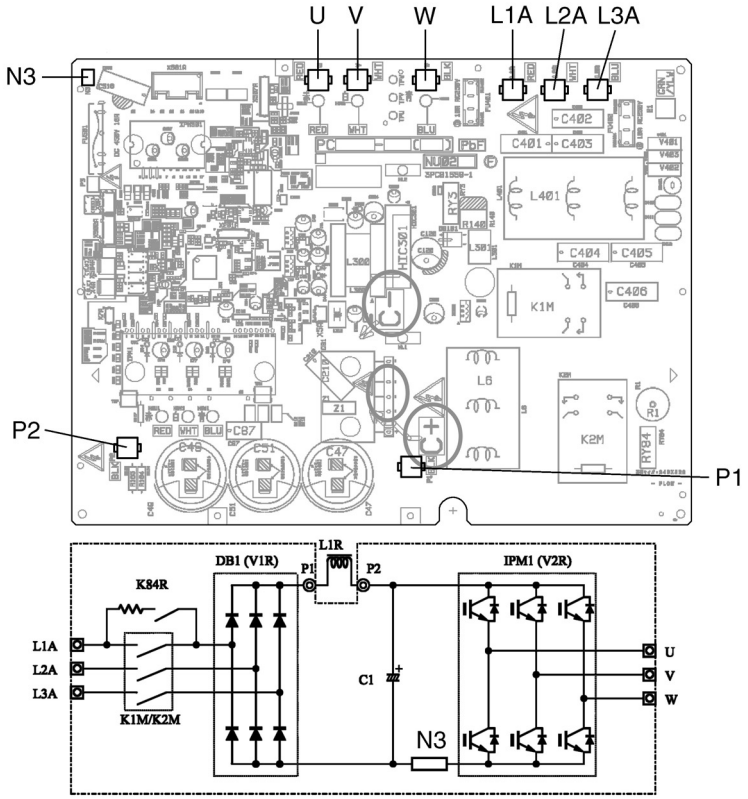
To use analog tester:
Measurement in the resistance value mode in the range of multiplying 1kΩ.

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. (→|—)

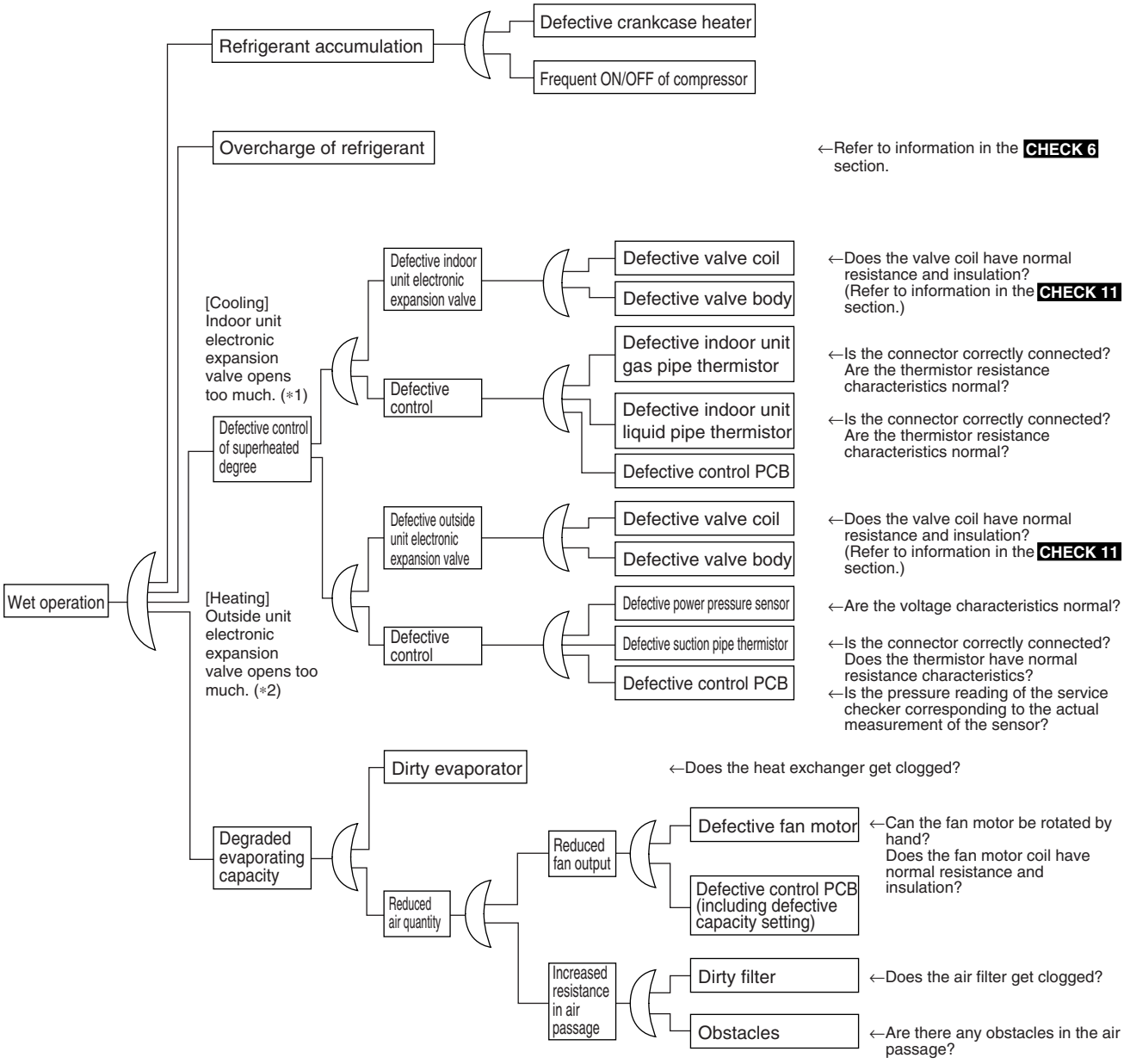
No.	Point of Measurement		Judgement Criteria	Remarks
	+	–		
1	P2	U	1.2V and over	Due to condenser charge and so on, resistance measurement may require some time.
2	P2	V		
3	P2	W		
4	U	P2	0.3 ~ 0.7V	
5	V	P2		
6	W	P2		
7	N3	U		
8	N3	V		
9	N3	W		
10	U	N3	1.2V and over	Due to condenser charge and so on, 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.



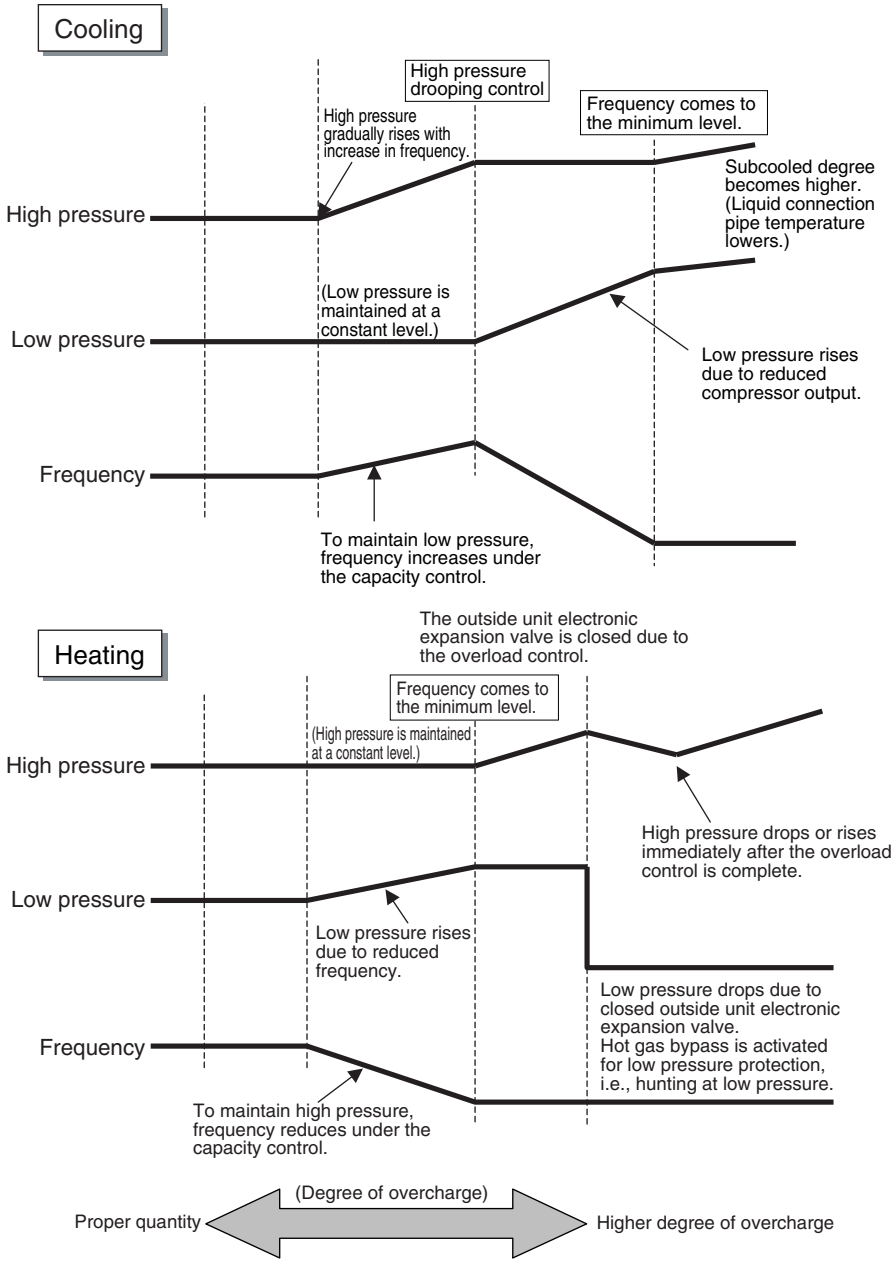
*1: "Superheated degree control" in cooling is exercised with the indoor unit electronic expansion valve.
*2: "Superheated degree control" in heating is exercised with the outside unit electronic expansion valve (EV1).
*3: Guideline of superheated degree to judge as wet operation
①Suction gas superheated degree: Not more than 3°C; ②Discharge gas superheated degree: Not more than 15°C, 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 subcooled degree of condensing rises. Consequently, in heating operation, the temperature of outlet air passing through the subcooling section becomes lower.

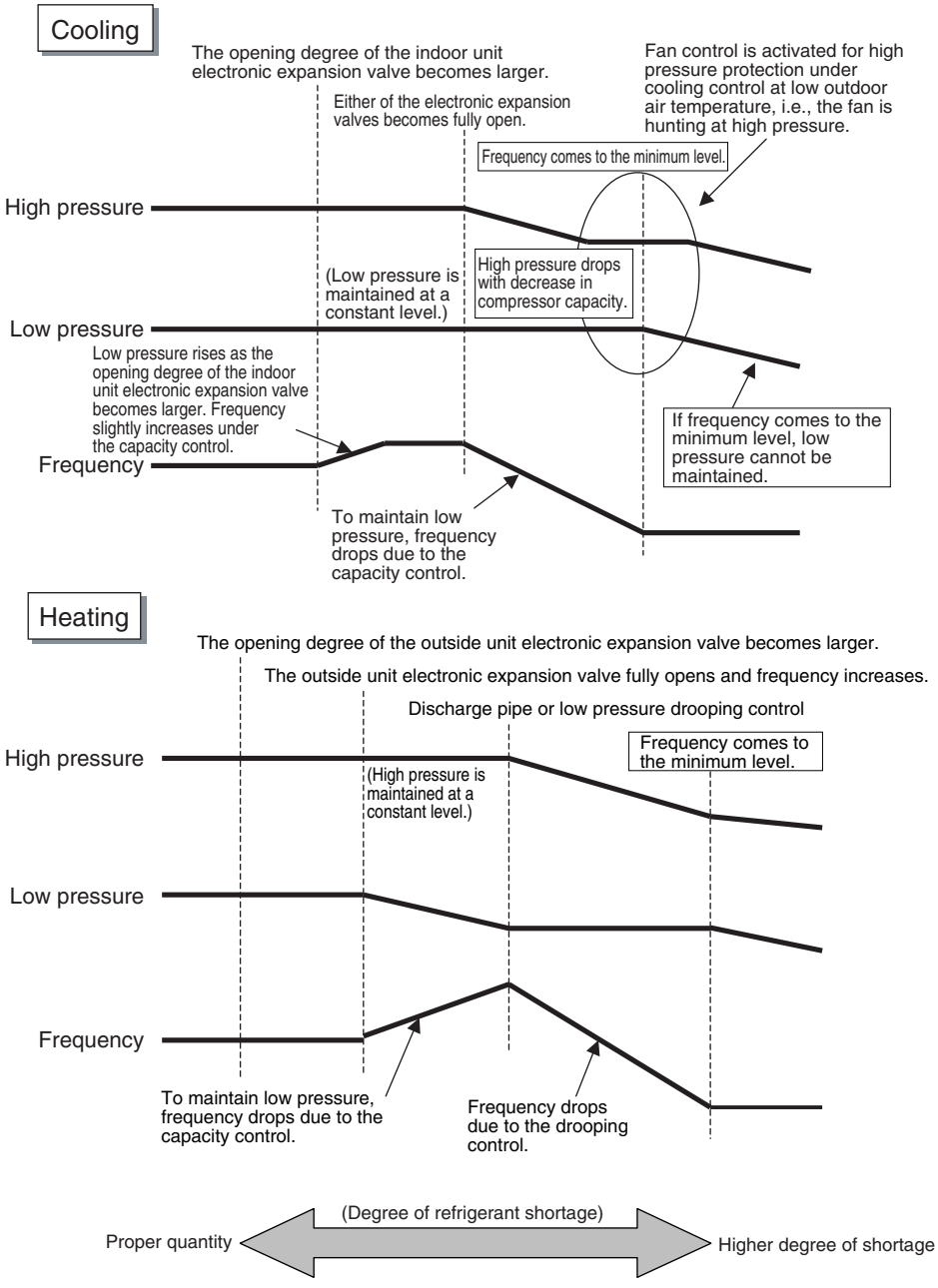


CHECK 7 **Check for shortage of refrigerant.**

In case of VRV Systems, the only way to judge as the shortage 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 shortage of refrigerant

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 100.7kPa (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 -100.7kPa or less.
- If the degree of vacuum does not reach -100.7kPa 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 -100.7kPa 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 -100.7kPa 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 0.05MPa.

③ Vacuuming and dehydration
- Conduct vacuuming and dehydration for a period of 1 hour or more. If the degree of vacuum does not reach -100.7kPa or less even though evacuation is conducted for a period of two hours or more, repeat vacuum break - vacuuming and dehydration.

④ Leaving in vacuum state
- Leave the compressor at the degree of vacuum of -100.7kPa 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 11 Thermistor Resistance / Temperature Characteristics

Indoor unit
- For suction air R1T
- For liquid pipe R2T
- For gas pipe R3T

Outside unit
- For radiation fin R1T

T°C	kΩ
-30	354.1
-25	259.7
-20	192.6
-15	144.2
-10	109.1
-5	83.25
0	64.10
5	49.70
10	38.85
15	30.61
20	24.29
25	19.41
30	15.61
35	12.64
40	10.30
45	8.439
50	6.954
55	5.761
60	4.797
65	4.014
70	3.375
75	2.851
80	2.418
85	2.060
90	1.762
95	1.513
100	1.304
105	1.128
110	0.9790
115	0.8527
120	0.7450
125	0.6530
130	0.5741

3PA61998L (AD92A057)

Indoor unit
- For suction air R1T
- For liquid pipe R2T
- For gas pipe R3T

Outside unit
- For suction pipe R2T
- For heat exchanger gas pipe R4T
- For subcooling heat exchanger outlet pipe R5T
- For receiver outlet liquid pipe R6T

T°C	kΩ
-30	361.7719
-25	265.4704
-20	196.9198
-15	147.5687
-10	111.6578
-5	85.2610
0	65.6705
5	50.9947
10	39.9149
15	31.4796
20	25.0060
25	20.0000
30	16.1008
35	13.0426
40	10.6281
45	8.7097
50	7.1764
55	5.9407
60	4.9439
65	4.1352
70	3.4757
75	2.9349
80	2.4894
85	2.1205
90	1.8138
95	1.5575
100	1.3425
105	1.1614

3SA48001 (AD87A001J)

Indoor unit
- For discharge pipe R4T

Outside unit
- For discharge pipe R3T

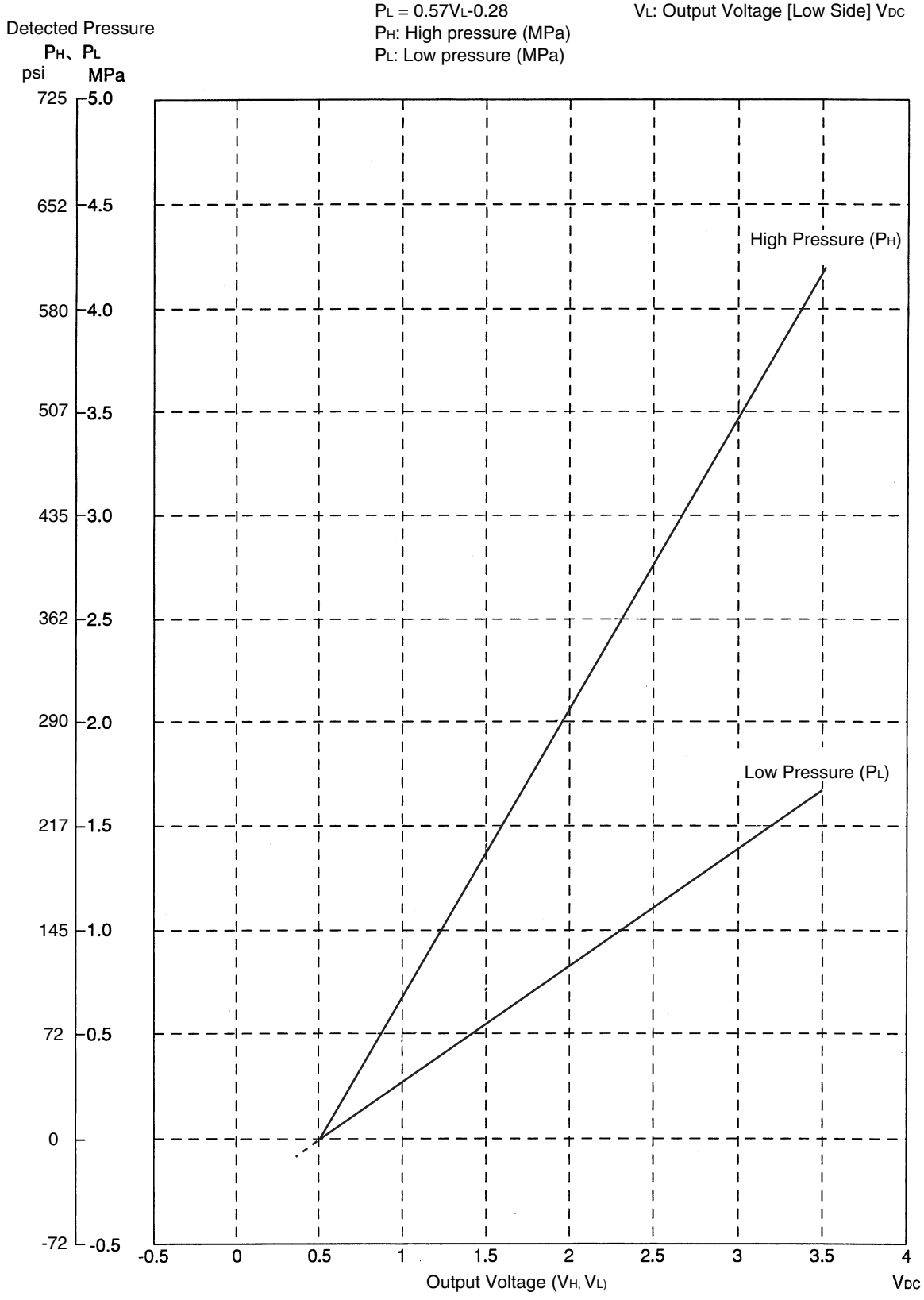
T°C	kΩ
-30	3257.371
-25	2429.222
-20	1827.883
-15	1387.099
-10	1061.098
-5	817.9329
0	635.0831
5	496.5712
10	391.0070
15	309.9511
20	247.2696
25	198.4674
30	160.2244
35	130.0697
40	106.1517
45	87.0725
50	71.7703
55	59.4735
60	49.5180
65	41.4168
70	34.7923
75	29.3499
80	24.8586
85	21.1360
90	18.0377
95	15.4487
100	13.2768
105	11.4395
110	9.8902
115	8.5788
120	7.4650
125	6.5156
130	5.7038
135	5.0073
140	4.4080
145	3.8907
150	3.4429

3SA48006 (AD87A001J)

CHECK 12 Pressure Sensor

$P_H = 1.38V_H-0.69$
$P_L = 0.57V_L-0.28$
P_H: High pressure (MPa)
P_L: Low pressure (MPa)

V_H: Output Voltage [High Side] V_{DC}
V_L: Output Voltage [Low Side] V_{DC}



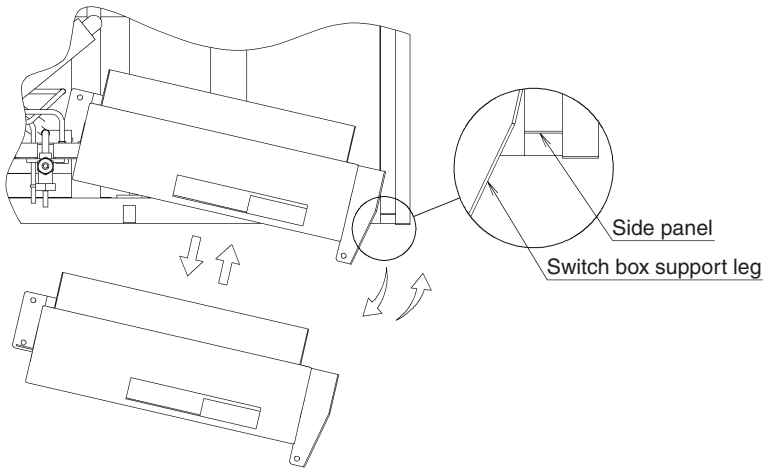
Part 7
Procedure for Mounting / Dismounting of Switch Box

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1.1 Procedure for Dismounting.....247
1.2 Procedure for Mounting.....247

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 on the right.
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 on the right.
   In order to pull out the switch box, check to be sure no wirings get stuck with the switch box.

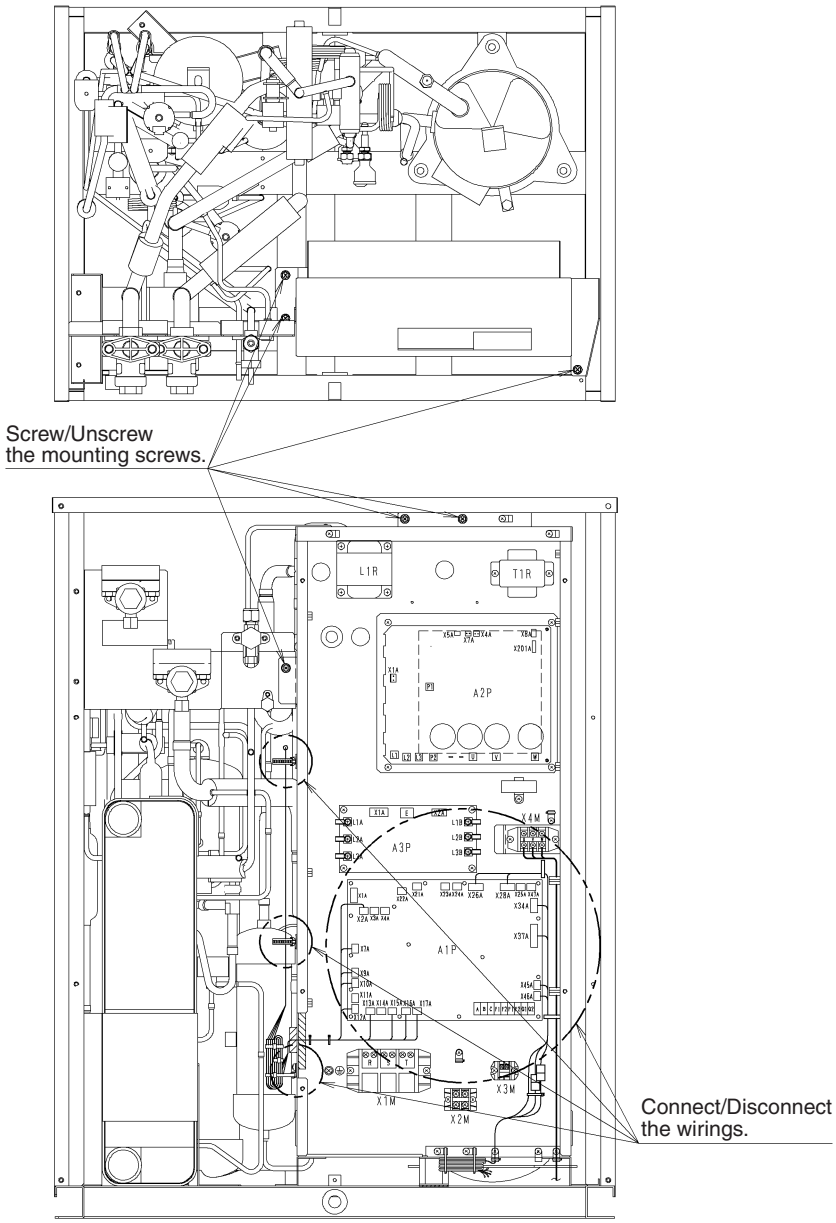


Procedure for Mounting/Dismounting of Switch Box

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			
High voltage wiring	A1P	X7A White (WHT)	Y1S
		X9A Blue (BLU)	Y3S
		X10A Pink (PNK)	Y4S
		X12A Gray (GRY)	Y6S
		X2A Red (RED)	S1PH
		X17A Gray (GRY)	E1HC
		X13A Green (GRN)	Y2S
		X15A Blue (BLU)	Y5S
		X16A Black (BLK)	Y7S
	X4M	U, V, W	M1C
Low voltage wiring	A1P	X34A Red (RED)	R3T
		X37A White (WHT)	R2T
		X37A White (WHT)	R4T
		X37A White (WHT)	R5T
		X37A White (WHT)	R6T
		X46A Red (RED)	S1NPH
		X45A Blue (BLU)	S1NPL
		X26A White (WHT) ※	Y1E
		X28A 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.

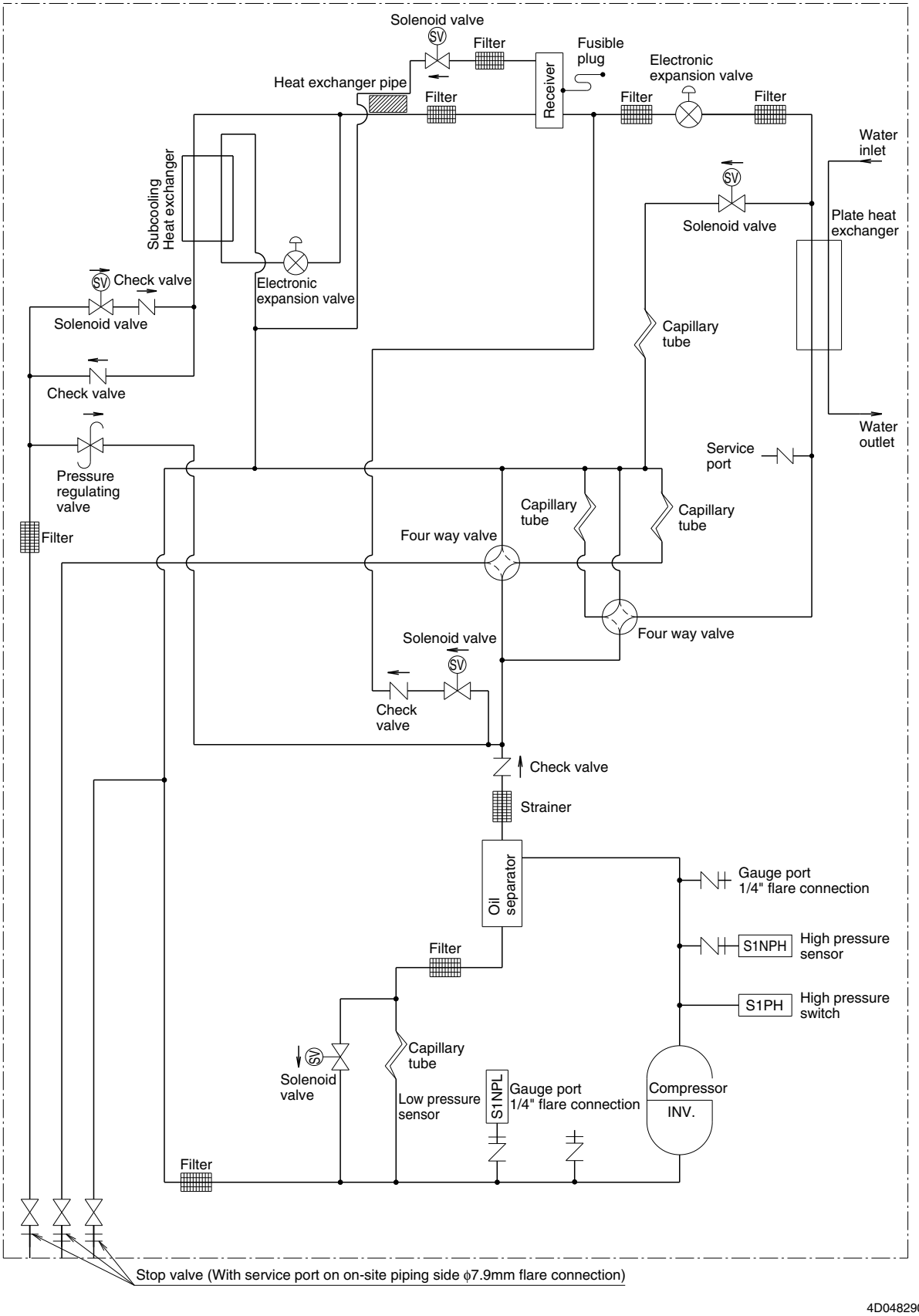
Part 8
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1. Piping Diagrams

1.1 Outside Units

RWEYQ8T / 7Y1B
RWEYQ10T / 7Y1B

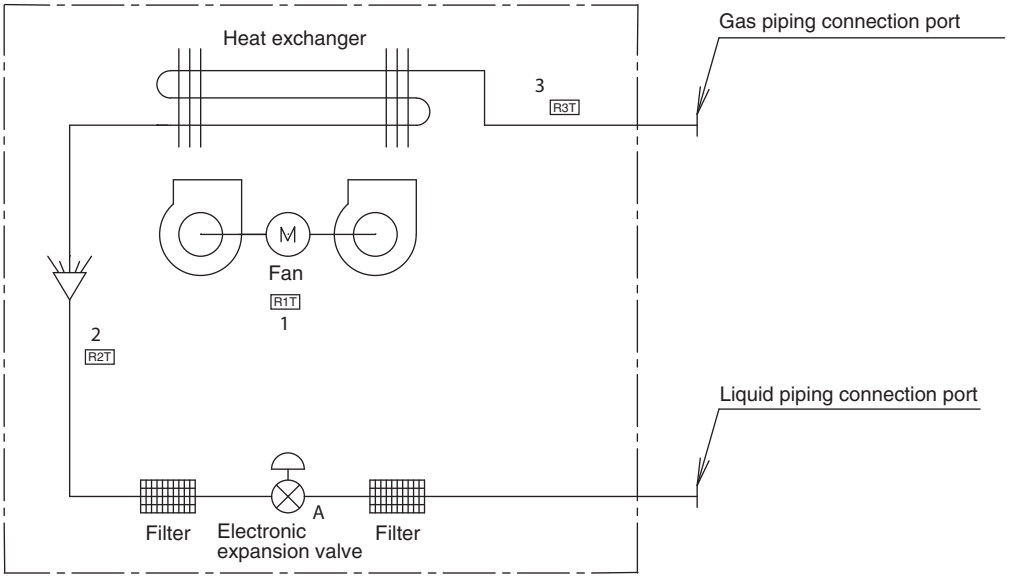


4D048290C

1.2 Indoor Unit

■ **FXFQ, FXZQ, FXCQ, FXKQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ, FXDQ, FXSQ**

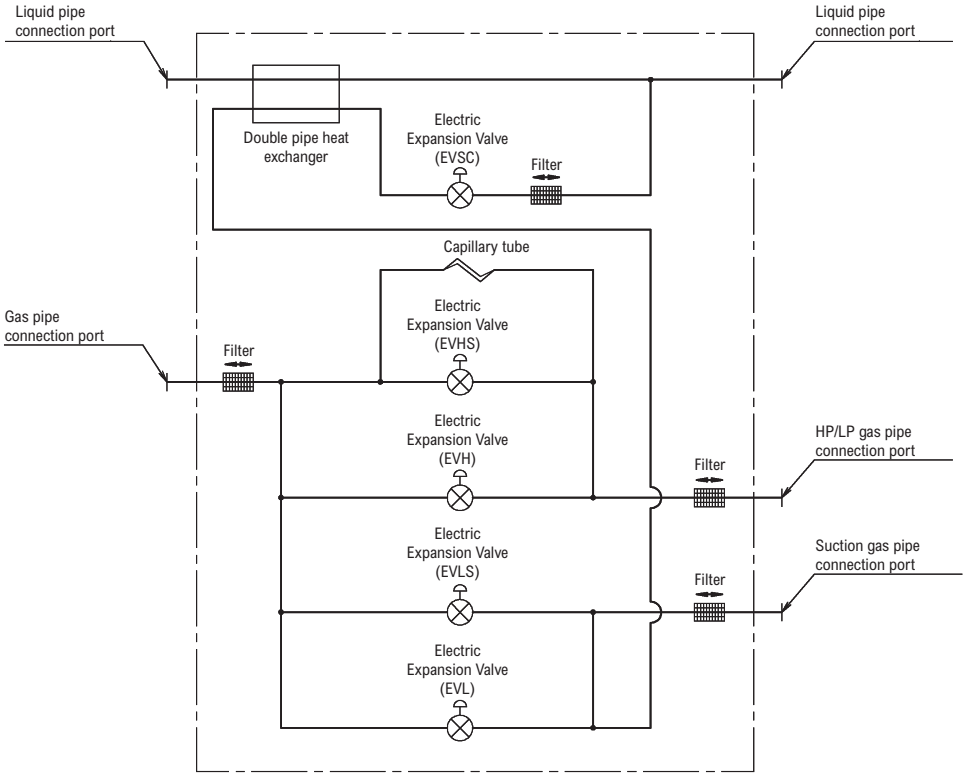
No. in Refrigerant System Diagram	Electric Symbol	Name	Major Function
	Y1E	Electronic expansion valve	Used for gas superheated degree control while in cooling or subcooled degree control while in heating.
①	R1T	Suction air thermistor	Used for thermostat control.
②	R2T	Liquid pipe thermistor	Used for gas superheated degree control while in cooling or subcooled degree control while in heating.
③	R3T	Gas pipe thermistor	Used for gas superheated degree control while in cooling.



4D024460E

1.3 BS Units

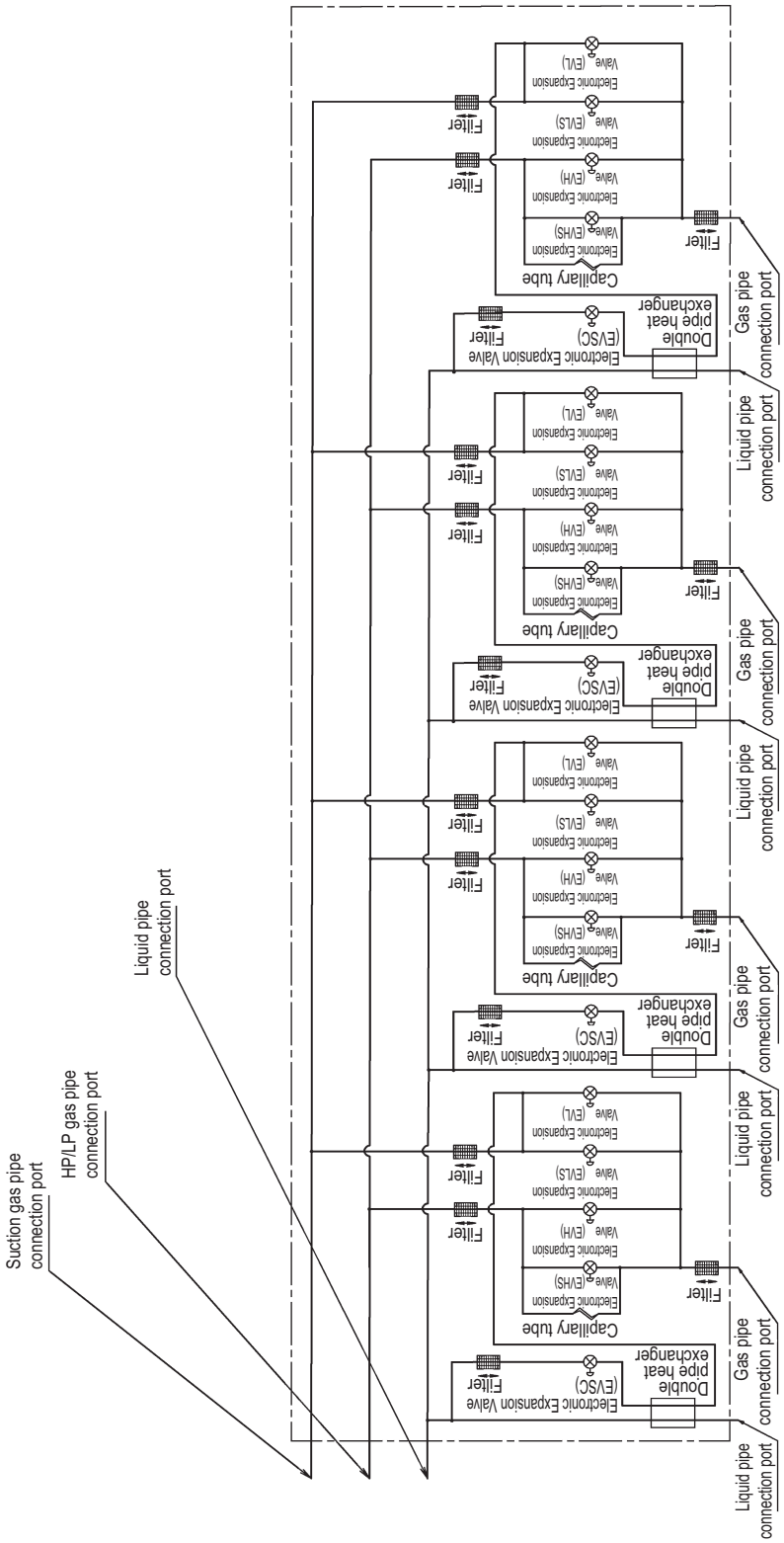
BSVQ-P9B



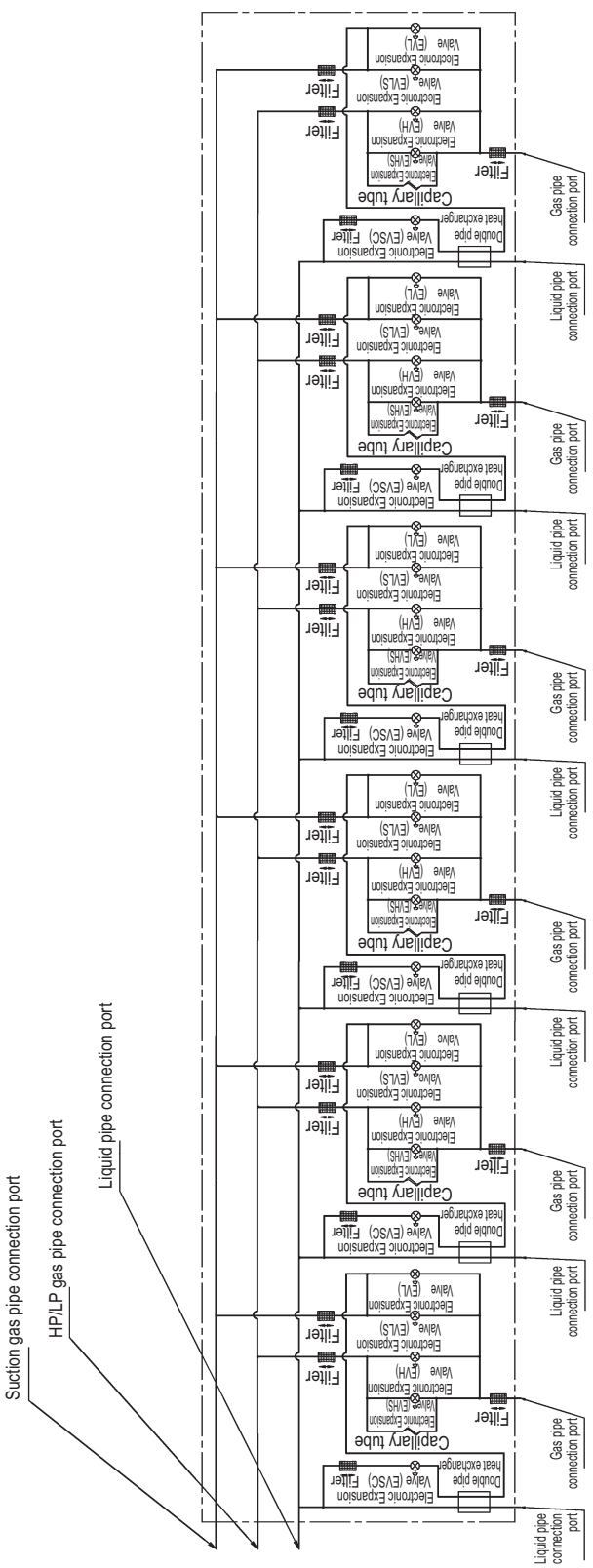
4D057985C

BSV4Q100PV

3D064148B



BSV6Q100PVB

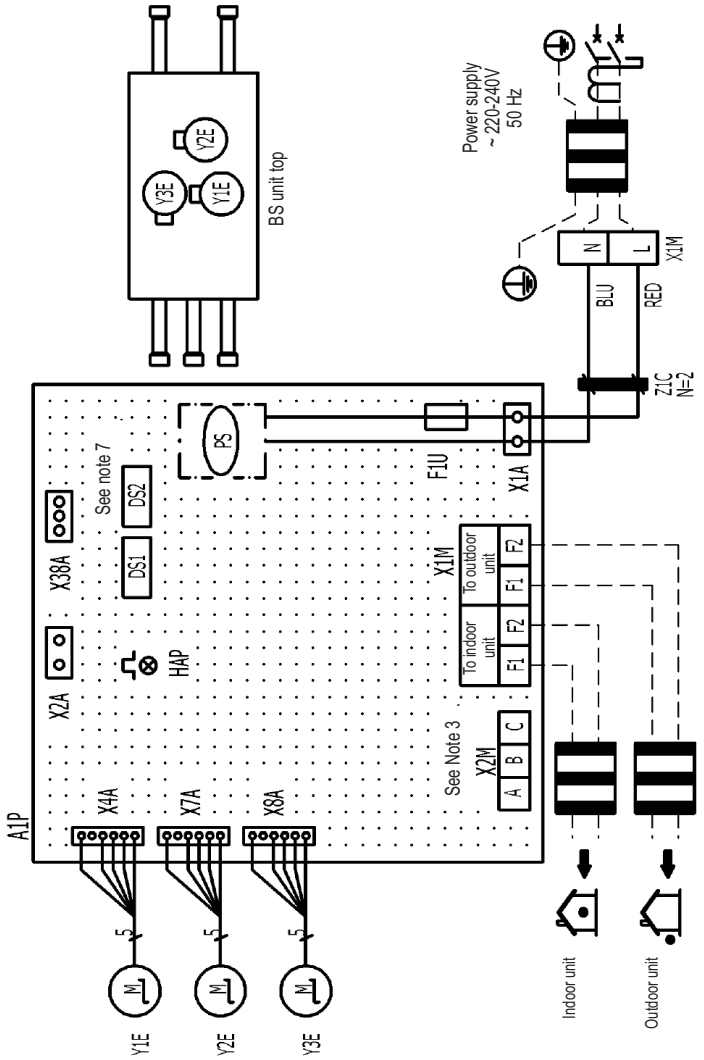


3D064149B

2. Wiring Diagrams

2.1 Outside Unit

BS1Q-A



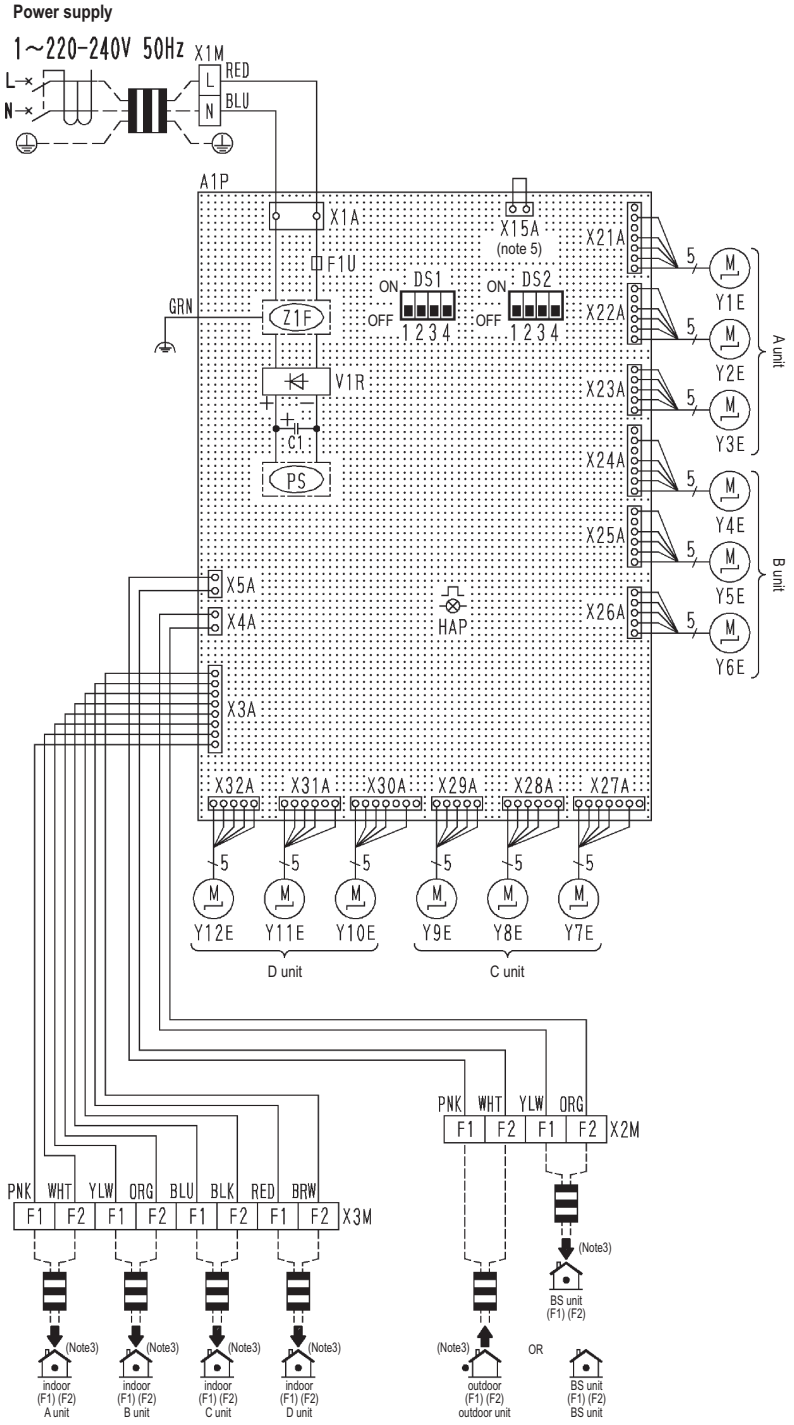
A1P	Printed circuit board	X1M	Terminal strip (power)	Y3E	Electric expansion valve (main suction)
DS1,DS2	DIP switch	X1M(A1P)	Terminal strip (control)	Z1C	Noise filter (ferrite core)
F1U	Fuse (T; 3.15A, 250V)	X2M	Terminal strip (C/H selector)		Connector for optional parts
HAP	Flashing lamp (service monitor-green)	Y1E	Electric expansion valve (sub cool)	X2A	Connector (wiring external control adapter for outdoor unit)
PS	Switching power supply	Y2E	Electric expansion valve (main discharge)		
				X38A	Connector (adapter for multi tenant)

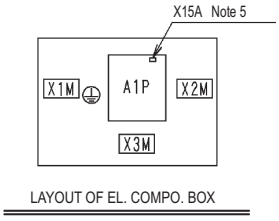
NOTES

1. This wiring diagram applies to the BS unit only
2. □□□□ : Terminal strip, ⊂o o⊃ : Connector, ─○─ : Terminal, ═□□═ : Field wiring, ⏚ : Protective earth
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 indoor unit (F1) (F2) and outdoor unit (F1) (F2)
5. Symbols shows as follows: (BLU: Blue, RED: Red)
6. Use copper conductors only.
7. DIP Switch (DS1, DS2) initial settings are as follows:

For using DIP Switch (DS1, DS2), refer to installation manual or "service precaution" label on EL. Compo. box cover.

BS4Q14A

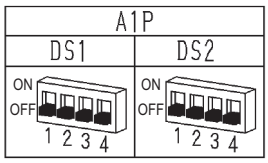




LAYOUT OF EL. COMPO. BOX

NOTES

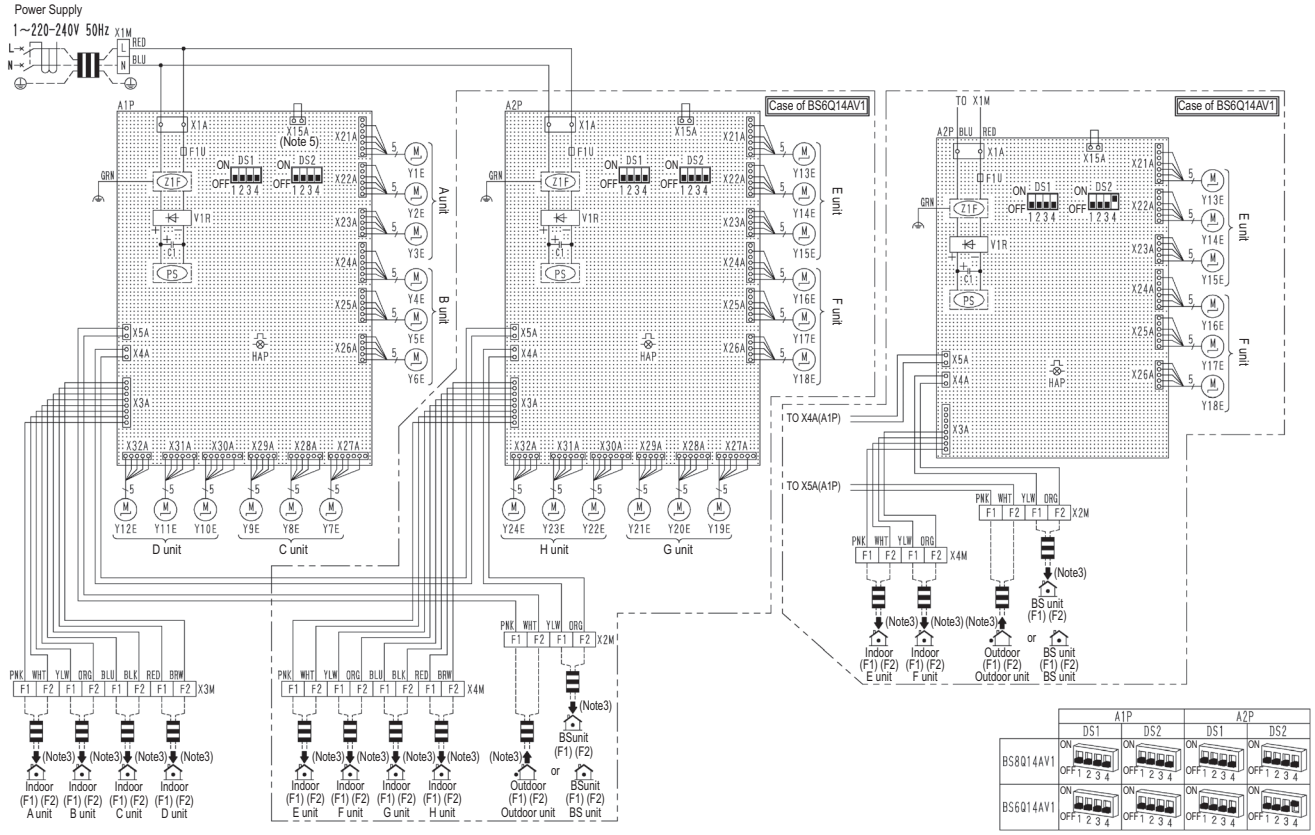
1 This wiring diagram is for BS units only.
2 The marks in this diagram indicate; ☐☐☐: Terminal block, ∞: Connector, ▮▮▮: Field wiring, ⏚: Earth terminal.
3 For wiring for the terminal block X2M • X3M (operation), refer to the installation manual attached to the product.
4 The factory setting of dip switch (DS1 • DS2) are as follows. For the setting method of dip switch (DS1 • DS2), refer to 'the installation manual' and 'precaution for service' attached on the control box cover.

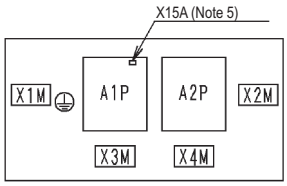


5 As for X15A(A1P), remove the short circuit connector and connect the air conditioner stop signal (optional product) when using the drain-up kit (optional product). For details, please refer to the operation manual attached to the kit.

A1P	Printed circuit board (Control)		Y4E	Electric expansion valve (Suction)	B unit
C1	Capacitor		Y5E	Electric expansion valve (HP/LP Gas)	
DS1, DS2	Dip switch		Y6E	Electric expansion valve (Sub cool)	
F1U	Fuse (T, 3.15A, 250V)		Y7E	Electric expansion valve (Suction)	C unit
HAP	Flashing lamp (Service monitor-green)		Y8E	Electric expansion valve (HP/LP Gas)	
PS	Switching power supply		Y9E	Electric expansion valve (Sub cool)	
V1R	Diode bridge		Y10E	Electric expansion valve (Suction)	D unit
X1M	Terminal strip (Power)		Y11E	Electric expansion valve (HP/LP Gas)	
X2M, X3M	Terminal strip (Transmission)		Y12E	Electric expansion valve (Sub cool)	
Z1F	Noise filter				
Y1E	Electric expansion valve (Suction)	A unit			
Y2E	Electric expansion valve (HP/LP Gas)		Optional accessories		
Y3E	Electric expansion valve (Sub cool)		X15A	Connector (drain up kit abnormal signal)	

BS6-8Q14A





LAYOUT OF EL. COMPO. BOX

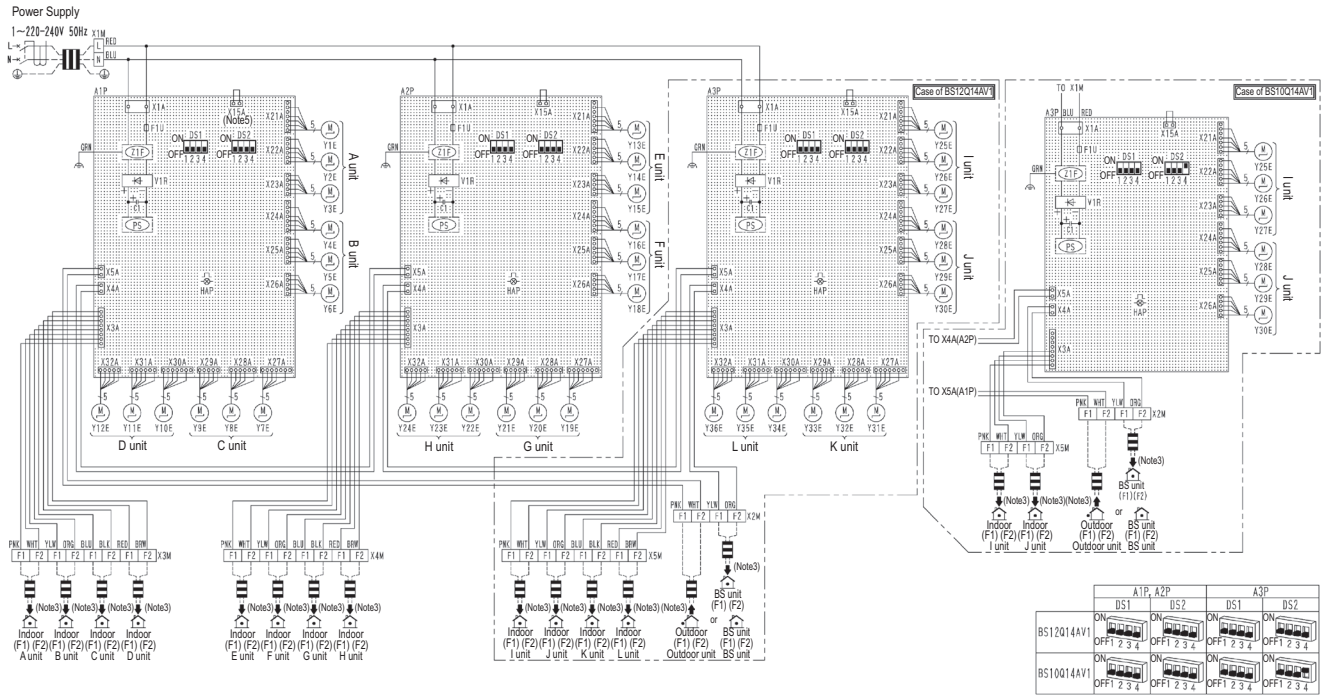
A1P, A2P	Printed circuit board (Control)		Y4E	Electric expansion valve (Suction)		Y16E	Electric expansion valve (Suction)	
C1	Capacitor (A1P, A2P)		Y5E	Electric expansion valve (HP/LP Gas)	B unit	Y17E	Electric expansion valve (HP/LP Gas)	F unit
DS1, DS2	Dip switch (A1P, A2P)		Y6E	Electric expansion valve (Sub cool)		Y18E	Electric expansion valve (Sub cool)	
F1U	Fuse (T, 3.15A 250V (A1P, A2P)		Y7E	Electric expansion valve (Suction)		Y19E	Electric expansion valve (Suction)	
HAP	Flashing lamp (Service monitor - green) (A1P, A2P)		Y8E	Electric expansion valve (HP/LP Gas)	C unit	Y20E	Electric expansion valve (HP/LP Gas)	G unit
PS	Switching power supply (A1P, A2P)		Y9E	Electric expansion valve (Sub cool)		Y21E	Electric expansion valve (Sub cool)	
V1R	Diode bridge (A1P, A2P)		Y10E	Electric expansion valve (Suction)		Y22E	Electric expansion valve (Suction)	
X1M	Terminal strip (Power)		Y11E	Electric expansion valve (HP/LP Gas)	D unit	Y23E	Electric expansion valve (HP/LP Gas)	H unit
X2M~X4M	Terminal strip (Transmission)		Y12E	Electric expansion valve (Sub cool)		Y24E	Electric expansion valve (Sub cool)	
Z1F	Noise filter (A1P, A2P)		Y13E	Electric expansion valve (Suction)		Optional Accessories		
Y1E	Electric expansion valve (Suction)		Y14E	Electric expansion valve (HP/LP Gas)	E unit	X15A	Connector (Drain up kit abnormal signal) (A1P)	
Y2E	Electric expansion valve (HP/LP Gas)	A unit	Y15E	Electric expansion valve (Sub cool)				
Y3E	Electric expansion valve (Sub cool)							

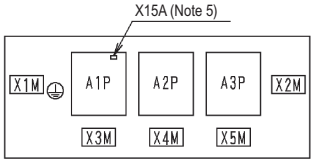
2D086236

NOTES

1 This wiring diagram is for BS units only.
2 The marks in this diagram indicate; ☐☐☐: Terminal block, ⊂⊃: Connector, ▮▮▮: Field wiring, ⏚: Earth terminal
3 For wiring for the terminal block X2M~X4M (operation), refer to the installation manual attached to the product.
4 The factory setting of dip switch (DS1 • DS2) are as follows. For the setting method of dip switch (DS1 • DS2), refer to 'the installation manual' and 'precaution for service' attached on the control box cover.

BS10-12Q14A





LAYOUT OF EL. COMPO. BOX

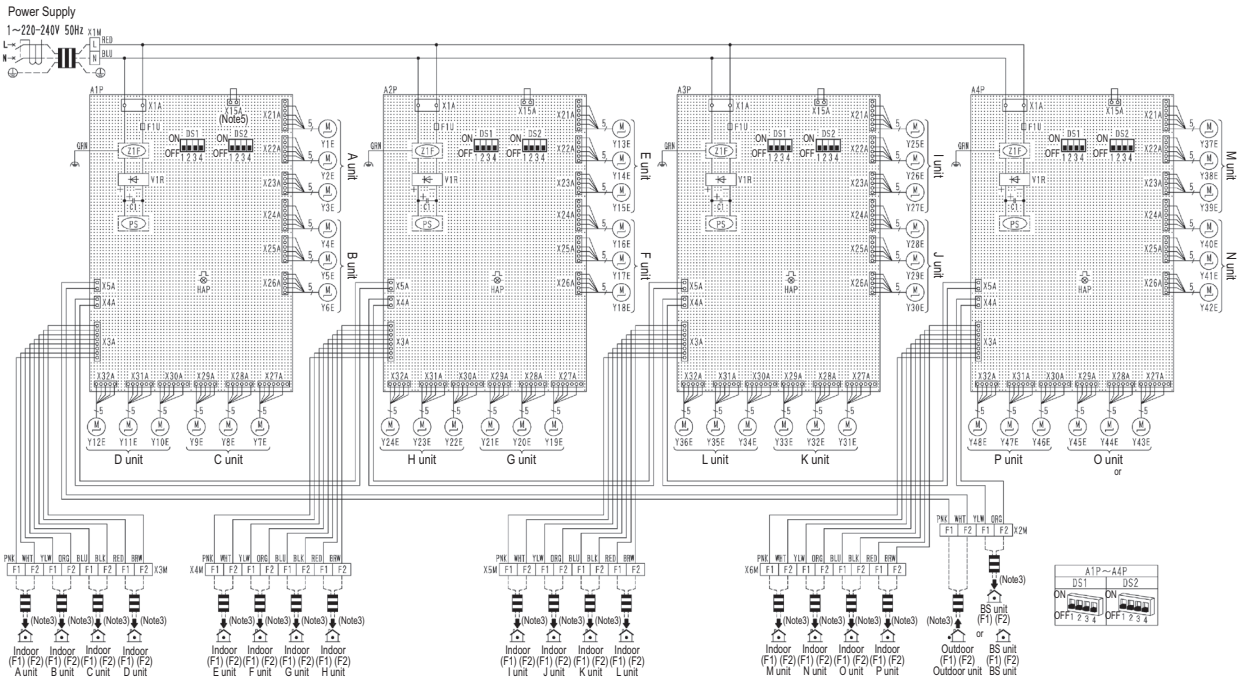
A1P~A3P	Printed circuit board (Control)		Y7E	Electric expansion valve (Suction)	C unit	Y22E	Electric expansion valve (Suction)	H unit
C1	Capacitor (A1P~ A3P)		Y8E	Electric expansion valve (HP/LP Gas)		Y23E	Electric expansion valve (HP/LP Gas)	
DS1, DS2	Dip switch (A1P~ A3P)		Y9E	Electric expansion valve (Sub cool)		Y24E	Electric expansion valve (Sub cool)	
F1U	Fuse (T, 3.15A 250V (A1P~ A3P)		Y10E	Electric expansion valve (Suction)	D unit	Y25E	Electric expansion valve (Suction)	I unit
HAP	Flashing lamp (Service monitor - green) (A1P~ A3P)		Y11E	Electric expansion valve (HP/LP Gas)		Y26E	Electric expansion valve (HP/LP Gas)	
PS	Switching power supply (A1P~ A3P)		Y12E	Electric expansion valve (Sub cool)		Y27E	Electric expansion valve (Sub cool)	
V1R	Diode bridge (A1P~ A3P)		Y13E	Electric expansion valve (Suction)	E unit	Y28E	Electric expansion valve (Suction)	J unit
X1M	Terminal strip (Power)		Y14E	Electric expansion valve (HP/LP Gas)		Y29E	Electric expansion valve (HP/LP Gas)	
X2M~X5M	Terminal strip (Transmission)		Y15E	Electric expansion valve (Sub cool)		Y30E	Electric expansion valve (Sub cool)	
Z1F	Noise filter (A1P~ A3P)		Y16E	Electric expansion valve (Suction)	F unit	Y31E	Electric expansion valve (Suction)	K unit
Y1E	Electric expansion valve (Suction)	A unit	Y17E	Electric expansion valve (HP/LP Gas)		Y32E	Electric expansion valve (HP/LP Gas)	
Y2E	Electric expansion valve (HP/LP Gas)		Y18E	Electric expansion valve (Sub cool)		Y33E	Electric expansion valve (Sub cool)	
Y3E	Electric expansion valve (Sub cool)		Y19E	Electric expansion valve (Suction)	G unit	Y34E	Electric expansion valve (Suction)	L unit
Y4E	Electric expansion valve (Suction)	B unit	Y20E	Electric expansion valve (HP/LP Gas)		Y35E	Electric expansion valve (HP/LP Gas)	
Y5E	Electric expansion valve (HP/LP Gas)		Y21E	Electric expansion valve (Sub cool)		Y36E	Electric expansion valve (Sub cool)	
Y6E	Electric expansion valve (Sub cool)					Optional Accessories		
						X15A	Connector (Drain up kit abnormal signal) (A1P)	

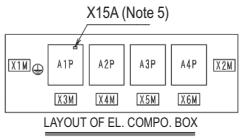
2D086237

NOTES

1 This wiring diagram is for BS units only.
2 The marks in this diagram indicate; ☐☐☐: Terminal block, ⊙: Connector, ▮▮▮: Field wiring, ⏚: Earth terminal
3 For wiring for the terminal block X2M~X5M (operation), refer to the installation manual attached to the product.
4 The factory setting of dip switch (DS1 • DS2) are as follows. For the setting method of dip switch (DS1 • DS2), refer to 'the installation manual' and 'precaution for service' attached on the control box cover.

BS16Q14A





A1P~A4P	Printed circuit board (Control)		Y13E	Electric expansion valve (Suction)		Y34E	Electric expansion valve (Suction)	
C1	Capacitor (A1P~ A4P)		Y14E	Electric expansion valve (HP/LP Gas)	E unit	Y35E	Electric expansion valve (HP/LP Gas)	L unit
DS1, DS2	Dip switch (A1P~ A4P)		Y15E	Electric expansion valve (Sub cool)		Y36E	Electric expansion valve (Sub cool)	
F1U	Fuse (T, 3.15A 250V (A1P~ A4P)		Y16E	Electric expansion valve (Suction)		Y37E	Electric expansion valve (Suction)	
HAP	Flashing lamp (Service monitor - green) (A1P~ A4P)		Y17E	Electric expansion valve (HP/LP Gas)	F unit	Y38E	Electric expansion valve (HP/LP Gas)	M unit
PS	Switching power supply (A1P~ A4P)		Y18E	Electric expansion valve (Sub cool)		Y39E	Electric expansion valve (Sub cool)	
V1R	Diode bridge (A1P~ A4P)		Y19E	Electric expansion valve (Suction)		Y40E	Electric expansion valve (Suction)	
X1M	Terminal strip (Power)		Y20E	Electric expansion valve (HP/LP Gas)	G unit	Y41E	Electric expansion valve (HP/LP Gas)	N unit
X2M~X6M	Terminal strip (Transmission)		Y21E	Electric expansion valve (Sub cool)		Y42E	Electric expansion valve (Sub cool)	
Z1F	Noise filter (A1P~ A4P)		Y22E	Electric expansion valve (Suction)		Y43E	Electric expansion valve (Suction)	
Y1E	Electric expansion valve (Suction)		Y23E	Electric expansion valve (HP/LP Gas)	H unit	Y44E	Electric expansion valve (HP/LP Gas)	O unit
Y2E	Electric expansion valve (HP/LP Gas)	A unit	Y24E	Electric expansion valve (Sub cool)		Y45E	Electric expansion valve (Sub cool)	
Y3E	Electric expansion valve (Sub cool)		Y25E	Electric expansion valve (Suction)		Y46E	Electric expansion valve (Suction)	
Y4E	Electric expansion valve (Suction)		Y26E	Electric expansion valve (HP/LP Gas)	I unit	Y47E	Electric expansion valve (HP/LP Gas)	P unit
Y5E	Electric expansion valve (HP/LP Gas)	B unit	Y27E	Electric expansion valve (Sub cool)		Y48E	Electric expansion valve (Sub cool)	
Y6E	Electric expansion valve (Sub cool)		Y28E	Electric expansion valve (Suction)		Optional Accessories		
Y7E	Electric expansion valve (Suction)		Y29E	Electric expansion valve (HP/LP Gas)	J unit	X15A	Connector (Drain up kit abnormal signal) (A1P)	
Y8E	Electric expansion valve (HP/LP Gas)	C unit	Y30E	Electric expansion valve (Sub cool)				
Y9E	Electric expansion valve (Sub cool)		Y31E	Electric expansion valve (Suction)				
Y10E	Electric expansion valve (Suction)		Y32E	Electric expansion valve (HP/LP Gas)	K unit			
Y11E	Electric expansion valve (HP/LP Gas)	D unit	Y33E	Electric expansion valve (Sub cool)				
Y12E	Electric expansion valve (Sub cool)							

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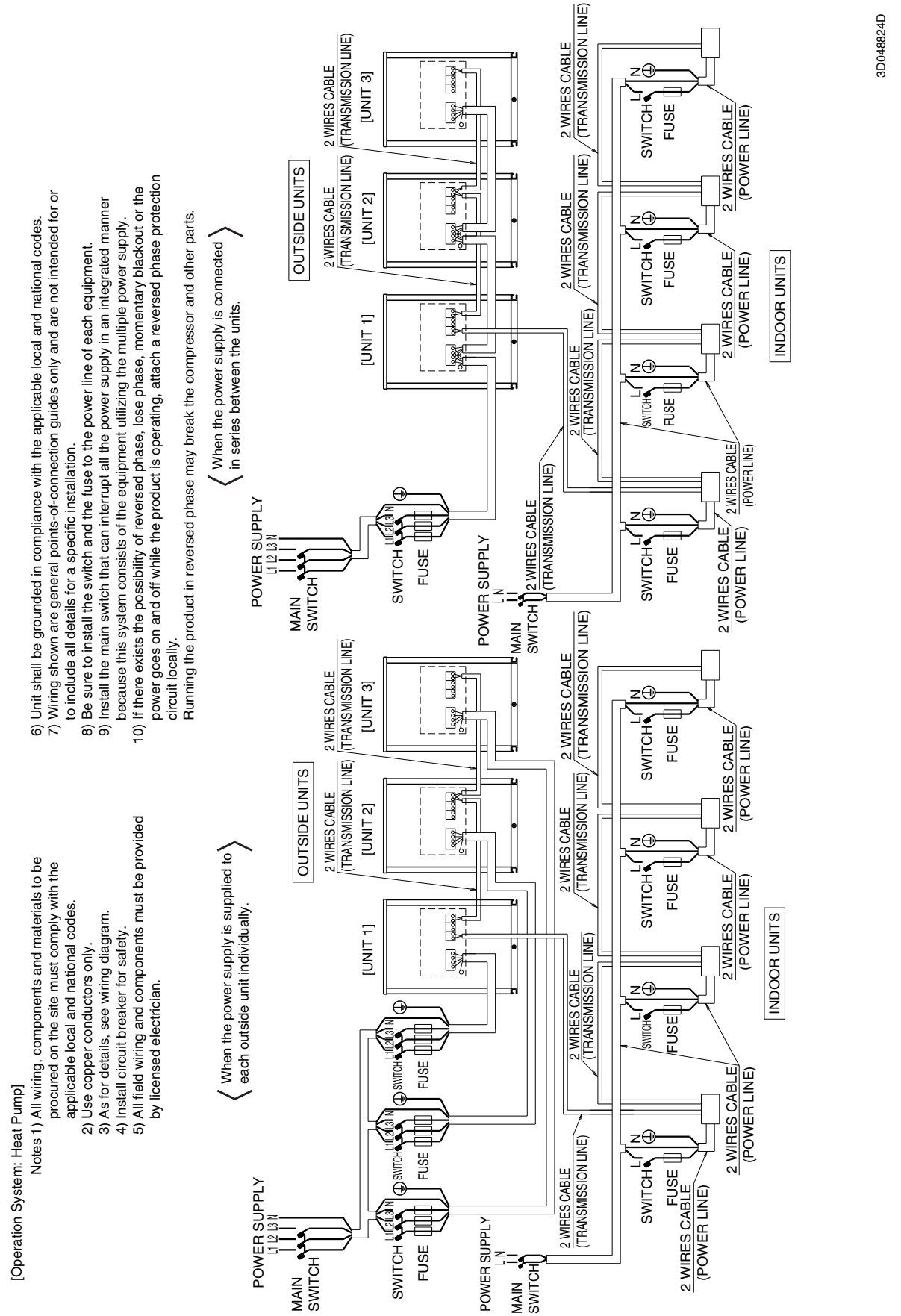
NOTES

1 This wiring diagram is for BS units only.
2 The marks in this diagram indicate; □□□: Terminal block, ⊡: Connector, ▮▮▮: Field wiring, ⏚: Earth terminal
3 For wiring for the terminal block X2M~X6M (operation), refer to the installation manual attached to the product.
4 The factory setting of dip switch (DS1 • DS2) are as follows. For the setting method of dip switch (DS1 • DS2), refer to 'the installation manual' and 'precaution for service' attached on the control box cover.

2.2 Outside Unit Field Wiring

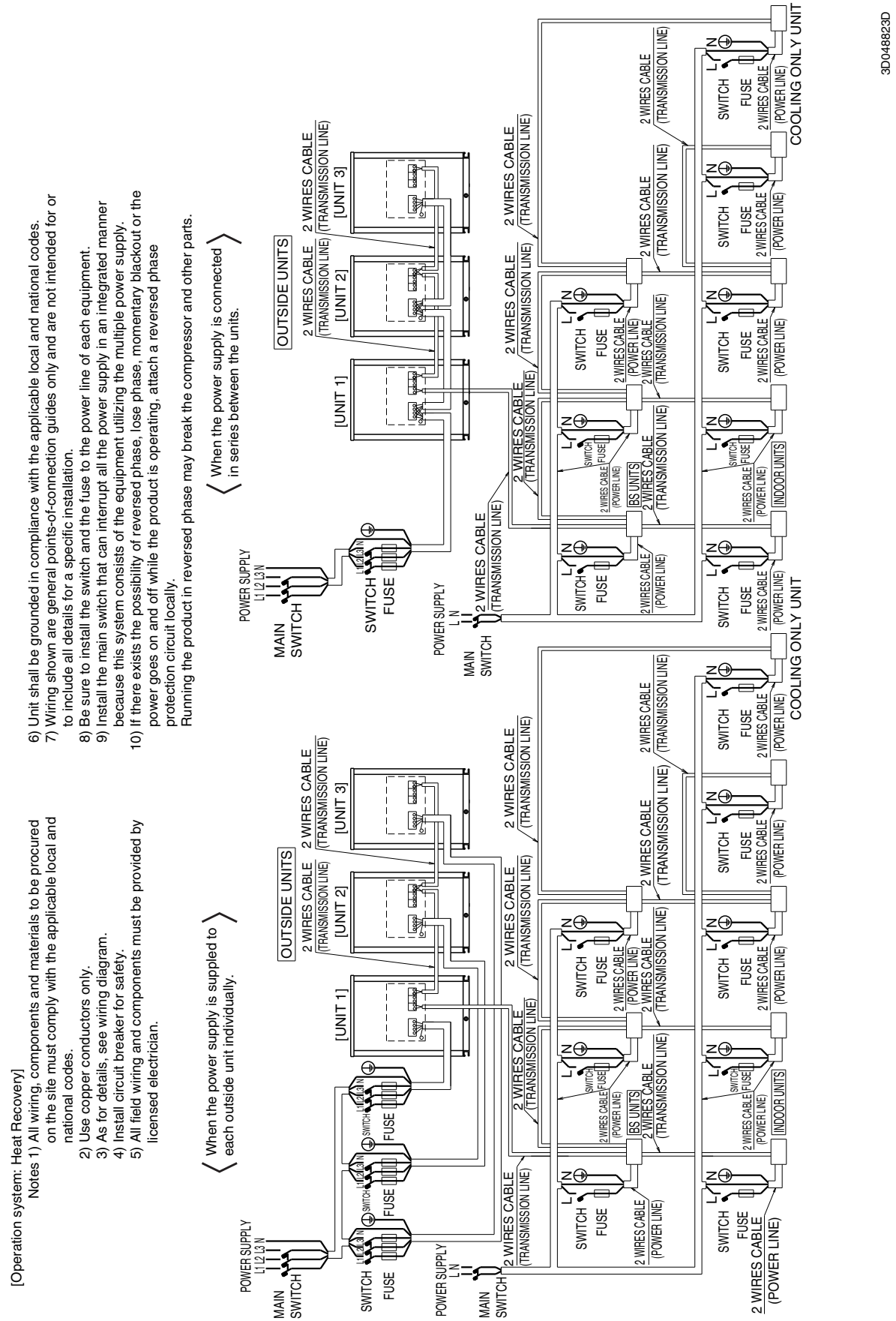
■ **Heat Pump**

RWEYQ8T7Y1 / RWEYQ10T7Y1 / RWEYQ16T7Y1 / RWEYQ18T7Y1 / RWEYQ20T7Y1 / RWEYQ24T7Y1
RWEYQ26T7Y1 / RWEYQ28T7Y1 / RWEYQ30T7Y1
RWEYQ10T7YL / RWEYQ20T7YL / RWEYQ30T7YL



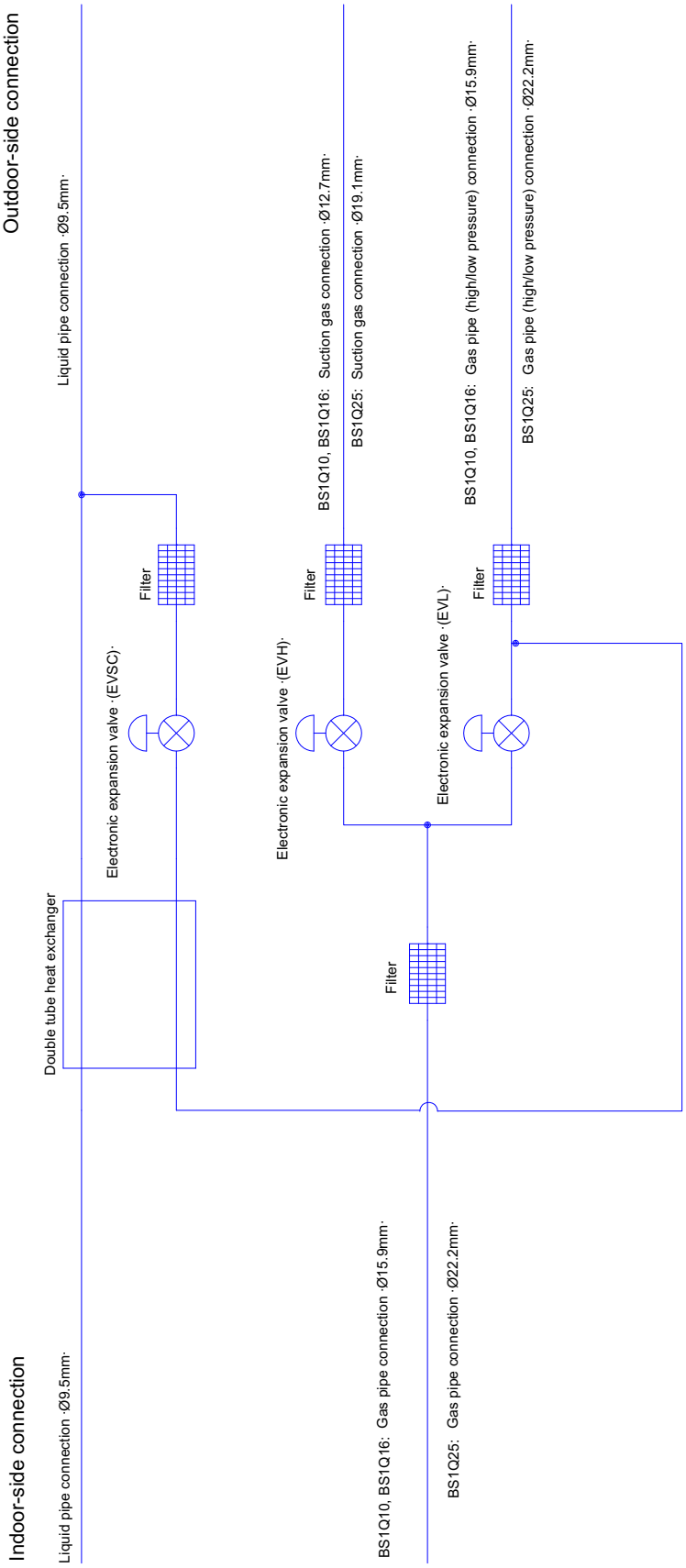
■ Heat Recovery

RWEYQ8T7Y1 / RWEYQ10T7Y1 / RWEYQ16T7Y1 / RWEYQ18T7Y1 / RWEYQ20T7Y1
RWEYQ24T7Y1 / RWEYQ26T7Y1 / RWEYQ28T7Y1 / RWEYQ30T7Y1
RWEYQ10T7YL / RWEYQ20T7YL / RWEYQ30T7YL

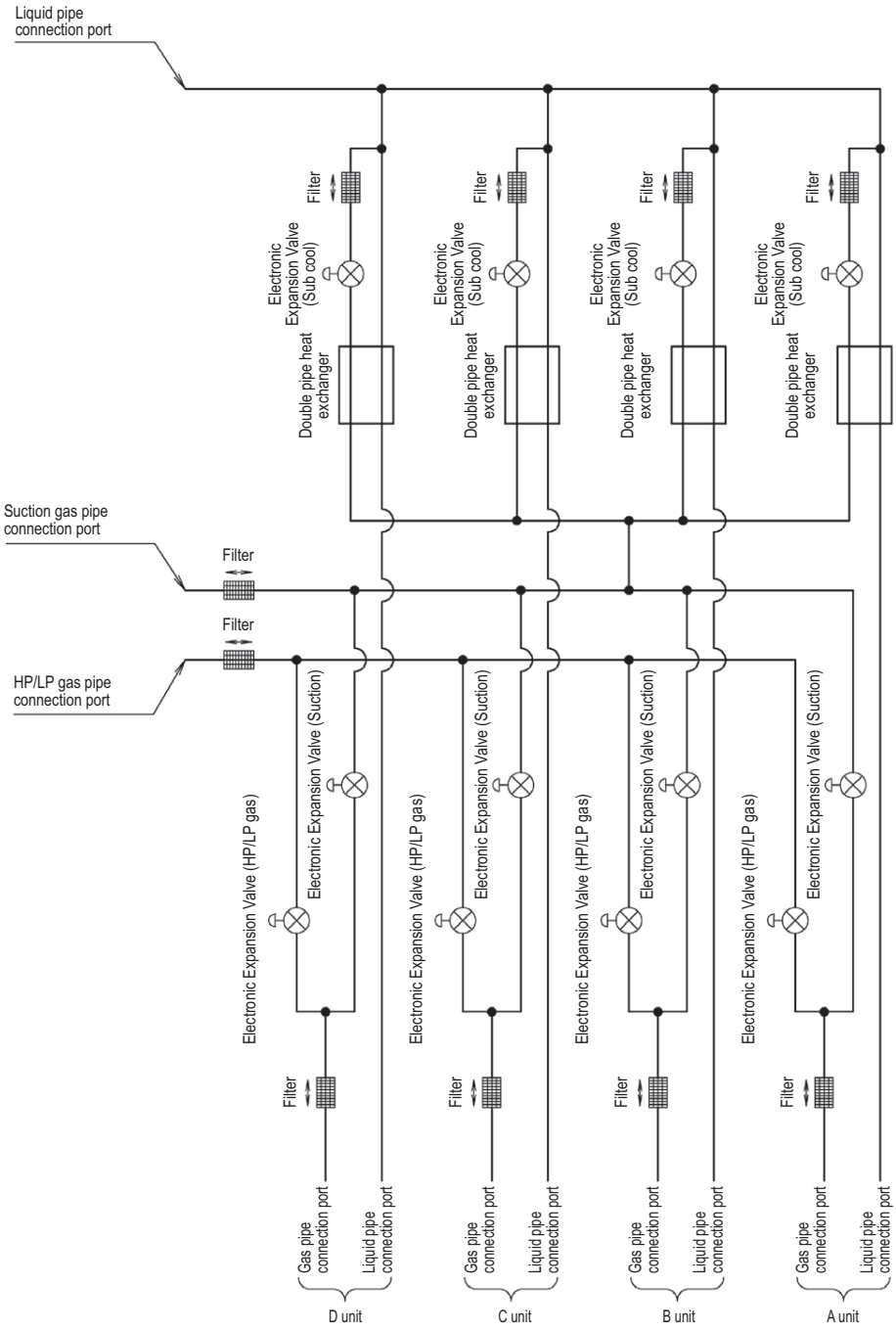


2.3 BS Unit

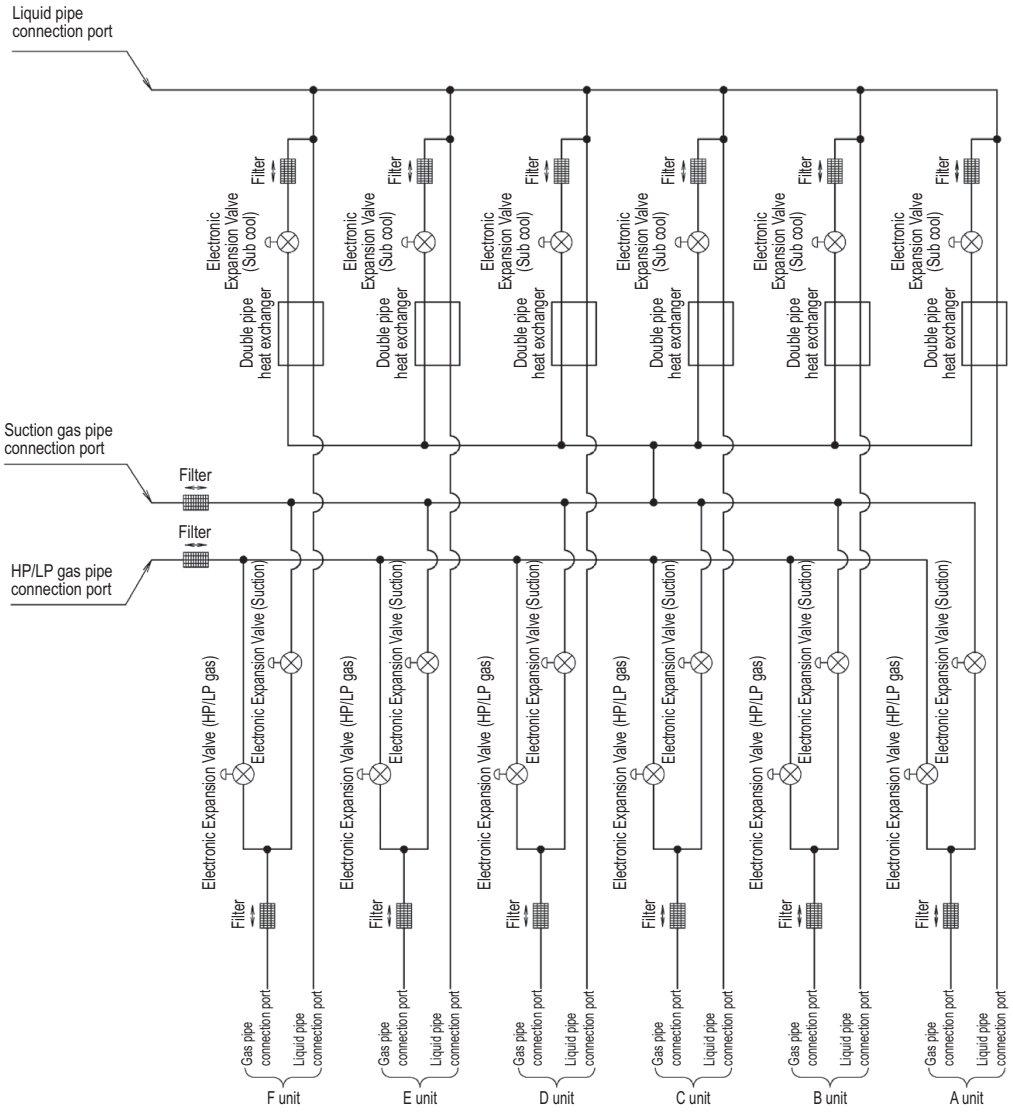
BS1Q-A



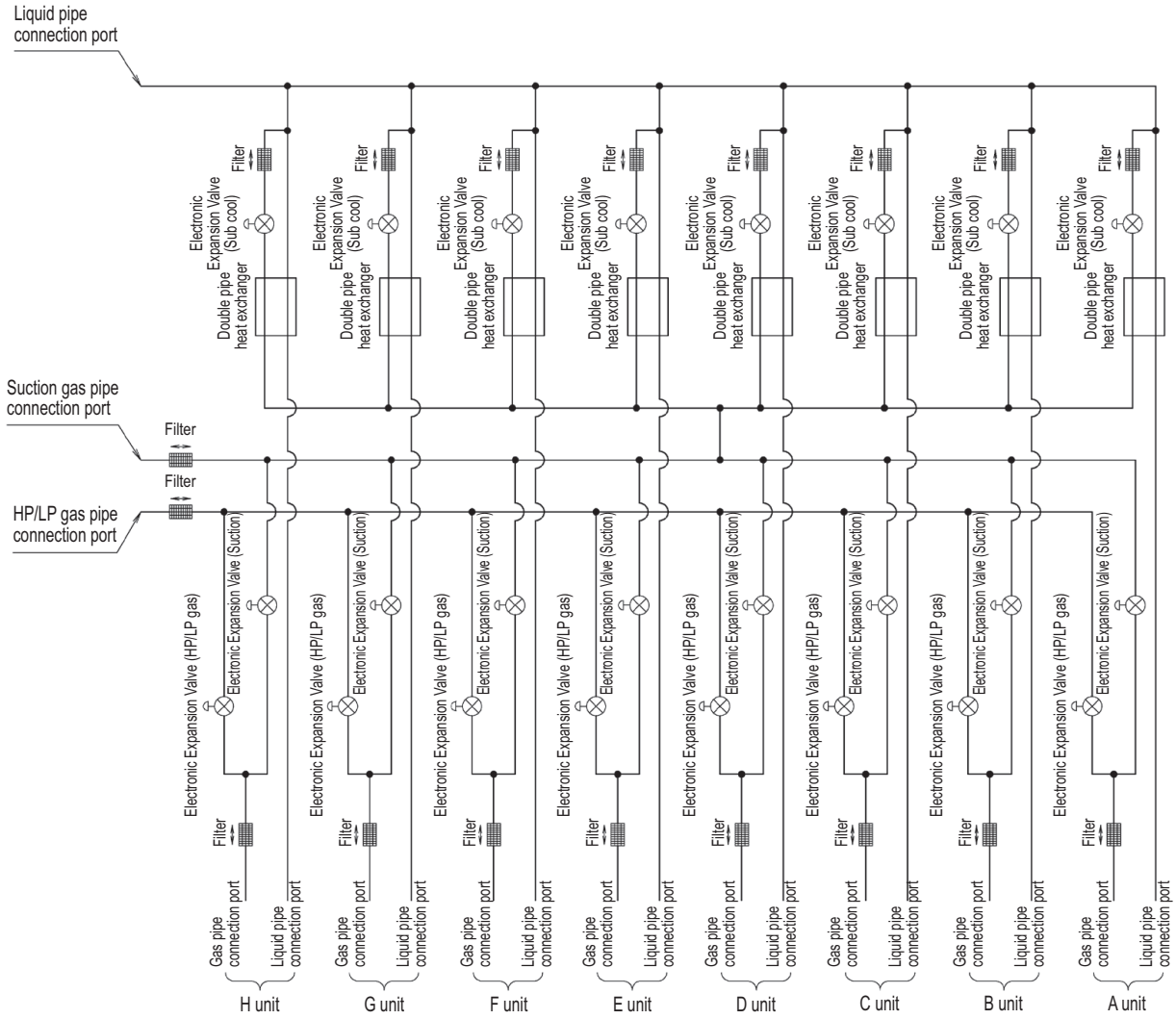
BS4Q14A


Liquid pipe connection port
Filter
Electronic Expansion Valve (Sub cool)
Double pipe heat exchanger
Suction gas pipe connection port
Filter
Filter
HP/LP gas pipe connection port
Electronic Expansion Valve (HP/LP gas)
Electronic Expansion Valve (Suction)
Filter
Gas pipe connection port
Liquid pipe connection port
D unit
C unit
B unit
A unit

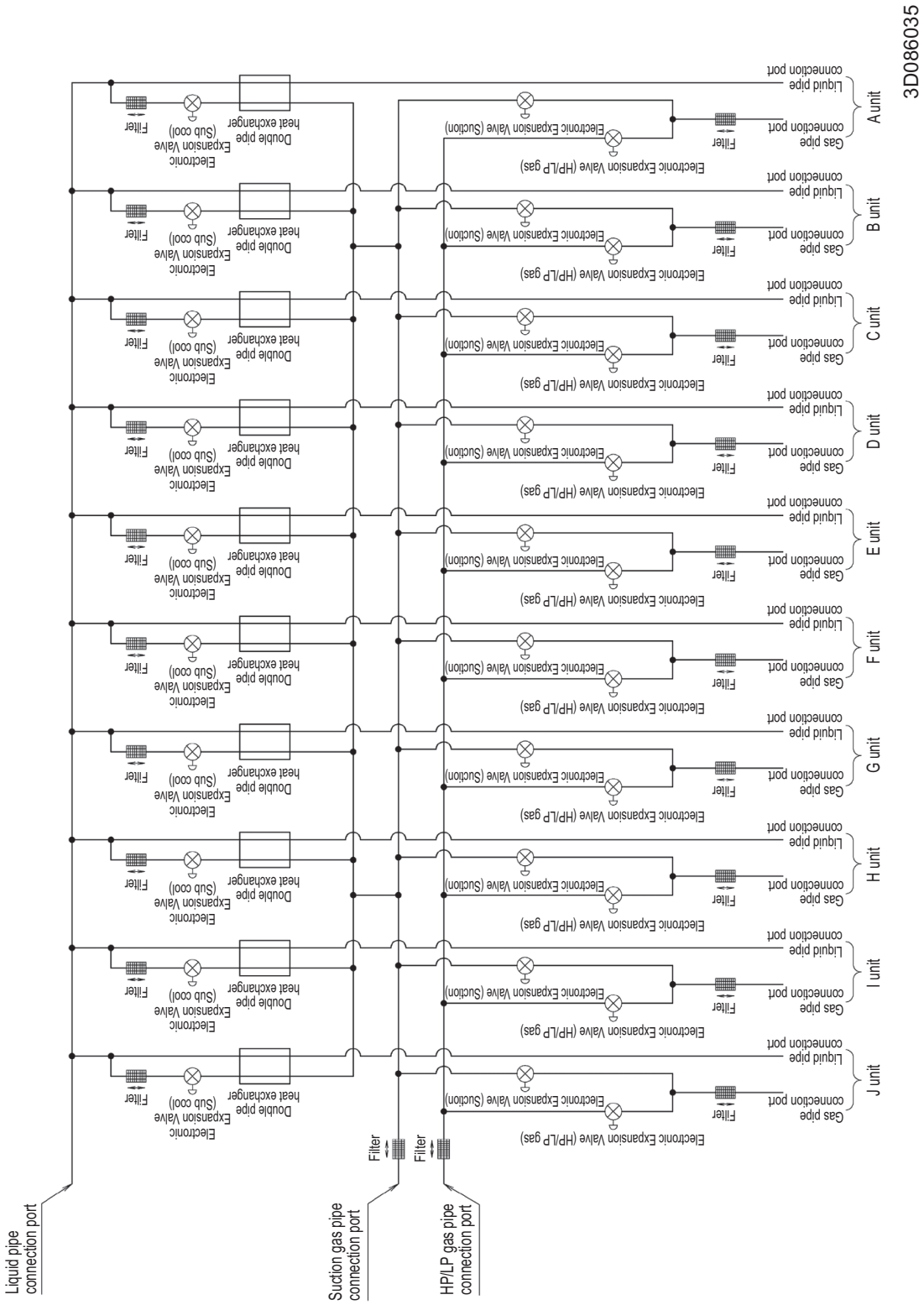
BS6Q14A


Liquid pipe connection port
Suction gas pipe connection port
HP/LP gas pipe connection port
Filter
Electronic Expansion Valve (Sub cool)
Double pipe heat exchanger
Electronic Expansion Valve (HP/LP gas)
Electronic Expansion Valve (Suction)
Gas pipe connection port
Liquid pipe connection port
F unit
E unit
D unit
C unit
B unit
A unit

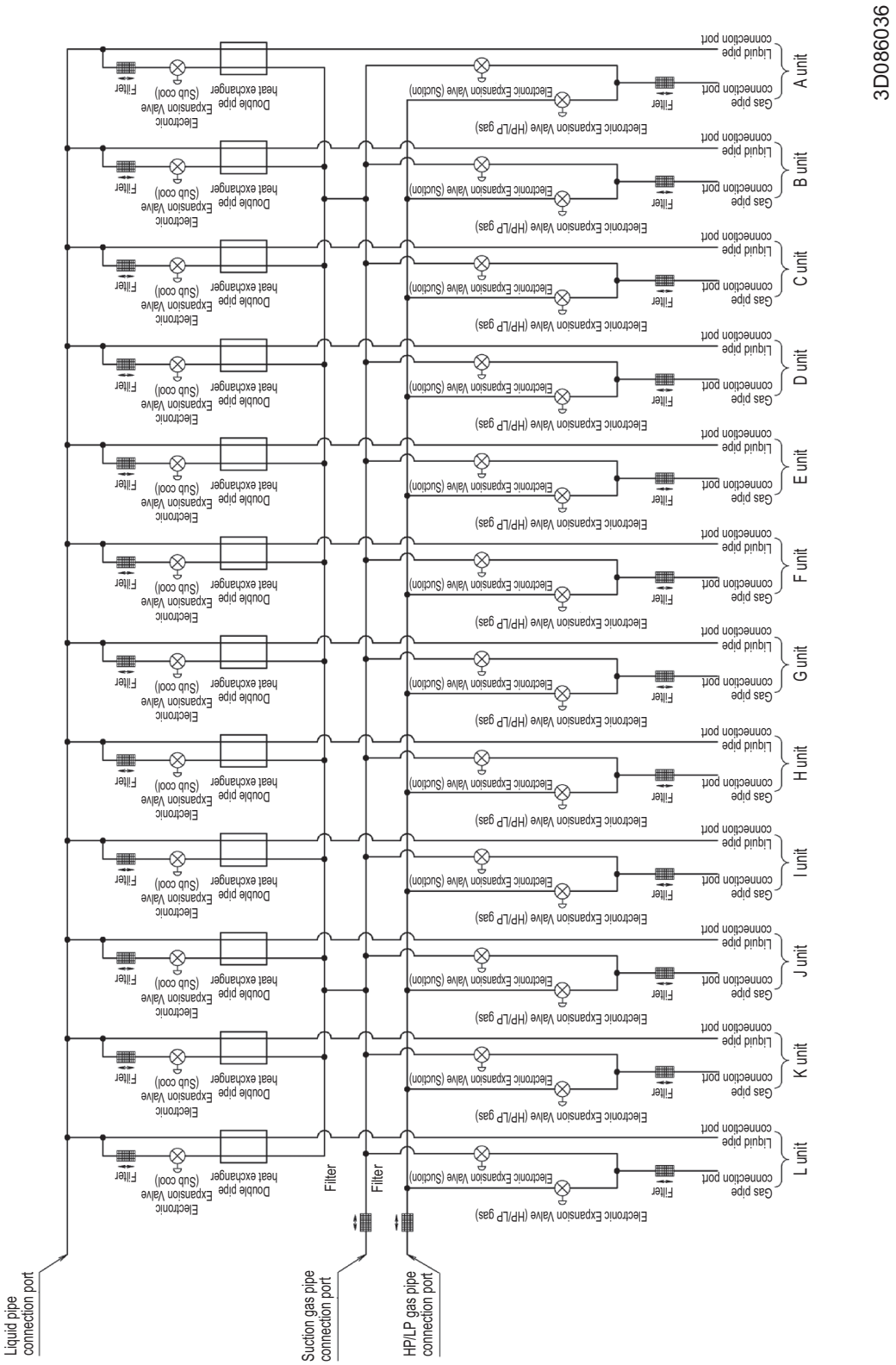
BS8Q14A


Liquid pipe connection port
Suction gas pipe connection port
HP/LP gas pipe connection port
Filter
Electronic Expansion Valve (Sub cool)
Double pipe heat exchanger
Electronic Expansion Valve (HP/LP gas)
Electronic Expansion Valve (Suction)
Gas pipe connection port
Liquid pipe connection port
H unit
G unit
F unit
E unit
D unit
C unit
B unit
A unit

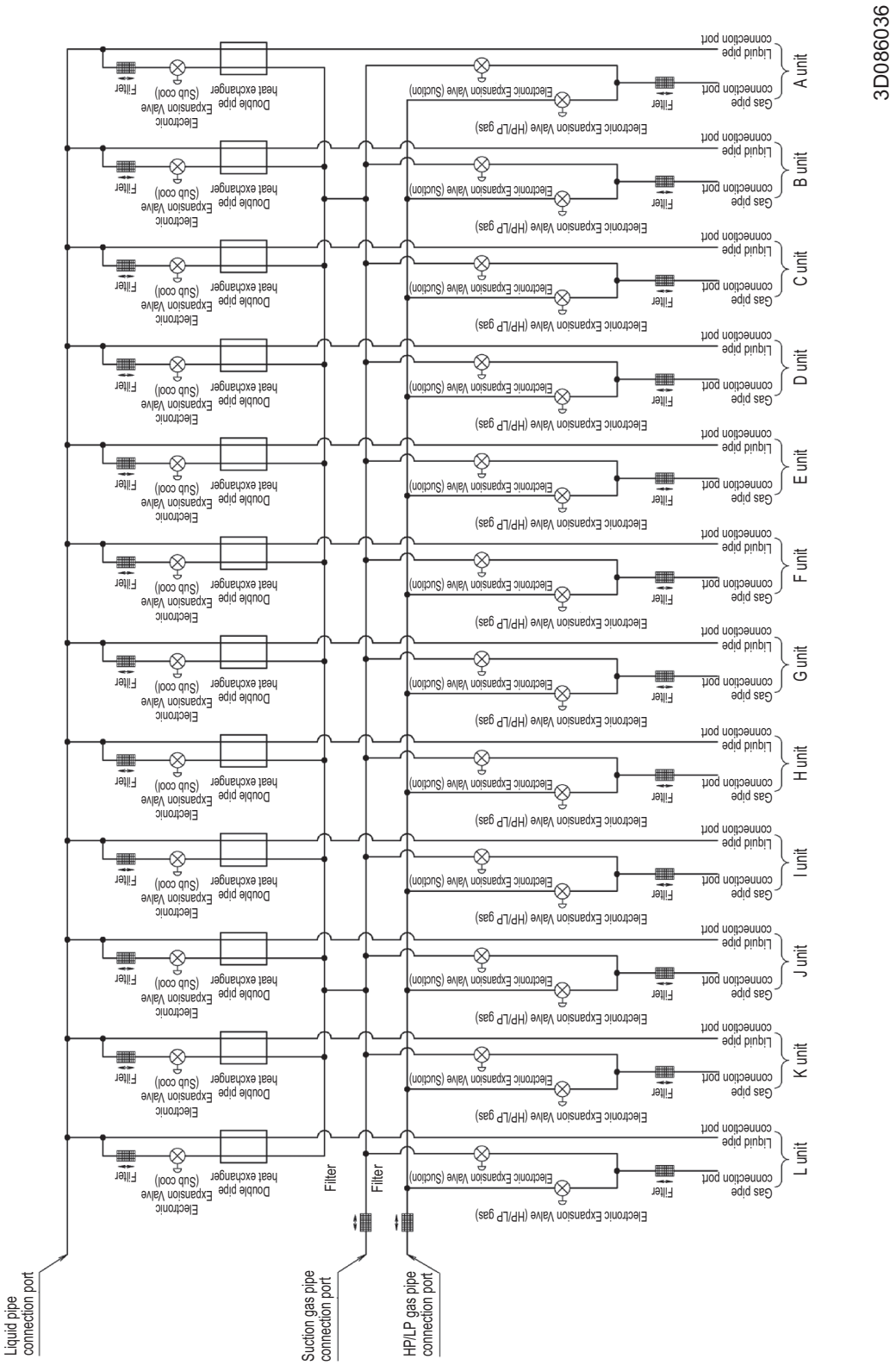
BS10Q14A


3D086035
A unit
B unit
C unit
D unit
E unit
F unit
G unit
H unit
I unit
J unit
Liquid pipe connection port
Gas pipe connection port
Filter
Electronic Expansion Valve (HP/LP gas)
Electronic Expansion Valve (Suction)
Electronic Expansion Valve (Sub cool)
Double pipe heat exchanger
Liquid pipe connection port
Suction gas pipe connection port
HP/LP gas pipe connection port

BS12Q14A

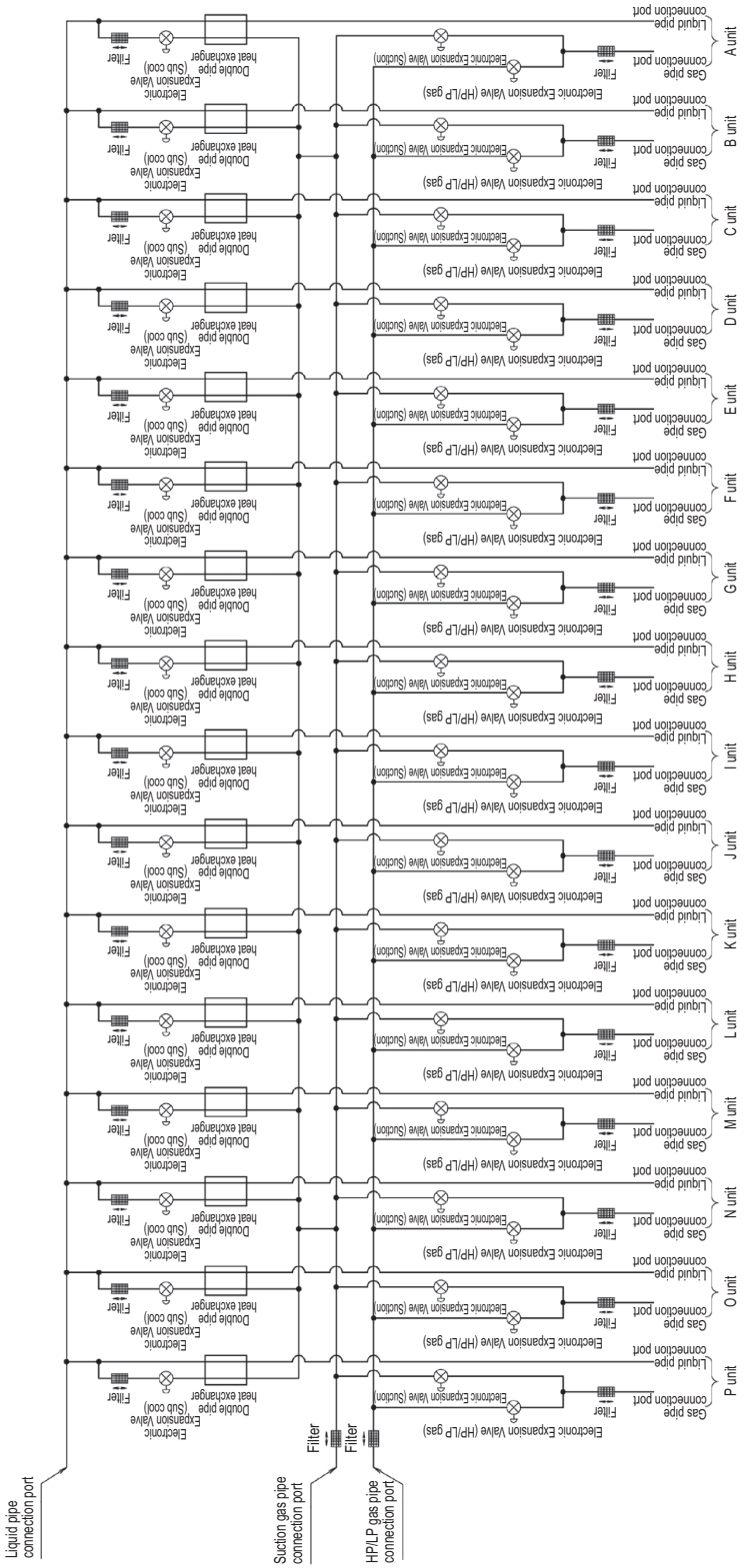

3D086036
A unit
B unit
C unit
D unit
E unit
F unit
G unit
H unit
I unit
J unit
K unit
L unit
Liquid pipe connection port
Gas pipe connection port
Filter
Electronic Expansion Valve (Suction)
Electronic Expansion Valve (HP/LP gas)
Double pipe heat exchanger
Electronic Expansion Valve (Sub cool)
Filter
Liquid pipe connection port
Suction gas pipe connection port
HP/LP gas pipe connection port

BS12Q14A

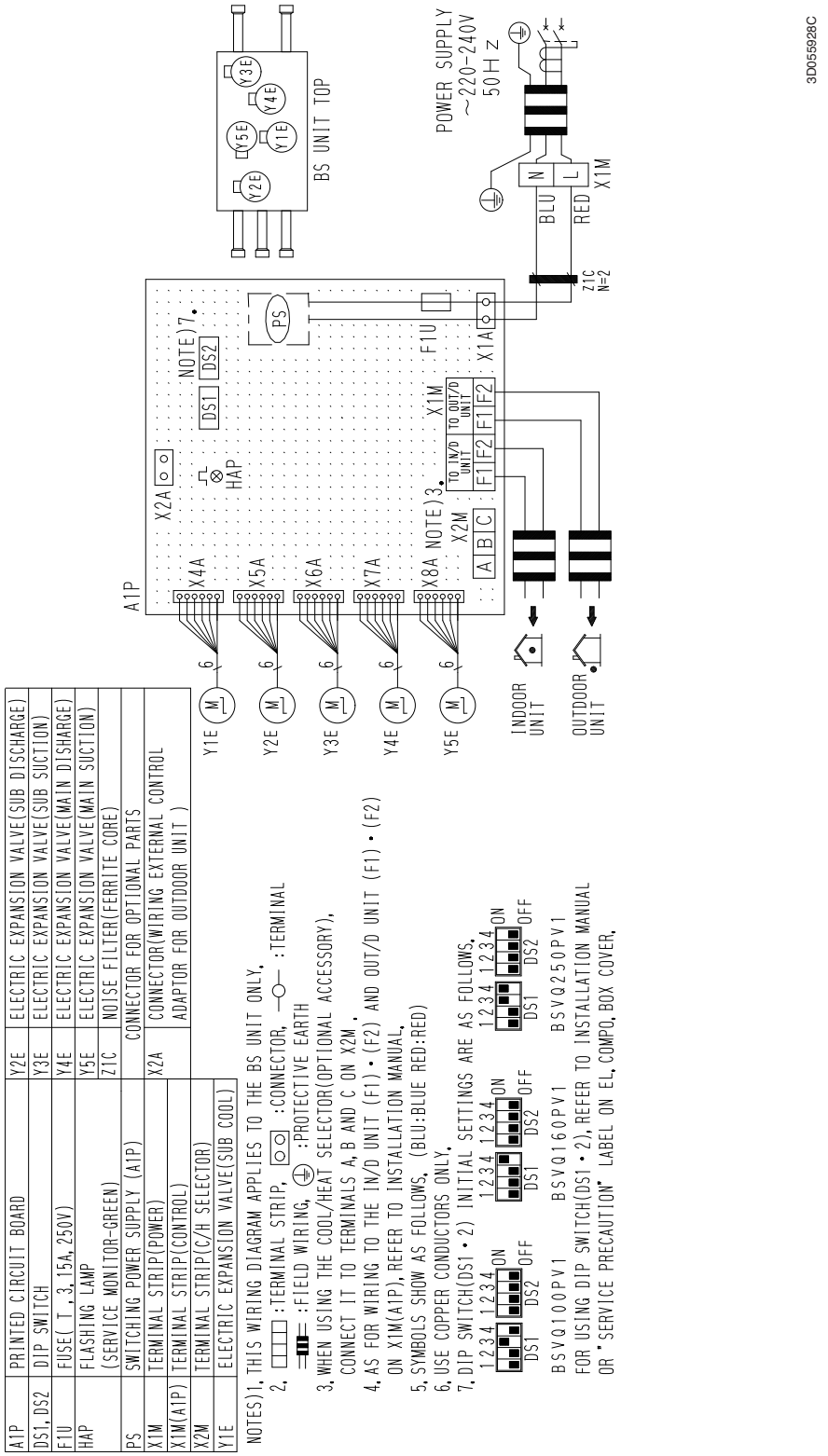

3D086036
A unit
B unit
C unit
D unit
E unit
F unit
G unit
H unit
I unit
J unit
K unit
L unit
Liquid pipe connection port
Gas pipe connection port
Filter
Electronic Expansion Valve (Suction)
Electronic Expansion Valve (HP/LP gas)
Electronic Expansion Valve (Sub cool)
Double pipe heat exchanger
Filter
Liquid pipe connection port
Suction gas pipe connection port
HP/LP gas pipe connection port

BS16Q14A

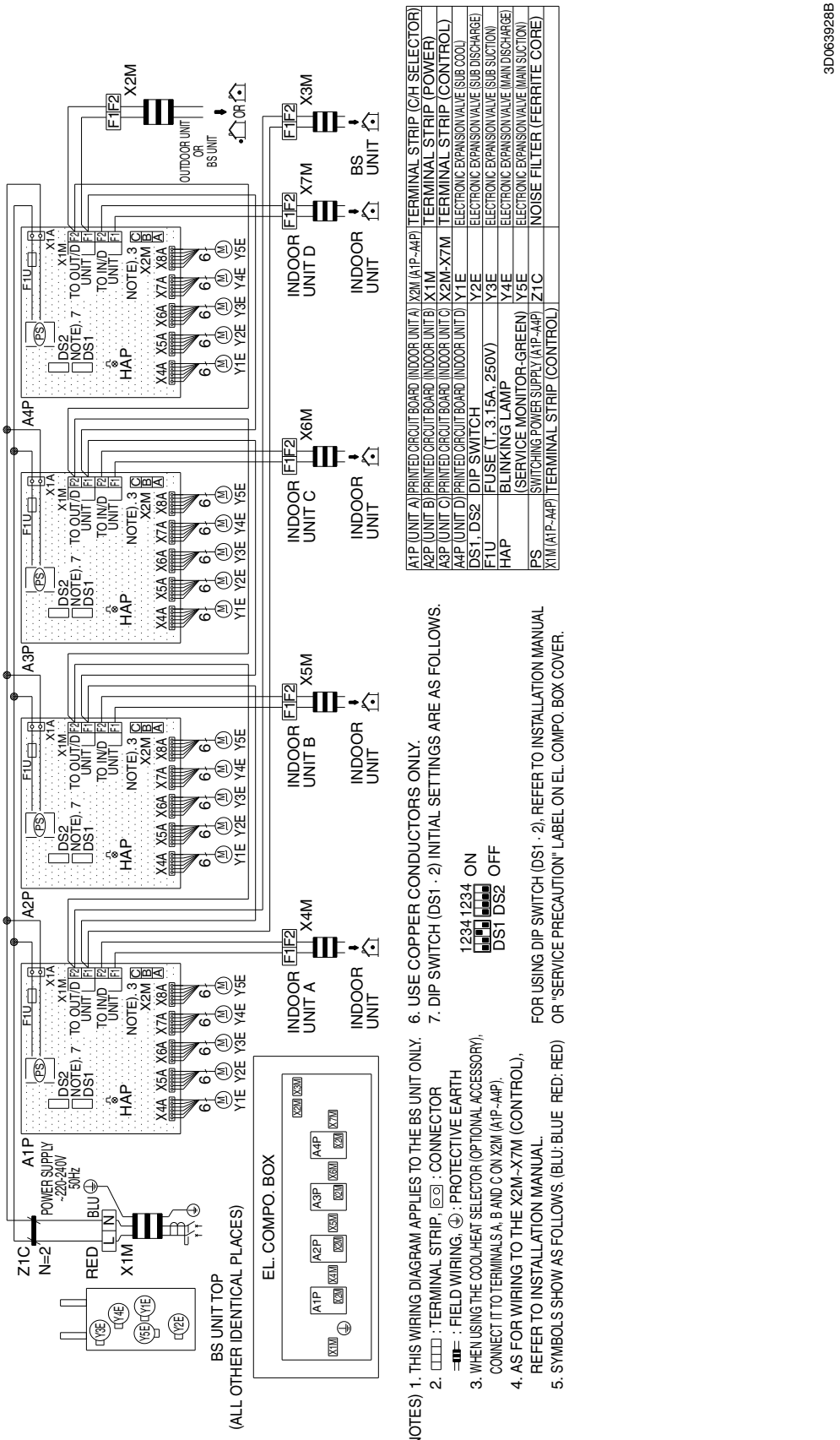
3D086037



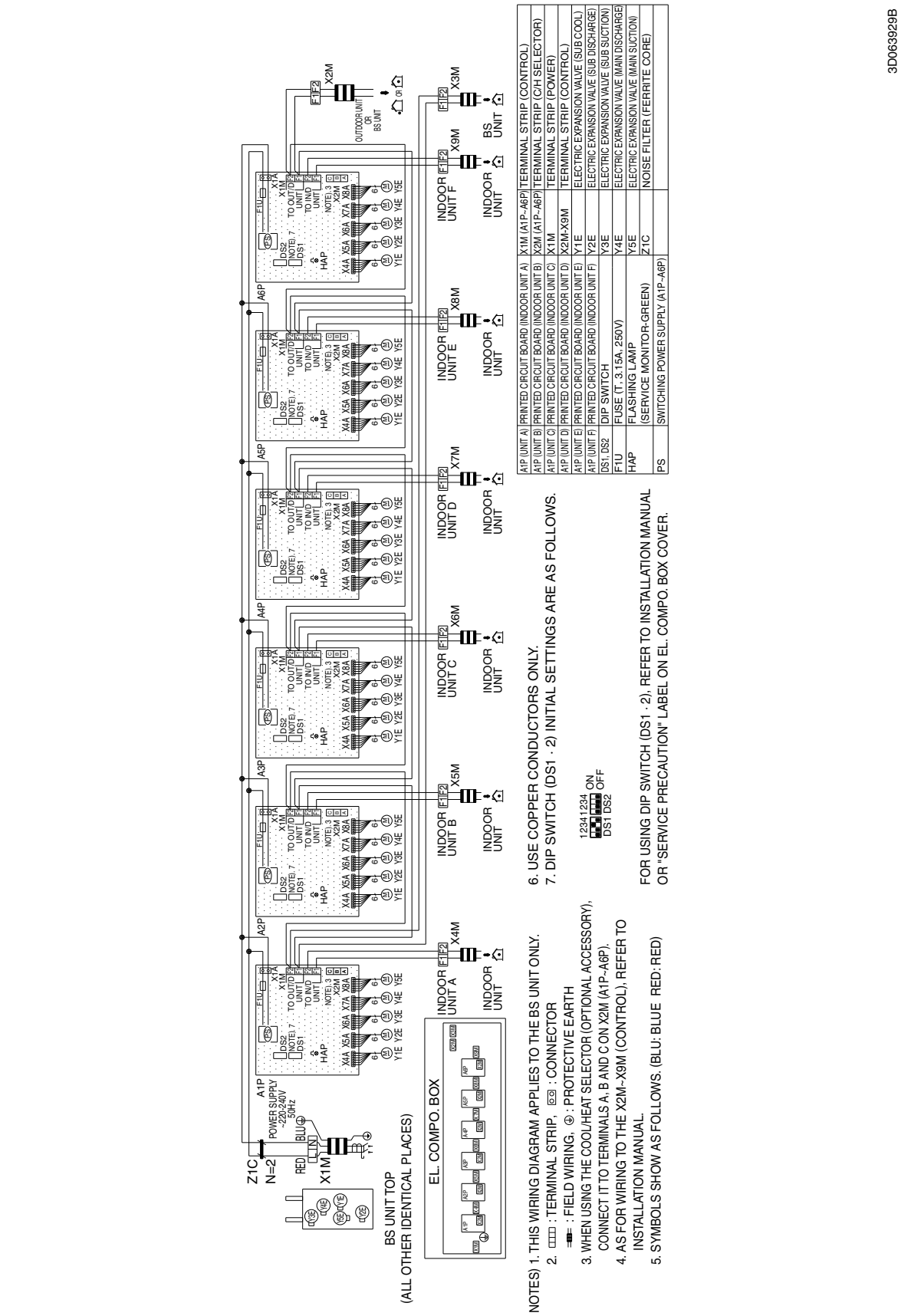
BSVQ100P / 160P / 250PV1



BSV4Q100PV1



BSV6Q100PV1



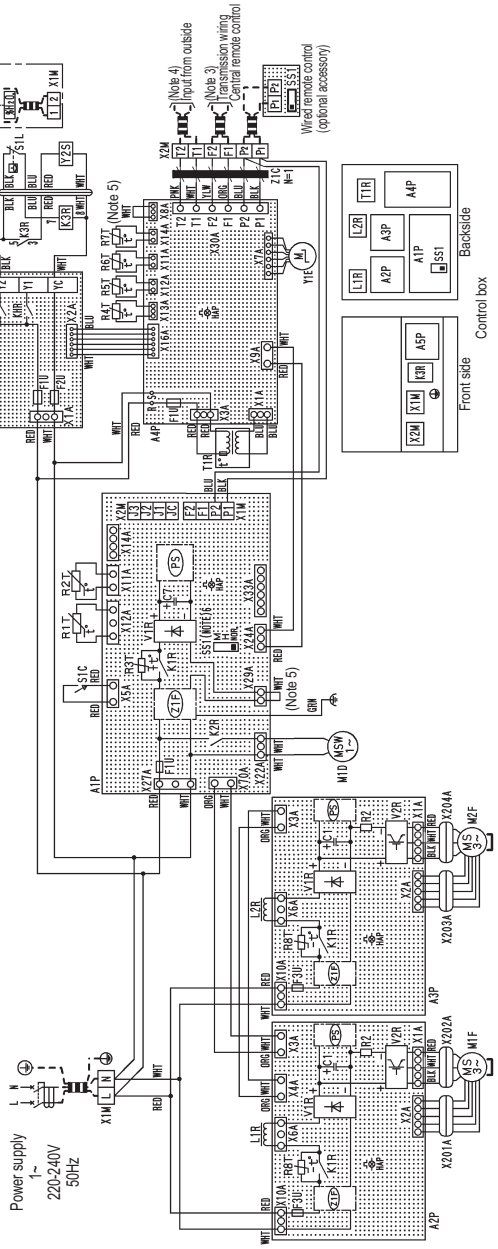
NOTES)
1. THIS WIRING DIAGRAM APPLIES TO THE BS UNIT ONLY.
2. : TERMINAL STRIP, : CONNECTOR
: FIELD WIRING, : PROTECTIVE EARTH
3. WHEN USING THE COOL/HEAT SELECTOR (OPTIONAL ACCESSORY), CONNECT IT TO TERMINALS A, B AND C ON X2M (A1P~A6P).
4. AS FOR WIRING TO THE X2M~X9M (CONTROL), REFER TO INSTALLATION 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.

FOR USING DIP SWITCH (DS1 · 2), REFER TO INSTALLATION MANUAL OR "SERVICE PRECAUTION" LABEL ON EL. COMPO. BOX COVER.

A1P (UNIT A)	PRINTED CIRCUIT BOARD (INDOOR UNIT A)	X1M (A1P~A6P) TERMINAL STRIP (CONTROL)
A1P (UNIT B)	PRINTED CIRCUIT BOARD (INDOOR UNIT B)	X2M (A1P~A6P) TERMINAL STRIP (C/H SELECTOR)
A1P (UNIT C)	PRINTED CIRCUIT BOARD (INDOOR UNIT C)	X1M TERMINAL STRIP (POWER)
A1P (UNIT D)	PRINTED CIRCUIT BOARD (INDOOR UNIT D)	X2M~X9M TERMINAL STRIP (CONTROL)
A1P (UNIT E)	PRINTED CIRCUIT BOARD (INDOOR UNIT E)	Y1E ELECTRIC EXPANSION VALVE (SUB COOL)
A1P (UNIT F)	PRINTED CIRCUIT BOARD (INDOOR UNIT F)	Y2E ELECTRIC EXPANSION VALVE (SUB DISCHARGE)
DS1, DS2	DIP SWITCH	Y3E ELECTRIC EXPANSION VALVE (SUB SUCTION)
F1U	FUSE (T : 3.15A, 250V)	Y4E ELECTRIC EXPANSION VALVE (MAIN DISCHARGE)
HAP	FLASHING LAMP (SERVICE MONITOR-GREEN)	Y5E ELECTRIC EXPANSION VALVE (MAIN SUCTION)
		Z1C NOISE FILTER (FERRITE CORE)
PS	SWITCHING POWER SUPPLY (A1P~A6P)	

2.4 Air Treatment Equipment

VKM50GBMV1
VKM80GBMV1
VKM100GBMV1



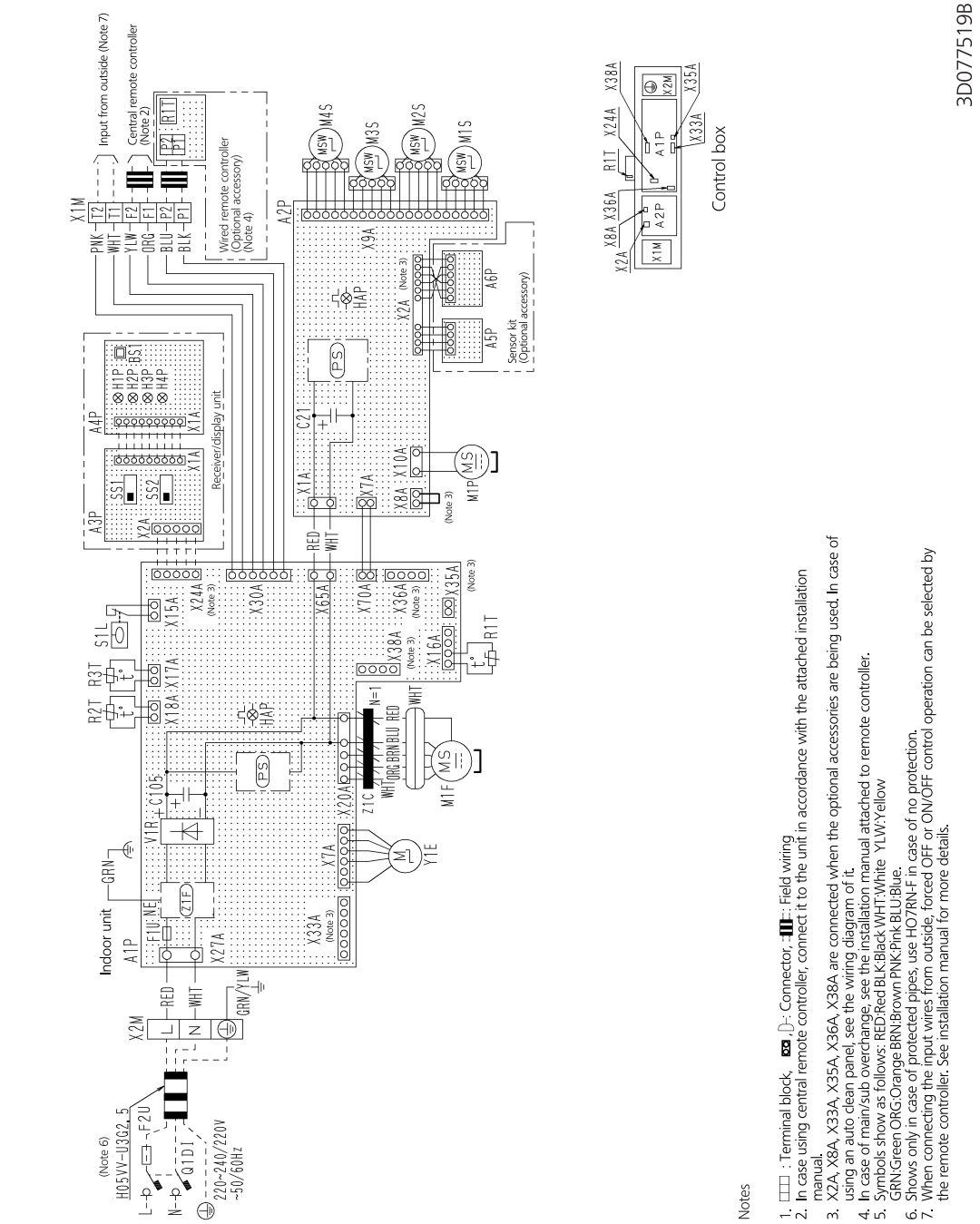
A1P	Printed circuit board	L2R	Reactor	X1M	Terminal block (power supply)
A2P	Printed circuit board (Exhaust fan)	M1D	Motor (damper motor)	X1M	Terminal block (power supply) (S1H)
A3P	Printed circuit board (Supply fan)	M1F	Motor (exhaust fan)	X2M	Terminal block (operation)
A4P	Printed circuit board	M2F	Motor (supply fan)	X1M, X2M	Terminal block (operation) (A1P)
A5P	Printed circuit board	PS	Switching power supply (A1P, A2P, A3P)	X1M, X2M	Terminal block (operation) (A5P)
C1	Capacitor (A2P, A3P)	R2	Resistor (A2P, A3P)	X20A	Relaying connector
C7	Capacitor (A1P)	R1T	Thermistor (indoor air)	X201A~X204A	Relaying connector
F1U	Fuse T, 6.3A, 250V (A1P)	R2T	Thermistor (outdoor air)	Y1E	Electronic expansion valve
F1U	Fuse Ⓑ, 5A, 250V (A4P)	R3T	Thermistor (PTC) (A1P)	Y2S	Solenoid valve for feed water
F1U, F2U	Fuse Ⓑ, 5A, 250V (A5P)	R4T	Thermistor (coil indoor air)	Z1C	Ferrite core
F3U	Fuse T, 6.3A, 250V (A2P, A3P)	R5T	Thermistor (coil liquid pipe)	Z1F	Noise filter (A1P, A2P, A3P)
HAP	Pilot lamp (service monitor-green) (A1P)	R6T	Thermistor (coil gas pipe)		Remote control
HAP	Pilot lamp (service monitor-green) (A2P, A3P)	R7T	Thermistor (coil outdoor air)	SS1	Selector switch (remote control)
HAP	Pilot lamp (service monitor-green) (A4P)	R8T	Thermistor (NTC) (A2P, A3P)		Local purchase
K1R	Magnetic relay (A1P, A2P, A3P)	S1C	Limit switch (damper motor)	S1H	Humidity controller
K2R	Magnetic relay	S1L	Float switch (humidification)		Connector for option (A1P)
K3R	Magnetic relay (S1L)	SS1	Selector switch (A1P)	X14A	Connector (CO_2 sensor)
KCR,KFR	Magnetic relay (A5P)	T1R	Transformer (220-240V/22V)	X33A	Connector (adapter for wiring)
KHR,KHuR	Magnetic relay (A5P)	V1R	Diode bridge (A1P, A2P, A3P)		
L1R	Reactor	V2R	Power module (A2P, A3P)		

NOTES

1. ⊡, ⊐: connector, □□□□, -○-: terminal, ⊡□: short circuit connector
2. -■■-: field wiring
3. In case using central remote control, connect it to the unit in accordance with the attached manual.
4. When connecting the input wires from outside, forced OFF or ON/OFF control operation can be selected by remote control. In details, refer to the installation manual attached to the unit.
5. Do not remove short circuit connector of X8A (A4P), X29A (A1P). If removed, the unit will not work.
6. SS1(A1P) has already been set to "NOR". At factory set, the unit will not work if the settings are changed.
7. In case attached humidity controller, remove short circuit line of between X1M (1) and X1M(2).
8. SS1(A5P) has already been set to "OFF". At factory set, humidifying becomes impossible, if the settings are changed.
9. Symbols shown as follows
   BLK: BLACK, RED: RED, BLU: BLUE, WHT: WHITE, YLW: YELLOW, ORG: ORANGE, GRN: GREEN.

2.5 Indoor Unit

FXFQ-A



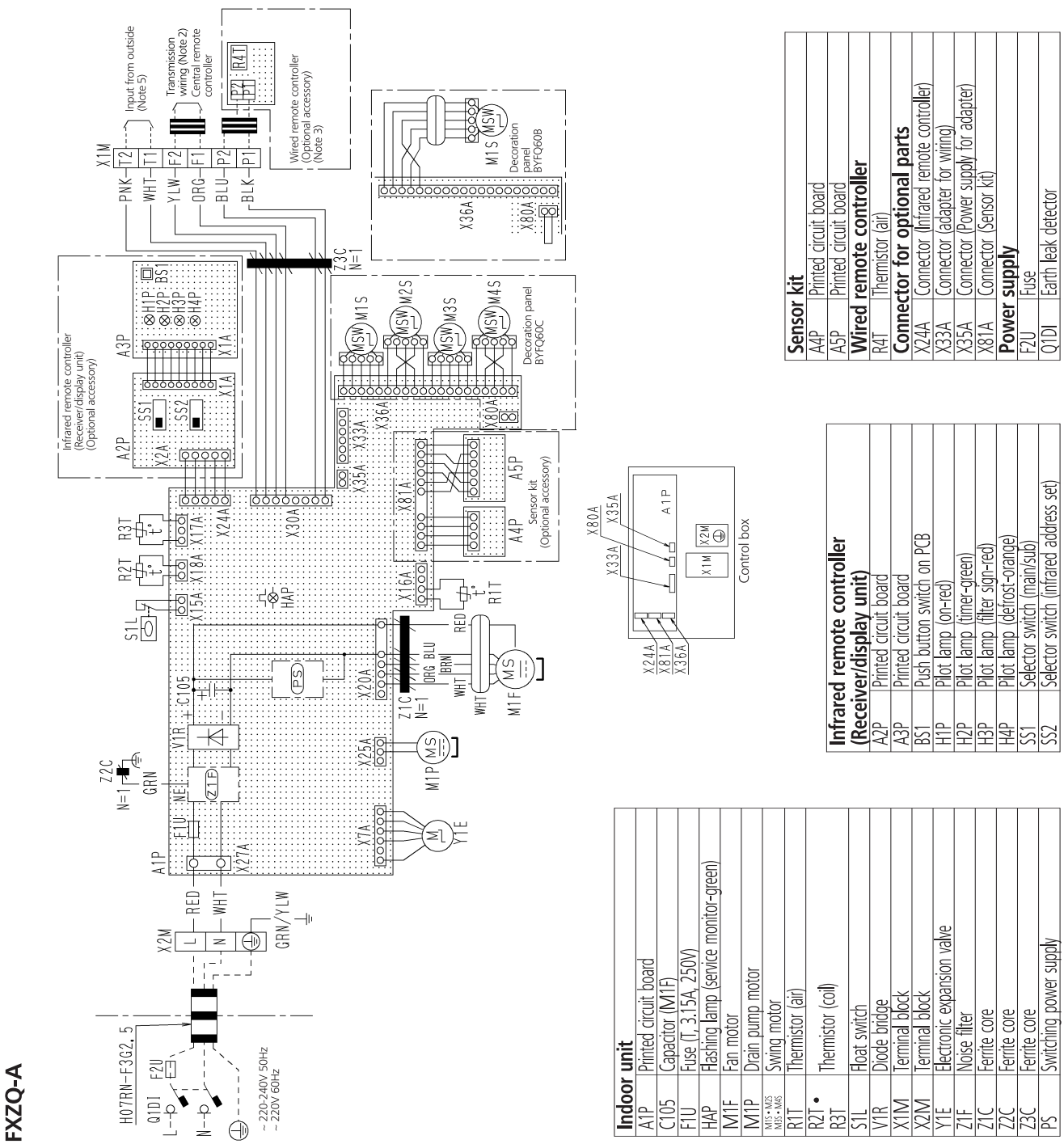
FXFQ-A

Indoor unit		
A1P	Printed circuit board	
A2P	Printed circuit board	
C21	Capacitor	
C105	Capacitor	
F1U	Fuse (T.3.15A, 250V)	
F2U	Field fuse	
HAP	Light emitting diode (service monitor green)	
M1F	Motor (indoor fan)	
M1P	Motor (drain pump)	
M1S-M4S	Motor (swing flap)	
Q1DI	Earth leak detector	
R1T	Thermistor (air)	
R2•R3T	Thermistor (coil)	
S1L	Float switch	
V1R	Diode bridge	
X1M	Terminal block	
X2M	Terminal block	
Y1E	Electronic expansion valve	
Z1C	Ferrite core (Noise filter)	
Z1F	Noise filter	
PS	Power supply circuit	
Wired remote controller		
R1T	Thermistor (air)	
Receiver/display unit (Attached to infrared remote controller)		
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 (infrared address set)	
Connector for optional parts		
X2A	Connector (Sensor kit)	
X8A	Connector (Auto clean panel)	
X24A	Connector (Infrared remote controller)	
X33A	Connector (adaptor for wiring)	
X35A	Connector (group control adapter)	
X36A	Connector (Auto clean panel)	
X38A	Connector (Multi tenant)	

Notes

1. □□□ : Terminal block, ⌧, ⌷: Connector, ——: Field wiring
2. In case using central remote controller, connect it to the unit in accordance with the attached installation manual.
3. X2A, X8A, X33A, X35A, X36A, X38A are connected when the optional accessories are being used. In case of using an auto clean panel, see the wiring diagram of it.
4. In case of main/sub overchange, see the installation manual attached to remote controller.
5. Symbols show as follows: RED:Red BLK:Black WHT:White YLW:Yellow GRN:Green ORG:Orange BRN:Brown PNK:Pink BLU:Blue.
6. Shows only in case of protected pipes, use HO7RN-F in case of no protection.
7. When connecting the input wires from outside, forced OFF or ON/OFF control operation can be selected by the remote controller. See installation manual for more details.

FXZQ-A

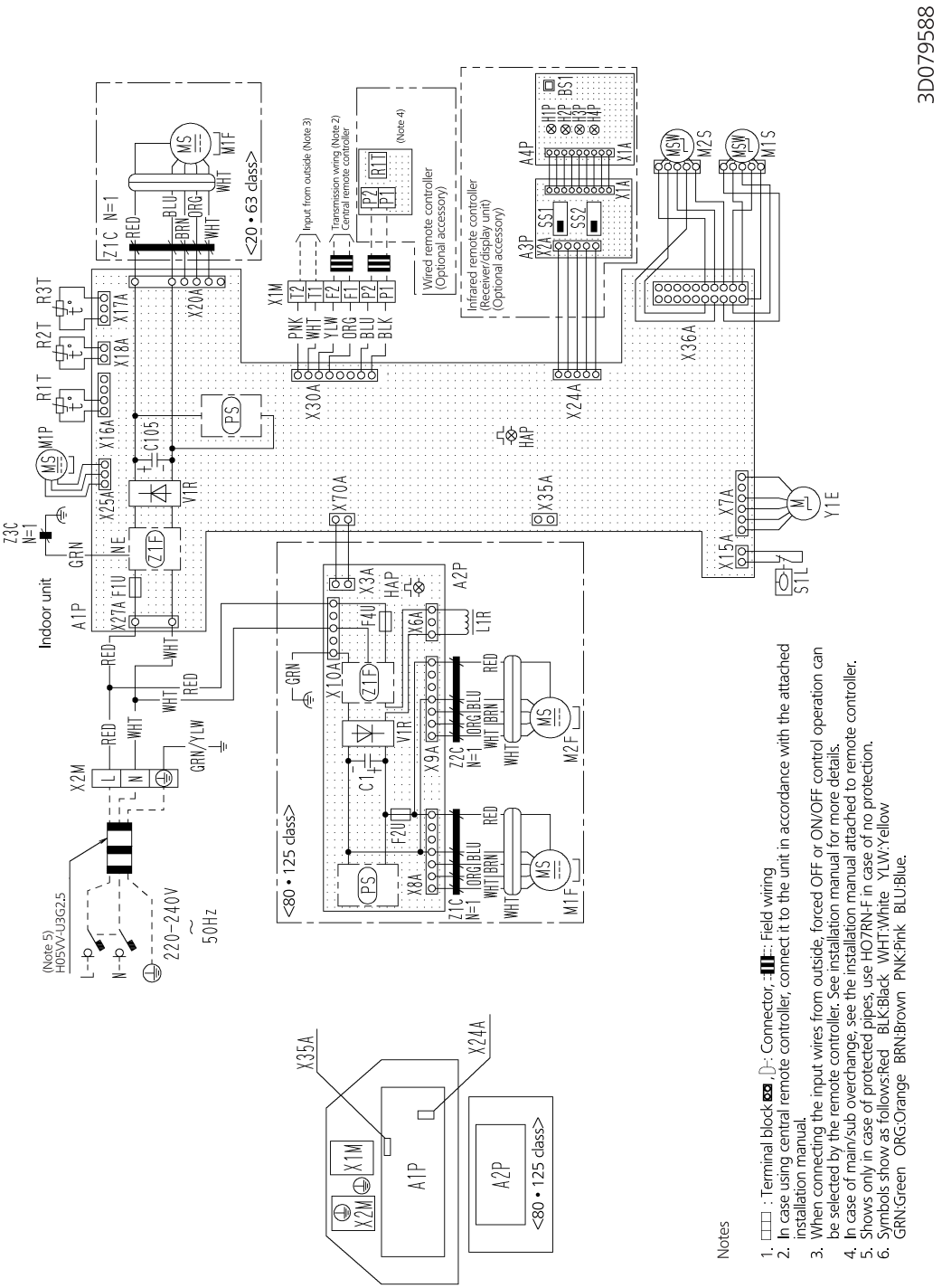


Indoor unit	
A1P	Printed circuit board
C105	Capacitor (M1F)
F1U	Fuse (T, 3.15A, 250V)
HAP	Flashing lamp (service monitor-green)
M1F	Fan motor
M1P	Drain pump motor
M1S • M2S M3S • M4S	Swing motor
R1T	Thermistor (air)
R2T • R3T	Thermistor (coil)
S1L	Float switch
V1R	Diode bridge
X1M	Terminal block
X2M	Terminal block
Y1E	Electronic expansion valve
Z1F	Noise filter
Z1C	Ferrite core
Z2C	Ferrite core
Z3C	Ferrite core
PS	Switching power supply

Infrared remote controller (Receiver/display unit)	
A2P	Printed circuit board
A3P	Printed circuit board
BS1	Push button switch on PCB
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 (infrared address set)

Sensor kit	
A4P	Printed circuit board
A5P	Printed circuit board
Wired remote controller	
R4T	Thermistor (air)
Connector for optional parts	
X24A	Connector (Infrared remote controller)
X33A	Connector (adapter for wiring)
X35A	Connector (Power supply for adapter)
X81A	Connector (Sensor kit)
Power supply	
F2U	Fuse
Q1DI	Earth leak detector

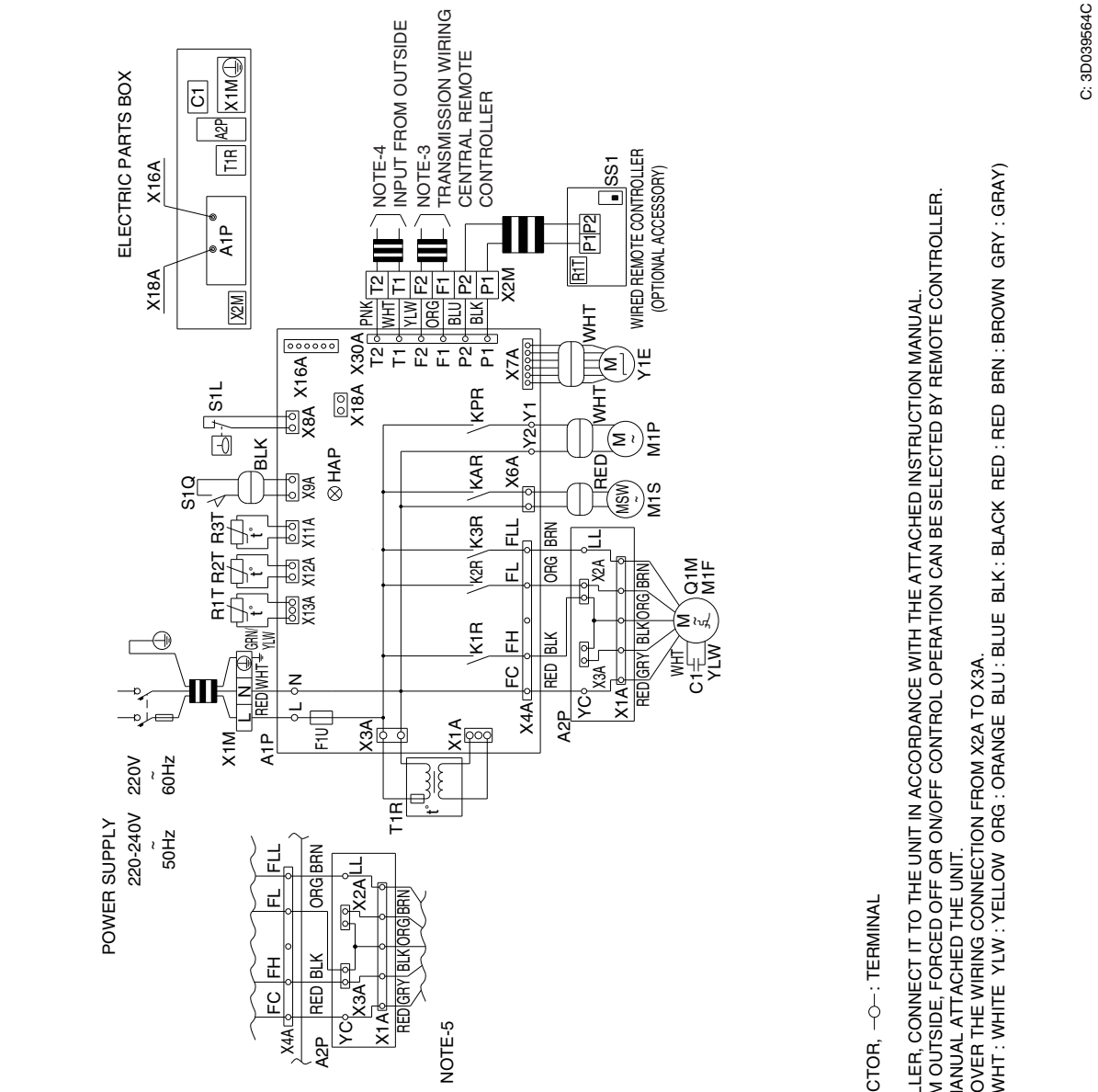
FXCQ-A



FXCQ-A

Indoor unit	
A1P•A2P	Printed circuit board
C105•C1	Capacitor
F1U	Fuse (T,3.15A, 250V)
F2U	Fuse (T,5A, 250V)
F4U	Fuse (T,6.3A, 250V)
HAP	Flashing lamp (service monitor-green) (A1P,A2P)
L1R	Reactor
M1F•M2F	Motor (indoor fan)
M1P	Motor (drain pump)
M1S•M2S	Motor (swing blade)
PS	Power supply circuit (A1P,A2P)
R1T	Thermistor (air)
R2T•R3T	Thermistor (coil)
S1L	Float switch
V1R	Diode bridge
X1M•X2M	Terminal block
Y1E	Electronic expansion valve
Z1C	Ferrite core
Z2C	Ferrite core
Z3C	Ferrite core
Z1F	Noise filter (A1P,A2P)
Infrared remote controller (Receiver/display unit)	
A3P•A4P	Printed circuit board
BS1	Push button switch (ON/OFF)
H1P	Pilot lamp (on-red)
H2P	Pilot lamp (timer-green)
H3P	Pilot lamp (filter sign-red)
HAP	Pilot lamp (defrost-orange)
SS1	Selector switch (main/sub)
SS2	Selector switch (infrared address set)
Connector for optional parts	
X24A	Connector (Infrared remote controller)
X35A	Connector (Power supply for adapter)

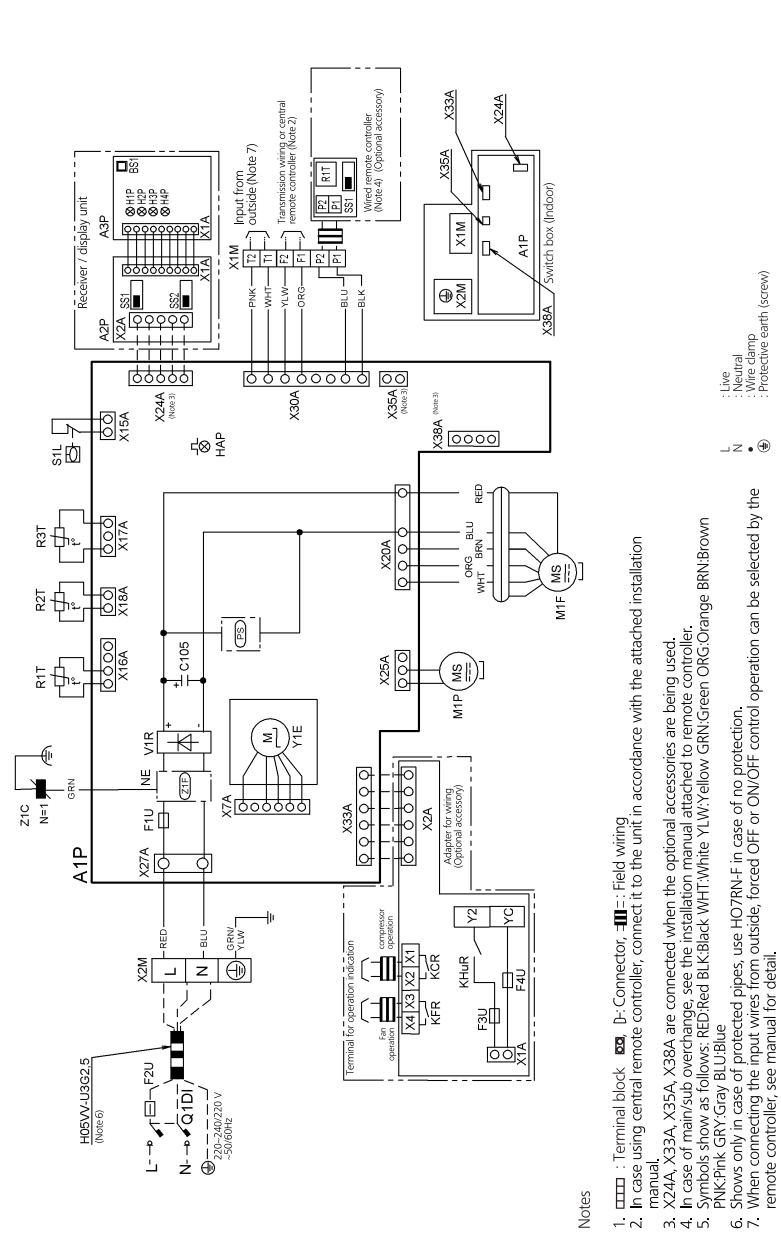
FXKQ-A



INDOOR UNIT	
A1P	PRINTED CIRCUIT BOARD
A2P	TERMINAL BOARD
C1	CAPACITOR (M1F)
F1U	FUSE (Ⓑ, 5A, 250V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)
K1R-K3R	MAGNETIC RELAY (M1F)
KAR	MAGNETIC RELAY (M1S)
KPR	MAGNETIC RELAY (M1P)
M1F	MOTOR (INDOOR FAN)
M1P	MOTOR (DRAIN PUMP)
M1S	MOTOR (SWING FLAP)
Q1M	THERMO SWITCH (M1F EMBEDDED)
R1T	THERMISTOR (AIR)
R2T-R3T	THERMISTOR (COIL)
S1L	FLOAT SWITCH
S1Q	LIMIT SWITCH (SWING FLAP)
T1R	TRANSFORMER (220-240V/22V)
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
X16A	CONNECTOR (ADAPTOR FOR WIRING)
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 INSTRUCTION MANUAL.
4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
5. IN CASE HIGH E. S. P. OPERATION, CHANGE OVER THE WIRING CONNECTION FROM X2A TO X3A.
6. SYMBOLS SHOW AS FOLLOWS. (PNK : PINK WHT : WHITE YLW : YELLOW ORG : ORANGE BLU : BLUE BLK : BLACK RED : RED BRN : BROWN GRY : GRAY)
7. UES COPPER CONDUCTORS ONLY.

FXDQ-A



3D080362B

FXDQ-A

Indoor unit
- A1P : Printed circuit board
- C105 : Capacitor
- E : Power supply circuit
- F1U : Fuse (T, 3.15A, 250V)
- F2U : Field use
- Z1C : Ferrite core (Noise filter)
- H4P : Light emitting diode (Service monitor-green)
- M1F : Motor (Fan)
- M1P : Motor (Drain pump)
- Q1DI : Earth leak detector
- R1T : Thermistor (Air)
- R2T,R3T : Thermistor (Coil)
- S1L : Float switch
- V1R : Diode bridge
- X1M : Terminal block(Control)
- X2M : Terminal block(Power supply)
- Z1C : Noise filter

Receiver / display unit
- A2P : Printed circuit board
- A3P : Printed circuit board
- BS1 : Push button (On/Off)
- H1P : Light emitting diode (on-red)
- H2P : Light emitting diode (filter sign-red)
- H3P : Light emitting diode (timer-green)
- H4P : Light emitting diode (defrost-orange)
- SS1 : Selector switch(Main/Sub)
- SS2 : Selector switch(Infrared adress set)

Connector for optional parts
- X24A : Connector (Infrared remote controller)
- X33A : Connector (Adapter for wiring)
- X35A : Connector (Power supply connector)
- X38A : Connector (Multitenant)

Adapter for wiring
- F3U,F4U : Fuse ((B), 5A, 250V)
- KFR, KCR, KHuR : Magnetic relay

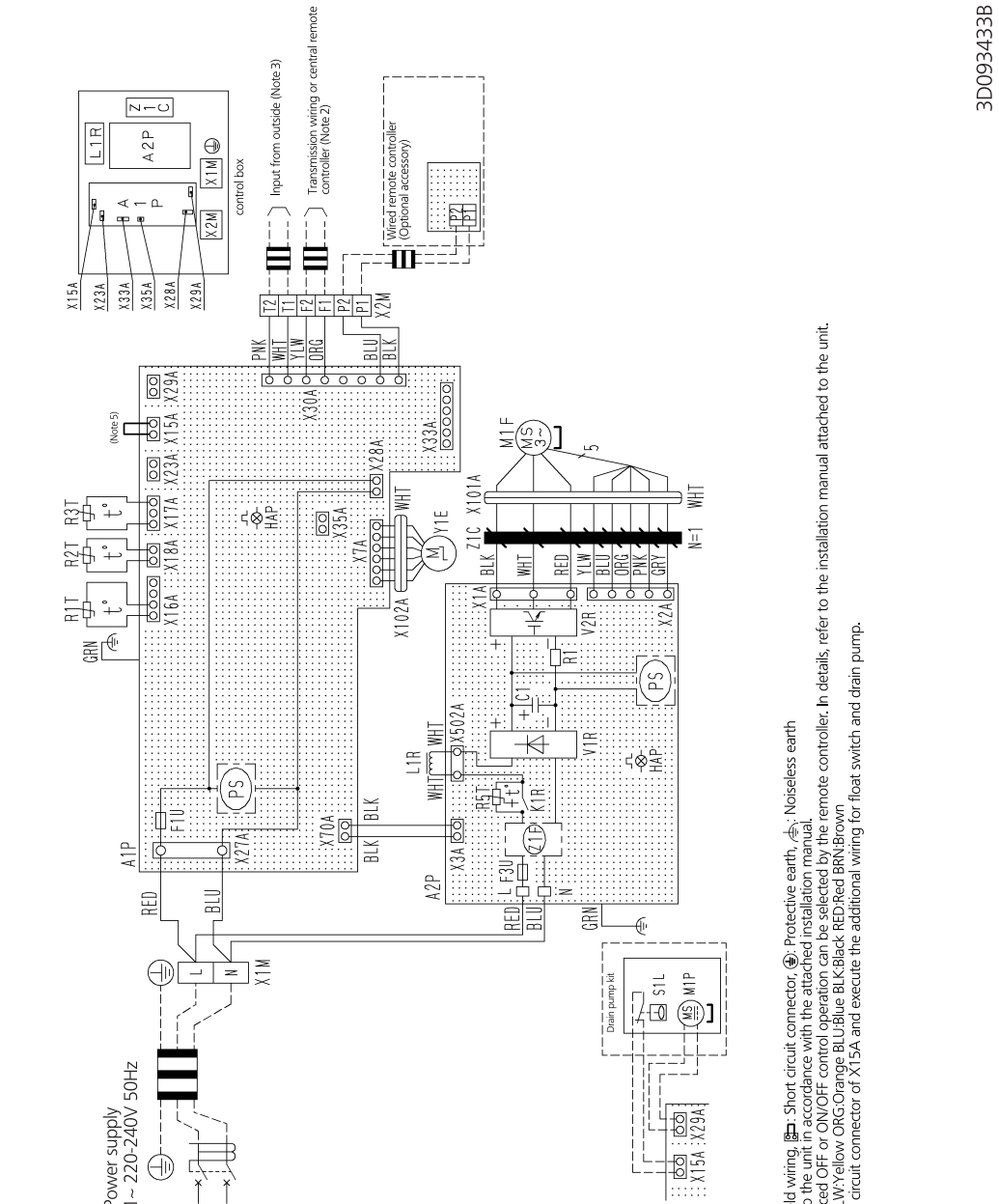
Wired remote controller
- R1T : Thermistor (air)
- SS1 : Select switch (MAIN-SUB)

Notes

1. ▭▭ : Terminal block, ⊠ : Connector, ▬ : Field wiring
2. In case using central remote controller, connect it to the unit in accordance with the attached installation manual.
3. X24A, X33A, X35A, X38A are connected when the optional accessories are being used.
4. In case of main/sub overchange, see the installation manual attached to remote controller.
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
6. Shows only in case of protected pipes, use HO7RN-F in case of no protection.
7. When connecting the input wires from outside, forced OFF or ON/OFF control operation can be selected by the remote controller, see manual for detail.

L : Live
N : Neutral
• : Wire clamp
⊕ : Protective earth (screw)

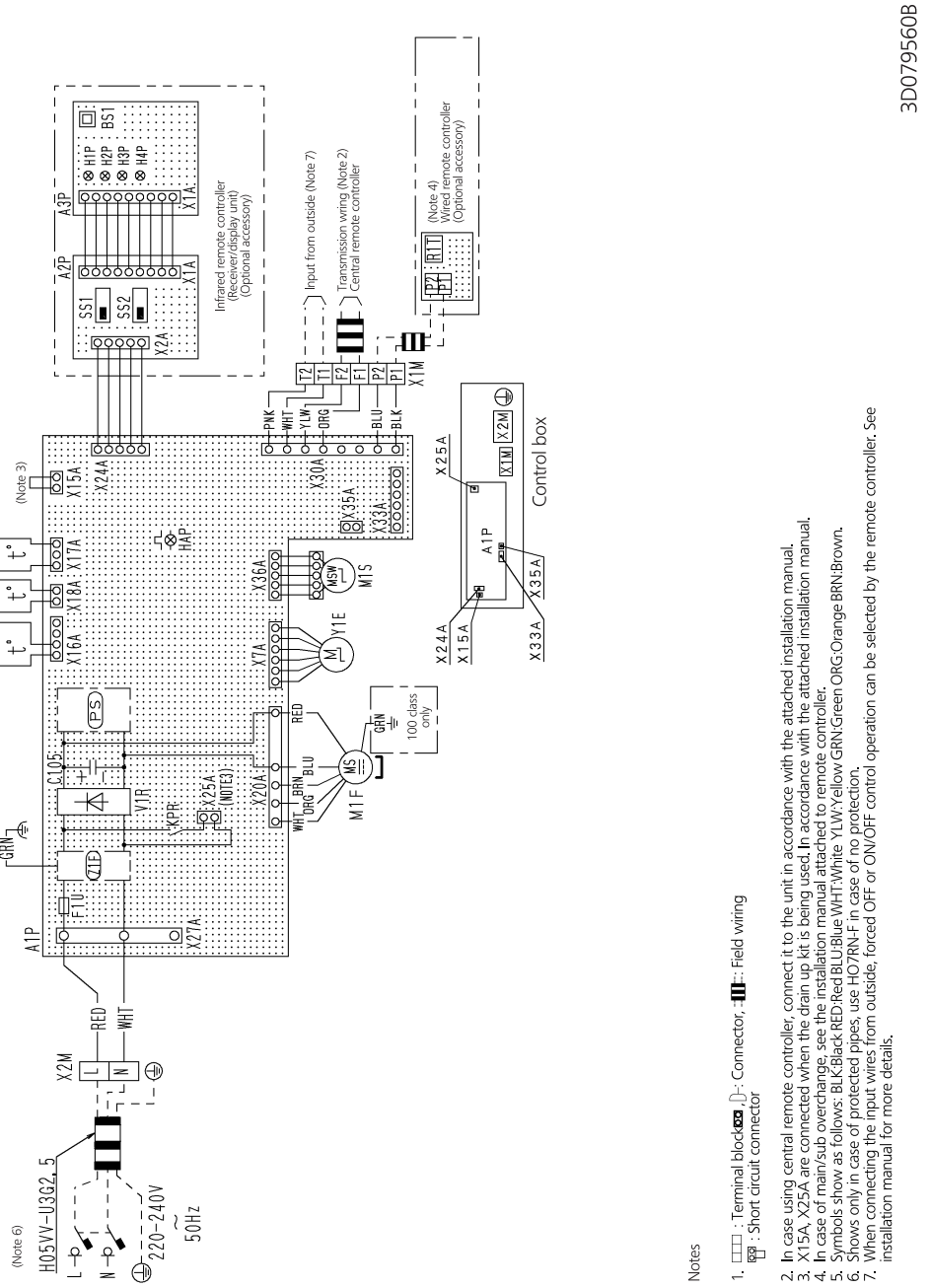
FXMQ-MB



Notes

1. ▭ : Terminal strip ⊠ ▷◁ Connector, ▬ : Field wiring, ⊠ : Short circuit connector, ⏚ : Protective earth, ⏚ : Noiseless earth
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 outside, forced OFF or ON/OFF control operation can be selected by the remote controller. In details, refer to the installation manual attached to the unit.
4. Symbols shows as follows: PNK:Pink WHT:White YLW:Yellow ORG:Orange BLU:Blue BLK:Black RED:Red BRN:Brown
5. In case installing the drain pump, remove the short circuit connector of X15A and execute the additional wiring for float switch and drain pump.

FXHQ-A



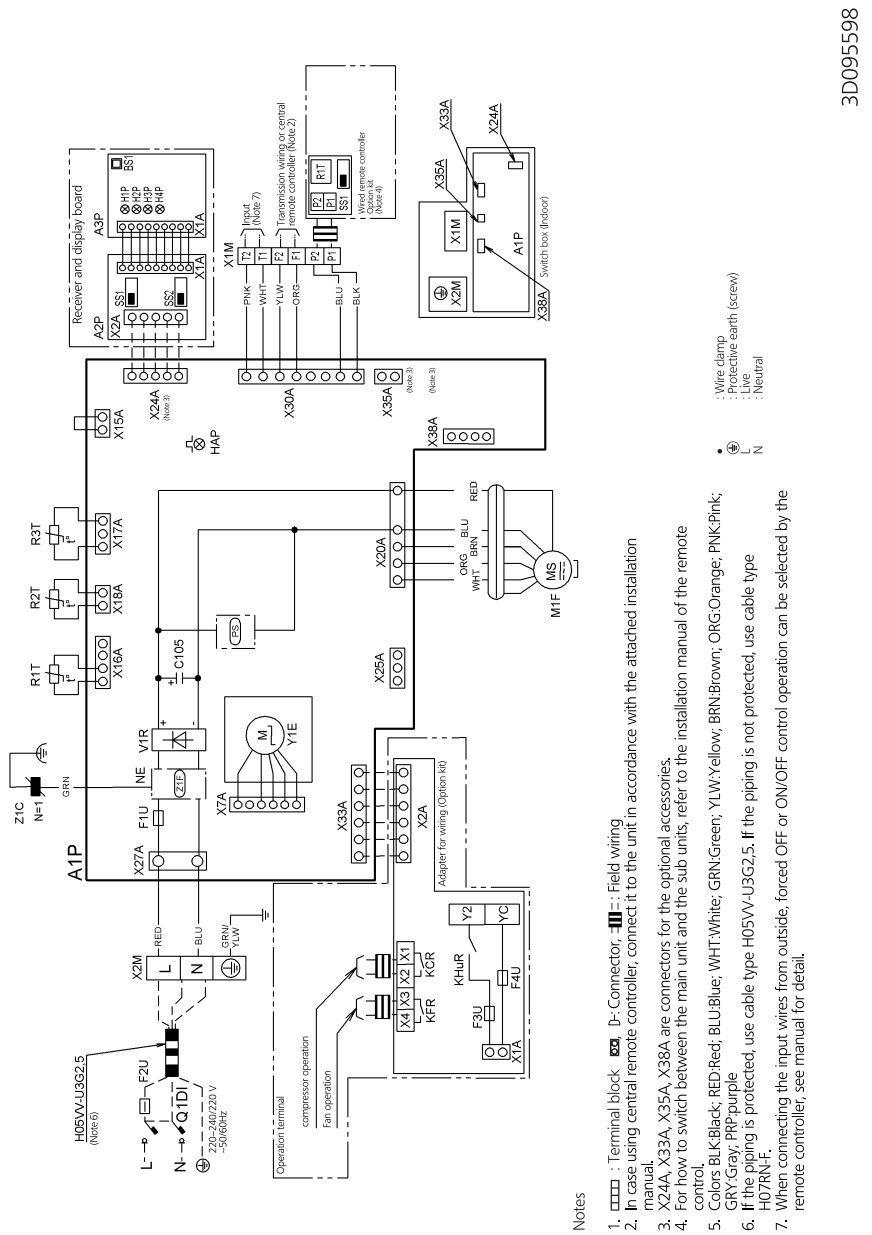
Indoor unit		
A1P	Printed circuit board	
C10S	Capacitor	
F1U	Fuse (T3.15A 250V)	
HAP	Flashing lamp (service monitor-green)	
KPR	Magnetic relay (drain pump)	
M1F	Motor (indoor fan)	
M1S	Motor (swing flade)	
PS	Power supply circuit	
R1T	Thermistor (air)	
R2T	Thermistor (coil)	
R3T	Thermistor (coil)	
V1R	Diode bridge	
X1M	Terminal block	
X2M	Terminal block	
Y1E	Electronic expansion valve	
Z1F	Noise filter	
Connector for optional parts		
X15A	Connector (Heat switch)	
X24A	Connector (Infrared remote controller)	
X25A	Connector (Drain pump)	
X33A	Connector (Adaptor for wiring)	
X35A	Connector (Power supply for adapter)	
Wired remote controller		
R1T	Thermistor (air)	
Infrared remote controller (Receiver/display unit)		
A2P	Printed circuit board	
A3P	Printed circuit board	
BS1	Push button (on/off)	
H1P	Pilot lamp (on-red)	
H2P	Pilot lamp (time-green)	
H3P	Pilot lamp (filter sign-red)	
H4P	Pilot lamp (defrost-orange)	
SS1	Selector switch (main/sub)	
SS2	Selector switch (Infrared address set)	

Notes

1. □□□ : Terminal block, ⏚ : Connector, ▮▮▮ : Field wiring
   ⏚ : Short circuit connector
2. In case using central remote controller, connect it to the unit in accordance with the attached installation manual.
3. X15A, X25A are connected when the drain up kit is being used. In accordance with the attached installation manual.
4. In case of main/sub overchange, see the installation manual attached to remote controller.
5. Symbols show as follows: BLK:Black RED:Red BLU:Blue WHT:White YLW:Yellow GRN:Green ORG:Orange BRN:Brown.
6. Shows only in case of protected pipes, use HO7RN-F in case of no protection.
7. When connecting the input wires from outside, forced OFF or ON/OFF control operation can be selected by the remote controller. See installation manual for more details.

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FXNQ-A



FXNQ-A

Indoor unit
A1P : Printed circuit board
C105 : Capacitor
(PS) : Power supply
F1U : Fuse (T, 3.15A, 250V)
F2U : Field fuse
Z1C : Ferrite core
HAP : Light emitting diode (Service monitor-green)
M1F : Motor (Fan)
Q1DI : Earth leakage detector
R1T : Thermistor (Air)
R2T,R3T : Thermistor (Coil)
V1R : Diode bridge
X1M : Terminal block (control)
X2M : Terminal block (Upward liquid pipe connection)
Y1E : Electronic expansion valve
(Z1F) : Noise filter

Receiver and display board
A2P : Printed circuit board
A3P : Printed circuit board
BS1 : Push button (On/Off)
H1P : Light emitting diode (Filter-red)
H2P : Light emitting diode (Error/diagnostic - red)
H3P : Light emitting diode (timer-green)
H4P : Light emitting diode (defrost-orange)
SS1 : Selector switch(Main/Sub)
SS2 : Selector switch(Infrared adress set)

Connector (Optional accessories)
X24A : Connector (Infrared remote controller)
X33A : Connector (Adapter for wiring)
X35A : Connector (Power supply)
X38A : Connector (Multitenant)

Adapter for wiring
F3U,F4U : Fuse ((B), 5A, 250V)
KFR, KCR, KHuR : Magnetic relay

Wired remote controller
R1T : Thermistor (air)
SS1 : Select switch (MAIN-SUB)

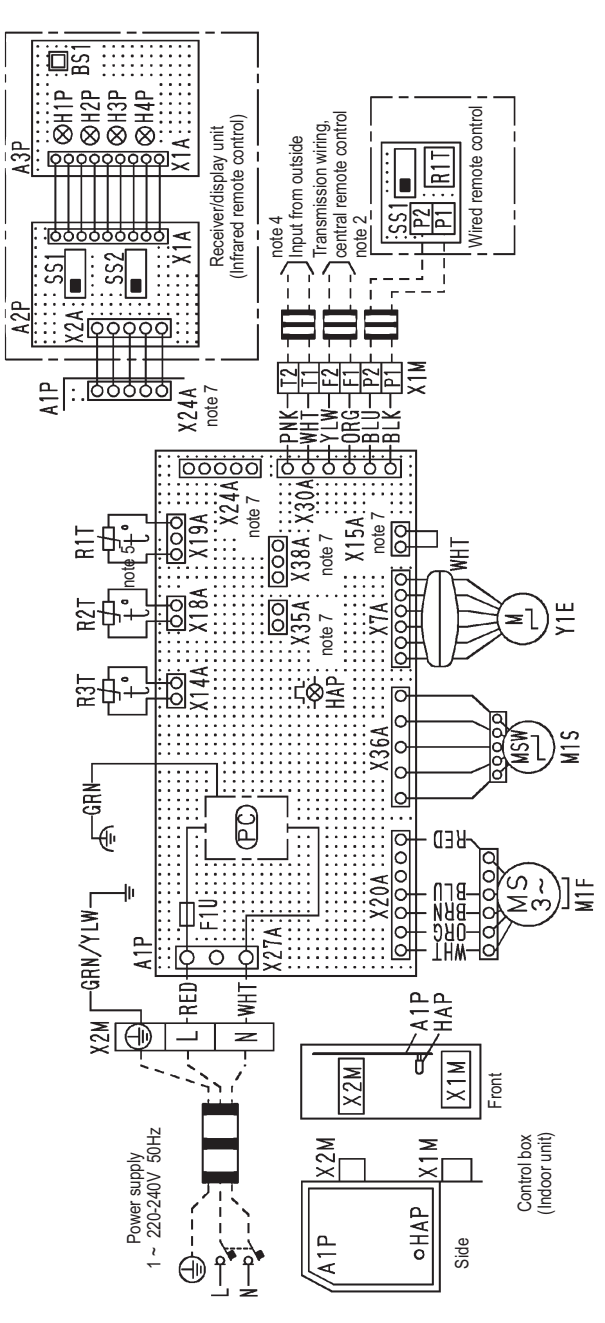
Notes

1. □□□ : Terminal block ⊠ D-Connector ▬ : Field wiring
2. In case using central remote controller, connect it to the unit in accordance with the attached installation manual.
3. X24A, X33A, X35A, X38A are connectors for the optional accessories.
4. For how to switch between the main unit and the sub units, refer to the installation manual of the remote control.
5. Colors BLK:Black; RED:Red; BLU:Blue; WHT:White; GRN:Green; YLW:Yellow; BRN:Brown; ORG:Orange; PNK:Pink; GRY:Gray; PRP:purple
6. If the piping is protected, use cable type H05VV-U3G2.5. If the piping is not protected, use cable type H07RN-F.
7. When connecting the input wires from outside, forced OFF or ON/OFF control operation can be selected by the remote controller, see manual for detail.

● : Wire clamp
⏚ : Protective earth (screw)
L : Live
N : Neutral

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FXAQ-PA

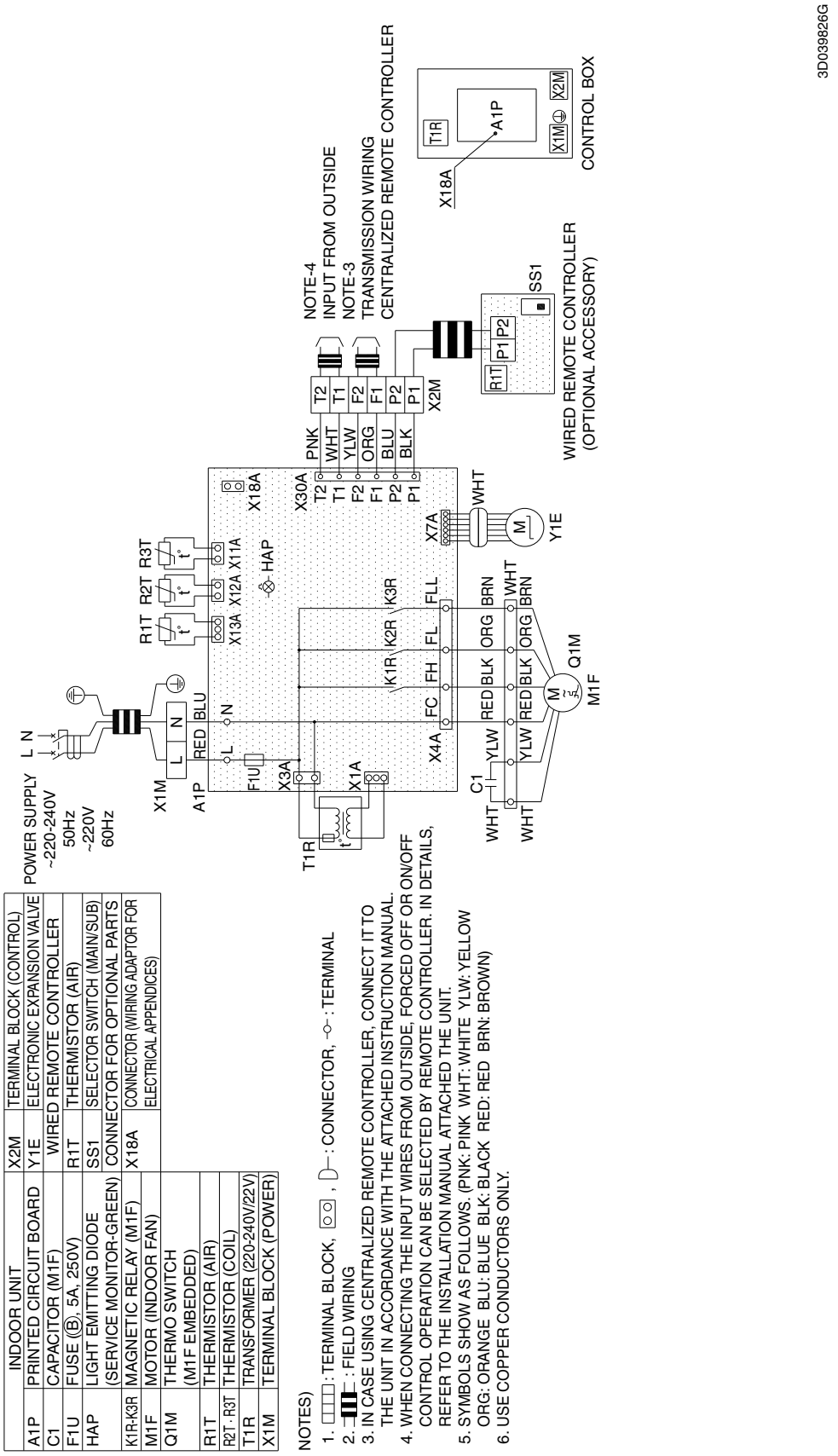


Indoor unit		Receiver/display unit (attached to infrared remote control)		Connector for optional parts	
A1P	Printed circuit board	A2P	Printed circuit board	X15A	Connector (float switch)
F1U	Fuse (T, 3.15AH, 250V)	A3P	Printed circuit board	X24A	Connector (infrared remote control)
HAP	Light emitting diode (service monitor green)	BS1	Push button (on/off)	X35A	Connector (group control adapter)
M1F	Motor (indoor fan)	H1P	Light emitting diode (on-red)	X38A	Connector (adapter for multi tenant)
M1S	Motor (swing flap)	H2P	Light emitting diode (timer-green)		
R1T	Thermistor (air)	H3P	Light emitting diode (filter sign-red)		
R2T	Thermistor (coil liquid pipe)	H4P	Light emitting diode (defrost-orange)		
R3T	Thermistor (coil gas pipe)	SS1	Selector switch (main/sub)		
X1M	Terminal block (control)	SS2	Selector switch (wireless address set)		
X2M	Terminal block (power)		Wired remote control		
Y1E	Electronic expansion valve	R1T	Thermistor (air)		
PC	Power circuit	SS1	Select switch (main/sub)		

GRN: green	
PNK: pink	WHT: white
YLW: yellow	ORG: orange
BLU: blue	BLK: black
RED: red	BRN: brown

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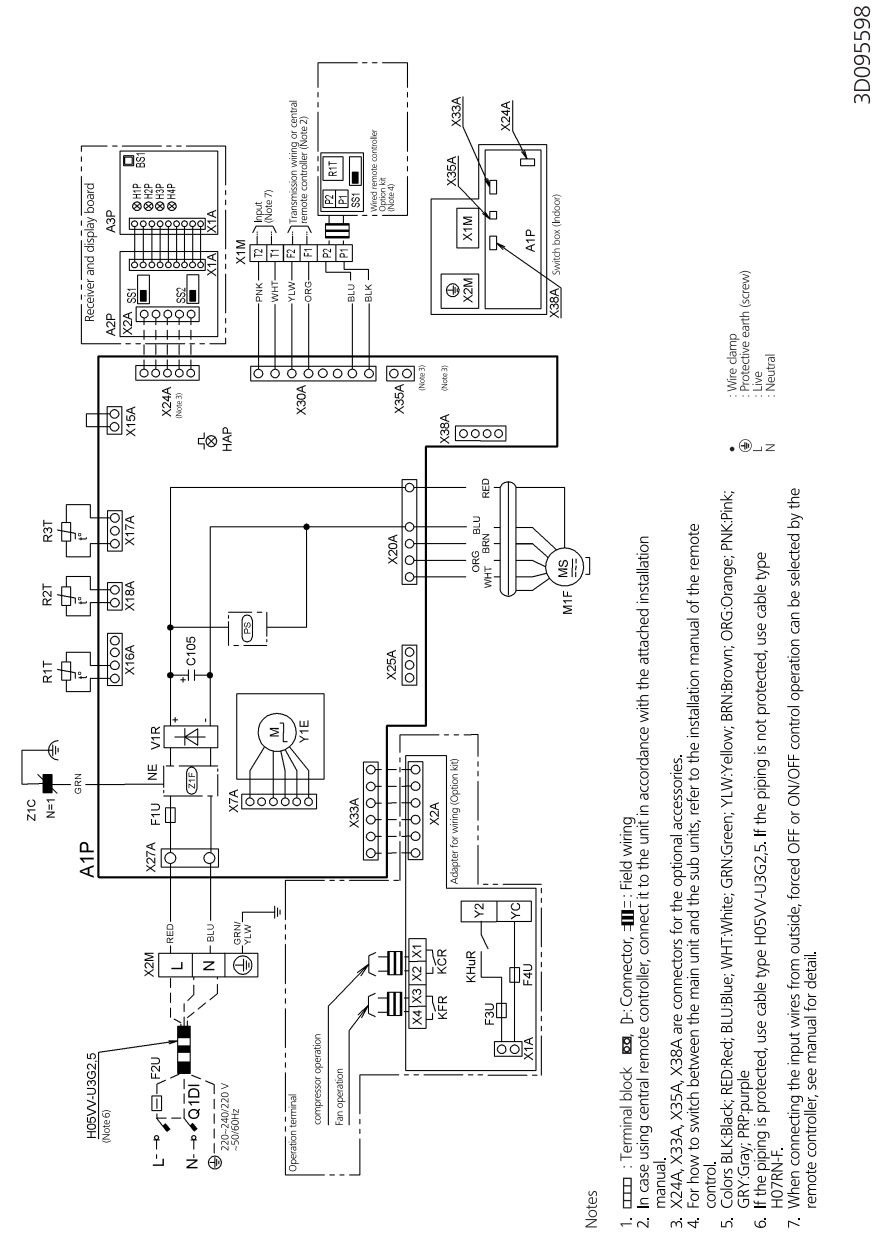
FXLQ20 / 25 / 32 / 40 / 50 / 63P7V1



	INDOOR UNIT	X2M	TERMINAL BLOCK (CONTROL)
A1P	PRINTED CIRCUIT BOARD	Y1E	ELECTRONIC EXPANSION VALVE
C1	CAPACITOR (M1F)		WIRED REMOTE CONTROLLER
F1U	FUSE (Ⓑ, 5A, 250V)	R1T	THERMISTOR (AIR)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	SS1	SELECTOR SWITCH (MAIN/SUB)
			CONNECTOR FOR OPTIONAL PARTS
K1R-K3R	MAGNETIC RELAY (M1F)	X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRICAL APPENDICES)
M1F	MOTOR (INDOOR FAN)		
Q1M	THERMO SWITCH (M1F EMBEDDED)		
R1T	THERMISTOR (AIR)		
R2T, R3T	THERMISTOR (COIL)		
T1R	TRANSFORMER (220-240V/22V)		
X1M	TERMINAL BLOCK (POWER)		

NOTES)
1. □□□ : TERMINAL BLOCK, ⊙⊙ , ⊃— : CONNECTOR, —○— : TERMINAL
2. ▬▬ : FIELD WIRING
3. IN CASE USING CENTRALIZED REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, 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.

FXNQ-A



FXNQ-A

Indoor unit
A1P : Printed circuit board
C105 : Capacitor
PS : Power supply
F1U : Fuse (T, 3.15A, 250V)
F2U : Field fuse
Z1C : Ferrite core
HAP : Light emitting diode (Service monitor-green)
M1F : Motor (Fan)
Q1DI : Earth leakage detector
R1T : Thermistor (Air)
R2T,R3T : Thermistor (Coil)
V1R : Diode bridge
X1M : Terminal block (control)
X2M : Terminal block (Upward liquid pipe connection)
Y1E : Electronic expansion valve
(Z1F) : Noise filter

Receiver and display board
A2P : Printed circuit board
A3P : Printed circuit board
BS1 : Push button (On/Off)
H1P : Light emitting diode (on-red)
H2P : Light-emitting diode (filter diagnostic - red)
H3P : Light emitting diode (timer-green)
H4P : Light emitting diode (defrost-orange)
SS1 : Selector switch(Main/Sub)
SS2 : Selector switch(Infrared adress set)

Connector (Optional accessories)
X24A : Connector (Infrared remote controller)
X33A : Connector (Adapter for wiring)
X35A : Connector (Power supply)
X38A : Connector (Multitenant)

Adapter for wiring
F3U,F4U : Fuse (IB), 5A, 250V)
KFR, KCR, KHuR : Magnetic relay

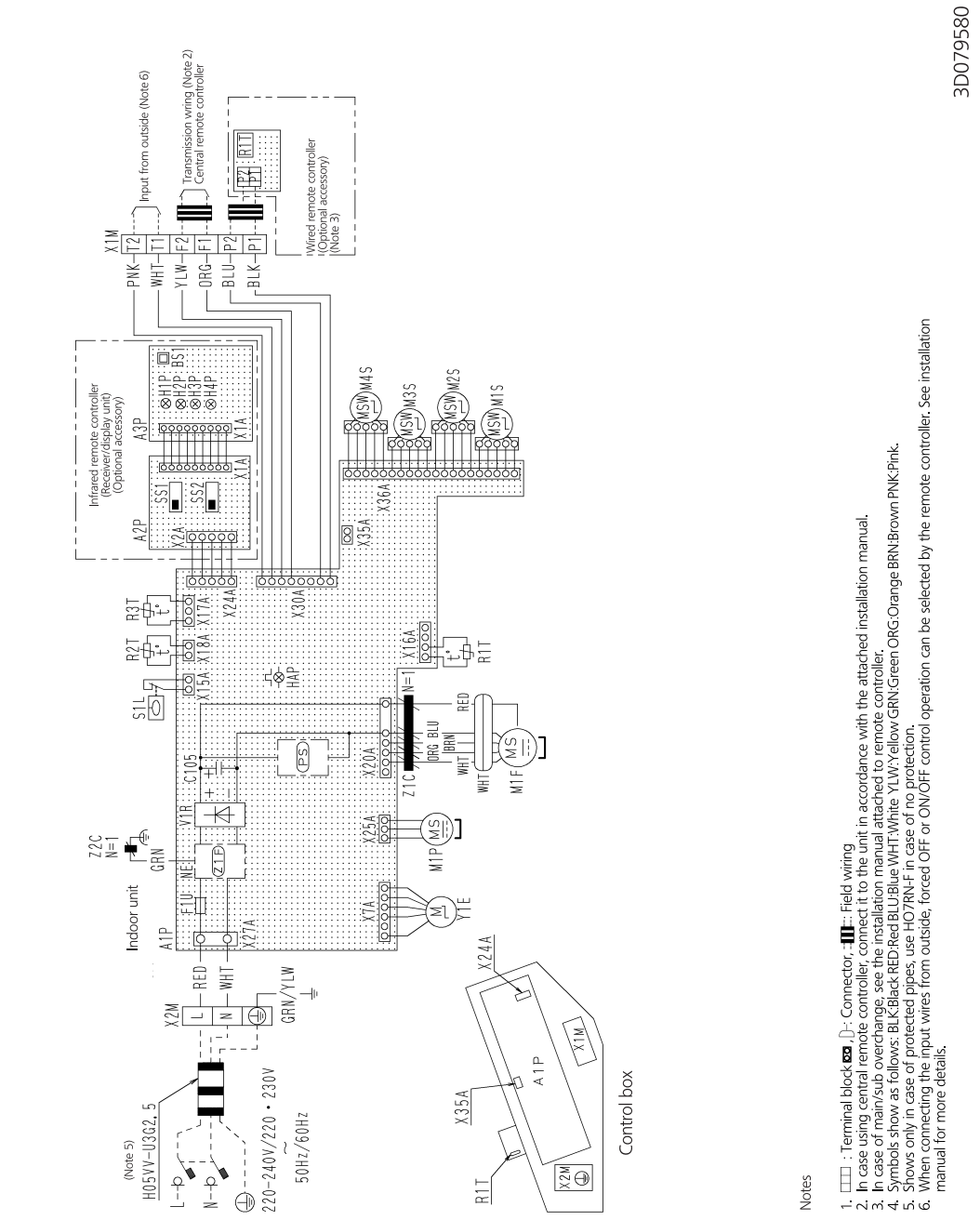
Wired remote controller
R1T : Thermistor (air)
SS1 : Select switch (MAIN-SUB)

Notes

1. □□□ : Terminal block ⊠ D-:Connector, ▬▮▮▬ : Field wiring
2. In case using central remote controller, connect it to the unit in accordance with the attached installation manual.
3. X24A, X33A, X35A, X38A are connectors for the optional accessories.
4. For how to switch between the main unit and the sub units, refer to the installation manual of the remote control.
5. Colors BLK:Black; RED:Red; BLU:Blue; WHT:White; GRN:Green; YLW:Yellow; BRN:Brown; ORG:Orange; PNK:Pink; GRY:Gray; PRP:purple
6. If the piping is protected, use cable type H05VV-U3G2.5. If the piping is not protected, use cable type H07RN-F.
7. When connecting the input wires from outside, forced OFF or ON/OFF control operation can be selected by the remote controller, see manual for detail.

• : Wire clamp
⏚ : Protective earth (screw)
L : Live
N : Neutral

FXUQ-A



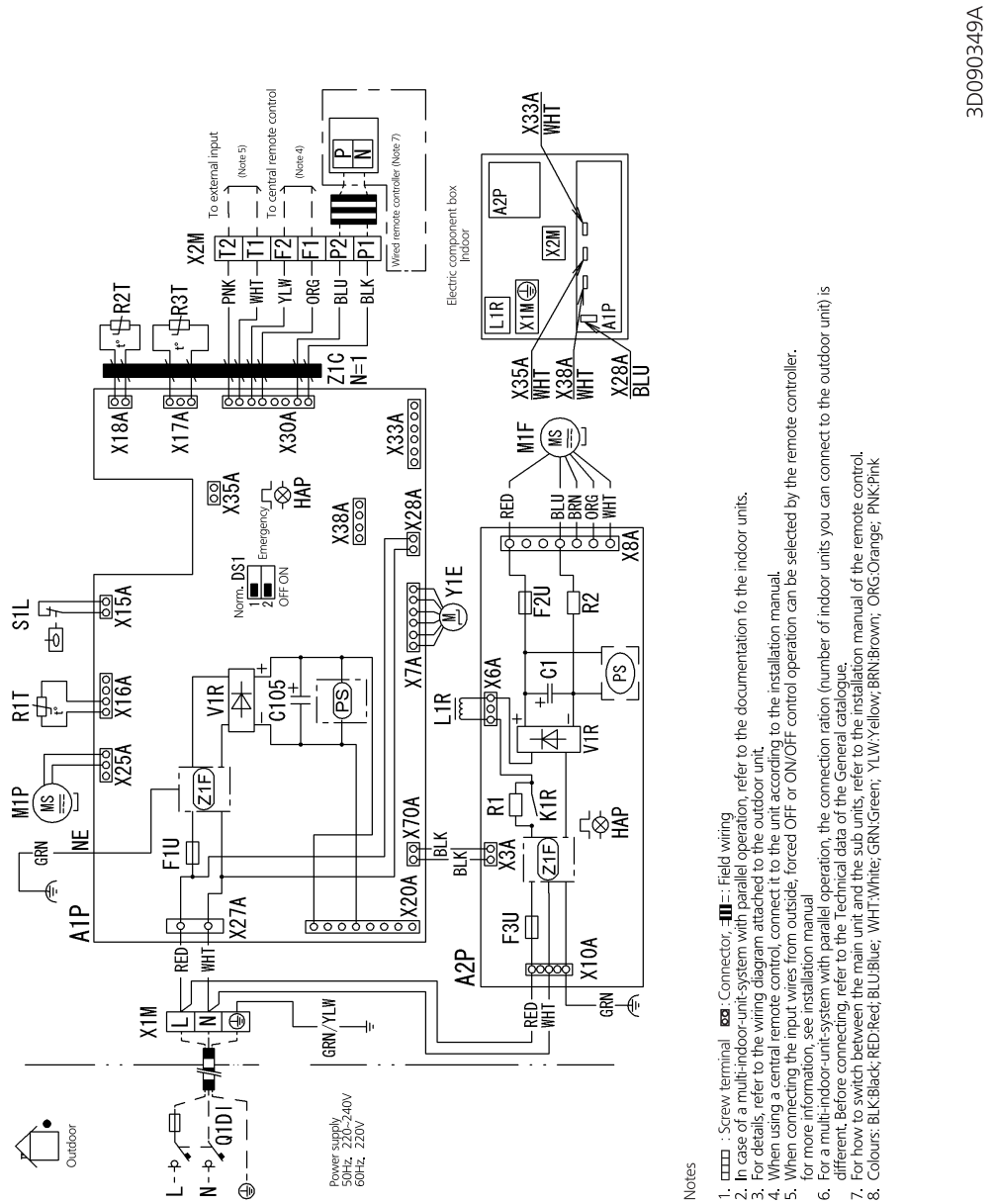
FXUQ-A

Indoor unit		
A1P	Printed circuit board	
C105	Capacitor (MF)	
F1U	Fuse (T3.15A, 250V)	
H4P	Flashing lamp (service monitor-green)	
M1F	Motor (indoor fan)	
M1P	Motor (drain pump)	
M1S●/M2S M3S●/M4S	Motor (louvre (Note))	
R1T	Thermistor (air)	
R2T●/R3T	Thermistor (coil)	
S1L	Float switch	
V1R	Diode bridge	
X1M	Terminal block	
X2M	Terminal block	
Y1E	Electronic expansion valve	
Z1F	Noise filter	
Z1C	Ferrite core	
Z2C	Ferrite core	
PS	Power supply circuit	
Infrared remote controller (Receiver/display unit)		
A2P	Printed circuit board	
A3P	Printed circuit board	
BS1	Push 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 (infrared address set)	
Wired remote controller		
R1T	Thermistor (air)	
Connector for optional parts		
X24A	Connector (Infrared remote controller)	
X35A	Connector (Power supply for adaptor)	

Notes

1. □□□ : Terminal block, ⏚: Connector, ▬▬: Field wiring
2. In case using central remote controller, connect it to the unit in accordance with the attached installation manual.
3. In case of main/sub overchange, see the installation manual attached to remote controller.
4. Symbols show as follows: BLK:Black RED:Red BLU:Blue WHT:White YLW:Yellow GRN:Green ORG:Orange BRN:Brown PNK:Pink.
5. Shows only in case of protected pipes, use HO7RN-F in case of no protection.
6. When connecting the input wires from outside, forced OFF or ON/OFF control operation can be selected by the remote controller. See installation manual for more details.

FXSQ15-125A



3D090349A

FXSQ15-125A

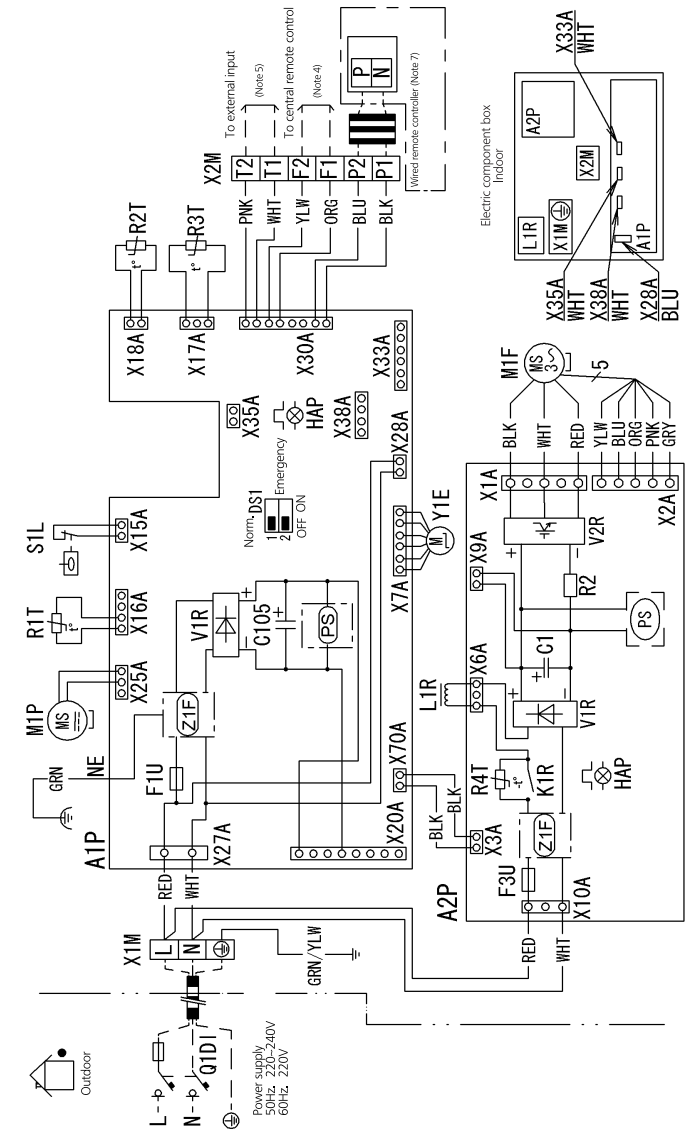
Indoor unit
A1P : Printed circuit board
A2P : Printed circuit board (Fan)
C1 : Capacitor
C105 : Capacitor
DS1 : Selector switch
F1U : Fuse (T, 315A, 250V)
F2U : Fuse (T, 5A, 250V)
F3U : Fuse (T, 6.3A, 250V)
HAP : Indication lamps
K1R : Magnetic relay
L1R : Reactor
M1F : Motor (Indoor fan)
M1P : Motor (Drain pump)
R1 : Resistor (current sensor)
R2 : Resistor (current sensor)
R1T : Thermistor (Suction)
R2T : Thermistor (Liquid)
R3T : Thermistor (Coil)
S1L : Float switch
V1R : Diode bridge
PS : Switching power supply
X1M : Terminal strip (Power supply)
X2M : Terminal block (Control)
Y1E : Electronic expansion valve coil
Z1F : Noise filter
Z1C : Ferrite core
Q1DI : Earth leakage breaker

Connector (Optional accessories)
X28A : Connector (Power supply for wiring)
X33A : Connector (for wiring)
X35A : Connector (Power supply for adapter)
X38A : Connector (for wiring)

Notes

1. : Screw terminal : Connector, : Field wiring
2. In case of a multi-indoor-unit-system with parallel operation, refer to the documentation to the indoor units.
3. For details, refer to the wiring diagram attached to the outdoor unit.
4. When using a central remote control, connect it to the unit according to the installation manual.
5. When connecting the input wires from outside, forced OFF or ON/OFF control operation can be selected by the remote controller. for more information, see installation manual
6. For a multi-indoor-unit-system with parallel operation, the connection ration (number of indoor units you can connect to the outdoor unit) is different. Before connecting, refer to the Technical data of the General catalogue.
7. For how to switch between the main unit and the sub units, refer to the installation manual of the remote control.
8. Colours: BLK:Black; RED:Red; BLU:Blue; WHT:White; GRN:Green; YLW:Yellow; BRN:Brown; ORG:Orange; PNK:Pink

FXSQ140A



3D090351

FXSQ140A

Indoor unit
A1P : Printed circuit board
A2P : Printed circuit board (Fan)
C1 : Capacitor
C105 : Capacitor
DS1 : Selector switch
F1U : Fuse (T, 3.15A, 250V)
F3U : Fuse (T, 6.3A, 250V)
HAP : Indication lamps
K1R : Magnetic relay
L1R : Reactor
M1F : Motor (Indoor fan)
M1P : Motor (Drain pump)
R2 : Resistor (current sensor)
R1T : Thermistor (Suction)
R2T : Thermistor (Liquid)
R3T : Thermistor (Coil)
R4T : Thermistor NTC (current limiting)
S1L : Float switch
V1R : Diode bridge
V2R : Power module
PS : Switching power supply
X1M : Terminal block (Power supply)
X2M : Terminal block (Control)
Y1E : Electronic expansion valve coil
Z1F : Noise filter
Q1DI : Earth leakage breaker

Connector (Optional accessories)
X28A : Connector (Power supply for wiring)
X33A : Connector (for wiring)
X35A : Connector (Power supply for adapter)
X38A : Connector (for wiring)

Notes

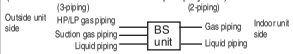
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7. For how to switch between the main unit and the sub units, refer to the installation manual of the remote control.
8. Colours: BLK:Black; RED:Red; BLU:Blue; WHT:White; GRN:Green; YLW:Yellow; BRN:Brown; ORG:Orange; PNK:Pink

3. Example of Connection

* Below table is mentioned about the case of heat recovery system (3-piping: suction gas, HP/LP gas and liquid pipes). In case of heat pump system (2-piping: gas and liquid pipes), select the pipe size from suction gas pipe for gas pipes and from liquid gas pipe for liquid pipes.
And BS unit is not required.

Example of connection

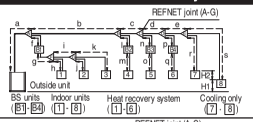
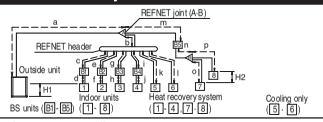
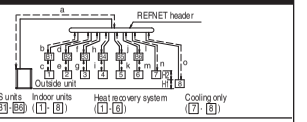
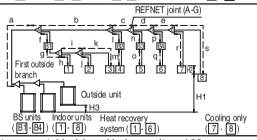
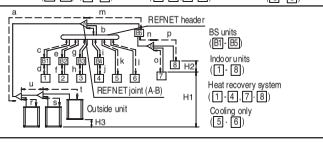
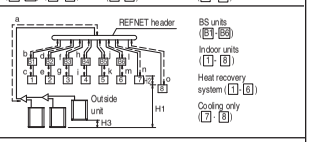
(Connection of 8 indoor units Heat pump system)

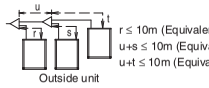


• Piping between outside unit and BS unit
(Thick line): 3-piping { HP/LP gas piping / Suction gas piping / Liquid piping }

• Piping between BS unit and indoor unit,
(Thin line): 2-piping { Gas piping / Liquid piping }

[*]
In case of multi outside unit system, re-read the [outside unit] as [the first outside branch seen from the indoor unit side].

		Branch with REFNET joint	Branch with REFNET joint and REFNET header	Branch with REFNET header
Single outside unit system		Example 1 	Example 2 	Example 3 
Multi outside unit system		Example 4 	Example 5 	Example 6 
Maximum allowable length	Between outside (*) and indoor units — Actual pipe length	Pipe length between outside (*) and indoor units ≤ 120m (Example 1,4) unit 8: a + b + c + d + e + s ≤ 120m	(Example 2,5) unit 6: a + b + l ≤ 120m, 8: a + m + n + p ≤ 120m	(Example 3,6) unit 8: a + o ≤ 120m
	Equivalent length	Equivalent pipe length between outside (*) and indoor units ≤ 140m (Note 1) (assume equivalent pipe length of REFNET joint to be 0.5m, that of REFNET header to be 1m, BSVP100,160 is 4 m and BSVP250 is 6m.)		
	Total extension length	Total piping length from outside unit (*) to all indoor units ≤ 300m		
	Between outside branch and outside unit (In case of multi system) — Actual pipe length	Piping length from outside branch to outside unit ≤ 10m Equivalent length: max 13m		
Allowable height length	Between outside and indoor units — Difference in height	Difference in height between outside and indoor units (H1) ≤ 50m (Max 40m if the outside unit is below)		
	Between indoor and indoor units — Difference in height	Difference in height between indoor units (H2) ≤ 15m		
	Between outside and outside units — Difference in height	Difference in height between outside unit (main) and outside unit (sub) (H3) ≤ 2m		
Allowable length after the branch	Actual pipe length	Pipe length from first refrigerant branch kit (either REFNET joint or REFNET header) to indoor unit ≤ 40m (Note 2) (Example 1,4) unit 8: b + c + d + e + s ≤ 40m	(Example 2,5) unit 6: b + l ≤ 40m, 8: m + n + p ≤ 40m	(Example 3,6) unit 8: o ≤ 40m



r ≤ 10m (Equivalent length ≤ 13m)
u+s ≤ 10m (Equivalent length ≤ 13m)
u+t ≤ 10m (Equivalent length ≤ 13m)

Refrigerant branch kit selection

Refrigerant branch kits can only be used with R-410A.

How to select REFNET joint:
• When using REFNET joints at the first branch counted from the outside unit side.
Choose from the following table in accordance with the capacity of the outside unit.
(Example 1,2,4,5 : REFNET joint◁)

Outside unit capacity type	Refrigerant branch kit name	
	Heat recovery system	Heat pump system
RWEYQ8, 10 type	KHRP25A33T	KHRP26A33T
RWEYQ16-20 type	KHRP25A72T + KHRP25M72TP	KHRP26A72T
RWEYQ24-30 type	KHRP25A73T + KHRP25M73TP	KHRP26A73T + KHRP26M73TP

• For REFNET joints other than the first branch, select the proper branch kit model based on the total capacity index.

Indoor capacity index	Refrigerant branch kit name	
	In case of 3-tube piping	In case of 2-tube piping
< 200	KHRP25A22T	KHRP26A22T
200 ≤ x< 290	KHRP25A33T	KHRP26A33T
290 ≤ x< 640	KHRP25A72T+KHRP25M72TP	KHRP26A72T
640 ≤	KHRP25A73T+KHRP25M73TP	KHRP26A73T+KHRP26M73TP

How to select REFNET header
• Select suitable one from the table below according to the total capacity of indoor units to be connected to the downstream of REFNET header.
• Be careful that 250 type cannot be connected to the downstream of REFNET header.

Indoor capacity index	Refrigerant branch kit name	
	In case of 3-tube piping	In case of 2-tube piping
< 200	KHRP25M33H	KHRP26M22H, KHRP26M33H
200 ≤ x< 290		KHRP26M33H
290 ≤ x< 640	KHRP25M72H+KHRP25M72HP	KHRP26M72H
640 ≤	KHRP25M73H+KHRP25M73HP	KHRP26M73H+KHRP26M73HP

How to select an outside branch kit (Needed when the outside unit type is RWEYQ20 or more.)
• Select from the table below according to the number of outside units.

Number of units of outside unit	Heat recovery system	Heat pump system
2 unit	BHFP26MA56	BHFP22MA56
3 unit	BHFP26MA84	BHFP22MA84

Example of downstream indoor units

(Example 1,4) In case of REFNET Joint◁, indoor units of 5 + 6 + 7 + 8

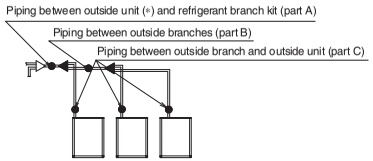
(Example 2,5) In case of REFNET Joint◁, indoor units of 7 + 8
(Example 2,5) In case of REFNET Header, indoor units of 1 + 2 + 3 + 4 + 5 + 6

(Example 3,6) In case of REFNET Header,
indoor units of 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8

Pipe size selection

⚠Caution
The thickness of the pipes in the table shows the requirements of Japanese High Pressure Gas Control low. (As of Jan. 2003)
The thickness and material shall be selected in accordance with local code.

For a multi outside unit system, make the settings in accordance with the following figure.



Piping between outside unit (*) and refrigerant branch kit (part A)
Piping between outside branch and outside unit (part C)
• Match to the size of connection piping of outside unit (Unit: mm)

Capacity type of outside unit	Piping size (outer diameter × Min. thickness)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
RWEYQ8	ϕ19.1 × 0.80	ϕ15.9 × 0.99	ϕ 9.5 × 0.80
RWEYQ10	ϕ22.2 × 0.80	ϕ19.1 × 0.80	
RWEYQ16	ϕ28.6 × 0.99	ϕ22.2 × 0.80	ϕ12.7 × 0.80
RWEYQ18, 20			ϕ15.9 × 0.99
RWEYQ24	ϕ34.9 × 1.21	ϕ28.6 × 0.99	ϕ19.1 × 0.80
RWEYQ26-30			

Piping between outside branches (part B)
• Select the size from the following table based on the total capacity of the outside unit to be connected to upstream (Unit: mm)

Total capacity of outside unit	Piping size (outer diameter × Min. thickness)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
16HP	ϕ28.6 × 0.99	ϕ22.2 × 0.80	ϕ12.7 × 0.80
18,20HP			ϕ15.9 × 0.99

Piping between refrigerant branch kit and refrigerant branch kit/BS unit
Piping between BS unit and refrigerant branching kit
• Select one from the table below according to the total capacity of indoor units to be connected to downstream.
• For the gas piping size in case of 2-tube piping between refrigerant branching kit/BS unit and refrigerant branching kit, select the size of suction gas piping.
• The size of connection piping should not exceed the refrigerant piping size selected under the generic term of the system. (Unit: mm)

Indoor capacity index	Piping size (outer diameter × minimum wall thickness)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
< 150	ϕ15.9 × 0.99	ϕ12.7 × 0.80	ϕ 9.5 × 0.80
150 ≤ x< 200	ϕ19.1 × 0.80	ϕ15.9 × 0.99	
200 ≤ x< 290	ϕ22.2 × 0.80	ϕ19.1 × 0.80	
290 ≤ x< 420	ϕ28.6 × 0.99		ϕ12.7 × 0.80
420 ≤ x< 640	ϕ28.6 × 0.99	ϕ28.6 × 0.99	ϕ15.9 × 0.99
640 ≤ x< 920	ϕ34.9 × 1.21		ϕ19.1 × 0.80
920 ≤	ϕ41.3 × 1.43		

Piping between BS unit (refrigerant branch kit) and indoor unit
• Match to the size of the connection piping on the indoor unit.
Indoor unit connection piping size (Unit:mm)

Indoor capacity type	Piping size (outer diameter × minimum wall thickness)	
	Gas pipe	Liquid pipe
20, 25, 32, 40, 50 type	ϕ12.7 × 0.80	ϕ6.4 × 0.80
63, 80, 100, 125 type	ϕ15.9 × 0.99	ϕ9.5 × 0.80
200 type	ϕ19.1 × 0.80	ϕ9.5 × 0.80
250 type	ϕ22.2 × 0.80	

How to calculate the additional refrigerant to be charged

Additional refrigerant to be charged R (kg)
(R should be rounded off in units of 0.1kg.)

R= (Total length (m) of liquid piping size at ϕ22.2) ×0.37 (kg/m) + (Total length (m) of liquid piping size at ϕ19.1) ×0.26 (kg/m) + (Total length (m) of liquid piping size at ϕ15.9) ×0.18 (kg/m) + (Total length (m) of liquid piping size at ϕ12.7) ×0.12 (kg/m)
+ (Total length (m) of liquid piping size at ϕ9.5) ×0.059 (kg/m) + (Total length (m) of liquid piping size at ϕ6.4) ×0.022 (kg/m) + Corrected volume by outside unit

System name	Heat pump system	Heat recovery system
RWEYQ10	3 kg	4 kg
RWEYQ20	4.5 kg	6.5 kg
RWEYQ30	6 kg	9 kg

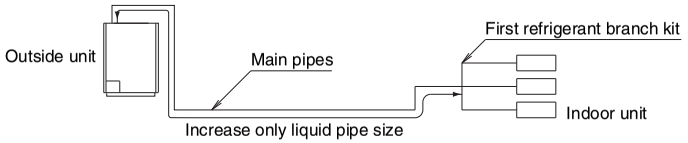
Example for refrigerant branch using REFNET joint and REFNET header for RWEYQ30
(Heat recovery system)
If the outside unit is RWEYQ30 and the piping lengths are as at right

a : ϕ19.1×30m	e : ϕ 9.5×10m	i : ϕ12.7×10m	m: ϕ 6.4×10m	r : ϕ 9.5×3m
b : ϕ15.9×10m	f : ϕ 9.5×10m	j : ϕ 6.4×10m	n : ϕ 6.4×10m	s : ϕ 9.5×3m
c : ϕ 9.5×10m	g : ϕ 6.4×10m	k : ϕ 6.4×10m	o : ϕ 6.4×10m	t : ϕ 9.5×3m
d : ϕ 9.5×10m	h : ϕ 6.4×20m	l : ϕ 6.4×10m	p : ϕ 6.4×10m	u : ϕ15.9×1m

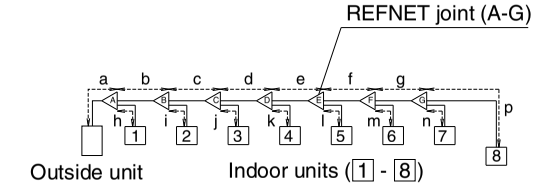
R= 30×0.26 + 11×0.18 + 10×0.12 + 49×0.059 + 100×0.022 + 9 = 25.071 ⇩ 25.1 (kg)
a b+u i c+d+e+f+r+s+t g+h+j+k+l+m+n+o+p

Note 1.
When the equivalent pipe length between outside and indoor units is 80m or more, the size of main pipes on the liquid side (refer to figure 21) must be increased according to the right table.
(Never increase suction gas pipe and HP/LP gas pipe.)

System	Liquid pipe
RWEYQ8, 10PY1	ϕ9.5 → ϕ12.7
RWEYQ16PY1	ϕ12.7 → ϕ15.9
RWEYQ18 ~ 24PY1	ϕ15.9 → ϕ19.1
RWEYQ26 ~ 30PY1	ϕ19.1 → ϕ22.2



Note 2. Allowable length after the first refrigerant branch kit to indoor units is 40m or less, however it can be extended up to 90m if all the following conditions are satisfied. (In case of "**Branch with REFNET joint**")

Required Conditions	Example Drawings	
1. It is necessary to increase the liquid and suction gas pipe size between the first branch kit and the final branch kit. (Reducers must be procured on site) However, the pipes that are same pipe size with main pipe must not be increased.	[8] b+c+d+e+f+g+p ≤ 90 m increase the liquid and suction gas pipe size of b, c, d, e, f, g	Increase the liquid and suction gas pipe size as follows ϕ9.5 → ϕ12.7 ϕ15.9 → ϕ19.1 ϕ22.2 → ϕ25.4* ϕ34.9 → ϕ38.1* ϕ12.7 → ϕ15.9 ϕ19.1 → ϕ22.2 ϕ28.6 → ϕ31.8*
2. For calculation of Total extension length, the actual length of above pipes must be doubled. (except main pipe and the pipes that are not increased)	a+b×2+c×2+d×2+e×2+f×2+g×2 +h+i+j+k+l+m+n+p ≤ 300 m	
3. Indoor unit to the nearest branch kit ≤ 40 m	h, i, j..... p ≤ 40 m	
4. The difference between [Outside unit to the farthest indoor unit] and [Outside unit to the nearest indoor unit] ≤ 40 m	The farthest indoor unit [8] The nearest indoor unit [1] (a+b+c+d+e+f+g+p)-(a+h) ≤ 40 m	

*If available on the site, use this size. Otherwise it can not be increased.

4. Precautions for New Refrigerant (R-410A)

4.1 Outline

4.1.1 About Refrigerant R-410A

■ Characteristics of new refrigerant, R-410A

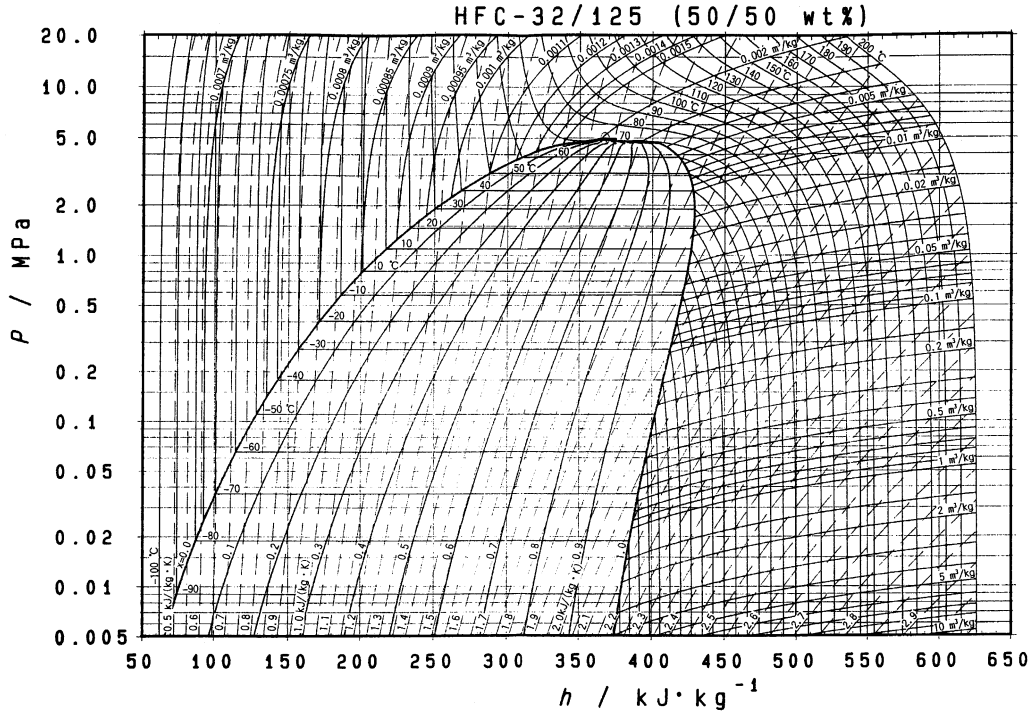
1. Performance
   Almost the same performance as R-22 and R-407C
2. Pressure
   Working pressure is approx. 1.4 times more than R-22 and R-407C.
3. Refrigerant composition
   Few problems in composition control, since it is a Quasi-azeotropic mixture refrigerant.

	HFC units (Units using new refrigerants)		HCFC units
Refrigerant name	R-407C	R-410A	R-22
Composing substances	Non-azeotropic mixture of HFC32, HFC125 and HFC134a (∗1)	Quasi-azeotropic mixture of HFC32 and HFC125 (∗2)	Single-component refrigerant
Design pressure (∗3)	3.2 MPa (gauge pressure) = 32.6 kgf/cm^2	4.0 MPa (gauge pressure) = 40.78 kgf/cm^2	2.75MPa (gauge pressure) = 28.0 kgf/cm^2
Refrigerant oil	Synthetic oil (Ether)		Mineral oil (Suniso)
Ozone destruction factor (ODP)	0	0	0.05
Combustibility	None	None	None
Toxicity	None	None	None

∗1. Non-azeotropic mixture refrigerant: mixture of 2 or more refrigerants having different boiling points.

∗2. Quasi-azeotropic mixture refrigerant: mixture of 2 or more refrigerants having similar boiling points.

∗3. The design pressure is different at each product. Please refer to the installation manual for each product.
(Reference) 1 MPa ≒ 10.19716 kgf / cm^2



Pressure-Enthalpy curves of HFC-32/125 (50/50wt%)

■ Thermodynamic characteristic of R-410A

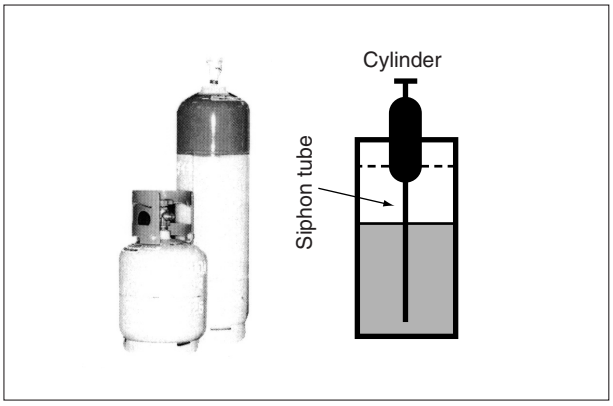
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Temperature (°C)	Steam pressure (kPa)		Density (kg/m³)		Specific heat at constant pressure (kJ/kgK)		Specific enthalpy (kJ/kg)		Specific entropy (kJ/KgK)	
	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
-70	36.13	36.11	1410.7	1.582	1.372	0.695	100.8	390.6	0.649	2.074
-68	40.83	40.80	1404.7	1.774	1.374	0.700	103.6	391.8	0.663	2.066
-66	46.02	45.98	1398.6	1.984	1.375	0.705	106.3	393.0	0.676	2.058
-64	51.73	51.68	1392.5	2.213	1.377	0.710	109.1	394.1	0.689	2.051
-62	58.00	57.94	1386.4	2.463	1.378	0.715	111.9	395.3	0.702	2.044
-60	64.87	64.80	1380.2	2.734	1.379	0.720	114.6	396.4	0.715	2.037
-58	72.38	72.29	1374.0	3.030	1.380	0.726	117.4	397.6	0.728	2.030
-56	80.57	80.46	1367.8	3.350	1.382	0.732	120.1	398.7	0.741	2.023
-54	89.49	89.36	1361.6	3.696	1.384	0.737	122.9	399.8	0.754	2.017
-52	99.18	99.03	1355.3	4.071	1.386	0.744	125.7	400.9	0.766	2.010
-51.58	101.32	101.17	1354.0	4.153	1.386	0.745	126.3	401.1	0.769	2.009
-50	109.69	109.51	1349.0	4.474	1.388	0.750	128.5	402.0	0.779	2.004
-48	121.07	120.85	1342.7	4.909	1.391	0.756	131.2	403.1	0.791	1.998
-46	133.36	133.11	1336.3	5.377	1.394	0.763	134.0	404.1	0.803	1.992
-44	146.61	146.32	1330.0	5.880	1.397	0.770	136.8	405.2	0.816	1.987
-42	160.89	160.55	1323.5	6.419	1.401	0.777	139.6	406.2	0.828	1.981
-40	176.24	175.85	1317.0	6.996	1.405	0.785	142.4	407.3	0.840	1.976
-38	192.71	192.27	1310.5	7.614	1.409	0.792	145.3	408.3	0.852	1.970
-36	210.37	209.86	1304.0	8.275	1.414	0.800	148.1	409.3	0.864	1.965
-34	229.26	228.69	1297.3	8.980	1.419	0.809	150.9	410.2	0.875	1.960
-32	249.46	248.81	1290.6	9.732	1.424	0.817	153.8	411.2	0.887	1.955
-30	271.01	270.28	1283.9	10.53	1.430	0.826	156.6	412.1	0.899	1.950
-28	293.99	293.16	1277.1	11.39	1.436	0.835	159.5	413.1	0.911	1.946
-26	318.44	317.52	1270.2	12.29	1.442	0.844	162.4	414.0	0.922	1.941
-24	344.44	343.41	1263.3	13.26	1.448	0.854	165.3	414.9	0.934	1.936
-22	372.05	370.90	1256.3	14.28	1.455	0.864	168.2	415.7	0.945	1.932
-20	401.34	400.06	1249.2	15.37	1.461	0.875	171.1	416.6	0.957	1.927
-18	432.36	430.95	1242.0	16.52	1.468	0.886	174.1	417.4	0.968	1.923
-16	465.20	463.64	1234.8	17.74	1.476	0.897	177.0	418.2	0.980	1.919
-14	499.91	498.20	1227.5	19.04	1.483	0.909	180.0	419.0	0.991	1.914
-12	536.58	534.69	1220.0	20.41	1.491	0.921	182.9	419.8	1.003	1.910
-10	575.26	573.20	1212.5	21.86	1.499	0.933	185.9	420.5	1.014	1.906
-8	616.03	613.78	1204.9	23.39	1.507	0.947	189.0	421.2	1.025	1.902
-6	658.97	656.52	1197.2	25.01	1.516	0.960	192.0	421.9	1.036	1.898
-4	704.15	701.49	1189.4	26.72	1.524	0.975	195.0	422.6	1.048	1.894
-2	751.64	748.76	1181.4	28.53	1.533	0.990	198.1	423.2	1.059	1.890
0	801.52	798.41	1173.4	30.44	1.543	1.005	201.2	423.8	1.070	1.886
2	853.87	850.52	1165.3	32.46	1.552	1.022	204.3	424.4	1.081	1.882
4	908.77	905.16	1157.0	34.59	1.563	1.039	207.4	424.9	1.092	1.878
6	966.29	962.42	1148.6	36.83	1.573	1.057	210.5	425.5	1.103	1.874
8	1026.5	1022.4	1140.0	39.21	1.584	1.076	213.7	425.9	1.114	1.870
10	1089.5	1085.1	1131.3	41.71	1.596	1.096	216.8	426.4	1.125	1.866
12	1155.4	1150.7	1122.5	44.35	1.608	1.117	220.0	426.8	1.136	1.862
14	1224.3	1219.2	1113.5	47.14	1.621	1.139	223.2	427.2	1.147	1.859
16	1296.2	1290.8	1104.4	50.09	1.635	1.163	226.5	427.5	1.158	1.855
18	1371.2	1365.5	1095.1	53.20	1.650	1.188	229.7	427.8	1.169	1.851
20	1449.4	1443.4	1085.6	56.48	1.666	1.215	233.0	428.1	1.180	1.847
22	1530.9	1524.6	1075.9	59.96	1.683	1.243	236.4	428.3	1.191	1.843
24	1615.8	1609.2	1066.0	63.63	1.701	1.273	239.7	428.4	1.202	1.839
26	1704.2	1697.2	1055.9	67.51	1.721	1.306	243.1	428.6	1.214	1.834
28	1796.2	1788.9	1045.5	71.62	1.743	1.341	246.5	428.6	1.225	1.830
30	1891.9	1884.2	1034.9	75.97	1.767	1.379	249.9	428.6	1.236	1.826
32	1991.3	1983.2	1024.1	80.58	1.793	1.420	253.4	428.6	1.247	1.822
34	2094.5	2086.2	1012.9	85.48	1.822	1.465	256.9	428.4	1.258	1.817
36	2201.7	2193.1	1001.4	90.68	1.855	1.514	260.5	428.3	1.269	1.813
38	2313.0	2304.0	989.5	96.22	1.891	1.569	264.1	428.0	1.281	1.808
40	2428.4	2419.2	977.3	102.1	1.932	1.629	267.8	427.7	1.292	1.803
42	2548.1	2538.6	964.6	108.4	1.979	1.696	271.5	427.2	1.303	1.798
44	2672.2	2662.4	951.4	115.2	2.033	1.771	275.3	426.7	1.315	1.793
46	2800.7	2790.7	937.7	122.4	2.095	1.857	279.2	426.1	1.327	1.788
48	2933.7	2923.6	923.3	130.2	2.168	1.955	283.2	425.4	1.339	1.782
50	3071.5	3061.2	908.2	138.6	2.256	2.069	287.3	424.5	1.351	1.776
52	3214.0	3203.6	892.2	147.7	2.362	2.203	291.5	423.5	1.363	1.770
54	3361.4	3351.0	875.1	157.6	2.493	2.363	295.8	422.4	1.376	1.764
56	3513.8	3503.5	856.8	168.4	2.661	2.557	300.3	421.0	1.389	1.757
58	3671.3	3661.2	836.9	180.4	2.883	2.799	305.0	419.4	1.403	1.749
60	3834.1	3824.2	814.9	193.7	3.191	3.106	310.0	417.6	1.417	1.741
62	4002.1	3992.7	790.1	208.6	3.650	3.511	315.3	415.5	1.433	1.732
64	4175.7	4166.8	761.0	225.6	4.415	4.064	321.2	413.0	1.450	1.722

4.2 Refrigerant Cylinders

■ Cylinder specifications

- The cylinder is painted refrigerant color (pink).
- The cylinder valve is equipped with a siphon tube.



Refrigerant can be charged in liquid state with cylinder in upright position.

Caution: Do not lay cylinder on its side during charging, since it cause refrigerant in gas state to enter the system.

■ Handling of cylinders

(1) Laws and regulations

R-410A is liquefied gas, and the High Pressure Gas Safety Law must be observed in handling them. Before using, refer to the High Pressure Gas Safety Law.

The Law stipulates standards and regulations that must be followed to prevent accidents with high pressure gases. Be sure to follow the regulations.

(2) Handing of vessels

Since R-410A is high pressure gas, it is contained in high pressure vessels.

Although those vessels are durable and strong, careless handling can cause damage that can lead to unexpected accidents. Do not drop vessels, let them fall, apply impact or roll them on the ground.

(3) Storage

Although R-410A is not flammable, it must be stored in a well-ventilated, cool, and dark place in the same way as any other high pressure gases.

It should also be noted that high pressure vessels are equipped with safety devices that releases gas when the outdoor air temperature reaches more than a certain level (fusible plug melts) and when the pressure exceeds a certain level (spring-type safety valve operates).

4.3 Service Tools

R-410A is used under higher working pressure, compared to previous refrigerants (R-22, R-407C). Furthermore, the refrigerating machine oil has been changed from Suniso oil to Ether oil, and if oil mixing is occurred, sludge results in the refrigerants and causes other problems. Therefore, gauge manifolds and charge hoses that are used with a previous refrigerant (R-22, R-407C) can not be used for products that use new refrigerants.
Be sure to use dedicated tools and devices.

■ Tool compatibility

Tool	Compatibility			Reasons for change
	HFC		HCFC	
	R-410A	R-407C	R-22	
Gauge manifold Charge hose	×			• Do not use the same tools for R-22 and R-410A. • Thread specification differs for R-410A and R-407C.
Charging cylinder	×		○	• Weighting instrument used for HFCs.
Gas detector	○		×	• The same tool can be used for HFCs.
Vacuum pump (pump with reverse flow preventive function)	○			• To use existing pump for HFCs, vacuum pump adaptor must be installed.
Weighting instrument	○			
Charge mouthpiece	×			• Seal material is different between R-22 and HFCs. • Thread specification is different between R-410A and others.
Flaring tool (Clutch type)	○			• For R-410A, flare gauge is necessary.
Torque wrench	○			• Torque-up for 1/2 and 5/8
Pipe cutter	○			
Pipe expander	○			
Pipe bender	○			
Pipe assembling oil	×			• Due to refrigerating machine oil change. (No Suniso oil can be used.)
Refrigerant recovery device	Check your recovery device.			
Refrigerant piping	See the chart below.			• Only ϕ19.1 is changed to 1/2H material while the previous material is "O".

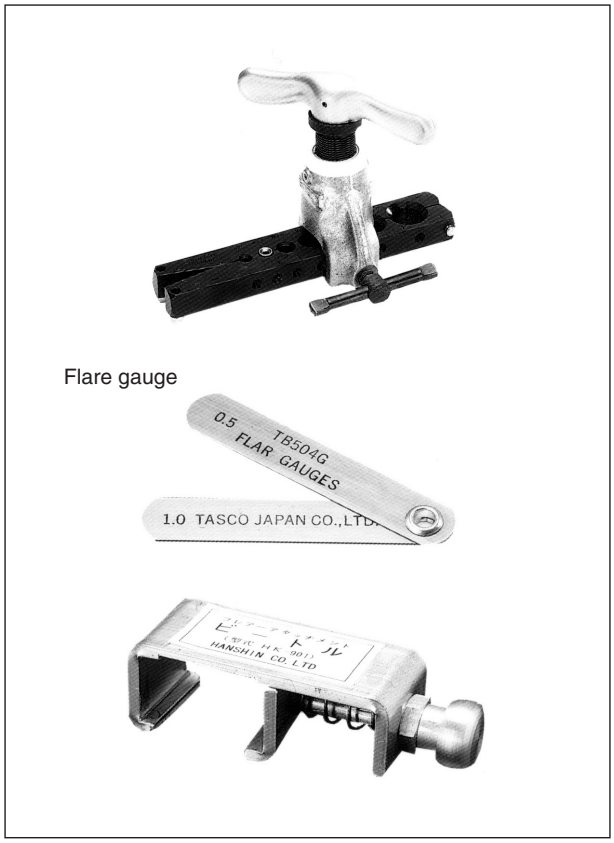
As for the charge mouthpiece and packing, 1/2UNF20 is necessary for mouthpiece size of charge hose.

■ Copper tube material and thickness

Pipe size	R-407C		R-410A	
	Material	Thickness t (mm)	Material	Thickness t (mm)
ϕ6.4	O	0.8	O	0.8
ϕ9.5	O	0.8	O	0.8
ϕ12.7	O	0.8	O	0.8
ϕ15.9	O	1.0	O	1.0
ϕ19.1	O	1.0	1/2H	1.0
ϕ22.2	1/2H	1.0	1/2H	1.0
ϕ25.4	1/2H	1.0	1/2H	1.0
ϕ28.6	1/2H	1.0	1/2H	1.0
ϕ31.8	1/2H	1.2	1/2H	1.1
ϕ38.1	1/2H	1.4	1/2H	1.4
ϕ44.5	1/2H	1.6	1/2H	1.6

∗ O: Soft (Annealed)
H: Hard (Drawn)

1. Flaring tool



■ Specifications

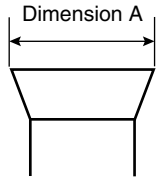
• Dimension A

Unit: mm

Nominal size	Tube O.D.	$A^{+0}_{-0.4}$	
	Do	Class-2 (R-410A)	Class-1 (Conventional)
1/4	6.35	9.1	9.0
3/8	9.52	13.2	13.0
1/2	12.70	16.6	16.2
5/8	15.88	19.7	19.4
3/4	19.05	24.0	23.3

■ Differences

• Change of dimension A



For class-1: R-407C
For class-2: R-410A

Conventional flaring tools can be used when the work process is changed.
(change of work process)
Previously, a pipe extension margin of 0 to 0.5mm was provided for flaring. For R-410A air conditioners, perform pipe flaring with a pipe extension margin of 1.0 to 1.5mm.
(For clutch type only)
Conventional tool with pipe extension margin adjustment can be used.

2. Torque wrench



■ Specifications

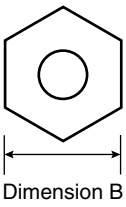
• Dimension B Unit: mm

Nominal size	Class-1	Class-2	Previous
1/2	24	26	24
5/8	27	29	27

No change in tightening torque
No change in pipes of other sizes

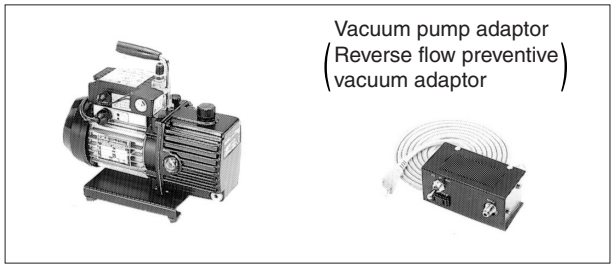
■ Differences

• Change of dimension B
Only 1/2", 5/8" are extended



For class-1: R-407C
For class-2: R-410A

3. Vacuum pump with check valve



■ Specifications

• Discharge speed
50 l/min (50Hz)
60 l/min (60Hz)

• Suction port UNF7/16-20(1/4 Flare)
UNF1/2-20(5/16 Flare) with adaptor

● Maximum degree of vacuum
Select a vacuum pump which is able to keep the vacuum degree of the system in excess of –100.7 kPa (5 torr – 755 mmHg).

■ Differences

• Equipped with function to prevent reverse oil flow
• Previous vacuum pump can be used by installing adaptor.

4. Leak tester



■ Specifications
- Hydrogen detecting type, etc.
- Applicable refrigerants
  R-410A, R-407C, R-404A, R-507A, R-134a, etc.

■ Differences
- Previous testers detected chlorine. Since HFCs do not contain chlorine, new tester detects hydrogen.

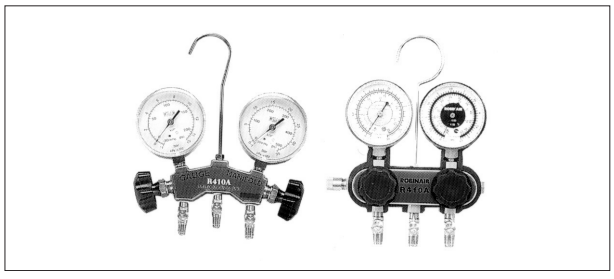
5. Refrigerant oil (Air compal)



■ Specifications
- Contains synthetic oil, therefore it can be used for piping work of every refrigerant cycle.
- Offers high rust resistance and stability over long period of time.

■ Differences
- Can be used for R-410A and R-22 units.

6. Gauge manifold for R-410A



■ Specifications
- High pressure gauge
  - 0.1 to 5.3 MPa (-76 cmHg to 53 kg/cm^2)
- Low pressure gauge
  - 0.1 to 3.8 MPa (-76 cmHg to 38 kg/cm^2)
- 1/4" → 5/16" (2min → 2.5min)
- No oil is used in pressure test of gauges.
  → For prevention of contamination

- Temperature scale indicates the relationship between pressure and temperature in gas saturated state.

■ Differences
- Change in pressure
- Change in service port diameter

7. Charge hose for R-410A

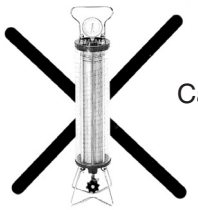


(Hose with ball valve)

■ Specifications
- Working pressure 5.08 MPa (51.8 kg/cm^2)
- Rupture pressure 25.4 MPa (259 kg/cm^2)
- Available with and without hand-operate valve that prevents refrigerant from outflow.

■ Differences
- Pressure proof hose
- Change in service port diameter
- Use of nylon coated material for HFC resistance

8. Charging cylinder



Can not be used

■ Specifications
- Use weigher for refrigerant charge listed below to charge directly from refrigerant cylinder.

■ Differences
- The cylinder can not be used for mixed refrigerant since mixing ratio is changed during charging.

  When R-410A is charged in liquid state using charging cylinder, foaming phenomenon is generated inside charging cylinder.

Warning

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

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

Cautions on product corrosion

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

JMI-0107

Organization:
DAIKIN INDUSTRIES, LTD.
AIR CONDITIONING MANUFACTURING DIVISION

Scope of Registration:
THE DESIGN/DEVELOPMENT AND MANUFACTURE OF COMMERCIAL AIR CONDITIONING, HEATING, COOLING, REFRIGERATING EQUIPMENT, HEATING EQUIPMENT, RESIDENTIAL AIR CONDITIONING EQUIPMENT, HEAT RECLAIM VENTILATION, AIR CLEANING EQUIPMENT, COMPRESSORS AND VALVES.

JQA-1452

Organization:
DAIKIN INDUSTRIES (THAILAND) LTD.

Scope of Registration:
THE DESIGN/DEVELOPMENT AND MANUFACTURE OF AIR CONDITIONERS AND THE COMPONENTS INCLUDING COMPRESSORS USED FOR THEM

EC99J2044

All of the Daikin Group's business facilities and subsidiaries in Japan are certified under the ISO 14001 international standard for environment management.

Dealer

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