DAIKIN

SiBE31-801_C

R-410A

Service Manual

VRV III-C

RTSQ10-20PY1

R-410A Heat Pump 50Hz

VRV III-C R-410A Heat Pump 50Hz

Part 6 Troubleshooting 194

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 an item for which caution must be exercised.
The pictogram shows the item to which attention must be paid.

◯ This symbol indicates a prohibited action.
The prohibited item or action is shown inside or near the symbol.

● This symbol indicates an action that must be taken, or an instruction.
The instruction is shown inside 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 Caution in Repair

⚠ Warning	
Be sure to disconnect the power cable plug from the plug socket before disassembling the equipment for a repair. Working on the equipment that is connected to a power supply can cause an electrical shock. 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 discharges during the repair work, do not touch the discharging refrigerant gas. The refrigerant gas can cause frostbite.	
When disconnecting the suction or discharge pipe of the compressor at the welded section, release 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 can cause injury.	
If the refrigerant gas leaks during the repair work, ventilate the area. The refrigerant gas can 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 can 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 can cause an electrical shock or fire.	

Caution	
Do not repair the electrical components with wet hands. Working on the equipment with wet hands can cause an electrical shock.	
Do not clean the air conditioner by splashing water. Washing the unit with water can 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.	
Do not tilt the unit when removing it. The water inside the unit can spill and wet the furniture and floor.	
Be sure to check that the refrigerating cycle section has cooled down sufficiently before conducting repair work. Working on the unit when the refrigerating cycle section is hot can cause burns.	
Use the welder in a well-ventilated place. Using the welder in an enclosed room can cause oxygen deficiency.	

1.1.2 Cautions Regarding Products after Repair

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 can cause an electrical shock, excessive heat generation or fire.	
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 can fall and cause injury.	
Be sure to install the product correctly by using the provided standard installation frame. Incorrect use of the installation frame and improper installation can cause the equipment to fall, resulting in injury.	For integral units only
Be sure to install the product securely in the installation frame mounted on a window frame. If the unit is not securely mounted, it can fall and cause injury.	For integral units only
Be sure to use an exclusive power circuit for the equipment, and follow the 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 can cause an electrical shock or fire.	

Warning	
Be sure to use the specified cable to connect 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 can cause excessive heat generation or fire.	
When connecting the cable 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 can cause an electrical shock, excessive heat generation or fire.	
Do not damage or modify the power cable. Damaged or modified power cable can cause an electrical shock or fire. Placing heavy items on the power cable, and heating or pulling the power cable can damage the cable.	
Do not mix air or gas other than the specified refrigerant (R-410A) 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 leak and repair it before charging the refrigerant. After charging refrigerant, make sure that there is no refrigerant leak. If the leak 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 can generate toxic gases when it contacts flames, such as fan and other heaters, stoves and ranges.	
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 a combustible gas leaks and remains around the unit, it can cause a fire.	
Be sure to install the packing and seal on the installation frame properly. If the packing and seal are not installed properly, water can enter the room and wet the furniture and floor.	For integral units only

1.1.3 Inspection after Repair

Warning	
Check to make sure that the power cable plug is not dirty or loose, then insert the plug into a power outlet all the way. If the plug has dust or loose connection, it can cause an electrical shock or fire.	
If the power cable and lead wires have scratches or deteriorated, be sure to replace them. Damaged cable and wires can 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 can cause an electrical shock, excessive heat generation or fire.	

Caution	
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 can cause excessive heat generation, fire or an electrical shock.	
If the installation platform or frame has corroded, replace it. Corroded installation platform or frame can cause the unit to fall, resulting in injury.	
Check the grounding, and repair it if the equipment is not properly grounded. Improper grounding can cause an electrical shock.	
Be sure to measure the insulation resistance after the repair, and make sure that the resistance is 1 MΩ or higher. Faulty insulation can cause an electrical shock.	
Be sure to check the drainage of the indoor unit after the repair. Faulty drainage can cause the water to enter the room and wet the furniture and floor.	

1.1.4 Using 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:

1.1.5 Using Icons List

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.

1.2 PREFACE

Thank you for your continued patronage of Daikin products.

This is the new service manual for Daikin's Year 2011 VRVIII-C series Heat Pump 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 VRVIII-C series R-410A Heat Pump System.

March, 2011

After Sales Service Division

Part 1
General Information

1. Model Names of Indoor/Outdoor Units

Indoor Unit

Type		Model Name												Power Supply
Roundflow Ceiling Mounted Cassette	FXFQ	20P8	25P8	32P8	40P8	50P8	63P8	—	80P8	100P8	125P8	—	—	—	VEB
600×600 4-Way Blow Ceiling Mounted Cassette	FXZQ	20M9	25M9	32M9	40M9	50M9	—	—	—	—	—	—	—	—	V1B
2-Way Blow Ceiling Mounted Cassette	FXCQ	20M8	25M8	32M8	40M8	50M8	63M8	—	80M8	—	125M8	—	—	—	V3B
Ceiling Mounted Corner Cassette	FXKQ	—	25MA	32MA	40MA	—	63MA	—	—	—	—	—	—	—	VE
Slim Concealed Ceiling Unit	FXDQ-PBVE	20PB	25PB	32PB	—	—	—	—	—	—	—	—	—	—	VE
	FXDQ-NBVE	—	—	—	40NB	50NB	63NB	—	—	—	—	—	—	—	VE
Concealed Ceiling Unit (Small)	FXDQ	20M9	25M9	—	—	—	—	—	—	—	—	—	—	—	V3B
Concealed Ceiling Unit	FXSQ	20P7	25P7	32P7	40P7	50P7	63P7	—	80P7	100P7	125P7	—	—	—	VEB
Concealed Ceiling Unit	FXMQ	20P	25P	32P	40P	50P	63P	—	80P	100P	125P	140P	—	—	VE
Concealed Ceiling Unit (Large)	FXMQ	—	—	—	—	—	—	—	—	—	—	—	200MA	250MA	VE
Ceiling Suspended Unit	FXHQ	—	—	32MA	—	—	63MA	—	—	100MA	—	—	—	—	VE
Wall Mounted Unit	FXAQ	20P	25P	32P	40P	50P	63P	—	—	—	—	—	—	—	V1
Floor Standing Unit	FXLQ	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—	—	VE
Concealed Floor Standing Unit	FXNQ	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—	—	VE
Outdoor Air Processing Unit	FXMQ-MF	—	—	—	—	—	—	—	—	—	125MF	—	200MF	250MF	V1
4-way blow ceiling suspended unit	FXUQ	—	—	—	—	—	—	71MA	—	100MA	125MA	—	—	—	V1
Connection Unit for FXUQ	BEVQ	—	—	—	—	—	—	71MA	—	100MA	125MA	—	—	—	VE

Note: FXDQ has following 2 Series, as show below.
FXDQ-PB, NBVE: with Drain Pump
BEV unit is required for FXUQ only.
MA: RoHS Directive models; Specifications, Dimensions and other functions are not changed compared with M type.

BS Units

Type	Model Name			Power Supply
Heat Pump Series	BSV	4Q100P	6Q100P	V1

Outdoor Unit

Series	Model Name					Power Supply
VRVIII-C for cold region	RTSYQ	10P	14P	16P	20P	Y1

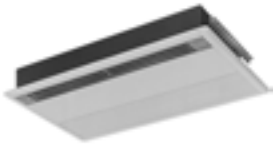
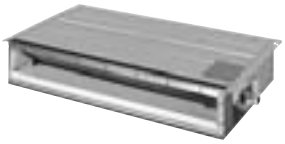
Function Unit

Type	Model Name		Power Supply
VRVIII-C for cold region	BTSQ	20P	Y1

VE : 1ϕ, 220 ~ 240V, 50Hz
V1 : 1ϕ, 220 ~ 240V, 50Hz
V3 : 1ϕ, 230V, 50Hz
Y1 : 3ϕ, 380 ~ 415V, 50Hz

2. External Appearance

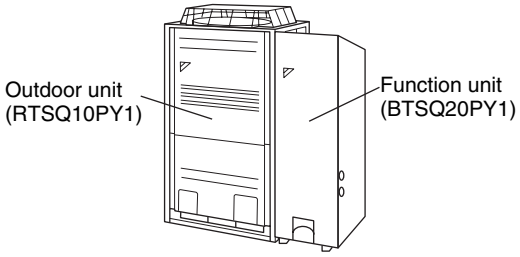
2.1 Indoor Units

Roundflow Ceiling Mounted Cassette FXFQ20P FXFQ25P FXFQ32P FXFQ40P FXFQ50P FXFQ63P FXFQ80P FXFQ100P FXFQ125P 	Concealed Ceiling Unit (Large) FXMQ200MA FXMQ250MA 
600×600 4-Way Blow Ceiling Mounted Cassette FXZQ20M FXZQ25M FXZQ32M FXZQ40M FXZQ50M 	Ceiling Suspended Unit FXHQ32MA FXHQ63MA FXHQ100MA 
2-Way Blow Ceiling Mounted Cassette FXCQ20M FXCQ25M FXCQ32M FXCQ40M FXCQ50M FXCQ63M FXCQ80M FXCQ125M 	Wall Mounted Unit FXAQ20P FXAQ25P FXAQ32P FXAQ40P FXAQ50P FXAQ63P 
Ceiling Mounted Corner Cassette FXKQ25MA FXKQ32MA FXKQ40MA FXKQ63MA 	Floor Standing Unit FXLQ20MA FXLQ25MA FXLQ32MA FXLQ40MA FXLQ50MA FXLQ63MA 
Slim Concealed Ceiling Unit FXDQ20PB FXDQ40NB FXDQ25PB FXDQ50NB FXDQ32PB FXDQ63NB with Drain Pump (VE) 	Concealed Floor Standing Unit FXNQ20MA FXNQ25MA FXNQ32MA FXNQ40MA FXNQ50MA FXNQ63MA 
Concealed Ceiling Unit (Small) FXDQ20M FXDQ25M 	BS Units BSV4Q100P BSV6Q100P 
Concealed Ceiling Unit FXSQ20P FXSQ25P FXSQ32P FXSQ40P FXSQ50P FXSQ63P FXSQ80P FXSQ100P FXSQ125P 	4-way Blow Ceiling Suspended Unit (Connection Unit Series) FXUQ71MA + BEVQ71MA FXUQ100MA + BEVQ100MA FXUQ125MA + BEVQ125MA Connection Unit 
Concealed Ceiling Unit FXMQ20P FXMQ25P FXMQ32P FXMQ40P FXMQ50P FXMQ63P FXMQ80P FXMQ100P FXMQ125P FXMQ140P 	Outdoor Air Processing Unit FXMQ125MF FXMQ200MF FXMQ250MF 

2.2 Outdoor Units and Function Units

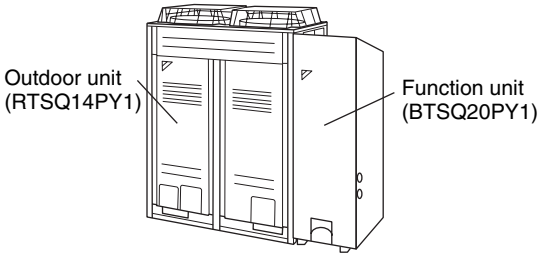
■ 10HP System

RTSYQ10PY1



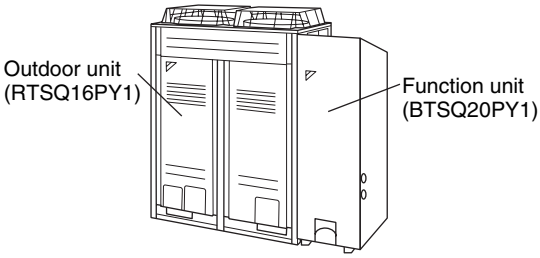
■ 14HP System

RTSYQ14PY1



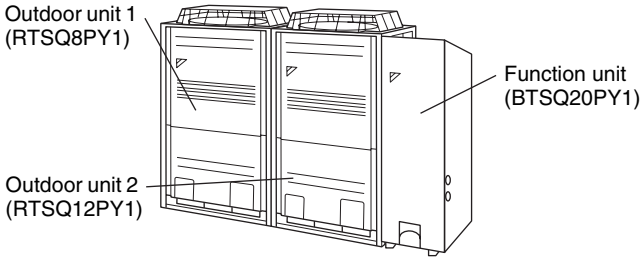
■ 16HP System

RTSYQ16PY1



■ 20HP System

RTSYQ20PY1



3. Model Selection

VRV III-C Heat Pump Series

Connectable indoor units number and capacity

HP	10HP	14HP	16HP	20HP
System name	RTSYQ10PY1	RTSYQ14PY1	RTSYQ16PY1	RTSYQ20PY1
Outdoor unit 1	RTSQ10PY1	RTSQ14PY1	RTSQ16PY1	RTSQ8PY1
Outdoor unit 2	–	–	–	RTSQ12PY1
Function unit	BTSQ20PY1	BTSQ20PY1	BTSQ20PY1	BTSQ20PY1
Total number of connectable indoor units	16	22	26	32
Total capacity of connectable indoor units (kW)	14.0~36.4	22.0~52.0	22.5~58.5	28.0~72.8

Connectable Indoor Unit

Type		Model Name													Power Supply
Roundflow Ceiling Mounted Cassette	FXFQ	20P8	25P8	32P8	40P8	50P8	63P8	—	80P8	100P8	125P8	—	—	—	VEB
600×600 4-Way Blow Ceiling Mounted Cassette	FXZQ	20M9	25M9	32M9	40M9	50M9	—	—	—	—	—	—	—	—	V1B
2-Way Blow Ceiling Mounted Cassette	FXCQ	20M8	25M8	32M8	40M8	50M8	63M8	—	80M8	—	125M8	—	—	—	V3B
Ceiling Mounted Corner Cassette	FXKQ	—	25MA	32MA	40MA	—	63MA	—	—	—	—	—	—	—	VE
Slim Concealed Ceiling Unit	FXDQ-PBVE	20PB	25PB	32PB	—	—	—	—	—	—	—	—	—	—	VE
	FXDQ-NBVE	—	—	—	40NB	50NB	63NB	—	—	—	—	—	—	—	VE
Concealed Ceiling Unit (Small)	FXDQ	20M9	25M9	—	—	—	—	—	—	—	—	—	—	—	V3B
Concealed Ceiling Unit	FXSQ	20P7	25P7	32P7	40P7	50P7	63P7	—	80P7	100P7	125P7	—	—	—	VEB
Concealed Ceiling Unit	FXMQ	20P	25P	32P	40P	50P	63P	—	80P	100P	125P	140P	—	—	VE
Concealed Ceiling Unit (Large)	FXMQ	—	—	—	—	—	—	—	—	—	—	—	200MA	250MA	VE
Ceiling Suspended Unit	FXHQ	—	—	32MA	—	—	63MA	—	—	100MA	—	—	—	—	VE
Wall Mounted Unit	FXAQ	20P	25P	32P	40P	50P	63P	—	—	—	—	—	—	—	V1
Floor Standing Unit	FXLQ	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—	—	VE
Concealed Floor Standing Unit	FXNQ	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—	—	VE
Outdoor Air Processing Unit	FXMQ-MF	—	—	—	—	—	—	—	—	—	125MF	—	200MF	250MF	V1
4-way blow ceiling suspended unit	FXUQ	—	—	—	—	—	—	71MA	—	100MA	125MA	—	—	—	V1
Connection Unit for FXUQ	BEVQ	—	—	—	—	—	—	71MA	—	100MA	125MA	—	—	—	VE

Note: FXDQ has following 2 Series, as show below.
FXDQ-PB, NBVE: with Drain Pump
BEV unit is required for FXUQ only.
MA: RoHS Directive models; Specifications, Dimensions and other functions are not changed compared with M type.

Indoor unit capacity

New refrigerant model code	P20 type	P25 type	P32 type	P40 type	P50 type	P63 type	P80 type	P100 type	P125 type	P140 type	P200 type	P250 type
Selecting model capacity	2.2 kW	2.8 kW	3.5 kW	4.5 kW	5.6 kW	7.0 kW	9.0 kW	11.2 kW	14.0 kW	16.0 kW	22.4 kW	28.0 kW
Equivalent output	0.8HP	1HP	1.25HP	1.6HP	2.0HP	2.5HP	3.2HP	4HP	5HP	6HP	8HP	10HP

Use the above tables to determine the capacities of indoor units to be connected. Make sure the total capacity of indoor units connected to each outdoor unit is within the specified value (kW).

- The total capacity of connected indoor units must be within a range of 50 to 130% of the rated capacity of the outdoor unit.
- In some models, it is not possible to connect the maximum number of connectable indoor units. Select models so the total capacity of connected indoor units conforms to the specification.

4. Features of This Model Series

This Model Series feature efficient heating operation conducted by adopting the "Two-stage Compression System" at low outdoor temperatures.

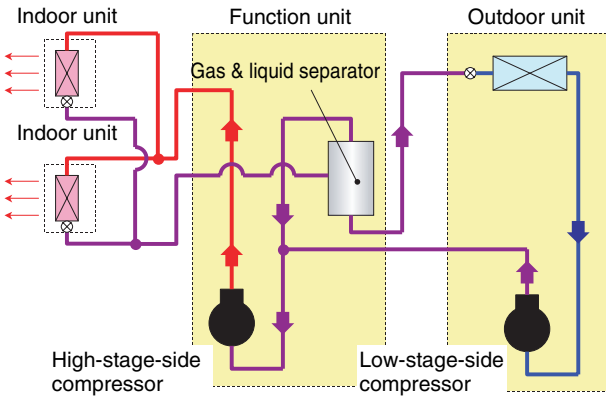
<Two-stage Compression System>

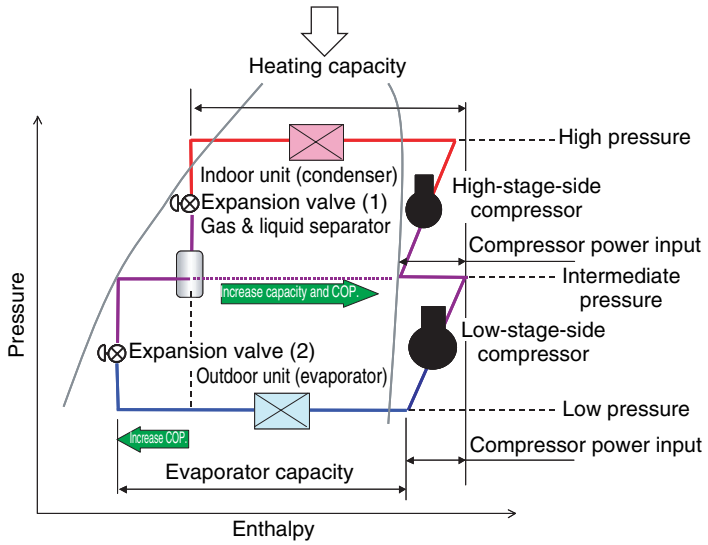
This is a system to conduct efficient heating operation by two-stage compression with two compressors connected in series.

The system is designed to separate gas and liquid with the "Gas & liquid separator" incorporated in the function unit to bypass all gas refrigerants that do not contribute to evaporation to the high-stage-side compressor on the high stage side, thus providing increased evaporator efficiency.

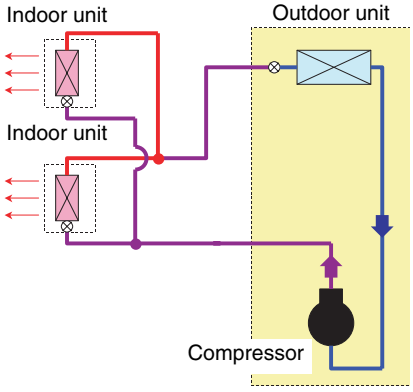
Furthermore, since the high-stage-side suction gas temperature falls, radiation loss also reduces to provide increased compressor efficiency.

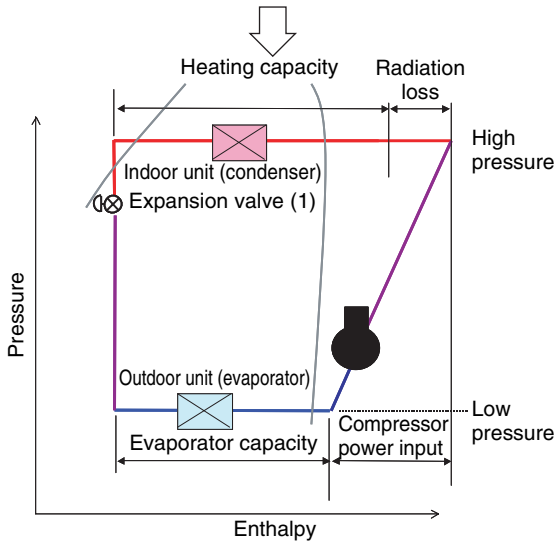
New System
(At low outdoor temperatures)





Conventional System





Part 2
Specifications

1. Specifications

1.1 Outdoor Units

Heat Pump 50Hz <RTSYQ-P>

Model Name				RTSYQ10PY1
Independent Unit		Outdoor Unit		RTSQ10PY1
		Function Unit		BTSQ20PY1
★1 Cooling Capacity			kW	28.0
★2 Heating Capacity			kW	31.5
★3 Heating Capacity (-10°CWB)			kW	28.0
Casing Color				Ivory White 5Y7.5/1
Dimensions: (H×W×D)			mm	(1,680×930×765)+(1,570×460×765)
Heat Exchanger				Cross Fin Coil
Comp.	Type			Hermetically Sealed Scroll Type
	Displacement ★4		m^3/h	(13.72+10.53)+16.9
	Number of Revolutions		r.p.m	(6300, 2900), 7980
	Motor Output×Number of Units ★5		kW	(2.2+4.5)+4.7
	Starting Method			Soft Start
Fan	Type			Propeller Fan
	Motor Output		kW	0.75×1
	Airflow Rate		m^3/min	185
	Drive			Direct Drive
Connecting Pipes	Liquid Pipe			ϕ9.5 C1220T (Brazing Connection)
	Suction Gas Pipe			ϕ22.2 C1220T (Brazing Connection)
Mass (Weight)			kg	257+110
Operating Sound			dB(A)	60
Safety Devices				High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method				Deicer
Capacity Control			%	9~100
Refrigerant	Refrigerant Name			R-410A
	Charge		kg	10.5
	Control			Electronic Expansion Valve
Refrigerator Oil				Refer to the nameplate of compressor
Standard Accessories				Installation Manual, Operation Manual, Connection Pipes, Clamps
Drawing No.				C: 4D060777

Notes:

★1 Indoor temp. : 27°CDB, 19°CWB / Outdoor temp. : 35°CDB
Equivalent piping length : 7.5m, level difference : 0m
Function unit : 6m

★2 Indoor temp. : 20°CDB / Outdoor temp. : 7°CDB, 6°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit : 6m

★3 Indoor temp. : 20°CDB / Outdoor temp. : -10°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit : 6m

★4 Displacement value are at nominal capacity.

★5 Motor output are nominal.

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

Model Name				RTSYQ14PY1
Independent Unit		Outdoor Unit		RTSQ14PY1
		Function Unit		BTSQ20PY1
★1 Cooling Capacity (19.5°CWB)			kW	40.0
★2 Cooling Capacity (19.0°CWB)			kW	45.0
★3 Heating Capacity			kW	40.0
Casing Color				Ivory White 5Y7.5/1
Dimensions: (H×W×D)			mm	(1,680×1,240×765)+(1,570×460×765)
Heat Exchanger				Cross Fin Coil
Comp.	Type			Hermetically Sealed Scroll Type
	Displacement ★4		m^3/h	(13.72+10.53+10.53)+16.9
	Number of Revolutions		r.p.m	(6300, 2900, 2900), 7980
	Motor Output×Number of Units ★5		kW	(1.9+4.5+4.5)+4.7
	Starting Method			Soft Start
Fan	Type			Propeller Fan
	Motor Output		kW	0.35×2
	Airflow Rate		m^3/min	233
	Drive			Direct Drive
Connecting Pipes	Liquid Pipe			ϕ12.7 C1220T (Brazing Connection)
	Suction Gas Pipe			ϕ28.6 C1220T (Brazing Connection)
Mass (Weight)			kg	338+110
Operation Sound			dB(A)	61
Safety Devices				High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method				Deicer
Capacity Control			%	7~100
Refrigerant	Refrigerant Name			R-410A
	Charge		kg	11.7
	Control			Electronic Expansion Valve
Refrigerator Oil				Refer to the nameplate of compressor
Standard Accessories				Installation Manual, Operation Manual, Connection Pipes, Clamps
Drawing No.				C: 4D060778

Notes:

★1 Indoor temp. : 27°CDB, 19°CWB / Outdoor temp. : 35°CDB
Equivalent piping length : 7.5m, level difference : 0m
Function unit : 6m

★2 Indoor temp. : 20°CDB / Outdoor temp. : 7°CDB, 6°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit : 6m

★3 Indoor temp. : 20°CDB / Outdoor temp. : -10°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit : 6m

★4 Displacement value are at nominal capacity.

★5 Motor output are nominal.

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

Model Name				RTSYQ16PY1
Independent Unit		Outdoor Unit		RTSQ16PY1
		Function Unit		BTSQ20PY1
★1 Cooling Capacity (19.5°CWB)			kW	45.0
★2 Cooling Capacity (19.0°CWB)			kW	50.0
★3 Heating Capacity			kW	45.0
Casing Color				Ivory White 5Y7.5/1
Dimensions: (H×W×D)			mm	(1,680×1,240×765)+(1,570×460×765)
Heat Exchanger				Cross Fin Coil
Comp.	Type			Hermetically Sealed Scroll Type
	Displacement ★4		m^3/h	(13.72+10.53+10.53)+16.9
	Number of Revolutions		r.p.m	(6300, 2900, 2900), 7980
	Motor Output×Number of Units ★5		kW	(3.2+4.5+4.5)+4.7
	Starting Method			Soft Start
Fan	Type			Propeller Fan
	Motor Output		kW	0.75×2
	Airflow Rate		m^3/min	239
	Drive			Direct Drive
Connecting Pipes	Liquid Pipe			ϕ12.7 C1220T (Brazing Connection)
	Suction Gas Pipe			ϕ28.6 C1220T (Brazing Connection)
Mass (Weight)			kg	344+110
Operation Sound			dB(A)	63
Safety Devices				High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method				Deicer
Capacity Control			%	7~100
Refrigerant	Refrigerant Name			R-410A
	Charge		kg	11.7
	Control			Electronic Expansion Valve
Refrigerator Oil				Refer to the nameplate of compressor
Standard Accessories				Installation Manual, Operation Manual, Connection Pipes, Clamps
Drawing No.				C: 4D060779

Notes:

★1 Indoor temp. : 27°CDB, 19°CWB / Outdoor temp. : 35°CDB
Equivalent piping length : 7.5m, level difference : 0m
Function unit : 6m

★2 Indoor temp. : 20°CDB / Outdoor temp. : 7°CDB, 6°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit : 6m

★3 Indoor temp. : 20°CDB / Outdoor temp. : -10°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit : 6m

★4 Displacement value are at nominal capacity.

★5 Motor output are nominal.

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

Model Name				RTSYQ20PY1
Independent Unit		Outdoor Unit		RTSQ8PY1+RTSQ12PY1
		Function Unit		BTSQ20PY1
★1 Cooling Capacity (19.5°CWB)			kW	56.0
★2 Cooling Capacity (19.0°CWB)			kW	63.0
★3 Heating Capacity			kW	56.0
Casing Color				Ivory White 5Y7.5/1
Dimensions: (H×W×D)			mm	(1,680×930×765)×2+(1,570×460×765)
Heat Exchanger				Cross Fin Coil
Comp.	Type			Hermetically Sealed Scroll Type
	Displacement ★4		m^3/h	16.9+(13.72+10.53)+16.9
	Number of Revolutions		r.p.m	7980, (6300, 2900), 7980
	Motor Output×Number of Units ★5		kW	4.7+(3.5+4.5)+4.7
	Starting Method			Soft Start
Fan	Type			Propeller Fan
	Motor Output		kW	(0.75×1)+(0.75×1)
	Airflow Rate		m^3/min	185+200
	Drive			Direct Drive
Connecting Pipes	Liquid Pipe			ϕ15.9 C1220T (Brazing Connection)
	Suction Gas Pipe			ϕ28.6 C1220T (Brazing Connection)
Equalizer pipe				ϕ19.1 C1220T (Brazing Connection)
Mass (Weight)			kg	205+257+110
Operating Sound			dB(A)	63
Safety Devices				High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method				Deicer
Capacity Control			%	6~100
Refrigerant	Refrigerant Name			R-410A
	Charge		kg	9.4+10.9
	Control			Electronic Expansion Valve
Refrigerator Oil				Refer to the nameplate of compressor
Standard Accessories				Installation Manual, Operation Manual, Connection Pipes, Clamps
Drawing No.				C: 4D060780

Notes:

★1 Indoor temp. : 27°CDB, 19°CWB / Outdoor temp. : 35°CDB
Equivalent piping length : 7.5m, level difference : 0m
Function unit : 6m

★2 Indoor temp. : 20°CDB / Outdoor temp. : 7°CDB, 6°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit : 6m

★3 Indoor temp. : 20°CDB / Outdoor temp. : -10°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit : 6m

★4 Displacement value are at nominal capacity.

★5 Motor output are nominal.

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

1.2 Indoor Units

Roundflow Ceiling Mounted Cassette

1-1 TECHNICAL SPECIFICATIONS				FXFQ20P8VEB	FXFQ25P8VEB	FXFQ32P8VEB	FXFQ40P8VEB	FXFQ50P8VEB
Capacity	Cooling		kW	2.2	2.8	3.6	4.5	5.6
	Heating		kW	2.5	3.2	4.0	5.0	6.3
Power Input	Cooling		kW	0.053	0.053	0.053	0.063	0.083
	Heating		kW	0.045	0.045	0.045	0.055	0.067
Casing	Material			Galvanised steel				
Dimensions	Packing	Height	mm	220				
		Width	mm	882				
		Depth	mm	882				
	Unit	Height	mm	204				
		Width	mm	840				
		Depth	mm	840				
Weight	Unit		kg	20	20	20	20	21
	Packed Unit		kg	24	24	24	24	26
Dimensions	Length	Inside	mm	2,096				
		Outside	mm	2,152				
Heat Exchanger	Dimensions	Nr of Rows		2				
		Fin Pitch	mm	1.2				
		Nr of Passes		2	2	3	3	7
		Face Area	m²	0.267	0.267	0.267	0.267	0.357
		Nr of Stages		6	6	6	6	8
		Empty Tube Plate Hole		4	4			
	Fin	Fin type		Cross fin coil (Multi louver fins and Hi-XSS tubes)				
Fan	Type			Turbo fan				
	Quantity			1				
Airflow Rate	Cooling	High	m³/min	12.5	12.5	12.5	13.5	15.5
		Low	m³/min	9.0	9.0	9.0	9.0	10.0
	Heating	High	m³/min	12.5	12.5	12.5	13.5	15.0
		Low	m³/min	9.0	9.0	9.0	9.0	9.5
Fan	Motor	Model		QTS48D11M				
		Steps		2				
		Output (high)	W	56				
Refrigerant	Name			R-410A				
Sound level	Cooling	Sound power (nominal)	dBA	49	49	49	50	51
Cooling	Sound Pressure	High	dBA	31	31	31	32	33
		Low	dBA	28				
Heating	Sound Pressure	High	dBA	31	31	31	32	33
		Low	dBA	28				
Piping connections	Liquid (OD)	Type		Flare connection				
		Diameter	mm	6.4				
	Gas	Type		Flare connection				
		Diameter	mm	12.7				
	Drain	Diameter	mm	VP25 (I.D. 25/O.D. 32)				
	Heat Insulation			Foamed polystyrene/foamed polyethylene				
	Sound absorbing insulation			(Foamed Polyurethane)				
Decoration Panel	Model			BYCQ140CW1 / BYCQ140CW1W				
	Colour			RAL9010				
	Dimensions	Height	mm	50				
		Width	mm	950				
		Depth	mm	950				
	Weight		kg	5.5				
Air Filter				Resin net with mold resistance				

Roundflow Ceiling Mounted Cassette

1-1 TECHNICAL SPECIFICATIONS	FXFQ20P8VEB	FXFQ25P8VEB	FXFQ32P8VEB	FXFQ40P8VEB	FXFQ50P8VEB
Standard Accessories	Installation and operation manual				
	Drain hose				
	Washer for hanging bracket				
	Screws				
	Sealing pads				
	Insulation for fitting				
	Clamp for drain hose				
	Installation guide				
	Drain sealing pad				
Notes	The sound pressure values are mentioned for a unit installed with rear suction				
	The sound power level is an absolute value indicating the power which a sound source generates.				
	Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 5m, level difference : 0m.				
	Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 5m, level difference : 0m.				
	Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.				
	The BYCQ140CW1W has white insulations. Be informed that formation of dirt on white insulations is visibly stronger and that it is consequently not advised to install the BYCQ140W1W decoration panel in environments exposed to concentrations of dirt.				

Roundflow Ceiling Mounted Cassette

1-1 TECHNICAL SPECIFICATIONS				FXFQ63P8VEB	FXFQ80P8VEB	FXFQ100P8VEB	FXFQ125P8VEB
Capacity	Cooling		kW	7.1	9.0	11.2	14.0
	Heating		kW	8.0	10.0	12.5	16.0
Power Input	Cooling		kW	0.095	0.120	0.173	0.258
	Heating		kW	0.114	0.108	0.176	0.246
Casing	Material			Galvanised steel			
Dimensions	Packing	Height	mm	220	262	262	304
		Width	mm	882			
		Depth	mm	882			
	Unit	Height	mm	204	246	246	288
		Width	mm	840			
		Depth	mm	840			
Weight	Unit		kg	21	24	24	26
	Packed Unit		kg	26	28	28	31
Dimensions	Length	Inside	mm	2,096			
		Outside	mm	2,152			
Heat Exchanger	Dimensions	Nr of Rows		2			
		Fin Pitch	mm	1.2			
		Nr of Passes		7	9	9	11
		Face Area	m^2	0.357	0.446	0.446	0.535
		Nr of Stages		8	10	10	12
	Fin	Fin type		Cross fin coil (Multi louver fins and Hi-XSS tubes)			
Fan	Type			Turbo fan			
	Quantity			1			
Airflow Rate	Cooling	High	m^3/min	16.5	23.5	26.5	33.0
		Low	m^3/min	11.0	14.5	17.0	20.0
	Heating	High	m^3/min	17.5	23.5	28.0	33.0
		Low	m^3/min	12.0	14.5	17.5	20.0
Fan	Motor	Model		QTS48D11M	QTS48C15M	QTS48C15M	QTS48C15M
		Steps		2			
		Output (high)	W	56	120	120	120
Refrigerant	Name			R-410A			
Sound level	Cooling	Sound power (nominal)	dBA	52	55	58	61
Cooling	Sound Pressure	High	dBA	34	38	41	44
		Low	dBA	29	32	33	34
Heating	Sound Pressure	High	dBA	36	38	42	44
		Low	dBA	30	32	34	34
Piping connections	Liquid (OD)	Type		Flare connection			
		Diameter	mm	9.52			
	Gas	Type		Flare connection			
		Diameter	mm	15.9			
	Drain	Diameter	mm	VP25 (I.D. 25/O.D. 32)			
	Heat Insulation			Foamed polystyrene/foamed polyethylene			
	Sound absorbing insulation			(Foamed Polyurethane)			
Decoration Panel	Model			BYCQ140CW1 / BYCQ140CW1W			
	Colour			RAL9010			
	Dimensions	Height	mm	50			
		Width	mm	950			
		Depth	mm	950			
	Weight		kg	5.5			
Air Filter				Resin net with mold resistance			

1-1 TECHNICAL SPECIFICATIONS	FXFQ63P8VEB	FXFQ80P8VEB	FXFQ100P8VEB	FXFQ125P8VEB
Standard Accessories	Installation and operation manual			
	Drain hose			
	Washer for hanging bracket			
	Screws			
	Sealing pads			
	Insulation for fitting			
	Clamp for drain hose			
	Installation guide			
	Drain sealing pad			
Notes	The sound pressure values are mentioned for a unit installed with rear suction			
	The sound power level is an absolute value indicating the power which a sound source generates.			
	Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 5m, level difference : 0m.			
	Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 5m, level difference : 0m.			
	Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.			
	The BYCQ140CW1W has white insulations. Be informed that formation of dirt on white insulations is visibly stronger and that it is consequently not advised to install the BYCQ140W1W decoration panel in environments exposed to concentrations of dirt.			

1-2 ELECTRICAL SPECIFICATIONS			FXFQ20P8VEB	FXFQ25P8VEB	FXFQ32P8VEB	FXFQ40P8VEB	FXFQ50P8VEB
Power Supply	Name		VE				
	Frequency	Hz	50				
	Voltage	V	220-240				
Current	Minimum circuit amps (MCA)	A	0.4	0.4	0.4	0.5	0.6
	Maximum fuse amps (MFA)	A	16				
	Full load amps (FLA)	A	0.3	0.3	0.3	0.4	0.5
Voltage range	Minimum	V	-10%				
	Maximum	V	+10%				
Notes	Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.						
	Maximum allowable voltage range variation between phases is 2%.						
	MCA/MFA : MCA = 1.25 × FLA						
	MFA is smaller than or equal to 4 × FLA						
	Next lower standard fuse rating minimum 16A						
	Select wire size based on the MCA						
	Instead of a fuse, use a circuit breaker						

1-1 ELECTRICAL SPECIFICATIONS			FXFQ63P8VEB	FXFQ80P8VEB	FXFQ100P8VEB	FXFQ125P8VEB
Power Supply	Name		VE			
	Frequency	Hz	50			
	Voltage	V	220-240			
Current	Minimum circuit amps (MCA)	A	0.9	0.9	1.4	1.9
	Maximum fuse amps (MFA)	A	16			
	Full load amps (FLA)	A	0.7	0.7	1.1	1.5
Voltage range	Minimum	V	-10%			
	Maximum	V	+10%			
Notes	Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.					
	Maximum allowable voltage range variation between phases is 2%.					
	MCA/MFA : MCA = 1.25 × FLA					
	MFA is smaller than or equal to 4 × FLA					
	Next lower standard fuse rating minimum 16A					
	Select wire size based on the MCA					
	Instead of a fuse, use a circuit breaker					

600×600 4-Way Blow Ceiling Mounted Cassette

1-1 TECHNICAL SPECIFICATIONS				FXZQ20M9V1B	FXZQ25M9V1B	FXZQ32M9V1B	FXZQ40M9V1B	FXZQ50M9V1B
Capacity	Cooling		kW	2.2	2.8	3.6	4.5	5.6
	Heating		kW	2.5	3.2	4.0	5.0	6.3
Power Input	Cooling		kW	0.073	0.073	0.076	0.089	0.115
	Heating		kW	0.064	0.064	0.068	0.080	0.107
Casing	Material			Galvanised steel				
Dimensions	Unit	Height	mm	286				
		Width	mm	575				
		Depth	mm	575				
Weight	Unit		kg	18				
Heat Exchanger	Dimensions	Nr of Rows		2				
		Fin Pitch	mm	1.5				
		Face Area	m²	0.269				
		Nr of Stages		10				
Fan	Type			Turbo fan				
	Quantity			1				
Cooling	High	m³/min		9.0	9.0	9.5	11.0	14.0
	Low	m³/min		7.0	7.0	7.5	8.0	10.0
Fan	Motor	Quantity		1				
		Model		QTS32C15M				
		Output (high)	W	55				
		Drive		Direct drive				
Refrigerant	Name			R-410A				
Sound level	Cooling	Sound power (nominal)	dBA	47	47	49	53	58
Cooling	Sound Pressure	High	dBA	30	30	32	36	41
		Low	dBA	25	25	26	28	33
Piping connections	Liquid (OD)	Type		Flare connection				
		Diameter	mm	6.35				
	Gas	Type		Flare connection				
		Diameter	mm	12.7				
	Drain	Diameter	mm	26				
	Heat Insulation			Foamed polystyrene/foamed polyethylene				
Decoration Panel	Model			BYFQ60B7W1				
	Colour			White (Ral 9010)				
	Dimensions	Height	mm	55				
		Width	mm	700				
		Depth	mm	700				
	Weight		kg	2.7				
Air Filter				Resin net with mold resistance				
Refrigerant control				Electronic expansion valve				
Temperature control				Microprocessor thermostat for cooling and heating				
Safety devices				PCB fuse				
				Fan motor thermal protector				
Standard Accessories				Installation and operation manual				
				Paper pattern for installation				
				Drain hose				
				Clamp metal				
				Washer fixing plate				
				Sealing pads				
				Clamps				
				Screws				
				Washer for hanger bracket				
				Insulation for fitting				
Notes				Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 7.5m (horizontal)				
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 7.5m (horizontal)				
				Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.				

1-2 ELECTRICAL SPECIFICATIONS			FXZQ20M9V1B	FXZQ25M9V1B	FXZQ32M9V1B	FXZQ40M9V1B	FXZQ50M9V1B
Power Supply	Name		V1				
	Phase		1~				
	Frequency	Hz	50				
	Voltage	V	220-240				
Current	Minimum circuit amps (MCA)	A	0.8	0.8	0.8	0.8	0.9
	Maximum fuse amps (MFA)	A	15				
	Full load amps (FLA)	A	0.6	0.6	0.6	0.6	0.7
Voltage range	Minimum	V	-10%				
	Maximum	V	+10%				
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.				
			Maximum allowable voltage range variation between phases is 2%.				
			MCA/MFA : MCA = 1.25 × FLA				
			MFA is smaller than or equal to 4 × FLA				
			Next lower standard fuse rating minimum 15A				
			Select wire size based on the MCA				
			Instead of a fuse, use a circuit breaker				

2-Way Blow Ceiling Mounted Cassette

1-1 TECHNICAL SPECIFICATIONS				FXCQ20M8V3B	FXCQ25M8V3B	FXCQ32M8V3B	FXCQ40M8V3B	FXCQ50M8V3B
Nominal Capacity	Cooling		kW	2.20	2.80	3.60	4.50	5.60
	Heating		kW	2.50	3.20	4.00	5.00	6.30
Power input (Nominal)	Cooling		kW	0.077	0.092	0.092	0.130	0.130
	Heating		kW	0.044	0.059	0.059	0.097	0.097
Casing	Colour			Non painted				
	Material			Galvanised steel				
Dimensions	Packing	Height	mm	405	405	405	405	405
		Width	mm	1060	1060	1060	1280	1280
		Depth	mm	665	665	665	665	665
	Unit	Height	mm	305	305	305	305	305
		Width	mm	780	780	780	995	995
		Depth	mm	600	600	600	600	600
Weight	Unit		kg	26	26	26	31	32
	Packed Unit		kg	30	30	30	37	38
Required Ceiling Void			mm	350	350	350	350	350
Heat Exchanger	Dimensions	Length	mm	475 × 2	475 × 2	475 × 2	690 × 2	475 × 2
		Nr of Rows		2 × 2				
		Fin Pitch	mm	1.50	1.50	1.50	1.50	1.50
		Nr of Passes		3 × 2				
		Face Area	m²	0.1 × 2	0.1 × 2	0.1 × 2	0.145 × 2	0.145 × 2
		Nr of Stages		10 × 2				
		Empty Tube Plate Hole					6	
	Tube type			Hi-XSS (7)				
	Fin	Fin type		Symmetric waffle louvre				
		Treatment		Hydrophilic				
Fan	Type			Sirocco fan				
	Quantity			1	1	1	2	2
Airflow Rate	Cooling	High	m³/min	7.0	9.0	9.0	12.0	12.0
		Low	m³/min	5.0	6.5	6.5	9.0	9.0
	Heating	High	m³/min	7.0	9.0	9.0	12.0	12.0
		Low	m³/min	5.0	6.5	6.5	9.0	9.0
Fan	Motor	Quantity		1	1	1	1	1
		Steps		Phase cut control				
		Output (high)	W	10	15	15	20	20
		Drive		Direct drive				
Refrigerant	Name			R-410A				
Sound Level	Cooling	Sound power (nominal)	dBA	45.0	50.0	50.0	50.0	50.0
Cooling	Sound Pressure	High	dBA	33.0	35.0	35.0	35.5	35.5
		Low	dBA	28.0	29.0	29.0	30.5	30.5
Heating	Sound Pressure	High	dBA	33.0	35.0	35.0	35.5	35.5
		Low	dBA	28.0	29.0	29.0	30.5	30.5
Piping connections	Liquid (OD)	Type		Flare connection				
		Diameter	mm	6.35	6.35	6.35	6.35	6.35
	Gas	Type		Flare connection				
		Diameter	mm	12.7	12.7	12.7	12.7	12.7
	Drain	Diameter	mm	32	32	32	32	32
	Heat Insulation			Both liquid and gas pipes				
Decoration Panel	Model			BYBC32GJW1	BYBC32GJW1	BYBC32GJW1	BYBC50GJW1	BYBC50GJW1
	Colour			White (10Y9/0.5)				
	Dimensions	Height	mm	53	53	53	53	53
		Width	mm	1030	1030	1030	1245	1245
		Depth	mm	680	680	680	680	680
	Weight		kg	8.0	8.0	8.0	8.5	8.5
Drain-up Height			mm	600	600	600	600	600

2-Way Blow Ceiling Mounted Cassette

1-1 TECHNICAL SPECIFICATIONS		FXCQ20M8V3B	FXCQ25M8V3B	FXCQ32M8V3B	FXCQ40M8V3B	FXCQ50M8V3B
Air Filter		Resin net with mold resistance				
Air direction control		Up and downwards				
Refrigerant control		Electronic expansion valve				
Temperature control		Microprocessor thermostat for cooling and heating				
Safety devices		PCB fuse				
		Fan motor thermal fuse				
		Drain pump fuse				
Standard Accessories	Standard Accessories	Screws for fixing the paper pattern for installation				
	Quantity	4	4	4	4	4
	Standard Accessories	Washer for hanging bracket				
	Quantity	8	8	8	8	8
	Standard Accessories	Clamps				
	Quantity	1	1	1	1	1
	Standard Accessories	Installation and operation manual				
	Quantity	1	1	1	1	1
	Standard Accessories	Paper pattern for installation				
	Quantity	1	1	1	1	1
	Standard Accessories	Insulation for fitting				
	Quantity	2	2	2	2	2
	Standard Accessories	Drain hose				
	Quantity	1	1	1	1	1
Notes		Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 8m, level difference : 0m.				
		Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 8m, level difference : 0m.				
		Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.				

1-1 TECHNICAL SPECIFICATIONS				FXCQ63M8V3B	FXCQ80M8V3B	FXCQ125M8V3B
Nominal Capacity	Cooling		kW	7.10	9.00	14.00
	Heating		kW	8.00	10.00	16.00
Power input (Nominal)	Cooling		kW	0.161	0.209	0.256
	Heating		kW	0.126	0.176	0.223
Casing	Colour			Non painted		
	Material			Galvanised steel		
Dimensions	Packing	Height	mm	405	405	405
		Width	mm	1460	1808	1808
		Depth	mm	665	645	645
	Unit	Height	mm	305	305	305
		Width	mm	1180	1670	1670
		Depth	mm	600	600	600
Weight	Unit		kg	35	47	48
	Packed Unit		kg	42	55	56
Required Ceiling Void			mm	350	350	350
Heat Exchanger	Dimensions	Length	mm	875 × 2	1365	1365
		Nr of Rows		2 × 2		
		Fin Pitch	mm	1.50	1.50	1.50
		Nr of Passes		6 × 2	5 × 2	6
		Face Area	m^2	0.184 × 2	0.287 × 2	0.287 × 2
		Nr of Stages		10 × 2		
		Empty Tube Plate Hole			8	
	Tube type			Hi-XSS (7)		
	Fin	Fin type		Symmetric waffle louvre		
		Treatment		Hydrophilic		
Fan	Type			Sirocco fan		
	Quantity			2	3	3
Airflow Rate	Cooling	High	m^3/min	16.5	26.0	33.0
		Low	m^3/min	13.0	21.0	25.0
	Heating	High	m^3/min	16.5	26.0	33.0
		Low	m^3/min	13.0	21.0	25.0
Fan	Motor	Quantity		1	1	1
		Steps		Phase cut control		
		Output (high)	W	30	50	85
		Drive		Direct drive		
Refrigerant	Name			R-410A		
Sound Level	Cooling	Sound power (nominal)	dBA	52.0	54.0	60.0
Cooling	Sound Pressure	High	dBA	38.0	40.0	45.0
		Low	dBA	33.0	35.0	39.0
Heating	Sound Pressure	High	dBA	38.0	40.0	45.0
		Low	dBA	33.0	35.0	39.0
Piping connections	Liquid (OD)	Type		Flare connection		
		Diameter	mm	9.5	9.5	9.5
	Gas	Type		Flare connection		
		Diameter	mm	15.9	15.9	15.9
	Drain	Diameter	mm	32	32	32
	Heat Insulation			Both liquid and gas pipes		
Decoration Panel	Model			BYBC63GJW1	BYBC125GJW1	BYBC125GJW1
	Colour			White (10Y9/0.5)		
	Dimensions	Height	mm	53	53	53
		Width	mm	1430	1920	1920
		Depth	mm	680	680	680
	Weight		kg	9.5	12.0	12.0
Drain-up Height			mm	600	600	600

1-1 TECHNICAL SPECIFICATIONS		FXCQ63M8V3B	FXCQ80M8V3B	FXCQ125M8V3B
Air Filter		Resin net with mold resistance		
Air direction control		Up and downwards		
Refrigerant control		Electronic expansion valve		
Temperature control		Microprocessor thermostat for cooling and heating		
Safety devices		PCB fuse		
		Fan motor thermal fuse	Fan motor thermal protector	Fan motor thermal protector
		Drain pump fuse		
Standard Accessories	Standard Accessories	Screws for fixing the paper pattern for installation		
	Quantity	4	4	4
	Standard Accessories	Washer for hanging bracket		
	Quantity	8	8	8
	Standard Accessories	Clamps		
	Quantity	1	1	1
	Standard Accessories	Installation and operation manual		
	Quantity	1	1	1
	Standard Accessories	Paper pattern for installation		
	Quantity	1	1	1
	Standard Accessories	Insulation for fitting		
	Quantity	2	2	2
	Standard Accessories	Drain hose		
	Quantity	1	1	1
Notes		Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 8m, level difference : 0m.		
		Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 8m, level difference : 0m.		
		Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.		

1-2 ELECTRICAL SPECIFICATIONS			FXCQ20M8V3B	FXCQ25M8V3B	FXCQ32M8V3B	FXCQ40M8V3B	FXCQ50M8V3B
Power Supply	Name		V3				
	Phase		1	1	1	1	1
	Frequency	Hz	50	50	50	50	50
	Voltage	V	230	230	230	230	230
Current	Minimum circuit amps (MCA)	A	0.50	0.50	0.50	0.80	0.80
	Maximum fuse amps (MFA)	A	16.00	16.00	16.00	16.00	16.00
	Full load amps (FLA)	A	0.40	0.40	0.40	0.60	0.60
Voltage range	Minimum	V	-10%				
	Maximum	V	+10%				
Power Supply Intake			Both indoor and outdoor unit				
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.				
			Maximum allowable voltage range variation between phases is 2%.				
			MCA/MFA : MCA = 1.25 × FLA				
			MFA<= 4 × FLA				
			select wire size based on the MCA				
			instead of a fuse, use a circuit breaker				
			For more details concerning conditional connections, see http://extranet.daikineurope.com, select "E-Data Books". Finally, click on the document title of your choice.				

1-2 ELECTRICAL SPECIFICATIONS			FXCQ63M8V3B	FXCQ80M8V3B	FXCQ125M8V3B
Power Supply	Name		V3		
	Phase		1	1	1
	Frequency	Hz	50	50	50
	Voltage	V	230	230	230
Current	Minimum circuit amps (MCA)	A	0.90	1.10	1.30
	Maximum fuse amps (MFA)	A	16.00	16.00	16.00
	Full load amps (FLA)	A	0.70	0.90	1.00
Voltage range	Minimum	V	-10%		
	Maximum	V	+10%		
Power Supply Intake			Both indoor and outdoor unit		
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.		
			Maximum allowable voltage range variation between phases is 2%.		
			MCA/MFA : MCA = 1.25 × FLA		
			MFA<= 4 × FLA		
			select wire size based on the MCA		
			instead of a fuse, use a circuit breaker		
			For more details concerning conditional connections, see http://extranet.daikineurope.com, select "E-Data Books". Finally, click on the document title of your choice.		

Ceiling Mounted Corner Cassette

1-1 TECHNICAL SPECIFICATIONS				FXKQ25MAVE	FXKQ32MAVE	FXKQ40MAVE	FXKQ63MAVE
Nominal Capacity	Cooling		kW	2.80	3.60	4.50	7.10
	Heating		kW	3.20	4.00	5.00	8.00
Power input	Cooling		kW	0.066	0.066	0.076	0.105
	Heating		kW	0.046	0.046	0.056	0.085
Casing	Material			Galvanised steel			
Dimensions	Unit	Height	mm	215			
		Width	mm	1110	1110	1110	1310
		Depth	mm	710			
Weight	Unit		kg	31	31	31	34
Heat Exchanger	Dimensions	Nr of Rows		2	2	2	3
		Fin Pitch	mm	1.75			
		Face Area	m²	0.180	0.180	0.180	0.226
		Nr of Stages		11			
Fan	Type			Sirocco fan			
	Quantity			1			
Airflow Rate	Cooling	High	m³/min	11.00	11.00	13.00	18.00
		Low	m³/min	9.00	9.00	10.00	15.00
Fan	Motor	Quantity		1			
		Model		3D12H1AN1V1	3D12H1AN1V1	3D12H1AP1V1	4D12H1AJ1V1
		Output (high)	W	15	15	20	45
		Drive		Direct drive			
Refrigerant	Name			R-410A			
Cooling	Sound Pressure	High	dBA	38.0	38.0	40.0	42.0
		Low	dBA	33.0	33.0	34.0	37.0
Piping connections	Liquid (OD)	Type		Flare connection			
		Diameter	mm	6.4	6.4	6.4	9.5
	Gas	Type		Flare connection			
		Diameter	mm	12.7	12.7	12.7	15.9
	Drain	Diameter	mm	32			
	Heat Insulation			Foamed Polyethylene			
Decoration Panel	Model			BYK45FJW1	BYK45FJW1	BYK45FJW1	BYK71FJW1
	Colour			White			
	Dimensions	Height	mm	70			
		Width	mm	1240	1240	1240	1440
		Depth	mm	800			
	Weight		kg	8.5	8.5	8.5	9.5
Air Filter				Resin net with mold resistance			
Refrigerant control				Electronic expansion valve			
Temperature control				Microprocessor thermostat for cooling and heating			
Safety devices				PCB fuse			
				Drain pump fuse			
				Fan motor thermal			
Standard Accessories	Standard Accessories			Installation and operation manual			
				Metal clamp for drain hose			
				Clamps			
				Insulation for hangar bracket			
				Positioning Jig for Installation			
				Paper pattern for installation			
				Drain hose			
				Insulation for fitting			
				Sealing Pads			
				Screws			
				Washer			
				Air Outlet blocking pad			
Notes				Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 7.5m (horizontal)			
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 7.5m (horizontal)			
				Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.			
				Sound pressure levels are measured at 220V			

1-2 ELECTRICAL SPECIFICATIONS			FXKQ25MAVE	FXKQ32MAVE	FXKQ40MAVE	FXKQ63MAVE
Power Supply	Name		VE			
	Phase		1			
	Frequency	Hz	50			
	Voltage	V	220-240			
Current	Minimum circuit amps (MCA)	A	0.30	0.30	0.30	0.50
	Maximum fuse amps (MFA)	A	15.00			
	Full load amps (FLA)	A	0.20	0.20	0.20	0.40
Voltage range	Minimum	V	-10%			
	Maximum	V	+10%			
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.			
			Maximum allowable voltage range variation between phases is 2%.			
			MCA/MFA : MCA = 1.25 × FLA			
			MFA<= 4 × FLA			
			next lower standard fuse rating minimum 15A			
			select wire size based on the MCA			
			instead of a fuse, use a circuit breaker			
			For more details concerning conditional connections, see http://extranet.daikineurope.com, select "E-Data Books". Finally, click on the document title of your choice.			

Slim Concealed Ceiling Unit (with Drain Pump)

1-1 TECHNICAL SPECIFICATIONS				FXDQ20PBVE	FXDQ25PBVE	FXDQ32PBVE
Capacity	Cooling		kW	2.2	2.8	3.6
	Heating		kW	2.5	3.2	4.0
Power Input	Cooling		kW	0.086	0.086	0.089
	Heating		kW	0.067	0.067	0.070
Casing	Material			Galvanised steel plate		
Dimensions	Unit	Height	mm	200		
		Width	mm	700		
		Depth	mm	620		
Weight	Unit		kg	23		
Heat Exchanger	Dimensions	Nr of Rows		2	2	3
		Fin Pitch	mm	1.5		
		Face Area	m²	0.126		
		Nr of Stages		12		
Fan	Type			Sirocco fan		
Airflow Rate	Cooling	High high	m³/min	8.0		
		High	m³/min	7.2		
		Low	m³/min	6.4		
Fan	External static pressure	High	Pa	30		
		Standard	Pa	10		
	Motor	Output (high)	W	62		
		Drive		Direct drive		
Cooling	Sound Pressure	High high	dBA	33		
		High	dBA	31		
		Low	dBA	29		
Piping connections	Liquid (OD)	Type		Flare connection		
		Diameter	mm	6.35		
	Gas	Type		Flare connection		
		Diameter	mm	12.7		
	Drain	Diameter	mm	VP20 (I.D. 20/O.D. 26)		
	Sound absorbing insulation			Foamed polyethylene		
Air Filter				Removable/washable/Mildew proof		
Refrigerant control				Electronic expansion valve		
Temperature control				Microprocessor thermostat for cooling and heating		
Safety devices				Fuse		
				Fan motor thermal protector		
Standard Accessories	Standard Accessories			Operation manual		
				Installation manual		
				Drain hose		
				Sealing pads		
				Clamps		
				Washer		
				Insulation for fitting		
				Clamp metal		
				Washer fixing plate		
				Screws for duct flanges		
				Air filter		
				Product Quality Certificate		
Notes				Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 7.5m (horizontal)		
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 7.5m (horizontal)		
				Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.		
				External static pressure is changeable to set by the remote control; this pressure means : high static pressure - standard static pressure.		
				The operation sound levels are conversion values in anechoic chamber. In practice, sound levels tend to be higher than the specified values due to ambient noise or reflection. When the suction place is changed to bottom suction, sound level will increase		

Slim Concealed Ceiling Unit (with Drain Pump)

1-2 ELECTRICAL SPECIFICATIONS			FXDQ20PBVE	FXDQ25PBVE	FXDQ32PBVE
Power Supply	Name		VE		
	Phase		1~		
	Frequency	Hz	50		
	Voltage	V	220-240		
Current	Minimum circuit amps (MCA)	A	0.8		
	Maximum fuse amps (MFA)	A	15		
	Full load amps (FLA)	A	0.6		
Voltage range	Minimum	V	-10%		
	Maximum	V	+10%		
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.		
			Maximum allowable voltage range variation between phases is 2%.		
			MCA/MFA : MCA = 1.25 × FLA		
			MFA is smaller than or equal to 4 × FLA		
			Next lower standard fuse rating minimum 15A		
			Select wire size based on the MCA		
			Instead of a fuse, use a circuit breaker		

Slim Concealed Ceiling Unit (with Drain Pump)

1-1 TECHNICAL SPECIFICATIONS				FXDQ40NBVE	FXDQ50NBVE	FXDQ63NBVE
Capacity	Cooling		kW	4.5	5.6	7.1
	Heating		kW	5.0	6.3	8.0
Power Input	Cooling		kW	0.160	0.165	0.181
	Heating		kW	0.147	0.152	0.168
Casing	Material			Galvanised steel plate		
Dimensions	Unit	Height	mm	200	200	200
		Width	mm	900	900	1,100
		Depth	mm	620	620	620
Weight	Unit		kg	27	28	31
Heat Exchanger	Dimensions	Nr of Rows		3	3	3
		Fin Pitch	mm	1.5	1.5	1.5
		Face Area	m²	0.176	0.176	0.227
		Nr of Stages		12	12	12
Fan	Type			Sirocco fan		
Airflow Rate	Cooling	High high	m³/min	10.5	12.5	16.5
		High	m³/min	9.5	11.0	14.5
		Low	m³/min	8.5	10.0	13.0
Fan	External static pressure	High	Pa	44	44	44
		Standard	Pa	15	15	15
	Motor	Output (high)	W	62	130	130
		Drive		Direct drive		
Cooling	Sound Pressure	High high	dBA	34	35	36
		High	dBA	32	33	34
		Low	dBA	30	31	32
Piping connections	Liquid (OD)	Type		Flare connection		
		Diameter	mm	6.35	6.35	9.52
	Gas	Type		Flare connection		
		Diameter	mm	12.7	12.7	15.9
	Drain (OD)	Diameter	mm	VP20 (I.D. 20/O.D. 26)		
	Sound absorbing insulation			Foamed polyethylene		
Air Filter				Removable/washable/Mildew proof		
Refrigerant control				Electronic expansion valve		
Temperature control				Microprocessor thermostat for cooling and heating		
Safety devices				Fuse		
				Fan motor thermal protector		
Standard Accessories	Standard Accessories			Operation manual		
				Installation manual		
				Drain hose		
				Sealing pads		
				Clamps		
				Washer		
				Insulation for fitting		
				Clamp metal		
				Washer fixing plate		
				Screws for duct flanges		
				Air filter		
				Product Quality Certificate		
Notes				Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 7.5m (horizontal)		
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 7.5m (horizontal)		
				Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.		
				External static pressure is changeable to set by the remote control; this pressure means : high static pressure - standard static pressure.		
				The operation sound levels are conversion values in anechoic chamber. In practice, sound levels tend to be higher than the specified values due to ambient noise or reflection. When the suction place is changed to bottom suction, sound level will increase		

1-2 ELECTRICAL SPECIFICATIONS			FXDQ40NBVE	FXDQ50NBVE	FXDQ63NBVE
Power Supply	Name		VE		
	Phase		1~		
	Frequency	Hz	50	50	50
	Voltage	V	220-240		
Current	Minimum circuit amps (MCA)	A	1.0	1.0	1.1
	Maximum fuse amps (MFA)	A	15	15	15
	Full load amps (FLA)	A	0.8	0.8	0.9
Voltage range	Minimum	V	-10%		
	Maximum	V	+10%		
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.		
			Maximum allowable voltage range variation between phases is 2%.		
			MCA/MFA : MCA = 1.25 × FLA		
			MFA is smaller than or equal to 4 × FLA		
			Next lower standard fuse rating minimum 15A		
			Select wire size based on the MCA		
			Instead of a fuse, use a circuit breaker		

Concealed Ceiling Unit (Small)

1-1 TECHNICAL SPECIFICATIONS				FXDQ20M9V3B	FXDQ25M9V3B
Capacity	Cooling		kW	2.2	2.8
	Heating		kW	2.5	3.2
Power Input	Cooling		kW	0.050	
	Heating		kW	0.050	
Casing	Colour			Non painted	
	Material			Galvanised steel	
Dimensions	Packing	Height	mm	301	
		Width	mm	584	
		Depth	mm	753	
	Unit	Height	mm	230	
		Width	mm	502	
		Depth	mm	652	
Weight	Unit		kg	17	
	Packed Unit		kg	18	
Required Ceiling Void			mm	>250	
Heat Exchanger	Dimensions	Length	mm	430	
		Nr of Rows		2	
		Fin Pitch	mm	1.4	
		Nr of Passes		2	
		Face Area	m²	0.108	
		Nr of Stages		12	
		Empty Tube Plate Hole		4	
	Tube type			Hi-XSS (7)	
	Fin	Fin type		Symmetric waffle louvre	
		Treatment		Hydrophilic	
Fan	Type			Sirocco fan	
	Quantity			1	
Cooling	High	m³/min		6.7	7.4
	Low	m³/min		5.2	5.8
Heating	High	m³/min		6.7	7.4
	Low	m³/min		5.2	5.8
Fan	Motor	Quantity		1	
		Steps		step motor	
		Output (high)	W	10	
		Drive		Direct drive	
Refrigerant	Name			R-410A	
Sound level	Cooling	Sound power (nominal)	dBA	50	
Cooling	Sound Pressure	High	dBA	37	
		Low	dBA	32	
Heating	Sound Pressure	High	dBA	37	
		Low	dBA	32	
Piping connections	Liquid (OD)	Type		Flare connection	
		Diameter	mm	6.35	
	Gas	Type		Flare connection	
		Diameter	mm	12.7	
	Drain	Diameter	mm	I.D. 21.6, O.D. 27.2	
Air Filter				Resin net with mold resistance	
Air direction control				Up and downwards	
Refrigerant control				Electronic expansion valve	
Temperature control				Microprocessor thermostat for cooling and heating	
Safety devices				PCB fuse	
				Fan motor thermal protector	
Notes				Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 8m, level difference : 0m.	
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 8m, level difference : 0m.	
				Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.	

1-2 ELECTRICAL SPECIFICATIONS			FXDQ20M9V3B	FXDQ25M9V3B
Power Supply	Name		V1	
	Phase		1~	
	Frequency	Hz	50	
	Voltage	V	230	
Current	Minimum circuit amps (MCA)	A	0.2	
	Maximum fuse amps (MFA)	A	16	
	Full load amps (FLA)	A	0.1	
Voltage range	Minimum	V	-10%	
	Maximum	V	+10%	
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.	
			Maximum allowable voltage range variation between phases is 2%.	
			MCA/MFA : MCA = 1.25 × FLA	
			MFA < 4 × FLA	
			Next lower standard fuse rating minimum 16A	
			Select wire size based on the MCA	
			Instead of a fuse, use a circuit breaker	

Concealed Ceiling Unit

1-1 TECHNICAL SPECIFICATIONS				FXSQ20P7VEB	FXSQ25P7VEB	FXSQ32P7VEB	FXSQ40P7VEB	FXSQ50P7VEB
Capacity	Cooling		kW	2.2	2.8	3.6	4.5	5.6
	Heating		kW	2.5	3.2	4.0	5.0	6.3
Power Input	Cooling		kW	0.073	0.073	0.079	0.192	0.192
	Heating		kW	0.061	0.061	0.067	0.180	0.180
Casing	Colour			Non painted				
	Material			Galvanised steel				
Dimensions	Packing	Height	mm	355				
		Width	mm	770	770	770	920	920
		Depth	mm	900				
	Unit	Height	mm	300				
		Width	mm	550	550	550	700	700
		Depth	mm	700				
Weight	Unit		kg	23	23	23	26	26
	Packed Unit		kg	28	28	28	32	32
Required Ceiling Void			mm	>350				
Heat Exchanger	Dimensions	Length	mm	290	290	290	440	440
		Nr of Rows		3				
		Fin Pitch	mm	1.75				
		Nr of Passes		3	3	3	4	4
		Face Area	m²	0.097	0.097	0.097	0.148	0.148
		Nr of Stages		16				
		Empty Tube Plate Hole		12				
	Tube type			Hi-XSS (7)				
	Fin	Fin type		Symmetric waffle louvre				
		Treatment		Hydrophilic				
Fan	Type			Sirocco fan				
	Quantity			1				
Cooling	High	m³/min		9	9	9.5	16	16
	Low	m³/min		6.5	6.5	7	11	11
Heating	High	m³/min		9	9	9.5	16	16
	Low	m³/min		6.5	6.5	7	11	11
Fan	External static pressure	High	Pa	70	70	70	100	100
		Standard	Pa	30				
	Motor	Quantity		1				
		Model		Brushless DC motor				
		Steps		9	9	9	10	10
Motor	Speed (cooling)	High	rpm	1,031	1,031	1,061	1,186	1,186
		Low	rpm	802	802	827	875	875
	Speed (heating)	High	rpm	1,031	1,031	1,061	1,186	1,186
		Low	rpm	802	802	827	875	875
Fan	Motor	Output (high)	W	90	90	90	140	140
		Drive		Direct drive				
Refrigerant	Name			R-410A				
Sound level	Cooling	Sound power (nominal)	dBA	55	55	56	63	63
Cooling	Sound Pressure	High	dBA	32	32	33	37	37
		Low	dBA	26	26	27	29	29
Heating	Sound Pressure	High	dBA	32	32	33	37	37
		Low	dBA	26	26	27	29	29
Piping connections	Liquid (OD)	Type		Flare connection				
		Diameter	mm	6.35				
	Gas	Type		Flare connection				
		Diameter	mm	12.7				
	Drain	Diameter	mm	VP25 (O.D. 32 / I.D. 25)				
	Heat Insulation			Both liquid and gas pipes				

Concealed Ceiling Unit

1-1 TECHNICAL SPECIFICATIONS				FXSQ20P7VEB	FXSQ25P7VEB	FXSQ32P7VEB	FXSQ40P7VEB	FXSQ50P7VEB
Decoration Panel	Model			BYBS32DJW1	BYBS32DJW1	BYBS32DJW1	BYBS45DJW1	BYBS45DJW1
	Colour			White (10Y9/0,5)				
	Dimensions	Height	mm	55				
		Width	mm	650	650	650	800	800
		Depth	mm	500				
	Weight		kg	3.0	3.0	3.0	3.5	3.5
Drain-up Height			mm	625				
Air Filter				Resin net with mold resistance				
Refrigerant control				Electronic expansion valve				
Safety devices				PCB fuse				
				PCB fuse (fan driver)				
				Drain pump fuse				
Notes				Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 7.5m, level difference : 0m.				
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 7.5m, level difference : 0m.				
				Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.				
				The sound pressure values are mentioned for a unit installed with rear suction				

Concealed Ceiling Unit

1-1 TECHNICAL SPECIFICATIONS				FXSQ63P7VEB	FXSQ80P7VEB	FXSQ100P7VEB	FXSQ125P7VEB
Capacity	Cooling		kW	7.1	9.0	11.2	14.0
	Heating		kW	8.0	10.0	12.5	16.0
Power Input	Cooling		kW	0.142	0.163	0.247	0.303
	Heating		kW	0.130	0.151	0.235	0.291
Casing	Colour			Non painted			
	Material			Galvanised steel			
Dimensions	Packing	Height	mm	355			
		Width	mm	1,220	1,220	1,620	1,620
		Depth	mm	900			
	Unit	Height	mm	300			
		Width	mm	1,000	1,000	1,400	1,400
		Depth	mm	700			
Weight	Unit		kg	35	35	46	46
	Packed Unit		kg	42	42	54	54
Required Ceiling Void			mm	>350			
Heat Exchanger	Dimensions	Length	mm	740	740	1,140	1,140
		Nr of Rows		3			
		Fin Pitch	mm	1.75			
		Nr of Passes		7	7	11	11
		Face Area	m²	0.249	0.249	0.383	0.383
		Nr of Stages		16			
	Tube type			Hi-XSS (7)			
	Fin	Fin type		Symmetric waffle louvre			
		Treatment		Hydrophilic			
Fan	Type			Sirocco fan			
	Quantity			2	2	3	3
Cooling	High	m³/min		19.5	25	32	39
	Low	m³/min		16	20	23	28
Heating	High	m³/min		19.5	25	32	39
	Low	m³/min		16	20	23	28
Fan	External static pressure	High	Pa	100	100	120	120
		Standard	Pa	30	40	40	50
	Motor	Quantity		1			
		Model		Brushless DC motor			
		Steps		8			
Motor	Speed (cooling)	High	rpm	975	1,161	1,060	1,218
		Low	rpm	840	960	813	920
	Speed (heating)	High	rpm	975	1,161	1,060	1,218
		Low	rpm	840	960	813	920
Fan	Motor	Output (high)	W	350			
		Drive		Direct drive			
Refrigerant	Name			R-410A			
Sound level	Cooling	Sound power (nominal)	dBA	59	63	61	66
Cooling	Sound Pressure	High	dBA	37	38	38	40
		Low	dBA	30	32	32	33
Heating	Sound Pressure	High	dBA	37	38	38	40
		Low	dBA	30	32	32	33

Concealed Ceiling Unit

1-1 TECHNICAL SPECIFICATIONS				FXSQ63P7VEB	FXSQ80P7VEB	FXSQ100P7VEB	FXSQ125P7VEB
Piping connections	Liquid (OD)	Type		Flare connection			
		Diameter	mm	9.52			
	Gas	Type		Flare connection			
		Diameter	mm	15.9			
	Drain	Diameter	mm	VP25 (O.D. 32 / I.D. 25)			
	Heat Insulation			Both liquid and gas pipes			
Decoration Panel	Model			BYBS71DJW1	BYBS71DJW1	BYBS125DJW1	BYBS125DJW1
	Colour			White (10Y9/0,5)			
	Dimensions	Height	mm	55			
		Width	mm	1,100	1,100	1,500	1,500
		Depth	mm	500			
	Weight		kg	4.5	4.5	6.5	6.5
Drain-up Height			mm	625			
Air Filter				Resin net with mold resistance			
Refrigerant control				Electronic expansion valve			
Safety devices				PCB fuse			
				PCB fuse (fan driver)			
				Drain pump fuse			
Notes				Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 7.5m, level difference : 0m.			
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 7.5m, level difference : 0m.			
				Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.			
				The sound pressure values are mentioned for a unit installed with rear suction			

1-2 ELECTRICAL SPECIFICATIONS			FXSQ20P7VEB	FXSQ25P7VEB	FXSQ32P7VEB	FXSQ40P7VEB	FXSQ50P7VEB
Power Supply	Name		VE				
	Frequency	Hz	50				
	Voltage	V	220-240				
Current	Minimum circuit amps (MCA)	A	0.4	0.4	0.4	1.2	1.2
	Maximum fuse amps (MFA)	A	16				
Voltage range	Minimum	V	-10%				
	Maximum	V	+10%				
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.				
			Maximum allowable voltage range variation between phases is 2%.				
			Select wire size based on the MCA				
			Instead of a fuse, use a circuit breaker				

1-1 ELECTRICAL SPECIFICATIONS			FXSQ63P7VEB	FXSQ80P7VEB	FXSQ100P7VEB	FXSQ125P7VEB
Power Supply	Name		VE			
	Frequency	Hz	50			
	Voltage	V	220-240			
Current	Minimum circuit amps (MCA)	A	1.1	1.3	1.6	2.1
	Maximum fuse amps (MFA)	A	16			
Voltage range	Minimum	V	-10%			
	Maximum	V	+10%			
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.			
			Maximum allowable voltage range variation between phases is 2%.			
			Select wire size based on the MCA			
			Instead of a fuse, use a circuit breaker			

Concealed Ceiling Unit

1-1 TECHNICAL SPECIFICATIONS				FXMQ20PVE	FXMQ25PVE	FXMQ32PVE	FXMQ40PVE	FXMQ50PVE
Capacity	Cooling		kW	2.2	2.8	3.6	4.5	5.6
	Heating		kW	2.5	3.2	4.0	5.0	6.3
Power Input	Cooling		kW	0.081	0.081	0.085	0.194	0.215
	Heating		kW	0.069	0.069	0.073	0.182	0.203
Casing	Material			Galvanised steel plate				
Dimensions	Unit	Height	mm	300				
		Width	mm	550	550	550	700	1,000
		Depth	mm	700				
Weight	Unit		kg	25	25	25	28	36
Heat Exchanger	Dimensions	Nr of Rows		3				
		Fin Pitch	mm	1.75				
		Face Area	m²	0.098	0.098	0.098	0.148	0.249
		Nr of Stages		16				
Fan	Type			Sirocco fan				
Airflow Rate	Cooling	High high	m³/min	9	9	9	16	18
		High	m³/min	7.5	7.5	8	13	16.5
		Low	m³/min	6.5	6.5	7	11	15
Fan	External static pressure	High	Pa	100	100	100	160	200
		Standard	Pa	50			100	
		Low	Pa	30	30	30	30	50
	Motor	Output (high)	W	90	90	90	140	350
		Drive		Direct drive				
Piping connections	Liquid (OD)	Type		Flare connection				
		Diameter	mm	6.35	6.35	6.35	6.35	6.35
	Gas	Type		Flare connection				
		Diameter	mm	12.7	12.7	12.7	12.7	12.7
	Drain	Diameter	mm	VP25 (I.D. 32/O.D. 25)				
Refrigerant control				Electronic expansion valve				
Temperature control				Microprocessor thermostat for cooling and heating				
Safety devices				Fuse				
				Fan driver overload protector				
Standard Accessories				Operation manual				
				Installation manual				
				Drain hose				
				Sealing pads				
				Clamps				
				Washer				
				Screws				
				Insulation for fitting				
				Clamp metal				
				Air discharge flange				
				Air suction flange				
Notes				Nominal cooling capacities are based on following conditions: return air temperature: 27°CDB/19°CWB; outdoor temperature: 35°CDB; standard external static pressure: 100Pa; equivalent refrigerant piping: 7.5m (horizontal)				
				Nominal heating capacities are based on following conditions: return air temperature: 20°CDB; outdoor temperature: 7°CDB/6°CWB; standard external static pressure: 100Pa; equivalent refrigerant piping: 7.5m (horizontal)				
				Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.				
				External static pressure is changeable in 7, 18, 14, 10 stages within the ( ) range by the remote control.				
				Air filter is not standard accessory, but please mount it in the duct system of the suction side. Select its colorimetric method (gravity method) 50% or more.				

1-1 TECHNICAL SPECIFICATIONS				FXMQ63PVE	FXMQ80PVE	FXMQ100PVE	FXMQ125PVE	FXMQ140PVE
Capacity	Cooling		kW	7.1	9.0	11.2	14.0	16.0
	Heating		kW	8.0	10.0	12.5	16.0	18.0
Power Input	Cooling		kW	0.230	0.298	0.376	0.461	0.461
	Heating		kW	0.218	0.286	0.364	0.449	0.449
Casing	Material			Galvanised steel plate				
Dimensions	Unit	Height	mm	300				
		Width	mm	1,000	1,000	1,400	1,400	1,400
		Depth	mm	700				
Weight	Unit		kg	36	36	46	46	47
Heat Exchanger	Dimensions	Nr of Rows		3				
		Fin Pitch	mm	1.75				1.5
		Face Area	m²	0.249	0.249	0.383	0.383	0.383
		Nr of Stages		16				
Fan	Type			Sirocco fan				
Airflow Rate	Cooling	High high	m³/min	19.5	25	32	39	46
		High	m³/min	17.5	22.5	27	33	39
		Low	m³/min	16	20	23	28	32
Fan	External static pressure	High	Pa	200	200	200	200	140
		Standard	Pa	100				
		Low	Pa	50	50	50	50	50
	Motor	Output (high)	W	350	350	350	350	350
		Drive		Direct drive				
Piping connections	Liquid (OD)	Type		Flare connection				
		Diameter	mm	9.52	9.52	9.52	9.52	9.52
	Gas	Type		Flare connection				
		Diameter	mm	15.9	15.9	15.9	15.9	15.9
	Drain	Diameter	mm	VP25 (I.D. 32/O.D. 25)				
Refrigerant control				Electronic expansion valve				
Temperature control				Microprocessor thermostat for cooling and heating				
Safety devices				Fuse				
				Fan driver overload protector				
Standard Accessories				Operation manual				
				Installation manual				
				Drain hose				
				Sealing pads				
				Clamps				
				Washer				
				Screws				
				Insulation for fitting				
				Clamp metal				
				Air discharge flange				
				Air suction flange				
Notes				Nominal cooling capacities are based on following conditions: return air temperature: 27°CDB/19°CWB; outdoor temperature: 35°CDB; standard external static pressure: 100Pa; equivalent refrigerant piping: 7.5m (horizontal)				
				Nominal heating capacities are based on following conditions: return air temperature: 20°CDB; outdoor temperature: 7°CDB/6°CWB; standard external static pressure: 100Pa; equivalent refrigerant piping: 7.5m (horizontal)				
				Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.				
				External static pressure is changeable in 7, 13, 14, 10 stages within the ( ) range by the remote control.				
				Air filter is not standard accessory, but please mount it in the duct system of the suction side. Select its colorimetric method (gravity method) 50% or more.				

1-2 ELECTRICAL SPECIFICATIONS			FXMQ20PVE	FXMQ25PVE	FXMQ32PVE	FXMQ40PVE	FXMQ50PVE
Power Supply	Name		VE				
	Phase		1~				
	Frequency	Hz	50				
	Voltage	V	220-240				
Current	Minimum circuit amps (MCA)	A	0.6	0.6	0.6	1.4	1.6
	Maximum fuse amps (MFA)	A	16				
	Full load amps (FLA)	A	0.5	0.5	0.5	1.1	1.3
Voltage range	Minimum	V	-10%				
	Maximum	V	+10%				
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.				
			Maximum allowable voltage range variation between phases is 2%.				
			MCA/MFA : MCA = 1.25 × FLA				
			MFA is smaller than or equal to 4 × FLA				
			Next lower standard fuse rating minimum 16A				
			Select wire size based on the MCA				
			Instead of a fuse, use a circuit breaker				

1-2 ELECTRICAL SPECIFICATIONS			FXMQ63PVE	FXMQ80PVE	FXMQ100PVE	FXMQ125PVE	FXMQ140PVE
Power Supply	Name		VE				
	Phase		1~				
	Frequency	Hz	50				
	Voltage	V	220-240				
Current	Minimum circuit amps (MCA)	A	1.8	2.3	2.9	3.4	3.4
	Maximum fuse amps (MFA)	A	16				
	Full load amps (FLA)	A	1.4	1.8	2.3	2.7	2.7
Voltage range	Minimum	V	-10%				
	Maximum	V	+10%				
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.				
			Maximum allowable voltage range variation between phases is 2%.				
			MCA/MFA : MCA = 1.25 × FLA				
			MFA is smaller than or equal to 4 × FLA				
			Next lower standard fuse rating minimum 16A				
			Select wire size based on the MCA				
			Instead of a fuse, use a circuit breaker				

Concealed Ceiling Unit (Large)

1-1 TECHNICAL SPECIFICATIONS				FXMQ200MAVE	FXMQ250MAVE
Capacity	Cooling		kW	22.4	28.0
	Heating		kW	25.0	31.5
Power Input	Cooling		kW	1.294	1.465
	Heating		kW	1.294	1.465
Casing	Material			Galvanised steel	
Dimensions	Unit	Height	mm	470	470
		Width	mm	1,380	1,380
		Depth	mm	1,100	1,100
Weight	Unit		kg	137	137
Heat Exchanger	Dimensions	Nr of Rows		3	3
		Fin Pitch	mm	2.0	2.0
		Face Area	m²	0.68	0.68
		Nr of Stages		26	26
Fan	Type			Sirocco fan	
	Quantity			2	2
Cooling	High	m³/min		58	72
	Low	m³/min		50	62
Fan	External static pressure (Max)	High	Pa	221	270
		Standard	Pa	132	147
	Motor	Quantity		2	2
		Model		D13/4G2DA1	D13/4G2DA1
		Output (high)	W	380	380
		Drive		Direct drive	
Refrigerant	Name			R-410A	
Cooling	Sound Pressure	High	dBA	48	48
		Low	dBA	45	45
Piping connections	Liquid (OD)	Type		Flare connection	
		Diameter	mm	9.52	9.52
	Gas	Type		Braze connection	
		Diameter	mm	19.1	22.2
	Drain	Diameter	mm	PS1B	PS1B
	Heat Insulation			Glass fiber	
Refrigerant control				Electronic expansion valve	
Temperature control				Microprocessor thermostat for cooling and heating	
Safety devices				Fuse	
				Fan motor thermal protector	
Standard Accessories				Operation manual	
				Installation manual	
				Connection pipes	
				Sealing pads	
				Clamps	
				Screws	
				Insulation for fitting	
				Clamp metal	
Notes				Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 7.5m (horizontal)	
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 7.5m (horizontal)	
				Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.	
				The external static pressure is changeable : change the connectors inside the el. compo. box, this pressure means : High static pressure -standard	
				Air filter is not standard accessory, but please mount it in the duct system of the suction side. Select its colorimetric method (gravity method) 50% or more.	
				Sound pressure levels are measured at 220V	

1-2 TECHNICAL SPECIFICATIONS			FXMQ200MAVE	FXMQ250MAVE
Power Supply	Name		VE	
	Phase		1~	
	Frequency	Hz	50	
	Voltage	V	220-240	
Current	Minimum circuit amps (MCA)	A	8.1	9.0
	Maximum fuse amps (MFA)	A	15	15
	Full load amps (FLA)	A	6.5	7.2
Voltage range	Minimum	V	-10%	
	Maximum	V	+10%	
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.	
			Maximum allowable voltage range variation between phases is 2%.	
			MCA/MFA : MCA = 1.25 × FLA	
			MFA is smaller than or equal to 4 × FLA	
			Next lower standard fuse rating minimum 15A	
			Select wire size based on the MCA	
			Instead of a fuse, use a circuit breaker	

Ceiling Suspended Unit

1-1 TECHNICAL SPECIFICATIONS				FXHQ32MAVE	FXHQ63MAVE	FXHQ100MAVE
Capacity	Cooling		kW	3.6	7.1	11.2
	Heating		kW	4.0	8.0	12.5
Power Input	Cooling		kW	0.111	0.115	0.135
	Heating		kW	0.111	0.115	0.135
Casing	Colour			White (10Y9/0,5)		
Dimensions	Unit	Height	mm	195	195	195
		Width	mm	960	1,160	1,400
		Depth	mm	680	680	680
Weight	Unit		kg	24	28	33
Heat Exchanger	Dimensions	Nr of Rows		2	3	3
		Fin Pitch	mm	1.75	1.75	1.75
		Face Area	m²	0.182	0.233	0.293
		Nr of Stages		12	12	12
Fan	Type			Sirocco fan		
Cooling	High	m³/min		12	17.5	25
	Low	m³/min		10	14	19.5
Fan	Motor	Model		3D12K1AA1	4D12K1AA1	3D12K2AA1
		Output (high)	W	62	62	130
		Drive		Direct drive		
Refrigerant	Name			R-410A		
Cooling	Sound Pressure	High	dBA	36	39	45
		Low	dBA	31	34	37
Piping connections	Liquid (OD)	Type		Flare connection		
		Diameter	mm	6.35	9.52	9.52
	Gas	Type		Flare connection		
		Diameter	mm	12.7	15.9	15.9
	Drain	Diameter	mm	VP20 (I.D. 20/O.D. 26)		
	Heat Insulation			Glass wool		
Air Filter				Resin net with mold resistance		
Refrigerant control				Electronic expansion valve		
Temperature control				Microprocessor thermostat for cooling and heating		
Safety devices				Fuse		
				Fan motor thermal protector		
Standard Accessories				Operation manual		
				Installation manual		
				Drain hose		
				Paper pattern for installation		
				Clamp metal		
				Insulation for fitting		
				Clamps		
				Washer		
Notes				Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 7.5m (horizontal)		
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 7.5m (horizontal)		
				Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.		

1-2 ELECTRICAL SPECIFICATIONS			FXHQ32MAVE	FXHQ63MAVE	FXHQ100MAVE
Power Supply	Name		VE		
	Phase		1~		
	Frequency	Hz	50		
	Voltage	V	220-240		
Current	Minimum circuit amps (MCA)	A	0.8	0.8	0.9
	Maximum fuse amps (MFA)	A	15	15	15
	Full load amps (FLA)	A	0.6	0.6	0.7
Voltage range	Minimum	V	-10%		
	Maximum	V	+10%		
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.		
			Maximum allowable voltage range variation between phases is 2%.		
			MCA/MFA : MCA = 1.25 × FLA		
			MFA is smaller than or equal to 4 × FLA		
			Next lower standard fuse rating minimum 15A		
			Select wire size based on the MCA		
			Instead of a fuse, use a circuit breaker		

Wall Mounted Unit

1-1 TECHNICAL SPECIFICATIONS				FXAQ20PV1	FXAQ25PV1	FXAQ32PV1	FXAQ40PV1	FXAQ50PV1	FXAQ63PV1
Capacity	Cooling		kW	2.2	2.8	3.6	4.5	5.6	7.1
	Heating		kW	2.5	3.2	4.0	5.0	6.3	8.0
Power Input	Cooling		kW	0.016	0.022	0.027	0.020	0.027	0.050
	Heating		kW	0.024	0.027	0.032	0.020	0.032	0.060
Casing	Colour			white (3.0Y8.5/0.5)					
Dimensions	Unit	Height	mm	290					
		Width	mm	795	795	795	1,050	1,050	1,050
		Depth	mm	238					
Weight	Unit		kg	11	11	11	14	14	14
Heat Exchanger	Dimensions	Nr of Rows		2					
		Fin Pitch	mm	1.40					
		Face Area	m²	0.161	0.161	0.161	0.213	0.213	0.213
		Nr of Stages		14					
Fan	Type			Cross flow fan					
	Quantity			1					
Cooling	High	m³/min		7.5	8	8.5	12	15	19
	Low	m³/min		4.5	5	5.5	9	12	14
Fan	Motor	Quantity		1					
		Model		QCL9661M	QCL9661M	QCL9661M	QCL9686M	QCL9686M	QCL9686M
		Output (high)	W	40	40	40	43	43	43
		Drive		Direct drive					
Refrigerant	Name			R-410A					
Cooling	Sound Pressure	High	dBA	36.0	37.0	38.0	40.0	43.0	47.0
		Low	dBA	31.0	31.0	31.0	36.0	38.0	41.0
Piping connections	Liquid (OD)	Type		Flare connection					
		Diameter	mm	6.35	6.35	6.35	6.35	6.35	9.52
	Gas	Type		Flare connection					
		Diameter	mm	12.7	12.7	12.7	12.7	12.7	15.9
	Drain	Diameter	mm	VP13 (I.D. 13/O.D. 18)					
	Heat Insulation			Foamed polystyrene/foamed polyethylene					
Air Filter				Washable resin net					
Refrigerant control				Electronic expansion valve					
Temperature control				Microprocessor thermostat for cooling and heating					
Safety devices				PCB fuse					
Standard Accessories				Installation and operation manual					
				Installation panel					
				Paper pattern for installation					
				Insulation tape					
				Clamps					
				Screws					
Notes				Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 5m (horizontal)					
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 5m (horizontal)					
				Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.					

Wall Mounted Unit

1-2 ELECTRICAL SPECIFICATIONS			FXAQ20PV1	FXAQ25PV1	FXAQ32PV1	FXAQ40PV1	FXAQ50PV1	FXAQ63PV1
Power Supply	Name		VE					
	Phase		1~					
	Frequency	Hz	50					
	Voltage	V	220-240					
Current	Minimum circuit amps (MCA)	A	0.3	0.4	0.4	0.4	0.4	0.6
	Maximum fuse amps (MFA)	A	15					
	Full load amps (FLA)	A	0.2	0.3	0.3	0.3	0.3	0.5
Voltage range	Minimum	V	-10%					
	Maximum	V	+10%					
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.					
			Maximum allowable voltage range variation between phases is 2%.					
			MCA/MFA : MCA = 1.25 × FLA					
			MFA is smaller than or equal to 4 × FLA					
			Next lower standard fuse rating minimum 15A					
			Select wire size based on the MCA					
			Instead of a fuse, use a circuit breaker					

Floor Standing Unit

1-1 TECHNICAL SPECIFICATIONS				FXLQ20MAVE	FXLQ25MAVE	FXLQ32MAVE	FXLQ40MAVE	FXLQ50MAVE	FXLQ63MAVE
Nominal Capacity	Cooling		kW	2.20	2.80	3.60	4.50	5.60	7.10
	Heating		kW	2.50	3.20	4.00	5.00	6.30	8.00
Power input	Cooling		kW	0.049	0.049	0.090	0.090	0.110	0.110
	Heating		kW	0.049	0.049	0.090	0.090	0.110	0.110
Casing	Colour			Ivory white (5Y7,5/1)					
Dimensions	Unit	Height	mm	600	600	600	600	600	600
		Width	mm	1000	1000	1140	1140	1420	1420
		Depth	mm	222	222	222	222	222	222
Weight	Unit		kg	25	25	30	30	36	36
Heat Exchanger	Dimensions	Nr of Rows		3	3	3	3	3	3
		Fin Pitch	mm	1.50	1.50	1.50	1.50	1.50	1.50
		Face Area	m^2	0.159	0.159	0.200	0.200	0.282	0.282
		Nr of Stages		14	14	14	14	14	14
Fan	Type			Sirocco fan					
	Quantity			1	1	1	1	1	1
Airflow Rate	Cooling	High	m^3/min	7.00	7.00	8.00	11.00	14.00	16.00
		Low	m^3/min	6.00	6.00	6.00	8.50	11.00	12.00
Fan	Motor	Quantity		1	1	1	1	1	1
		Model		D14B20	D14B20	2D14B13	2D14B13	2D14B20	2D14B20
		Output (high)	W	15	15	25	25	35	35
		Drive		Direct drive					
Refrigerant	Name			R-410A					
Cooling	Sound Pressure	High	dBA	35.0	35.0	35.0	38.0	39.0	40.0
		Low	dBA	32.0	32.0	32.0	33.0	34.0	35.0
Piping connections	Liquid (OD)	Type		Flare connection					
		Diameter	mm	6.4	6.4	6.4	6.4	6.4	9.5
	Gas	Type		Flare connection					
		Diameter	mm	12.7	12.7	12.7	12.7	12.7	15.9
	Drain	Diameter	mm	O.D. 21					
	Heat Insulation			Glass Fiber/Urethane Foam					
Air Filter				Resin net with mold resistance					
Refrigerant control				Electronic expansion valve					
Temperature control				Microprocessor thermostat for cooling and heating					
Safety devices				PCB fuse					
				Fan motor thermal protector					
Standard Accessories	Standard Accessories			Installation and operation manual					
				Insulation for fitting					
				Drain hose					
				Clamps					
				Screws					
				Level adjustment screw					
				Washer					
Notes				Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 7.5m (horizontal)					
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 7.5m (horizontal)					
				Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.					
				Sound pressure levels are measured at 220V					

Floor Standing Unit

1-2 ELECTRICAL SPECIFICATIONS			FXLQ20MAVE	FXLQ25MAVE	FXLQ32MAVE	FXLQ40MAVE	FXLQ50MAVE	FXLQ63MAVE
Power Supply	Name		VE					
	Phase		1					
	Frequency	Hz	50					
	Voltage	V	220-240					
Current	Minimum circuit amps (MCA)	A	0.30	0.30	0.60	0.60	0.60	0.60
	Maximum fuse amps (MFA)	A	15.00					
	Full load amps (FLA)	A	0.20	0.20	0.50	0.50	0.50	0.50
Voltage range	Minimum	V	-10%					
	Maximum	V	+10%					
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.					
			Maximum allowable voltage range variation between phases is 2%.					
			MCA/MFA : MCA = 1.25 × FLA					
			MFA<= 4 × FLA					
			next lower standard fuse rating minimum 15A					
			select wire size based on the MCA					
			instead of a fuse, use a circuit breaker					
			For more details concerning conditional connections, see http://extranet.daikineurope.com, select "E-Data Books". Finally, click on the document title of your choice.					

Concealed Floor Standing Unit

1-1 TECHNICAL SPECIFICATIONS				FXNQ20MAVE	FXNQ25MAVE	FXNQ32MAVE	FXNQ40MAVE	FXNQ50MAVE	FXNQ63MAVE
Capacity	Cooling		kW	2.20	2.80	3.60	4.50	5.60	7.10
	Heating		kW	2.50	3.20	4.00	5.00	6.30	8.00
Power Input	Cooling		kW	0.049	0.049	0.090	0.090	0.110	0.110
	Heating		kW	0.049	0.049	0.090	0.090	0.110	0.110
Casing	Material			Galvanised steel					
Dimensions	Unit	Height	mm	610	610	610	610	610	610
		Width	mm	930	930	1070	1070	1350	1350
		Depth	mm	220	220	220	220	220	220
Weight	Unit		kg	19	19	23	23	27	27
Heat Exchanger	Dimensions	Nr of Rows		3	3	3	3	3	3
		Fin Pitch	mm	1.50	1.50	1.50	1.50	1.50	1.50
		Face Area	m^2	0.159	0.159	0.200	0.200	0.282	0.282
		Nr of Stages		14	14	14	14	14	14
Fan	Type			Sirocco fan					
	Quantity			1	1	1	1	1	1
Airflow Rate	Cooling	High	m^3/min	7.00	7.00	8.00	11.00	14.00	16.00
		Low	m^3/min	6.00	6.00	6.00	8.50	11.00	12.00
Fan	Motor	Quantity		1	1	1	1	1	1
		Model		D14B20	D14B20	2D14B13	2D14B13	2D14B20	2D14B20
		Output (high)	W	15	15	25	25	35	35
		Drive		Direct drive					
Refrigerant	Name			R-410A					
Cooling	Sound Pressure	High	dBA	35.0	35.0	35.0	38.0	39.0	40.0
		Low	dBA	32.0	32.0	32.0	33.0	34.0	35.0
Piping connections	Liquid (OD)	Type		Flare connection					
		Diameter	mm	6.35	6.35	6.35	6.35	6.35	9.52
	Gas	Type		Flare connection					
		Diameter	mm	12.7	12.7	12.7	12.7	12.7	15.9
	Drain	Diameter	mm	21	21	21	21	21	21
	Heat Insulation			Glass Fiber/Urethane Foam					
Air Filter				Resin net with mold resistance					
Refrigerant control				Electronic expansion valve					
Temperature control				Microprocessor thermostat for cooling and heating					
Safety devices				PCB fuse					
				Fan motor thermal protector					
Standard Accessories	Standard Accessories			Installation and operation manual					
				Insulation for fitting					
				Drain hose					
				Clamps					
				Screws					
				Washer					
				Level adjustment screw					
Notes				Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, outdoor temperature : 35°CDB, equivalent refrigerant piping : 7.5m (horizontal)					
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor temperature : 7°CDB, 6°CWB, equivalent refrigerant piping : 7.5m (horizontal)					
				Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.					
				Sound pressure levels are measured at 220V					

Concealed Floor Standing Unit

1-2 ELECTRICAL SPECIFICATIONS			FXNQ20MAVE	FXNQ25MAVE	FXNQ32MAVE	FXNQ40MAVE	FXNQ50MAVE	FXNQ63MAVE
Power Supply	Name		VE					
	Phase		1~					
	Frequency	Hz	50					
	Voltage	V	220-240					
Current	Minimum circuit amps (MCA)	A	0.3	0.3	0.6	0.6	0.6	0.6
	Maximum fuse amps (MFA)	A	15	15	15	15	15	15
	Full load amps (FLA)	A	0.2	0.2	0.5	0.5	0.5	0.5
Voltage range	Minimum	V	-10%					
	Maximum	V	+10%					
Notes			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.					
			Maximum allowable voltage range variation between phases is 2%.					
			MCA/MFA : MCA = 1.25 × FLA					
			MFA is smaller than or equal to 4 × FLA					
			Next lower standard fuse rating minimum 15A					
			Select wire size based on the MCA					
			Instead of a fuse, use a circuit breaker					

4-way Blow Ceiling Suspended Unit

1-1 TECHNICAL SPECIFICATIONS				FXUQ71MAV1	FXUQ100MAV1	FXUQ125MAV1
Power input (Nominal)	Cooling		kW	0.180	0.289	0.289
	Heating		kW	0.160	0.269	0.269
Casing	Colour			White		
	Material			Resin		
Dimensions	Packing	Height	mm	230	295	295
		Width	mm	960	960	960
		Depth	mm	960	960	960
	Unit	Height	mm	165	230	230
		Width	mm	895	895	895
		Depth	mm	895	895	895
Weight	Unit		kg	25	31	31
	Packed Unit		kg	35	42	42
Heat Exchanger	Dimensions	Length	mm	2101	2101	2101
		Nr of Rows		3	3	3
		Fin Pitch	mm	1.50	1.50	1.50
		Nr of Passes		8	8	12
		Face Area	m^2	0.265	0.353	0.353
		Nr of Stages		6	8	8
		Empty Tube Plate Hole			4	
	Fin	Fin type		Cross fin coil (Multi louver fins and N-hex tubes)		
Fan	Type			Turbo fan		
	Quantity			1	1	1
Airflow Rate	Cooling	High	m^3/min	19.00	29.00	32.00
		Low	m^3/min	14.00	21.00	23.00
	Heating	High	m^3/min	19.00	29.00	32.00
		Low	m^3/min	14.00	21.00	23.00
Fan	Motor	Steps		2	2	2
		Output (high)	W	45	90	90
Refrigerant	Name			R-410A		
Sound Level	Cooling	Sound power (nominal)	dBA	56.0	59.0	60.0
Cooling	Sound Pressure	High	dBA	40.0	43.0	44.0
		Low	dBA	35.0	38.0	39.0
Heating	Sound Pressure	High	dBA	40.0	43.0	44.0
		Low	dBA	35.0	38.0	39.0
Piping connections	Liquid (OD)	Type		Flare connection		
		Diameter	mm	9.5	9.5	9.5
	Gas	Type		Flare connection		
		Diameter	mm	15.9	15.9	15.9
	Drain	Diameter	mm	I.D. 20/O.D. 26		
	Heat Insulation			Heat resistant foamed polyethylene, regular foamed polyethylene		
Air Filter				Resin net with mold resistance		
Safety devices				Fan motor thermal protector		
Standard Accessories	Standard Accessories			Installation and operation manual		
				Drain hose		
				Clamp metal		
				Insulation for fitting		
				Sealing Pads		
				Clamps		
				Washer		

4-way Blow Ceiling Suspended Unit

1-2 ELECTRICAL SPECIFICATIONS			FXUQ71MAV1	FXUQ100MAV1	FXUQ125MAV1
Power Supply	Name		V1		
	Phase		1	1	1
	Frequency	Hz	50	50	50
	Voltage	V	220-240		
Current	Full load amps (FLA)	A	0.60	1.00	1.00
Note			For more details concerning conditional connections, see http://extranet.daikineurope.com, select "E-Data Books". Finally, click on the document title of your choice.		

BEV Units

Model				BEVQ71MAVE	BEVQ100MAVE	BEVQ125MAVE
Power Supply				1 Phase 50Hz 220~240V	1 Phase 50Hz 220~240V	1 Phase 50Hz 220~240V
Casing				Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate
Dimensions: (H×W×D)			mm	100×350×225	100×350×225	100×350×225
Sound Absorbing Thermal Insulation Material				Flame and Heat Resistant Foamed Polyethylene	Flame and Heat Resistant Foamed Polyethylene	Flame and Heat Resistant Foamed Polyethylene
Piping Connection	Indoor Unit	Liquid Pipes		9.5mm (Flare Connection)	9.5mm (Flare Connection)	9.5mm (Flare Connection)
		Gas Pipes		15.9mm (Flare Connection)	15.9mm (Flare Connection)	15.9mm (Flare Connection)
	Outdoor Unit	Liquid Pipes		9.5mm (Flare Connection)	9.5mm (Flare Connection)	9.5mm (Flare Connection)
		Suction Gas Pipes		15.9mm (Flare Connection)	15.9mm (Flare Connection)	15.9mm (Flare Connection)
Machine Weight (Mass)			kg	3.0	3.0	3.5
Standard Accessories				Installation manual, Gas piping connections, Insulation for fitting, Sealing material, Clamps	Installation manual, Gas piping connections, Insulation for fitting, Sealing material, Clamps	Installation manual, Gas piping connections, Insulation for fitting, Sealing material, Clamps
Drawing No.				4D045387A	4D045387A	4D045388A

Outdoor Air Processing Unit

Model			FXMQ125MFV1	FXMQ200MFV1	FXMQ250MFV1
★1 Cooling Capacity		kcal/h	12,000	19,300	24,100
		Btu/h	47,800	76,400	95,500
		kW	14.0	22.4	28.0
★1 Heating Capacity		kcal/h	7,700	12,000	15,000
		Btu/h	30,400	47,400	59,400
		kW	8.9	13.9	17.4
Casing			Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate
Dimensions: (H×W×D)		mm	470×744×1,100	470×1,380×1,100	470×1,380×1,100
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm	3×26×2.0	3×26×2.0	3×26×2.0
	Face Area	m²	0.28	0.65	0.65
Fan	Model		D13/4G2DA1	D13/4G2DA1	D13/4G2DA1
	Type		Sirocco Fan	Sirocco Fan	Sirocco Fan
	Motor Output × Number of Units	W	380×1	380×1	380×1
	Airflow Rate (H/L)	m³/min	18	28	35
		cfm	635	988	1,236
	External Static Pressure ★4	Pa	185	225	205
	Drive		Direct Drive	Direct Drive	Direct Drive
Temperature Control			Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating
Sound Absorbing Thermal Insulation Material			Glass Fiber	Glass Fiber	Glass Fiber
Air Filter			★2	★2	★2
Piping Connections	Liquid Pipes		9.5mm (Flare Connection)	9.5mm (Flare Connection)	9.5mm (Flare Connection)
	Gas Pipes		15.9mm (Flare Connection)	19.1mm (Brazing Connection)	22.2mm (Brazing Connection)
	Drain Pipe	(mm)	PS1B (female thread)	PS1B (female thread)	PS1B (female thread)
Machine Weight (Mass)		kg	86	123	123
Sound Level (220V) ★3,★4		dBA	42	47	47
Safety Devices			Fuse Thermal Protector for Fan Motor	Fuse Thermal Protector for Fan Motor	Fuse Thermal Protector for Fan Motor
Refrigerant Control			Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve
Standard Accessories			Operation Manual, Installation Manual, Sealing Pads, Screws, Clamps.	Operation Manual, Installation Manual, Sealing Pads, Connection Pipes, Screws, Clamps.	Operation Manual, Installation Manual, Sealing Pads, Connection Pipes, Screws, Clamps.
Connectable Outdoor Units ★5,★6			RXYQ8~54PY1	RXYQ8~54PY1	RXYQ10~54PY1
Drawing No.			C:3D046147B	C:3D046147B	C:3D046147B

Notes:

★1. Specifications are based on the following conditions:
- · Cooling: Outdoor temp. of 33°CDB, 28°CWB (68% RH). and discharge temp. of 18°CDB
- · Heating: Outdoor temp. of 0°CDB, -2.9°CWB (50% RH). and discharge temp. of 25°CDB
- · Equivalent reference piping length: 7.5m (0m Horizontal)
- · At 220V

★2. Air filter is not standard accessory, but please mount it in the duct system of the suction side. Select its dust collection efficiency (gravity method) 50% or more.

★3. Anechoic chamber conversion value, measured at a point 1.5m downward from the unit center. These values (measured at 220V) are normally somewhat higher during actual operation as a result of ambient conditions.

★4. Valves measured at 220 V.

★5. Within the range that the total capacity of indoor units is 50 to 100%, it is possible to connect to the outdoor unit.

★6. It is not possible to connect to the 5 HP outdoor unit. Not available for Heat Recovery type and VRV II-S series.
- · This equipment cannot be incorporated into the refrigerant piping system or remote group control of the VRV II system.

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

1.3 BS Units

Model				BSV4Q100PV1	BSV6Q100PV1
Power Supply				1 Phase 50Hz 200-240V	1 Phase 50Hz 200-240V
Total capacity index of connectable indoor units				400 or less	600 or less
Capacity index of connectable indoor units per branch				100 or less	
No. of Connectable Indoor Units				Max. 20	Max. 30
Casing				Galvanized steel plate	Galvanized steel plate
Dimensions: (H×W×D)			mm	209×1053×635	209×1577×635
Sound Absorbing Thermal Insulation Material				Foamed polyurethane, Flame resistant needle felt	Foamed polyurethane, Flame resistant needle felt
Piping Connection	Indoor Unit	Liquid Pipes		9.5mm C1220T (brazing connection) ★1	9.5mm C1220T (brazing connection)
		Gas Pipes		15.9mm C1220T (brazing connection) ★1	15.9mm C1220T (brazing connection) ★2
	Outdoor Unit	Liquid Pipes		12.7mm C1220T (brazing connection)	15.9mm C1220T (brazing connection)
		Suction Gas Pipes		28.6mm C1220T (brazing connection)	28.6mm C1220T (brazing connection) ★2
		HP/LP Gas Pipes		19.1mm C1220T (brazing connection)	28.6mm C1220T (brazing connection) ★2
Weight			kg	60	89
Standard Accessories				Installation manual, Attached pipe Insulation pipe cover, Clamps	Installation manual, Attached pipe Insulation pipe cover, Clamps
Drawing No.				4D064131A	4D064132A

Note: ★1 When connecting with a 20 to 50 class indoor unit, connect to the attached pipe to the field pipe.
(Braze the connection between the attached and field pipe.)
★2 When connecting with an indoor unit of 150 or more and 160 or less, connect to the attached pipe to the field pipe.
(Braze the connection between the attached and field pipe.)

Part 3
Refrigerant Circuit

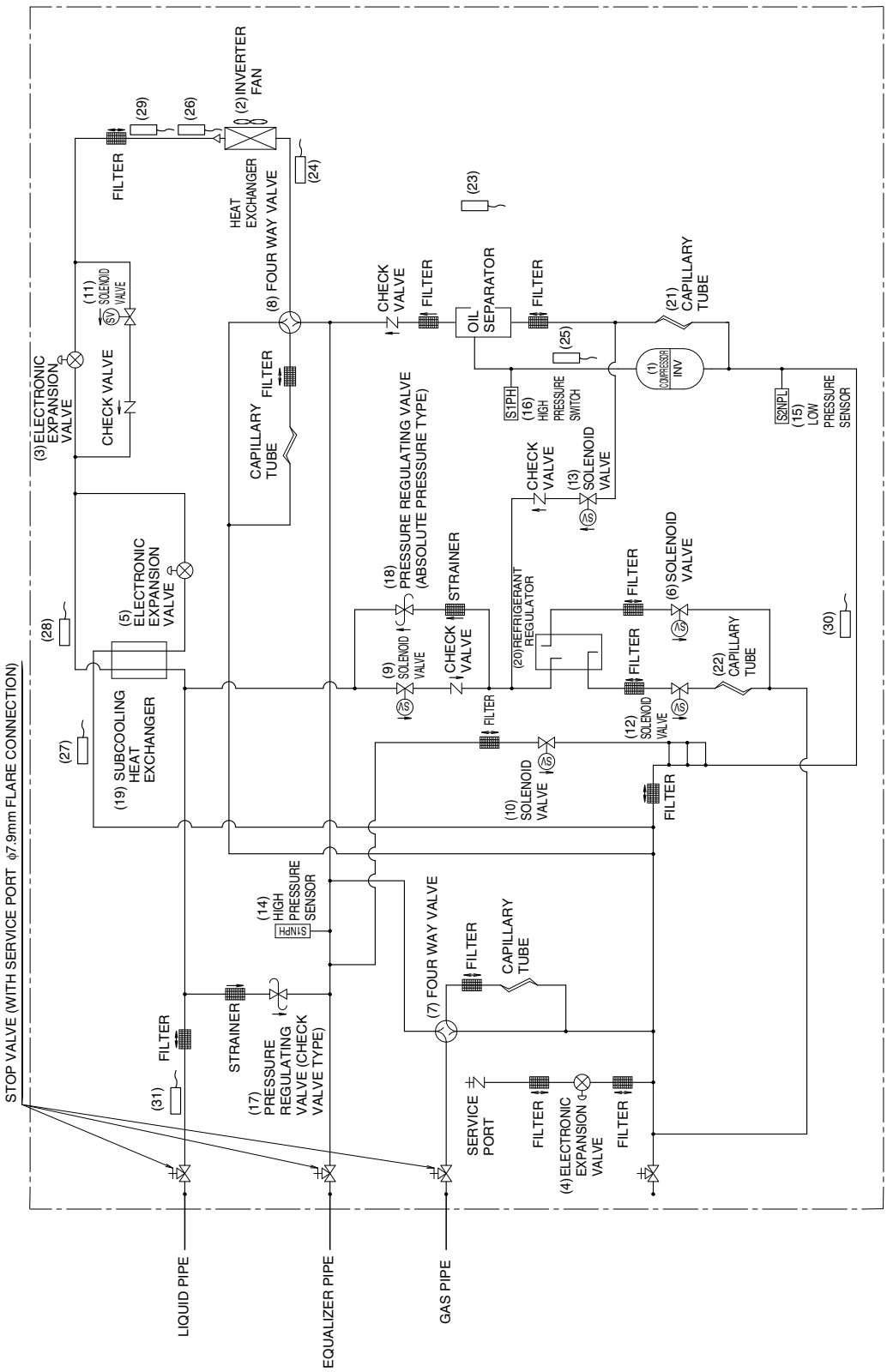
1. Refrigerant Circuit

1.1 RTSQ8PY1

No. in refrigerant system diagram	Symbol	Name	Major Function
1	M1C	Inverter compressor	Inverter compressor is operated on frequencies between 52Hz and 280Hz by using the inverter. Compressor operation steps : Refer to P.92~93.
2	M1F	Inverter fan	Because the system is an air heat exchange type, the fan is operated at 9-step rotation speed by using the inverter.
3	Y1E	Electronic expansion valve (Main: EVM)	While the outdoor heat exchanger is evaporator, PI control is applied to keep the outlet superheated degree of air heat exchanger constant.
4	Y2E	Electronic expansion valve (Refrigerant charge EVJ)	This is used to open/close refrigerant charge port.
5	Y3E	Electronic expansion valve (Subcooling: EVT)	PI control is applied to keep the outlet superheated degree of subcooling heat exchanger constant.
6	Y1S	Solenoid valve (Refrigerant regulator gas vent pipe: SVG)	This is used to collect refrigerant to the refrigerant regulator.
7	Y2S	Four way valve (Dual pressure gas pipe switch: 20SB)	This is used to switch dual pressure gas pipe to high pressure or low pressure.
8	Y3S	Four way valve (Heat exchanger switch: 20SA)	This is used to switch outdoor heat exchanger to evaporator or condenser.
9	Y4S	Solenoid valve (Refrigerant regulator liquid pipe: SVL)	This is used to collect refrigerant to the refrigerant regulator.
10	Y5S	Solenoid valve (Hot gas: SVP)	Used to prevent the low pressure from transient falling.
11	Y6S	Solenoid valve (Main bypass: SVE)	This opens in cooling operation.
12	Y7S	Solenoid valve (Refrigerant regulator discharge pipe: SVO)	This is used to discharge refrigerant from the refrigerant regulator.
13	Y8S	Solenoid valve (Discharge pipe of refrigerant regulator: SVT)	Bypass the high pressure gas to the refrigerant regulator.
14	S1NPH	High pressure sensor	Used to detect high pressure.
15	S2NPL	Low pressure sensor	Used to detect low pressure.
16	S1PH	High pressure switch (For INV. compressor)	This functions when pressure increases to stop operation and avoid high pressure increase in the fault operation.
17	—	Pressure regulating valve (Liquid pipe)	This is used when pressure increases, to prevent any damage on components caused by pressure increase in transport or storage.
18	—	Pressure regulating valve (Refrigerant regulator)	This is used when pressure increases, to prevent any damage on components caused by pressure increase in transport or storage.
19	—	Subcooling heat exchanger	Apply subcooling to liquid refrigerant.
20	—	Refrigerant regulator	Surplus refrigerant is held according to the operation conditions.
21	—	Capillary tube	Used to return the refrigerating oil separated through the oil separator to the INV compressor.
22	—	Capillary tube	This is used to discharge refrigerant from the refrigerant regulator.
23	R1T	Thermistor (Outdoor air: Ta)	Used to detect outdoor temperature, correct discharge pipe temperature, and others.
24	R2T	Thermistor (Heat exchanger gas pipe: Tg)	This detects temperature of gas pipe for air heat exchanger. Used to exercise the constant control of superheated degree when an evaporator is used for outdoor unit heat exchanging.
25	R31T	Thermistor (INV. discharge pipe: Tdi)	Used to detect discharge pipe temperature. Used for compressor temperature protection control.
26	R4T	Thermistor (Heat exchanger deicer: Tb)	This detects temperature of some of the liquid pipes for air heat exchanger. Used to make judgements on defrosting operation.
27	R5T	Thermistor (Subcooling heat exchanger gas pipe: Tsh)	This detects temperature of gas pipe on the evaporator side for the subcooling heat exchanger. Used to exercise the constant control of superheated degree at the outlet of subcooling heat exchanger.
28	R6T	Thermistor (Subcooling heat exchanger liquid pipe: Tl)	This detects temperature of liquid pipe between the main expansion valve and subcooling heat exchanger.
29	R7T	Thermistor (Heat exchanger liquid pipe: Tf)	This detects temperature of liquid pipe between the air heat exchanger and main electronic expansion valve. Used to make judgements on the recover or discharge refrigerants to the refrigerant regulator.
30	R8T	Thermistor (Suction pipe: TsA)	Used to detect suction pipe temperature.
31	R9T	Thermistor (Liquid pipe: Tsc)	This detects temperature of liquid pipe between the liquid stop valve and subcooling heat exchanger.

RTSQ8PY1

C: 3D060784

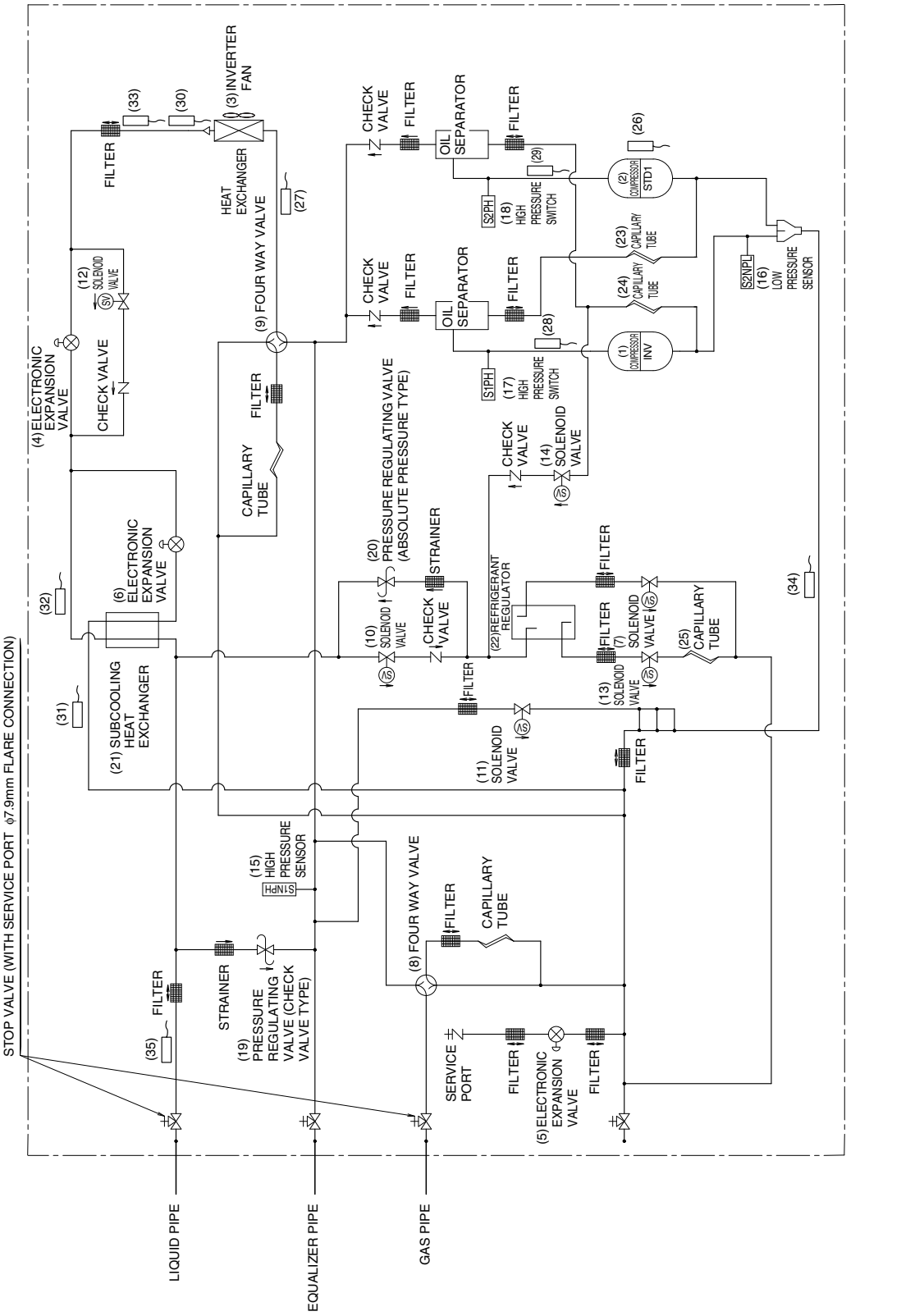


1.2 RTSQ10PY1, 12PY1

No. in refrigerant system diagram	Symbol	Name	Major Function
1	M1C	Inverter compressor	Inverter compressor is operated on frequencies between 52Hz and 280(266 for RTSQ12P)Hz by using the inverter, while Standard compressor is operated with commercial power supply only. The number of operating steps is as follows when Inverter compressor is operated in combination with Standard compressor. Compressor operation steps : Refer to P.92~93.
2	M2C	Standard compressor 1 (STD1)	
3	M1F	Inverter fan	Because the system is an air heat exchange type, the fan is operated at 9-step rotation speed by using the inverter.
4	Y1E	Electronic expansion valve (Main: EVM)	While the outdoor heat exchanger is evaporator, PI control is applied to keep the outlet superheated degree of air heat exchanger constant.
5	Y2E	Electronic expansion valve (Refrigerant charge: EVJ)	Used to open/close refrigerant charge port.
6	Y3E	Electronic expansion valve (Subcooling: EVT)	PI control is applied to keep the outlet superheated degree of subcooling heat exchanger constant.
7	Y1S	Solenoid valve (Refrigerant regulator gas purging pipe SVG)	Used to collect refrigerant to the refrigerant regulator.
8	Y2S	Four way valve (Dual pressure gas pipe switch: 20SB)	Used to switch dual pressure gas pipe to high pressure or low pressure.
9	Y3S	Four way valve (Heat exchanger switch: 20SA)	Used to switch outdoor heat exchanger to evaporator or condenser.
10	Y4S	Solenoid valve (Refrigerant regulator liquid pipe: SVL)	Used to collect refrigerant to the refrigerant regulator.
11	Y5S	Solenoid valve (Hot gas: SVP)	Used to prevent the low pressure from transient falling.
12	Y6S	Solenoid valve (Main bypass: SVE)	This opens in cooling operation.
13	Y7S	Solenoid valve (Refrigerant regulator discharge pipe: SVO)	This is used to discharge refrigerant from the refrigerant regulator.
14	Y8S	Solenoid valve (Discharge pipe of refrigerant regulator: SVT)	Bypass the high pressure gas to the refrigerant regulator.
15	S1NPH	High pressure sensor	Used to detect high pressure.
16	S2NPL	Low pressure sensor	Used to detect low pressure.
17	S1PH	High pressure switch (For INV. compressor)	This functions when pressure increases to stop operation and avoid high pressure increase in the fault operation.
18	S2PH	High pressure switch (For STD compressor 1)	
19	—	Pressure regulating valve (Liquid pipe)	This is used when pressure increases, to prevent any damage on components caused by pressure increase in transport or storage.
20	—	Pressure regulating valve (Refrigerant regulator)	This is used when pressure increases, to prevent any damage on components caused by pressure increase in transport or storage.
21	—	Subcooling heat exchanger	Apply subcooling to liquid refrigerant.
22	—	Refrigerant regulator	Surplus refrigerant is held according to the operation conditions.
23	—	Capillary tube	Used to return the refrigerating oil separated through the oil separator to the INV compressor.
24	—	Capillary tube	Used to return the refrigerating oil separated through the oil separator to the STD1 compressor.
25	—	Capillary tube	Used to discharge refrigerant from the refrigerant regulator.
26	R1T	Thermistor (Outdoor air: Ta)	Used to detect outdoor temperature, correct discharge pipe temperature, and others.
27	R2T	Thermistor (Heat exchanger gas pipe: Tg)	This detects temperature of gas pipe for air heat exchanger. Used to exercise the constant control of superheated degree when an evaporator is used for outdoor unit heat exchanging.
28	R31T	Thermistor (INV. discharge pipe: Tdi)	Used to detect discharge pipe temperature. Used for compressor temperature protection control.
29	R32T	Thermistor (STD1 discharge pipe: Tds1)	
30	R4T	Thermistor (Heat exchanger deicer: Tb)	Used to detect liquid pipe temperature of air heat exchanger. Used to make judgements on defrosting operation.
31	R5T	Thermistor (Subcooling heat exchanger gas pipe: Tsh)	Used to detect gas pipe temperature on the evaporation side of subcooling heat exchanger. Used to exercise the constant control of superheated degree at the outlet of subcooling heat exchanger.
32	R6T	Thermistor (Subcooling heat exchanger liquid pipe: Tl)	This detects temperature of liquid pipe between the main expansion valve and subcooling heat exchanger.
33	R7T	Thermistor (Heat exchanger liquid pipe: Tf)	This detects temperature of liquid pipe between the air heat exchanger and main electronic expansion valve. Used to make judgements on the recover or discharge refrigerants to the refrigerant regulator.
34	R8T	Thermistor (Suction pipe: TsA)	Used to detect suction pipe temperature.
35	R9T	Thermistor (Liquid pipe: Tsc)	This detects temperature of liquid pipe between the liquid stop valve and subcooling heat exchanger.

RTSQ10PY1, 12PY1

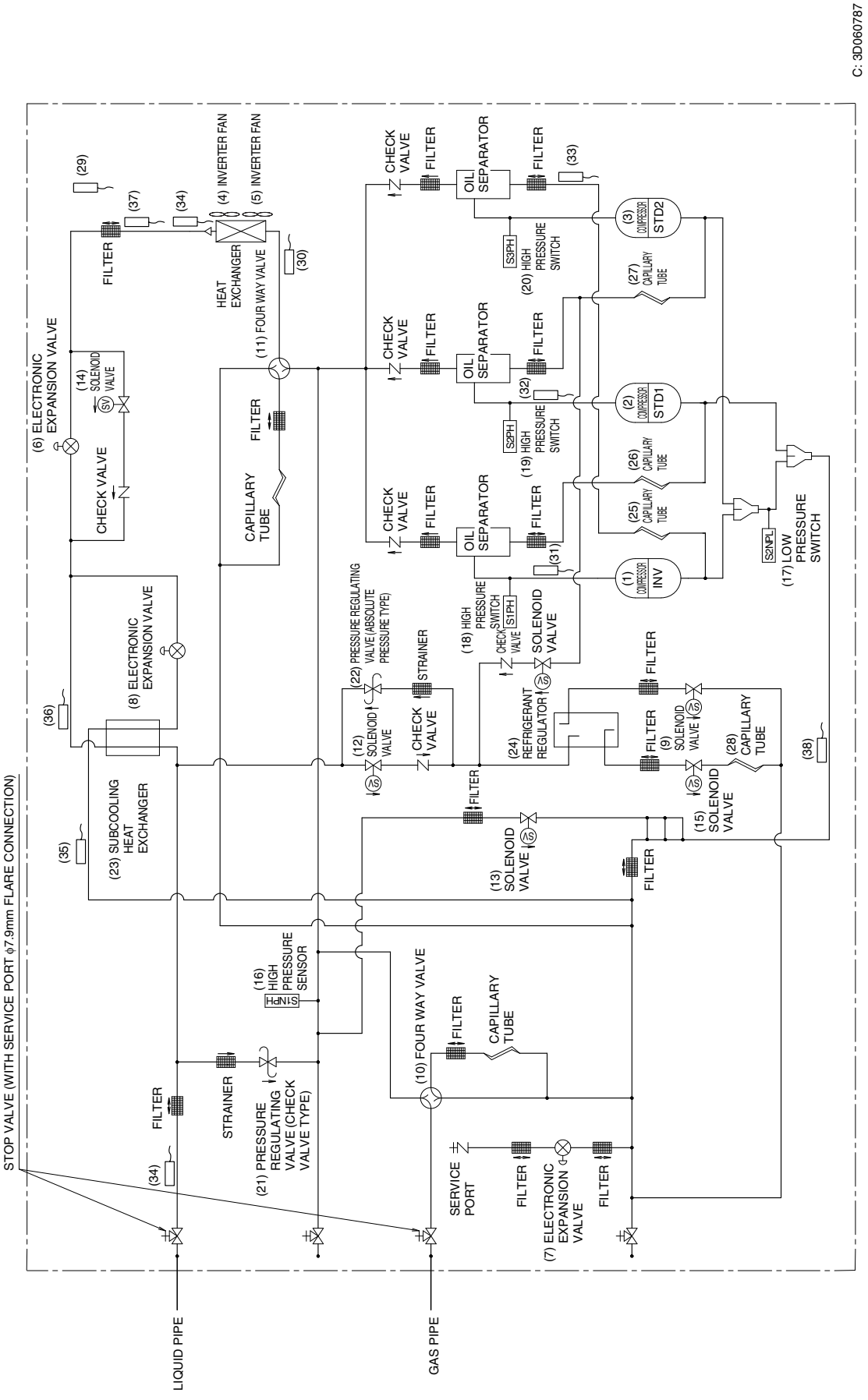
C: 3D060785 (for RTSQ10P)
C: 3D060786 (for RTSQ12P)



1.3 RTSQ14PY1, 16PY1

No. in refrigerant system diagram	Symbol	Name	Major Function
1	M1C	Inverter compressor	Inverter compressor is operated on frequencies between 52Hz and 266Hz by using the inverter, while Standard compressor is operated with commercial power supply only. The number of operating steps is as follows when Inverter compressor is operated in combination with Standard compressor. Compressor operation steps : Refer to P.92~93.
2	M2C	Standard compressor 1 (STD1)	
3	M3C	Standard compressor 2 (STD2)	
4	M1F	Inverter fan	Because the system is an air heat exchange type, the fan is operated at 9-step rotation speed by using the inverter.
5	M2F	Inverter fan	Because the system is an air heat exchange type, the fan is operated at 9-step rotation speed by using the inverter.
6	Y1E	Electronic expansion valve (Main: EVM)	While the outdoor heat exchanger is evaporator, PI control is applied to keep the outlet superheated degree of air heat exchanger constant.
7	Y2E	Electronic expansion valve (Refrigerant charge: EVJ)	Used to open/close refrigerant charge port.
8	Y3E	Electronic expansion valve (Subcooling: EVT)	PI control is applied to keep the outlet superheated degree of subcooling heat exchanger constant.
9	Y1S	Solenoid valve (Refrigerant regulator gas purging pipe: SVG)	Used to collect refrigerant to the refrigerant regulator.
10	Y2S	Four way valve (Dual pressure gas pipe switch: 20SB)	Used to switch dual pressure gas pipe to high pressure or low pressure.
11	Y3S	Four way valve (Heat exchanger switch: 20SA)	Used to switch outdoor heat exchanger to evaporator or condenser.
12	Y4S	Solenoid valve (Refrigerant regulator liquid pipe: SVL)	Used to collect refrigerant to the refrigerant regulator.
13	Y5S	Solenoid valve (Hot gas: SVP)	Used to prevent the low pressure from transient falling.
14	Y6S	Solenoid valve (Main bypass: SVE)	This opens in cooling operation.
15	Y7S	Solenoid valve (Refrigerant regulator discharge pipe: SVO)	This is used to discharge refrigerant from the refrigerant regulator.
16	S1NPH	High pressure sensor	Used to detect high pressure.
17	S2NPL	Low pressure sensor	Used to detect low pressure.
18	S1PH	High pressure switch (For INV. compressor)	This functions when pressure increases to stop operation and avoid high pressure increase in the fault operation.
19	S2PH	High pressure switch (For STD compressor 1)	
20	S3PH	High pressure switch (For STD compressor 2)	
21	—	Pressure regulating valve (Liquid pipe)	This is used when pressure increases, to prevent any damage on components caused by pressure increase in transport or storage.
22	—	Pressure regulating valve (Refrigerant regulator)	This is used when pressure increases, to prevent any damage on components caused by pressure increase in transport or storage.
23	—	Subcooling heat exchanger	Apply subcooling to liquid refrigerant.
24	—	Refrigerant regulator	Surplus refrigerant is held according to the operation conditions.
25	—	Capillary tube	Used to return the refrigerating oil separated through the oil separator to the INV compressor.
26	—	Capillary tube	Used to return the refrigerating oil separated through the oil separator to the STD1 compressor.
27	—	Capillary tube	Used to return the refrigerating oil separated through the oil separator to the STD2 compressor.
28	—	Capillary tube	This is used to discharge refrigerant from the refrigerant regulator.
29	R1T	Thermistor (Outdoor air: Ta)	Used to detect outdoor temperature, correct discharge pipe temperature, and others.
30	R2T	Thermistor (Heat exchanger gas pipe: Tg)	This detects temperature of gas pipe for air heat exchanger. Used to exercise the constant control of superheated degree when an evaporator is used for outdoor unit heat exchanging.
31	R31T	Thermistor (INV discharge pipe: Tdi)	Used to detect discharge pipe temperature. Used for compressor temperature protection control.
32	R32T	Thermistor (STD1 discharge pipe: Tds1)	
33	R33T	Thermistor (STD2 discharge pipe: Tds2)	
34	R4T	Thermistor (Heat exchanger deicer: Tb)	Used to detect liquid pipe temperature of air heat exchanger. Used to make judgements on defrosting operation.
35	R5T	Thermistor (Subcooling heat exchanger gas pipe: Tsh)	This detects temperature of gas pipe on the evaporator side for the subcooling heat exchanger. Used to exercise the constant control of superheated degree at the outlet of subcooling heat exchanger.
36	R6T	Thermistor (Subcooling heat exchanger liquid pipe: Tl)	This detects temperature of liquid pipe between the main expansion valve and subcooling heat exchanger.
37	R7T	Thermistor (Heat exchanger liquid pipe: Tf)	This detects temperature of liquid pipe between the air heat exchanger and main electronic expansion valve. Used to make judgements on the recover or discharge refrigerants to the refrigerant regulator.
38	R8T	Thermistor (Suction pipe: TsA)	Used to detect suction pipe temperature.
39	R9T	Thermistor (Liquid pipe: Tsc)	This detects temperature of liquid pipe between the liquid stop valve and subcooling heat exchanger.

RTSQ14PY1, 16PY1

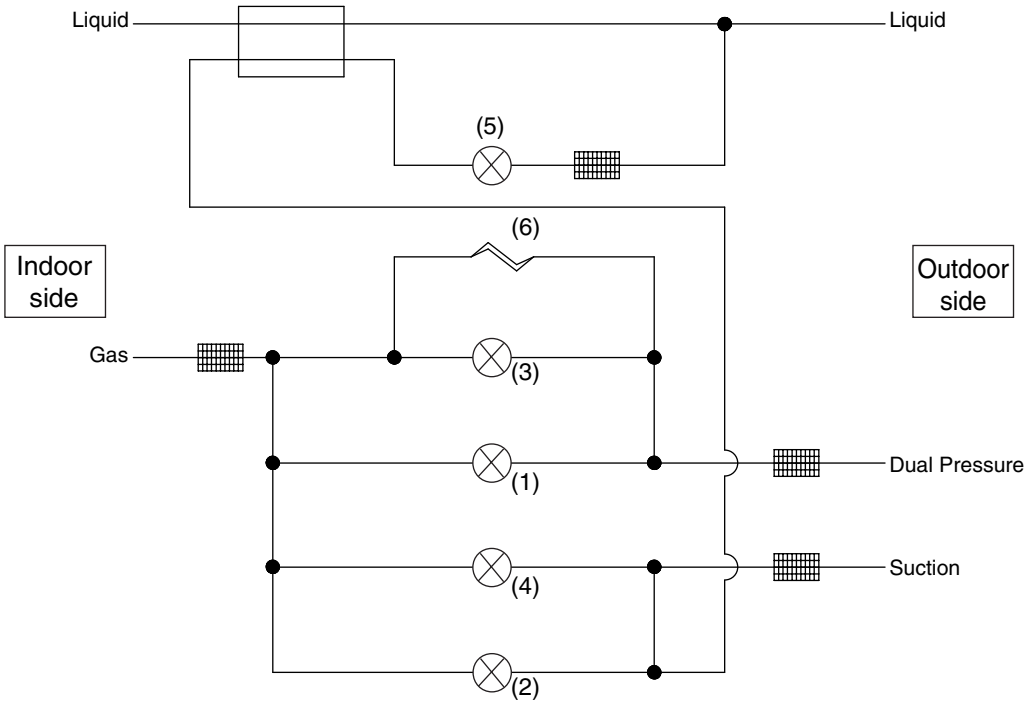


1.4 BS Unit Functional Parts

BSV4Q100PV1, 6Q100PV1

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

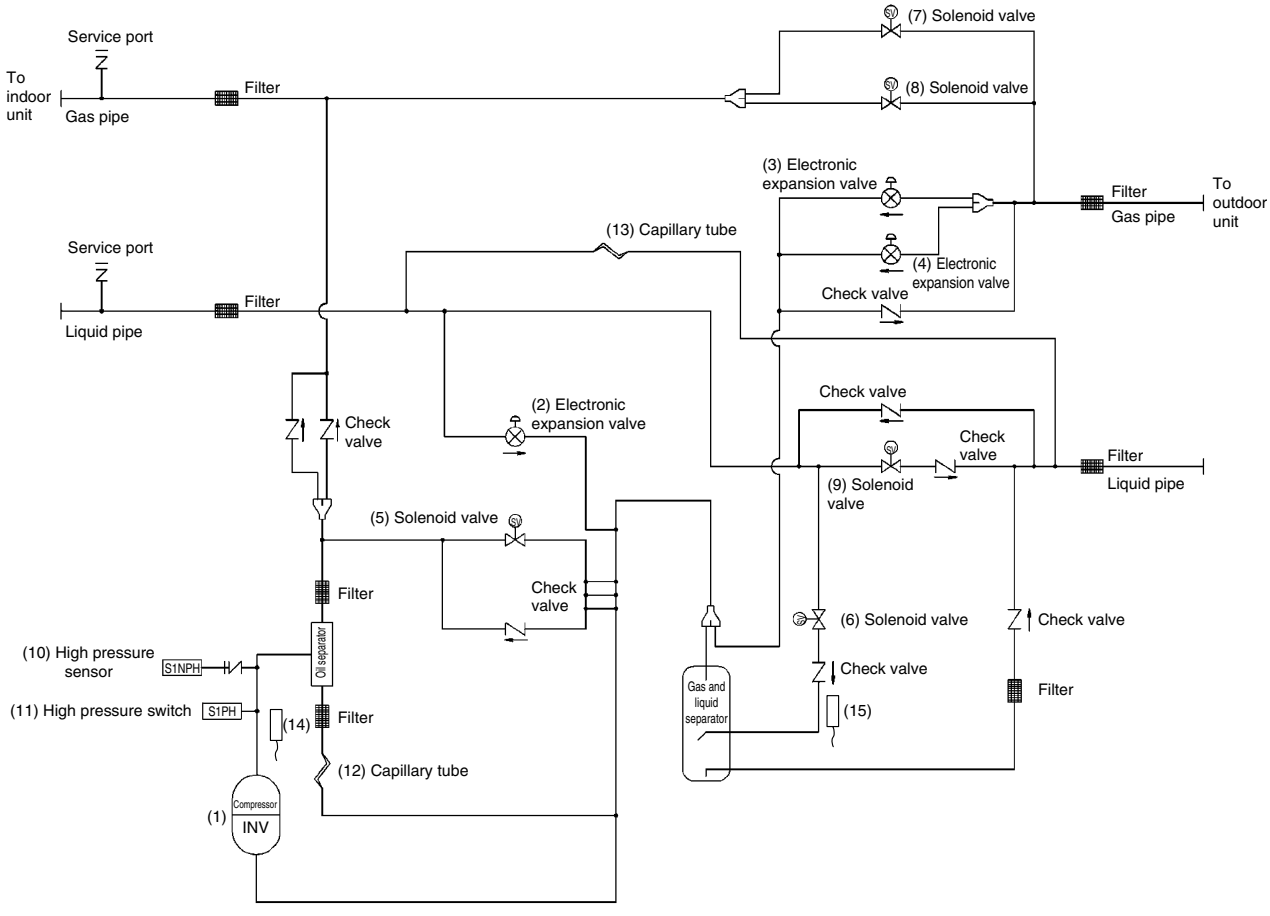
Note : Factory setting of all EV opening : 60pls



1.5 Function Unit

BTSQ20P

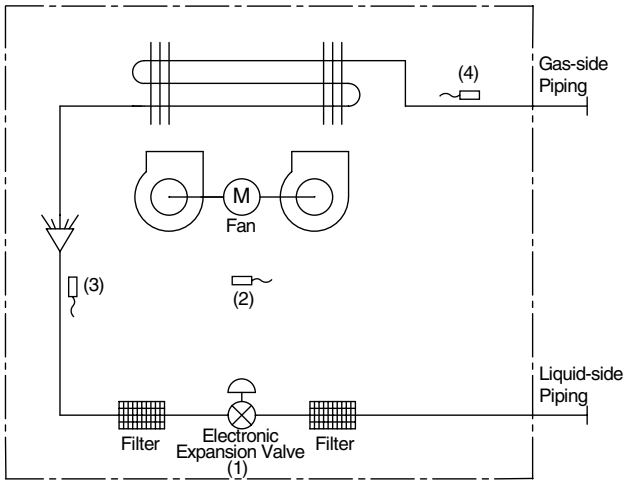
No.	Symbol	Name	Function
1	M1C	Inverter compressor	Inverter compressor is operated on frequencies between 52Hz and 280Hz by using the inverter. Compressor operation steps: Refer to page 93.
2	Y1E	Electronic expansion valve (Liquid injection)	Used to conduct PI control so that the discharge pipe superheated degree of the compressor will be kept constant.
3	Y2E1	Electronic expansion valve (Two-stage selection-1)	Open (fully open) to conduct heating operation at low outdoor temperatures (while in two-stage compression mode).
4	Y2E2	Electronic expansion valve (Two-stage selection-2)	
5	Y1S	Solenoid valve (Hot gas)	Used to prevent transitional suction pressure drops by hot gas injection.
6	Y2S	Solenoid valve (Two-stage pressure reduction)	Open to conduct heating operation at low outdoor temperatures (while in two-stage compression mode).
7	Y3S	Solenoid valve (Bypass 1)	Open to conduct cooling operation or normal heating operation (while in single-stage compression mode).
8	Y4S	Solenoid valve (Bypass 2)	
9	Y5S	Solenoid valve (Liquid line selection)	Open to conduct normal heating operation (while in single-stage compression mode).
10	S1NPH	High pressure sensor	Used to detect high pressure.
11	S1PH	High pressure switch	Activated when pressure rises to stop operation, in order to prevent high pressure from rising in case of a malfunction.
12	—	Capillary tube	Used to return refrigeration oil separated through the oil separator to the INV. compressor.
13	—	Capillary tube	Used to prevent liquid sealing when operation stops.
14	R3T	Discharge pipe thermistor	Used to detect discharge pipe temperature.
15	R4T	Liquid temperature thermistor	Used to detect the equivalent saturation temperature of intermediate pressure while in two-stage compression mode.



C: 3D060823

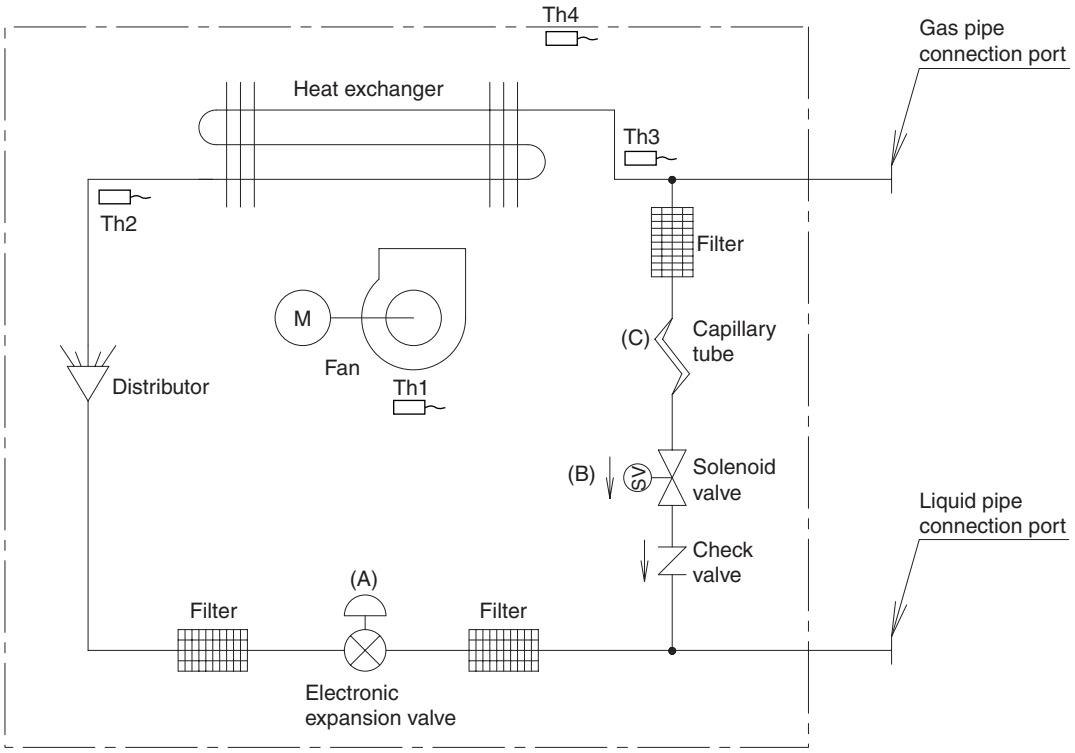
1.6 Indoor Units

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



No.	Name	Symbol	Function
①	Electronic expansion valve	Y1E	Used to control superheated degree of gas when cooling and subcooled degree when heating. (Max. 2000 pls)
②	Suction air thermistor	R1T	Used for thermostat control.
③	Liquid pipe thermistor	R2T	Used to control superheated degree of gas when cooling and subcooled degree when heating.
④	Gas pipe thermistor	R3T	Used for gas superheated degree control when cooling.

FXMQ125MFV1~250MFV1



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Main Control Equipment

Code	Symbol	Name	Main function
A	Y1E	Electronic expansion valve	Used to control the flow rate of refrigerant, and make the SH control while in cooling or the SC control while in heating.*
B	Y1S	Solenoid valve	Used to bypass hot gas while in heating with thermostat OFF.
C	-	Capillary tube	Used to reduce pressure from high to low in bypassing hot gas.

* SH control: Superheated control of heat exchanger outlet
SC control: Subcooling control of heat exchanger outlet

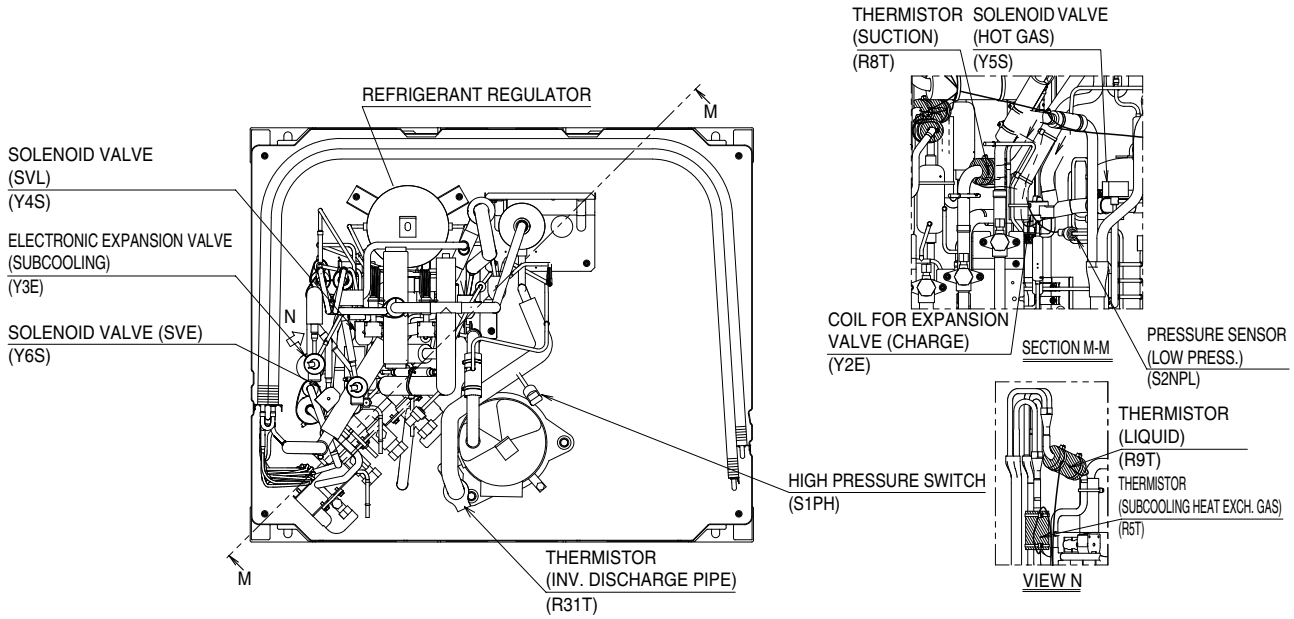
Thermistor

Code	Symbol	Name	Main function
Th1	R1T	Suction air temperature thermistor	Used to turn ON or OFF the thermostat and select cooling or heating operation.
Th2	R2T	Liquid pipe temperature thermistor	Used to control the opening degree of EV (Y1F) under the SC control.
Th3	R3T	Gas pipe temperature thermistor	Used to control the opening degree of EV (Y1E) under the SH control.
Th4	R4T	Discharge air temperature thermistor	Used to control the electronic expansion valve opening and thermostat ON/OFF so as to keep the discharge air temperature at the set temperature.

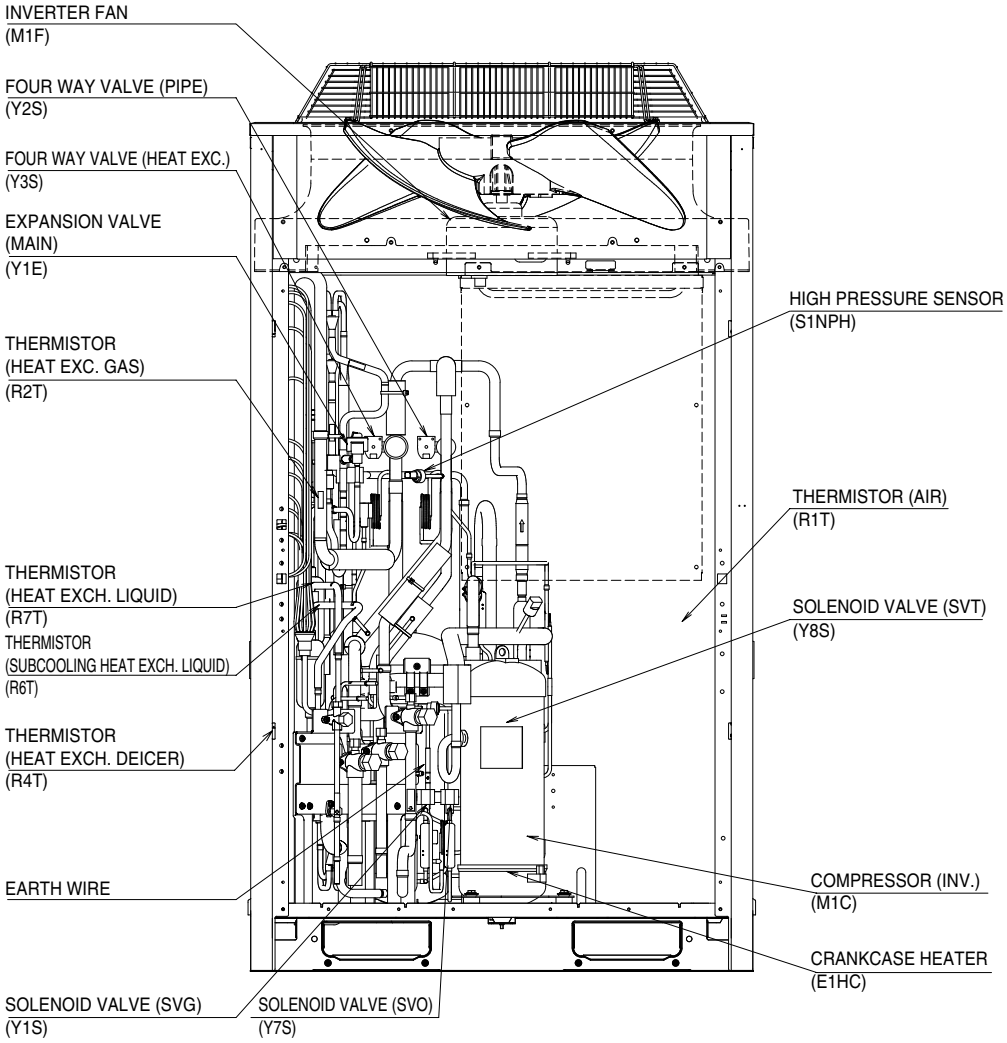
2. Functional Parts Layout

2.1 RTSQ8P

Plan

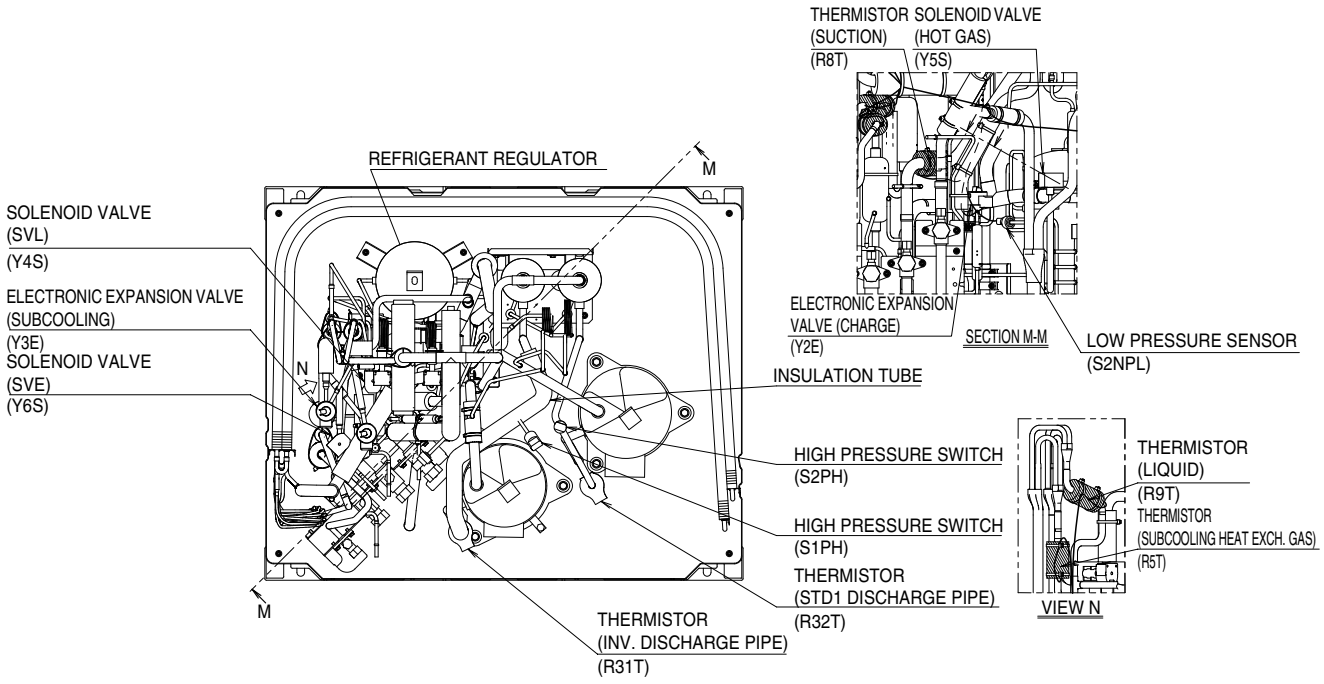


Front View

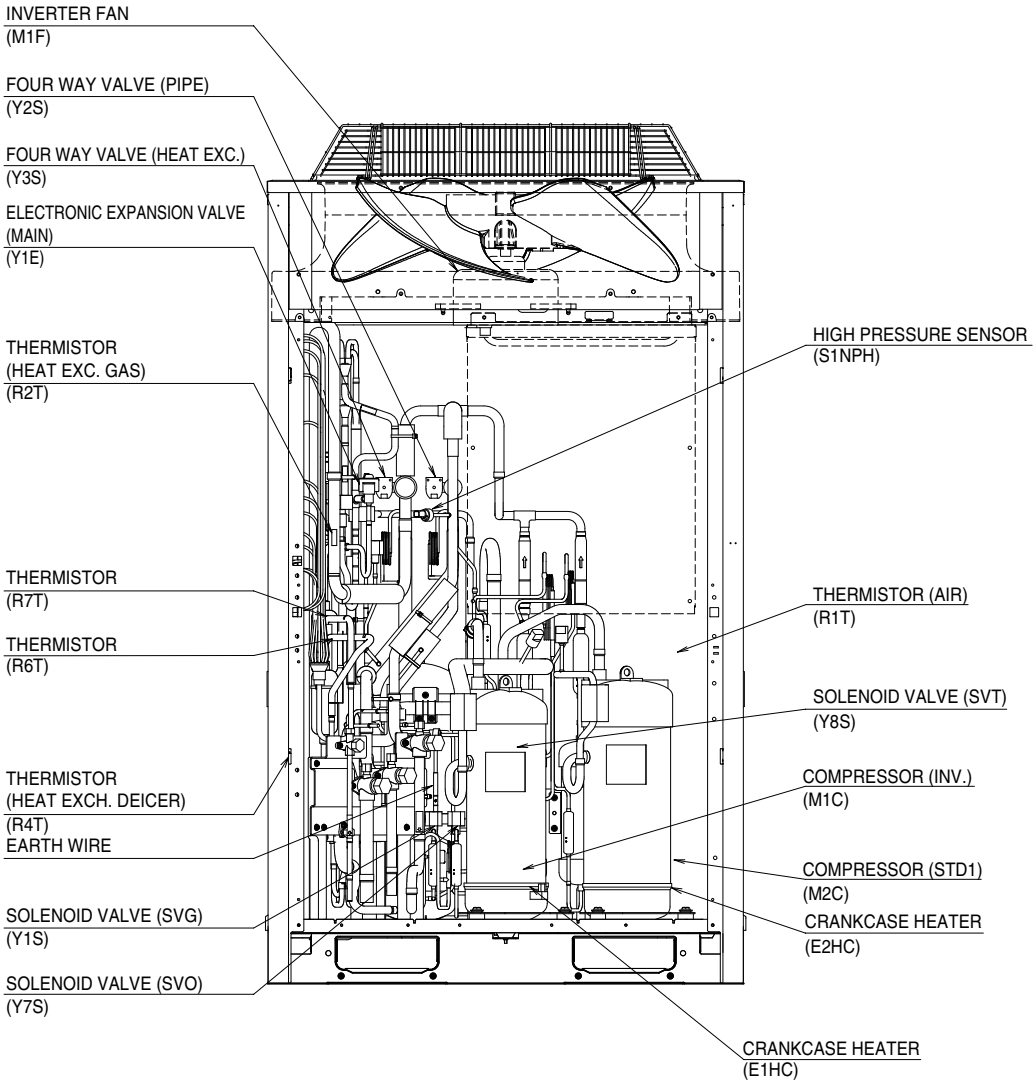


2.2 RTSQ10P, 12P

Plan

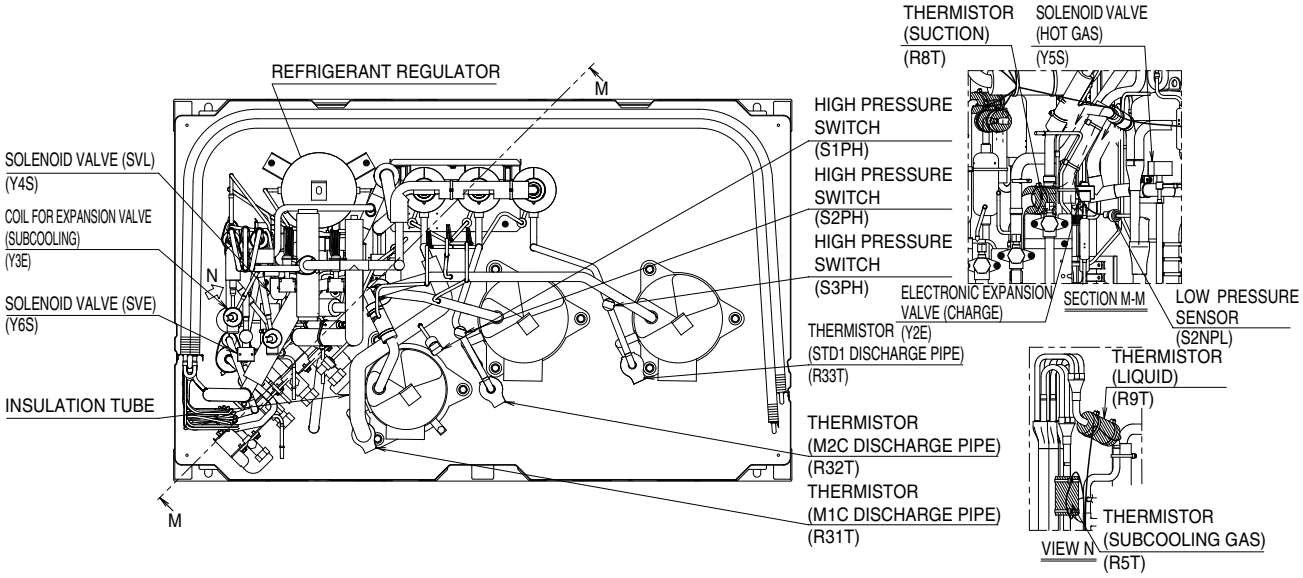


Front View

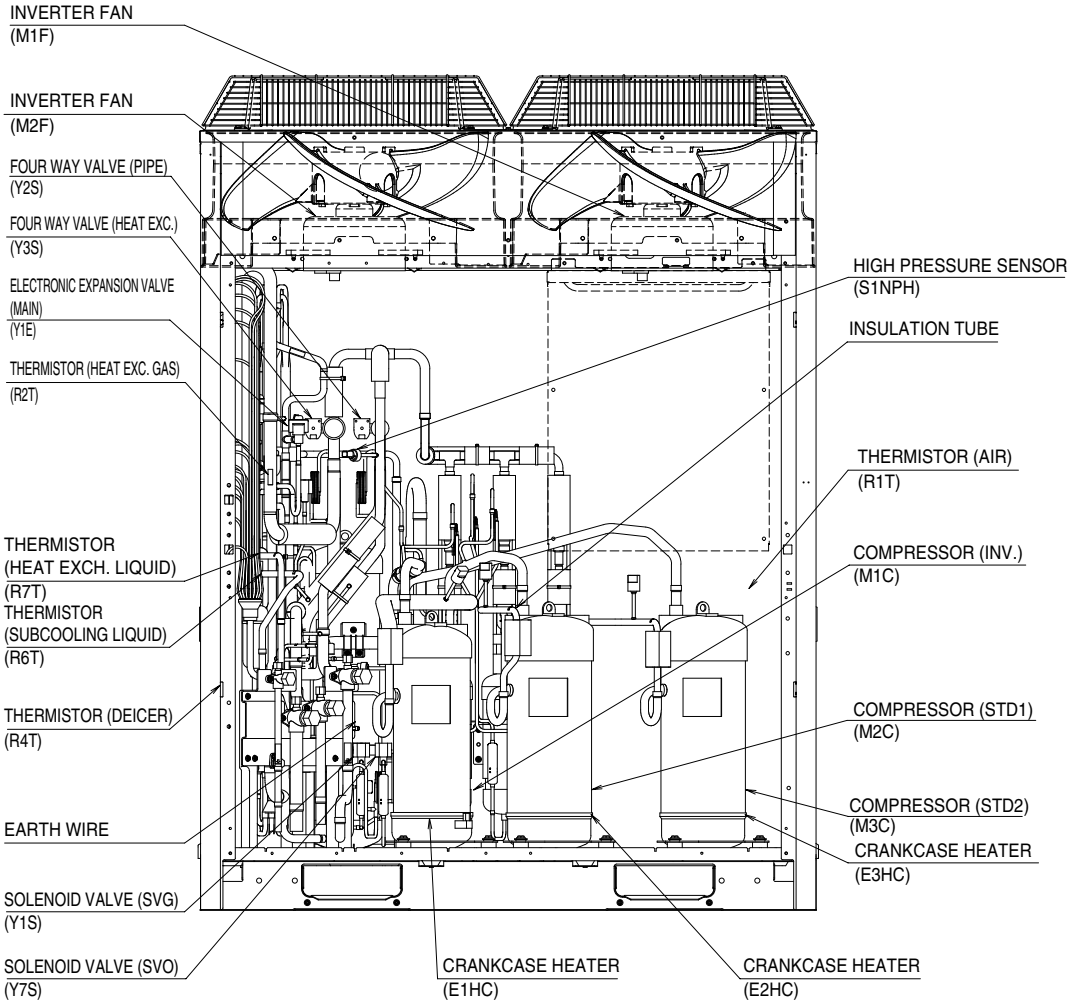


2.3 RTSQ14P, 16P

Plan

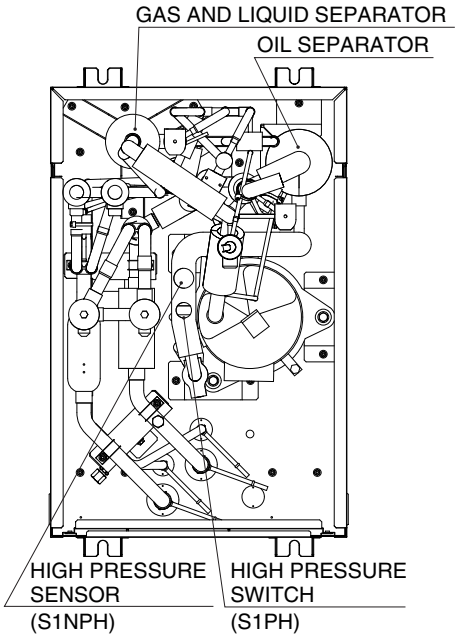


Front View

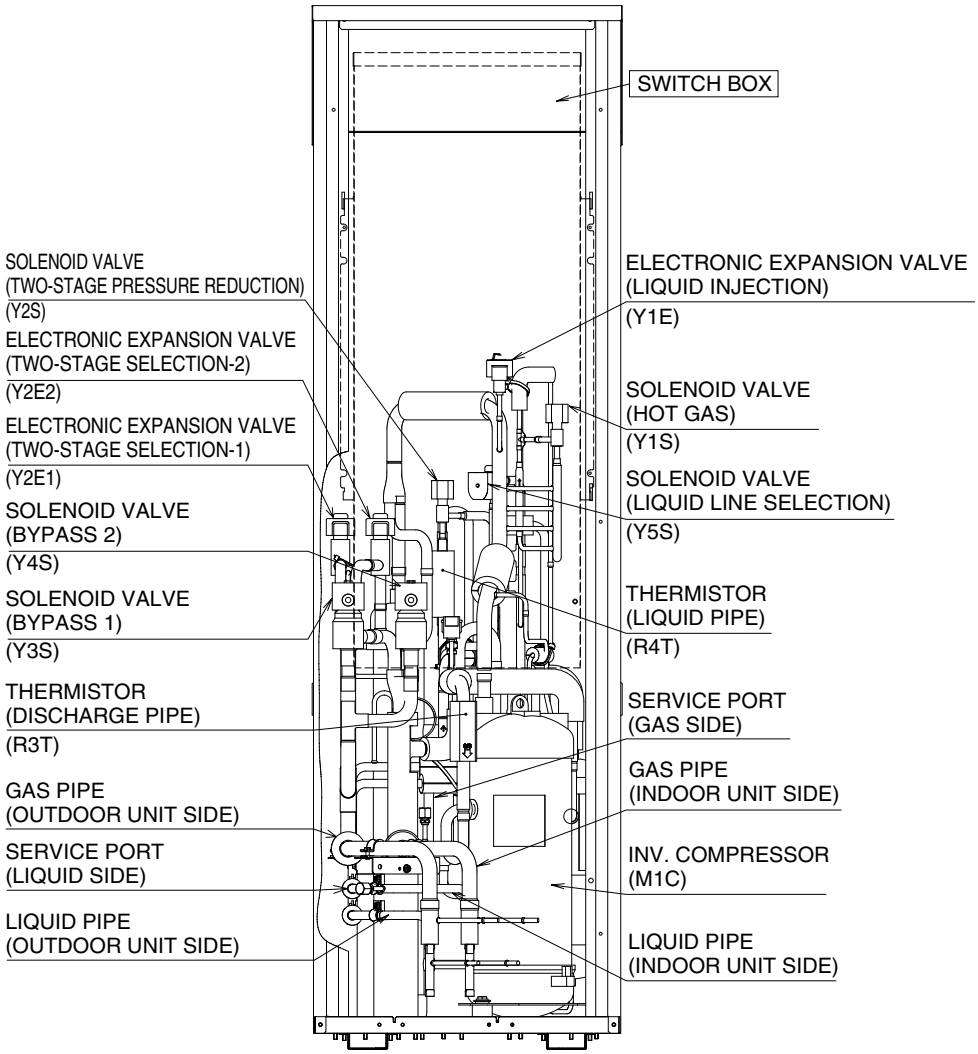


2.4 BTSQ20P

Plan

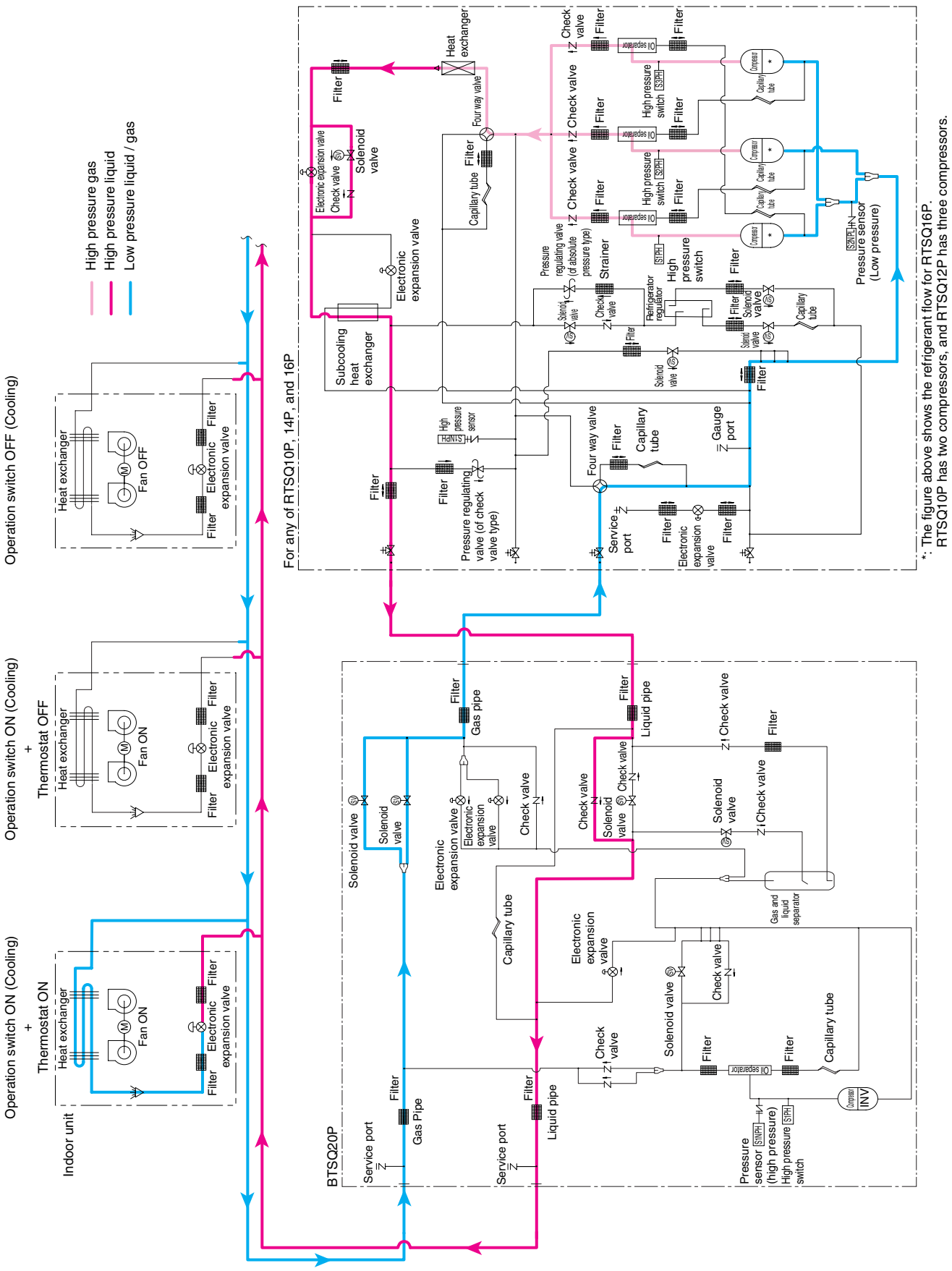


Front View

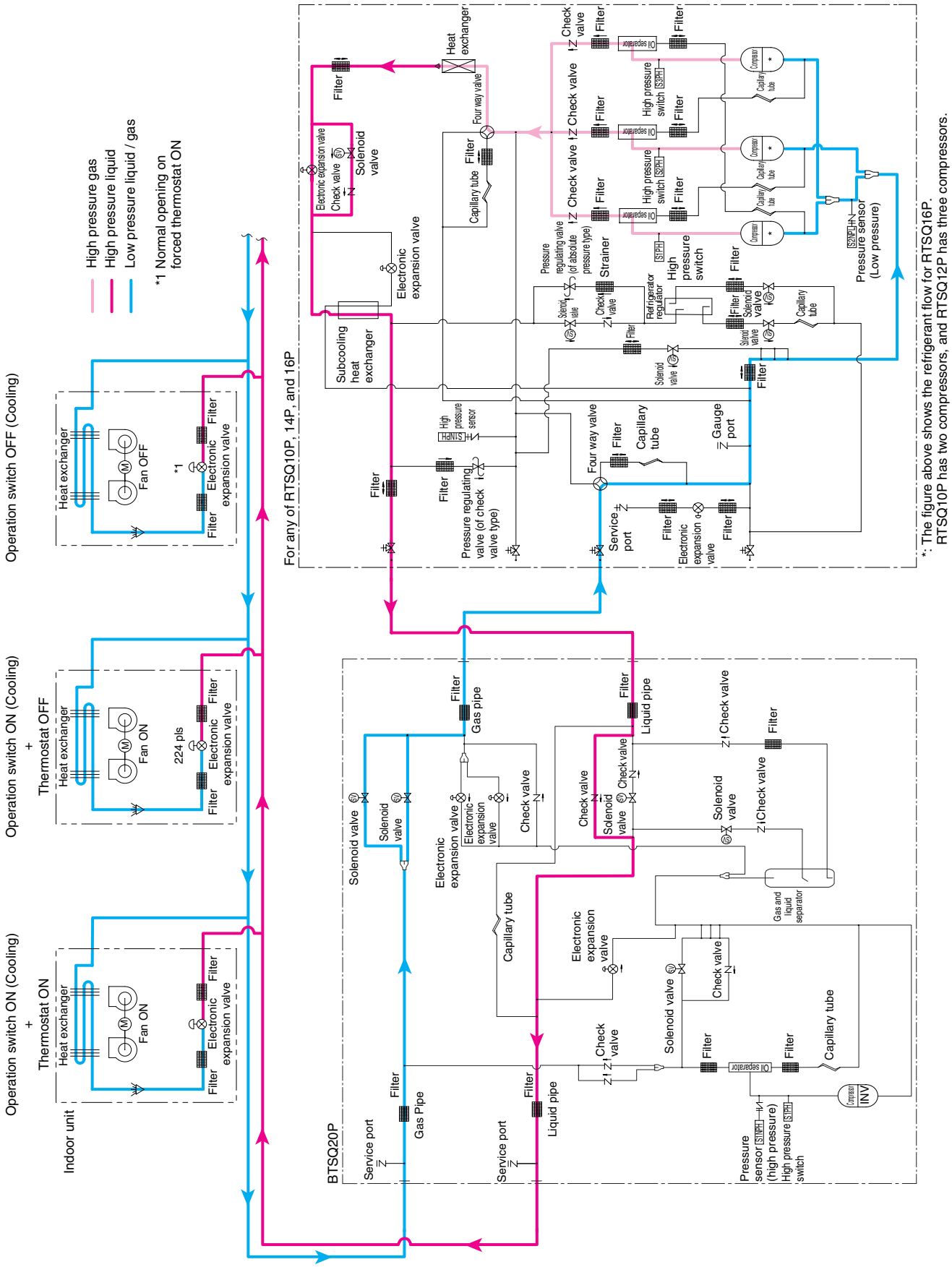


3. Refrigerant Flow for Each Operation Mode

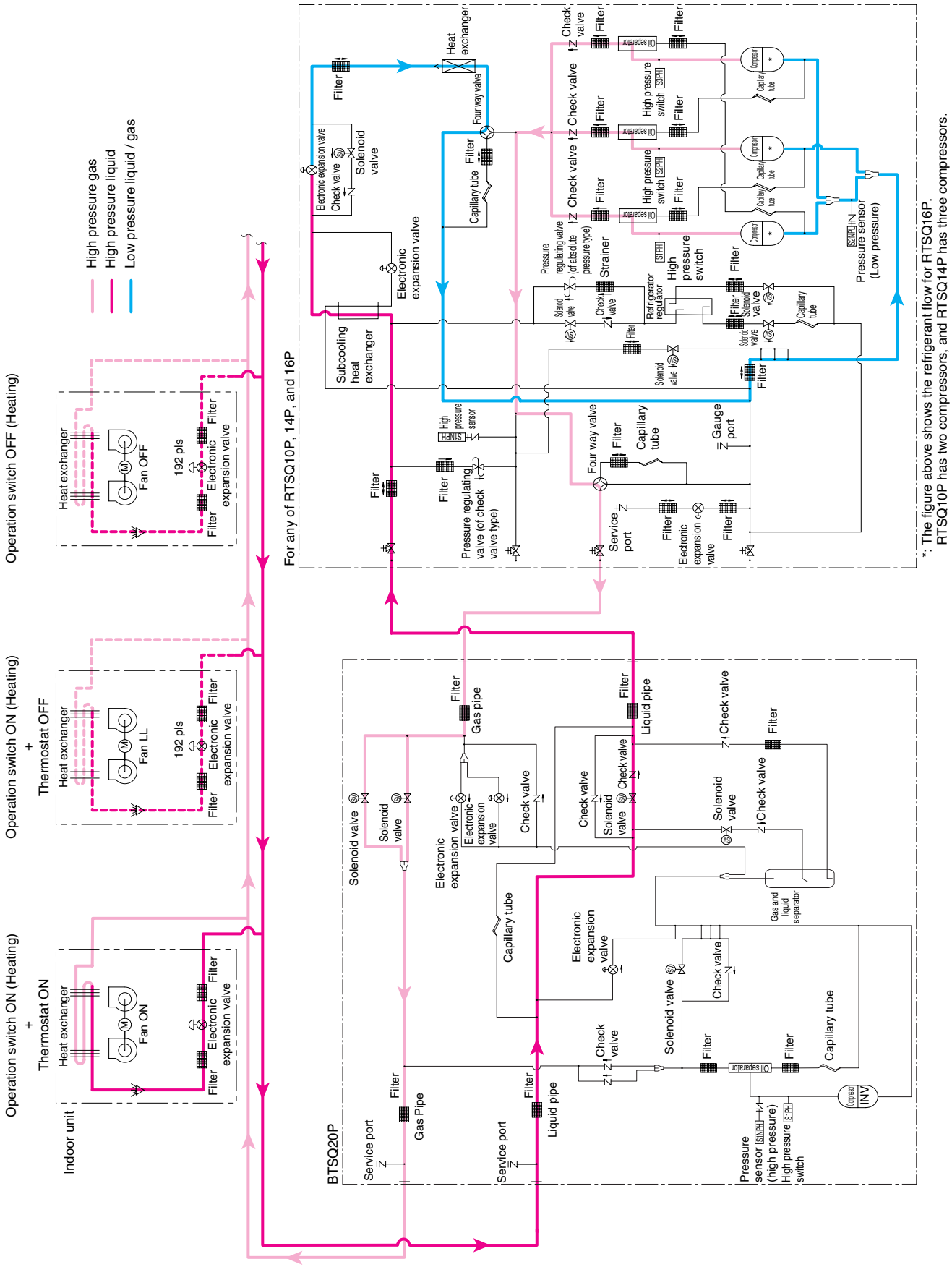
RTSYQ10P, 14P, 16P
Cooling Operation



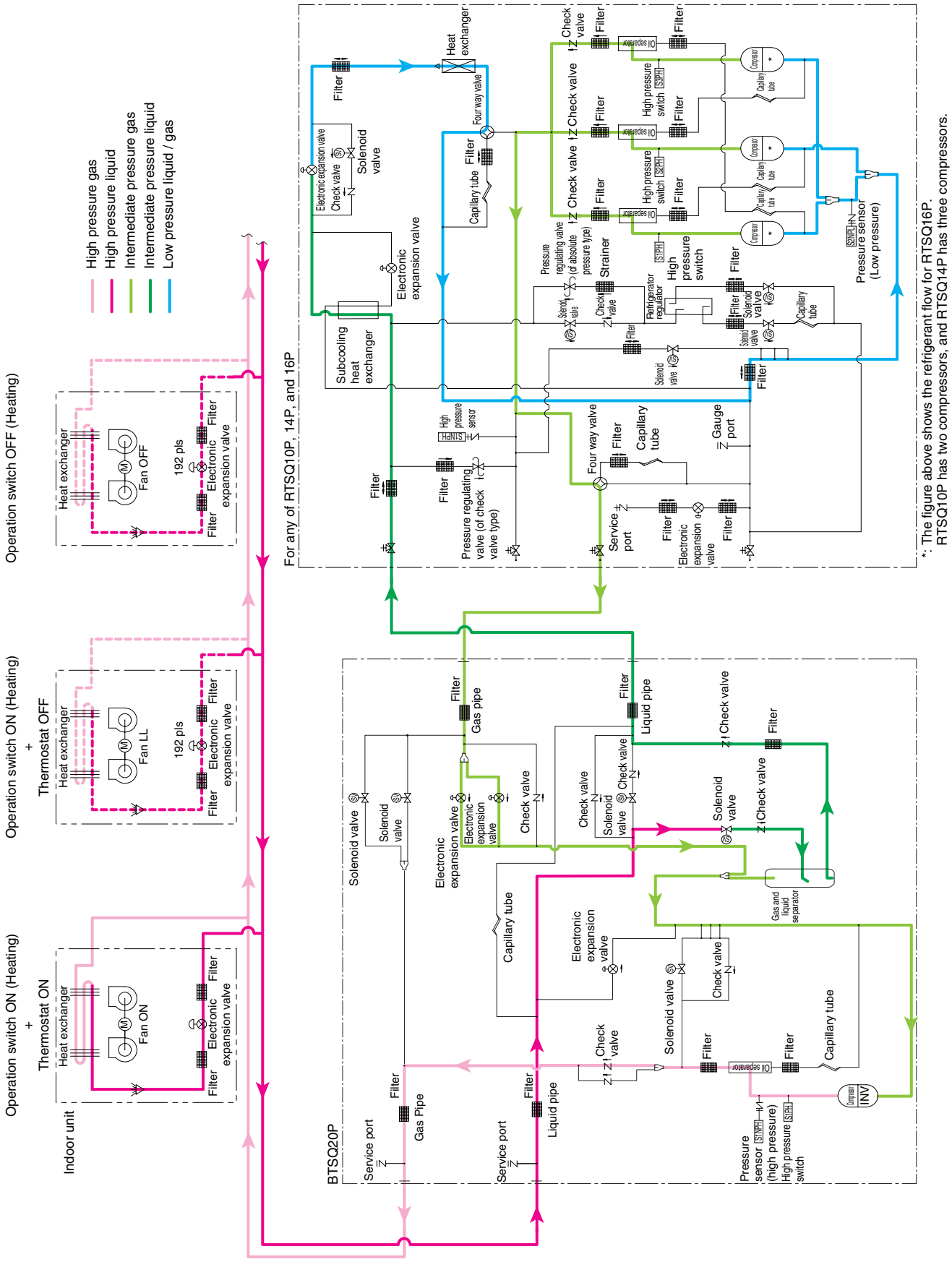
Cooling Oil Return Operation



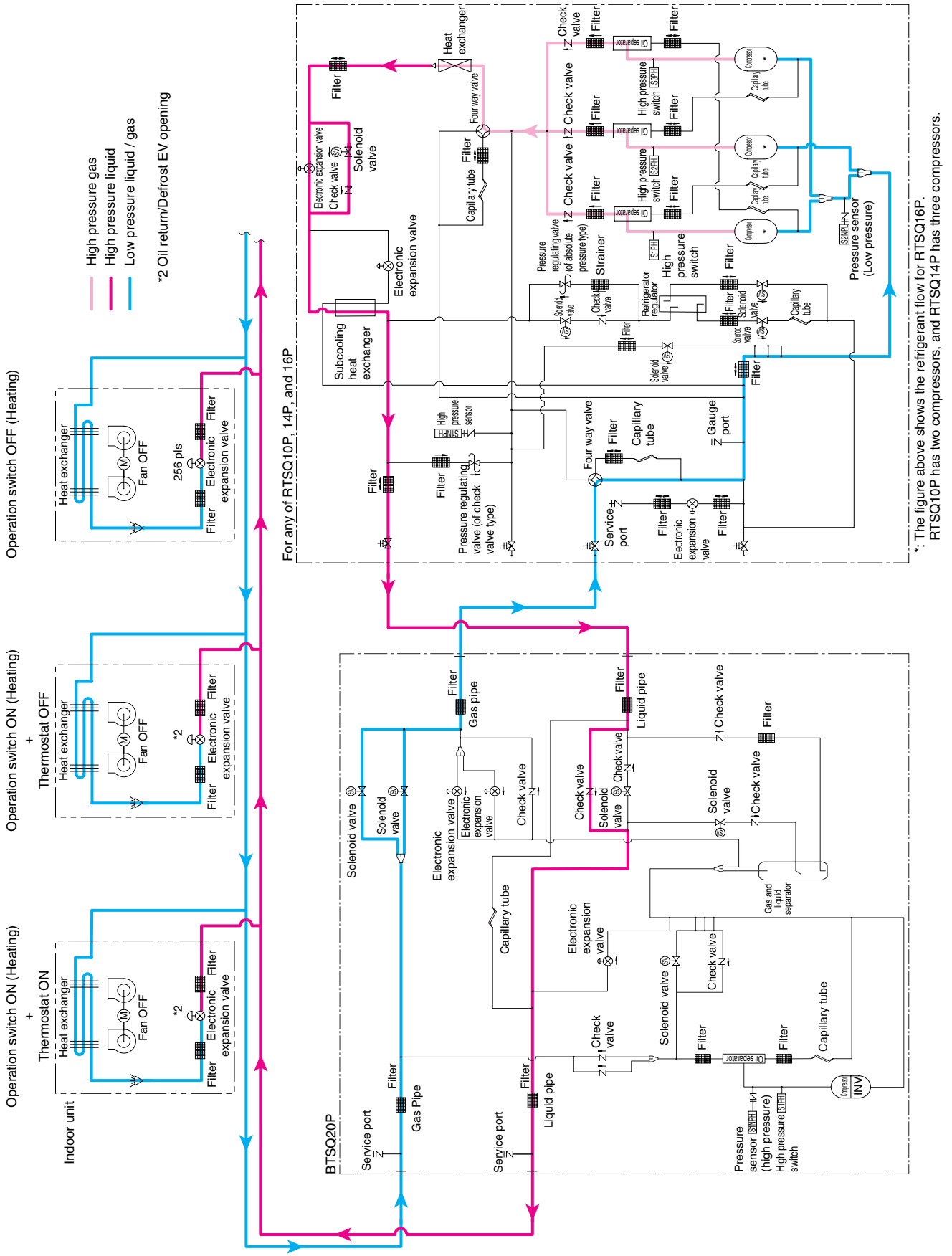
Heating Operation (Normal)



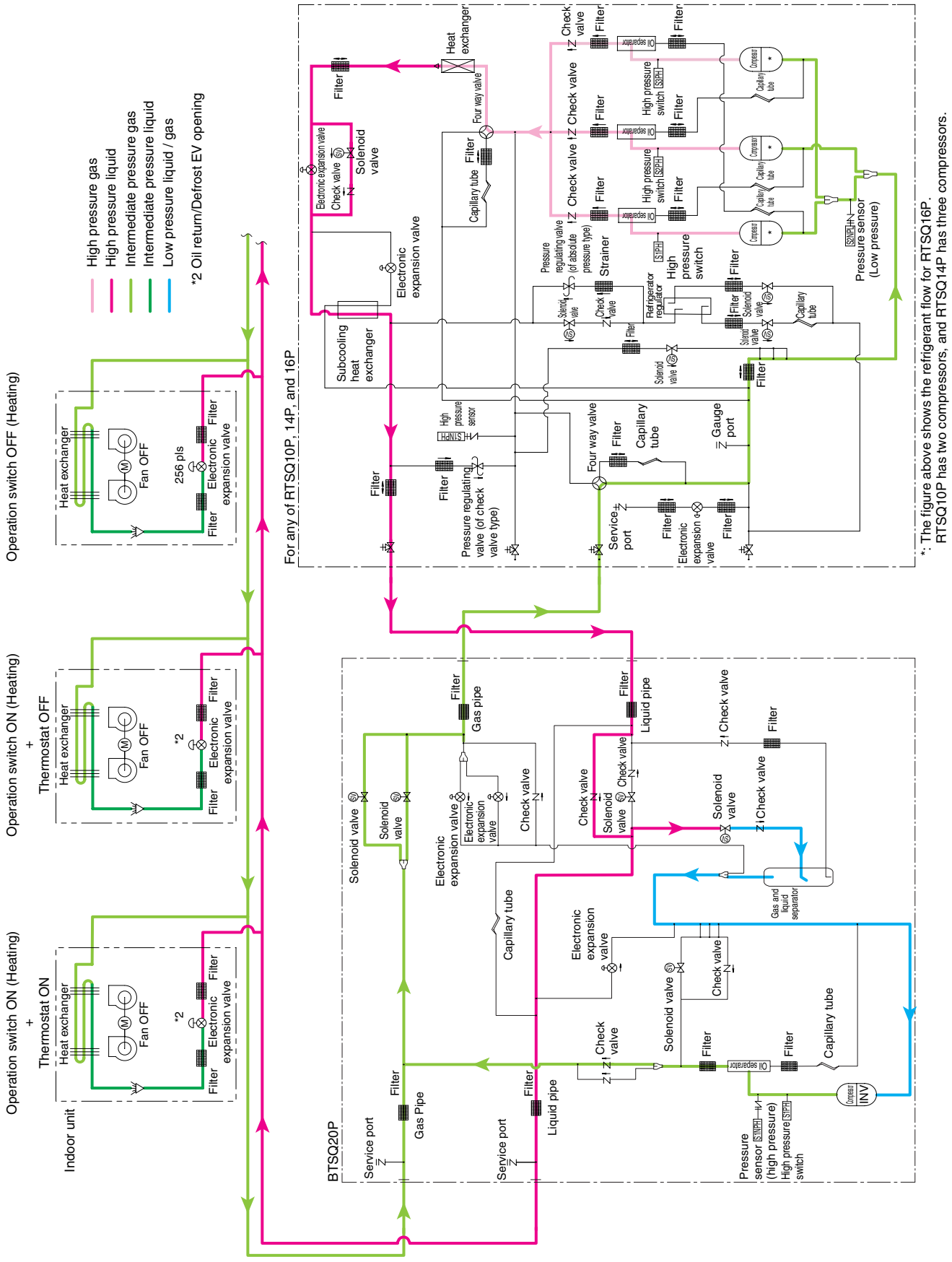
Heating Operation (at Low Outdoor Temperature)



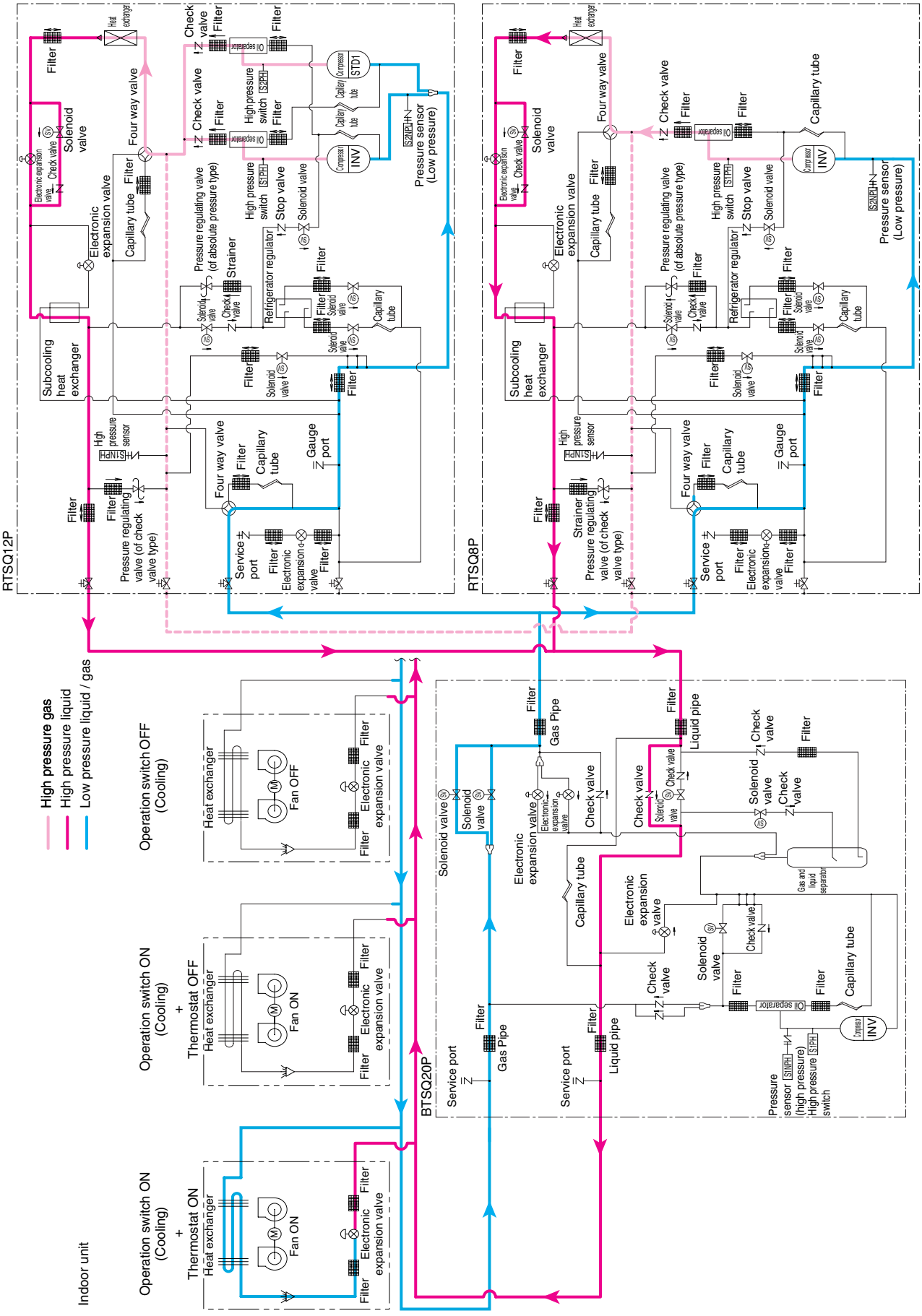
Heating Oil Return & Defrost Operation (Normal)



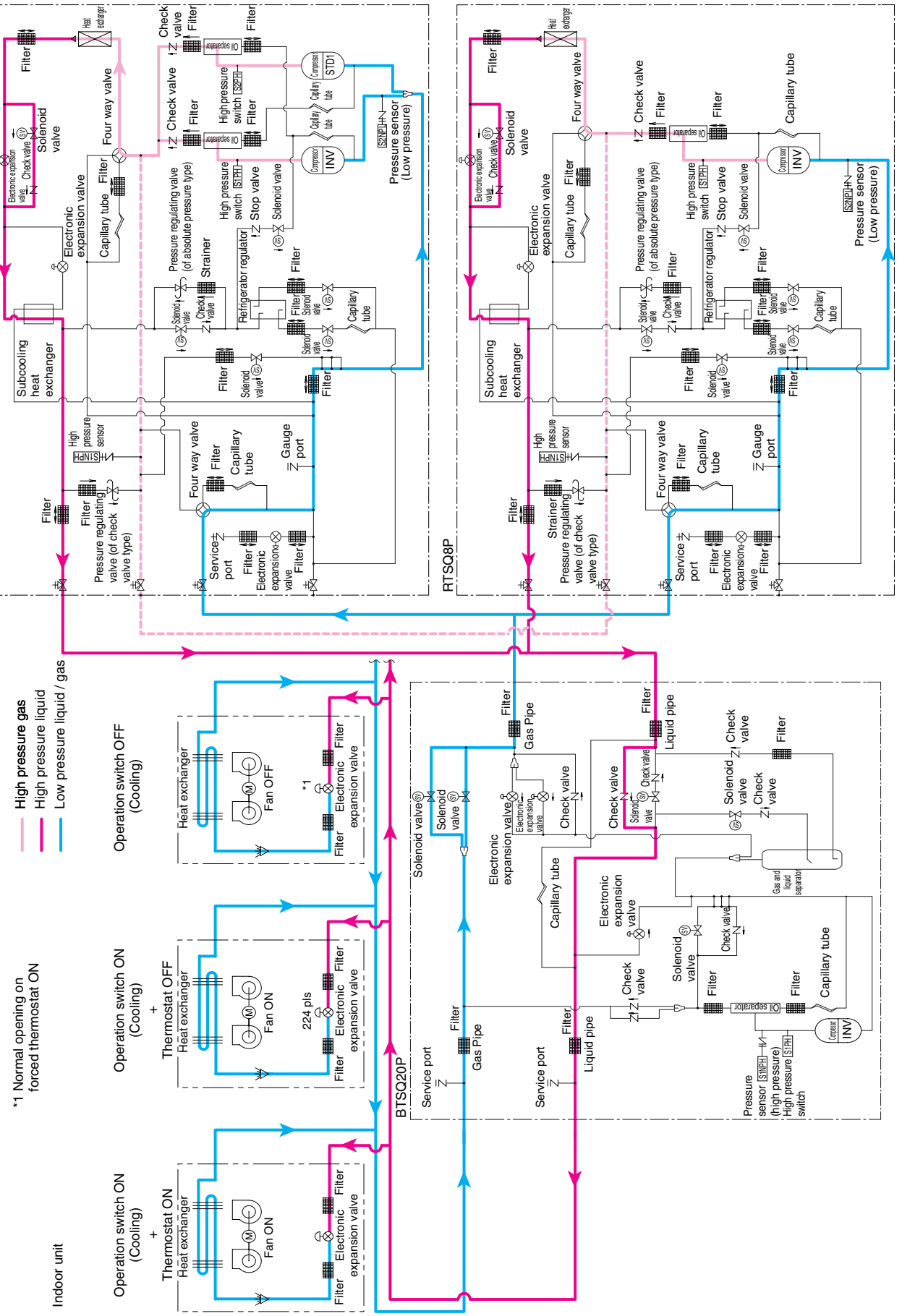
Heating Oil Return & Defrost Operation (at Low Outdoor Temperature)



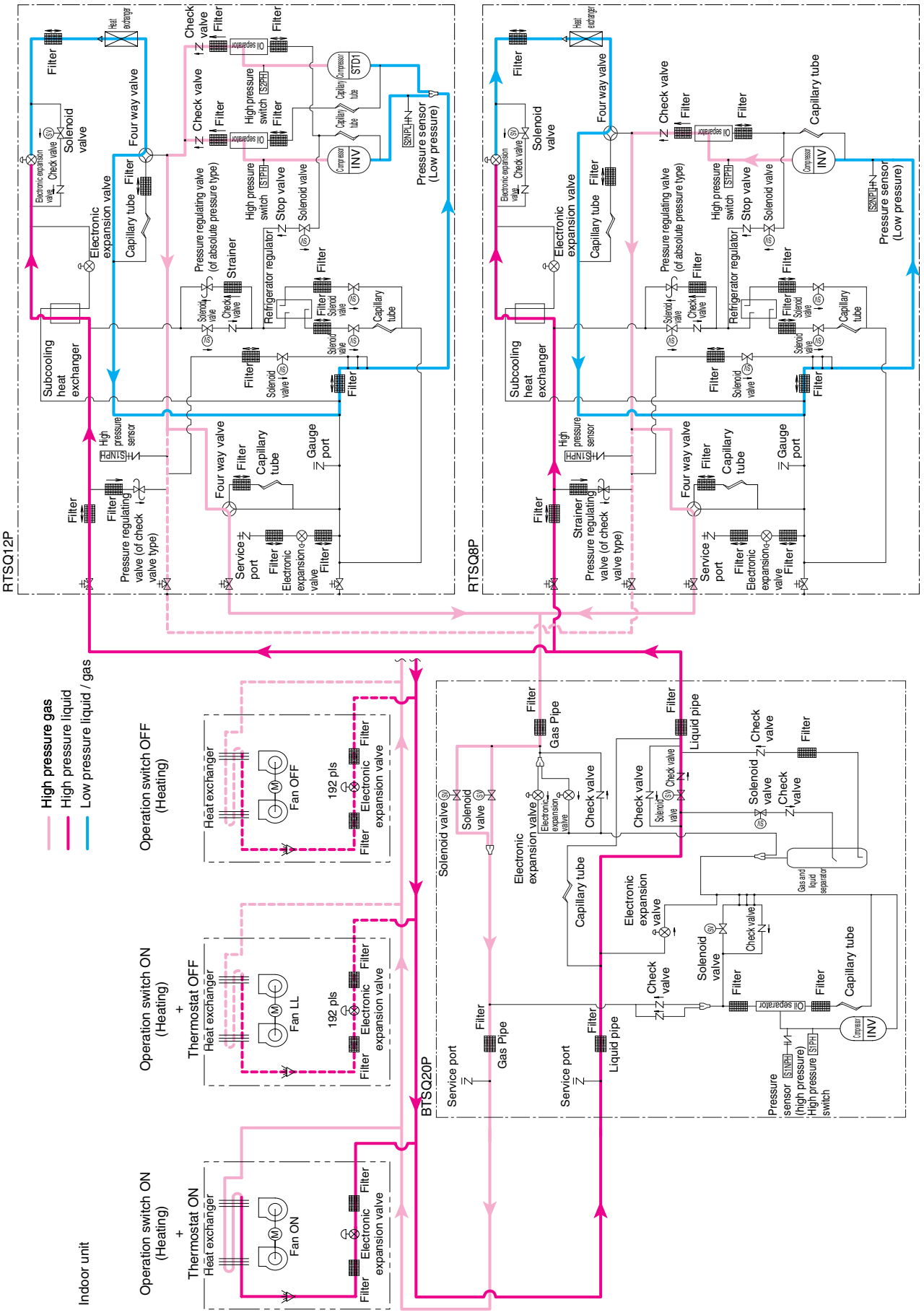
RTSYQ20P
Cooling Operation



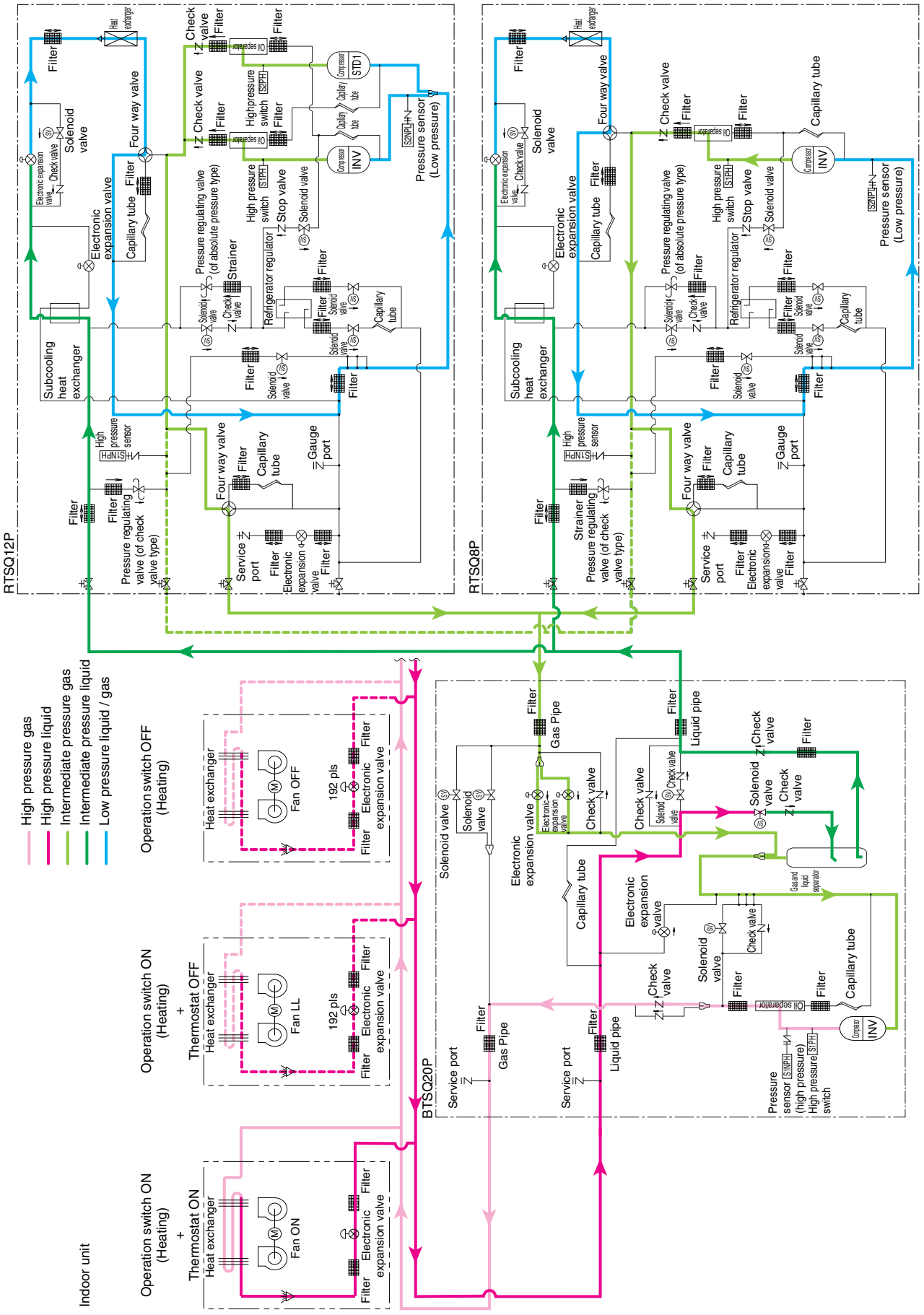
Cooling Oil Return Operation



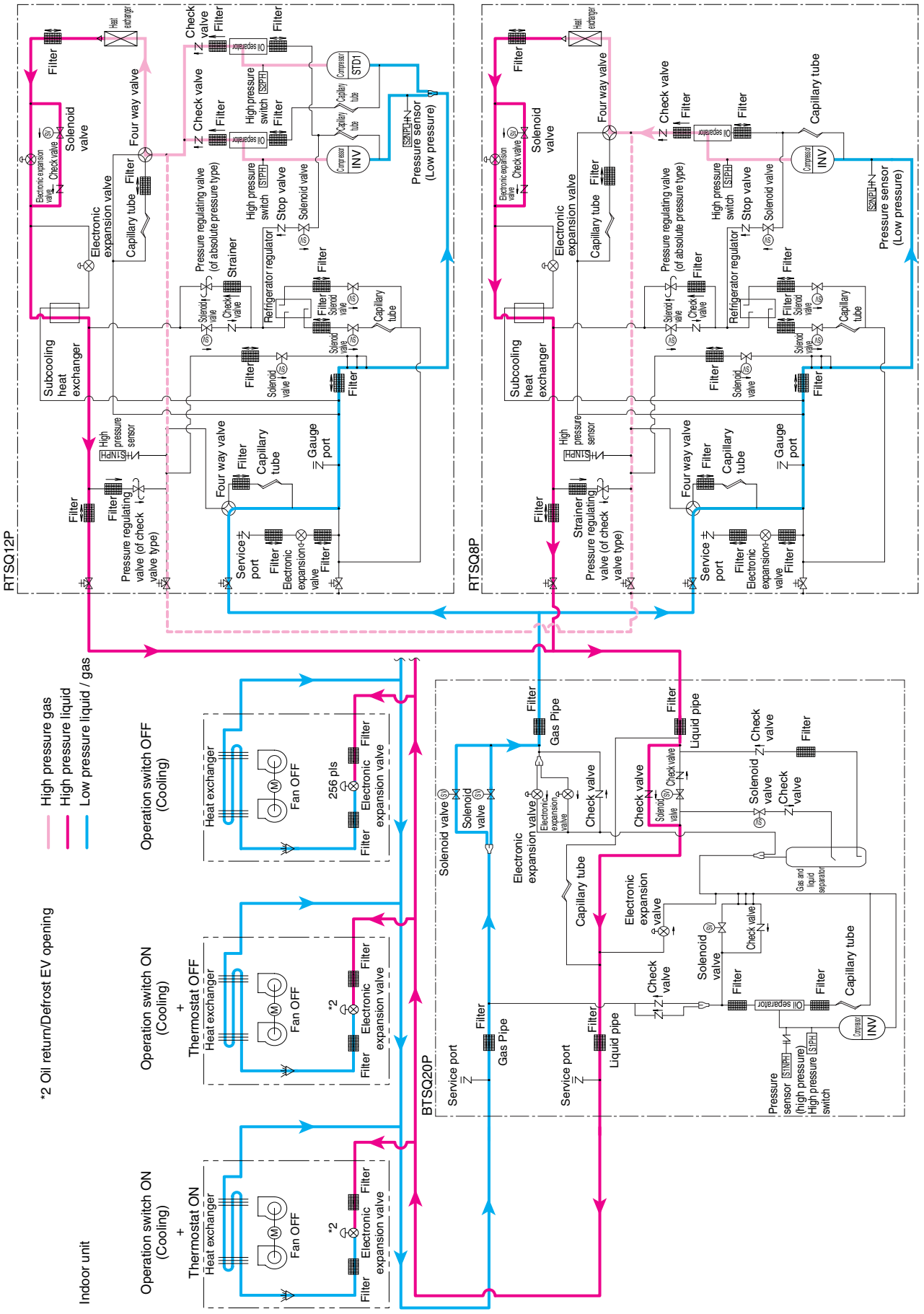
Heating Operation (Normal)



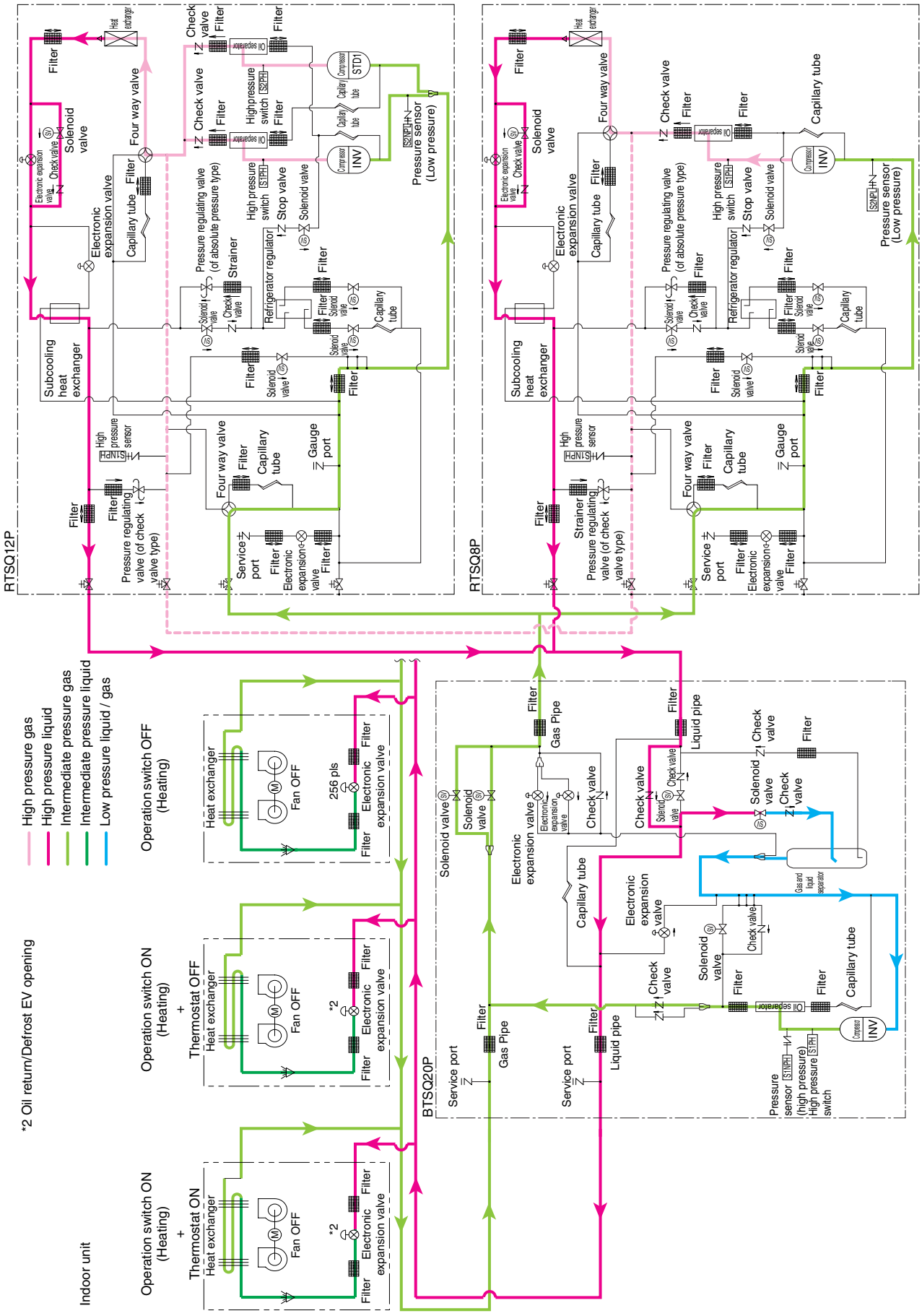
Heating Operation (at Low Outdoor Temperature)



Heating Oil Return & Defrost Operation (Normal)



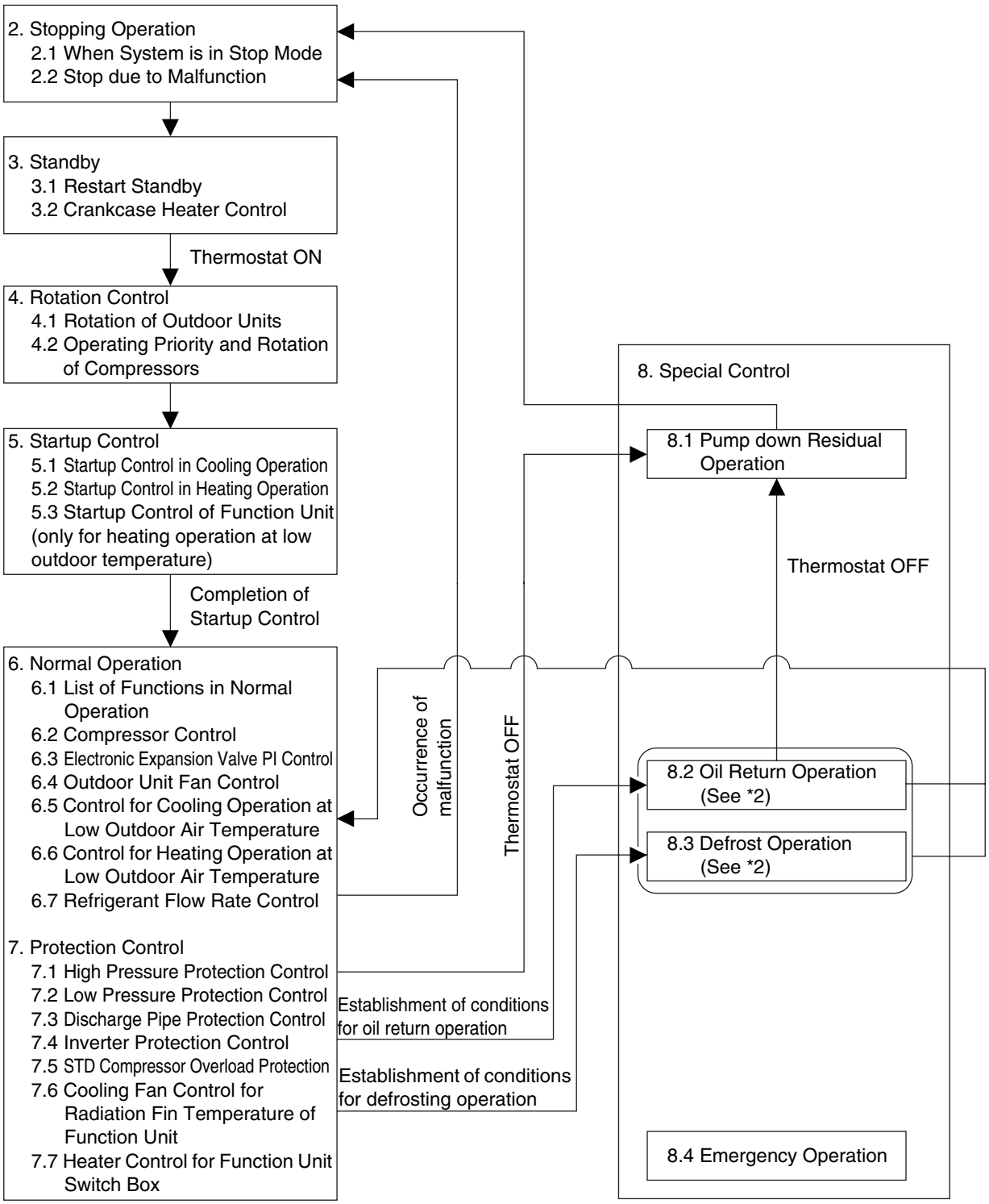
Heating Oil Return & Defrost Operation (at Low Outdoor Temperature)



Part 4
Function

1. Function General

1.1 Operation Modes



*1. If the thermostat turns OFF while “oil return operation” or “defrosting operation” is in progress, “pump down residual operation” will be initiated after the completion of the oil return operation or the defrosting operation.

*2. Numbers put ahead of control names are corresponding to the section numbers of Detailed Control Functions provided on pages after the next, respectively. For detail, refer to information in the “Detailed Control Functions” section.

1.2 Symbol

Symbol	Electric symbol	Description or function
20SA	Y3S	Four way valve (Heat exchanger switch)
20SB	Y2S	Four way valve (High/low pressure gas pipe switch)
DSH	–	Discharge pipe superheated degree (Discharge pipe temp.-high pressure equivalent saturation temp.)
DSHi	–	Discharge pipe superheat of inverter compressor
DSHs	–	Discharge pipe superheat of standard compressor
EV	–	Opening of electronic expansion valve
EVM	Y1E	Electronic expansion valve for main heat exchanger
EVT	Y3E	Electronic expansion valve for subcooling heat exchanger
EVJ	Y2E	Electronic expansion valve at the refrigerant charge port
HTdi	–	Value of INV compressor discharge pipe temperature compensated with outdoor air temperature
HTds	–	Value of STD compressor discharge pipe temperature compensated with outdoor air temperature
Pc	S1NPH	Value detected by high pressure sensor
Pe	S2NPL	Value detected by low pressure sensor
SH	–	Evaporator outlet superheat (Suction pipe temp.-low pressure equivalent saturation temp.)
SHS	–	Target evaporator outlet superheat
SVE	Y6S	Main bypass solenoid valve
SVP	Y5S	Solenoid valve for hot gas
SVL	Y4S	Refrigerant regulator liquid pipe solenoid valve
SVG	Y1S	Refrigerant regulator gas purging pipe solenoid valve
SVO	Y7S	Refrigerant regulator discharge pipe solenoid valve
SVT	Y8S	Refrigerant regulator discharge pipe solenoid valve
Ta	R1T	Outdoor air temperature
TsA	R8T	Suction pipe temperature
Tb	R4T	Heat exchanger outlet temperature at cooling
Tc	–	High pressure equivalent saturation temperature
TcS	–	Target temperature of Tc
Tdi	R31T	Discharge pipe temperature of inverter compressor
Tds	R32T, R33T	Discharge pipe temperature of standard compressor
Te	–	Low pressure equivalent saturation temperature
TeS	–	Target temperature of Te
Tf	R7T	Temperature of liquid pipe between heat exchanger and main electronic expansion valve
Tfin	R1T	Radiation fin temperature
Tg	R2T	Heat exchanger gas pipe temperature
Tl	R6T	Liquid pipe temperature detected with the liquid pipe thermistor
Tsc	R9T	Temperature of liquid pipe between liquid stop valve and subcooling heat exchanger
Tsh	R5T	Temperature of gas pipe at the subcooling heat exchanger evaporation side

2. Stopping Operation

2.1 When System is in Stop Mode

Both master units and slave units all stop according to the following contents.

Actuator	Symbol	Elect. symbol	Operation		
			RTSQ8P	RTSQ10•12P	RTSQ14•16P
Compressor 1	—	M1C	OFF	OFF	OFF
Compressor 2	—	M2C	—	OFF	OFF
Compressor 3	—	M3C	—	—	OFF
Outdoor unit fan1	—	M1F	OFF	OFF	OFF
Outdoor unit fan2	—	M2F	—	—	OFF
Electronic expansion valve (Main)	EVM	Y1E	0 pls		
Electronic expansion valve (Subcooling)	EVT	Y3E	0 pls		
Electronic expansion valve (Refrigerant charge)	EVJ	Y2E	80 pls		
Solenoid valve (Refrigerant regulator gas purging pipe)	SVG	Y1S	OFF		
Four way valve (Heat exchanger switch)	20SA	Y3S	Holds		
Solenoid valve (Refrigerant regulator liquid pipe)	SVL	Y4S	OFF		
Solenoid valve (Hot gas)	SVP	Y5S	OFF		
Solenoid valve (Main bypass)	SVE	Y6S	OFF		
Solenoid valve (Refrigerant regulator discharge pipe)	SVO	Y7S	OFF		
Solenoid valve (Refrigerant regulator discharge pipe)	SVT	Y8S	OFF		
Four way valve (High/low pressure gas pipe switch)	20SB	Y2S	Holds		
Ending conditions	—		Indoor unit thermostat is turned ON.		

2.2 Stop due to Malfunction

In order to protect compressors, if abnormal conditions occur, the system will make "stop with thermostat OFF" and the malfunction will be determined according to the number of retry times.
(Refer to P.213~215 "List of Malfunction Code" in Part 6 "Troubleshooting" about the items of malfunction decision.)

- Operation by which this malfunction is determined: The system makes a stop and the remote controller displays the relevant "Malfunction code".

3. Standby

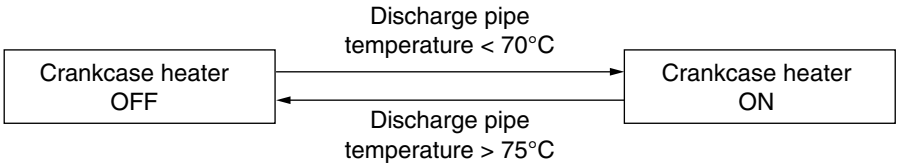
3.1 Restart Standby

This function is used to forcedly turn OFF the thermostat for a period of 2 minutes after a compressor stops running, in order to prevent the frequent ON-OFF operations of the compressor and equalize pressure in the refrigerant circuit. Furthermore, the outdoor fan continues residual operation for a while to facilitate pressure equalization and prevent the stay of refrigerant in evaporator.

Actuator	Symbol	Elect. symbol	Operation		
			RTSQ8P	RTSQ10•12P	RTSQ14•16P
Compressor 1	—	M1C	OFF	OFF	OFF
Compressor 2	—	M2C	—	OFF	OFF
Compressor 3	—	M3C	—	—	OFF
Outdoor unit fan1	—	MF1	Ta>30°C: STEP4 Ta≤30°C: OFF	Ta>30°C: STEP4 Ta≤30°C: OFF	Ta>30°C: STEP4 Ta≤30°C: OFF
Outdoor unit fan2	—	MF2	—	—	Ta>30°C: STEP4 Ta≤30°C: OFF
Electronic expansion valve (Main)	EVM	Y1E	0 pls		
Electronic expansion valve (Subcooling)	EVT	Y3E	0 pls		
Electronic expansion valve (Refrigerant charge)	EVJ	Y2E	80 pls		
Solenoid valve (Refrigerant regulator gas purging pipe)	SVG	Y1S	OFF		
Four way valve (Heat exchanger switch)	20SA	Y3S	Holds		
Solenoid valve (Refrigerant regulator liquid pipe)	SVL	Y4S	OFF		
Solenoid valve (Hot gas)	SVP	Y5S	OFF		
Solenoid valve (Main bypass)	SVE	Y6S	OFF		
Solenoid valve (Refrigerant regulator discharge pipe)	SVO	Y7S	OFF		
Solenoid valve (Refrigerant regulator discharge pipe)	SVT	Y8S	OFF		
Four way valve (High/low pressure gas pipe switch)	20SB	Y2S	Holds		
Ending conditions	—		2 min.		

3.2 Crankcase Heater Control

In order to prevent the refrigerant from melting in the compressor oil in the stopped mode, this mode is used to control the crankcase heater.



4. Rotation Control

4.1 Rotation of Outdoor Units

In order to make operating time equal for each compressor of multi connection outdoor units, outdoor units are used in rotation.

[Rotation of outdoor units]
[System with two outdoor units]

	Outdoor Unit 1	Outdoor Unit 2
Previous time	Priority 1	Priority 2
This time	Priority 2	Priority 1
Next time	Priority 1	Priority 2

[Timing of outdoor rotation]
In start of startup control

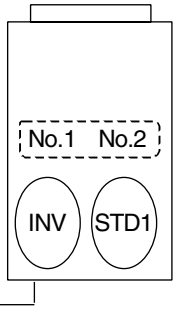
4.2 Operating Priority and Rotation of Compressors

Each compressor operates in the following order of priority.

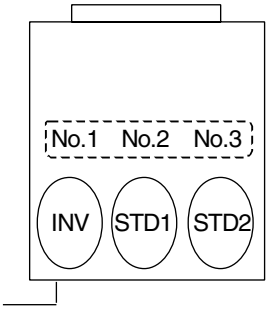
INV.: Inverter compressor
STD1: Standard compressor 1
STD2: Standard compressor 2

[System with one outdoor unit]

RTSYQ10P

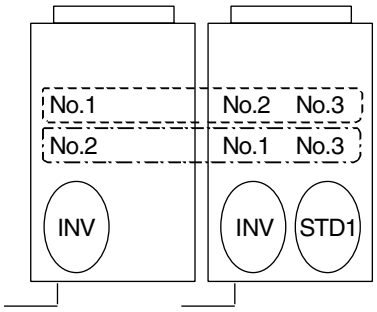


RTSYQ14P
RTSYQ16P



[System with two outdoor units]
Used in 2 patterns of “Rotation Operation” as shown in the following.

RTSYQ20P



5. Startup Control

This control is used to equalize the pressure in the front and back of the compressor prior to the startup of the compressor, thus reducing startup loads. Furthermore, the inverter is turned ON to charge the capacitor.
In addition, to avoid stresses to the compressor due to liquid refrigerant return or else after the startup, the following control is made and the position of the four way valve is also determined. To position the four way valve, the master and slave units simultaneously start up.

5.1 Startup Control in Cooling Operation

Actuator	Symbol	Elect. symbol	Pressure equalization control before startup	Startup control	
				STEP1	STEP2
Compressor 1	—	M1C	0 Hz	52 Hz+OFF+OFF	52Hz+OFF+OFF+2STEP / 20 sec. (Until it reaches Pc-Pe>0.39 MPa)
Compressor 2		M2C			
Compressor 3		M3C			
Outdoor unit fan 1	—	M1F	STEP4	Ta<20°C: OFF Ta≥20°C: STEP4	+1step/15 sec. (When Pc_max>2.16 MPa) -1step/15 sec. (When Pc_max<1.77 MPa)
Outdoor unit fan 2		M2F			
Electronic expansion valve (Main)	EVM	Y1E	0 pls	480 pls	480 pls
Electronic expansion valve (Subcooling)	EVT	Y3E	0 pls	0 pls	0 pls
Electronic expansion valve (Refrigerant charge)	EVJ	Y2E	80 pls	80 pls	80 pls
Solenoid valve (Refrigerant regulator gas purging pipe)	SVG	Y1S	OFF	OFF	OFF
Four way valve (Heat exchanger switch)	20SA	Y3S	OFF	OFF	OFF
Solenoid valve (Refrigerant regulator liquid pipe)	SVL	Y4S	OFF	OFF	OFF
Solenoid valve (Hot gas)	SVP	Y5S	OFF	OFF	OFF
Solenoid valve (Main bypass)	SVE	Y6S	OFF	ON	ON
Solenoid valve (Refrigerant regulator discharge pipe)	SVO	Y7S	OFF	OFF	OFF
Solenoid valve (Refrigerant regulator discharge pipe)	SVT	Y8S	OFF	OFF	OFF
Four way valve (High/low pressure gas pipe switch)	20SB	Y2S	ON	ON	ON
Ending conditions			A lapse of 60 sec.	A lapse of 15 sec.	OR • A lapse of 90 sec. • Pc - Pe>0.39 MPa

5.2 Startup Control in Heating Operation

Actuator	Symbol	Elect. symbol	Pressure equalization control before startup	Startup control	
				STEP1	STEP2
Compressor 1	—	M1C	0 Hz	52 Hz+OFF+OFF	52Hz+OFF+OFF+2STEP / 20 sec. (Until it reaches Pc-Pe>0.39 MPa)
Compressor 2		M2C			
Compressor 3		M3C			
Outdoor unit fan 1	—	M1F	STEP4	20SA=ON: STEP7	20SA=ON: STEP7
Outdoor unit fan 2		M2F			
Electronic expansion valve (Main)	EVM	Y1E	0 pls	20SA=ON: SH Control	20SA=ON: SH Control
Electronic expansion valve (Subcooling)	EVT	Y3E	0 pls	0 pls	0 pls
Electronic expansion valve (Refrigerant charge)	EVJ	Y2E	80 pls	80 pls	80 pls
Solenoid valve (Refrigerant regulator gas purging pipe)	SVG	Y1S	OFF	OFF	OFF
Four way valve (Heat exchanger switch)	20SA	Y3S	ON	ON	ON
Solenoid valve (Refrigerant regulator liquid pipe)	SVL	Y4S	OFF	OFF	OFF
Solenoid valve (Hot gas)	SVP	Y5S	OFF	OFF	OFF
Solenoid valve (Main bypass)	SVE	Y6S	OFF	OFF	OFF
Solenoid valve (Refrigerant regulator discharge pipe)	SVO	Y7S	OFF	OFF	OFF
Solenoid valve (Refrigerant regulator discharge pipe)	SVT	Y8S	OFF	OFF	OFF
Four way valve (High/low pressure gas pipe switch)	20SB	Y2S	OFF	OFF	OFF
Ending conditions			A lapse of 60 sec.	A lapse of 15 sec.	OR • A lapse of 90 sec. • Pc - Pe>0.39 MPa

5.3 Startup Control of Function Unit (only for heating operation at low outdoor air temperature)

Part name	Electric symbol	Pressure equalization control before startup	Startup control			
			Step 1	Step 2	Step 3	Step 4
Compressor	M1C	0Hz	52 Hz	52 Hz	112 Hz	180 Hz
Electronic expansion valve (liquid injection)	Y1E	0 pls	0 pls	0 pls	PI control	PI control
Electronic expansion valve (two-stage switching-1)	Y2E1	0 pls	0 pls	200 pls	200 pls	760 pls
Electronic expansion valve (two-stage switching-2)	Y2E2	0 pls	0 pls	0 pls	0 pls	760 pls
Solenoid valve (hot gas)	Y1S	ON	ON	OFF	OFF	OFF
Solenoid valve (two-stage decompression)	Y2S	OFF	OFF	OFF	ON	ON
Solenoid valve (bypass-1)	Y3S	ON	ON	ON	OFF	OFF
Solenoid valve (bypass-2)	Y4S	ON	ON	ON	OFF	OFF
Solenoid valve (liquid line switch)	Y5S	ON	ON	ON	OFF	OFF
Ending conditions		A lapse of 30 sec.	A lapse of 30 sec.	A lapse of 10 sec.	A lapse of 30 sec.	A lapse of 20 sec.

6. Normal Operation

6.1 List of Functions in Normal Operation

6.1.1 Outdoor Unit

Part Name	Symbol	Electric Symbol	Normal Cooling	Normal Heating
Compressor 1	—	M1C	PI control, High pressure protection, Low pressure protection, Td protection, INV protection,	PI control, High pressure protection, Low pressure protection, Td protection, INV protection,
Compressor 2		M2C		
Compressor 3		M3C		
Outdoor unit fan 1	—	M1F	Cooling fan control	Fan step No.7 or No.8
Outdoor unit fan 2		M2F		
Electronic expansion valve (Main)	EVM	Y1E	480 pls	PI control
Electronic expansion valve (Subcooling)	EVT	Y3E	PI control	PI control
Electronic expansion valve (Refrigerant charge)	EVJ	Y2E	80 pls	80 pls
Solenoid valve (Refrigerant regulator gas purging pipe)	SVG	Y1S	ON for refrigerant recovery	ON for refrigerant recovery
Four way valve (Heat exchanger switch)	20SA	Y3S	OFF	ON
Solenoid valve (Refrigerant regulator liquid pipe)	SVL	Y4S	ON for refrigerant recovery	ON for refrigerant recovery
Solenoid valve (Hot gas)	SVP	Y5S	OFF	OFF
Solenoid valve (Main bypass)	SVE	Y6S	ON	OFF
Solenoid valve (Refrigerant regulator discharge pipe)	SVO	Y7S	ON for refrigerant discharge	ON for refrigerant discharge
Solenoid valve (Refrigerant regulator discharge pipe)	SVT	Y8S	ON for oil level control	ON for oil level control
Four way valve (High/low pressure gas pipe switch)	20SB	Y2S	ON	OFF

6.1.2 Function Unit

Part name		Electric symbol	Cooling operation	Heating operation	
				Normal	Low outdoor air temp.
Compressor		M1C	OFF	OFF	PI control
Cooling fan		M1F	OFF	OFF	Cooling fan control
Electronic expansion valve	Liquid injection	Y1E	0 pls	0 pls	Discharge superheated degree control
	Two-stage switching-1	Y2E1	0 pls	0 pls	760 pls (fully open)
	Two-stage switching-2	Y2E2	0 pls	0 pls	760 pls (fully open)
Solenoid valve	Hot gas	Y1S	OFF	OFF	OFF
	Two-stage decompression	Y2S	OFF	OFF	ON
	Bypass-1	Y3S	ON	ON	OFF
	Bypass-2	Y4S	ON	ON	OFF
	Liquid line switch	Y5S	OFF	ON	OFF

6.1.3 Indoor Unit

Indoor unit actuator			Normal cooling	Normal heating
Fan	M1F	Thermostat ON unit	Remote controller setting	Remote controller setting
		Stopping unit	OFF	OFF
		Thermostat OFF unit	Remote controller setting	LL
Electronic expansion valve	Y1E	Thermostat ON unit	Normal opening *1	Normal opening *1
		Stopping unit	0 pls	192 pls
		Thermostat OFF unit	0 pls	192 pls

*1: Refer to “6.3 Electronic Expansion Valve PI Control” on P.94.

6.2 Compressor Control

6.2.1 Compressor PI Control

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

[Cooling operation]

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

Te set value (Make this setting while in Setting mode 2.)

Te setting

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

Te : Low pressure equivalent saturation temperature (°C)

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

*On multi-outdoor-unit systems, this control is made according to values of the first-priority unit, which is detected with the pressure sensor.

[Heating operation]

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

Te set value (Make this setting while in Setting mode 2.)

Tc setting

L	M (Normal) (factory setting)	H
43	46	48

Tc : High pressure equivalent saturation temperature (°C)

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

*On multi-outdoor-unit systems, this control is made according to values of the first-priority unit, which is detected with the pressure sensor.

[Heating operation at low outdoor air temperature]

<Outdoor unit>

This function is used to conduct the same control as that for "Heating operation" aforementioned.

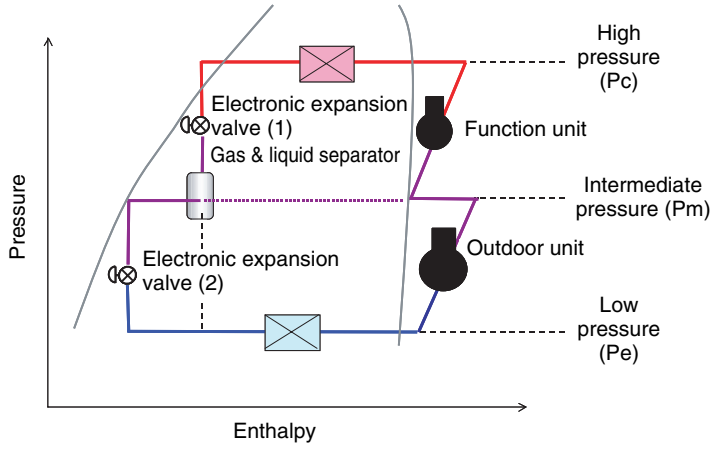
<Function unit>

This function is used to control the compressor capacity so that the ratio (Ph) of the high-stage-side compression ratio to the low-stage-side compression ratio will come to the target value.

$$\bigcirc Ph = \frac{\text{High-stage-side compression ratio}}{\text{Low-stage-side compression ratio}} = \frac{Pc/Pm}{Pm/Pe}$$

Pc : Value detected by the high pressure sensor of the function unit (MPa)
Pm : Value detected by the high pressure sensor of the outdoor unit (MPa)
Pe : Value detected by the low pressure sensor of the outdoor unit (MPa)

○Target value of Ph: PhS = 0.5 to 2.0



6.2.2 Compressor Step Control

Compressor operations vary with the following steps according to information in "6.2.1 Compressor PI Control".

RTSYQ10P

STEP No.	INV	STD	
1	52 Hz	OFF	
2	56 Hz	OFF	
3	62 Hz	OFF	
4	68 Hz	OFF	
5	74 Hz	OFF	
6	80 Hz	OFF	
7	88 Hz	OFF	
8	96 Hz	OFF	
9	104 Hz	OFF	
10	110 Hz	OFF	
11	116 Hz	OFF	
12	124 Hz	OFF	
13	132 Hz	OFF	
14	144 Hz	OFF	
15	158 Hz	OFF	
16	166 Hz	OFF	
17	176 Hz	OFF	
18	188 Hz	OFF	
19	202 Hz	OFF	
20	210 Hz	OFF	
21	52 Hz	ON	
22	62 Hz	ON	
23	68 Hz	ON	
24	74 Hz	ON	
25	80 Hz	ON	
26	88 Hz	ON	
27	96 Hz	ON	
28	104 Hz	ON	
29	116 Hz	ON	
30	124 Hz	ON	
31	132 Hz	ON	
32	144 Hz	ON	
33	158 Hz	ON	
34	176 Hz	ON	
35	188 Hz	ON	
36	202 Hz	ON	
37	210 Hz	ON	*1
38	218 Hz	ON	
39	232 Hz	ON	
40	248 Hz	ON	
41	266 Hz	ON	*2

*1: Upper limit frequency for single-stage compression

*2: Upper limit frequency for two-stage compression in 50-Hz districts

RTSYQ14 · 16P

STEP No.	INV	STD1	STD2
1	52 Hz	OFF	OFF
2	56 Hz	OFF	OFF
3	62 Hz	OFF	OFF
4	68 Hz	OFF	OFF
5	74 Hz	OFF	OFF
6	80 Hz	OFF	OFF
7	88 Hz	OFF	OFF
8	96 Hz	OFF	OFF
9	104 Hz	OFF	OFF
10	110 Hz	OFF	OFF
11	116 Hz	OFF	OFF
12	124 Hz	OFF	OFF
13	132 Hz	OFF	OFF
14	144 Hz	OFF	OFF
15	158 Hz	OFF	OFF
16	166 Hz	OFF	OFF
17	176 Hz	OFF	OFF
18	188 Hz	OFF	OFF
19	202 Hz	OFF	OFF
20	210 Hz	OFF	OFF
21	52 Hz	ON	OFF
22	62 Hz	ON	OFF
23	68 Hz	ON	OFF
24	74 Hz	ON	OFF
25	80 Hz	ON	OFF
26	88 Hz	ON	OFF
27	96 Hz	ON	OFF
28	104 Hz	ON	OFF
29	116 Hz	ON	OFF
30	124 Hz	ON	OFF
31	132 Hz	ON	OFF
32	144 Hz	ON	OFF
33	158 Hz	ON	OFF
34	176 Hz	ON	OFF
35	188 Hz	ON	OFF
36	202 Hz	ON	OFF
37	210 Hz	ON	OFF
38	52 Hz	ON	ON
39	62 Hz	ON	ON
40	74 Hz	ON	ON
41	88 Hz	ON	ON
42	96 Hz	ON	ON
43	104 Hz	ON	ON
44	124 Hz	ON	ON
45	144 Hz	ON	ON
46	158 Hz	ON	ON
47	166 Hz	ON	ON
48	176 Hz	ON	ON
49	188 Hz	ON	ON
50	202 Hz	ON	ON
51	210 Hz	ON	ON	*1
52	218 Hz	ON	ON
53	232 Hz	ON	ON
54	248 Hz	ON	ON
55	266 Hz	ON	ON	*2

*1: Upper limit frequency for single-stage compression in 50-Hz districts

*2: Upper limit frequency for two-stage compression in 50-Hz districts

[Function unit]

RTSYQ20P

(To increase Step No.)

STEP No.	Unit 1 INV	Unit 2 INV	STD
1	52 Hz	52 Hz	OFF
2	56 Hz	56 Hz	OFF
3	62 Hz	62 Hz	OFF
4	66 Hz	66 Hz	OFF
5	70 Hz	70 Hz	OFF
6	74 Hz	74 Hz	OFF
7	80 Hz	80 Hz	OFF
8	88 Hz	88 Hz	OFF
9	92 Hz	92 Hz	OFF
10	96 Hz	96 Hz	OFF
11	104 Hz	104 Hz	OFF
12	110 Hz	110 Hz	OFF
13	116 Hz	116 Hz	OFF
14	124 Hz	124 Hz	OFF
15	132 Hz	132 Hz	OFF
16	144 Hz	144 Hz	OFF
17	158 Hz	158 Hz	OFF
18	166 Hz	166 Hz	OFF
19	176 Hz	176 Hz	OFF
20	80 Hz	80 Hz	ON
21	88 Hz	88 Hz	ON
22	96 Hz	96 Hz	ON
23	104 Hz	104 Hz	ON
24	116 Hz	116 Hz	ON
25	124 Hz	124 Hz	ON
26	132 Hz	132 Hz	ON
27	144 Hz	144 Hz	ON
28	158 Hz	158 Hz	ON
29	176 Hz	176 Hz	ON
30	188 Hz	188 Hz	ON
31	202 Hz	202 Hz	ON
32	210 Hz	210 Hz	ON
33	218 Hz	218 Hz	ON
34	232 Hz	232 Hz	ON
35	248 Hz	248 Hz	ON
36	266 Hz	266 Hz	ON
37	280 Hz	280 Hz	ON

(To decrease Step No.)

STEP No.	Unit 1 INV	Unit 2 INV	STD
1	52 Hz	0 Hz	OFF
2	56 Hz	0 Hz	OFF
3	62 Hz	0 Hz	OFF
4	68 Hz	0 Hz	OFF
5	74 Hz	0 Hz	OFF
6	80 Hz	0 Hz	OFF
7	88 Hz	0 Hz	OFF
8	96 Hz	0 Hz	OFF
9	104 Hz	0 Hz	OFF
10	52 Hz	52 Hz	OFF
11	56 Hz	56 Hz	OFF
12	62 Hz	62 Hz	OFF
13	66 Hz	66 Hz	OFF
14	70 Hz	70 Hz	OFF
15	74 Hz	74 Hz	OFF
16	80 Hz	80 Hz	OFF
17	88 Hz	88 Hz	OFF
18	92 Hz	92 Hz	OFF
19	96 Hz	96 Hz	OFF
20	104 Hz	104 Hz	OFF
21	110 Hz	110 Hz	OFF
22	116 Hz	116 Hz	OFF
23	124 Hz	124 Hz	OFF
24	132 Hz	132 Hz	OFF
25	52 Hz	52 Hz	ON
26	62 Hz	62 Hz	ON
27	68 Hz	68 Hz	ON
28	74 Hz	74 Hz	ON
29	80 Hz	80 Hz	ON
30	88 Hz	88 Hz	ON
31	96 Hz	96 Hz	ON
32	104 Hz	104 Hz	ON
33	116 Hz	116 Hz	ON
34	124 Hz	124 Hz	ON
35	132 Hz	132 Hz	ON
36	144 Hz	144 Hz	ON
37	158 Hz	158 Hz	ON
38	176 Hz	176 Hz	ON
39	188 Hz	188 Hz	ON
40	202 Hz	202 Hz	ON
41	210 Hz	210 Hz	ON
42	218 Hz	218 Hz	ON
43	232 Hz	232 Hz	ON
44	248 Hz	248 Hz	ON
45	266 Hz	266 Hz	ON
46	280 Hz	280 Hz	ON

BTSQ20P

STEP No.	INV	
1	52Hz	
2	56Hz	
3	62Hz	
4	68Hz	
5	74Hz	
6	80Hz	
7	88Hz	
8	96Hz	
9	104Hz	
10	110Hz	
11	116Hz	
12	124Hz	
13	132Hz	
14	144Hz	
15	158Hz	
16	166Hz	
17	176Hz	
18	188Hz	
19	202Hz	
20	210Hz	
21	218Hz	
22	232Hz	← RTSYQ10P upper limit
23	248Hz	
24	266Hz	← RTSYQ14P upper limit
25	280Hz	← RTSYQ16P, 20P upper limit

Notes:

1. INV : Inverter compressor
   STD: Standard compressor
   Figures after ON represent the number of STD compressors in operation.
2. “Master unit”, and “slave unit” in this section are the names for control, and they will be transferred according to the priority of rotation system.
   Depending on the operating conditions of compressors, the compressors may run in patterns other than those aforementioned.

6.3 Electronic Expansion Valve PI Control

6.3.1 Electronic Expansion Valve of Outdoor Unit

Main electronic expansion valve (Y1E)

When the outdoor unit heat exchanging is performed via the evaporator (20SA is set to ON), this function is used to exert PI control on the electronic expansion valve (Y1E) so that the evaporator outlet superheated degree (SH) will become constant.

SH = Tg - Te

SH: Evaporator outlet superheated degree (°C)
Tg : Gas pipe temperature (°C) detected by the heat exchanger gas pipe thermistor R2T.
Te : Low pressure equivalent saturated temperature (°C)

Refrigerant charge electronic expansion valve (Y2E)

While in automatic refrigerant charge and additional refrigerant charge mode, this function is used to exert PI control on the opening degree of the electronic expansion valve (Y2E) in response to outdoor temperature and close the valve after the completion of refrigerant charge. For normal operation, this electronic expansion valve opening is 80 pls.

Subcooling electronic expansion valve (Y3E)

In order to make the maximum use of the subcooling heat exchanger, this function is used to exert PI control on the electronic expansion valve (Y3E) so that the evaporator-side gas pipe superheated degree (SH) will keep constant.

SH = Tsh - Te

SH : Evaporator outlet superheated degree (°C)
Tsh: Gas pipe temperature (°C) detected by the subcooling heat exchanger outlet thermistor R5T
Te : Low pressure equivalent saturated temperature (°C)

6.3.2 Electronic Expansion Valve of Function Unit

Liquid injection electronic expansion valve (Y1E)

This electronic expansion valve (Y1E) operates under the PI control so that the compressor discharge pipe superheated degree (DSH) will be kept constant in heating operation at low outdoor temperature.

DSH = HTdik - Tck

DSH : Discharge pipe superheated degree (°C)
HTdik: Discharge pipe temperature (°C)
Tck : High pressure equivalent saturation temperature (°C)

6.4 Outdoor Unit Fan Control

6.4.1 Step Control of Outdoor Unit Fans

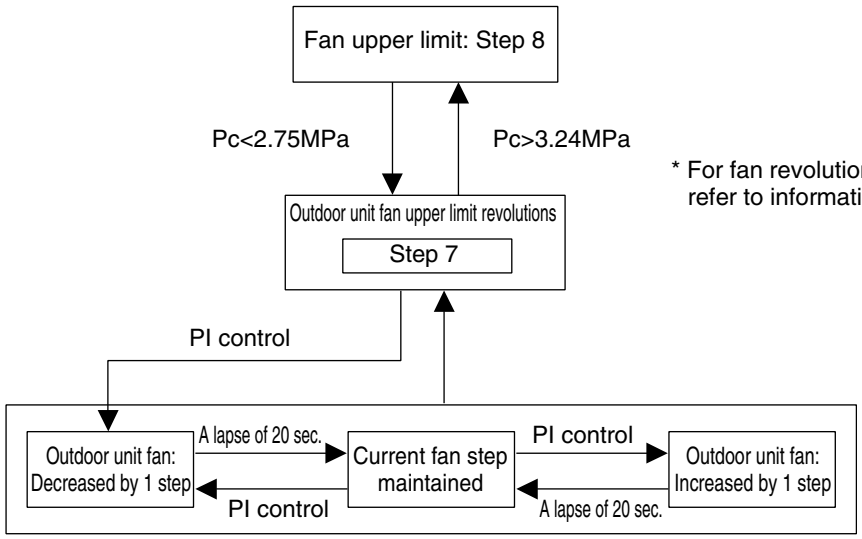
Used to control the revolutions of outdoor unit fans in the steps listed in table below, according to condition changes.

STEP No.	Fan revolutions (rpm)						
	RTSQ8P	RTSQ10P	RTSQ12P	RTSQ14P		RTSQ16P	
				M1F	M2F	M1F	M2F
0	0	0	0	0	0	0	0
1	350	350	350	230	0	395	0
2	370	370	370	380	0	460	0
3	400	400	400	290	260	570	0
4	450	460	460	375	345	385	355
5	540	560	560	570	540	550	520
6	670	680	680	720	690	800	770
7	760	821/800	870	1091	1061	1136	1106
8	796/780 (Cooling/ Heating)	821/800	870	1136	1106	1166	1136

* Figures listed above are all those controlled while in standard mode, which vary when the system is set to high static pressure or capacity precedence mode.

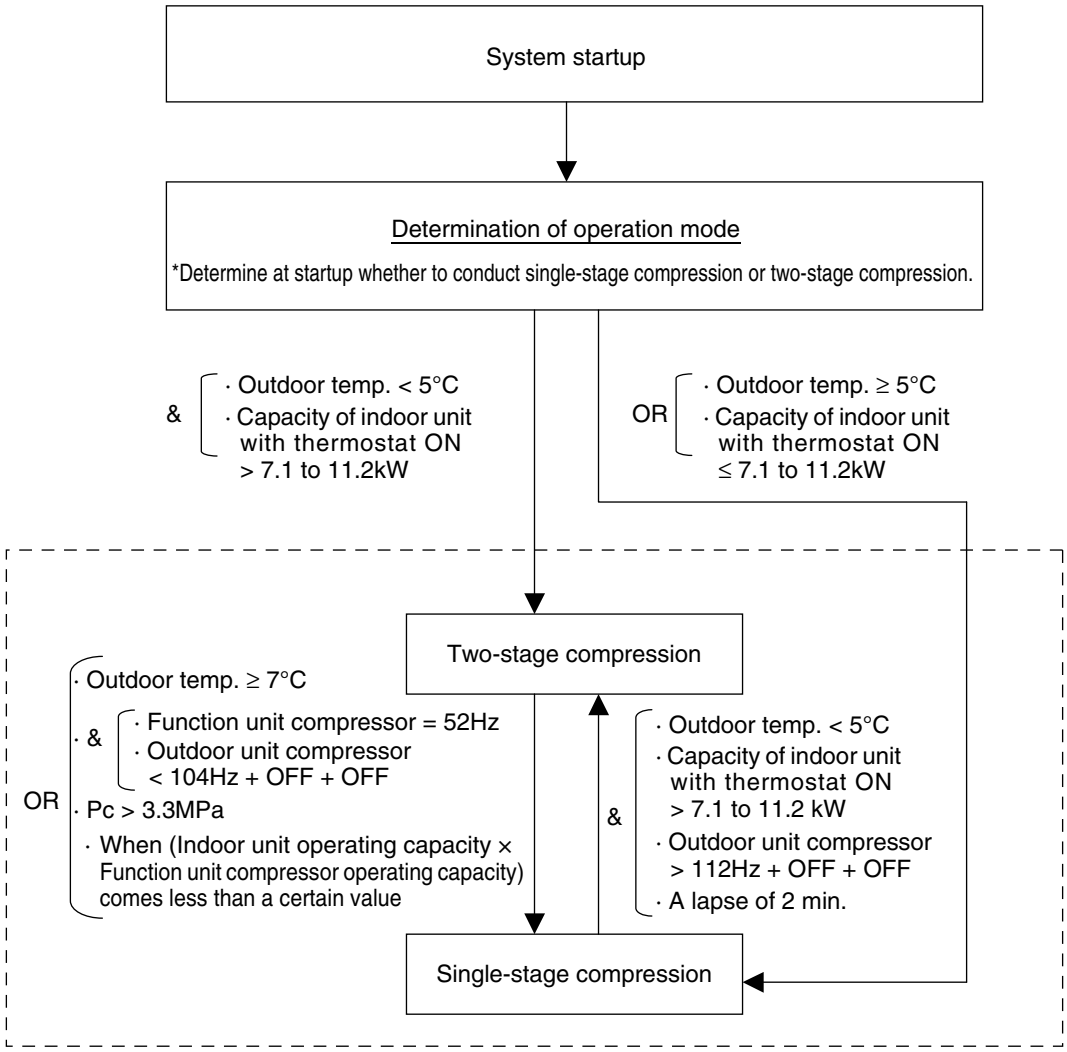
6.5 Control for Cooling Operation at Low Outdoor Air Temperature

For cooling operation at low outdoor temperature, this function is used to conduct high pressure control on the outdoor unit fan to secure liquid pressure, thus providing an adequate circulation airflow rate to the indoor unit.



6.6 Control for Heating Operation at Low Outdoor Air Temperature

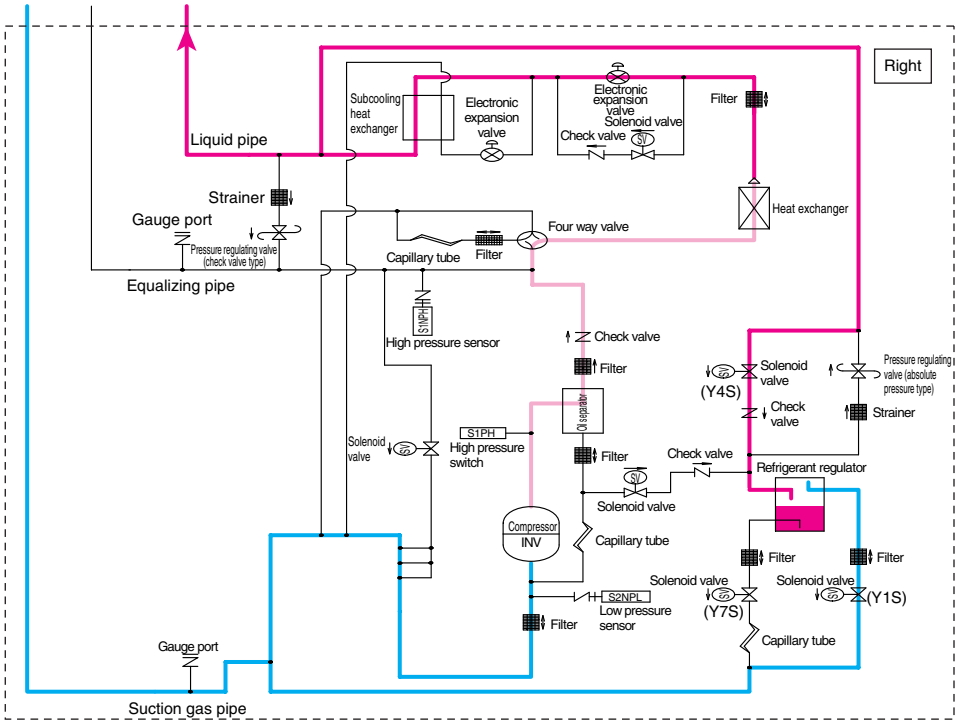
To conduct optimal heating operation, the two operation modes, "Two-stage compression" and "Single-stage compression", are available according to outdoor temperatures and loads.



6.7 Refrigerant Flow Rate Control

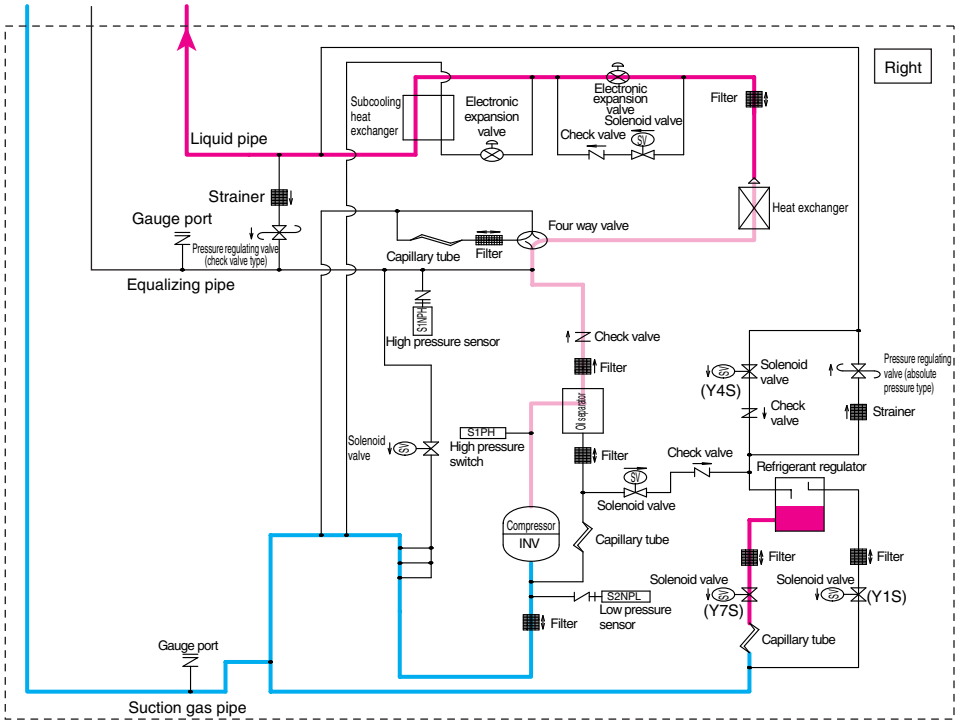
Recovery of Refrigerant

When the indoor unit operates at low load, the solenoid valves (Y1S and Y4S) will be energized to recover excess refrigerant to the refrigerant regulator.



Discharge of Refrigerant

When the indoor unit operates at high load, the solenoid valve (Y7S) will be energized to discharge refrigerant from the refrigerant regulator.



Pressure Regulating Valve (Refrigerant Regulator)

When all solenoid valves (Y1S, Y4S, and Y7S) are deenergized, a closed circuit will be set up. To avoid that, relieve pressure raised by the refrigerant regulator to the liquid refrigerant piping side.

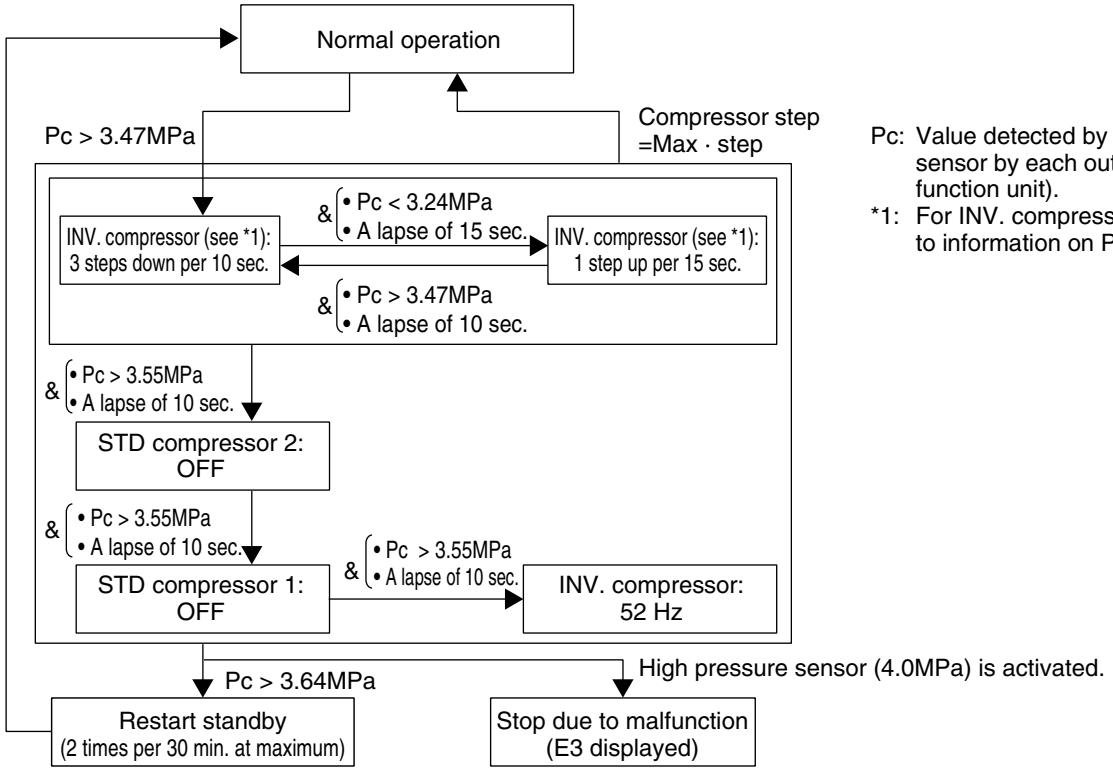
7. Protection Control

7.1 High Pressure Protection Control

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

[In cooling operation]

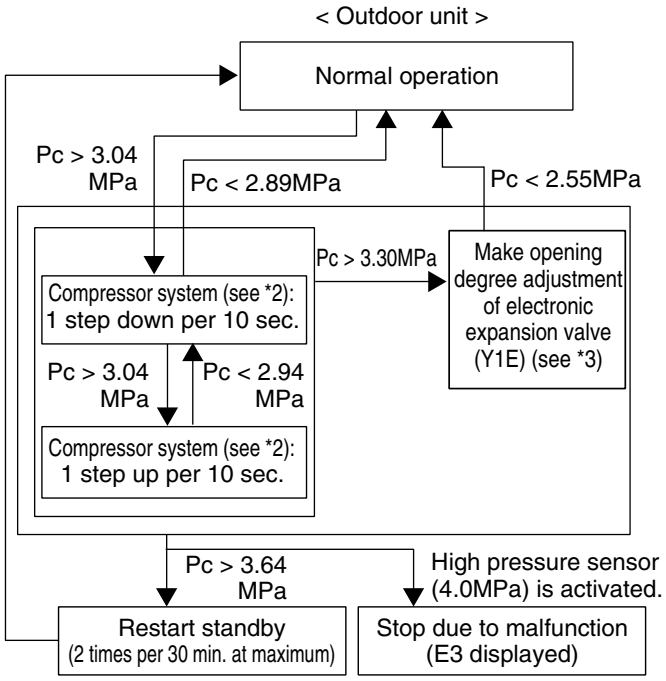
★ The following control is performed in each outdoor unit (and function unit).



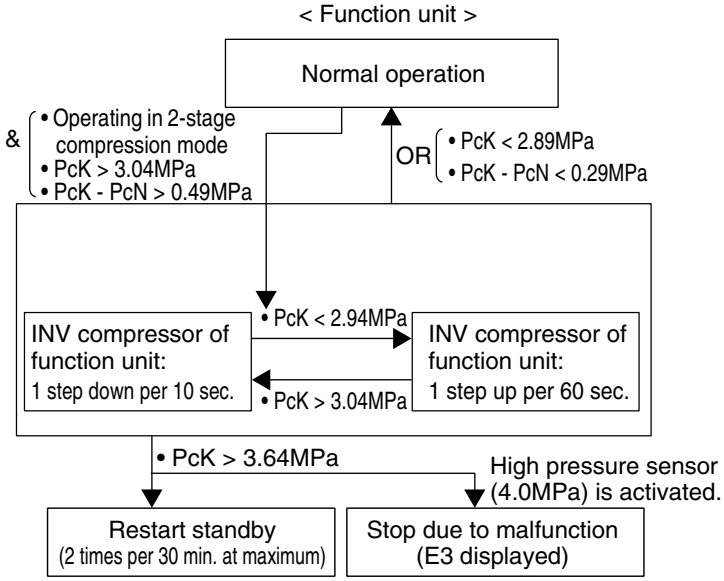
Pc: Value detected by high pressure sensor by each outdoor unit (and function unit).

*1: For INV. compressor steps, refer to information on P.92 and 93.

[In heating operation]



Pc: Value detected by the high pressure sensor of master unit.
*2 : For compressor system steps, refer to information on P.92 and 93.
*3 : Return high-pressure refrigerant to the low pressure side.



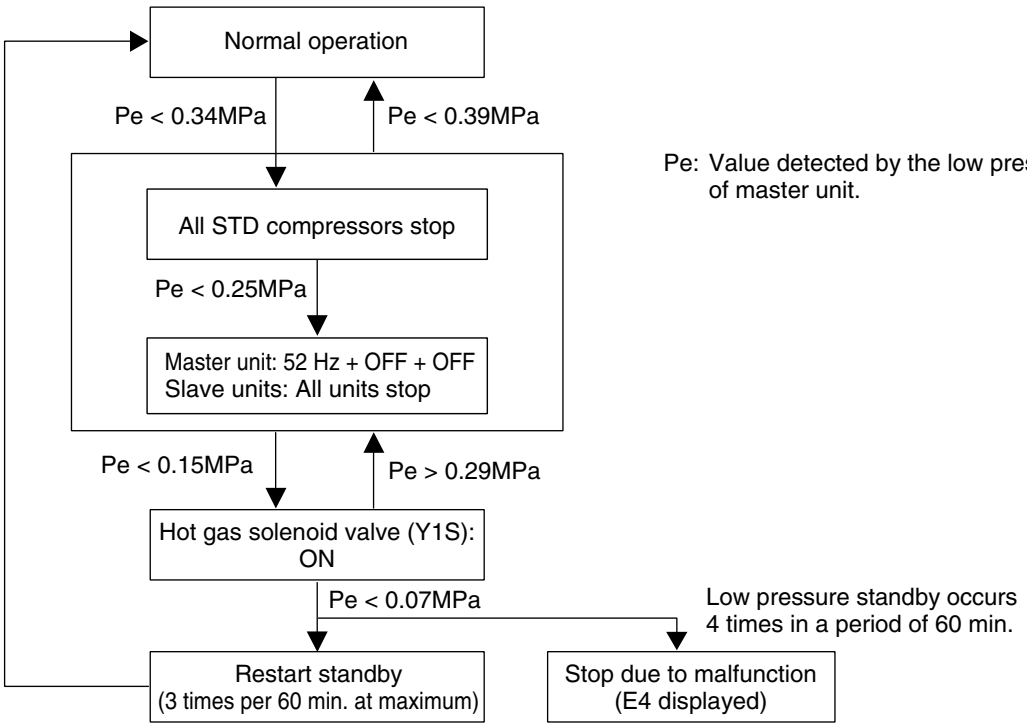
PcK: Value detected by the high pressure sensor of function unit.
PcN: Value detected by the high pressure sensor of master outdoor unit.

7.2 Low Pressure Protection Control

This function is used to conduct low-pressure protection control on outdoor units, in order to protect compressors from transient drops in low pressure.

[In cooling operation]

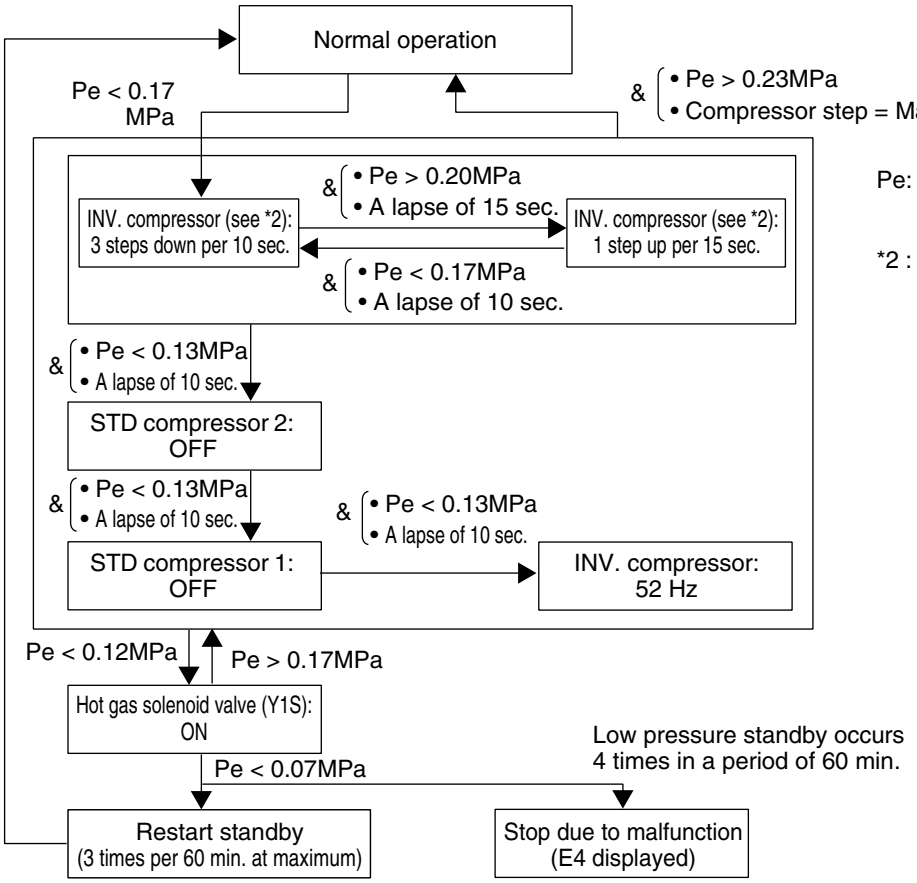
★ For systems with multi outdoor units, the control shown below is conducted on the whole system.



Pe: Value detected by the low pressure sensor of master unit.

[In heating operation]

★ For systems with multi outdoor units, the control shown below is conducted by outdoor unit.



Pe: Value detected by the low pressure sensor by each outdoor unit.

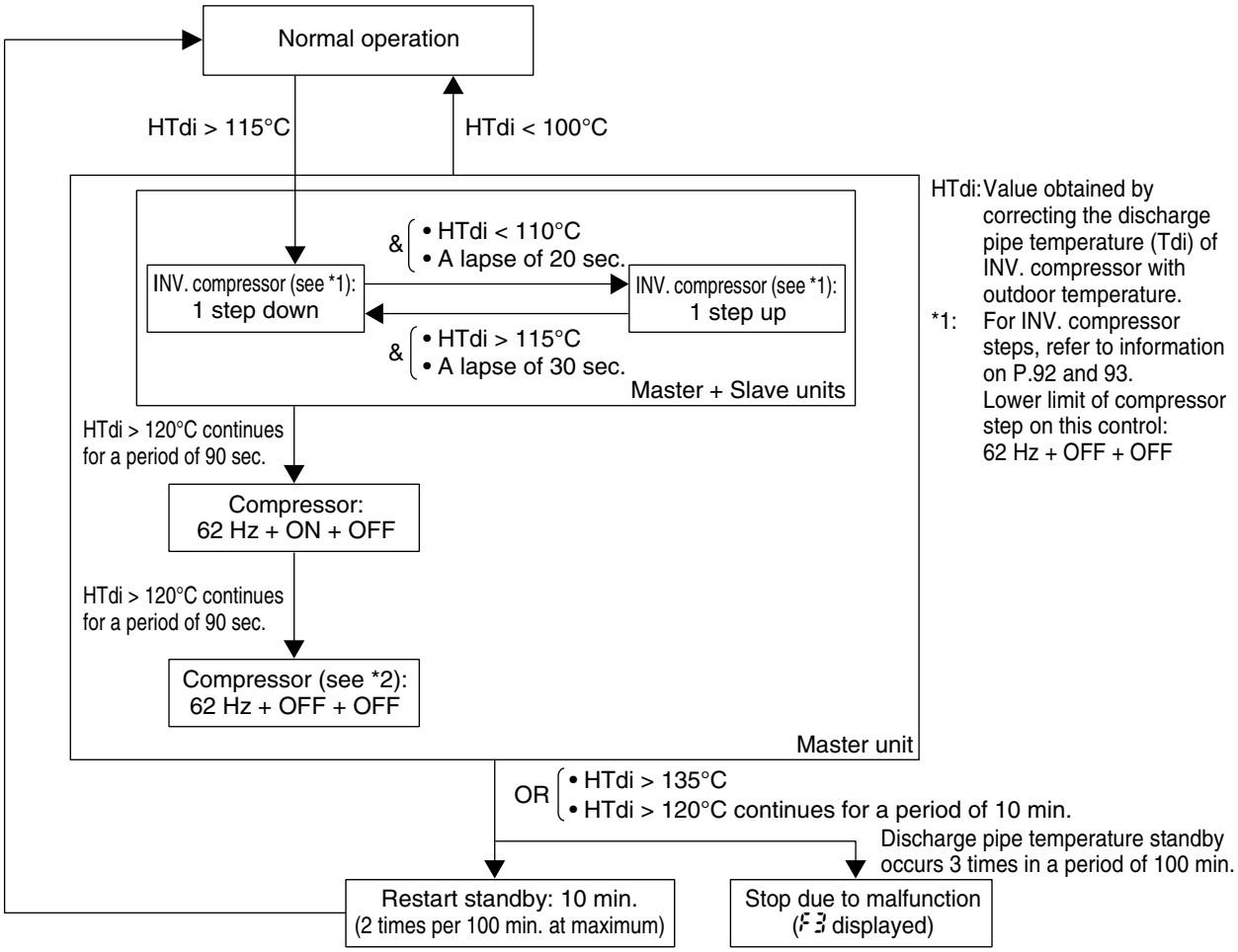
*2 : For INV. compressor steps, refer to information on P.92 and 93.

7.3 Discharge Pipe Protection Control

This discharge pipe protection control is used to protect the compressor internal temperature against a malfunction or transient increase of discharge pipe temperature.
This control is performed by each compressor.

[INV compressor]

★ The following control is performed for each compressor of outdoor (and function unit).

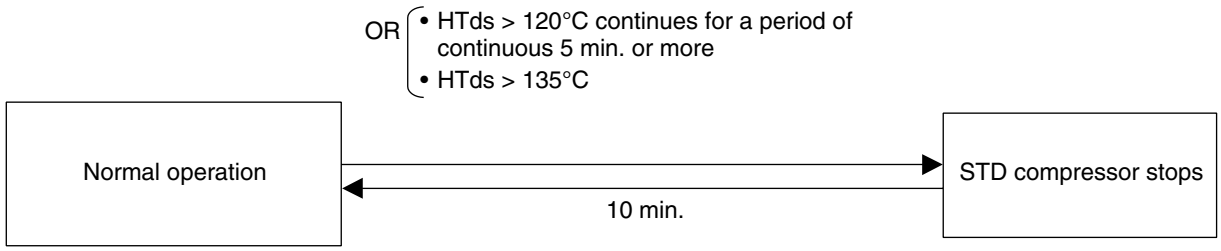


HTdi: Value obtained by correcting the discharge pipe temperature (Tdi) of INV. compressor with outdoor temperature.

*1: For INV. compressor steps, refer to information on P.92 and 93.
Lower limit of compressor step on this control:
62 Hz + OFF + OFF

[STD compressor]

★ For systems with multi outdoor units, the control shown below is conducted by outdoor unit.



HTdS: Value of STD compressor discharge pipe temperature (Tds) compensated with outdoor air temperature.

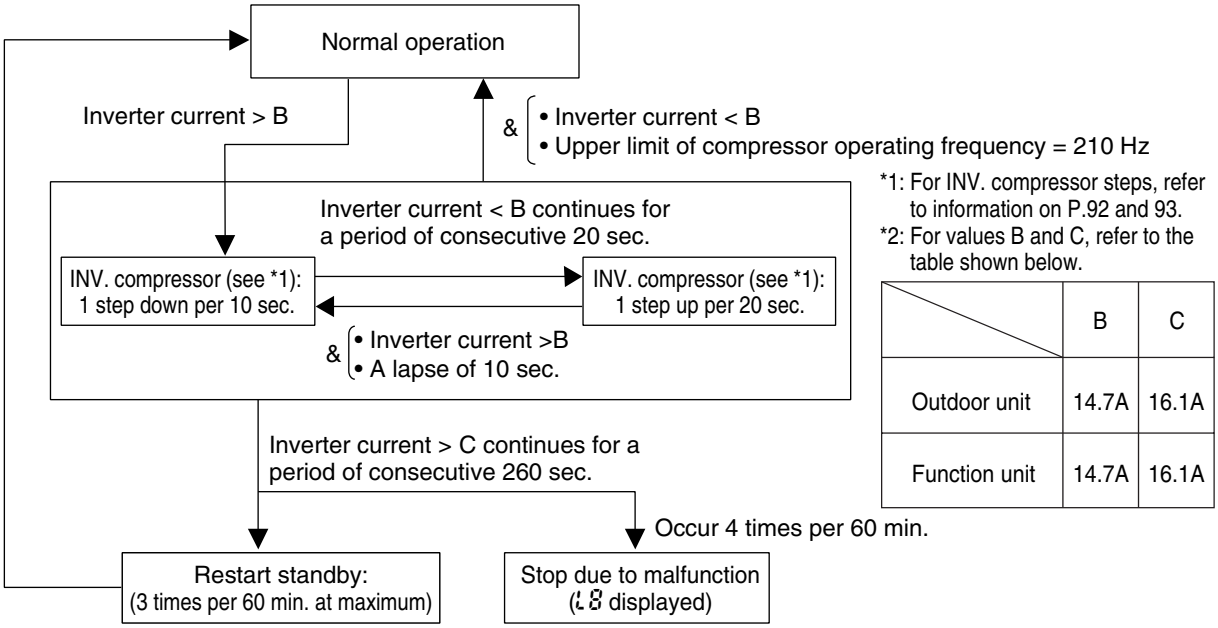
7.4 Inverter Protection Control

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

★ In the case of multi-outdoor-unit system, each INV compressor performs these controls in the following sequence.

7.4.1 Inverter Overcurrent Protection Control (Refer to page 351 and 352)

★ This control is conducted by each INV. compressor.

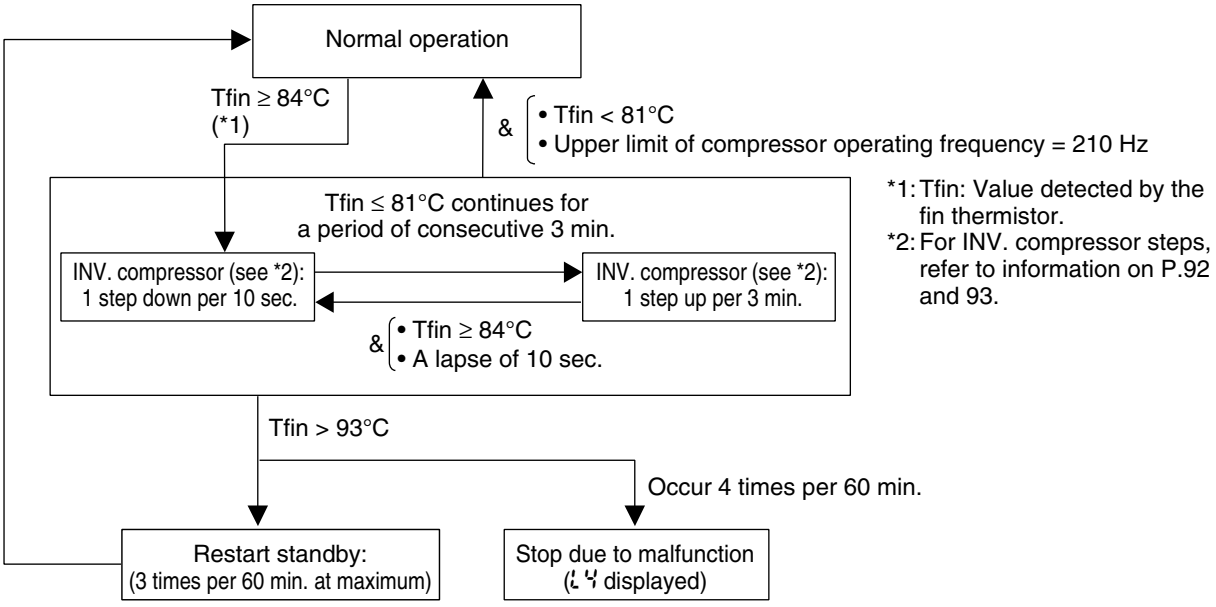


*1: For INV. compressor steps, refer to information on P.92 and 93.
*2: For values B and C, refer to the table shown below.

	B	C
Outdoor unit	14.7A	16.1A
Function unit	14.7A	16.1A

7.4.2 Inverter Fin Temperature Control

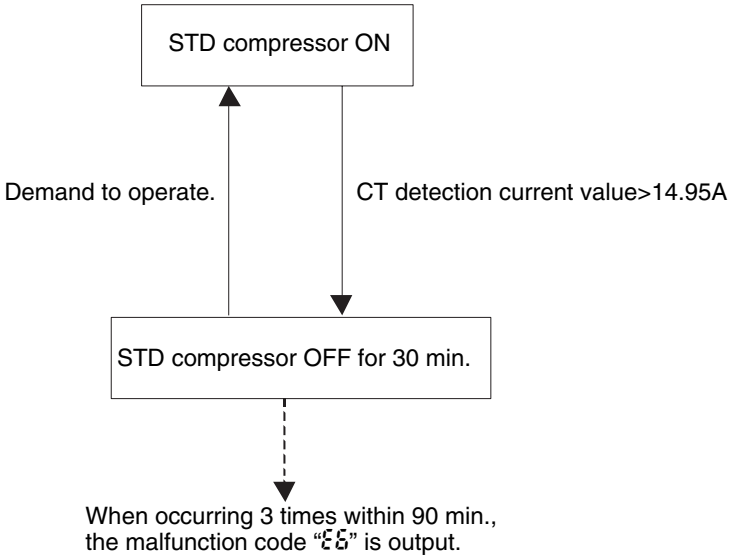
★ This control is conducted by each INV. compressor.



*1: Tfin: Value detected by the fin thermistor.
*2: For INV. compressor steps, refer to information on P.92 and 93.

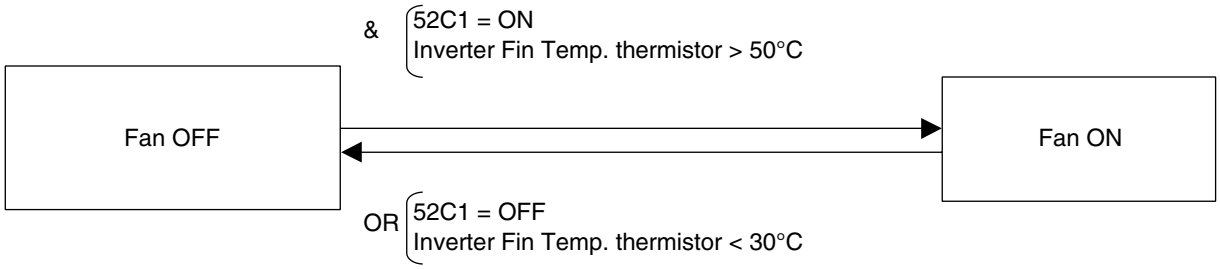
7.5 STD Compressor Overload Protection

★ This control is used to prevent abnormal heating due to overcurrent to the compressor resulting from failures of STD compressor such as locking.



7.6 Cooling Fan Control for Radiation Fin Temperature of Function Unit

When the inverter fin temperature of function unit rises, it is cooled with the fan (M1F) as follows.



7.7 Heater Control for Function Unit Switch Box

The heater (E2HC) places to the function unit switch box to prevent freezing by low outdoor temperature, and it is controlled as follows by the outdoor temperature.

The operation range of function unit	"ON"	(Outdoor temp. < -20°C)
	"OFF"	(Outdoor temp. > -17°C)
The range of compressor stop	"ON"	(Outdoor temp. < -17°C)
	"OFF"	(Outdoor temp. > -14°C)

8. Special Control

8.1 Pump down Residual Operation

If the liquid refrigerant stays in the Evaporator at the startup of a compressor, this liquid refrigerant enters the compressor, thus resulting in diluted oil in the compressor and then degraded lubrication performance. Consequently, in order to recover the refrigerant in the Evaporator while the compressor stops, the pump down residual operation is conducted.

8.1.1 Pump down Residual Operation in Cooling Operation (Outdoor Unit)

Actuator	Elect. symbol	STEP 1		STEP 2	
		Master unit operation	Slave unit operation (RTSYQ20PY1 only)	Master unit operation	Slave unit operation (RTSYQ20PY1 only)
Compressor 1	M1C	124 Hz	OFF	52 Hz	OFF
Compressor 2	M2C	OFF		OFF	
Compressor 3	M3C	OFF		OFF	
Outdoor unit fan 1	M1F	Fan control	OFF	Fan control	OFF
Outdoor unit fan 2	M2F				
Electronic expansion valve (Main)	Y1E	480 pls	0 pls	240 pls	0 pls
Electronic expansion valve (Subcooling)	Y3E	0 pls	0 pls	0 pls	0 pls
Electronic expansion valve (Refrigerant charge)	Y2E	80 pls	80 pls	80 pls	80 pls
Solenoid valve (Refrigerant regulator gas purging pipe)	Y1S	OFF	OFF	OFF	OFF
Four way valve (Heat exchanger switch)	Y3S	OFF	OFF	OFF	OFF
Solenoid valve (Refrigerant regulator liquid pipe)	Y4S	OFF	OFF	OFF	OFF
Solenoid valve (Hot gas)	Y5S	OFF	OFF	OFF	OFF
Solenoid valve (Main bypass)	Y6S	ON	ON	ON	ON
Solenoid valve (Refrigerant regulator discharge pipe)	Y7S	OFF	OFF	OFF	OFF
Solenoid valve (Refrigerant regulator discharge pipe)	Y8S	OFF	OFF	OFF	OFF
Four way valve (High/low pressure gas pipe switch)	Y2S	ON	ON	ON	ON
Ending conditions		or • 5 min. • Master unit Pe<0.49 MPa • Master unit Pc>2.94 MPa • Master unit Tdi>110°C • Master unit Tp>125°C		or • 45 sec. • Master unit Pe<0.24 MPa • Master unit Tp>160°C • Master unit Pc>3.14 MPa	

8.1.2 Pump down Residual Operation in Heating Operation (Outdoor Unit)

Actuator	Elect. symbol	Master unit operation	Slave unit operation (RTSYQ20PY1 only)
Compressor 1	M1C	124 Hz	OFF
Compressor 2	M2C	OFF	
Compressor 3	M3C	OFF	
Outdoor unit fan 1	M1F	Fan STEP No. 8	Fan STEP No. 4
Outdoor unit fan 2	M2F		
Electronic expansion valve (Main)	Y1E	0 pls	0 pls
Electronic expansion valve (Subcooling)	Y3E	0 pls	0 pls
Electronic expansion valve (Refrigerant charge)	Y2E	80 pls	80 pls
Solenoid valve (Refrigerant regulator gas purging pipe)	Y1S	OFF	OFF
Four way valve (Heat exchanger switch)	Y3S	ON	ON
Solenoid valve (Refrigerant regulator liquid pipe)	Y4S	OFF	OFF
Solenoid valve (Hot gas)	Y5S	OFF	OFF
Solenoid valve (Main bypass)	Y6S	ON	ON
Solenoid valve (Refrigerant regulator discharge pipe)	Y7S	OFF	OFF
Solenoid valve (Refrigerant regulator discharge pipe)	Y8S	OFF	OFF
Four way valve (High/low pressure gas pipe switch)	Y2S	OFF	OFF
Ending conditions		or • 3 min. • Master unit Pe<0.24 MPa • Master unit Pc>3.14 MPa • Master unit Tdi>110°C • Master unit Tp>140°C	

8.1.3 Function Unit [Only applicable to heating operation at low outdoor temperature]

Part name	Electrical symbol	Function unit operation
Compressor	M1C	OFF
Electronic expansion valve (Liquid injection)	Y1E	0 pls
Electronic expansion valve (Two-stage switching-1)	Y2E1	0 pls
Electronic expansion valve (Two-stage switching-2)	Y2E2	0 pls
Solenoid valve (Hot gas)	Y1S	OFF
Solenoid valve (Two-stage pressure reducing)	Y2S	OFF
Solenoid valve (Bypass 1)	Y3S	OFF → ON (Pc>2.45MPa)
Solenoid valve (Bypass 2)	Y4S	OFF → ON (Pc>2.45MPa)
Solenoid valve (Liquid line switch)	Y5S	OFF → ON (after a lapse of 15 sec.)
Ending conditions		A lapse of 30 sec.

8.2 Oil Return Operation

This function is used to recover refrigerant oil that flows out from the compressor to the system side by conducting oil return operation in order to prevent the compressor from running out of refrigerant oil.

8.2.1 Cooling Oil Return Operation

[Start conditions]

Referring to the following conditions, start cooling oil return operation.

OR
- Integral oil rise rate (*1) is reached to specified level.
- When cumulative compressor operating time exceeds 8 hours (2 hours when the power supply turns ON for the first time)

*1 The integral oil rise rate:

The higher the compressor operating step No., the cumulative refrigerant oil consumption increases.

<Outdoor Units>

Outdoor unit actuator	Elect. symbol	Oil return preparation operation	Oil return operation	Operation after oil return
Compressor 1	M1C	Take the current step as the upper limit.	52Hz+ON+ON (Subsequently, constant low pressure control) Maintain the number of compressors that were used before oil return operation)	52Hz+ON+ON (Subsequently, constant low pressure control)
Compressor 2	M2C			
Compressor 3	M3C			
Outdoor unit fan 1	M1F	Fan control	Fan control	Fan control
Outdoor unit fan 2	M2F			
Electronic expansion valve (main)	Y1E	480 pls	480 pls	480 pls
Electronic expansion valve (subcooling)	Y3E	SH control	0 pls	0 pls
Electronic expansion valve (refilling refrigerant)	Y2E	80 pls	80 pls	80 pls
Solenoid valve (gas purging pipe of refrigerant regulator)	Y1S	OFF	OFF	OFF
Four way valve (for heat exchanger selection)	Y3S	OFF	OFF	OFF
Solenoid valve (liquid pipe of refrigerant regulator)	Y4S	OFF	OFF	OFF
Solenoid valve (hot gas)	Y5S	OFF	OFF	OFF
Solenoid valve (main bypass)	Y6S	ON	ON	ON
Solenoid valve (discharge pipe of refrigerant regulator)	Y7S	OFF	OFF	OFF
Solenoid valve (discharge pipe of refrigerant regulator)	Y8S	OFF	OFF	OFF
Four way valve (for high and low pressure gas pipe selection)	Y2S	ON	ON	ON
End conditions		20 sec.	or • After a lapse of 3 min. • TsA - Te<5°C	or • After a lapse of 3 min. • Pe<0.59MPa • Pc>3.53MPa • HTdi>110°C

*1: In case of multi outdoor unit system:

Master unit: It conducts the operation listed in the table above.

Slave units: Operating units conduct the operation listed in the table above.

Non-operating units conduct the operation listed in the table above after the "Oil returning" process. (Non-operating units stop while in "Preparation" mode.)

<Function Unit>

State of function units is same as “Cooling operation” of 6.1.2 “Function Unit” (P.90)

<Indoor Units>

Part Name	Elect. symbol	Indoor unit actuator operation during cooling oil return operation	
Fan	M1F	Thermo. ON unit	Remote controller setting
		Unit not in operation	OFF
		Thermo. OFF unit	Remote controller setting
Electronic expansion valve	Y1E	Thermo. ON unit	Normal opening degree
		Unit not in operation	Normal opening degree for forced thermostat ON
		Thermo. OFF unit	224 pls

8.2.2 Heating Oil Return Operation

[Start conditions]

Referring to the following conditions, start heating oil return operation.

OR
- Integral oil rise rate (*1) is reached to specified level.
- When cumulative compressor operating time exceeds 8 hours (2 hours when the power supply turns ON for the first time)

*1 The integral oil rise rate:

The higher the compressor operating step No., the cumulative refrigerant oil consumption increases.

<Outdoor unit>

Actuator	Elect. Symbol	In preparation		In oil return operation	After oil return operation		
		Step 1	Step 2		Step 1	Step 2	
Compressor 1	M1C	52 Hz	OFF	RTSQ10, 12P: 232Hz RTSQ14, 16P: 210Hz	OFF	124 Hz	Increase the operating frequency in increments of 2 steps per 20 sec. until "Pc-Pe>4MPa.
Compressor 2	M2C	Maintaining the current step		ON		OFF	
Compressor 3	M3C			ON		OFF	
Outdoor unit fan 1	M1F	Same step as that in normal heating	Fan Control	Fan Control	Fan: Step 8	Fan: Step 8	
Outdoor unit fan 2	M2F	Same step as that in normal heating	OFF	OFF			
Electronic expansion valve (main)	Y1E	Same step as that in normal heating	480 pls	480 pls	480 pls	55 pls	
Electronic expansion valve (subcooling)	Y3E	Same step as that in normal heating	0 pls	0 pls	0 pls	0 pls	
Electronic expansion valve (refrigerant charge)	Y2E	80 pls	80 pls	80 pls	80 pls	80 pls	
Solenoid valve (gas purging pipe of refrigerant regulator)	Y1S	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	
Four way valve (for heat changer selection)	Y3S	ON	OFF	OFF	OFF	ON	
Solenoid valve (liquid pipe of refrigerant regulator)	Y4S	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	
Solenoid valve (hot gas)	Y5S	Same step as that in normal heating	ON	OFF	ON	OFF	
Solenoid valve (main bypass)	Y6S	OFF	ON	ON	ON	OFF	
Solenoid valve (discharge pipe of refrigerant regulator)	Y7S	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	
Solenoid valve (discharge pipe of refrigerant regulator)	Y8S	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	
Four way valve (for high- and low-pressure gas pipe selection)	Y2S	OFF	ON	ON	ON	OFF	
Ending Conditions		170 sec.	or • After a lapse of 1 min. • Pc-Pe <0.5MPa	or • After a lapse of 4 min. • TsA-Te <5°C	or • After a lapse of 1 min. • Pc-Pe <0.5MPa	or • After a lapse of 160sec. • Pc-Pe>0.4MPa	

*1: In case of multi outdoor unit system:

Master unit: It conducts the operation listed in the table above.

Slave units: Operating units conduct the operation listed in the table above.

Non-operating units conduct the operation listed in the table above after the "Oil returning" process. (Non-operating units stop while in "Preparation" mode.)

<Function unit>

Actuator	Elect. Symbol	In preparation		In oil return operation	After oil return operation
		Step 1	Step 2		
Compressor	M1C	0 Hz	0 Hz	210 Hz→52 Hz	0 Hz
Electronic expansion valve (Liquid injection)	Y1E	0 pls	0 pls	0 pls	0 pls
Electronic expansion valve (Two-stage selection 1)	Y2E1	200 pls	0 pls	0 pls	200 pls
Electronic expansion valve (Two-stage selection 2)	Y2E2	200 pls	0 pls	0 pls	200 pls
Solenoid valve (Hot gas)	Y1S	OFF	ON	ON	OFF
Solenoid valve (Two-stage decompression)	Y2S	OFF	OFF	OFF	OFF
Solenoid valve (Bypass 1)	Y3S	ON	ON	ON	ON
Solenoid valve (Bypass 2)	Y4S	ON	ON	ON	ON
Solenoid valve (Liquid line selection)	Y5S	ON	ON	ON	ON
Ending Conditions		170 sec.	or • After a lapse of 1 min. • Pc-Pe <0.5MPa	or • After a lapse of 4 min. • TsA-Te <5°C	or • After a lapse of 1 min. • Pc-Pe <0.5MPa

<Indoor Unit>

Part Name	Elect. symbol	Indoor unit actuator operation during heating oil return operation	
Fan	M1F	Thermo. ON unit	OFF
		Unit not in operation	OFF
		Thermo. OFF unit	OFF
Electronic expansion valve	Y1E	Thermo. ON unit	Oil return EV degree
		Unit not in operation	256 pls
		Thermo. OFF unit	Oil return EV degree

8.3 Defrost Operation

Execute the Defrost operation to recover the heating capacity by melting frost attached on the outdoor heat exchanger during heating operation.

[Start conditions]

Referring to the following conditions, start defrost operation.

& • When there is a decrease in the coefficient of heat transfer (*1) of outdoor unit heat exchanger
• When there is a drop in the temperature of outdoor unit heat exchanger outlet (Tb)
• When the low pressure stays low for a certain amount of time (2 hours minimum)

*1 The thermal continuity of outdoor unit heat exchanger is calculated by Tc, Te, and compressor loads.

<Outdoor unit>

Actuator	Elect. Symbol	In preparation		In defrosting operation	After defrosting operation		
		Step 1	Step 2		Step 1	Step 2	
Compressor 1	M1C	52 Hz	OFF	RTSQ10, 12P: 232Hz RTSQ14, 16P: 210Hz	OFF	124 Hz	Increase the operating frequency in increments of 2 steps per 20 sec. until "Pc-Pe>4MPa.
Compressor 2	M2C	Maintaining the current step		ON		OFF	
Compressor 3	M3C			ON		OFF	
Outdoor unit fan 1	M1F	Same step as that in normal heating	OFF	OFF	Fan: Step 8	Fan: Step 8	
Outdoor unit fan 2	M2F	Same step as that in normal heating	OFF	OFF			
Electronic expansion valve (main)	Y1E	Same step as that in normal heating	480 pls	480 pls	480 pls	55 pls	
Electronic expansion valve (subcooling)	Y3E	Same step as that in normal heating	0 pls	0 pls	0 pls	0 pls	
Electronic expansion valve (refilling refrigerant)	Y2E	80 pls	80 pls	80 pls	80 pls	80 pls	
Solenoid valve (gas purging pipe of refrigerant regulator)	Y1S	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	
Four way valve (for heat changer selection)	Y3S	ON	OFF	OFF	OFF	ON	
Solenoid valve (liquid pipe of refrigerant regulator)	Y4S	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	
Solenoid valve (hot gas)	Y5S	Same step as that in normal heating	ON	OFF	ON	OFF	
Solenoid valve (main bypass)	Y6S	OFF	ON	ON	ON	OFF	
Solenoid valve (discharge pipe of refrigerant regulator)	Y7S	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	
Solenoid valve (discharge pipe of refrigerant regulator)	Y8S	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	Same step as that in normal heating	
Four way valve (for high- and low-pressure gas pipe selection)	Y2S	OFF	ON	ON	ON	OFF	
Ending Conditions		170 sec.	or • After a lapse of 1 min. • Pc-Pe <0.5MPa	or • After a lapse of 12 min. • Tb>11°C	or • After a lapse of 1 min. • Pc-Pe <0.5MPa	or • After a lapse of 160sec. • Pc-Pe>0.4MPa	

*2: The system may be operated beyond the upper limit of frequency of the compressor (in P.92 and 93) during defrost operation.

<Function unit>

Actuator	Elect. Symbol	In preparation		In defrosting operation	After defrosting operation
		Step 1	Step 2		
Compressor	M1C	0 Hz	0 Hz	210 Hz→52 Hz	0 Hz
Electronic expansion valve (Liquid injection)	Y1E	0 pls	0 pls	0 pls	0 pls
Electronic expansion valve (Two-stage selection 1)	Y2E1	200 pls	0 pls	0 pls	200 pls
Electronic expansion valve (Two-stage selection 2)	Y2E2	200 pls	0 pls	0 pls	200 pls
Solenoid valve (Hot gas)	Y1S	OFF	ON	ON	OFF
Solenoid valve (Two-stage decompression)	Y2S	OFF	OFF	OFF	OFF
Solenoid valve (Bypass 1)	Y3S	ON	ON	ON	ON
Solenoid valve (Bypass 2)	Y4S	ON	ON	ON	ON
Solenoid valve (Liquid line selection)	Y5S	ON	ON	ON	ON
Ending Conditions		170 sec.	or • After a lapse of 1 min. • Pc-Pe <0.5MPa	or • After a lapse of 12 min. • Tb>11°C	or • After a lapse of 1 min. • Pc-Pe <0.5MPa

<Indoor unit>

Part Name	Elect. symbol	Indoor unit actuator operation during defrost operation	
Fan	M1F	Thermo. ON unit	OFF
		Unit not in operation	OFF
		Thermo. OFF unit	OFF
		Thermo. ON unit	Defrost EV degree
Electronic expansion valve	Y1E	Unit not in operation	256pls
		Thermo. OFF unit	Defrost EV degree

8.4 Emergency Operation

If any of the compressors goes wrong, disable the relevant compressor or the relevant outdoor unit from operating, and then conduct emergency operation only with operational compressors or outdoor units.
There are two ways of conducting the Emergency operation : ① with remote controller reset and ② by setting outdoor unit PCB.

Operating method / Applicable model	① Emergency operation with remote controller reset (Auto backup operation)	② Emergency operation with outdoor unit PCB setting (Manual backup operation)
RTSYQ10 ~ 16PY1	–	Backup operation by the compressor
RTSYQ20PY1	Backup operation by the outdoor unit	Backup operation by the outdoor unit

① Emergency operation by resetting remote controller

[Emergency operation method]
- Reset the remote controller (i.e., press the RUN/STOP button on the remote controller for 4 seconds or more) when the outdoor unit stops because of malfunction state.

[Details of operation]
- Automatically disable the defective outdoor unit from operating, and then operate other outdoor units. (This emergency operation is not possible in the system with one outdoor unit.)

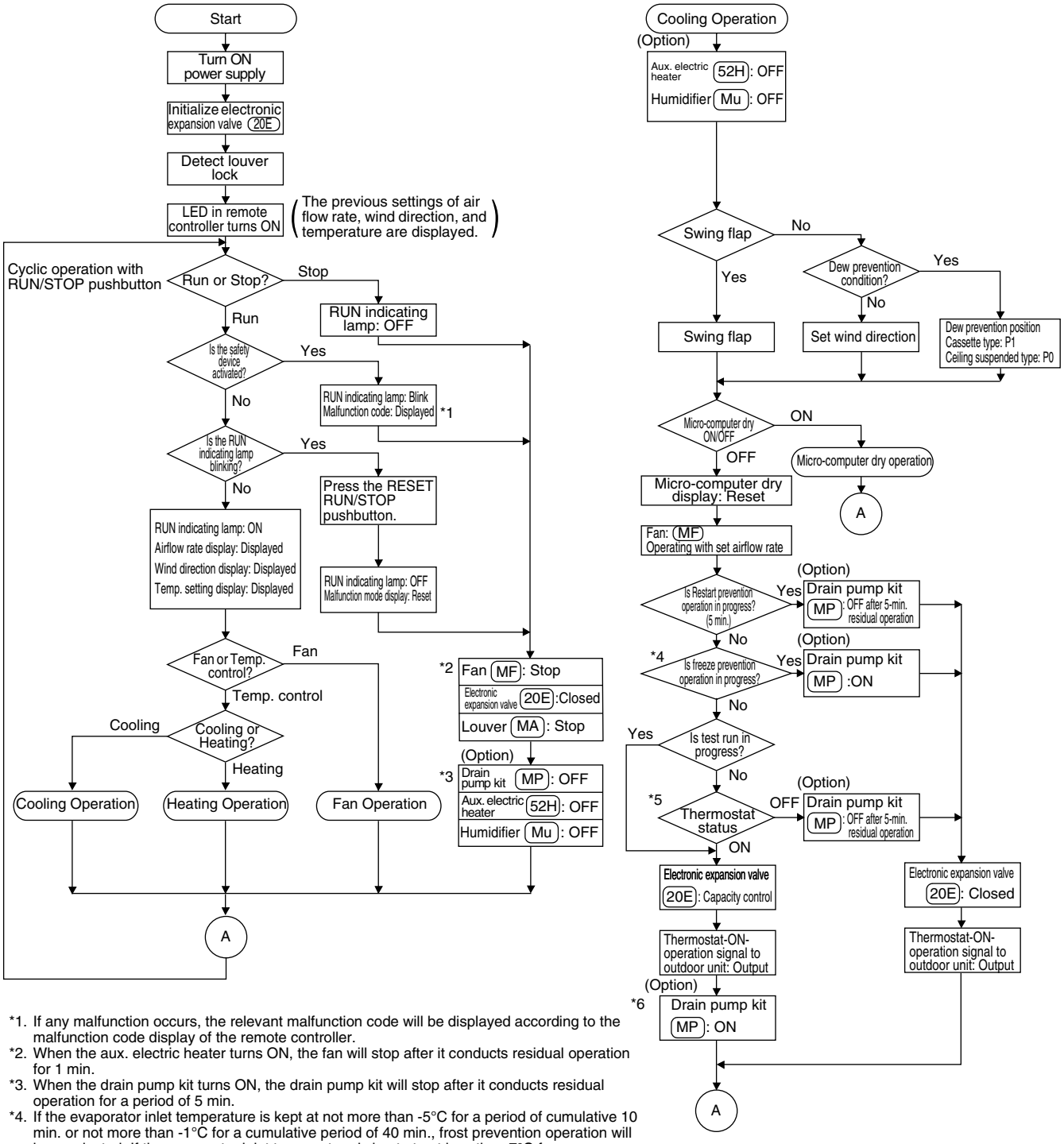
② Emergency operation by setting outdoor unit PCB

[Setting Procedure]
- Make setting of compressor to be set to "Operation prohibited" while in field setting mode (Setting mode 2).
- Make setting of outdoor unit to be set to "Operation prohibited" while in field setting mode (Setting mode 2).
  (For detail of the setting procedure, refer to information on P.189 to 193.)

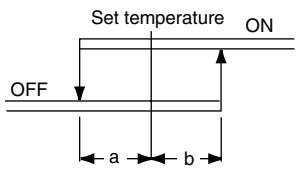
[Operation]
- Prohibit the compressor that is "set to Operation Prohibited" from operating, and only operate other compressor(s).
- Prohibit the outdoor unit that is "set to Operation Prohibited" from operating, and only operate other out door unit(s).

9. Outline of Control (Indoor Unit)

9.1 Operation Flow Chart

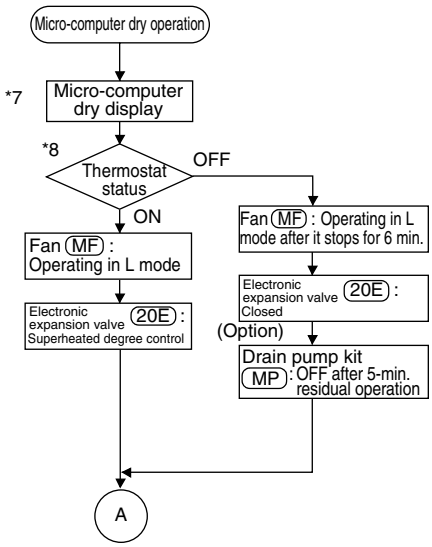


*1. If any malfunction occurs, the relevant malfunction code will be displayed according to the malfunction code display of the remote controller.
*2. When the aux. electric heater turns ON, the fan will stop after it conducts residual operation for 1 min.
*3. When the drain pump kit turns ON, the drain pump kit will stop after it conducts residual operation for a period of 5 min.
*4. If the evaporator inlet temperature is kept at not more than -5°C for a period of cumulative 10 min. or not more than -1°C for a cumulative period of 40 min., frost prevention operation will be conducted. If the evaporator inlet temperature is kept at not less than 7°C for a consecutive period of 10 min., the frost prevention operation will be reset.
*5. Thermostat status

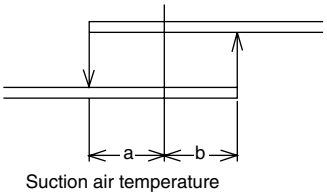


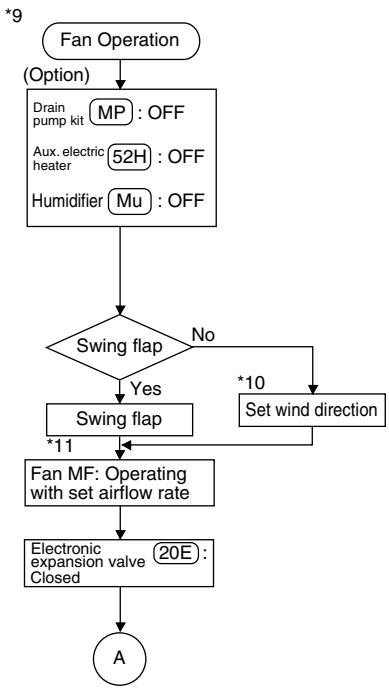
Suction air temperature
a=b=1
(a=b=0.5 is only available for the FXCQ, FXFQ, FXHQ, and FXKQ series.)

*6. The FXCQ, FXFQ, FXKQ, and FXSQ series have the drain pump as standard equipment.

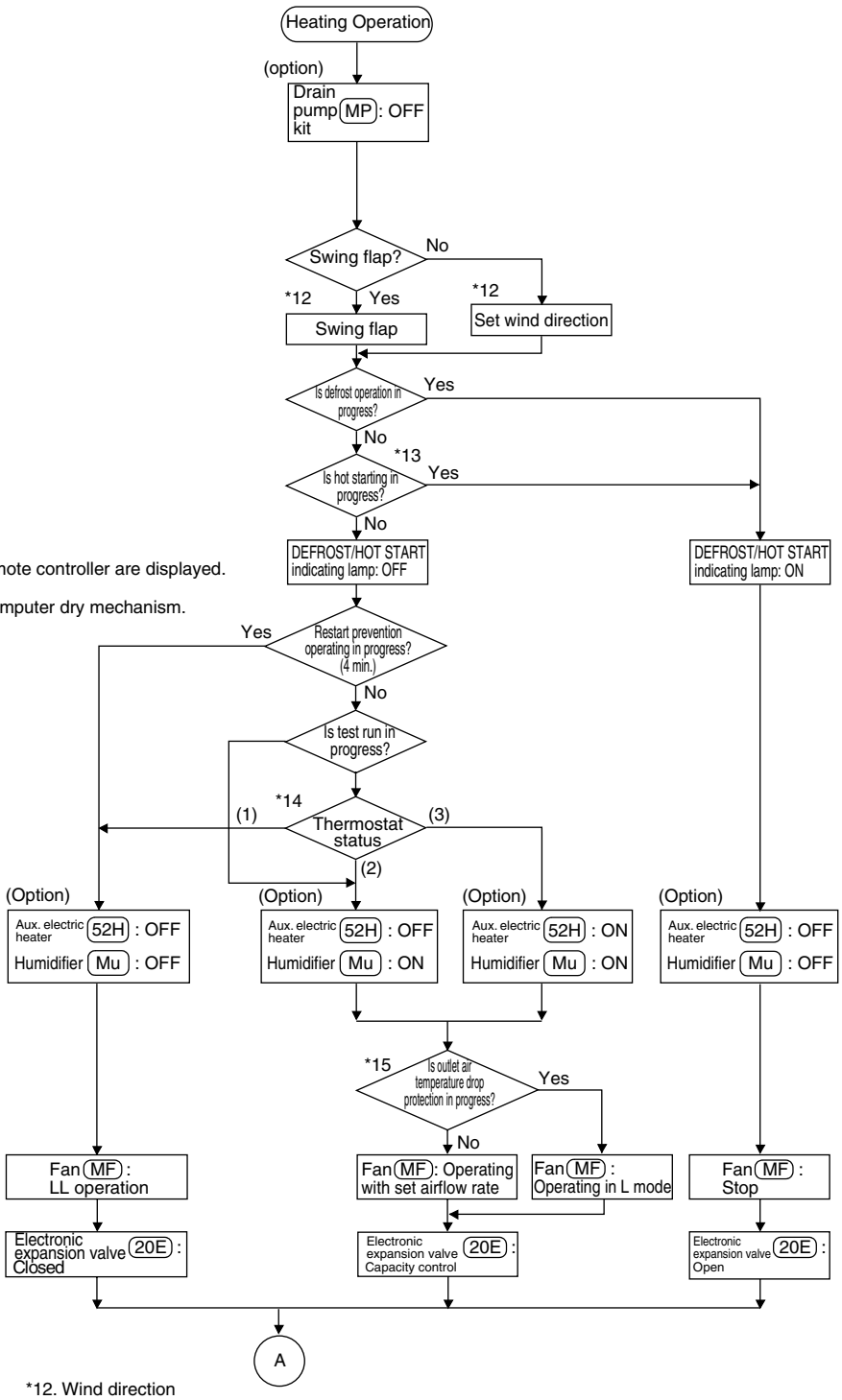


*7. Micro-computer dry display
No set temperature and airflow rate of the remote controller are displayed.
*8. Thermostat status
Set temperature when operating the micro-computer dry mechanism.

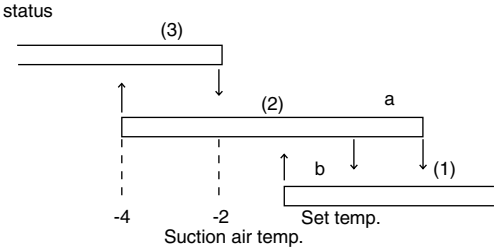




*9. Fan operation
By setting the remote controller to Fan, the fan will operate with thermostat OFF in set temperature control operation mode.
*10. Set wind direction
According to wind direction instruction from the remote controller, the wind direction is set to 100% horizontal while in heating operation.
*11. Fan
According to fan speed instruction from the remote controller, the fan is put into operation in LL mode while in heating operation.



*12. Wind direction
When the heating thermostat turns OFF, the wind direction will be set to 100% horizontal.
*13. Hot start
If the condenser inlet temperature exceeds 34°C at the time of starting operation or after the completion of defrost operation, or until 3 minutes pass or Tc is above 52°C, hot starting will be conducted.
*14. Thermostat status



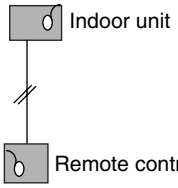
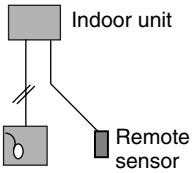
*15. Outlet air temperature drop protection
When the set temperature is below 24°C or the electronic expansion valve opening is small, the protection will be activated.

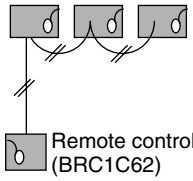
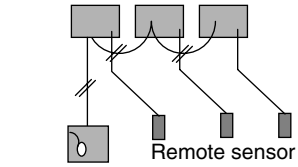
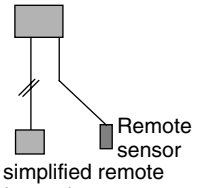
9.2 Thermostat Control

9.2.1 Thermostat Control for VRV Multi System

The thermostat control for VRV multi system is available in the three patterns shown below.

1. **Using suction air thermistor (body thermostat) and remote control thermistor in combination (Factory setting)**
   - For VRV multi system, the suction air thermistor (body thermostat) of indoor unit and the thermistor of remote controller (BRC1C62) are used in combination to control room temperatures.
   - For the operating ranges of thermistors, refer to information on the following page.
2. **Only using suction air thermistor (body thermostat)**
   - If the remote control thermistor is unable to sample room temperatures, it will be needed to make a change to the thermistor selection from "Remote control thermistor + Suction air thermistor" to "Suction air thermistor" by the use of field setting mode of the remote controller.
   - For control without using a remote controller such as group control, the system will be changed to control only using the suction air thermistor.
3. **Replacing suction air thermistor with remote sensor**
   - If the suction air thermistor is unable to detect accurate room temperatures (in case of the ceiling chamber type), it will be recommended to replace the suction air thermistor of indoor unit with a remote sensor.

Thermostat control 1 and 2	Thermostat control 3
· Using suction air thermistor and remote control thermistor in combination (Factory setting) · Only using suction air thermistor  Simplified remote controller (BRC2C51) (See *1)	· Replacing suction air thermistor with a remote sensor  Remote controller (BRC1C62) Simplified remote controller (BRC2C51)

Thermostat control 2		Thermostat control 3
Only using suction air thermistor: ○ For group control 	Since the remote controller is set to group control mode, the thermostat setting of remote controller is automatically changed to "Not use". (See *2)	Replacing suction air thermistors with remote sensors: 
Only using suction air thermistor: ○ The remote controller is · wireless remote controller, or · simplified remote controller BRC2C51. (See *1)	Since the remote controller has no thermistor, the thermostat setting of remote controller is automatically changed to "Not use". (See *2)	Replacing suction air thermistor with a remote sensor:  In case a simplified remote controller is used

*1. The simplified remote controller BRC2C51 incorporates a remote control thermostat.

*2. The remote controller setting 10 (20) is displayed as 2-01 (Use). For group control, however, it is automatically changed to "Not use" of remote control thermostat.

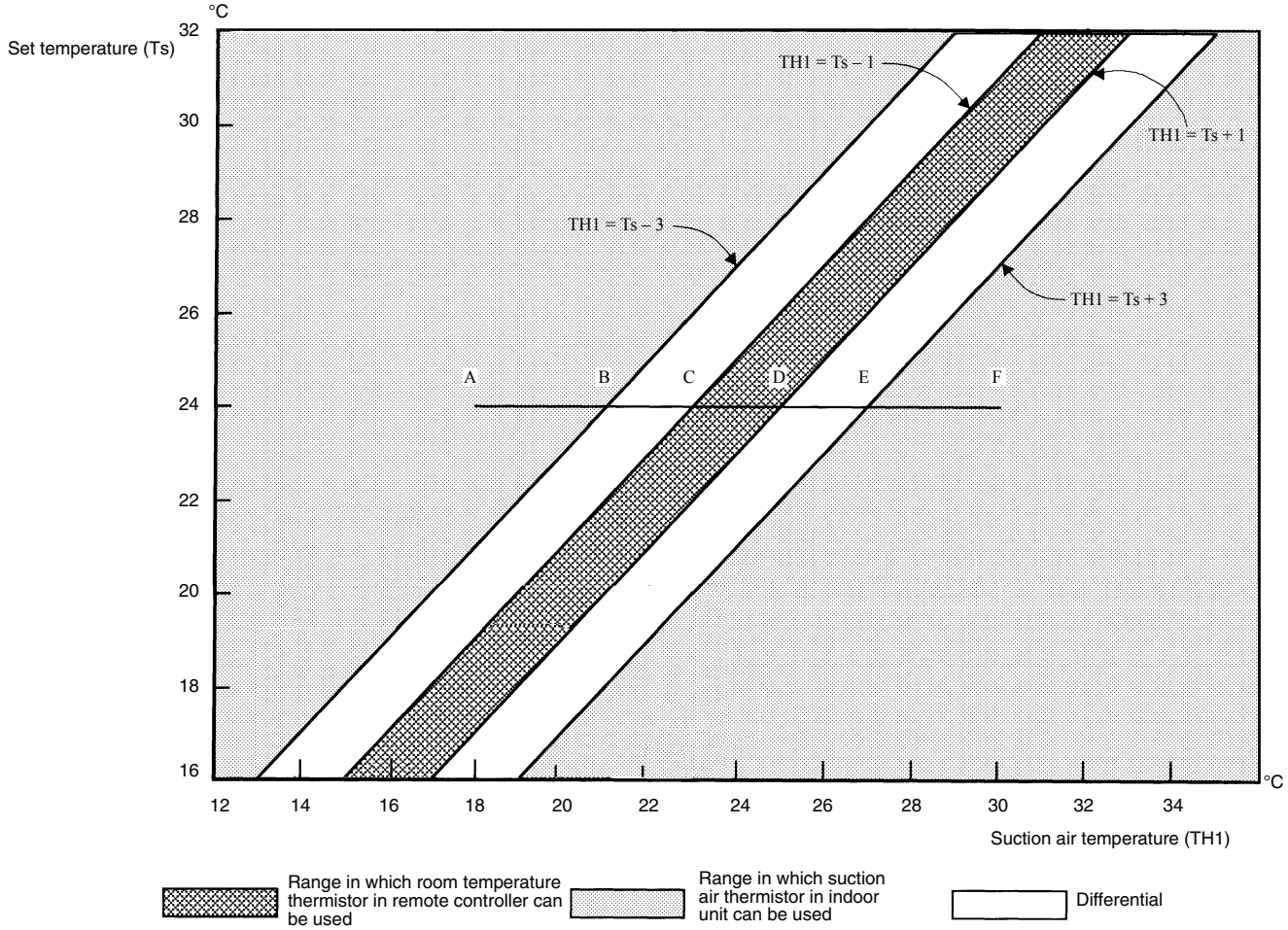
Remark: For the SkyAir Series, factory setting is made to "Only using suction air thermistor".

9.2.2 Room Temperature Thermistor in Remote Controller

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

Cooling

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



■ **Ex: When cooling**

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

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

Suction air thermistor in indoor unit is used for temperatures from 18°C to 23°C (A → C).

Room temperature thermistor in remote controller is used for temperatures from 23°C to 27°C (C → E).

Suction air thermistor in indoor unit is used for temperatures from 27°C to 30°C (E → F).

And, assuming suction temperature has changed from 30°C to 18°C (F → A):

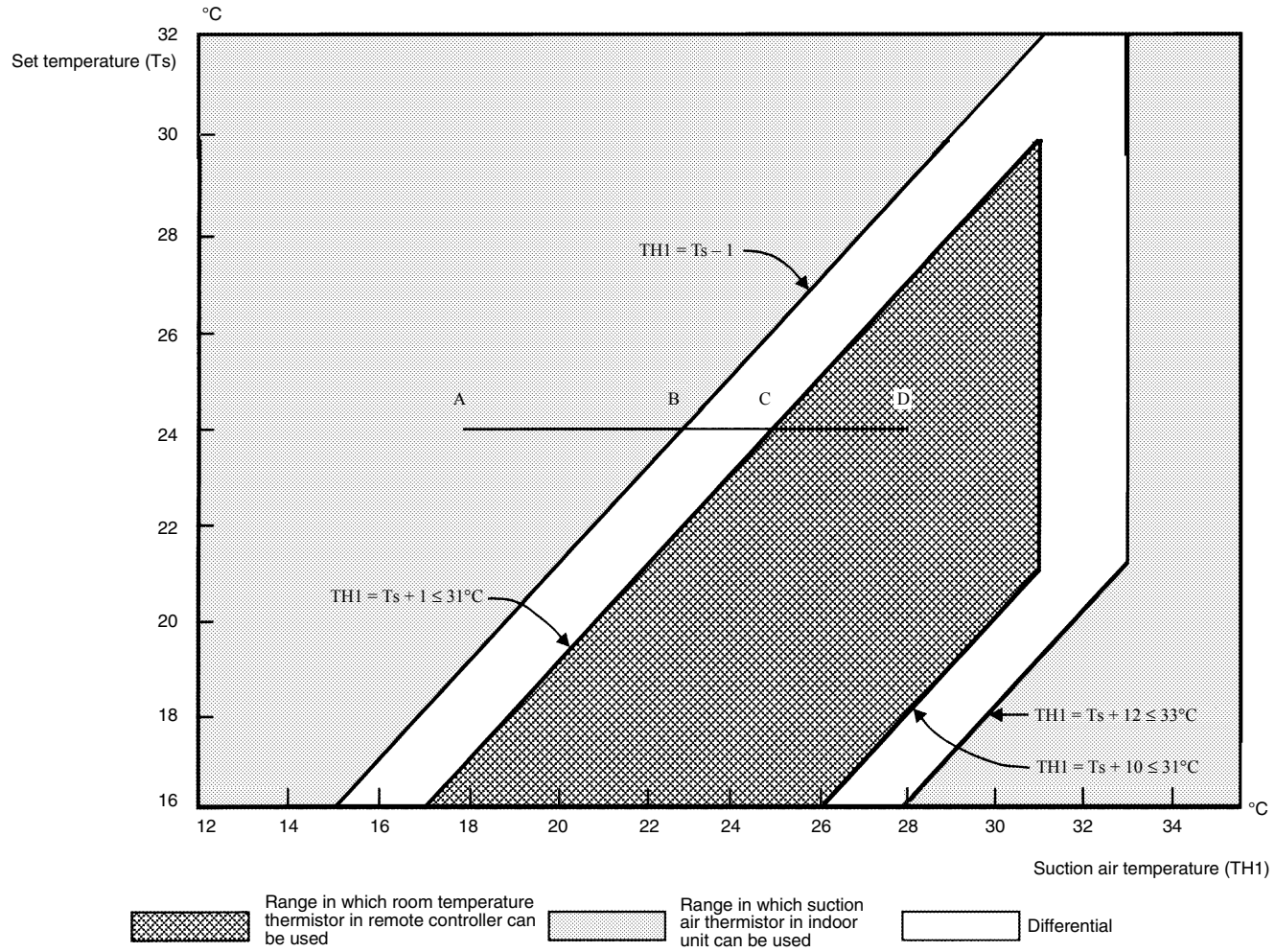
Suction air thermistor in indoor unit is used for temperatures from 30°C to 25°C (F → D).

Room temperature thermistor in remote controller is used for temperatures from 25°C to 21°C (D → B).

Suction air thermistor in indoor unit is used for temperatures from 21°C to 18°C (B → A).

Heating

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



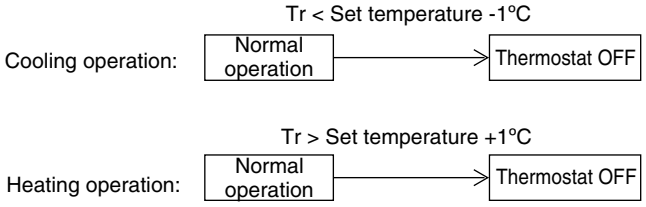
■ **Ex: When heating Assuming the set temperature in the figure above is 24°C, and the suction air temperature has changed from 18°C to 28°C (A → D):**

(This example also assumes there are several other air conditioners, the VRV system is off, and that temperature changes even when the thermostat sensor is off.)
Suction air thermistor in indoor unit is used for temperatures from 18°C to 25°C (A → C).
Room temperature thermistor in remote controller is used for temperatures from 25°C to 28°C (C → D).

And, assuming suction temperature has changed from 28°C to 18°C (D → A):
Room temperature thermistor in remote controller is used for temperatures from 28°C to 23°C (D → B).
Suction air thermistor in indoor unit is used for temperatures from 23°C to 18°C (B → A).

9.2.3 Thermostat Control while in Normal Operation

VRV multi systems are set at factory to thermostat control mode using the remote controller. While in normal thermostat differential control mode (i.e., factory setting mode), the thermostat turns OFF when the system reaches a temperature of -1°C from the set temperature while in cooling operation or of +1°C from that while in heating operation.

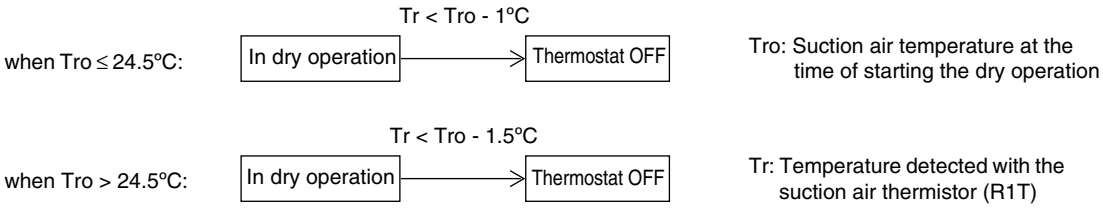


While in a single remote controller group control, the body thermostat is only used for this control.
Furthermore, while in heating operation, cassette-mounted indoor units conduct the thermostat control by a value compensated by -2°C for the value detected with the body thermostat.
(Through field settings,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

9.2.4 Thermostat Control in Dry Operation

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

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



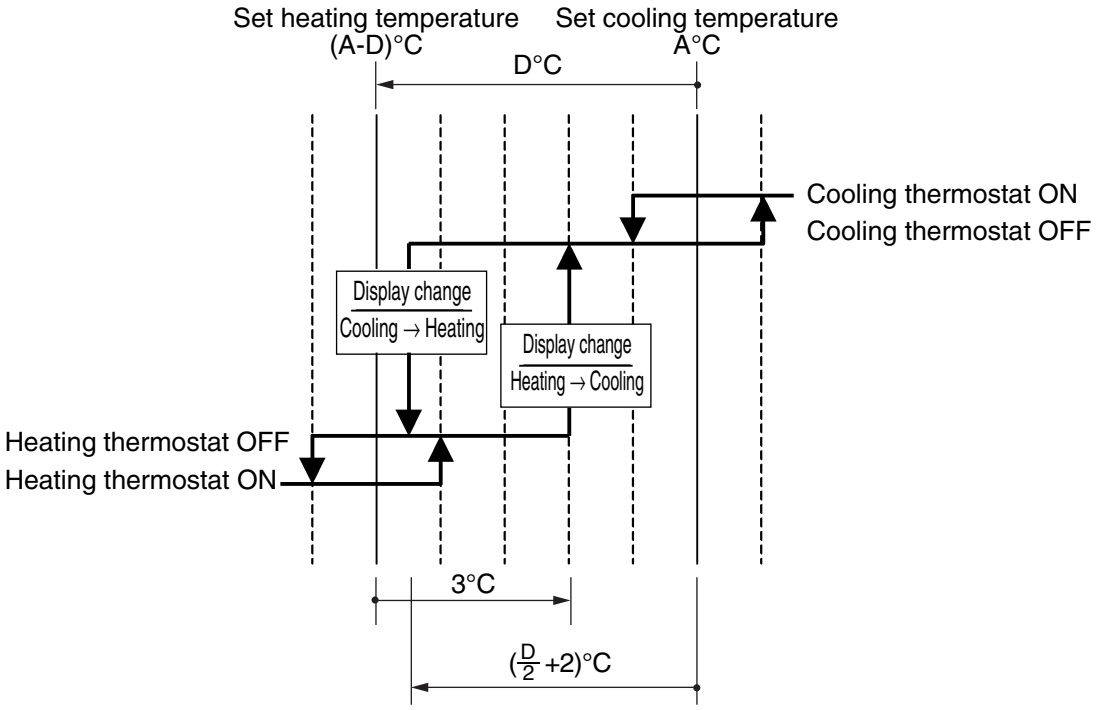
Furthermore, while in dry operation mode, fans operate at L flow rate, stops for a period of six minutes while the thermostat is OFF, and then return to operation at L flow rate. (This control is used to prevent a rise in indoor temperature while in thermostat OFF mode.)

9.2.5 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 with remote controller (P.148 and later)" section.

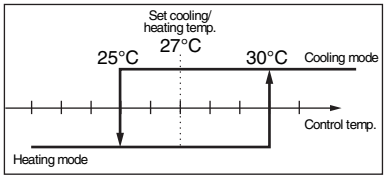
Mode No.	First code No.	Contents of setting	Second code No.							
			01	02	03	04	05	06	07	08
12	4	Differential value while in "AUTO" operation mode	0°C	1°C	2°C	3°C	4°C	5°C	6°C	7°C

: Factory setting

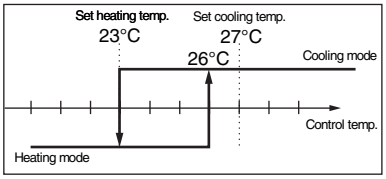


(Ex.) When automatic cooling temperature is set to 27°C:

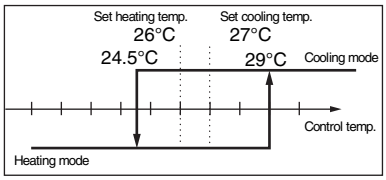
Differential value :0°C



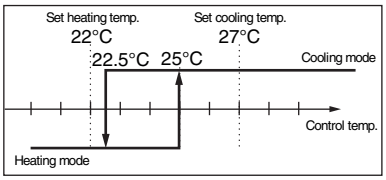
Differential value set to 4°C



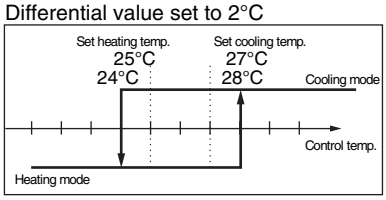
Differential value set to 1°C



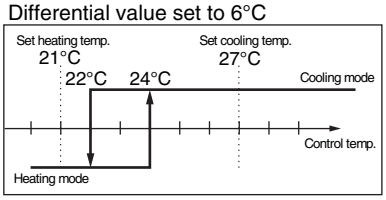
Differential value set to 5°C



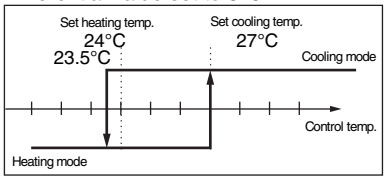
Differential value set to 2°C



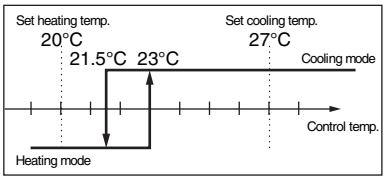
Differential value set to 6°C



Differential value set to 3°C



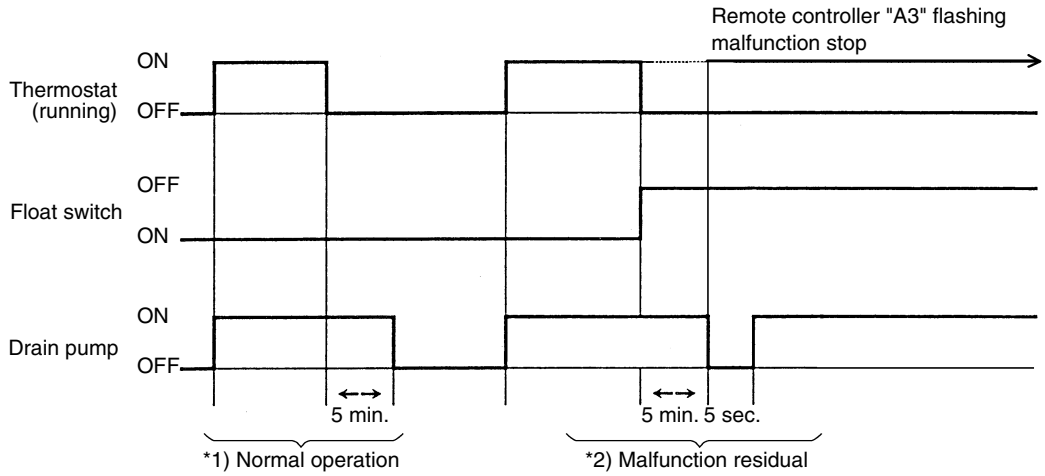
Differential value set to 7°C



9.3 Drain Pump Control

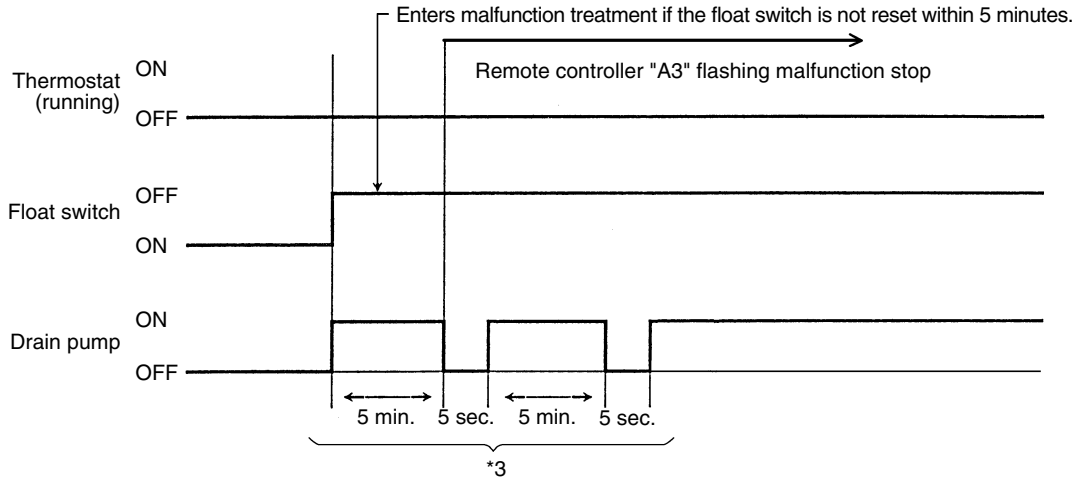
1. The drain pump is controlled by the ON/OFF buttons (4 button (1) - (4) given in the figure below).

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



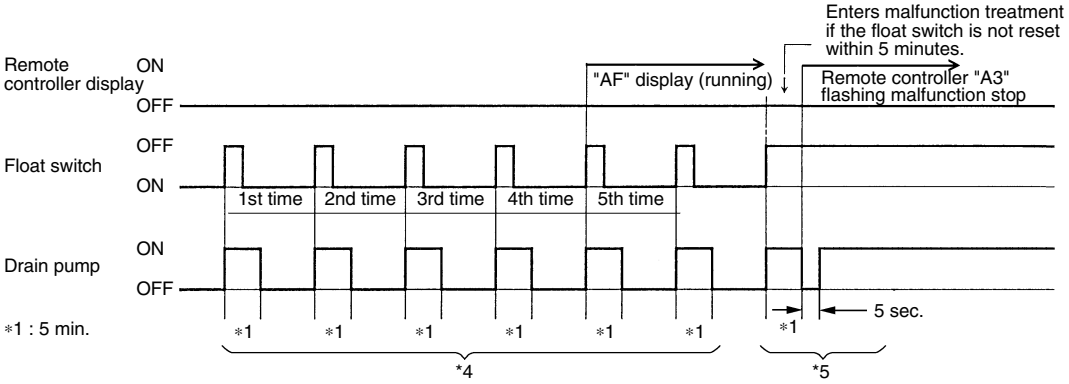
∗1. (Normal operation):
The objective of residual operation is to completely drain any moisture adhering to the fin of the indoor unit heat exchanger when the thermostat goes off during cooling operation.
∗2. (Malfunction residual):
The remote controller will display "A3" and the air conditioner will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

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



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

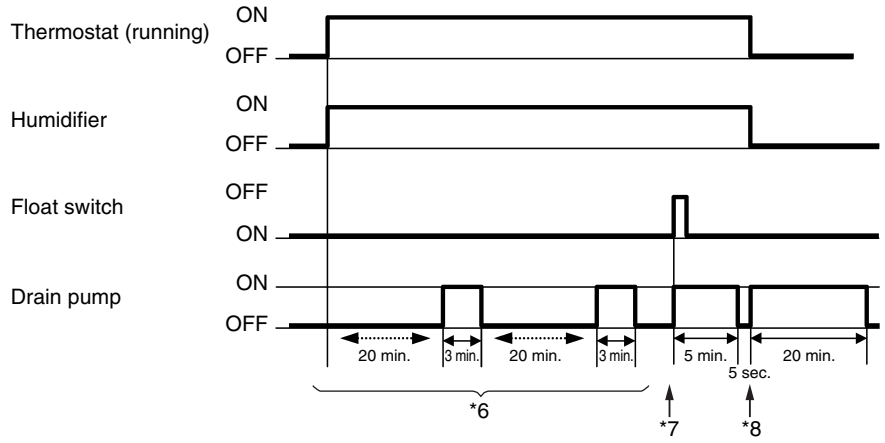
9.3.3 When the Float Switch is Tripped and “AF” is Displayed on the Remote Controller:



*4. (Malfunction residual):
If the float switch is tripped five times in succession, a drain malfunction is determined to have occurred. “AF” is then displayed as operation continues.
*5. (Malfunction 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 *4.

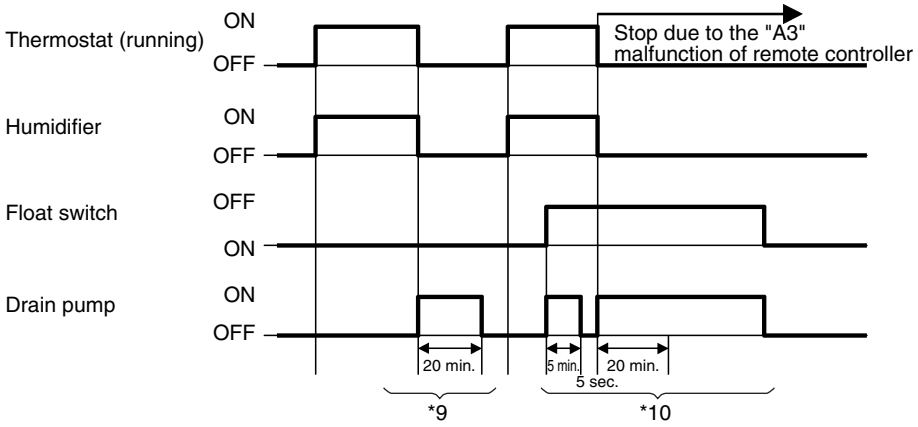
If a humidifier is connected and the "Drain pump / Humidifier interlock" parameter is set to "Enabled" while in filed setting mode, the following control will be conducted.

1. Float switch activation (1), etc.



*6: While in operation with thermostat ON, the drain pump repeats 20-min. OFF and 3-min. ON operation.
*7: If the float switch is activated, the drain pump will conduct residual operation for a period of 5 minutes.
*8: If the thermostat turns OFF, the drain pump will conduct residual operation for a period of 20 minutes.

2. Float switch activation (2), etc.



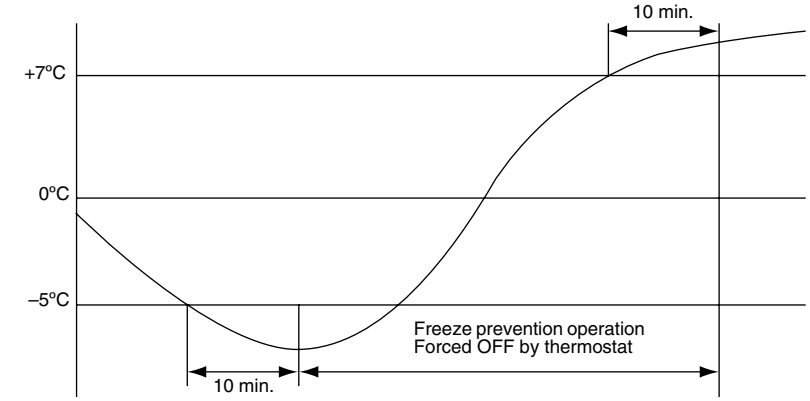
*9: If the thermostat turns OFF, the drain pump will conduct residual operation for a period of 20 minutes regardless of its operating status.
*10: If the float switch is not reset within a period of 5 minutes after it is activated, the remote controller will display the malfunction code "A3" and the system will make a stop due to malfunction.

9.4 Freeze Prevention

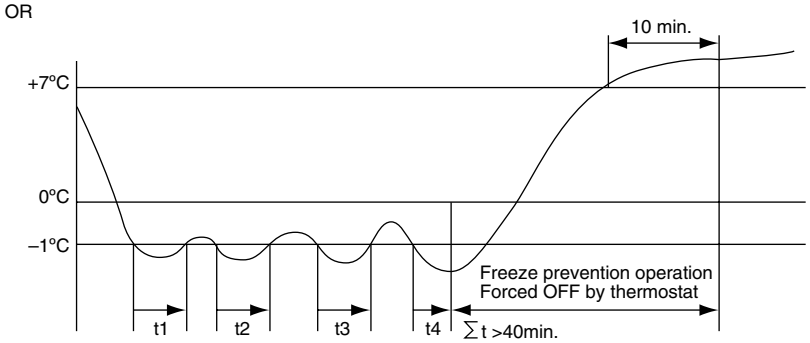
Freeze Prevention by Off Cycle (Indoor Unit)

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

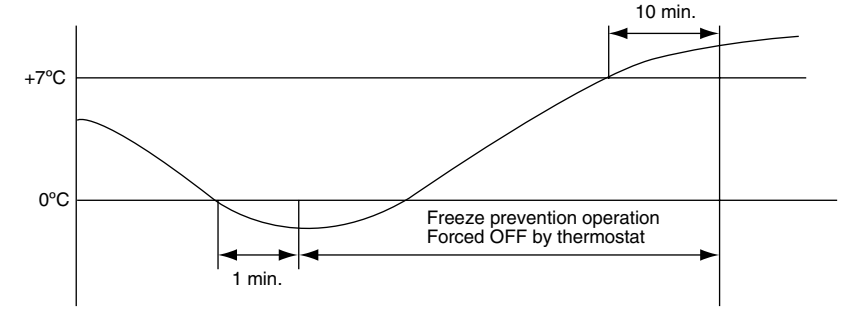
When freeze prevention is activated, the electronic expansion valve is closed, the drain pump turns ON and the fan tap is fixed to L airflow. When the following conditions for stopping are satisfied, it returns.
Conditions for starting freeze prevention: Temperature is -1°C or less for total of 40 min., or temperature is -5°C or less for total of 10 min.
Conditions for stopping freeze prevention: Temperature is +7°C or more for 10 min. continuously



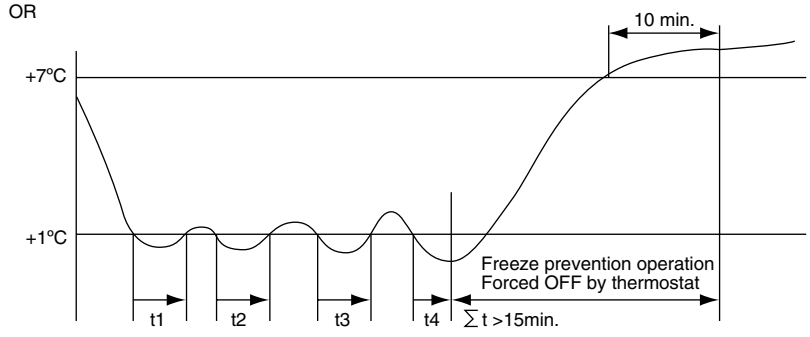
OR



[Conditions for starting when airflow direction is two-way or three-way]
Conditions for starting: Temperature is 1°C or less for a total of 15 minutes or 0°C or less for 1 minute continuously.



OR

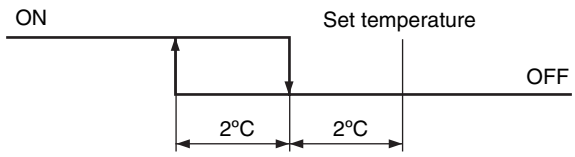


9.5 Heater Control (Optional PCB KRP1B...is required.)

The heater control is conducted in the following manner.

[Normal control]

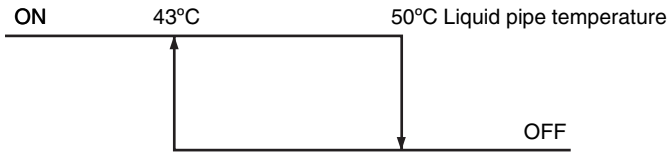
While in heating operation, the heater control (ON/OFF) is conducted as shown on the right.



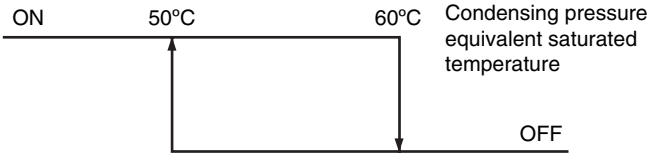
[Overload control]

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

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



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



[Fan residual operation]

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

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

9.6 List of Swing Flap Operations

Swing flaps operate as shown in 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		Horizontal or 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	Horizontal	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 on FXFQ models

9.7 Control of Electronic Expansion Valve

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

• Superheated degree control in cooling operation

This function is used to adjust the opening of the electronic expansion valve so that superheated degree (SH), which is calculated from the detection temperature (Tg) of the gas pipe thermistor (R3T) and the detection temperature (T1) of the liquid temperature thermistor (R2T) of the indoor unit, will come close to a target superheated degree (SHS).
At that time, correction to the superheated degree is made according to the differences (ΔT) between set temperature and suction air thermistor temperature.

SH = Tg - T1
SH:Evaporator outlet superheated degree (°C)
Tg:Indoor unit gas pipe temperature (R3T)
T1:Indoor unit liquid pipe temperature (R2T)

SHS (Target SH value)
SHS:Target superheated degree

- Normally 5°C.
- As ΔT (Remote controller set temp. - Suction air temp.) becomes larger, SHS becomes lower.
- As ΔT (Remote controller set temp. - Suction air temp.) becomes smaller, SHS becomes higher.

• Sub cooled degree control in heating operation

This function is used to adjust the opening of the electronic expansion valve so that the high-pressure equivalent saturated temperature (Tc), which is converted from the detected pressure of the high pressure sensor in the outdoor unit, and the subcooled degree (SC), which is calculated from the detected temperature (T1) of the liquid temperature thermistor (R2T) in the indoor unit, will come close to the target subcooled degree (SCS).
At that time, corrections to the subcooled degree are made according to differences (ΔT) between set temperature and suction air thermistor temperatures.

SC = Tc - T1
SC:Condenser outlet subcooled degree (°C)
Tc:High pressure equivalent saturated temperature detected by the high pressure sensor (S1NPH)
T1:Indoor unit liquid pipe temperature (R2T)

SCS (Target SC value)
SCS:Target subcooling degree

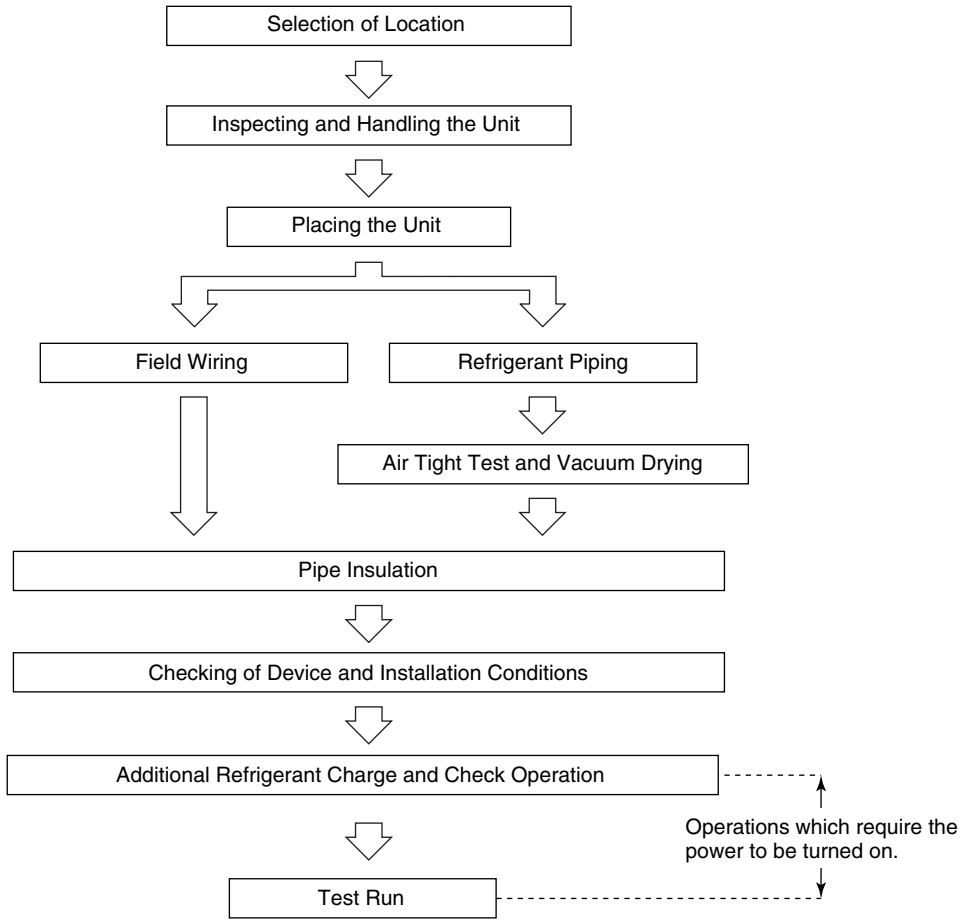
- Normally 5°C.
- As ΔT (Remote controller set temp. - Suction air temp.) becomes larger, SCS becomes lower.
- As ΔT (Remote controller set temp. - Suction air temp.) becomes lower, SCS becomes larger.

Part 5
Test Operation

1. Test Operation

1.1 Installation Process

Below Figure shows the installation process. Install in the order of the steps shown.



1.2 Procedure and Outline

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

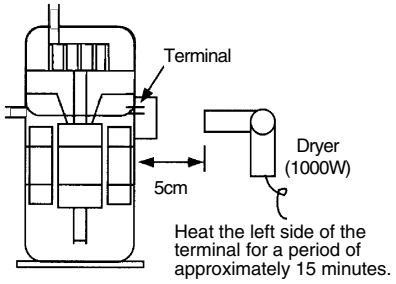
1.2.1 Check Work Prior to Turn Power Supply On

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

⇩

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

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



Check on refrigerant piping / insulation materials

⇩

- ○ Is the pipe size proper?
- ○ Are the design pressures for the liquid pipe, suction pipe, dual pressure gas pipe, and pressure equalizer pipe (in case of multi units) all not less than 4.0 MPa?
- ○ Is the pipe insulation material installed securely?
  Liquid, suction and high & low pressure gas pipe need to be insulated. (Otherwise causes water leak.)

Check air tight test and vacuum drying.

⇩

- ○ Have the air tight test and the vacuum drying been conducted according to the procedure in the Installation Manual?

Check on amount of refrigerant charge

○ Is a proper quantity of refrigerant charged?
The following method is available for additional charging of refrigerant.
(1) Calculate additional refrigerant quantity.

- Calculate a necessary additional refrigerant charging amount according to the procedure for calculation shown below.

* Procedure for calculating additional refrigerant charging amount (Unit: 0.1 kg)

$$R = \left[\begin{array}{l}\left(\begin{array}{l}\text{Total length of}\\ \phi 22.2\text{-mm}\\ \text{liquid pipe)}\end{array}\right) \times 0.37 + \left(\begin{array}{l}\text{Total length of}\\ \phi 19.1\text{-mm}\\ \text{liquid pipe)}\end{array}\right) \times 0.26 + \left(\begin{array}{l}\text{Total length of}\\ \phi 15.9\text{-mm}\\ \text{liquid pipe)}\end{array}\right) \times 0.18\\ + \left(\begin{array}{l}\text{Total length of}\\ \phi 12.7\text{-mm}\\ \text{liquid pipe)}\end{array}\right) \times 0.12 + \left(\begin{array}{l}\text{Total length of}\\ \phi 9.5\text{-mm}\\ \text{liquid pipe)}\end{array}\right) \times 0.059 + \left(\begin{array}{l}\text{Total length of}\\ \phi 6.4\text{-mm}\\ \text{liquid pipe)}\end{array}\right) \times 0.022\end{array}\right] \times 1.02$$

Correction amount with indoor unit

System name	Correction amount
Model RTSYQ10PY1	—
Model RTSYQ14PY1	1.3kg
Model RTSYQ16PY1	2.3kg
Model RTSYQ20PY1	—

- If there is a refrigerant shortage, charge a liquid refrigerant through the stop valve service port with the stop valves of liquid and those of gas closes after the completion of vacuum drying.
- If the refrigerant charging is still insufficient, "Additional Refrigerant Charge and Check Operation" following the information on P.134~.

○ Has the additional refrigerant charging amount been recorded on the "Precautions for servicing" label?

Check the stop valves for conditions.

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

Name / System Name	Liquid-pipe stop valve	Equalizing pipe stop valve	Gas pipe stop valve
RTSYQ10~16P	Open	—	Open
RTSYQ20P	Open	Open	Open

1.2.2 Turn Power On

Turn outdoor unit, function unit and indoor unit power on.

⇩

Check the LED display of the outdoor unit PCB.

⇩

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

○ Check to be sure the transmission is normal.
The transmission is normal if the LEDs display conditions as shown in table below.

LED display ○ ON ● OFF ◑ Blinking

LED display (Default status before delivery)		Micro-computer operation monitor	MODE	TEST	COOL / HEAT select			Low noise	Demand	Multi
					IND	MASTER	SLAVE			
		HAP	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
One outdoor unit installed		◑	●	●	○	●	●	●	●	●
Multiple outdoor unit system (*)	Master	◑	●	●	○	●	●	●	●	○
	Slave	◑	●	●	●	●	●	●	●	◑ or ●

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

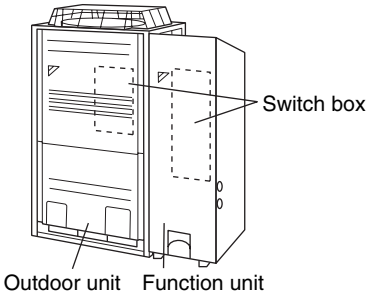
Make field settings with outdoor unit PCB.

⇩

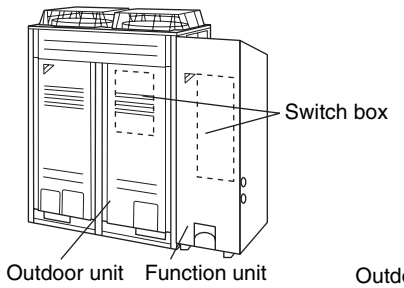
○ Make field settings if needed.
(For the setting procedure, refer to information in "3.2. Field Setting from Outdoor Unit" on page 166 onward.)
For the outdoor-multi system, make field settings with the master unit.
(Field settings made with the slave unit will be all invalid.)

(Reference)

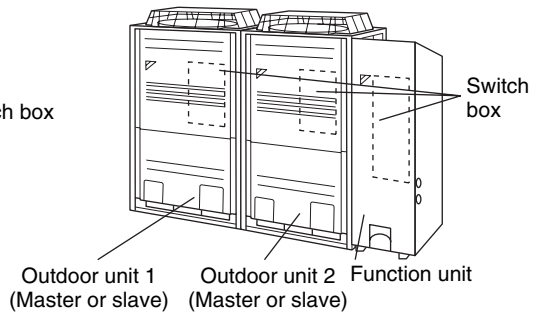
<RTSYQ10P>



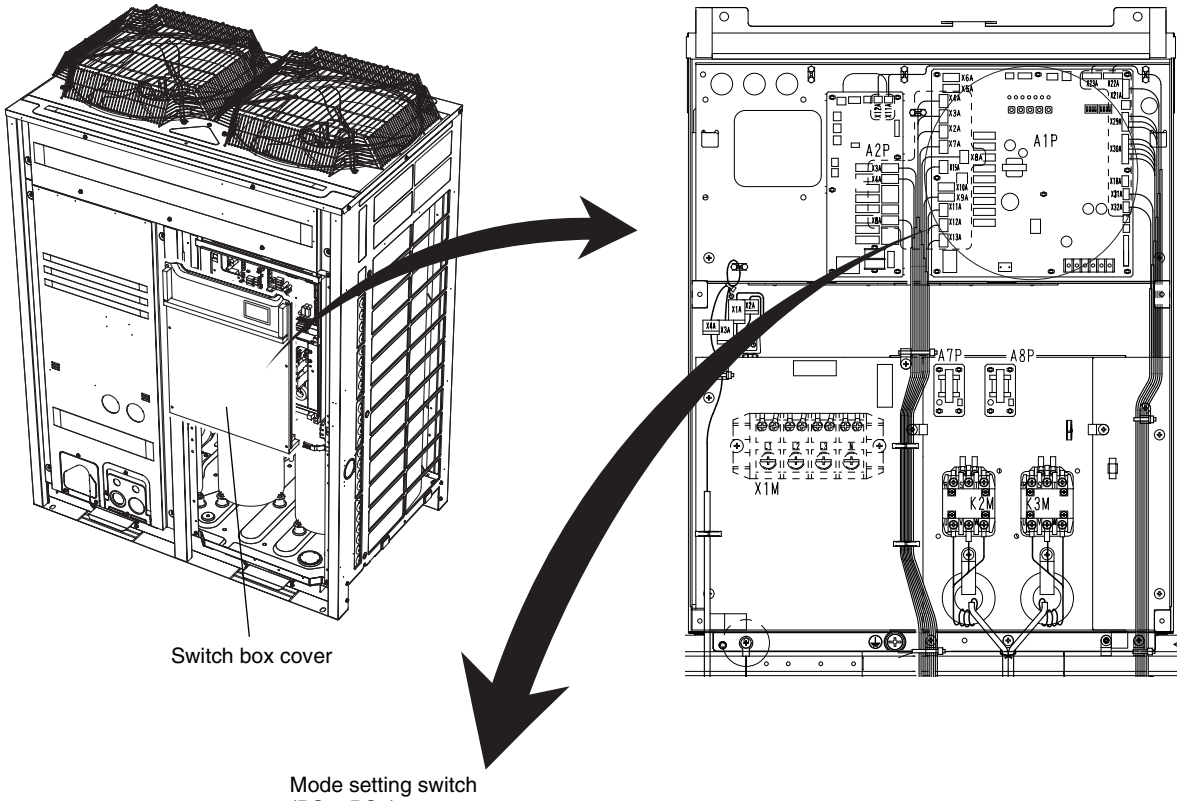
<RTSYQ14 · 16P>



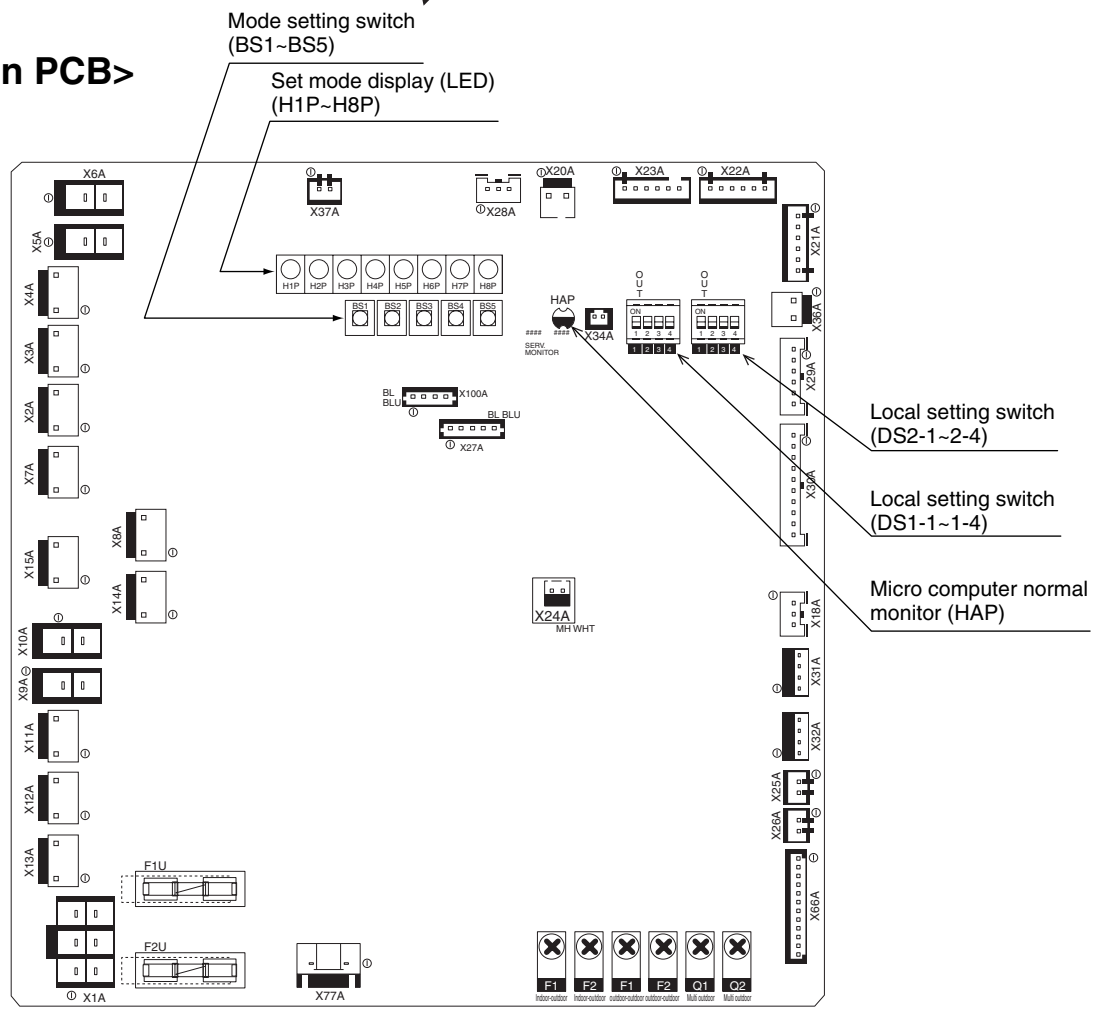
<RTSYQ20P>



Inside of the switch box

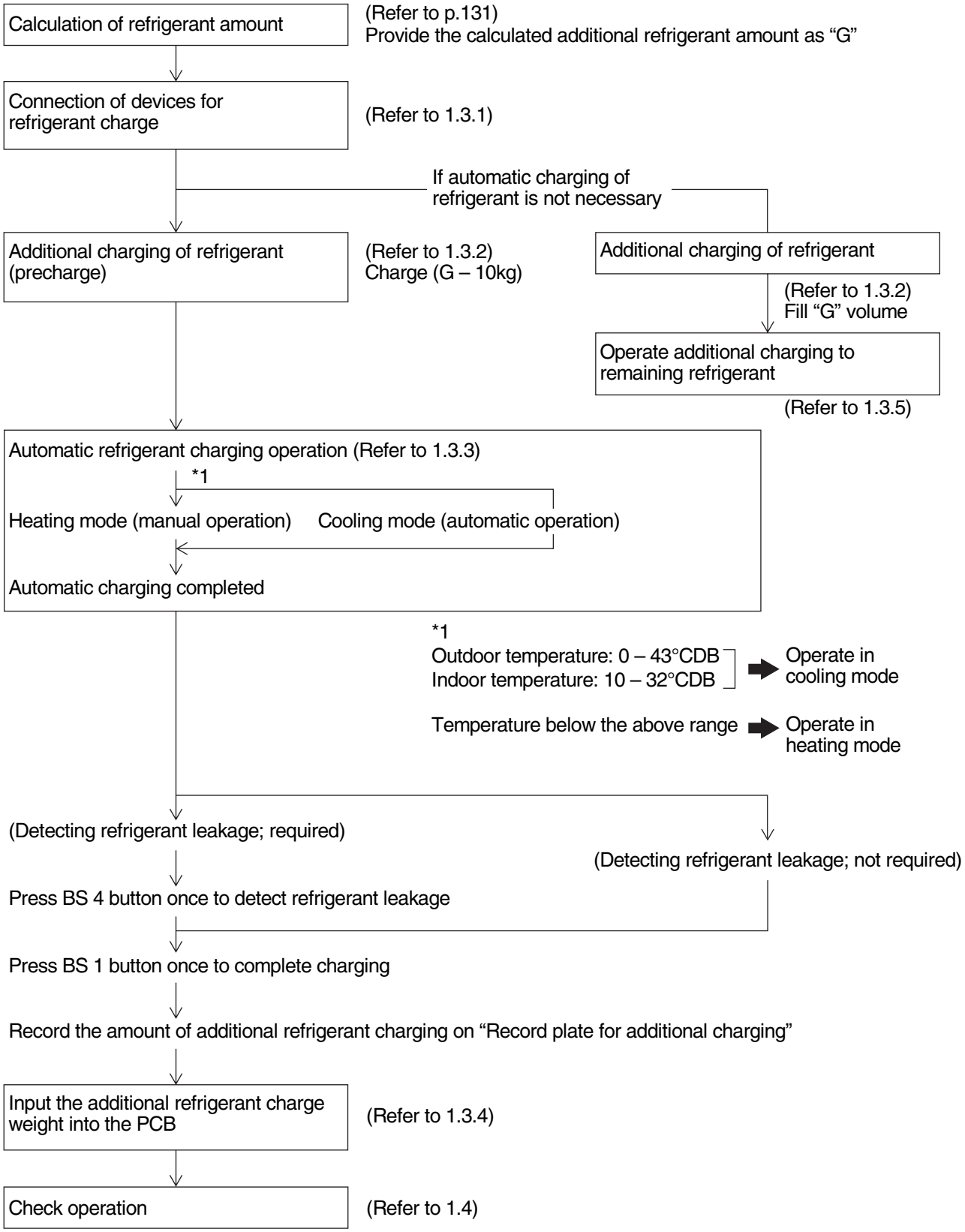


<Main PCB>



1.3 Additional Refrigerant Charge Procedure

Charge the additional refrigerant by following procedure before test operation.



Note:

Note 1. When the refrigerant charging procedure is done or when pausing, close the valve of the refrigerant tank immediately.
- The refrigerant charge port has a electronic expansion valve and will be closed at the end of the refrigerant charging. However, the valve will be opened when operating the unit after refrigerant charging.
- If the tank is left with the valve open, the amount of refrigerant which is properly charged may get off point. More refrigerant may be charged by any remaining pressure after the unit has stopped.

Note 2. Perform the settings on the circuit board (A1P) of the outdoor unit and check the LED display after the power is on via the service lid which is in the lid of the electric component box.

Operate switches with an insulated stick (such as a ball-point pen) to avoid touching the life parts.
Make sure to re-attach the inspection cover into the switch box cover after the job is finished.

Note 3. If the power of some units is turned off, the charging procedure can not be finished properly.

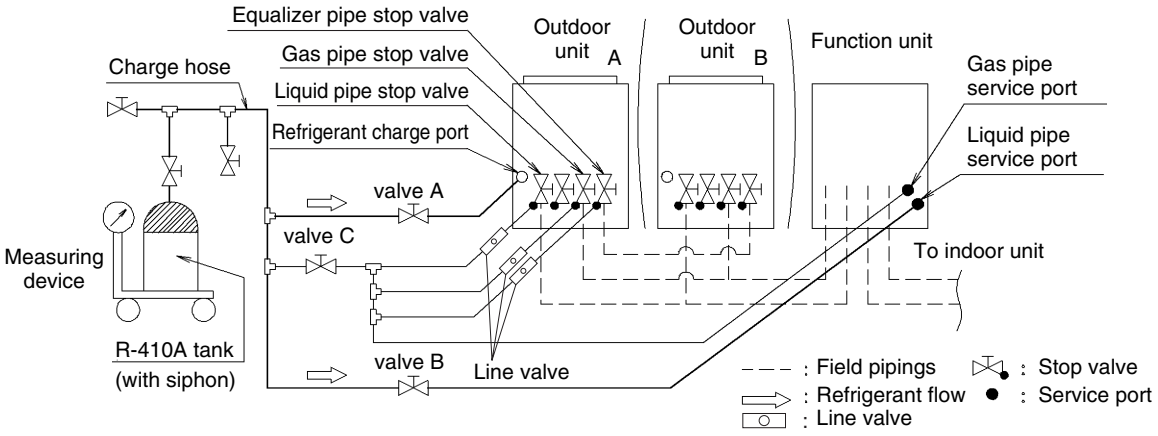
Note 4. Make sure to turn ON the power 6 hours before starting the operation. This is necessary to warm the crankcase by the electric heater.

Note 5. If operation is performed within 12 minutes after the indoor units, BS units and outdoor unit are turned on, the H2P-LED will be lit and the compressor will not operate.

Note 6. After adding the refrigerant, do not forget to close the lid of the refrigerant charging port.
The tightening torque for the lid is 11.5 to 13.9 N•m.

Note 7. In order to ensure uniform refrigerant distribution, it may take the compressor ±10 minutes to start up after the unit has started operation. This is not a malfunction.

1.3.1 Connection of Devices for Refrigerant Charge



1.3.2 Additional Charging of Refrigerant

Pre-charging

To speed up the process of charging refrigerant for large systems, it is recommended to first manually charge a portion of the refrigerant first before performing automatic charging.

1. Calculate how much refrigerant to be added using the formula explained in the chapter "How to calculate the additional refrigerant to be charged" on P.131.
2. The amount of pre-charging is 10 kg less than the calculated amount.
3. Open the valve B in the above figure (The valves A and C and the outdoor unit stop valves are to be kept closed.), and additionally charge refrigerant from the function unit liquid pipe service port.
4. After fully charged, close the valve B.

Note: When the leak detection function is not required, complete charging when using the previous described method (unit is not operating) can be done.
If it is not possible to charge the entire quantity through the service port of the liquid pipe stop valve with the unit not operating, refer to "1.3.5 Remaining Refrigerant Charging Method" on page 143.

1.3.3 Automatic Refrigerant Charging Operation

After pre-charging, perform the refrigerant charge operation as shown below and charge the remaining refrigerant of the additional charging amount through valve A. (See P.135)

1. Turn on power for all the indoor units and outdoor units (for Multi system, all the outdoor units) and the function unit in the whole refrigerant system.
2. Make sure to fully open the stop valves of liquid pipe, gas pipe and equalizer pipe (only for Multi system).
   (Valve A, B, C must be closed)
3. Close all front panels except the electric component box front panel and turn the power ON. Make sure all indoor units are connected, refer to "1. How to check how many units are connected" on page 140.

Note 1: If the H2P LED is not flashing (in 12 minutes time after turning on the power), make sure it is displayed as shown in the "2. Normal system display" on P.140.
If the H2P LED is flashing, check the malfunction code on the remote controller "3. Remote controller malfunction code display" on P.141.

Note 2: If you perform the refrigerant charging operation within the refrigerant system with one or more units with power OFF, the refrigerant charging operation can not be accomplished properly. For confirming the number of indoor units with power ON, refer to "1. How to check how many units are connected" on page 140.

4. Press the **BS1 MODE** button once if the LEDs combination is not as in the figure below.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	●	○	●	●	●	●

5. Press the **BS4 TEST** button once.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
○	○	○	○	○	○	○

6. Hold the **BS4 TEST** button down for 5 seconds or more.
7. **Charging mode judgement**
   However, if the indoor temperature is 10°C DB or lower or the outdoor temperature is 0°C DB or lower, in some cases the unit will charge in heating mode to increase the indoor temperature.
   The unit will automatically select the cooling mode or heating mode for charging.

Note 1: When charging in cooling mode, the unit will stop operating when the required amount of refrigerant is charged.

Note 2: During charging in heating mode, a person must manually close valve A before complete charging is finished. The required amount is the calculated amount (see "5. Example of Connection (R-410A Type)" on page 404), therefore, the weight must be monitored constantly.

<Charging in heating mode >

8. Start up
   Wait while the unit is preparing for charging in heating mode.

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Pressure control (for the first minute)	●	◑	●	●	●	●	○
Start up control (for the next 2 minutes)	◑	◑	●	●	●	○	●
Waiting for stable heating conditions (for the next ±15 minutes (according to the system))	◑	◑	●	●	●	○	○

   It takes about 2 to 10 minutes for the system to become stable.
   In case of a small charging amount, the system will start charging the refrigerant before the system reaches the stable state. It may disturb a correct decision and may cause overcharging.
9. Ready

H1P	H2P	H3P	H4P	H5P	H6P	H7P
◑	◑	●	●	○	●	○

   Press the **BS4 TEST** button once within 5 minutes.
   If the **BS4 TEST** button is not pushed within 5 minutes, P2 will be displayed on the remote controller. Refer to "3. Remote controller malfunction code display" on P.141.
10. Operation
    When the following LED display is shown, open valve A and close the front panel. If the front panel is left open, the system can not operate properly during the refrigerant charging.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
○	◑	*	*	*	*	*

* = The state of this LED is not important.

Note 1: When the refrigerant tank is not connected or is left with the valve closed for 30 minutes or more, the outdoor unit will stop operation and the P2 code will be displayed on the remote controller of the indoor unit. Follow the procedure as described in "3. Remote controller malfunction code display" on P.141.

Note 2: When a malfunction occurs, check the display of the remote controller and refer to "3. Remote controller malfunction code display" on P.141.

11. Complete
    If the calculated amount of refrigerant is reached, close valve A and press the **BS3 RETURN** button once.

Note: Always close valve A and remove the refrigerant tank immediately after finishing the refrigerant charge operation.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
◑	◑	◑	○	○	○	○

Beware of the fan blades when you open the front panel.
The fan may still rotate for a while after unit operation has stopped.

12. In case leak detection function is required

Press the **BS4 TEST** button once for post-processing with regard to the leak detection function and press the **BS1 MODE** button to confirm that charging is completed.
Record the amount that was added on the additional refrigerant charge label provided with the unit and attach it on the back side of the front panel.
Perform the procedure "1.3.4 Procedure for Inputting the Additional Refrigerant Charge Weight into the PCB" as described on page 141.

12. In case leak detection function is not required

Press the **BS1 MODE** button once and the charging is complete.
Record the amount that was added on the additional refrigerant charge label provided with the unit and attach it on the back side of the front panel.
Perform the procedure "1.3.4 Procedure for Inputting the Additional Refrigerant Charge Weight into the PCB" as described on page 141.

<Charging in cooling mode>

8. Start up
   Wait while the unit is preparing for charging in cooling mode.

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Pressure control (for the first minute)	●	◑	●	●	●	●	○
Start up control (for the next 2 minutes)	●	◑	●	●	●	○	●
Waiting for stable cooling conditions (for the next ±15 minutes (according to the system))	●	◑	●	●	●	○	○

   It takes about 2 to 10 minutes for the system to become stable.
   In case of a small charging amount, the system will start charging the refrigerant before the system reaches the stable state. It may disturb a correct decision and may cause overcharging.
9. Ready

H1P	H2P	H3P	H4P	H5P	H6P	H7P
◑	◑	◑	●	○	●	○

   Press the **BS4 TEST** button once within 5 minutes.
   If the **BS4 TEST** button is not pushed within 5 minutes, P2 will be displayed on the remote controller. Refer to "3. Remote controller malfunction code display" on page 141.
10. Operation
    When the following LED display is shown, open valve A and close the front panel. If the front panel is left open, the system can not operate properly during the refrigerant charging.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
○	◑	*	*	*	*	*

* = The state of this LED is not important.

Note 1: When the refrigerant tank is not connected or is left with the valve closed for 30 minutes or more, the outdoor unit will stop operation and the P2 code will be displayed on the remote controller of the indoor unit. Follow the procedure as described in "3. Remote controller malfunction code display" on P.141.

Note 2: When a malfunction occurs, check the display of the remote controller and refer to "3. Remote controller malfunction code display" on P.141.

11. Complete

H1P	H2P	H3P	H4P	H5P	H6P	H7P
◑	◑	◑	○	○	○	○

The display on the remote controller shows a flashing PE code for signalling that automatic charging will be finished in about 10 minutes.
When the unit stops operating, close valve A immediately and check the LEDs and check if the P9 code is displayed on the remote controller.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
○	◑	◑	○	○	○	○

If the LED indication is not as shown above, correct the malfunction (as indicated in the display of the remote controller) and restart the complete charging procedure. When the charging amount is little, the PE code may not be displayed, but instead the P9 code will be displayed immediately.

Beware of the fan blades when you open the front panel.
The fan may still rotate for a while after unit operation has stopped.

- When the unit displays an out of temperature range, the automatic charging of refrigerant can not be completed.
  - Out of outdoor temperature range

H1P	H2P	H3P	H4P	H5P	H6P	H7P
○	◑	◑	◑	○	●	●

Complete the charging of refrigerant on another time when the outdoor temperature is warmer than 0°C DB and colder than 43°C DB.

  - Out of indoor temperature range

H1P	H2P	H3P	H4P	H5P	H6P	H7P
○	◑	◑	◑	●	○	●

Complete the charging of refrigerant on another time when the indoor temperature is warmer than 20°C DB and colder than 32°C DB.

12. In case leak detection function required
Press the **BS4 TEST** button once for post-processing with regard to the leak detection function and press the **BS1 MODE** button to confirm that charging is completed.
Record the amount that was added on the additional refrigerant charge label provided with the unit and attach it on the back side of the front panel.
Perform the procedure "1.3.4 Procedure for Inputting the Additional Refrigerant Charge Weight into the PCB" as described on P.141.

12. In case leak detection function not required
Press the **BS1 MODE** button once and the charging is complete.
Record the amount that was added on the additional refrigerant charge label provided with the unit and attach it on the back side of the front panel.
Perform the procedure "1.3.4 Procedure for Inputting the Additional Refrigerant Charge Weight into the PCB" as described on P.141.

1. How to check how many units are connected

It is possible to find out how many indoor units are active and connected by operating the push-button switch on the printed circuit board (A1P) of the working outdoor unit.
Make sure that all the indoor units connected to the outdoor unit are active.

Follow the 5-step procedure as explained below.

- The LEDs on the A1P shows the operating status of the outdoor unit and the number of indoor units that are active.

  ● OFF ○ ON ◑ Blinking

- The number of units that are active can be read from the LED display in the "Monitor Mode" procedure below.
  Example: in the following procedure there are 22 units active:

Note: Wherever during this procedure, press the **BS1 MODE** button if something becomes unclear. You will return to setting mode 1 (H1P= ● "OFF").

1 Setting mode 1 (default system status)

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Default status (normal)	●	●	○	●	●	●	●

Press the **BS1 MODE** button to switch from setting mode 1 to monitor mode.

2 Monitor mode

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Default status display	◑	●	●	●	●	●	●

To check the number of indoor units, press the **BS2 SET** button 5 times.

3 Monitor mode

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Selection status of how many connected indoor units to display.	◑	●	●	●	○	●	○

Pressing the **BS3 RETURN** button causes the LED display to show the data on the number of indoor units that are connected.

4 Monitor mode

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Displaying the number of connected indoor units	◑	●	◑	●	◑	◑	●
		32	16	8	4	2	1

Calculate the number of connected indoor units by adding the values of all (H2P~H7P) blinking (◑) LEDs together.
In this example: 16+4+2=**22** units
Press the **BS1 MODE** button to return to step 1, setting mode 1 (H1P= ● "OFF").

2. Normal system display

LED display (Default status before delivery)		Micro-computer operation monitor	Mode	Ready/ Error	Cooling/Heating changeover			Low noise	Demand	Multi
					Indivi-dual	Bulk (master)	Bulk (slave)			
		HAP	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
Single outdoor unit system		◑	●	●	○	●	●	●	●	●
Multiple outdoor unit system	Master unit(a)	◑	●	●	○	●	●	●	●	○
	Slave unit 1(a)	◑	●	●	●	●	●	●	●	◑or●

(a) The state of the H8P (multi) LED in a multi-system shows which unit is the master unit (○), slave 1 unit (◑).
Only the master unit is connected to the indoor units with interunit wiring.

3. Remote controller malfunction code display

Remote controller heating mode malfunction codes

Error code		
P8 recharge operation	Close valve A immediately and press the TEST OPERATION button once. The operation will restart from the charging mode judgement onwards.	
P2 charge hold	Close valve A immediately. Check following items: - Check if the gas stop valve is opened correctly - Check if the valve of the refrigerant cylinder is opened - Check if the air inlet and outlet of the indoor unit are not obstructed	After correcting the abnormality, restart the automatic charging procedure again.

Remote controller cooling mode malfunction codes

Error code		
PE	Charging is almost finished. Ready to close valve A.	
P9	Charging is finished. Close valve A and remove the refrigerant tank.	
P8, PH replace the cylinder	Close valve A and replace the empty cylinder. After replacing the cylinder, open valve A again and continue the work (the outdoor unit will not stop operating).	
P8 recharge operation	Close valve A immediately. Restart the automatic charging procedure again.	
P2 charge hold	Close valve A immediately. Check following items: - Check if the high pressure/low pressure gas pipe, suction gas pipe and liquid pipe stop valves are opened correctly - Check if the valve of the refrigerant cylinder is opened - Check if the air inlet and outlet of the indoor unit are not obstructed	After correcting the abnormality, restart the automatic charging procedure again.
* abnormal stop	Close valve A immediately. Confirm the malfunction code by the remote controller and correct the abnormality by following the " Correcting after abnormal completion of the check operation" on page 145.	

1.3.4 Procedure for Inputting the Additional Refrigerant Charge Weight into the PCB

Availability of the leak detection function feature requires input of the additional refrigerant charge amount immediately after finishing the automatic charging. The input must be executed before performing the test operation.

If a wrong value is input for the additional charged refrigerant weight, the accuracy of the leak detection function will decrease.

Procedure

1. Close the electric box lid and all front panels except the one on the side of the electric box.
2. Press and hold the **BS1 MODE** button for 5 seconds to enter into setting mode 2.
   The H1P LED is on ○.
3. Press the **BS2 SET** button 14 times.
   The LED display must be as follows:

H1P	H2P	H3P	H4P	H5P	H6P	H7P
○	●	●	○	○	○	●

   Press the **BS3 RETURN** button once as confirmation of the LEDs combination.
   LEDs will be blinking in function of the last entered setting (factory setting = 0 kg).
4. The weighed and already recorded amount of additional refrigerant charge (not the total amount of refrigerant present in the system) must be entered by selecting the corresponding LED display.
   Scroll through the possible LED combinations by pressing the **BS2 SET** button until the LED combination corresponds to the weight of additional refrigerant charge you must input.
   Select the required input by pressing the **BS3 RETURN** button and confirm the input into the PCB by pressing the **BS3 RETURN** button again.

Possible LED combinations in function of weight of additional refrigerant charge (= x) to input;

	kg	H1P	H2P	H3P	H4P	H5P	H6P	H7P
0	x=0	○	●	●	●	●	●	●
1	0<x<5	○	●	●	●	●	●	○
2	5≤x<10	○	●	●	●	●	○	●
3	10≤x<15	○	●	●	●	●	○	○
4	15≤x<20	○	●	●	●	○	●	●
5	20≤x<25	○	●	●	●	○	●	○
6	25≤x<30	○	●	●	●	○	○	●
7	30≤x<35	○	●	●	●	○	○	○
8	35≤x<40	○	●	●	○	●	●	●
9	40≤x<45	○	●	●	○	●	●	○
10	45≤x<50	○	●	●	○	●	○	●
11	50≤x<55	○	●	●	○	●	○	○
12	55≤x<60	○	●	●	○	○	●	●
13	60≤x<65	○	●	●	○	○	●	○
14	65≤x<70	○	●	●	○	○	○	●
15	70≤x<75	○	●	●	○	○	○	○
16	75≤x<80	○	●	○	●	●	●	●
17	80≤x<85	○	●	○	●	●	●	○
18	85≤x<90	○	●	○	●	●	○	●
19	90≤x<95	○	●	○	●	●	○	○
20	95≤x<100	○	●	○	●	○	●	●
21	100≤x	○	●	○	●	○	●	○

5. Return to setting mode 1 (= initial state) by pressing the **BS1 MODE** button.

Note: If you get confused in the middle of the input process, press the **BS1 MODE** button to return to setting mode 1 (= initial state).
The H1P LED is off ●.
Resume the input procedure from step 2 onwards.

Perform a check operation as described in "1.4 Check Operation" on P.144.

1.3.5 Remaining Refrigerant Charging Method

When the leak detection function is not required and the entire refrigerant quantity can not be charged through the liquid pipe stop valve service port with the unit not operating (refer to Pre-charging" on page 135), make sure to charge the remaining charging quantity using the following procedure:

1. Turn the power of the indoor unit, the BS unit and the outdoor unit on.
2. Make sure to open the stop valves of the suction gas pipe, the high pressure/low pressure gas pipe and the liquid pipe completely.
3. Connect the refrigerant charge hose to the refrigerant charging port (for additionally charging).
4. When the unit is not operating, push the **BS2 SET** button until the additional refrigerant charging operation function A in setting mode 2 can be defined the H1P LED is on (○).
5. The operation starts automatically.
   The H2P LED will start flashing (◑) and the messages "Test operation" and "Under centralized control" will display on the remote controller.
6. After charging the specified quantity of refrigerant, press the **BS3 RETURN** button to stop the operation.
   The operation will stop within 30 minutes.
   - If charging is not completed after 30 minutes, set and perform the additional refrigerant charging operation again.
   - If the additional refrigerant charging operation stops before the passing of 30 minutes, the system may be overcharged.

Never charge extra refrigerant.

7. Disconnect the refrigerant charge hose.
8. Are the stop valves for both liquid and gas open?
   Is the amount of refrigerant, that has been added, recorded on the refrigerant charge label?

1.4 Check Operation

- Make sure to carry out the check operation after the first installation. Otherwise, the malfunction code "U3" will be displayed on the remote controller and normal operation cannot be carried out. When the check operation is finished normally, normal operation can be carried out after approx. 5 minutes.
  <In case of Single system>
  Settings and display confirmations are to be made at the EL. COMPO. BOX.
  <In case of Multi system>
  Check the settings and display results on the master remote controller.

- In case the unit is operated with the leak detection function available:
  - the outdoor temperature must be 0°C DB~43°C DB
  - the indoor temperature must be 10°C DB~32°C DB

  In case the unit is operated out of the temperature range as instructed above, the display of the remote controller shows U3 and the unit operates without the availability of the leak detection function.
- In the check operation, the following checks and judgement will be performed:
  - Check of the stop valve opening
  - Check for wrong wiring
  - Check of refrigerant overcharge
  - Initial refrigerant detection
- In case the leak detection function is available, the check operation will last 2 hours, otherwise it takes between 40 and 60 minutes to complete the check operation.
- Abnormalities on indoor units can not be checked for each unit individual. After the check operation is finished, check the indoor units one by one by performing a normal operation using the remote controller.

1.4.1 Procedure of Check Operation

1. Close all front panels except the front panel of the electric component box.
2. Turn ON the power to the outdoor unit and the connected indoor units.
   Be sure to turn on the power 6 hours before operation in order to have power running to the crankcase heater and to protect the compressor.
3. Make the field setting as described in the paragraph "3.2 Field Setting from Outdoor Unit" on page 166.
4. Press the **BS1 MODE** button once, and set to the SETTING MODE (H1P LED = OFF).
5. **In case the leak detection function is required,**
   press and hold the BS4 TEST button down for 5 seconds or more. The unit will start the test operation.
   In case the leak detection function is not required,
   go into setting mode 2 by pressing the **BS1 MODE** button for 5 seconds. The H1P LED is on ○.
   Perform following steps.
   1) Press the **BS2 SET** button 3 times.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
○	●	●	●	●	○	○

   2) Press the **BS3 RETURN** button once to confirm.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
○	●	●	●	●	●	◑

   3) Press the **BS2 SET** button in order to change the LED display to the following display.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
○	●	●	●	●	◑	●

   4) Press the **BS3 RETURN** button once to confirm.
   5) Press the **BS3 RETURN** button a second time to start the test operation. The unit will start the test operation.

- The test operation is automatically carried out in cooling mode, the H2P LED will light up and the messages "Test operation" and "Under centralized control" will display on the remote controller.
- It may take 10 minutes to bring the state of the refrigerant uniform before the compressor starts.
- During the test operation, the refrigerant running sound or the magnetic sound of a solenoid valve may become loud and the LED display may change, but these are not malfunctions.
- During the test operation, it is not possible to stop the unit operation from a remote controller. To abort the operation, press the **BS3 RETURN** button. The unit will stop after ±30 seconds.

6. Close the front panel in order to let it not be the cause of misjudgement.
7. Check the test operation results by the LED display on the outdoor unit.

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Normal completion	●	●	○	●	●	●	●
Abnormal completion	●	○	○	●	●	●	●

8. When the test operation is fully completed, normal operation will be possible after 5 minutes. Otherwise, refer to "Correcting after abnormal completion of the check operation" on page 145 to take actions for correcting the abnormality.

Correcting after abnormal completion of the check operation

The test operation is only completed if there is no malfunction code displayed on the remote controller. In case of a displayed malfunction code, perform the following actions to correct the abnormality:

1.4.2 Confirm the Malfunction Code on the Remote Controller

Installation error	Error code	Remedial action
The stop valve of an outdoor unit is left closed.	E3 E4 F3 F6 UF	Open the stop valve.
The phases of the power to the outdoor unit is reversed.	U1	Exchange two of the three phases (L1, L2, L3) to make a positive phase connection.
No power is supplied to an outdoor or indoor unit (including phase interruption).	LC U1 U4	Check if the power wiring for the outdoor units are connected correctly.
Incorrect interconnections between units.	UF	Check if the refrigerant line piping and the unit wiring are consistent with each other.
Refrigerant overcharge.	E3 F6 UF	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
Insufficient refrigerant.	E4 F3	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.
The added amount of refrigerant was not inputted after automatic charging.	PF	Availability of the leak detection function feature requires input of the additional refrigerant charge amount immediately after finishing the automatic charging. Refer to "1.3.4 Procedure for Inputting the Additional Refrigerant Charge Weight into the PCB" on page 141.
In case the test operation was interrupted or the unit was operating out of the instructed temperature range, the initial refrigerant detection has failed.	U3	In case the test operation was interrupted, perform the test operation again. In case the unit was operating out of the instructed temperature range, the unit can still be operated normally, but the leak detection function will not be available. Perform the test operation again within the instructed temperature range.

- After correcting the abnormality, press the **BS3 RETURN** button and reset the malfunction code.
- Carry out the test operation again and confirm that the abnormality is properly corrected.

1.5 Check in Normal Operation

After all installation works are completed, operate the unit normally and check the following:

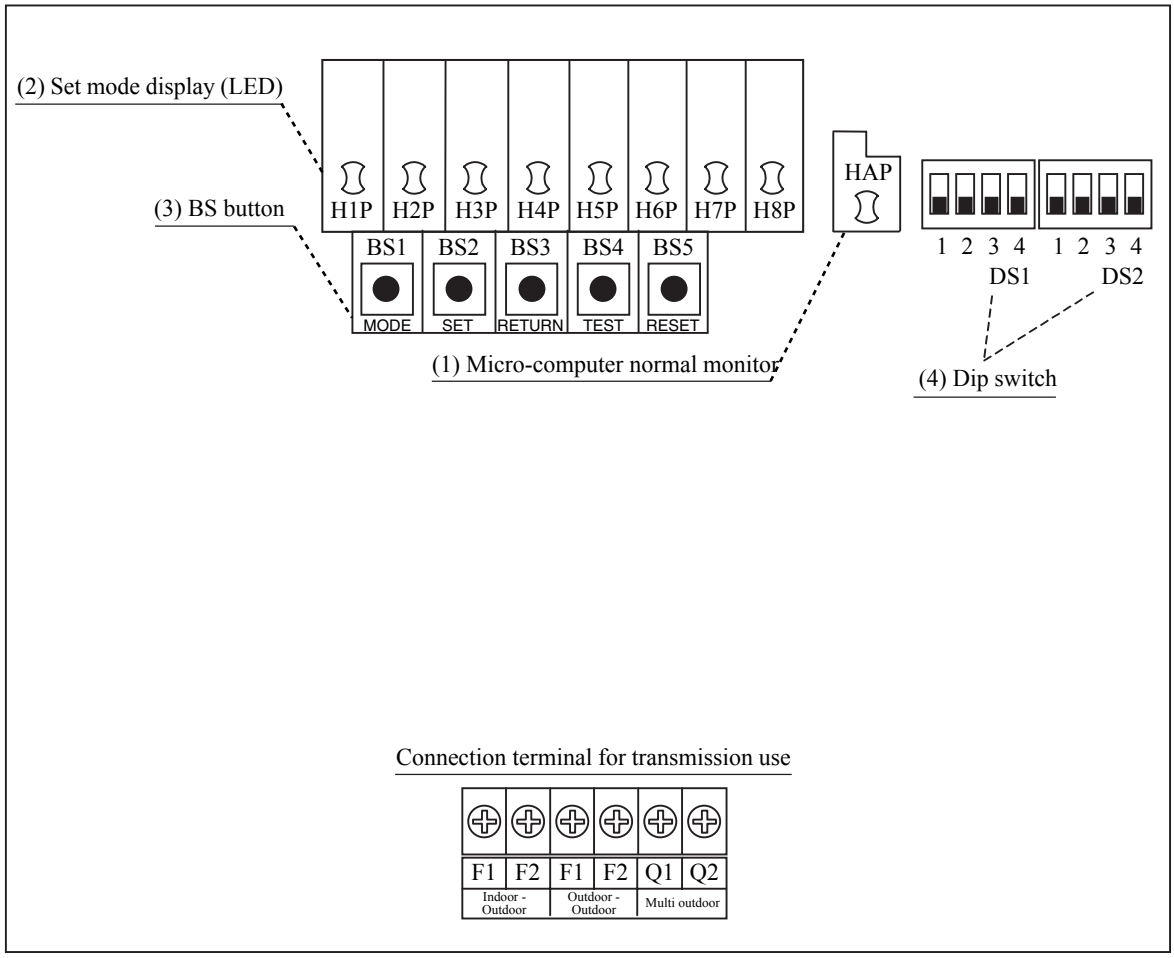
- Make sure the indoor units and outdoor unit are operating normally.
- Operate each indoor unit separately and make sure the corresponding outdoor unit is also operating properly.
- Check if cold or hot air is coming out from the indoor unit.
- Push the fan direction and fan strength buttons on the remote controller to check if they are operating properly.

Note:

- Heating is not possible if the outdoor temperature is 24°C or higher. Refer to the operation manual.
- If a knocking sound is heard in the liquid compression of the compressor, stop the unit immediately and then energize the crankcase heater for a sufficient length of time before restarting the operation.
- Once stopped, the compressor will not restart in about 5 minutes, even if the ON/OFF button on the remote controller is pushed.
- When the system operation is stopped by the remote controller, the outdoor unit may continue operation for a maximum of 5 minutes.
- The outdoor fan may rotate at low speeds in the night-time low noise setting or the external low noise level setting is made; but this is not a malfunction.

2. Outdoor Unit PCB Layout

Outdoor unit PCB



(1) Micro-computer normal monitor
This monitor blinks while in normal operation, and turns on or off when a malfunction 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. Field Setting

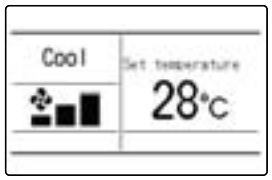
3.1 Field Setting from Remote Controller

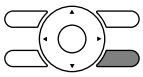
Individual function of indoor unit can be changed from the remote controller. At the time of installation or after service inspection / repair, make the local setting in accordance with the following description.
Wrong setting may cause malfunction.
(When optional accessory is mounted on the indoor unit,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

3.1.1 Wired Remote Controller <BRC1E51>

<Basic screen>

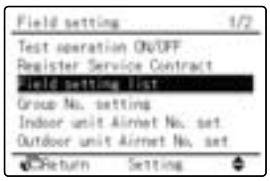
(1)

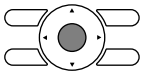




<Field setting menu screen>

(2)



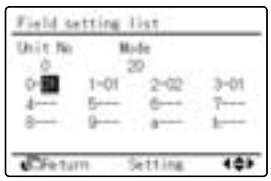


Press Menu/Enter button.

<Field setting screen>

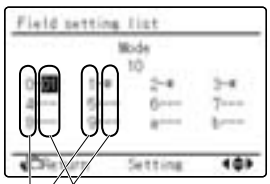
In the case of individual setting per indoor unit

(3)
(4)
(5)

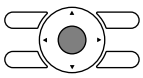


In the case of group total setting

(3)
(5)



SECOND CODE NO.
FIRST CODE (SW) NO.



Press Menu/Enter button.

1 Press and hold 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.

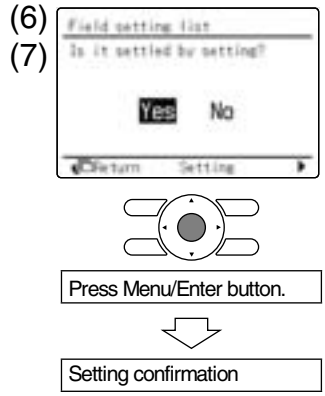
4 In the case of setting per indoor unit during group control (When Mode No. such as 20 , 21 , 22 , 23 , 25 are selected), highlight the unit No. and select "Indoor unit No." to be set by using ▲▼ (Up/Down) button.
(In the case of group total setting, this operation is not needed.)

[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.]

<Setting confirmation screen>



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.

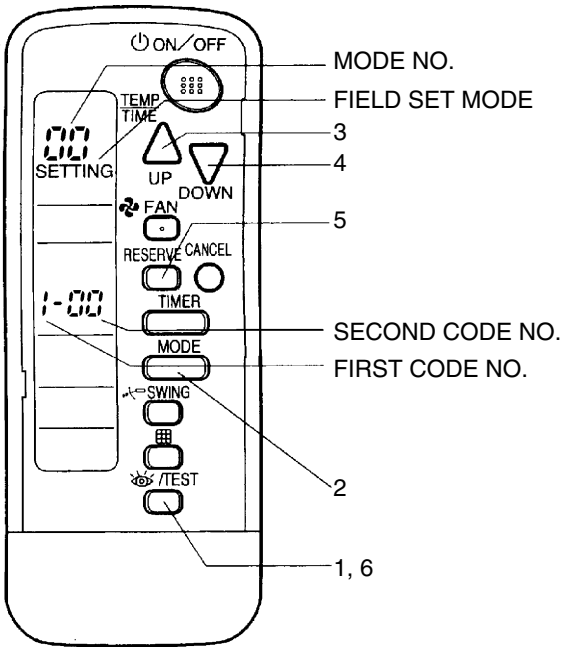
10 Backlight goes out, and "Connection under check Please wait for a moment" is displayed for initialization. After the initialization, the basic screen returns.

⚠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 outdoor unit, see installation manual attached to the outdoor unit.

3.1.2 Wireless Remote Controller - Indoor Unit

BRC7C type
BRC7E type
BRC4C type

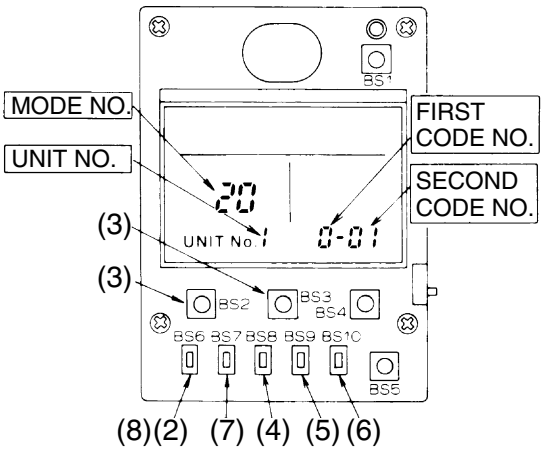


1. When in the normal mode, push the " /TEST " button for 4 seconds or more, and operation then enters the "field set mode."
2. Select the desired "mode No." with the " MODE " button.
3. Pushing the " UP " button, select the first code No.
4. Pushing the " DOWN " button, select the second code No.
5.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

(Example)
When setting the filter sign time to "Filter Dirtiness-High" in all group unit setting, set the Mode No. to "10", Mode setting No. to "0" and second code No. to "02".

3.1.3 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 set), and the FIELD SET 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), push the [BS8] (④) BUTTON (unit No.) and select the INDOOR UNIT NO. to be set. (This operation is unnecessary when setting by group.)
5. Push the [BS9] BUTTON (⑤) (set A) and select FIRST CODE NO.
6. Push the [BS10] BUTTON (⑥) (set B) and select SECOND CODE NO.
7. Push the [BS7] BUTTON (⑦) (set/cancel) once and the present settings are SET.
8. Push the [BS6] BUTTON (⑧) (field set) 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”.

3.1.4 Setting Contents and Code No. – VRV Indoor unit

VRV system indoor unit settings	Mode No. Note 2	First code No.	Setting Contents		Second Code No.(Note 3)								Details No
					01		02		03		04		
	10(20)	0	Filter contamination heavy/ light (Setting for display time to clean air filter) (Sets display time to clean air filter to half when there is heavy filter contamination.)	Ultra long life filter	Light	Approx. 10,000 hrs.	Heavy	Approx. 5,000 hrs.	—		—		(1)
				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)
		2	Room temperature thermistor in remote controller		Remote controller + Body thermostat		Only body thermostat		Only remote controller thermostat		—		(3)
		3	Display time to clean air filter calculation (Set when filter sign is not to be displayed.)		Display		No display		—		—		(4)
		5	Information to intelligent Manager, intelligent Touch Controller		Only unit sensor value (or remote sensor if installed).		Sensor value as set by 10-2-X or 10-6-X.		—		—		—
		6	Thermostat sensor in group control		Use unit sensor only (or remote sensor if installed).		Use both unit sensor (or remote sensor if installed) AND remote sensor.		—		—		—
	11(21)	7	Airflow adjustment		OFF		Completion of airflow adjustment		Start of airflow adjustment		—		(5)
	12(22)	0	Optional accessories output selection (field selection of output for adaptor for wiring)		Indoor unit turned ON by thermostat		—		Operation output		Malfunction output		(6)
		1	ON/OFF input from outside (Set when ON/OFF is to be controlled from outside.)		Forced OFF		ON/OFF control		External protection device input		—		(7)
		2	Thermostat differential changeover (Set when remote sensor is to be used.)		1°C		0.5°C		—		—		(8)
		3	Airflow setting when heating thermostat is OFF		LL		Set fan speed		—		—		(9)
		4	Automatic mode differential		01:0	02:1	03:2	04:3	05:4	06:5	07:6	08:7	(10)
		5	Power failure automatic reset		Not equipped		Equipped		—		—		(11)
		6	Airflow setting when Cooling thermostat is OFF		LL		Set fan speed		—		—		(12)
	13(23)	0	Setting of normal airflow		N		H		S		—		(13)
		1	Selection of airflow direction (Set when a blocking pad kit has been installed.)		F (4 directions)		T (3 directions)		W (2 directions)		—		(14)
		3	Operation of downward flow flap: Yes/No		Equipped		Not equipped		—		—		(15)
		4	Field set airflow position setting		Draft prevention		Standard		Ceiling Soiling prevention		—		(16)
		5	Setting of static pressure selection		Standard		High static pressure		—		—		(17)
		6	External Static Pressure Settings		01:30	02:50	03:60	04:70	05:80	06:90	07:100	08:110	(18)
					09:120	10:130	11:140	12:150	13:160	14:180	15:200	—	
	15(25)	1	Thermostat OFF excess humidity		Not equipped		Equipped		—		—		(19)
		2	Direct duct connection (when the indoor unit and heat reclaim ventilation unit are connected by duct directly.) ∗Note 6		Not equipped		Equipped		—		—		(20)
		3	Drain pump humidifier interlock selection		Not equipped		Equipped		—		—		(21)
		5	Field set selection for individual ventilation setting by remote controller		Not equipped		Equipped		—		—		(22)

Notes :

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. Marked ▭ are factory setting.
4. Do not make settings other than those described above. Nothing is displayed for functions the indoor unit is not equipped with.
5. “88” may be displayed to indicate the remote controller is resetting when returning to the normal mode.
6. If the setting mode to “Equipped”, heat reclaim ventilation fan conducts the fan residual operation by linking to indoor unit.

3.1.5 Applicable Range of Field Setting

	Ceiling mounted cassette				Slim concealed ceiling unit	Concealed ceiling unit (small)	Concealed ceiling unit	Concealed ceiling unit	Concealed ceiling unit (large)	Ceiling suspended unit	Wall mounted unit	Floor standing unit	Concealed floor standing unit	4-way blow ceiling suspended unit	Outdoor air processing unit
	Roundflow	4-way blow	2-way blow	Corner type											
	FXFQ	FXZQ	FXCQ	FXKQ	FXDQ	FXDQ	FXSQ	FXMQ	FXMQ	FXHQ	FXAQ	FXLQ	FXNQ	FXUQ	FXMQ-MF
Filter sign	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Ultra long life filter sign	○	○	○	—	—	—	—	—	—	—	—	—	—	—	—
Room temperature thermistor in remote controller	○	○	○	○	○	○	○	○	○	○	○	○	○	○	—
Set fan speed when thermostat OFF	○	○	○	○	○	○	○	○	○	○	○	○	○	○	—
Airflow adjustment Ceiling height	○	—	—	—	—	—	—	—	—	○	—	—	—	○	—
Airflow direction	○	○	—	—	—	—	—	—	—	—	—	—	—	○	—
Airflow direction adjustment (Down flow operation)	—	—	—	○	—	—	—	—	—	—	—	—	—	—	—
Airflow direction adjustment range	○	○	○	○	—	—	—	—	—	—	—	—	—	—	—
Field set fan speed selection	○	—	—	—	○*1	—	—	—	—	○	—	—	—	—	—
Discharge air temp. (Cooling)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	○
Discharge air temp. (Heating)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	○

*1 Static pressure selection

3.1.6 Detailed Explanation of Setting Modes

(1) Filter Sign Setting

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

Set Time

Setting \ Filter Specs.	Standard Filter	Long Life Filter	Ultra Long Life Filter
Contamination Light	200 hrs.	2,500 hrs.	10,000 hrs.
Contamination Heavy	100 hrs.	1,250 hrs.	5,000 hrs.

(2) Ultra Long Life Filter Sign Setting

When a long life filter or 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

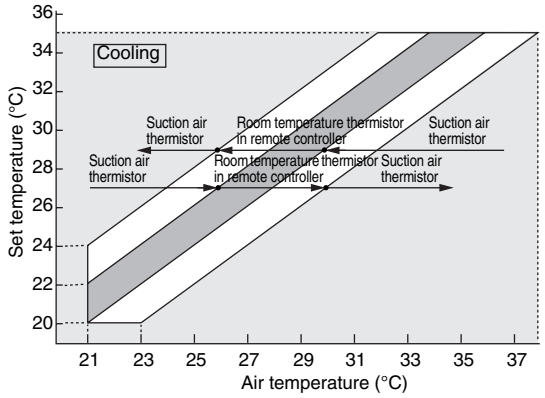
(3) Selection of Thermistor

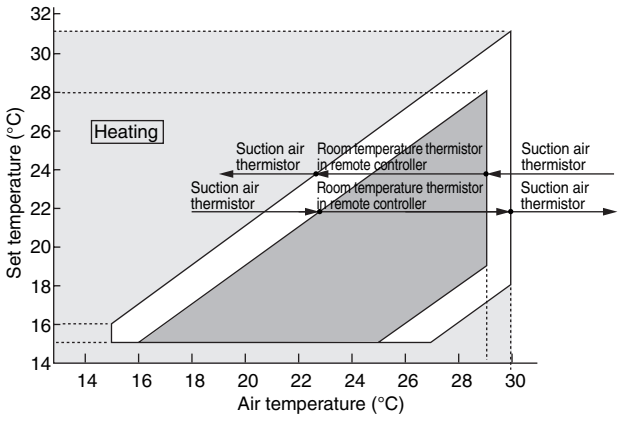
Select the thermistor to control room temperature.

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

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. (For details, see the figures below.)

In case that is impossible to install remote controller in the room, change the Second Code No. to "02".





(4) "Filter Cleaning" Displayed or Not Displayed

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

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

(5) Airflow Adjustment (AUTO)

External Static Pressure Settings

Make settings in either method (a) or method (b) as explained below.

(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.

(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 Table 4. The “SECOND CODE NO.” is set to 01 (OFF) at factory setting. Change the “SECOND CODE NO.” as shown in Table according to the external static pressure of the duct to be connected.

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

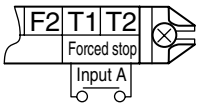
(6) Optional Output Switching

Using this setting, "operation output signal" and "abnormal output signal" can be provided. Output signal is output between terminals K1 and K2 of "customized wiring adaptor," 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 "Malfunction Display" appears on the remote controller, output is provided.

(7) 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 (X1A) in the electric component box.



Setting Table

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

(8) Thermostat Switching

Differential value during thermostat ON/OFF control can be changed. (For details, refer to "9.2.3 Thermostat Control while in Normal Operation" on P.119.)

Mode No.	First Code No.	Second Code No.	Differential value
12(22)	2	01	1°C
		02	0.5°C

(9) Airflow Setting When Heating Thermostat is OFF

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

* When thermostat OFF airflow volume up mode is used, careful consideration is required before deciding installation location. During heating operation, this setting takes precedence over "(8) Thermostat Switching."

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

(10) Setting of Operation Mode to "AUTO"

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

Mode No.	First code No.	Second code No.							
		01	02	03	04	05	06	07	08
12 (22)	4	0°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.

(11) Auto Restart after Power Failure Reset

For the air conditioners with no setting for the function (same as factory setting), the units will be left in the stop condition when the power supply is reset automatically after power failure reset or the main power supply is turned on again after once turned off. However, for the air conditioners with the setting (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).

(12) 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.	Contents
12 (22)	6	01	LL airflow
		02	Preset airflow

(13) Setting of Normal Airflow

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

■ **In the Case of FXAQ, FXHQ**

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

■ **In the Case of FXFQ25~80**

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

■ **In the Case of FXFQ100~125**

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

■ **In the Case of FXUQ71~125**

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 2.7 m	Lower than 3.0 m	Lower than 3.5 m
		02	High Ceiling (H)	Lower than 3.0 m	Lower than 3.5 m	Lower than 3.8 m
		03	Higher Ceiling (S)	Lower than 3.5 m	Lower than 3.8 m	—

(14) Airflow Direction Setting

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

Setting Table

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

(15) Operation of Downward Flow Flap: Yes/No

Only the model FXKQ has the function.

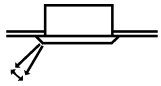
When only the front-flow is used, sets yes/no of the swing flap operation of down-flow.

Setting Table

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

(16) Setting of Airflow Direction Adjustment Range

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



Setting Table

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.

(17) Setting of the Static Pressure Selection (for FXDQ model)

Model No.	First Code No.	Second Code No.	External static pressure
13 (23)	5	01	Standard (15Pa)
		02	High static pressure (44Pa)

(18) External Static Pressure Settings (for FXMQ-P model)

MODE NO.	FIRST CODE NO.	SECOND CODE NO.	External Static Pressure
13 (23)	06	01	30Pa (*1)
		02	50Pa
		03	60Pa
		04	70Pa
		05	80Pa
		06	90Pa
		07	100Pa
		08	110Pa
		09	120Pa
		10	130Pa
		11	140Pa
		12	150Pa
		13	160Pa
		14	180Pa (*2)
		15	200Pa (*2)

The “SECOND CODE NO.” is set to 07 (an external static pressure of 100 Pa) at factory setting.

*1 The FXMQ50 · 63 · 80 · 100 · 125· 140PVE cannot be set to 30 Pa.

*2 The FXMQ20 · 25 · 32 · 40PVE cannot be set to 180 or 200 Pa.

(19) 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

(20) Setting of Direct Duct Connection

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

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

(21) 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

(22) Individual Setting of Ventilation

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

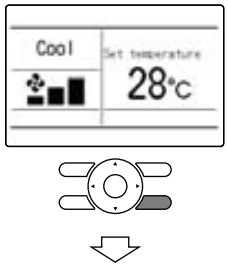
Mode No.	First Code No.	Second Code No.	Contents
15 (25)	5	01	—
		02	Individual operation of ventilation

3.1.7 Centralized Control Group No. Setting

BRC1E Type

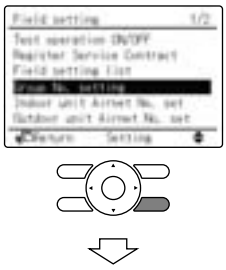
In order to conduct the centralized remote control using the centralized remote controller and the unified ON/OFF controller, Group No. settings should be made by group using the operating remote controller.
Make Group No. settings for centralized remote control using the operating remote controller.

(1) <Basic screen>



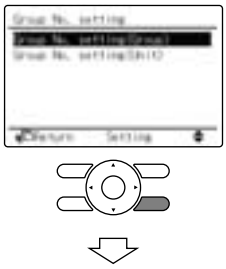
1. Press and hold Cancel button for 4 seconds or more.
   Field setting menu in displayed.

(2) <Field setting menu screen>



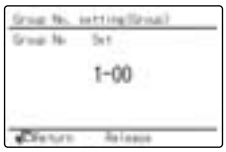
2. Select Group No. setting the field setting menu, and press Menu/Enter button.
   Group No. setting screen is displayed.

(3) <Group No. setting>



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

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



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

Note:

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

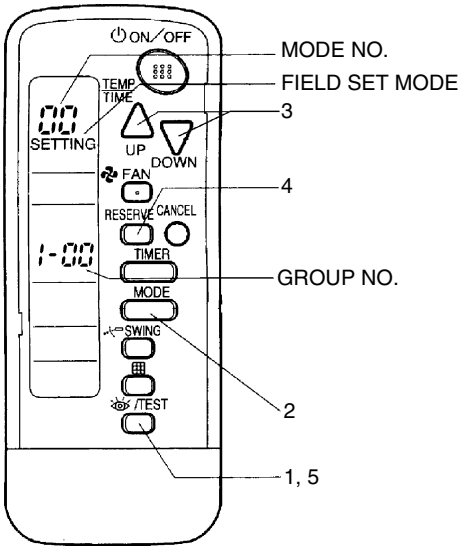
NOTICE

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

BRC7C Type
BRC7E Type
BRC4C Type

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

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



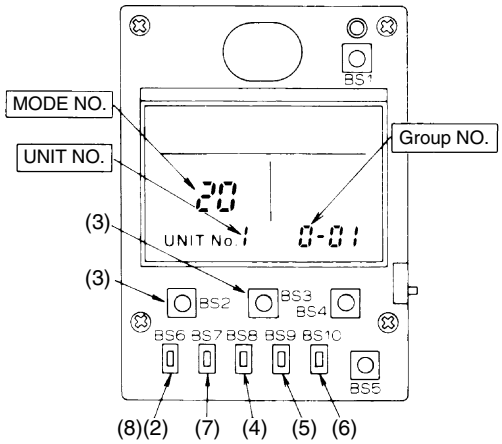
BRC2A Type
BRC2C Type

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

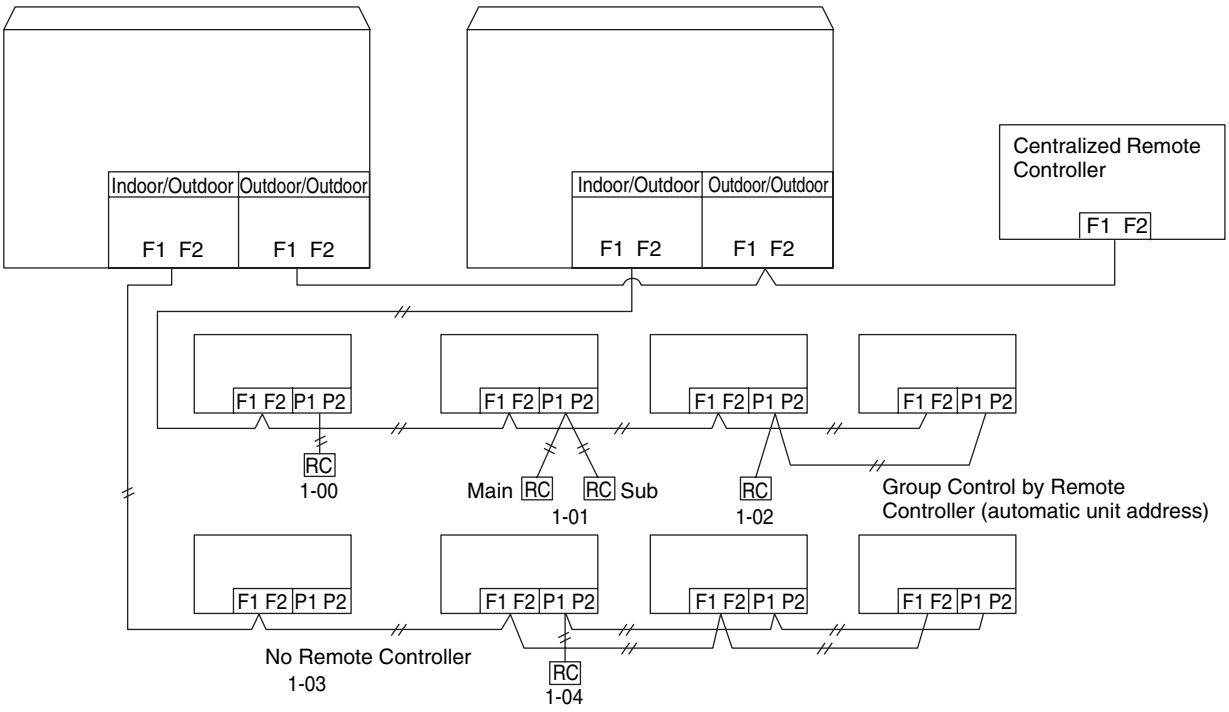
1. Dismount the upper casing from the remote controller.
2. Press the [BS6] button (2) (field setting) to set the system to field setting mode.
3. Press the [BS2] button (3) (temperature setting " ▲ ") or the [BS3] (3) temperature setting " ▼ ") to set the Mode No. to "00".
4. Press the [BS9] button (4) (setting A) or the [BS10] button (4) (setting B) to select a Group No.
   (The group numbers increase like 1-00, 1-01, · · · 1-15, 2-00, · · ·, 4-15. However, the ON/OFF controller only displays group numbers in the range selected by the control range setting switch.)
5. Press the [BS7] button (5) (setting/cancel) to determine the Group No. selected.
6. Press the [BS6] button (2) (field setting) to return the system to normal mode.

<CAUTION>

- Even if no remote controller is used, connect a remote controller to make Group No. setting, make setting of Group No. for central control, and then disconnect the remote controller after the completion of setting.
- To make Group No. setting, turn on the power supply of the central controller, ON/OFF controller, and indoor unit, respectively.



Group No. Setting Example



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

3.1.8 Setting of Operation Control Mode from Remote Controller (Local 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 next page.)
Centralized remote controller is normally available for operations. (Except when centralized monitor is connected)

3.1.9 Contents of Control Modes

Twenty modes consisting of combinations of the following five 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.

How to Select Operation Mode

Whether operation by remote controller will be possible or not for turning on/off, controlling temperature or setting operation mode is selected and decided by the operation mode given on the right edge of the table below.

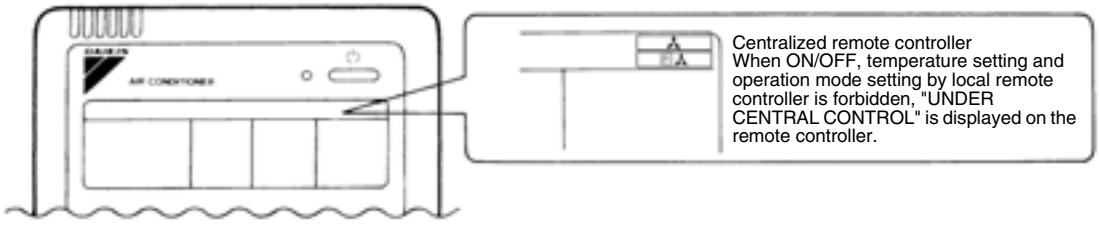
Example

ON by remote controller (Unified ON by centralized remote controller)	OFF by remote controller (Unified OFF by centralized remote controller)	OFF by remote controller	Temperature control by remote controller	Operation mode setting by remote controller	
↓	↓	↓	↓	↓	⇨ Control mode is "1."
Rejection	Rejection	Rejection	Acceptance	Acceptance	

Control mode	Control by remote controller					Control mode
	Operation		OFF	Temperature control	Operation mode setting	
	Unified operation, individual operation by centralized remote controller, or operation controlled by timer	Unified OFF, 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
OFF control only 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 ∗1
					Rejection	17
Timer operation possible by remote controller	Acceptance (During timer at ON position only)	Acceptance (During timer at ON position only)		Rejection	Acceptance	8
					Rejection	18
				Acceptance	Acceptance	9
					Rejection	19

Do not select “timer operation possible by remote controller” if not using a remote controller. Operation by timer is impossible in this case.

∗1. Factory setting



3.2 Field Setting from Outdoor Unit

■ **List of Field Setting Items**

This following section indicates the list of field setting items. For the lists of dip switch contents, Setting mode 1, and Setting mode 2, refer to information in tables shown on the following page onward.

For setting items of (*1), refer to detailed information provided on P.178 onward.

3.2.1 Function Setting

Setting item			Content and objective of setting	Overview of setting procedure
Function setting	1	Setting of COOL/ HEAT selection (*1)	■ COOL/HEAT selection methods are possible to select from the following (1) Control by each outdoor unit using the indoor unit remote controller (2) Batch control by outdoor unit group using the indoor unit remote controller (3) Batch control by some groups using the COOL/HEAT centralized remote controller	■ For outdoor unit group control, set the system to "BATCH MASTER" or "SLAVE" while in "Setting mode 1". Then, make setting of COOL/HEAT batch address.
	2	Setting of low noise operation (*1)	A. Use external input to step down the upper limit of the fan (factory setting to Step 8), providing low noise level. (1) Mode 1: Step 5 or lower (2) Mode 2: Step 4 or lower (3) Mode 3: Step 3 or lower	■ Use the "External control adaptor for outdoor unit". Set to "External control adaptor for outdoor unit" with No. 12 of "Setting mode 2" and select the mode with No. 25. If necessary, set the "Capacity priority setting" to ON with No. 29.
			B. The low noise operation aforementioned is enabled in nighttime automatic low noise operation mode. Start time: Possible to select in the range of 20:00 to 24:00 hours. End time: Possible to select in the range of 06:00 to 08:00 hours. (Use the said time as a guide since the start time and the end time are estimated according to outdoor temperatures.)	■ Make this setting while in "Setting mode 2". Select a mode with No. 22 of "Setting mode 2". Select the start time with No. 26 and the end time with No. 27. If necessary, set the "Capacity priority setting" to ON with No. 29.
	3	Setting of demand operation (*1)	■ Used to place limits on the compressor operating frequency to control the upper limit of power consumption. (1) Mode 1 of Demand 1: 60% or less of rating (2) Mode 2 of Demand 1: 70% or less of rating (3) Mode 3 of Demand 1: 80% or less of rating (4) Demand 2: 40% or less of rating (5) Demand 3: Forced thermostat OFF	■ Method of setting with "External control adaptor" Select Demands 1 to 3 following the method of short-circuiting the terminal block (TeS1). ■ Method of setting only in "Setting mode 2" Select Demand 1 or 2 with No. 32 in "Setting mode 2". When Demand 1 is selected, further select Level 1 to 3 with No. 30 in "Setting mode 2".
	4	Setting of AIRNET address	■ Used to make address setting with AIRNET connected.	■ Set the AIRNET to an intended address using binary numbers with No. 13 of "Setting mode 2".
	5	Setting of high static pressure	■ Make this setting to operate a system with diffuser duct while in high static pressure mode. (Use this setting mode when shields are installed on upper floors or balconies.) * In order to mount the diffuser duct, remove the cover from the outdoor unit fan.	■ Set No. 18 of "Setting mode 2" to ON.

3.2.2 Service Setting

Setting item			Content and objective of setting	Overview of setting procedure
Service setting	1	Indoor unit fan forced H operation	■ Used to operate the indoor unit in the stopped state in forced H operation mode.	■ Set No. 5 of "Setting mode 2" to indoor unit forced fan H.
	2	Indoor unit forced operation	■ Used to operate the indoor unit in forced operation mode.	■ Set No. 6 of "Setting mode 2" to indoor unit forced operation mode.
	3	Change of targeted evaporating temperature (in cooling)	■ In cooling operation, used to change the targeted evaporating temperature for compressor capacity control.	■ Select high side or low side with No. 8 of "Setting mode 2".
	4	Change of targeted condensing temperature (in heating)	■ In heating operation, used to change the targeted condensing temperature for compressor capacity control.	■ Select high side or low side with No. 9 of "Setting mode 2".
	5	Setting of defrost selection	■ Used to change a temperature at which the defrost operation is initiated, thus making the initiation easy or hard.	■ Select fast side or slow side with No. 10 of "Setting mode 2".
	6	Setting of sequential startup	■ Used to start units not in sequence but simultaneously.	■ Set No. 11 of "Setting mode 2" to NONE.
	7	Emergency operation (*1)	■ If the compressor has a failure, used to prohibit the operation of compressor(s) concerned or outdoor unit(s) concerned and to conduct emergency operation of the system only with operable compressor(s) or outdoor unit(s).	■ Make this setting while in "Setting mode 2". For system with multiple outdoor units: Set with No. 38, 39, or 40.
	8	Airtight test	■ Fully open the expansion valves of the indoor and outdoor units, and energize part of solenoid valves.	■ Set No. 21 of "Setting mode 2" to ON.
	9	Refrigerant recovery mode (*1)	■ Used to recover refrigerant on site. With operations of indoor and outdoor units prohibited, fully open the expansion valve of the indoor and outdoor units.	■ Set No. 21 of "Setting mode 2" to ON.
	10	Vacuuming mode (*1)	■ Used to conduct vacuuming on site. Fully open the expansion valves of the indoor and outdoor units, and energize part of solenoid valves. Use a vacuum pump to conduct vacuuming.	■ Set No. 21 of "Setting mode 2" to ON.
	11	Power transistor check mode	■ Used for the troubleshooting of DC compressors. Inverter waveform output makes it possible to judge whether a malfunction results from the compressor or the PCB.	■ Set No. 28 of "Setting mode 2" to ON.
	12	Setting of model with spare PCB	■ In order to replace the PCB by a spare one, be sure to make model setting.	■ For this setting, set the DS2-2, -3, and-4 switches on the PCB to the model concerned.

For setting items of (*1), refer to detailed information provided on P.188 onward.

3.2.3 Setting by Dip Switches

<Outdoor Units>

Using dip switches on the PCB enables field setting shown below. However, make no changes of factory settings except for DS1-1.

Dipswitch		Setting item	Description
No.	Setting		
DS1-1 ~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)		

Setting at replacement by spare PCB

Caution **DIP switch Setting after changing the main PCB (A1P) to spare parts PCB.**

After the replacement by the spare PCB, be sure to make settings shown below.
When you change the main PCB (A1P) to spare parts PCB, please carry out the following setting.

Initial conditions of dip switches

DIP Switch Detail

DS No.	Item	Contents	
DS1-1	—	ON	Do not change the factory settings.
		OFF (Factory setting of spare PCB)	
DS1-2	Power supply specification	ON	200V class (220V)
		OFF (Factory setting of spare PCB)	400V class (380V)
DS1-3	—	ON	Do not change the factory settings.
		OFF (Factory setting of spare PCB)	
DS1-4	Unit allocation setting	ON	Make the following settings according to allocation of unit. (All models are set to OFF at factory.)
DS2-1		OFF (Factory setting of spare PCB)	

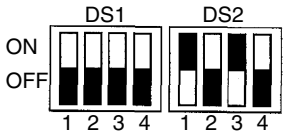
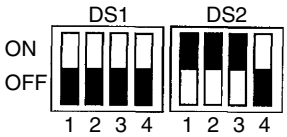
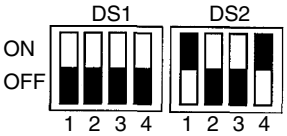
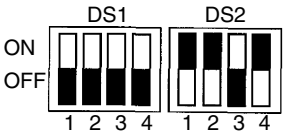
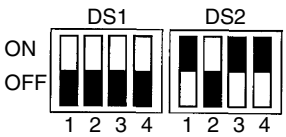
	Domestic Japan	Overseas General	Europe
DS1-4	OFF	OFF	ON
DS2-1	OFF	ON	OFF

DS No.	Item	Contents
DS2-2	Model setting	Make the following settings according to models of outdoor units. (All models are set to OFF at factory.)
DS2-3		
DS2-4		

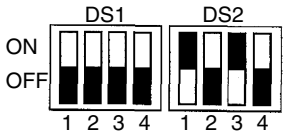
	RTSQ8P	RTSQ10P	RTSQ12P	RTSQ14P	RTSQ16P
DS2-2	OFF	ON	OFF	ON	OFF
DS2-3	ON	ON	OFF	OFF	ON
DS2-4	OFF	OFF	ON	ON	ON

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

"Detail of DS1-1~4, DS2-1~4 setting" (for Overseas general)

Unit	Setting method (■ represents the position of switches)	
HEAT PUMP(8HP) RTSQ8PY1		Set DS2-1 and DS2-3 to ON.
HEAT PUMP(10HP) RTSQ10PY1		Set DS2-1, DS2-2 and DS2-3 to ON.
HEAT PUMP(12HP) RTSQ12PY1		Set DS2-1 and DS2-4 to ON.
HEAT PUMP(14HP) RTSQ14PY1		Set DS2-1, DS2-2 and DS2-4 to ON.
HEAT PUMP(16HP) RTSQ16PY1		Set DS2-1, DS2-3 and DS2-4 to ON.

<Function Units>

Unit	Setting method (■ represents the position of switches)	
BTSQ20PY1(E)		Set DS2-1 and DS2-3 to ON.

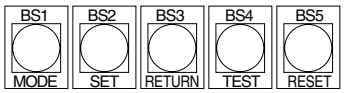
3.2.4 Setting by Pushbutton Switches

The following settings are made by pushbutton switches on PCB.
In case of multi-outdoor unit system, various items should be set with the master unit.
(Setting with the slave unit is disabled.)
The master unit and slave unit can be discriminated with the LED display as shown below.

LED display

		MODE H1P	TEST H2P	COOL/HEAT select			Low noise H6P	Demand H7P	Multi H8P
				IND H3P	MASTER H4P	SLAVE H5P			
Single-outdoor-unit system		●	●	○	●	●	●	●	●
Outdoor-multi system	Master	●	●	○	●	●	●	●	○
	Slave	●	●	●	●	●	●	●	◑

(Factory setting)



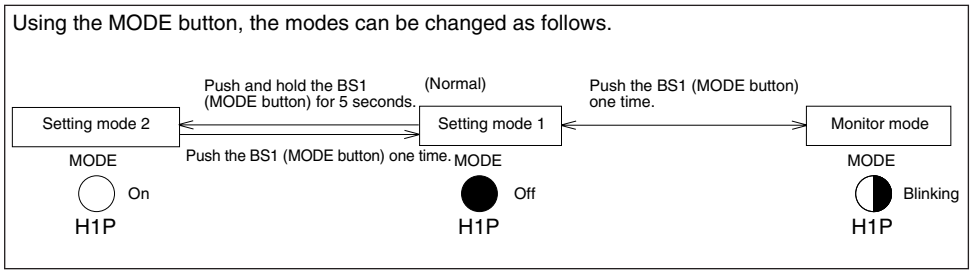
There are the following three setting modes.

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

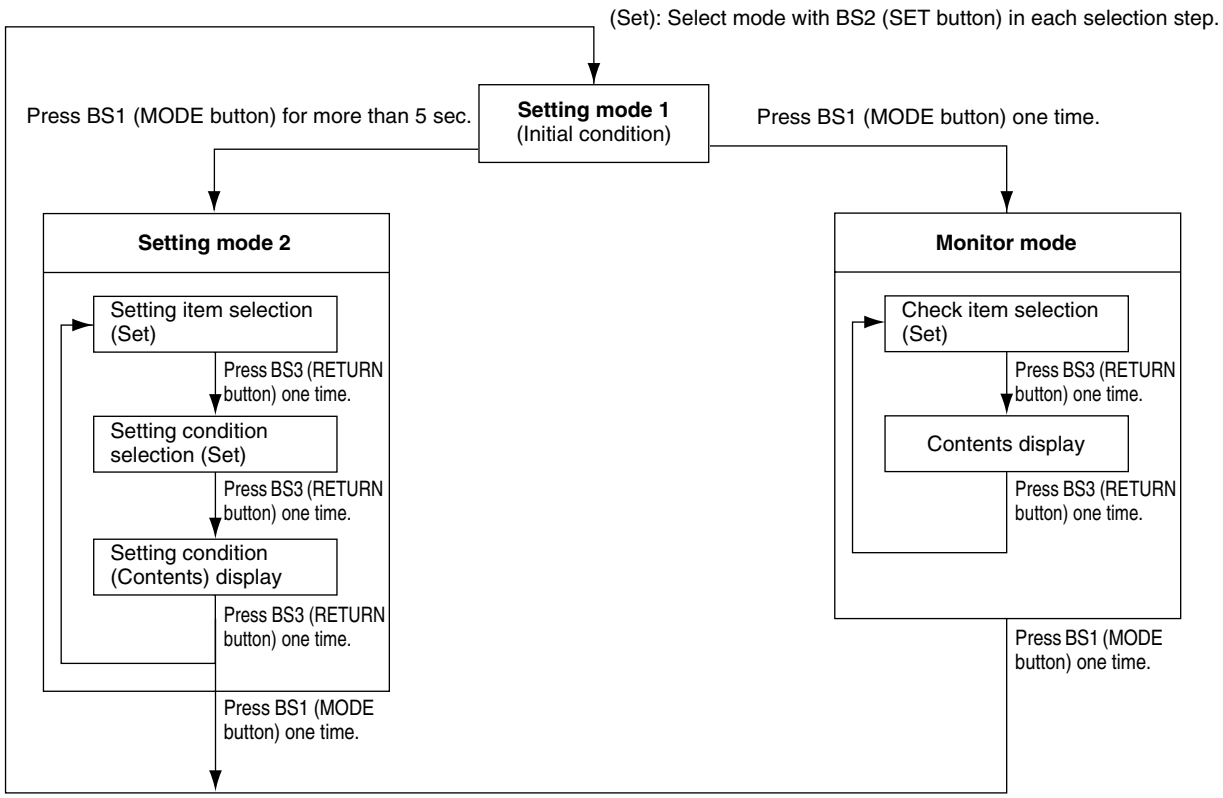
② **Setting mode 2 (H1P on)**
Used to modify the operating status and to set program addresses, etc. Usually used in servicing the system.

③ **Monitor mode (H1P blinks)**
Used to check the program made in Setting mode 2.

■ **Mode changing procedure 1**



■ **Mode changing procedure 2**



a. “Setting mode 1”

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

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

Procedure for changing COOL/HEAT selection setting

Normally, “Setting mode 1” is set. In case of other status, push MODE (BS1) button one time and set to “Setting mode 1”.

Push the SET (BS2) button to set the blinking of LED to any of conditions shown on the right.

Push the RETURN (BS3) button to determine the setting.

Pushing the RETURN (BS3) button will return the system to the initial condition of "Setting mode 1".

○ ON
● OFF
◑ Blink

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

Procedure for checking check items

The system is normally set to "Setting mode 1".
Should the system be set to any mode other than that, push the MODE (BS1) button to set the system to "Setting mode 1".

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

Pushing the RETURN (BS3) button will bring the system to the initial state of "Setting mode 1".

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

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

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

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

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

b. “Setting mode 2”

Push and hold the MODE (BS1) button for 5 seconds and set to “Setting mode 2”.

<Selection of setting items>

Push the SET (BS2) button and set the LED display to a setting item shown in the table on the right.
↓
Push the RETURN (BS3) button and decide the item. (The present setting condition is blinked.)

<Selection of setting conditions>

Push the SET (BS2) button and set to the setting condition you want.
↓
Push the RETURN (BS3) button and decide the condition.

Push the RETURN (BS3) button and set to the initial status of “Setting mode 2”.

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

No.	Setting item	Description
0	Digital pressure gauge kit display	Used to make setting of contents to display on the digital pressure gauges (e.g. pressure sensors and temperature sensors)
1	Cool/Heat unified address	Sets address for cool/heat unified operation.
2	Low noise/demand address	Address for low noise/demand operation
3	Test operation settings	Used to conduct test operation without making changes to the PCB and replacing the refrigerant, after the completion of maintenance.
5	Indoor unit forced fan H	Allows forced operation of indoor unit fan while unit is stopped. (H tap)
6	Indoor unit forced operation	Allows forced operation of indoor unit.
8	Te setting	Target evaporation temperature for cooling
9	Tc setting	Target condensation temperature for heating
10	Defrost changeover setting	Changes the temperature condition for defrost and sets to quick defrost or slow defrost.
11	Sequential operation setting	Sets sequential operation (Factory setting to ON)
12	External low noise setting / Demand setting	Reception of external low noise or demand signal
13	AIRNET address	Set address for AIRNET.
16	Setting of hot water	Make this setting to conduct heating operation with hot water heater.
18	High static pressure setting	Make this setting in the case of operating in high static pressure mode with diffuser duct mounted. (In order to mount the diffuser duct, remove the cover from the outdoor unit fan.)
19	Emergency operation	Used to operate system only with inverter compressor when STD compressor malfunctions. This is a temporary operation extremely impairing comfortable environment. Therefore, prompt replacement of the compressor is required. (This operation, however, is not set with RXYQ5, 8P.)
20	Additional refrigerant charge operation setting	Carries out additional refrigerant charge operation.
21	Refrigerant recovery/ vacuuming mode setting	Sets to refrigerant recovery or vacuuming mode. Indoor unit Electronic expansion valve →Fully open Outdoor unit Part of electronic expansion valve and solenoid valve→Fully open
22	Night-time low noise setting	Sets automatic nighttime low noise operation in a simple way. The operating time is based on “Starting set” and “Ending set”.
24	ENECUT test operation	Used to forcedly turn ON the ENECUT. (Be noted that the ENECUT is only functional with outdoor unit in the stopped state - Japanese domestic model only.)
25	Setting of external low noise level	Sets low noise level when the low noise signal is input from outside.
26	Night-time low noise operation start setting	Sets starting time of nighttime low noise operation. (Night-time low noise setting is also required.)
27	Night-time low noise operation end setting	Sets ending time of nighttime low noise operation. (Night-time low noise setting is also required.)
28	Power transistor check mode ∗Check after disconnection of compressor wires	Used for trouble diagnosis of DC compressor. Since the waveform of inverter is output without wiring to the compressor, it is convenient to probe whether the trouble comes from the compressor or PCB.
29	Capacity precedence setting	If the capacity control is required, the low noise control is automatically released by this setting during carrying out low noise operation and nighttime low noise operation.
30	Demand setting 1	Changes target value of power consumption when demand control 1 is input.
32	Normal demand setting	Normally enables demand control 1 or 2 without external input. (Effective to prevent a problem that circuit breaker of small capacity is shut down due to large load.)

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

No.	Setting item	Description
38	Emergency operation 1 (Setting for the master unit operation prohibition in multi-outdoor-unit system)	<RTSYQ20P> Prohibits operation of master unit.
39	Emergency operation 2 (Setting for the slave unit 1 operation prohibition in multi-outdoor-unit system)	Prohibits operation of slave unit.
42	Emergency operation 3 (prohibition of INV compressor operation)	Prohibits operation of inverter compressor of outdoor unit or function unit.
51	Set-up of master / slave units for multi outdoor units	Set up master and slave units for multi-connection outdoor units. After setting up, press the BS5 (REWIRING) button for 5 seconds or more.

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

No.	Setting item display								Setting condition display		
	Setting item	MODE H1P	TEST H2P	C/H selection			Low noise H6P	Demand H7P			
				IND H3P	Master H4P	Slave H5P					✻ Factory setting
0	Digital pressure gauge kit display	○	●	●	●	●	●	●	Address (Binary number (4 digits))	0 1 ~ 15	○●●●●● ○●●●●○ ○●●○○○
1	Cool/Heat Unified address	○	●	●	●	●	●	○	Address (Binary number (6 digits))	0 1 ~ 31	○●●●●●✻ ○●●●●○ ○●○○○○
2	Low noise/demand address	○	●	●	●	●	○	●	Address (Binary number (6 digits))	0 1 ~ 31	○●●●●●✻ ○●●●●○ ○●○○○○
3	Test operation (Refer to the description on page	○	●	●	●	●	○	○	Test operation: OFF Test operation: ON		○●●●●○●✻ ○●●●●○
5	Indoor forced fan H	○	●	●	●	○	●	○	Normal operation Indoor forced fan H		○●●●●○✻ ○●●●○●
6	Indoor forced operation	○	●	●	●	○	○	●	Normal operation Indoor forced operation		○●●●●○✻ ○●●●○●
8	Te setting	○	●	●	○	●	●	●	Low (Level L) Normal (Level M) High ① High ② High ③ High ④ High ⑤ (Level H)		○●●●●○ ○●●●●○●✻ ○●●●○○ ○●●●○●● ○●●●○●○ ○●●●○○● ○●●●○○○
9	Tc setting	○	●	●	○	●	●	○	Low Normal (factory setting) High		○●●●●○ ○●●●●○●✻ ○●●●○●●
10	Defrost changeover setting	○	●	●	○	●	○	●	Slow defrost Normal (factory setting) Quick defrost		○●●●●○ ○●●●●○●✻ ○●●●○●●
11	Sequential operation setting	○	●	●	○	●	○	○	OFF ON		○●●●●○ ○●●●●○●✻
12	External low noise/ demand setting	○	●	●	○	○	●	●	External low noise/demand: NO External low noise/demand: YES		○●●●●○✻ ○●●●●○●
13	AIRNET address	○	●	●	○	○	●	○	Address (Binary number (6 digits))	0 1 ~ 63	○●●●●●✻ ○●●●●○ ○○○○○○
16	Setting of hot water heater	○	●	○	●	●	●	●	OFF ON		○●●●●○✻ ○●●●○●
18	High static pressure setting	○	●	○	●	●	○	●	High static pressure setting: OFF High static pressure setting: ON		○●●●●○✻ ○●●●○●
19	Emergency operation (STD compressor is inhibited to operate.)	○	●	○	●	●	○	○	OFF STD 1, 2 operation: Inhibited STD 2 operation: Inhibited		○●●●●●✻ ○●●●●○ ○●●●○●
20	Additional refrigerant charging operation setting	○	●	○	●	○	●	●	Refrigerant charging: OFF Refrigerant charging: ON		○●●●●○✻ ○●●●○●
21	Refrigerant recovery/vacuuming mode setting	○	●	○	●	○	●	○	Refrigerant recovery / vacuuming: OFF Refrigerant recovery / vacuuming: ON		○●●●●○✻ ○●●●○●

No.	Setting item display: 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 display (✻ Factory setting)	
22	Night-time low noise setting	○	●	○	●	○	○	●	OFF	○●●●●●✻
									Level 1 (outdoor fan with 6 step or lower)	○●●●●○
									Level 2 (outdoor fan with 5 step or lower)	○●●●●○●
									Level 3 (outdoor fan with 4 step or lower)	○●●●●○○
24	ENECUT test operation (Domestic Japan only)	○	●	○	○	●	●	●	ENECUT output OFF	○●●●●○✻
									ENECUT output forced ON	○●●●●○●
25	Low noise setting	○	●	○	○	●	●	○	Level 1 (outdoor fan with 5 step or lower)	○●●●●○
									Level 2 (outdoor fan with 4 step or lower)	○●●●●○●✻
									Level 3 (outdoor fan with 3 step or lower)	○●●●○●●
26	Night-time low noise operation start setting	○	●	○	○	●	○	●	About 20:00	○●●●●○
									About 22:00 (factory setting)	○●●●●○●✻
									About 24:00	○●●●○●●
27	Night-time low noise operation end setting	○	●	○	○	●	○	○	About 6:00	○●●●●●○
									About 7:00	○●●●●○●
									About 8:00 (factory setting)	○●●●○●●✻
28	Power transistor check mode	○	●	○	○	○	●	●	OFF	○●●●●●○✻
									ON	○●●●●○●
29	Capacity precedence setting	○	●	○	○	○	●	○	OFF	○●●●●●○✻
									ON	○●●●●○●
30	Demand setting 1	○	●	○	○	○	○	●	60 % demand (Level 1)	○●●●●●○
									70 % demand (Level 2)	○●●●●○●✻
									80 % demand (Level 3)	○●●●○●●
32	Normal demand setting	○	○	●	●	●	●	●	OFF	○●●●●●○✻
									Demand 1	○●●●●○●
									Demand 2	○●●●○●●
38	Emergency operation 1	○	○	●	●	○	○	●	OFF	○●●●●●○✻
									Master unit operation: Inhibited	○●●●●○●
39	Emergency operation 2	○	○	●	●	○	○	○	OFF	○●●●●●○✻
									Slave unit 1 operation: Inhibited	○●●●●○●
42	Emergency operation 3	○	○	●	○	●	○	●	OFF	○●●●●●○✻
									Prohibition of INV compressor operation	○●●●●○●
51	Master-slave set-up for multi outdoor units	○	○	○	●	●	○	○	Automatic judgement	○●●●●●✻
									Master	○●●●●●○
									Slave	○●●●●○●

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

c. Monitor mode

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

<Selection of setting item>

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

<Confirmation on setting contents>

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

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

* Push the MODE (BS1) button and returns to "Setting mode 1".

No.	Setting item	LED display							Data display
		H1P	H2P	H3P	H4P	H5P	H6P	H7P	
0	Various settings	◑	●	●	●	●	●	●	Lower 4 digits
2	Low noise/demand address	◑	●	●	●	●	○	●	Lower 6 digits
4	AIRNET address	◑	●	●	●	○	●	●	
5	Number of connected indoor units *1	◑	●	●	●	○	●	○	
7	Number of connected zone units (Fixed to "0")	◑	●	●	●	○	○	○	
8	Number of outdoor units *3	◑	●	●	○	●	●	●	
11	Number of zone units	◑	●	●	○	●	○	○	Lower 6 digits
12	Number of terminal units *5	◑	●	●	○	○	●	●	Lower 4 digits: upper
13	Number of terminal units *5	◑	●	●	○	○	●	○	Lower 4 digits: lower
14	Contents of malfunction (the latest)	◑	●	●	○	○	○	●	Malfunction code table
15	Contents of malfunction (1 cycle before)	◑	●	●	○	○	○	○	Refer to P.216.
16	Contents of malfunction (2 cycle before)	◑	●	○	●	●	●	●	
20	Contents of retry (the latest)	◑	●	○	●	○	●	●	
21	Contents of retry (1 cycle before)	◑	●	○	●	○	●	○	
22	Contents of retry (2 cycle before)	◑	●	○	●	○	○	●	
25	Number of multi connection outdoor units	◑	●	○	○	●	●	○	Lower 6 digits

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

*1: Number of connected indoor units
Used to make setting of the number of indoor units connected to an outdoor unit.

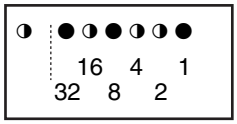
*2: Number of outdoor units
Used to make setting of the number of outdoor units connected to DIII-NET that is one of the communication lines.

*3: Number of terminal units
Used to make setting of the number of indoor units connected to DIII-NET that is one of the communication lines.
(Only available for VRV indoor units)

Setting item 0 Display contents of "Number of units for various settings"

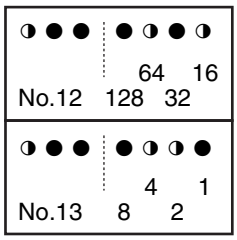
EMG operation / backup operation setting	ON	◑	●	●	○	●	●	●
	OFF	◑	●	●	●	●	●	●
Defrost select setting	Short	◑	●	●	●	○	●	●
	Medium	◑	●	●	●	◑	●	●
	Long	◑	●	●	●	●	●	●
Te setting	L	◑	●	●	●	●	●	●
	M	◑	●	●	●	●	◑	●
	H ①~⑤	◑	●	●	●	●	○	●
Tc setting	L	◑	●	●	●	●	●	●
	M	◑	●	●	●	●	●	◑
	H	◑	●	●	●	●	●	○

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



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

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



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

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

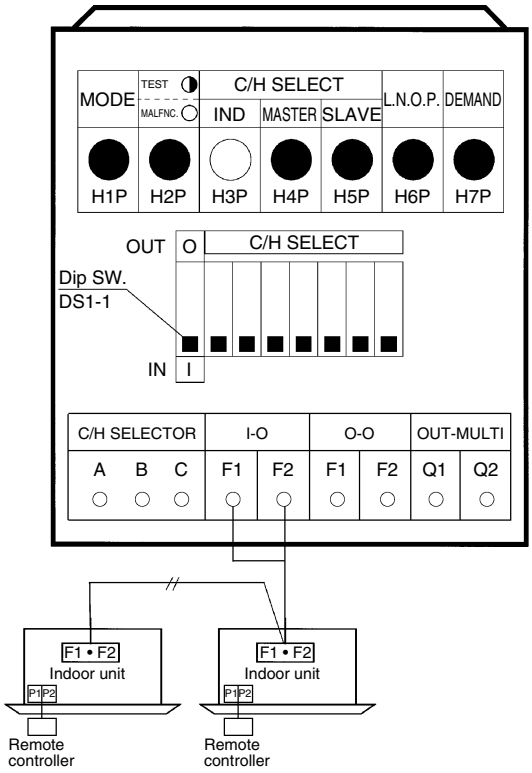
3.2.5 Cool / Heat Mode Switching

There are the following 4 cool/heat switching modes.

① Set cool/heat separately for each outdoor unit system by indoor unit remote controller.
② Set cool/heat separately for each outdoor unit system by cool/heat selector.
③ Set cool/heat for more than one outdoor unit system simultaneously in accordance with unified master outdoor unit by indoor unit remote controller.
④ Set cool/heat for more than one outdoor unit system simultaneously in accordance with unified master outdoor unit by cool/heat switching remote controller.

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

- ◆ It does not matter whether or not there is outdoor - outdoor unit wiring.
- ◆ Set outdoor unit PCB DS1-1 to IN (factory setting).
- ◆ Set cool/heat switching to IND (individual) for "Setting mode 1" (factory setting).
- ◆ Set the master unit (= indoor unit having the right to select the cooling/heating operation mode).



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

In the case of wired remote controllers

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

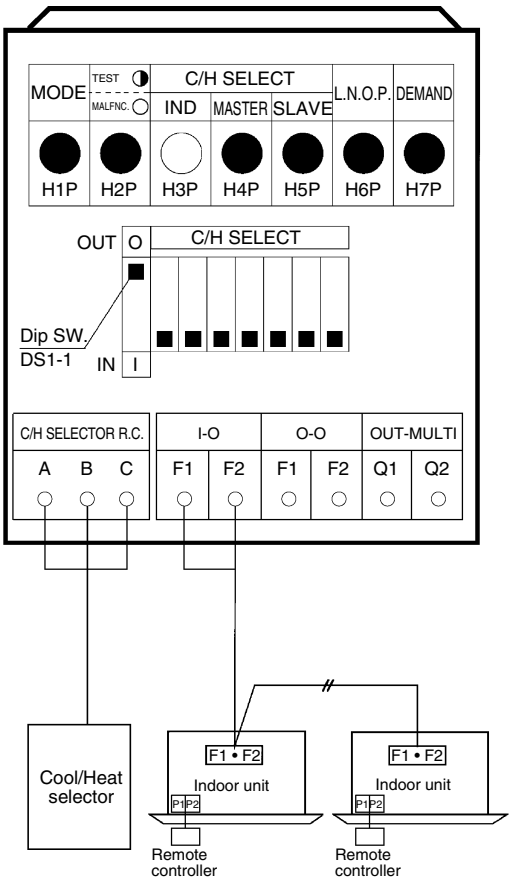
For the details, refer to the installation manual supplied together with the indoor unit.

In the case of wireless remote controllers

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

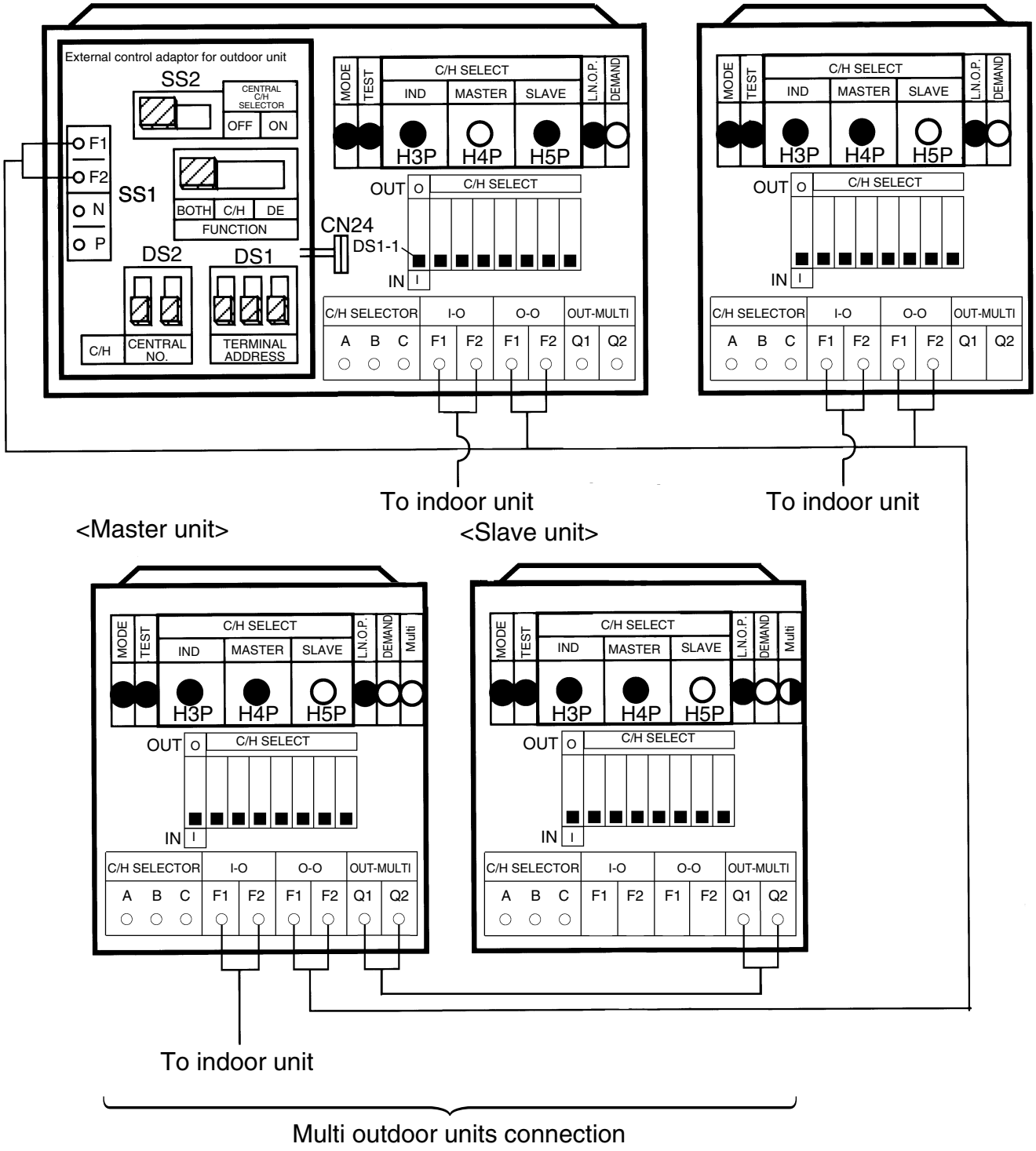
(2) Set Cool / Heat Separately for Each Outdoor Unit System by Cool / Heat Selector

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



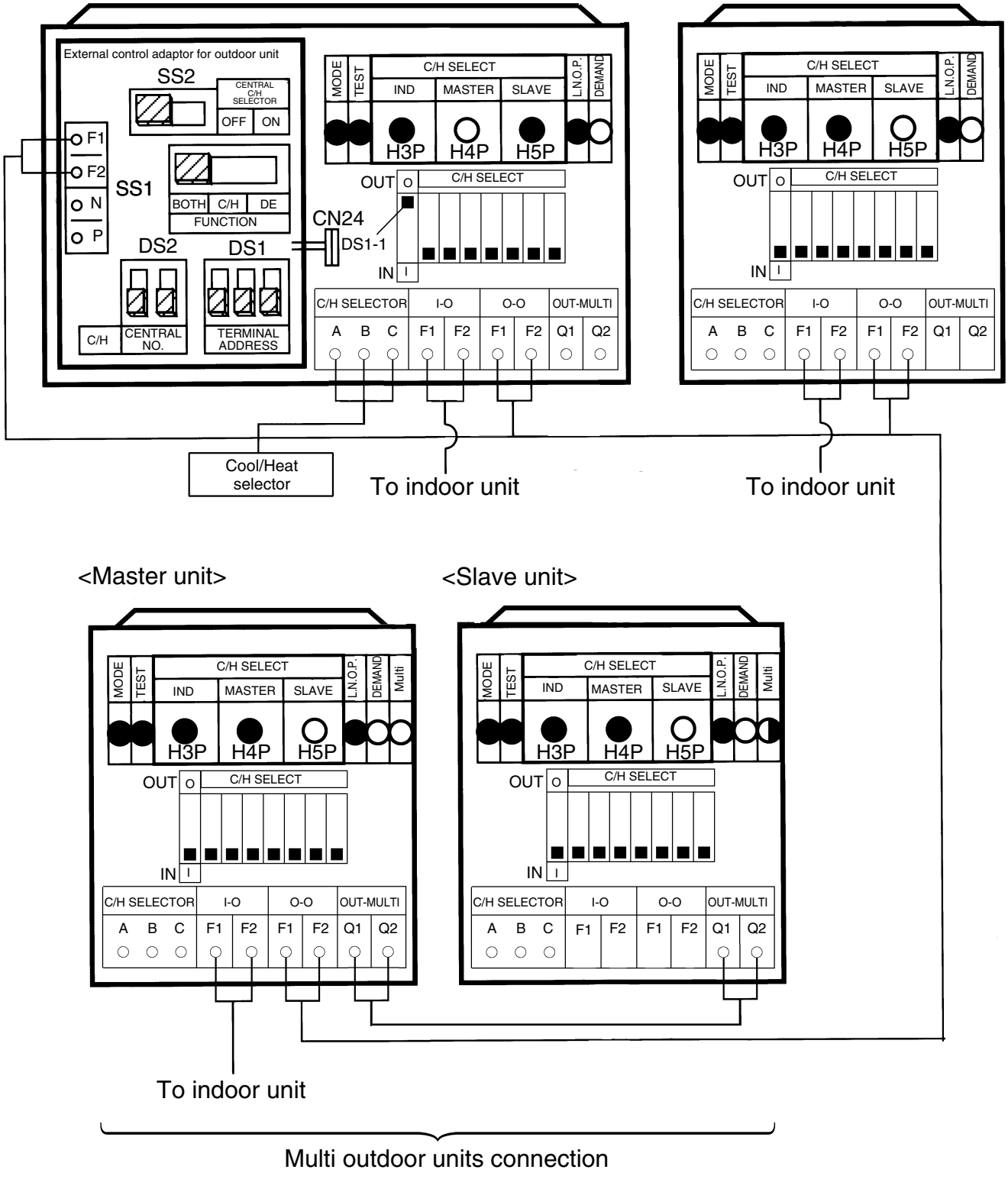
(3) Set Cool / Heat for More Than One Outdoor Unit System Simultaneously in Accordance with Unified Master Outdoor Unit by Indoor Unit Remote Controller

- Install the external control adaptor for outdoor unit on either the outdoor-outdoor, indoor-outdoor transmission line.
- Set outdoor unit PCB DS1-1 to IN (factory setting).
- In setting mode 1, set the outdoor unit you want to give cool/heat selection permission to as the group master, and set the other outdoor units as group slave units.
- Set the outdoor unit external control adaptor SS1 to BOTH (factory setting) or C/H, and SS2 to OFF (factory setting).



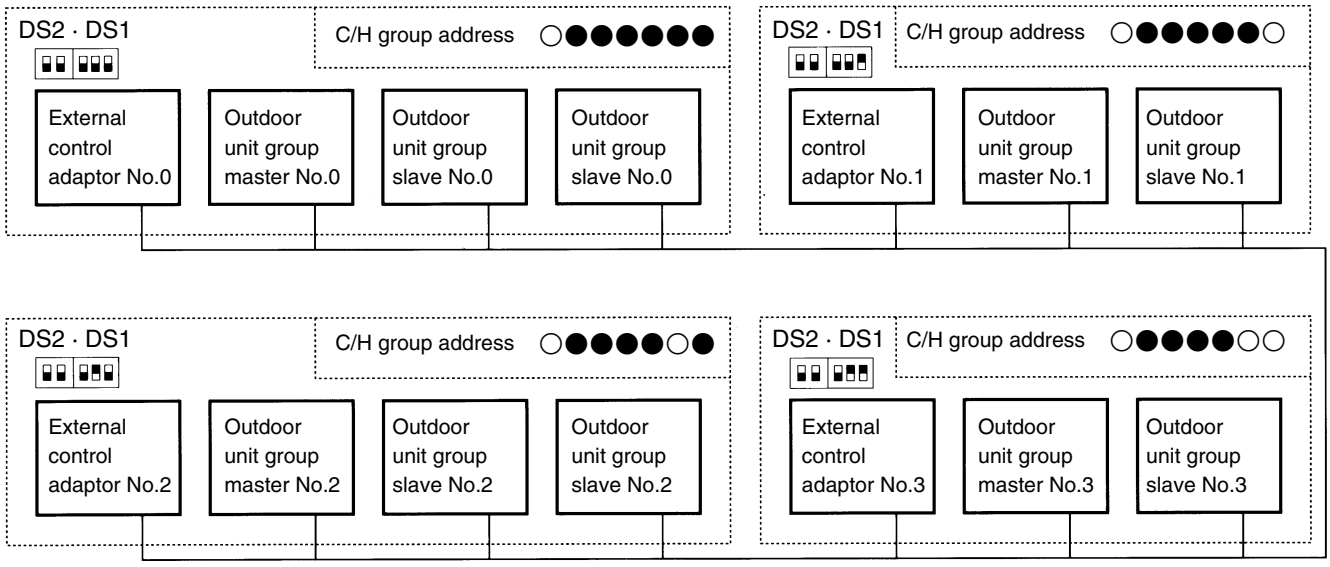
(4) Set Cool / Heat for More Than One Outdoor Unit System Simultaneously in Accordance with Unified Master Outdoor Unit by Cool / Heat Selector

- Install the external control adaptor for outdoor unit on either the outdoor-outdoor, indoor-outdoor transmission line.
- Mount the COOL/HEAT selector to the master outdoor unit for the unified control.
- Set the DS1-1 on the PCB of master outdoor unit to OUT.
- In setting mode 1, set the outdoor unit you want to give cool/heat selection permission to as the group master, and set the other outdoor units as group slave units.
- Set the outdoor unit external control adaptor SS1 to BOTH (factory setting) or C/H, and SS2 to OFF (factory setting).



Supplementation on (3) and (4).

When switching cool/heat for each adaptor PCB with the use of more than one adaptor PCB, set the address of the external control adaptor for outdoor unit PCB DS1 and DS2 so that it matches the unified cool/heat address of outdoor unit main PCB.



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

Address No.	Outdoor unit PCB LED Set with setting mode 2	External control adaptor for outdoor 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)

3.2.6 Setting of Low Noise Operation and Demand Operation

(1) Setting of Low Noise Operation

By connecting the external contact input to the low noise input of the outdoor unit external control adaptor (optional), you can use low noise operating.

Setting	Content
Level 1	Set the outdoor unit fan to Step 5 or lower.
Level 2	Set the outdoor unit fan to Step 4 or lower.
Level 3	Set the outdoor unit fan to Step 3 or lower.

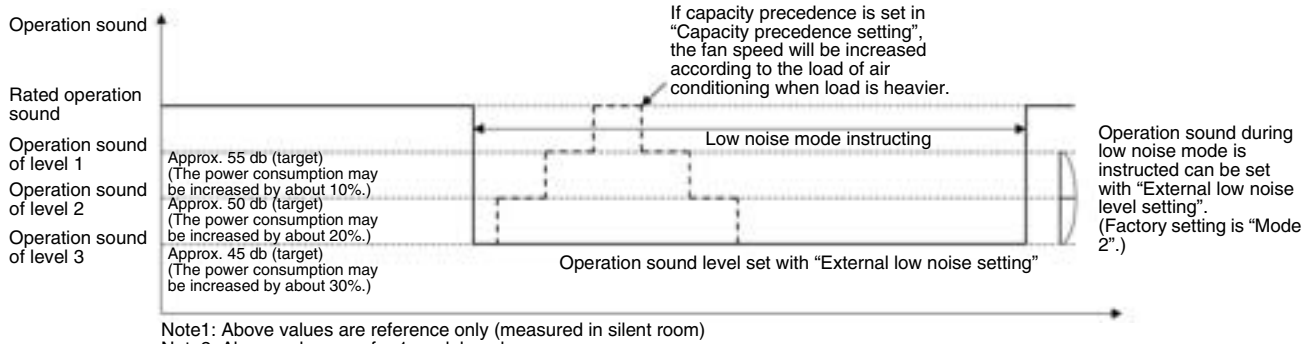
A. When the low noise operation is carried out by external contacts (with the use of the external control adaptor for outdoor unit)

1. Connect the external adaptor for the outdoor unit, and then connect the external input wiring to the low-noise operation input terminal on the terminal block (TeS1).
2. While in "Setting mode 2", set the setting condition for set item No. 12 (Setting of external low noise/demand operation) to "YES".
3. If necessary, while in "Setting mode 2", select the setting condition (i.e., "Level 1", "Level 2", or "Level 3") for set item No. 25 (Setting of external low noise level).
4. If necessary, while in "Setting mode 2", set the setting condition for the set item No. 29 (Setting of capacity precedence) to "ON".
   (If the condition is set to "ON", when the air-conditioning load reaches a high level, the low noise operation command will be ignored to put the system into normal operation mode.)

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

1. While in "Setting mode 2", select the setting condition (i.e., "Level 1", "Level 2", or "Level 3") for set item No. 22 (Setting of nighttime low noise level).
2. If necessary, while in "Setting mode 2", select the setting condition (i.e., "20:00", "22:00", or "24:00") for set item No. 26 (Setting of start time of nighttime low noise operation).
   (Use the start time as a guide since it is estimated according to outdoor temperatures.)
3. If necessary, while in "Setting mode 2", select the setting condition (i.e., "06:00", "07:00", or "08:00") for set item No. 27 (Setting of end time of nighttime low noise operation).
   (Use the end time as a guide since it is estimated according to outdoor temperatures.)
4. If necessary, while in "Setting mode 2", set the setting condition for set item No. 29 (Setting of capacity precedence) to "ON".
   (If the condition is set to "ON", when the air-conditioning load reaches a high level, the system will be put into normal operation mode even during nighttime.)

Image of operation in the case of A



Note1: Above values are reference only (measured in silent room)
Note2: Above values are for 1 module only.

Image of operation in the case of B

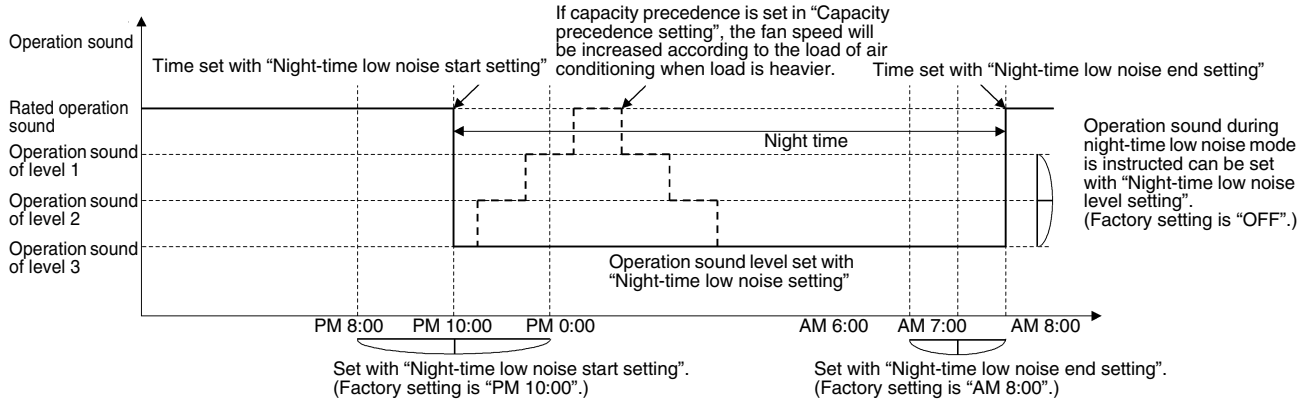
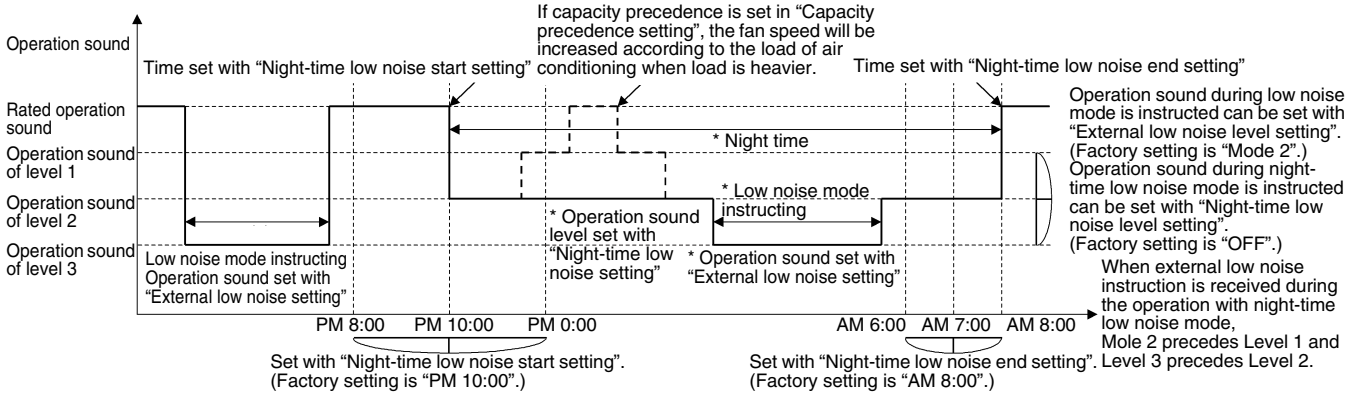


Image of operation in the case of A and B



(2) Setting of Demand Operation

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

Description of setting			Setting procedure	
Setting item	Condition	Description	External control adaptor	Outdoor unit PCB
Demand 1	Level 1	Operate with power of approx. 60% or less of the rating.	Short-circuit between "1" and "C" of the terminal block (TeS1).	Set the setting item No. 32 to "Demand 1" and the setting item No. 30 to "Level 1".
	Level 2	Operate with power of approx. 70% or less of the rating.		Set the setting item No. 32 to "Demand 1" and the setting item No. 30 to "Level 2".
	Level 3	Operate with power of approx. 80% or less of the rating.		Set the setting item No. 32 to "Demand1" and the setting item No. 30 to "Level 3".
Demand 2	–	Operate with power of approx. 40% or less of the rating.	Short-circuit between "2" and "C".	Set the setting item No. 32 to "Demand 2".
Demand 3	–	Operate with forced thermostat OFF	Short-circuit between "3" and "C"	–

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

1. Connect the external adaptor of the outdoor unit, and then connect to the terminal block (TeS1) by the external input if necessary.
2. While in "Setting mode 2", set the setting condition for set item No. 12 (Setting of external low noise/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 outdoor unit is not required.)

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

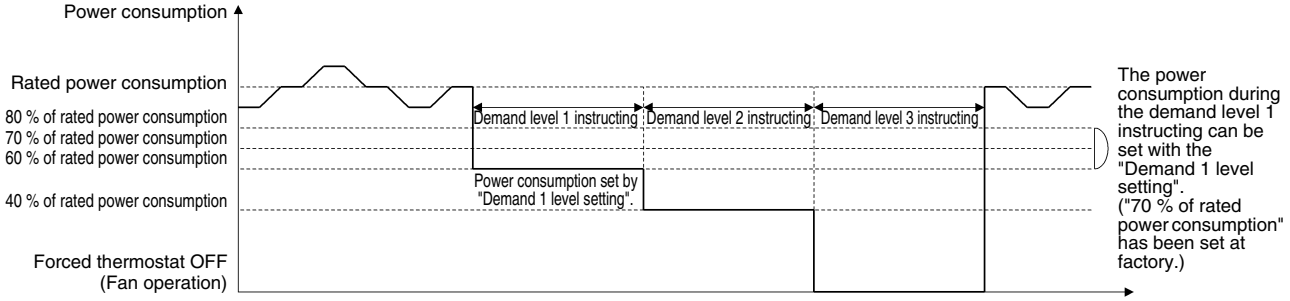


Image of operation in the case of B

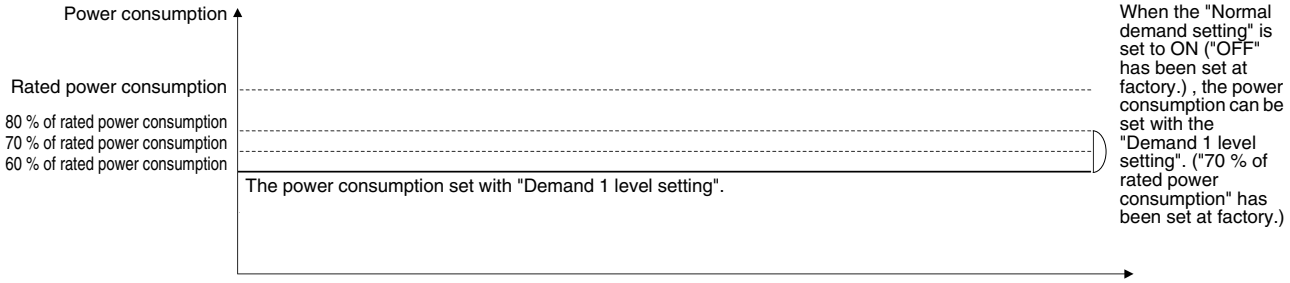
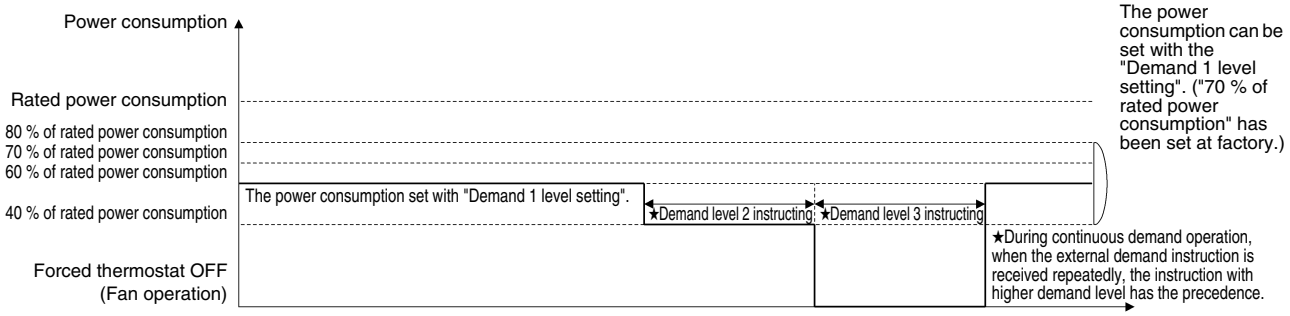


Image of operation in the case of A and B



(3) Detailed Setting Procedure of Low Noise Operation and Demand Control

1. Setting mode 1 (H1P off)

① In setting mode 2, push the BS1 (MODE button) one time. → Setting mode 1 is entered and H1P lights off.
During the setting mode 1 is displayed, “In low noise operation” and “In demand control” are displayed.

2. Setting mode 2 (H1P on)

① In setting 1, push and hold the BS1 (MODE button) for more than 5 seconds. → Setting mode 2 is entered and H1P lights.
② Push the BS2 (SET button) several times and match the LED display with the Setting No. you want.
③ Push the BS3 (RETURN button) one time, and the present setting content is displayed.
→ Push the BS2 (SET button) several times and match the LED display with the setting content (as shown below) you want.
④ Push the BS3 (RETURN button) two times. → Returns to ①.
⑤ Push the BS1 (MODE button) one time. → Returns to the setting mode 1 and turns H1P off.

○: ON ●: OFF ◑: Blink

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

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

3.2.7 Air Tight Testing Procedure

Carry out airtight testing after the completion of internal service for the system on site. For this purpose, fully open the expansion valves of indoor and outdoor units and turn ON some of solenoid valves.

[Testing procedure]

1. While in Setting Mode 2 with the system in a stopped state, set (A) Refrigerant recovery / Vacuuming mode (Setting item No. 21) to ON. The expansion valves of the indoor and outdoor units will fully open and some of the solenoid valves will be excited. (H2P will indicate that test operation is in progress (i.e., blink), and the remote controller will display "Test Operation" and "Under central control), thus prohibiting operation.)
2. Close the stop valve of the liquid pipe, suction pipe, high and low pressure gas pipes, and equalizer pipe (only on multi systems) respectively, and then carry out airtight testing at 4.0-MPa pressure.
3. Press the MODE button (BS1) to clear Setting Mode 2.

<CAUTION>

Do not turn OFF the power supply of the outdoor unit while the airtight testing is in progress.
(Doing so will make the solenoid valves unexcited, thus disabling the airtight testing on the outdoor unit.)

3.2.8 Setting of Refrigerant Recovery Mode

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

[Operation procedure]

① In **setting mode 2** with units in stop mode, set "Refrigerant Recovery / Vacuuming mode" to ON. The respective electronic expansion valve of indoor and outdoor units are fully opened. (H2P turns to display "TEST OPERATION" (blinks), "TEST OPERATION" and "UNDER CENTRALIZED CONTROL" are displayed on the remote controller, and the all indoor / outdoor unit operation is prohibited.
After setting, do not cancel "Setting Mode 2" until completion of refrigerant recovery operation.
② Collect the refrigerant using a refrigerant recovery unit. (See the instruction attached to the refrigerant recovery unit for more detail.)
③ Press Mode button "BS1" once and reset "Setting Mode 2".

3.2.9 Setting of Vacuuming Mode

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

[Operating procedure]

① With **Setting Mode 2** while the unit stops, set "Refrigerant recovery / Vacuuming mode" to ON. The expansion valves of indoor and outdoor units fully open and some of solenoid valves open.
(H2P blinks to indicate the test operation, and the remote controller displays "Test Operation" and "Under 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".

3.2.10 Emergency Operation

If any of the compressors causes a failure, the relevant compressor or the relevant outdoor unit will be prohibited from running, and emergency operation will be conducted only with an operable compressor or outdoor unit.
The emergency operation can be conducted by resetting the remote controller or making outdoor unit PCB setting.

(1) Emergency operation by resetting the remote controller (Automatic backup operation)

If a certain outdoor unit circuit causes a failure (i.e., the system stops operation or the indoor unit remote controller displays malfunction), the faulty outdoor unit or function unit will be prohibited from running for a period of eight hours through the indoor unit remote controller setting for a period of eight hours, and emergency operation will be conducted only with an operable outdoor unit.

[Emergency operation procedure]

· If the outdoor unit or the function unit stops running due to a malfunction, reset the remote controller (i.e., press and hold the ON/OFF button of the remote controller for a period of not less than 4 seconds.

[Detail]

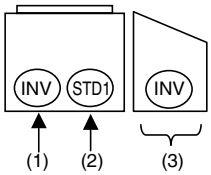
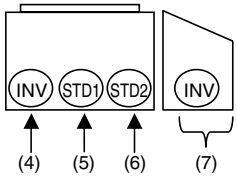
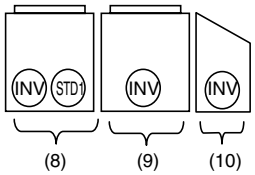
· The outdoor unit or the function unit in which malfunction occurs will be prohibited from running, and other outdoor units will run.

E3, E4, E5, E7 (*1), F3
H7 (*1), H9
J2, J3, J5, J6, J7, J9, JA, JC
L3, L4, L5, L8, L9, LC, U2, UJ

· Malfunction codes that enable the emergency operation are as listed on the left.
*1: While in heating operation, if E7 or H7 malfunction occurs, the emergency operation will be disabled.

(2) Emergency operation by making outdoor unit PCB setting (Manual backup operation)

If any of the compressors stops running due to malfunction, emergency operation will be conducted only with an operable compressor or outdoor unit by setting the relevant compressor, outdoor unit or function unit into "operation prohibited" according to the outdoor unit PCB setting.

Detail of setting \ Applicable model		RTSYP280A	RTSYP400 · 450A	RTSYP560A	Remark
By compressor	Setting of INV compressor to operation prohibited with outdoor unit (master unit)	Set the setting item No. 42 to "INV compressor operation prohibited". (Applicable to ①)	Set the setting item No. 42 to "INV compressor operation prohibited". (Applicable to ④)	—	Set with outdoor unit.
	Setting of STD compressor 1 and 2 to operation prohibited with outdoor unit (master unit)	Set the setting item No. 19 to "STD compressor 1, 2 operation prohibited". (Applicable to ②)	Set the setting item No. 19 to "STD compressor 1, 2 operation prohibited". (Applicable to ⑤ and ⑥)	—	Set with outdoor unit.
	Setting of STD compressor 2 to operation prohibited with outdoor unit (master unit)	—	Set the setting item No. 19 to "STD compressor 2 operation prohibited". (Applicable to ⑥)	—	Set with outdoor unit.
By unit	Setting of master unit to operation prohibited with outdoor unit (master unit)	—	—	Set the setting item No. 38 to "Master unit operation prohibited". (Applicable to ⑧)	Set with master unit. (CAUTION) Setting with slave unit will be invalidated.
	Setting of slave unit to operation prohibited with outdoor unit (master unit)	—	—	Set the setting item No. 39 to "Slave unit operation prohibited". (Applicable to ⑨)	Set with master unit. (CAUTION) Setting with slave unit will be invalidated.
	Setting to operation prohibited with function unit	Set the setting item No. 42 to "INV compressor operation prohibited". (Applicable to ③)	Set the setting item No. 42 to "INV compressor operation prohibited". (Applicable to ⑦)	Set the setting item No. 42 to "INV compressor operation prohibited". (Applicable to ⑩)	Set with function unit. (CAUTION) Setting with outdoor unit will prohibit the operation of the outdoor unit INV compressor.
Remark					

<Disable-operation setting of the compressor> (Applied model: RTSYQ10~16P)

○ Disabling the inverter compressor from operating

Set No. 42 of setting mode 2 to "Disable-inverter compressor operation."

(Step)	LED display (○: ON ●: OFF ◑: Blink) H1P----------H7P
(1) Press the MODE button (BS1) for 5 seconds or more.	○●●●●●●
(2) Press the SET button (BS2) 42 times.	○○●○●○●
(3) Press the RETURN button (BS3) once.	○●●●●●◑
(4) Press the SET button (BS2) once.	○●●●●◑●
(5) Press the RETURN button (BS3) twice.	○●●●●●●
(6) Press the MODE button (BS1) once.	●●○●●●●

○ Disabling the STD compressor 1 (or STD compressor 2) from operating

Set No. 19 of setting mode 2 to "Disable-STD compressor 1 or 2 operation."

(Step)	LED display (○: ON ●: OFF ◑: Blink) H1P----------H7P
(1) Press the MODE button (BS1) for 5 seconds or more.	○●●●●●●
(2) Press the SET button (BS2) 19 times.	○●○●●○○
(3) Press the RETURN button (BS3) once.	○●●●●●●
(4) Press the SET button (BS2) once.	○●●●●●◑
(5) Press the RETURN button (BS3) twice.	○●●●●●●
(6) Press the MODE button (BS1) once.	●●○●●●●

○ Disabling the STD compressor 2 from operating [RTSQ14 · 16P]

Set No. 19 of setting mode 2 to "Disable-STD compressor 2 operation."

(Step)	LED display (○: ON ●: OFF ◑: Blink) H1P----------H7P
(1) Press the MODE button (BS1) for 5 seconds or more.	○●●●●●●
(2) Press the SET button (BS2) 19 times.	○●○●●○○
(3) Press the RETURN button (BS3) once.	○●●●●●●
(4) Press the SET button (BS2) twice.	○●●●●◑●
(5) Press the RETURN button (BS3) twice.	○●●●●●●
(6) Press the MODE button (BS1) once.	●●○●●●●

- On the models RTSQ14P and 16P, if the INV compressor is set to "Operation prohibited", only one STD compressor will operate due to oil equalization.
- On the models RTSQ14P and 16P, the STD compressor 1 cannot be set to "Operation prohibited" due to oil equalization.

<Disable-operation setting of the outdoor unit> (Applied model: RTSYQ20P)

Make disable-operation setting by each outdoor unit.

Make the following setting with the master unit. (Setting with the slave unit will be invalidated.)

* Discriminate between the master unit and the slave unit according to LED displays shown below.

	LED display (○: ON ●: OFF ◑: Blink)	
	H1P----------H7P	H8P
Master :	●●○●●●●	○
Slave :	●●●●●●●	◑ (Factory setting)

○ To prohibit the operation of master unit:

Set the setting item No. 38 of "Setting mode 2" to "Master operation prohibited".

(Step)	LED display (○: ON ●: OFF ◑: Blink) H1P----------H7P
(1) Press and hold the MODE button (BS1) for a period of 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 (BS2) once.	●●○●●●●

○ To prohibit the operation of slave unit:

Set the setting item No. 39 of "Setting mode 2" to "Slave operation prohibited".

(Step)	LED display (○: ON ●: OFF ◑: Blink) H1P----------H7P
(1) Press and hold the MODE button (BS1) for a period of 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 (BS2) once.	●●○●●●●

- Systems with multi outdoor units cannot be set to "operation prohibited" by compressor.
- If systems with multi outdoor units are set to "operation prohibited" as aforementioned, outdoor unit rotation will not be conducted.

<Setting of Function Unit to "Operation Prohibited> (Applied model: RTSYQ10~20P)

Set the setting item No. 42 of "Setting mode 2" to "INV compressor operation prohibited".

Make the following setting with the function unit.

(Step)	LED display (○: ON ●: OFF ◑: Blink) H1P----------H7P
(1) Press and hold the MODE button (BS1) for a period of 5 sec. or more.	○●●●●●●
(2) Press the SET button (BS2) 42 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 (BS2) once.	●●○●●●●

[Cancel of Emergency Operation]

To cancel the emergency operation, conduct the following setting. (Return to Factory setting.)

<RTSYQ10 to 16PY1>

○ Cancel disabling the inverter compressor from operating:

Set No. 42 of setting mode 2 "Disable-inverter compressor operation" to "OFF".

	LED display (○: ON ●: OFF ◑: Blink)
(Step)	H1P----------H7P
(1) Press the MODE button (BS1) for 5 seconds or more.	○●●●●●●
(2) Press the SET button (BS2) 42 times.	○○●○●○●
(3) Press the RETURN button (BS3) once.	○●●●●◑●
(4) Press the SET button (BS2) once.	○●●●●●◑ (Factory setting)
(5) Press the RETURN button (BS3) twice.	○●●●●●●
(6) Press the MODE button (BS1) once.	●●○●●●●

○ Cancel disabling the STD compressor 1 (or STD compressor 2) from operating:

Set No. 19 of setting mode 2 "Disable-STD compressor 1 or 2 operation" to "OFF".

	LED display (○: ON ●: OFF ◑: Blink)
(Step)	H1P----------H7P
(1) Press the MODE button (BS1) for 5 seconds or more.	○●●●●●●
(2) Press the SET button (BS2) 19 times.	○●○●●○○
(3) Press the RETURN button (BS3) once.	○●●●●●◑
(4) Press the SET button (BS2) twice.	○●●●●●● (Factory setting)
(5) Press the RETURN button (BS3) twice.	○●●●●●●
(6) Press the MODE button (BS1) once.	●●○●●●●

○ Cancel disabling the STD compressor 2 from operating [RTSQ14 · 16P]:

Set No. 19 of setting mode 2 "Disable-STD compressor 2 operation" to "OFF".

	LED display (○: ON ●: OFF ◑: Blink)
(Step)	H1P----------H7P
(1) Press the MODE button (BS1) for 5 seconds or more.	○●●●●●●
(2) Press the SET button (BS2) 19 times.	○●○●●○○
(3) Press the RETURN button (BS3) once.	○●●●●◑●
(4) Press the SET button (BS2) once.	○●●●●●● (Factory setting)
(5) Press the RETURN button (BS3) twice.	○●●●●●●
(6) Press the MODE button (BS1) once.	●●○●●●●

<RTSYQ20PY1>

Cancel the disable-operation setting by each outdoor unit.

Make the following setting on the outdoor unit 1. (If this setting is made on an outdoor unit other than the outdoor unit 2, the setting will become invalid.)

*It is possible to tell the outdoor units 1, 2, and 3 according the LED displays shown below.

	LED display (○: ON ●: OFF ◑: Blink) H1P----------H7P H8P
Outdoor unit 1:	●●○●●●● ○
Outdoor unit 2:	●●●●●●● ◑
Outdoor unit 3:	●●●●●●● ● (Factory setting)

○ Cancel disabling the outdoor unit 1 from operating:

Set No. 38 "Disable outdoor unit 1 operation" of setting mode 2 to "OFF".

(Step)	LED display (○: ON ●: OFF ◑: Blink) H1P----------H7P
(1) Press and hold the MODE button (BS1) for 5 sec. or more.	○●●●●●●
(2) Press the SET button (BS2) 38 times.	○○●●○○●
(3) Press the RETURN button (BS3) once.	○●●●●◑●
(4) Press the SET button (BS2) once.	○●●●●●◑ (Factory setting)
(5) Press the RETURN button (BS3) twice.	○●●●●●●
(6) Press the MODE button (BS1) once.	●●○●●●●

○ Cancel disabling the outdoor unit 2 from operating:

Set No. 39 "Disable-outdoor-unit-2 operation" of setting mode 2 to "OFF".

(Step)	LED display (○: ON ●: OFF ◑: Blink) H1P----------H7P
(1) Press the MODE button (BS1) for 5 seconds or more.	○●●●●●●
(2) Press the SET button (BS2) 39 times.	○○●●○○○
(3) Press the RETURN button (BS3) once.	○●●●●◑●
(4) Press the SET button (BS2) once.	○●●●●●◑ (Factory setting)
(5) Press the RETURN button (BS3) twice.	○●●●●●●
(6) Press the MODE button (BS1) once.	●●○●●●●

○ Cancel disabling the outdoor unit 3 from operating:

Set No. 40 "Disable-outdoor-unit-3 operation" of setting mode 2 to "OFF".

(Step)	LED display (○: ON ●: OFF ◑: Blink) H1P----------H7P
(1) Press the MODE button (BS1) for 5 seconds or more.	○●●●●●●
(2) Press the SET button (BS2) 40 times.	○○●○●●●
(3) Press the RETURN button (BS3) once.	○●●●●◑●
(4) Press the SET button (BS2) once.	○●●●●●◑ (Factory setting)
(5) Press the RETURN button (BS3) twice.	○●●●●●●
(6) Press the MODE button (BS1) once.	●●○●●●●

<Function Unit>

Set the setting item No. 42 of "Setting mode 2" to "OFF".

Make the following setting with the function unit.

(Step)	LED display (○: ON ●: OFF ◑: Blink) H1P----------H7P
(1) Press and hold the MODE button (BS1) for a period of 5 sec. or more.	○●●●●●●
(2) Press the SET button (BS2) 42 times.	○○●○●○●
(3) Press the RETURN button (BS3) once.	○●●●●◑●
(4) Press the SET button (BS2) once.	○●●●●●◑ (Factory setting)
(5) Press the RETURN button (BS3) twice.	○●●●●●●
(6) Press the MODE button (BS2) once.	●●○●●●●

Part 6
Troubleshooting

1. Check Items for Service

1.1 For Troubleshooting

1.1.1 Initial Check and Fault Diagnosis

1. Thoroughly check for requests/complaints of users.
2. Check for statuses in which faults occur through hearings from users.
3. Check whether or not any "malfunction code" is displayed on the remote controller.
   (Or check whether or not any malfunction is caused in the monitor mode of outdoor unit.)
   ↓
4. If no malfunction code is displayed, carry out a fault diagnosis with reference to information in the "Symptom-based Troubleshooting" section.
   If any "malfunction code" is displayed, carry out a fault diagnosis with reference to information in the "Troubleshooting Flowchart" section.

1.1.2 Taking Countermeasures

1. According to the result of fault diagnosis, rectify the fault or replace the faulty part(s).
2. To conduct dismounting work, turn OFF all power supplies, and then wait for a lapse of 10 minutes or more.
3. To replace any part in the refrigerant circuit, be sure to recover refrigerant beforehand.

1.1.3 Check after Taking Countermeasures

1. After the completion of rectifying the fault, run the system to ensure that it is definitely normal.
2. Record the results of checks to explain them to user.

1.2 Precautions for Service

To conduct service, pay careful attention to the precautions shown below.

1.2.1 Precautions for Service

Before conducting service, touch a metal part with no paint coating applied (e.g. the lid of switch box for standard units, or bolts that fix the switch box for Salt damage resistant and serious salt damage resistant units) to eliminate static electricity.

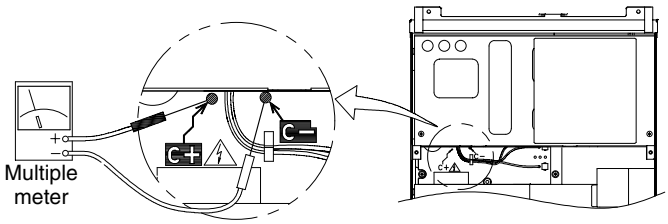
1.2.2 Precautions for Access Lid for Service

Be sure to close the access lid for service after the completion of service.
(Not doing so will cause water or foreign matter to enter the unit, thus resulting in failures.)

1.2.3 Precautions for Service in Switch Box

1. Do not open the lid of the switch box for a period of 10 minutes after turning OFF the power supply.
2. After opening the lid of the switch box, make measurement of voltage between the terminals of the power supply terminal block by the use of a multiple meter.
   Then, make voltage measurement in the points shown in the figure on the following page by the use of a multiple meter to ensure that the voltage of the main circuit capacitor is not more than 50VDC.
3. To prevent a failure of PCBs, be sure to touch the ground terminal in the switch box by hand right before disconnecting and connecting a connector to eliminate static electricity from the body.
4. Disconnect the junction relays X1A, X2A, X3A, and X4A (X3A and X4A are only equipped on systems with two outdoor units) from the outdoor unit fan motors, and then commence service work.
   When disconnecting the junction connectors, pay careful attention not to touch a live part.
   (Rotating the outdoor unit fan due to the strong wind may store electricity in the main circuit capacitor, thus resulting in an electric shock.)

5. After the completion of service, reinstall the junction connectors to the outdoor unit fans.
   - The malfunction code "E7" is displayed on the remote controller to disable normal operation.
   - To connect the connectors, refer to information in Section "2 Wiring Diagrams".



1.2.4 Precautions for Field Settings

<Independent systems>

- Make various settings with the switch box located on the front right side.

<Systems with multi outdoor units>

- Make various settings with the switch box of the master outdoor unit. (Settings with slave unit are invalidated.)

○: ON ◑: BLINK ●:OFF

	LED indication and location							
	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
Master	●	●	○	●	●	●	●	○
Slave 1	●	●	●	●	●	●	●	◑
Slave 2	●	●	●	●	●	●	●	●

[Discrimination between master unit and slave unit]

1. An outdoor unit to which the indoor unit connection wiring is connected is a master unit, and other outdoor units are a slave unit.
2. The outdoor units can be discriminated as shown in the table on the upper right according to LED displays on the outdoor unit PCB (A1P).

1.2.5 Precautions for Piping Work and Refrigerant Charging

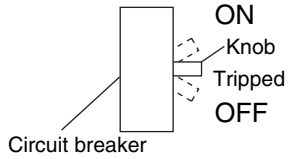
This unit uses R-410A refrigerant. Pay careful attention to the precautions shown below.

1. Use a charge hose and a gauge manifold dedicated to R-410A to withstand pressure and prevent impurities (e.g. SUNISO oil) from getting mixed in the refrigerant.
2. To blaze, be sure to blow nitrogen gas through the piping.
   - Conduct airtight tests and vacuum drying without fail. (Airtight testing pressure: 4.0MPa)
   - Charge refrigerant in a liquid state.

1.2.6 Precautions for Operation in Service Mode (Field Setting)

In order to restart service mode for test operation after interrupting or normal completion of the service mode, provide intervals of not less than one minute. If the service mode is restarted at no intervals of time, any of the malfunction indicating LEDs on the outdoor unit PCB may turn ON. In this case, press the RETURN button (BS3). If the LED is still kept ON, reset the power supply.

2. 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 outdoor unit	Remove obstacle(s).
			Clogged air filter(s)	Clean the air filter(s).
3	The system does not cool or heat air well.		Blocked air inlet or outlet of indoor or outdoor unit	Remove obstacle(s).
			Clogged air filter(s)	Clean the air filter(s).
			Enclosed outdoor 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 five minutes.
		Pressing the TEMP ADJUST button immediately resets the system.		
		The remote controller displays "UNDER CENTRALIZED CONTROL", which blinks for a period of several seconds when the OPERATION button is depressed.	The system is controlled with centralized controller. Blinking display indicates that the system cannot be operated using the remote controller.	Operate the system using the COOL/HEAT centralized remote controller.
		The system stops immediately after turning ON the power supply.	The system is in preparation mode of micro computer operation.	Wait for a period of approximately one minute.
5	The system makes intermittent stops.	The remote controller displays malfunction 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.
		The remote controller displays "UNDER CENTRAL CONTROL", but the system is switched to blasting operation without conducting cooling or heating operation.	While in heat storage operation, the system is switched to blasting operation even if it is set to cooling or heating operation, and the remote controller displays "UNDER CENTRAL CONTROL".	Normal operation.
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 operation, when the room temperature reaches the set degree, the outdoor 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 operation, the system will be brought to fan LL operation. (The fan LL operation is also enabled while in oil return mode in cooling operation.)	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 operation, the ambient humidity is high. (This indoor unit is installed in a place with much oil or dust.)	Uneven temperature distribution due to heavy stain of the inside of the indoor unit	Clean the inside of the indoor unit.
		<Indoor unit> Immediately after cooling operation stopping, the outdoor air temperature and humidity are low.	Hot gas (refrigerant) flown in the indoor unit results to be vapor from the unit.	Normal operation.
		<Indoor and outdoor 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 one minute.
		<Indoor and outdoor 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 outdoor units.	Normal operation.
		<Indoor and outdoor 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.
		<Outdoor unit> Pitch of operating sounds changes.	The reason is that the compressor changes the operating frequency.	Normal operation.

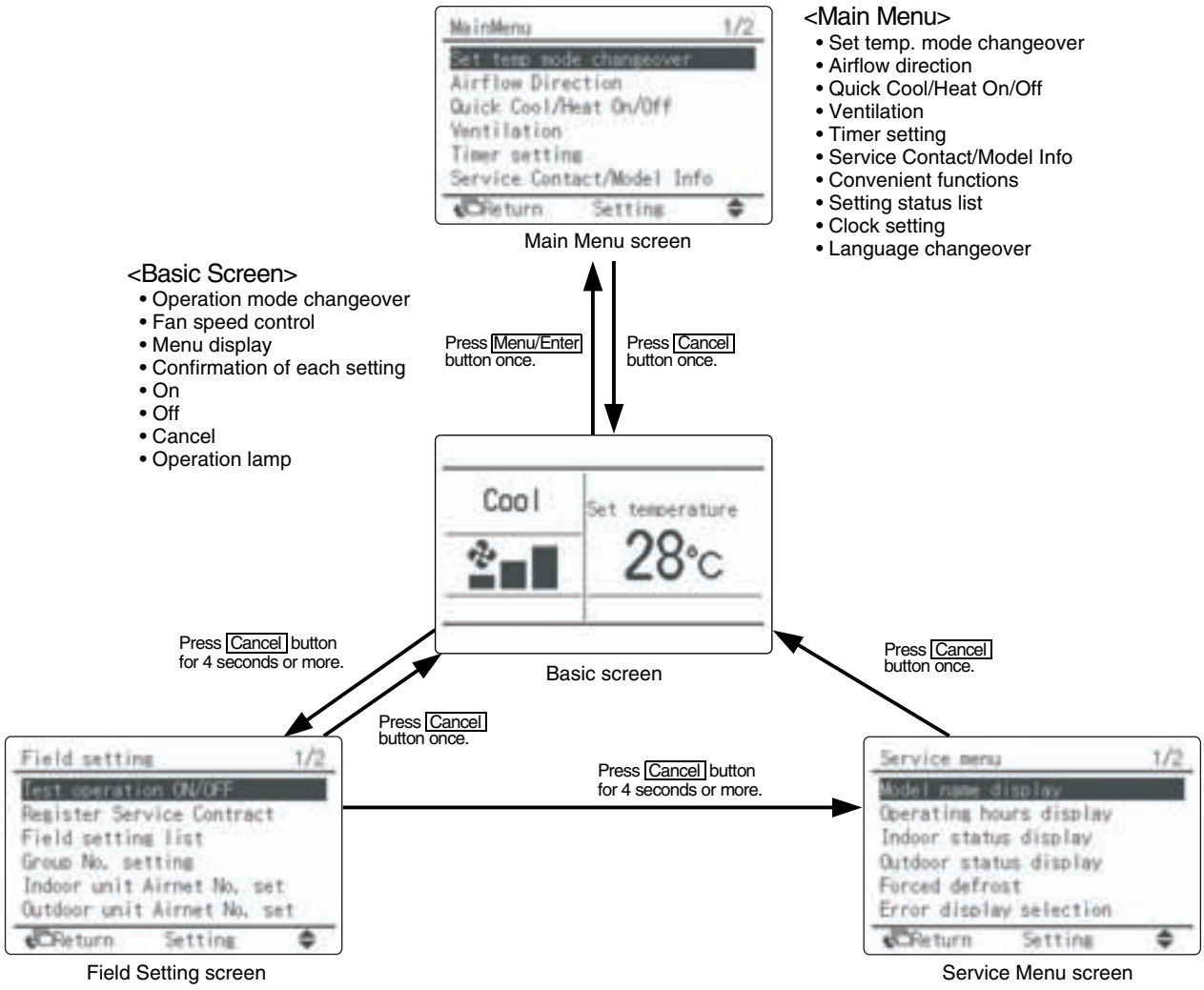
	Symptom		Supposed Cause	Countermeasure
12	Dust comes out from the system.	Dust comes out from the system when it restarts after the stop for an extended period of time.	Dust, which has deposited on the inside of indoor unit, is blown out from the system.	Normal operation.
13	Odors come out from the system.	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	Outdoor 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 one minute at maximum.
16	The outdoor unit compressor or the outdoor unit fan does not stop.	After stopping operation	It stops in order to prevent oil or refrigerant from dwelling.	Normal operation. It stops after a lapse of approximately 5 to 10 minutes.
17	The outdoor gets hot.	While stopping operation	The reason is that the compressor is warmed up to provide smooth startup of the system.	Normal operation.
18	Hot air comes out from the system even though it stops.	Hot air is felt while the system stops.	On VRV systems, small quantity of refrigerant is fed to indoor units in the stopped state when other indoor units are in operation.	Normal operation.
19	The system does not cool air well.	The system is in dry operation.	The reason is that the dry operation serves not to reduce the room temperature where possible.	Change the system to cooling operation.

3. Troubleshooting by Remote Controller

3.1 The INSPECTION / TEST Button

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

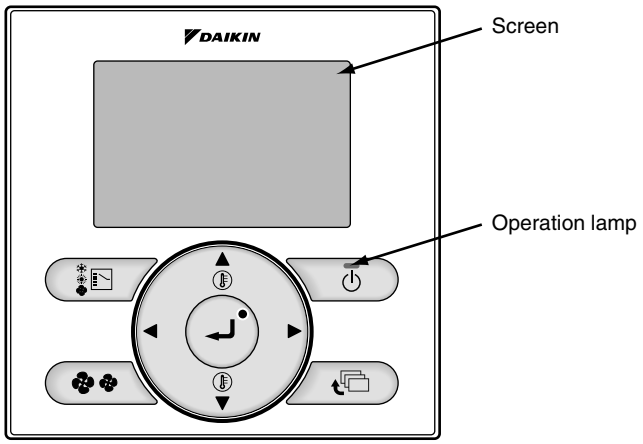
On power-up, the message "Connection under check. Please wait for a moment" will be displayed on the remote controller screen. Then that message will disappear and the basic screen will be displayed. To access a mode from the basic screen, refer to the figure below. When any of the operation buttons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



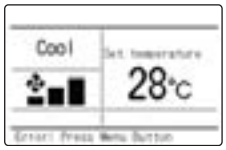
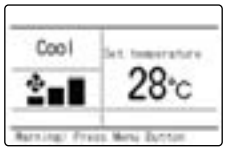
3.2 Self-diagnosis by Wired Remote Controller

Explanation

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



(1) Checking a malfunction or warning

	Operation Status	Display	
Abnormal shutdown	The system stops operating.	The operation lamp (green) starts to blink. The message "Malfunction: 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.	

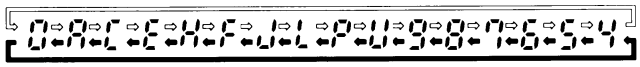
3.3 Self-diagnosis by Wireless Remote Controller

In the Case of BRC7C Type BRC7E Type BRC4C Type

If equipment stops due to a malfunction, the operation indicating LED on the light reception section flashes.
The malfunction code can be determined by following the procedure described below. (The malfunction code is displayed when an operation error has occurred. In normal condition, the malfunction code of the last problem is displayed.)

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

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



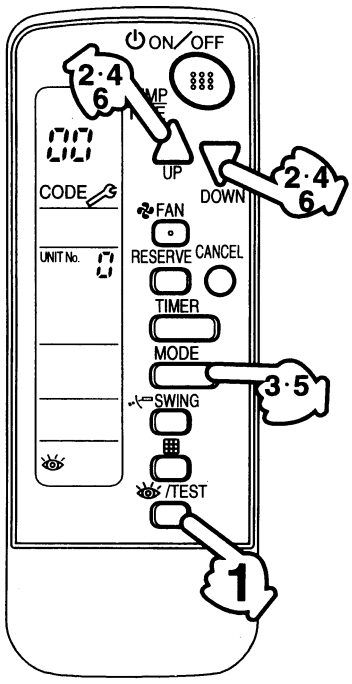
⇨ “Advance” button ⇦ “Backward” button

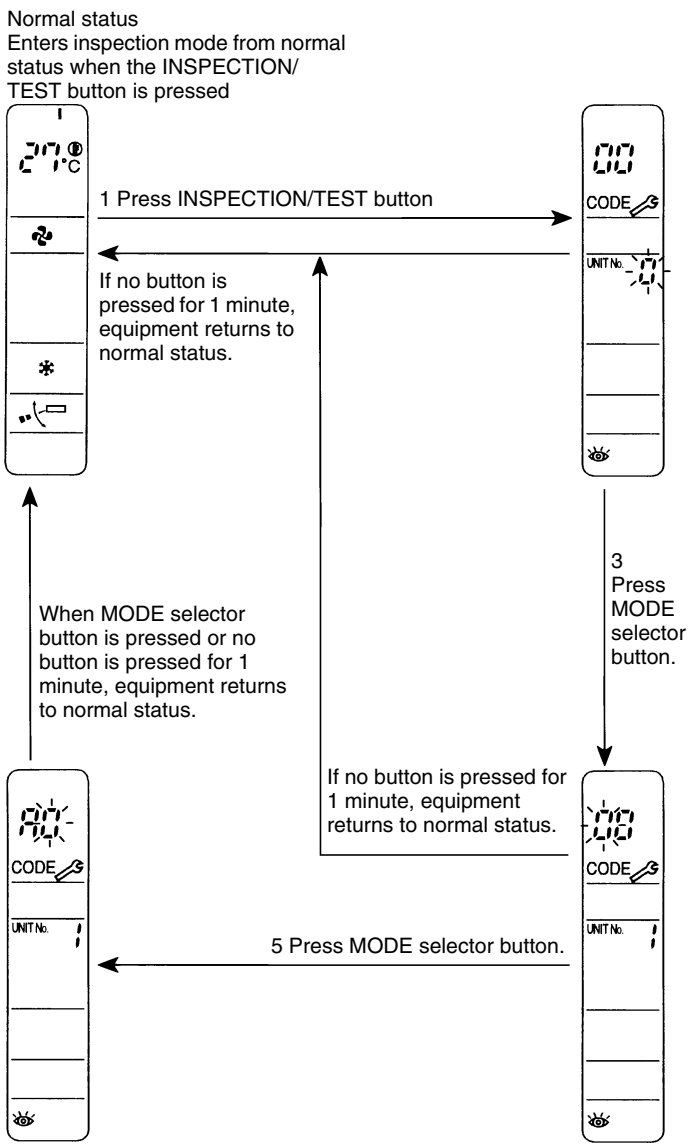
*2 Number of beeps
Continuous beep : Both upper and lower digits matched. (Malfunction code confirmed)
2 short beeps : Upper digit matched.
1 short beep : Lower digit matched.

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

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

⇨ **"Advance" button** ⬅ **"Backward" button**

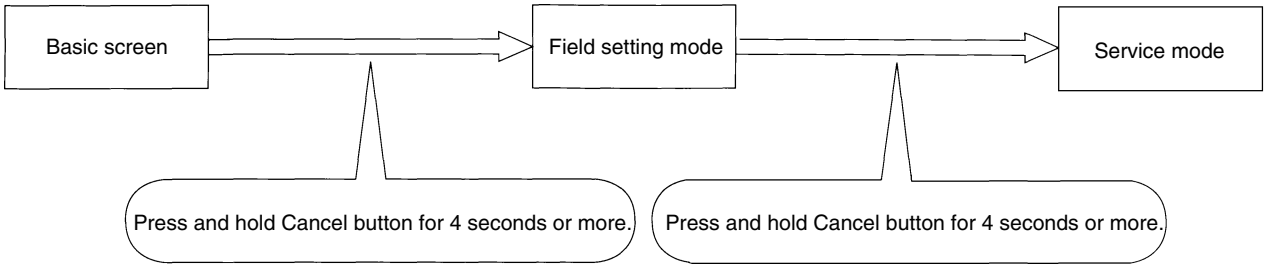



Normal status
Enters inspection mode from normal status when the INSPECTION/ TEST button is pressed
1 Press INSPECTION/TEST button
If no button is pressed for 1 minute, equipment returns to normal status.
CODE
UNIT No.
3 Press MODE selector button.
When MODE selector button is pressed or no button is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

3.4 Remote Controller Service Mode

Operating the CHECK/TEST button on the remote controller will make it possible to obtain "service data" and change "service setting" while in service mode.

How to Enter the Service Mode



Service Mode Operation Method

1. Select the mode No.
Select the desired item from the Service menu, and then press Menu/Enter button.
2. Select the Item 2.
Select the desired Unit No. using the ▲/▼ (Up/Down) buttons. The corresponding data will be displayed.

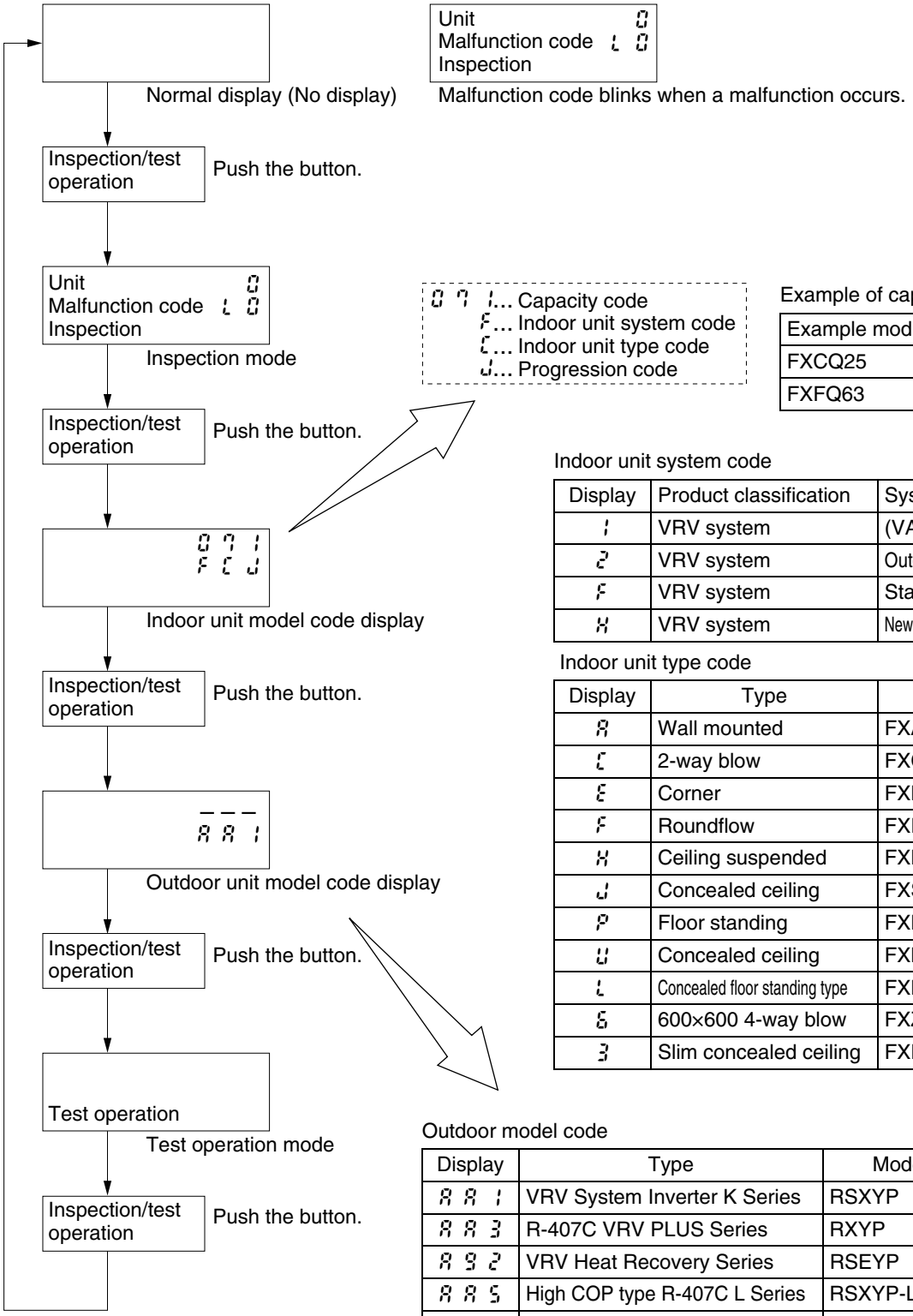
For details, refer to the table in next page.

Service Menu	Item 2	Remarks	
1. Model Name Display	1. Unit No.	Select the Unit No. you want to check.	
	2. Indoor unit		
	3. Outdoor 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		
	6. Outdoor fan 1 operation		
	7. Outdoor fan 2 operation		
	8. Outdoor comp. 1 operation		
	9. Outdoor comp. 2 operation		
3. Indoor Status Display 1/2	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	
3. Indoor Status Display 2/2	1. Unit No.	Select the Unit No. you want to check.	
		SkyAir	VRV
	2. Th1	Suction air thermistor	Suction air thermistor
	3. Th2	Heat exchanger thermistor	Heat exchanger liquid pipe thermistor
	4. Th3	—	Heat exchanger gas pipe thermistor
	5. Th4	Discharge air thermistor	Discharge air thermistor
	6. Th5	—	—
	7. Th6	—	—
4. Outdoor Status Display	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	
		SkyAir	VRV
	6. Th1	Outdoor air thermistor	—
	7. Th2	Heat exchanger thermistor	—
	8. Th3	Discharge pipe thermistor	—
5. Forced Defrost (SkyAir only)	1. Forced defrost ON	Enables the forced defrost operation.	
	2. Forced defrost OFF	Disables the forced defrost operation.	

Service Menu	Item 2	Remarks
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 thermistor (°C) Indoor unit address No. Outdoor unit address No. BS unit address No. Zone control address No. Cooling/heating batch address No. Demand/low-noise address No.
	○ Data	The corresponding data will be displayed, based on the Unit No. and Code selected.

3.5 Inspection Mode

Operating the INSPECTION/TEST button on the remote controller will make it possible to check the malfunction codes, indoor unit model codes, and outdoor unit model codes while in inspection mode.



Example of capacity code display

Example model	Display
FXCQ25	028
FXFQ63	071

Indoor unit system code

Display	Product classification	System classification
1	VRV system	(VAV indoor unit)
2	VRV system	Outdoor air processing unit
F	VRV system	Standard indoor unit
H	VRV system	New ceiling suspended cassette

Indoor unit type code

Display	Type	Model
A	Wall mounted	FXAQ
C	2-way blow	FXCQ
E	Corner	FXKQ
F	Roundflow	FXFQ
H	Ceiling suspended	FXHQ
J	Concealed ceiling	FXSQ
P	Floor standing	FXLQ
U	Concealed ceiling	FXMQ
L	Concealed floor standing type	FXNQ
6	600×600 4-way blow	FXZQ
3	Slim concealed ceiling	FXDQ

Outdoor model code

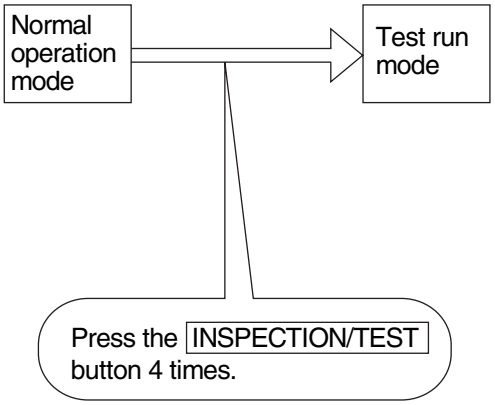
Display	Type	Model
AA1	VRV System Inverter K Series	RSXYP
AA3	R-407C VRV PLUS Series	RXYP
A92	VRV Heat Recovery Series	RSEYP
AA5	High COP type R-407C L Series	RSXYP-L
AAA	VRV II	RXYQ-M
AAC	VRV II M/C	RXYQ-MA
AAE	VRV III Heat Pump Series	RXYQ-P
	VRV III Cooling Only Series	RXQ-P
A9E	VRV III Heat Recovery Series	REYQ-P
A5E	VRV III-C Heat Pump Series	RTSYQ-P

3.6 Test Run Mode

Operating the INSPECTION/TEST button on the remote controller will make it possible to put the system into test run mode.

(1) Test run mode setting

The test run mode setting can be made by conducting the following operation.

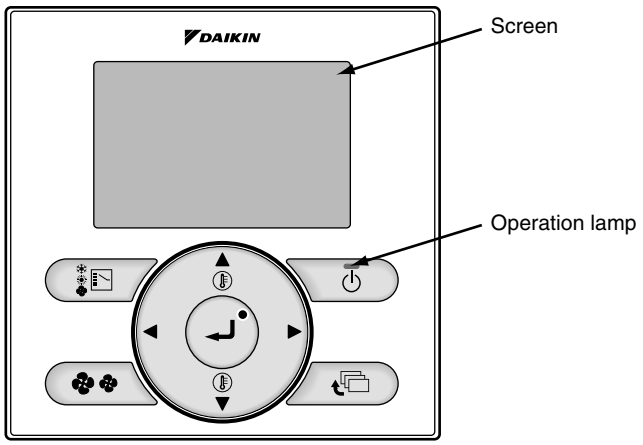


Press the ON/OFF button after the completion of test run mode setting, and a test run starts. (The remote controller will display "TEST RUN" on it.)

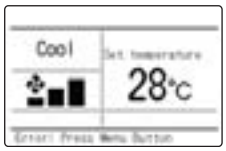
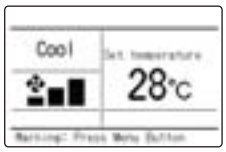
3.7 Remote Controller Self-Diagnosis Function

The following will be displayed on the screen when a malfunction (or a warning) occurs during operation.

Check the malfunction code and take the corrective action specified for the particular model.

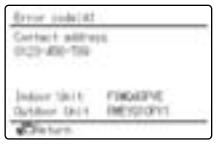


(1) Checking a malfunction or warning

	Operation Status	Display	
Abnormal shutdown	The system stops operating.	The operation lamp (green) starts to blink. The message "Malfunction: 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 malfunction code.



— Malfunction code

⊢ Applicable model names

· Take the corrective action specific to the model.

3.8 List of Malfunction Code

○: ON ●: OFF ◑: Blink

	Malfunction code	Operation lamp	Inspection display	Unit No.	Malfunction contents	Page Referred
Indoor Unit	A0	◑	◑	◑	Error of external protection device	220
	A1	◑	◑	◑	PCB defect	221
	A3	◑	◑	◑	Malfunction of drain level control system	222
	A6	◑	◑	◑	Fan motor (M1F) lock, overload	224 226 227
	A7	○	●	◑	Malfunction of swing flap motor	230
	A9	◑	◑	◑	Malfunction of moving part of electronic expansion valve / Dust clogging	232 234
	AF	○	●	◑	Drain level about limit	236
	AH	○	●	◑	Malfunction of air filter maintenance	—
	AJ	◑	◑	◑	Malfunction of capacity setting	237
	C4	◑	◑	◑	Malfunction of thermistor for heat exchange (loose connection, disconnection, short circuit, failure)	238
	C5	◑	◑	◑	Malfunction of thermistor for gas pipes (loose connection, disconnection, short circuit, failure)	239
	C9	◑	◑	◑	Malfunction of thermistor for air inlet (loose connection, disconnection, short circuit, failure)	240
	CA	◑	◑	◑	Malfunction of thermistor for discharge air (loose connection, disconnection, short circuit, failure)	241
	CJ	○	○	○	Malfunction of room temperature thermistor in remote controller	242
Outdoor Unit Function Unit	E1	◑	◑	◑	PCB defect	243
	E3	◑	◑	◑	Actuation of high pressure switch	244
	E4	◑	◑	◑	Actuation of low pressure sensor	246
	E5	◑	◑	◑	Compressor motor lock	248
	E6	◑	◑	◑	Standard compressor lock or overcurrent	250
	E7	◑	◑	◑	Malfunction of outdoor unit fan motor	251
	E9	◑	◑	◑	Malfunction of electronic expansion valve coil	254
	F3	◑	◑	◑	Abnormal discharge pipe temperature	256
	F6	◑	◑	◑	Refrigerant overcharged	258
	H7	◑	◑	◑	Abnormal outdoor fan motor signal	259
	H9	◑	◑	◑	Malfunction of thermistor for outdoor air (loose connection, disconnection, short circuit, failure)	261
	J2	◑	◑	◑	Current sensor malfunction	262
	J3	◑	◑	◑	Malfunction of discharge pipe thermistor (loose connection, disconnection, short circuit, failure)	263
	J4	◑	◑	◑	Malfunction of temperature sensor for heat exchanger gas	264
	J5	◑	◑	◑	Malfunction of thermistor for suction pipe (loose connection, disconnection, short circuit, failure)	265
	J6	◑	◑	◑	Malfunction of thermistor for heat exchanger (loose connection, disconnection, short circuit, failure)	266
	J7	◑	◑	◑	Malfunction of receiver outlet liquid pipe thermistor	267
	J8	◑	◑	◑	Malfunction of liquid pipe thermistor 2	268
	J9	◑	◑	◑	Malfunction of subcooling heat exchanger gas pipe thermistor	269
	JA	◑	◑	◑	Malfunction of high pressure sensor	270
	JC	◑	◑	◑	Malfunction of low pressure sensor	272
	L1	◑	◑	◑	Malfunction of inverter PCB	274
	L4	◑	◑	◑	Malfunction of inverter radiation fin temperature rise	276
	L5	◑	◑	◑	DC output overcurrent of inverter compressor	278
	L8	◑	◑	◑	Inverter current abnormal	280
	L9	◑	◑	◑	Inverter start up error	282

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

○: ON ●: OFF ◑: Blink

	Malfunction code	Operation lamp	Inspection display	Unit No.	Malfunction contents	Page Referred
Outdoor Unit	LC	◑	◑	◑	Malfunction of transmission between inverter and control PCB	285
	P1	◑	◑	◑	Inverter over-ripple protection	288
	P2	◑	◑	◑	[In automatically refrigerant charge] Operation stop in charging	141
	P4	◑	◑	◑	Malfunction of inverter radiation fin temperature rise sensor	290
	P8	◑	◑	◑	[In automatically refrigerant charge] Heat exchanger freeze prevention	141
	P9	◑	◑	◑	[In automatically refrigerant charge] Completion of automatically refrigerant charge	141
	PA	◑	◑	◑	[In automatically refrigerant charge] Refrigerant tank empty	141
	PE	◑	◑	◑	[In automatically refrigerant charge] Preparation for refrigerant tank shut	141
	PH	◑	◑	◑	[In automatically refrigerant charge] Refrigerant tank empty (slave unit)	141
	PJ	◑	◑	◑	Faulty field setting after replacing main PCB or faulty combination of PCB	291
System	U0	○	●	◑	Refrigerant shortage alert	293
	U1	◑	◑	◑	Reverse phase / open phase	295
	U2	◑	◑	◑	Power supply insufficient or instantaneous failure	296
	U3	◑	◑	◑	Check operation is not executed.	299
	U4	◑	◑	◑	Malfunction of transmission between indoor and outdoor units	300
	U5	◑	◑	◑	Malfunction of transmission between remote controller and indoor unit	302
	U5	●	○	●	Failure of remote controller PCB or setting during control by remote controller	302
	U7	◑	◑	◑	Malfunction of transmission between outdoor units	303
	U8	◑	◑	●	Malfunction of transmission between main and sub remote controllers (malfunction of sub remote controller)	310
	U9	◑	◑	◑	Malfunction of transmission between indoor unit and outdoor unit in the same system	311
	UA	◑	◑	◑	Improper combination of indoor and outdoor units, indoor units and remote controller	312
	UC	○	○	○	Address duplication of centralized remote controller	316
	UE	◑	◑	◑	Malfunction of transmission between centralized remote controller and indoor unit	317
	UF	◑	◑	◑	Refrigerant system not set, incompatible wiring / piping	320
	UH	◑	◑	◑	Malfunction of system, refrigerant system address undefined	321
Centralized Remote Controller and Schedule Timer	M1	○ or ●	◑	◑	Centralized remote controller PCB defect Schedule timer PCB defect	323
	M8	○ or ●	◑	◑	Malfunction of transmission between optional controllers for centralized control	324
	MA	○ or ●	◑	◑	Improper combination of optional controllers for centralized control	325
	MC	○ or ●	◑	◑	Address duplication, improper setting	327
	—				Operation lamp blinks	328
	—				“Under Centralized Control” Blinks (Repeats single blink)	330
	—				“Under Centralized Control” Blinks (Repeats double blink)	333

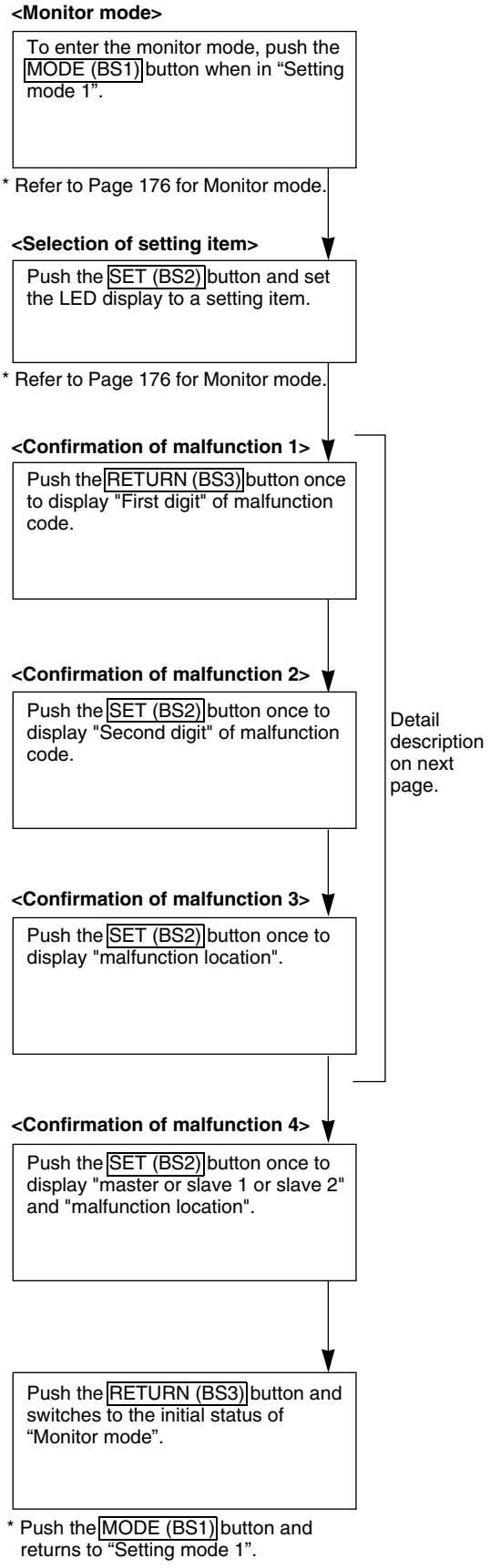
The system operates for malfunction codes indicated in black squares, however, be sure to check and repair.

○: ON ●: OFF ◑: Blink

	Malfunction code	Operation lamp	Inspection display	Unit No.	Malfunction contents	Page Referred
Heat Reclaim Ventilation	60	○	●	◑	Error of external protection device (Field setting [18-8] setting position is 02 “Overall Alarm”)	334
	60	◑	◑	◑	Error of external protection device (Field setting [18-8] setting position is 03 “Overall malfunction”)	334
	64	○	●	◑	Indoor unit’s air thermistor error	335
	65	○	●	◑	Outside air thermistor error	335
	6A	○	●	◑	Damper system alarm	336
	6A	◑	◑	◑	Damper system + thermistor error	337
	6F	○	●	◑	Malfunction of simplified remote controller	338

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

Malfunction code indication by outdoor unit PCB



Malfunctions		Malfunction code
Description of malfunction	Description of malfunction (PGF)	Remote controller
PCB malfunction	PCB malfunction	E1
	Faulty PCB	
Abnormal discharge pressure	High pressure switch activated	E3
Abnormal suction pressure	Pe malfunction	E4
Compressor lock	INV compressor lock detected	E5
OC activation	STD1 compressor lock detected	E6
	STD2 compressor lock detected	
Overload, overcurrent and abnormal lock of outdoor unit fan motor	Instantaneous overcurrent of 1DC fan motor	E7
	1DC fan motor lock detected	
	Fan 1 IPM faulty protection detected	
	Instantaneous overcurrent of 2DC fan motor	
	2DC fan motor lock detected	
	Fan 2 IPM faulty protection detected	
Electronic expansion valve malfunction	EVM (main)	E9
	EVJ (refrigerant charging)	
	EVT (subcooling heat exchanger)	
Abnormal discharge pipe temperature	Td malfunction	F3
Abnormal heat exchanger temperature	Refrigerant overcharged	F6
Positioning signal malfunction of outdoor unit fan motor	1DC fan motor positioning signal malfunction	H7
	2DC fan motor positioning signal malfunction	
Abnormal outdoor temperature	Ta sensor malfunction (short-circuited or open)	H9
Current sensor malfunction	CT1 sensor malfunction (STD compressor 1)	J2
	CT2 sensor malfunction (STD compressor 2)	
	CT sensor malfunction (system)	
Discharge pipe temperature sensor malfunction	Tdi sensor malfunction	J3
	Tds1 sensor malfunction (short-circuited)	
	Tds2 sensor malfunction (short-circuited)	
Heat exchanger gas temperature sensor malfunction	Tg sensor malfunction (R2T)	J4
Suction pipe temperature sensor malfunction	TsA sensor malfunction (short-circuited) (R8T)	J5
Heat exchanger temperature sensor malfunction	Tb sensor malfunction (R4T)	J6
Liquid pipe temperature sensor malfunction	Tsc sensor malfunction (R6T)	J7
	TL sensor malfunction (R9T)	
Heat exchanger liquid pipe temperature sensor malfunction	Tf sensor malfunction (R7T)	J8
Subcooling heat exchanger temperature sensor malfunction	Tsh sensor malfunction (R5T)	J9
Discharge pressure sensor malfunction	Pc sensor malfunction (S1NPH)	JA
Suction pressure sensor malfunction	Pe sensor malfunction (S1NPL)	JC
INV PCB malfunction	Faulty IPM Current sensor failure confirmation 1 Current sensor failure confirmation 2 IGBT malfunction	L1
Rise in INV radiation fin temperature	Overheat of INV radiation fin temperature	L4
DC output overcurrent	INV compressor (outdoor unit)	L5
	INV compressor (function unit)	
Electronic thermal	Electronic thermal 1	L8
	Electronic thermal 2	
	Loss of synchronization	
	Speed degradation after startup	
	Thunder detected	
Stall prevention (time limit)	Stall prevention (increased current)	L9
	Stall prevention (startup failure)	
	Abnormal starting waveform	
	Loss of synchronization	
INV transmission malfunction	INV transmission data malfunction	LC
	INV transmission malfunction	

○ : ON
◑ : Blink
● : OFF

○: ON ●: OFF ◑:Blink

Malfunction code	Confirmation of malfunction 1 (Check 1)							Confirmation of malfunction 2 (Check 2)							Confirmation of malfunction 3 (Check 3)							Confirmation of malfunction 4 (Check 4)						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P
E1	◑			●	●	◑	◑	◑	●	○	●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
								◑	●	○	●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	◑	◑	◑
E3								◑	●	○	●	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
E4								◑	●	○	●	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
E5								◑	●	○	●	◑	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
E6								◑	●	○	●	◑	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
E7								◑	●	○	●	◑	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
															◑	○	●	●	●	●	●	◑	○	○	◑	●	*1	
															◑	○	●	●	●	●	◑	◑	○	○	●	●		
															◑	○	●	●	●	●	◑	◑	○	○	●	◑		
															◑	○	●	●	●	●	◑	◑	○	○	◑	●		
E9								◑	●	○	◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
															◑	○	●	●	●	●	●	◑	○	○	◑	●		
F3	◑			●	◑	●	◑	◑	●	○	●	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	*1	
F6								◑	●	○	●	◑	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
H7	◑			●	◑	●	●	◑	●	○	●	◑	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	◑	◑	○	○	●	●	*1	
H9								◑	●	○	◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
J2	◑			●	◑	◑	●	◑	●	○	●	●	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
J3								◑	●	○	●	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
															◑	○	●	●	●	●	●	◑	○	○	◑	●		
J4								◑	●	○	●	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
J5								◑	●	○	●	◑	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	*1	
J6								◑	●	○	●	◑	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
J7								◑	●	○	●	◑	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	◑		
															◑	○	●	●	●	●	●	◑	○	○	●	●		
J8								◑	●	○	◑	●	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
J9								◑	●	○	◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
JA								◑	●	○	◑	●	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
JC								◑	●	○	◑	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
L1	◑			●	◑	◑	◑	◑	●	○	●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
																						◑	○	○	●	◑		
																						◑	○	○	◑	●		
																						◑	○	○	◑	◑		
L4								◑	●	○	●	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
L5								◑	●	○	●	◑	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	*1	
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
L8								◑	●	○	◑	●	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
L9								◑	●	○	◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
LC								◑	●	○	◑	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		

Display of contents of malfunction (first digit)

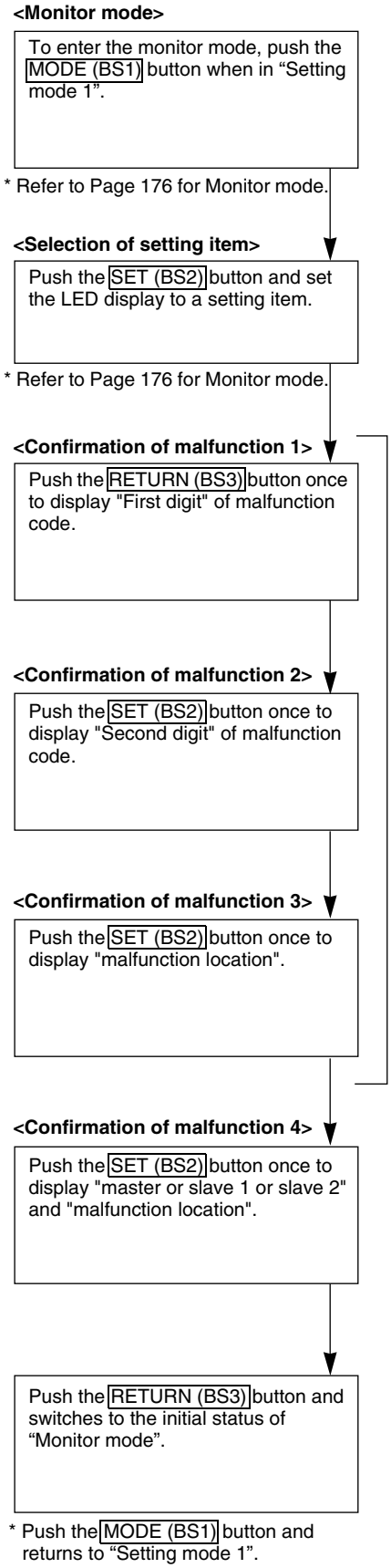
Display of contents of malfunction (second digit)

Display 1 of malfunction in detail

Display 2 of malfunction in detail

*1: Faulty system

			Individual system	Multi system
●	●	→	Right-hand system	Master
●	◑	→	Left-hand system	Slave 1
◑	●	→	—	Slave 2
◑	◑	→	All systems	System



Detail description on next page.

Malfunctions		Malfunction code
Description of malfunction	Description of malfunction (PGF)	Remote controller
Open phase and unbalanced power supply	Unbalanced INV power supply voltage	P1
INV radiation fin temperature sensor malfunction	INV fin thermistor malfunction	P4
Faulty combination of INV and fan driver	Faulty combination of INV	PJ
Out of gas	Out-of-gas alarm	U0
Reversed phase	Reversed phase malfunction	U1
Abnormal power supply voltage	Insufficient INV voltage	U2
	INV open phase (single phase)	
	Abnormal charge of capacitor of INV main circuit	
Test run not carried out yet	Test run not carried out yet	U3
Faulty transmission between indoor and outdoor units	IN-OUT transmission malfunction	U4
	System malfunction	
Faulty transmission between outdoor units	Malfunction caused when mounting the external control adaptor	U7
	Alarm given when mounting the external control adaptor	
	Malfunction caused between the master and the slave 1	
	Malfunction caused between the master and the slave 2	
	Multi RTSYQ models connected	
	Faulty address setting of slaves 1 and 2	
	4 or more outdoor units connected in the same system	
	Erroneous address of slaves 1 and 2	
	Disconnection of function unit	
	Over-connection of function unit	
	Error of installation for 8, 12HP single unit	
Faulty transmission with other systems	Other system or other unit in the same system	U9
Faulty field setting	Excess indoor units connected	UA
	Erroneous refrigerant used for indoor unit	
	Faulty combination of outdoor units	
	Faulty independent installation	
	Faulty connection of former BS unit	
Unmatched wiring/piping, no system settings	Unmatched wiring/piping	UF
Faulty system line	Wrong wiring (auto address error)	UH

○ : ON
◑ : Blink
● : OFF

○: ON ●: OFF ◑:Blink

Malfunction code	Confirmation of malfunction 1 (Check 1)							Confirmation of malfunction 2 (Check 2)							Confirmation of malfunction 3 (Check 3)							Confirmation of malfunction 4 (Check 4)						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P
P1	◑	◑	●	◑	●	●	●	◑	●	○	●	●	●	◑	◑	○	◑	●	●	●	●	◑	○	○	●	●		
P4								◑	●	○	●	◑	●	●	◑	○	◑	●	●	●	●	◑	○	○	●	●	＊1	
PJ								◑	●	○	◑	◑	●	◑	◑	○	◑	●	●	●	●	◑	○	○	●	●		
U0	◑	◑	●	◑	●	●	◑	◑	●	○	●	●	●	●	◑	○	◑	●	●	●	●	◑	○	○	●	●	◑	◑
U1								◑	●	○	●	●	●	◑	◑	○	◑	●	●	●	●	◑	○	○	●	●		
U2								◑	●	○	●	●	◑	●	◑	○	◑	●	●	●	●	◑	○	○	●	●		
															◑	○	◑	●	●	●	●	◑	○	○	●	◑	＊1	
U3								◑	●	○	●	●	◑	◑	◑	○	◑	●	●	●	●	◑	○	○	●	●	◑	◑
U4								◑	●	○	●	◑	●	●	◑	○	◑	●	●	●	●	◑	○	○	●	●	◑	◑
															◑	○	◑	●	●	●	●	◑	○	○	●	◑	◑	◑
U7								◑	●	○	●	◑	◑	◑	◑	○	◑	●	●	●	●	◑	○	○	●	●	◑	◑
															◑	○	◑	●	●	●	●	◑	○	○	●	◑	◑	◑
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															◑	○	◑	●	●	●	◑	◑	○	○	◑	◑	◑	◑
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															◑	○	●	●	●	◑	●	◑	○	○	◑	●	◑	◑
															◑	○	●	●	●	◑	●	◑	○	○	◑	◑	◑	◑
U9								◑	●	○	◑	●	●	◑	◑	○	◑	●	●	●	●	◑	○	○	●	●	◑	◑
UA								◑	●	○	◑	●	◑	●	◑	○	◑	●	●	●	●	◑	○	○	◑	●	◑	◑
															◑	○	◑	●	●	●	◑	◑	○	○	●	●	◑	◑
															◑	○	◑	●	●	●	◑	◑	○	○	●	◑	◑	◑
															◑	○	◑	●	●	◑	●	◑	○	○	●	◑	◑	◑
															◑	○	◑	●	●	◑	●	◑	○	○	◑	●	◑	◑
UF								◑	●	○	◑	◑	◑	◑	◑	○	◑	●	●	●	●	◑	○	○	●	●	◑	◑
UH								◑	●	○	◑	●	◑	◑	◑	○	◑	●	●	●	●	◑	○	○	●	●	◑	◑

Display of contents of malfunction (first digit)

Display of contents of malfunction (second digit)

Display 1 of malfunction in detail

Display 2 of malfunction in detail

*1: Faulty system

Individual system			Multi system
●	●	→ Right-hand system	Master
●	◑	→ Left-hand system	Slave 1
◑	●	→ —	Slave 2
◑	◑	→ All systems	System

4. Troubleshooting by Indication on the Remote Controller

4.1 "A0" Indoor Unit: Error of External Protection Device

Remote Controller Display

A0

Applicable Models

All indoor unit models

Method of Malfunction Detection

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

Malfunction Decision Conditions

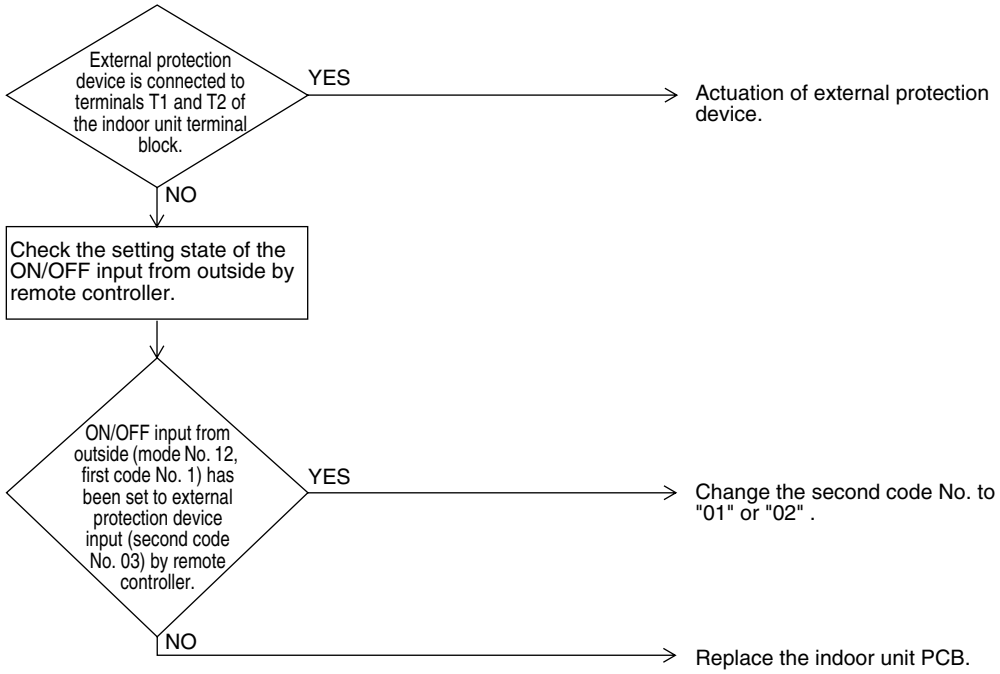
When an open circuit occurs between external input terminals with the remote controller set to "external ON/OFF terminal".

Supposed Causes

- Actuation of external protection device
- Improper field set
- Defect of indoor unit PCB

Troubleshooting

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



4.2 "A1" Indoor Unit: PCB Defect

Remote Controller Display

A1

Applicable Models

All indoor unit models

Method of Malfunction Detection

Check data from E²PROM.

Malfunction Decision Conditions

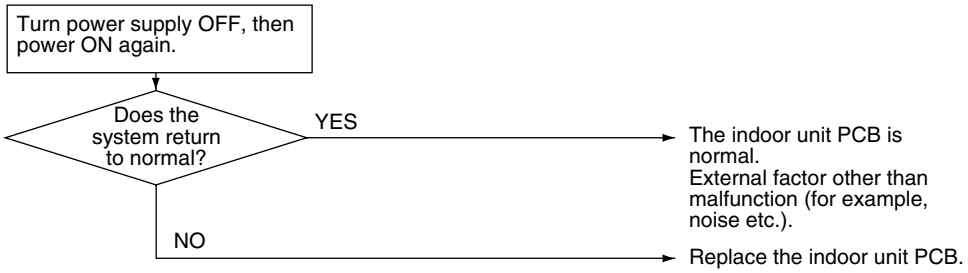
When data could not be correctly received from the E²PROM
E²PROM : Type of nonvolatile memory. Maintains memory contents even when the power supply is turned off.

Supposed Causes

- Defect of 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 occurred.

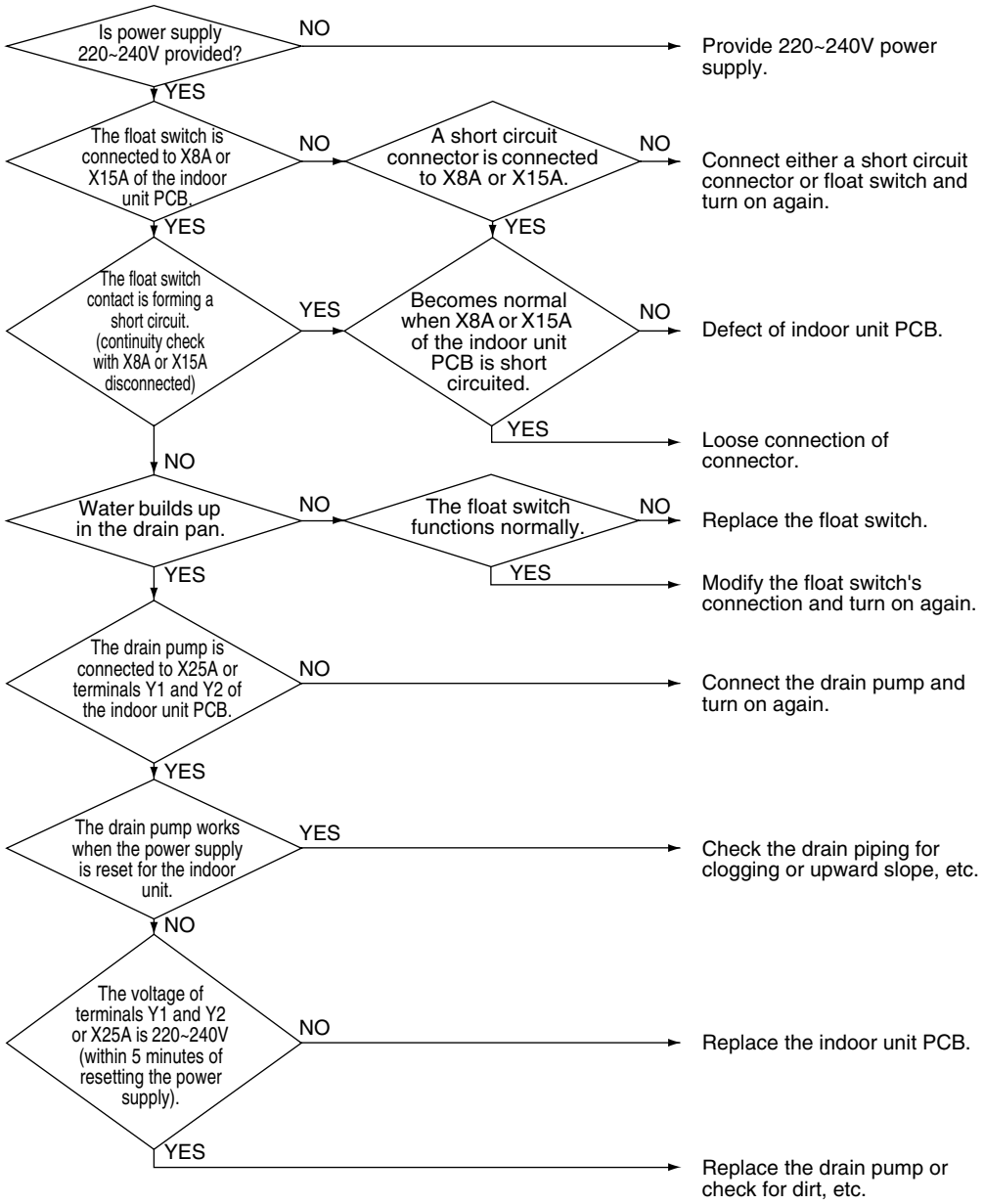


4.3 "A3" Indoor Unit: Malfunction of Drain Level Control System (S1L)

Remote Controller Display	A3
Applicable Models	FXCQ, FXZQ, FXFQ, FXSQ, FXKQ, FXDQ, FXMQ, FXUQ, FXHQ (Option), FXMQ200,250M (Option), FXAQ (Option)
Method of Malfunction Detection	By float switch OFF detection
Malfunction 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 ■ Defect of float switch or short circuit connector ■ Defect of drain pump ■ Drain clogging, upward slope, etc. ■ Defect of 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 occurred.

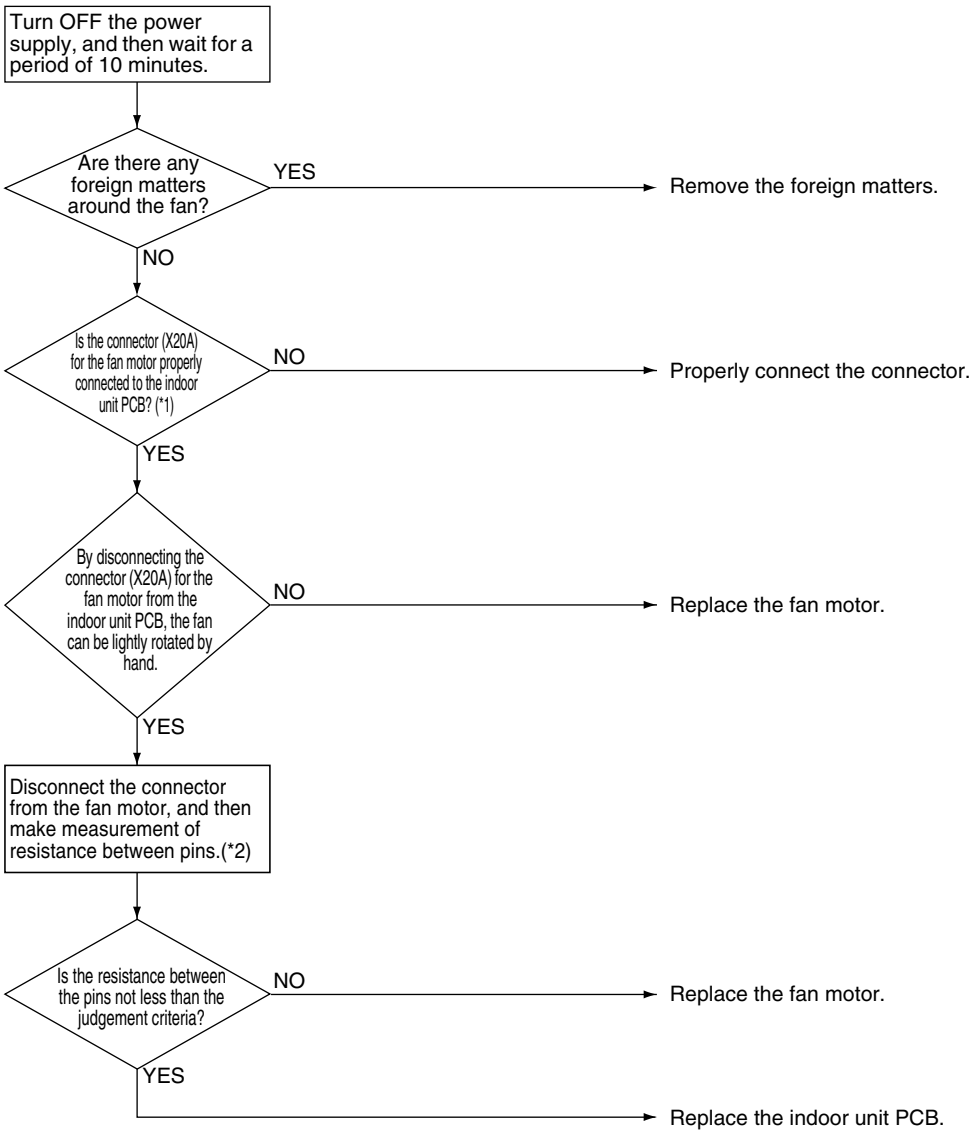


4.4 "A6" Indoor Unit: Fan Motor (M1F) Lock, Overload

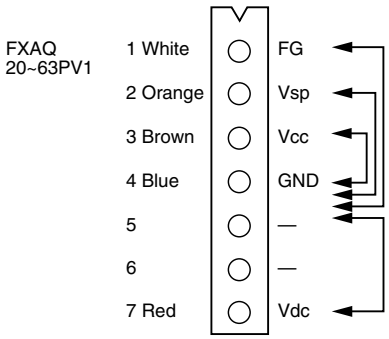
Remote Controller Display	A6
Applicable Models	FXAQ20~63PV1, FXFQ20~125P8VE
Method of Malfunction Detection	Abnormal fan revolutions are detected by a signal output from the fan motor.
Malfunction Decision Conditions	When the fan revolutions do not increase
Supposed Causes	■ Broken wires in, short circuit of, or disconnection of connectors from the fan motor harness ■ Faulty fan motor (Broken wires or faulty insulation) ■ Abnormal signal output from the fan motor (Faulty circuit) ■ Faulty PCB ■ Instantaneous disturbance in the power supply voltage ■ Fan motor lock (Due to motor or external causes) ■ The fan does not rotate due to foreign matters blocking the fan. ■ Disconnection of the connector between the high-power PCB (A1P) and the low-power PCB (A2P).

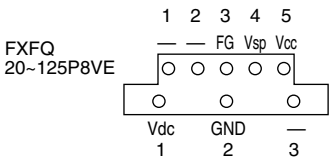
Troubleshooting

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



*1. If any junction connector is provided between the connector (X20A) on the indoor unit PCB and the fan motor, also check whether or not the junction connector is properly connected.
*2. All resistance measuring points and judgement criteria





Judgement Criteria

Measuring point	Criteria
FG-GND	Not less than 1MΩ
Vsp-GND	Not less than 100kΩ
Vcc-GND	Not less than 100Ω
Vdc-GND	Not less than 100kΩ

"A6" Indoor Unit : Malfunction of Indoor Unit Fan Motor

Remote Controller Display

A6

Applicable Models

FXHQ32~100MAVE, FXDQ20~32PB, 40~63NBVE

Method of Malfunction Detection

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

Malfunction Decision Conditions

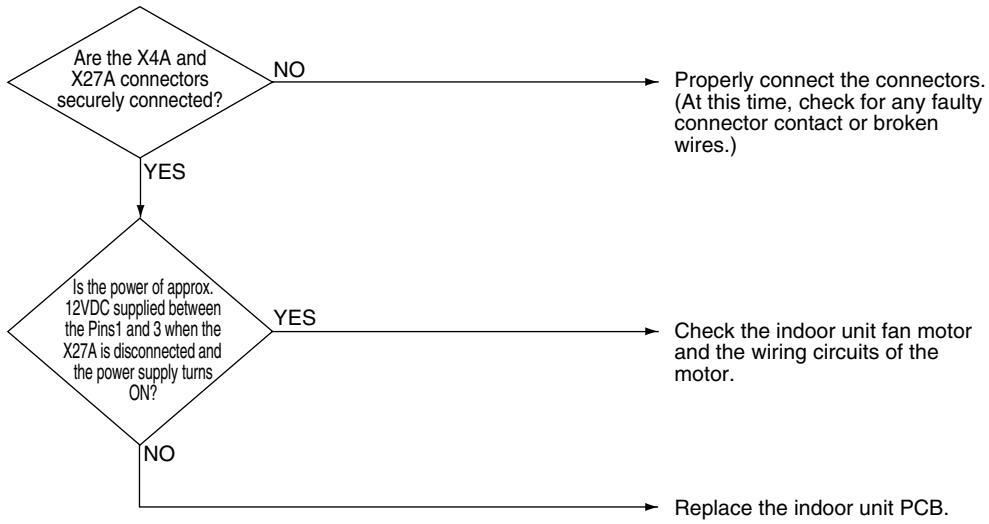
When no revolutions can be detected even at the maximum output voltage to the fan

Supposed Causes

- Faulty indoor fan motor
- Broken wires
- Faulty contact

Troubleshooting

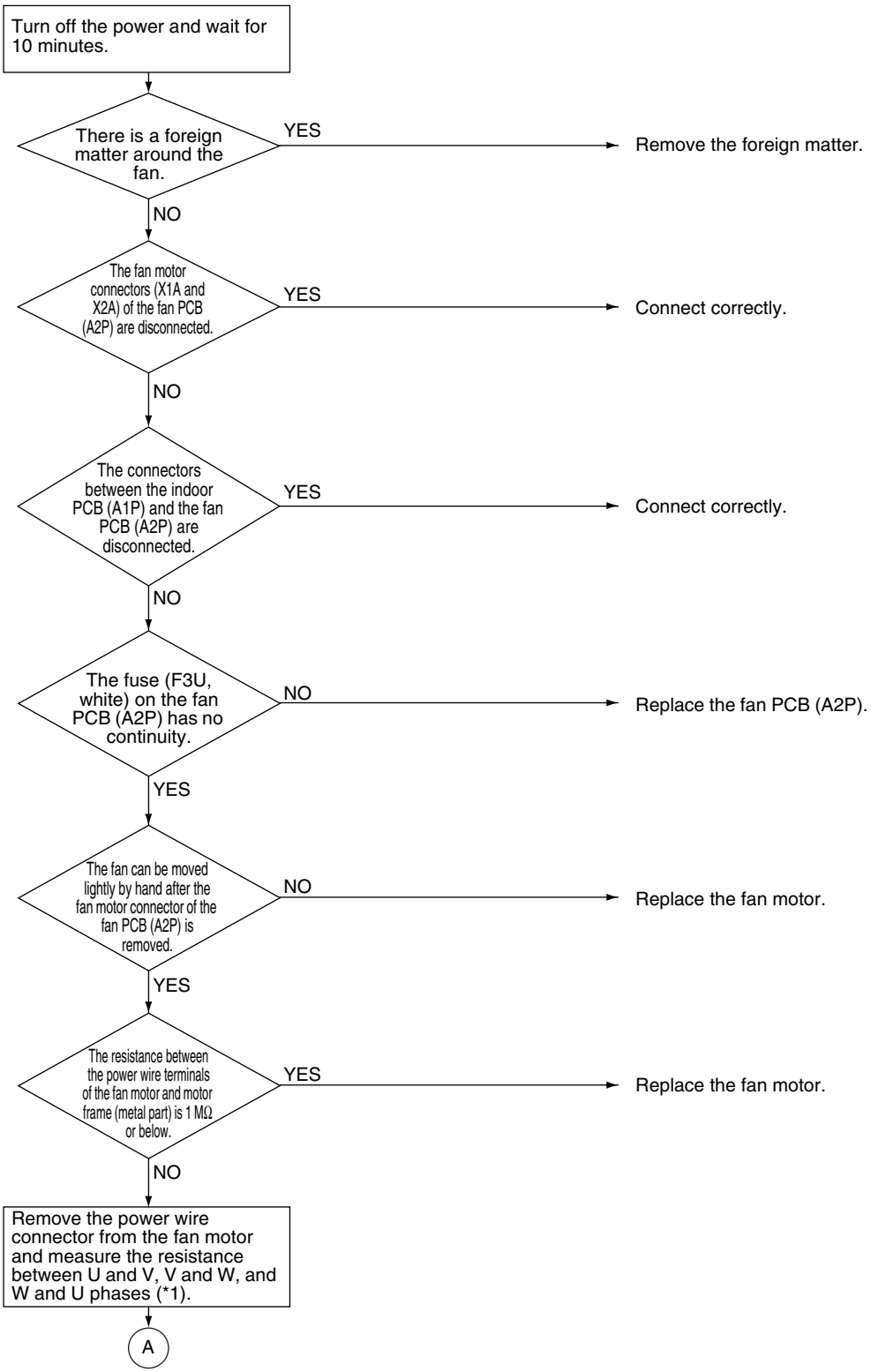
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

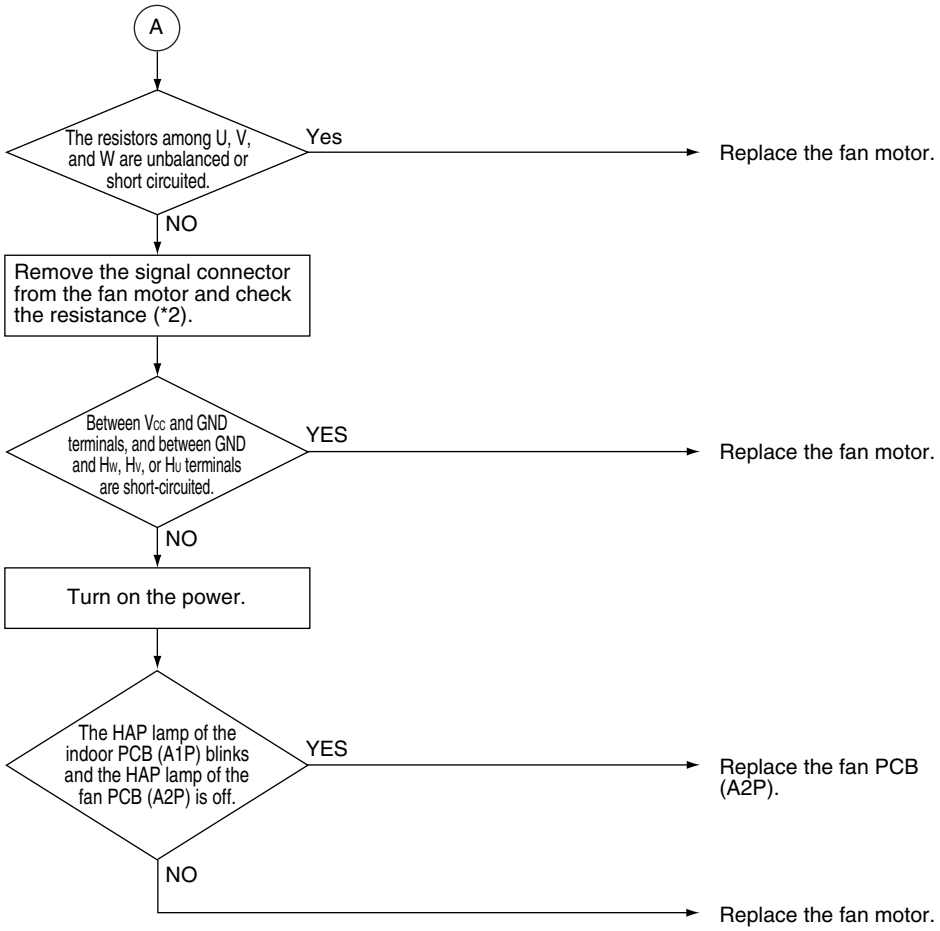


Remote Controller Display	A6
Applicable Models	FXMQ50~140P
Method of Malfunction Detection	Detection from the current flow on the fan PCB Detection from the RPM of the fan motor in operation Detection from the position signal of the fan motor Detection from the current flow on the fan PCB when the fan motor starting operation
Malfunction 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. ■ An overcurrent flows.
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 PCB (A1P) and fan PCB (A2P) ■ A failure in fan PCB (A2P) ■ A failure in the fan motor

Troubleshooting

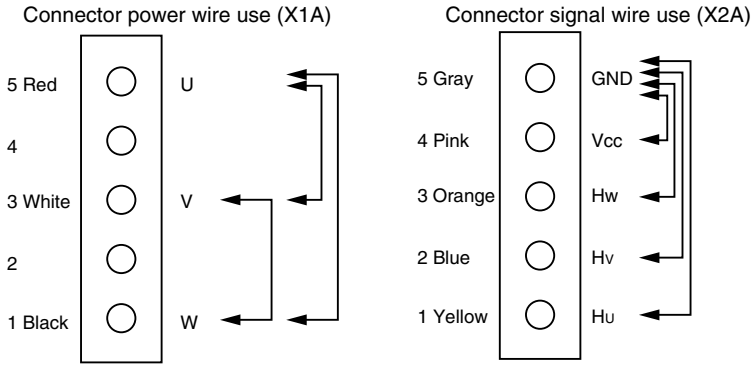
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.





*1. Measurement of power 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 five conductors) 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 five conductors).

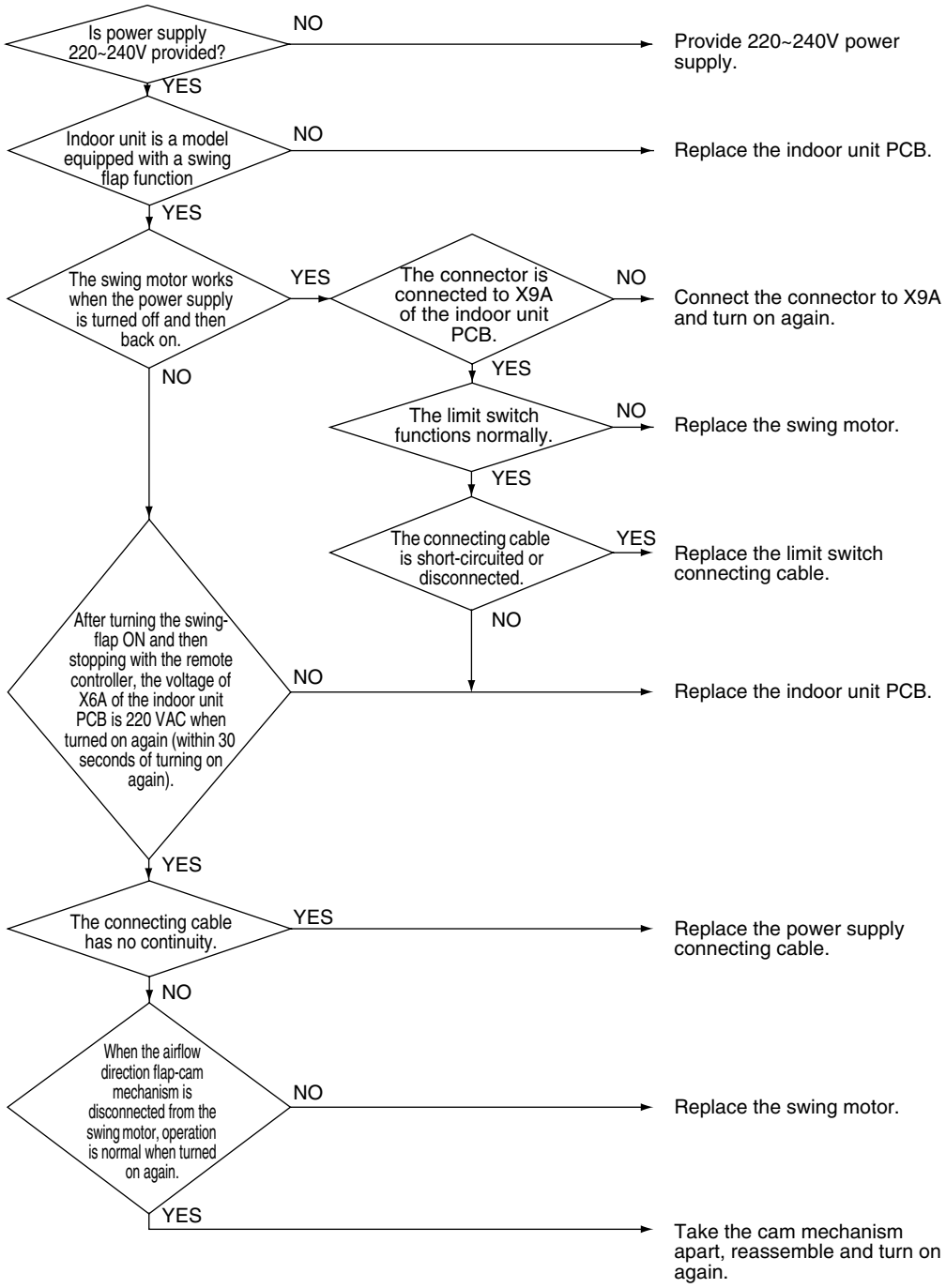


4.5 "A7" Indoor Unit: Malfunction of Swing Flap Motor (M1S)

Remote Controller Display	A7
Applicable Models	FXCQ, FXHQ, FXKQ
Method of Malfunction Detection	Utilizes ON/OFF of the limit switch when the motor turns
Malfunction 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	■ Defect of swing motor ■ Defect of connection cable (power supply and limit switch) ■ Defect of airflow direction adjusting flap-cam ■ Defect of indoor unit PCB

Troubleshooting

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

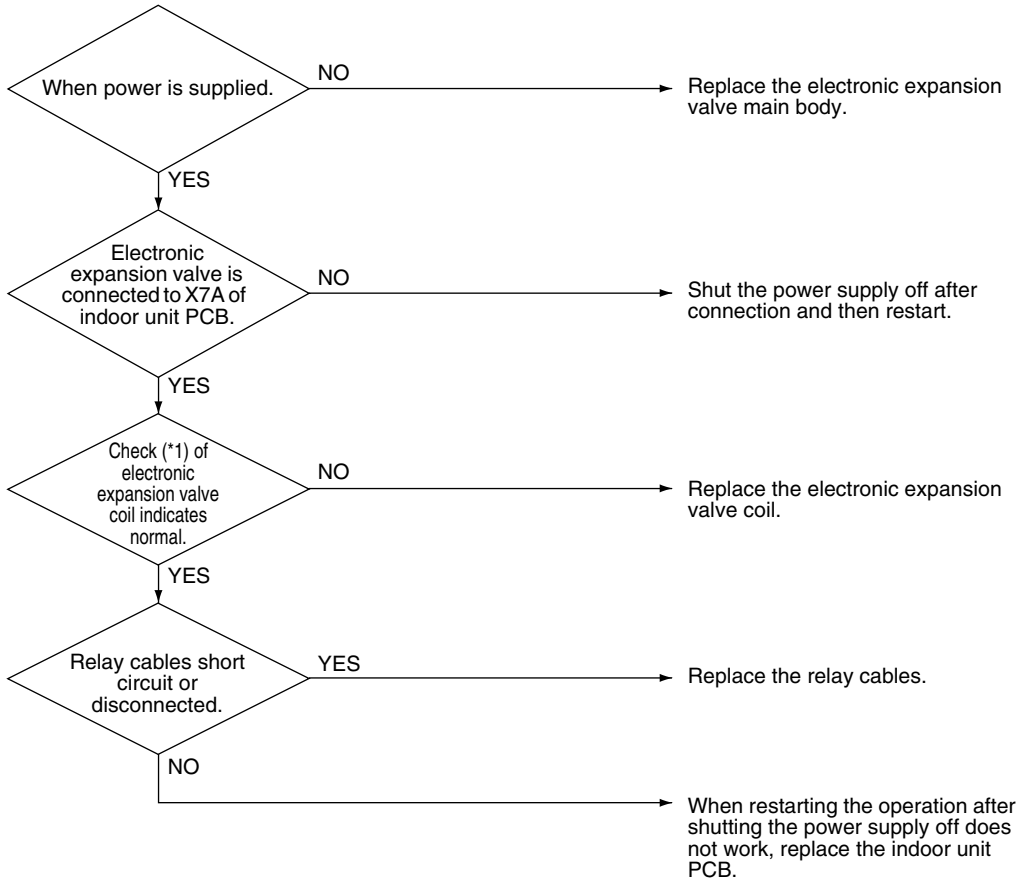


4.6 "A9" Electronic Expansion Valve Malfunction / Dust Clogging

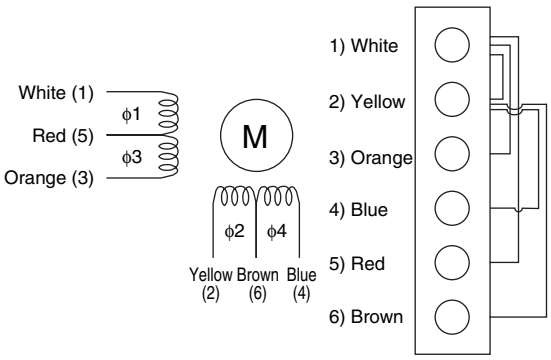
Remote Controller Display	A9
Applicable Models	FXFQ25~125P
Method of Malfunction Detection	Check coil condition of electronic expansion valve by using micro-computer. Check dust clogging condition of electronic expansion valve main body by using micro-computer.
Malfunction Decision Conditions	Pin input 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 drive of electronic expansion valve ■ Defective PCB of indoor unit ■ Defective relay cables

Troubleshooting

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



*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.



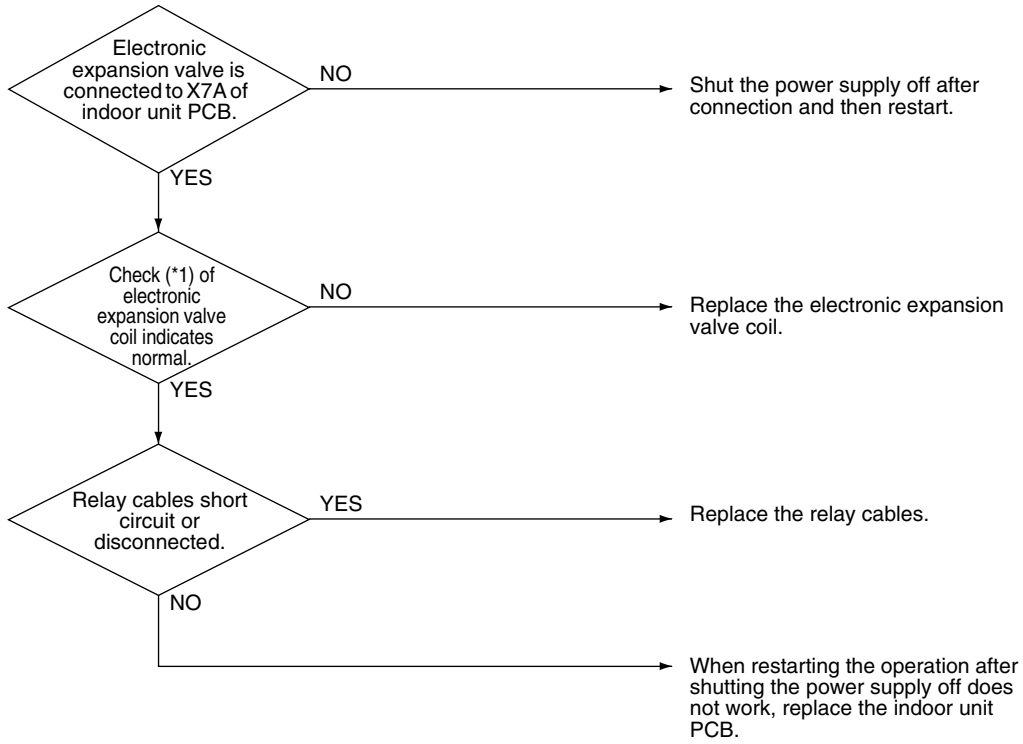
The normal products will show the following conditions:
(1) No continuity between (1) and (2)
(2) Resistance value between (1) and (3) is approx. 300 Ω
(3) Resistance value between (1) and (5) is approx. 150 Ω
(4) Resistance value between (2) and (4) is approx. 300 Ω
(5) Resistance value between (2) and (6) is approx. 150 Ω

"A9" Indoor Unit: Malfunction of Electronic Expansion Valve Coil

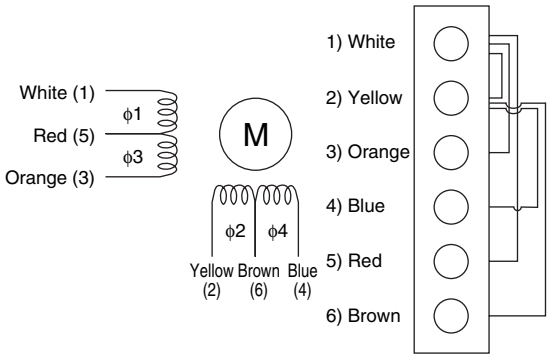
Remote Controller Display	A9
Applicable Models	Indoor units except FXFQ models
Method of Malfunction Detection	Check coil condition of electronic expansion valve by using micro-computer.
Malfunction Decision Conditions	Pin input for electronic expansion valve coil is abnormal when initializing micro-computer.
Supposed Causes	■ Defective drive of electronic expansion valve ■ Defective PCB of indoor unit ■ Defective relay cables

Troubleshooting

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



*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

4.7 "AF" Indoor Unit: Drain Level above Limit

Remote Controller Display

AF

Applicable Models

FXCQ, FXZQ, FXFQ, FXSQ, FXKQ, FXMQ, FXDQ, FXMQ-MF, FXUQ

Method of Malfunction Detection

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

Malfunction Decision Conditions

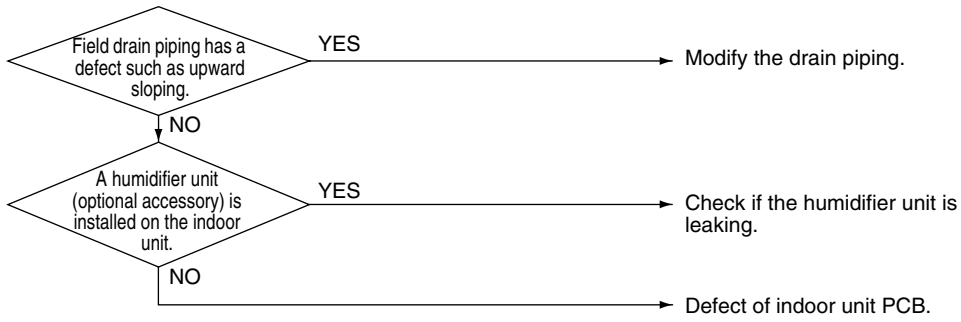
When the float switch changes from ON to OFF while the compressor is in non-operation.
★ Error code is displayed but the system operates continuously.

Supposed Causes

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

Troubleshooting

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



4.8 "A1" Indoor Unit: Malfunction of Capacity Determination Device

Remote Controller Display

A1

Applicable Models

All indoor unit models

Method of Malfunction 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.

Malfunction Decision Conditions

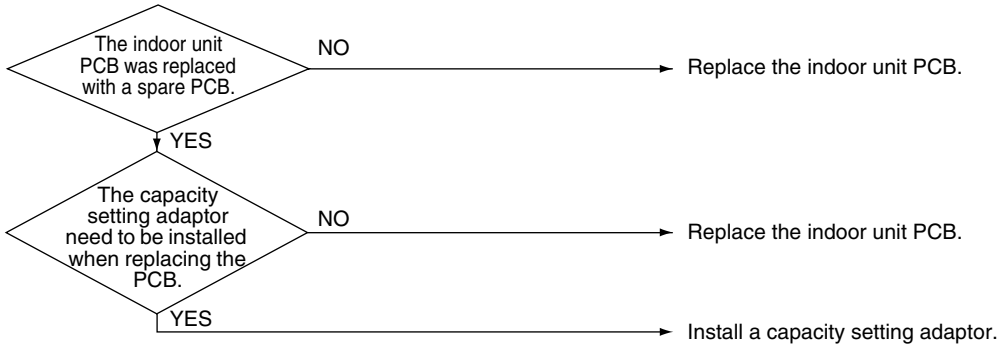
When the capacity code is not saved to the PCB, and the capacity setting adaptor is not connected.
When a capacity that does not exist for that unit is set.

Supposed Causes

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

Troubleshooting

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



4.9 "C4" Indoor Unit: Malfunction of Thermistor (R2T) for Heat Exchanger

Remote Controller Display

C4

Applicable Models

All indoor unit models

Method of Malfunction Detection

Malfunction detection is carried out by temperature detected by heat exchanger thermistor.

Malfunction Decision Conditions

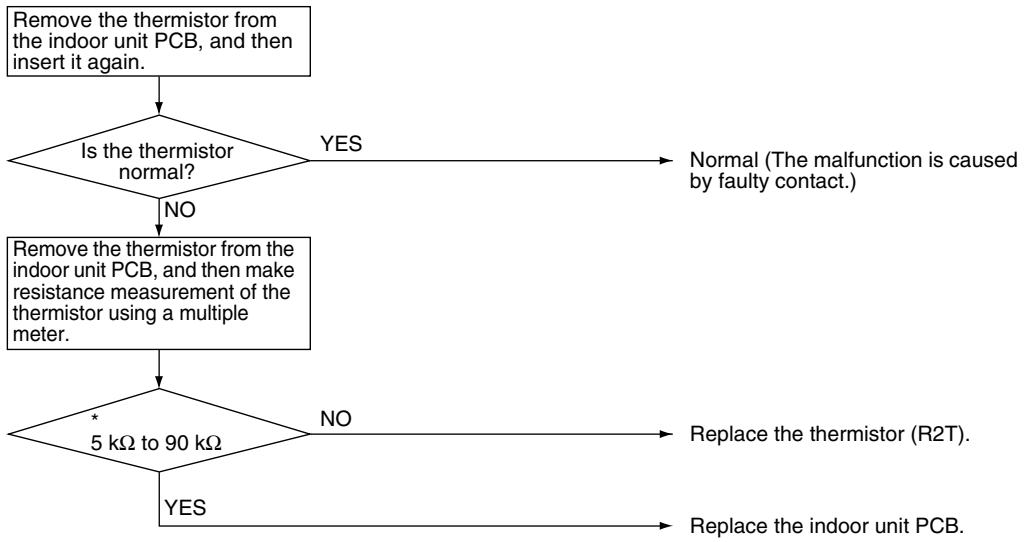
When the heat exchanger thermistor becomes disconnected or shorted while the unit is running.

Supposed Causes

- Defect of thermistor (R2T) for liquid pipe
- Defect of indoor unit PCB

Troubleshooting

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



∗ Refer to "Thermistor Resistance / Temperature Characteristics" table on P.408.

4.10 "C5" Indoor Unit: Malfunction of Thermistor (R3T) for Gas Pipes

Remote Controller Display

C5

Applicable Models

All indoor unit models

Method of Malfunction Detection

Malfunction detection is carried out by temperature detected by gas pipe thermistor.

Malfunction Decision Conditions

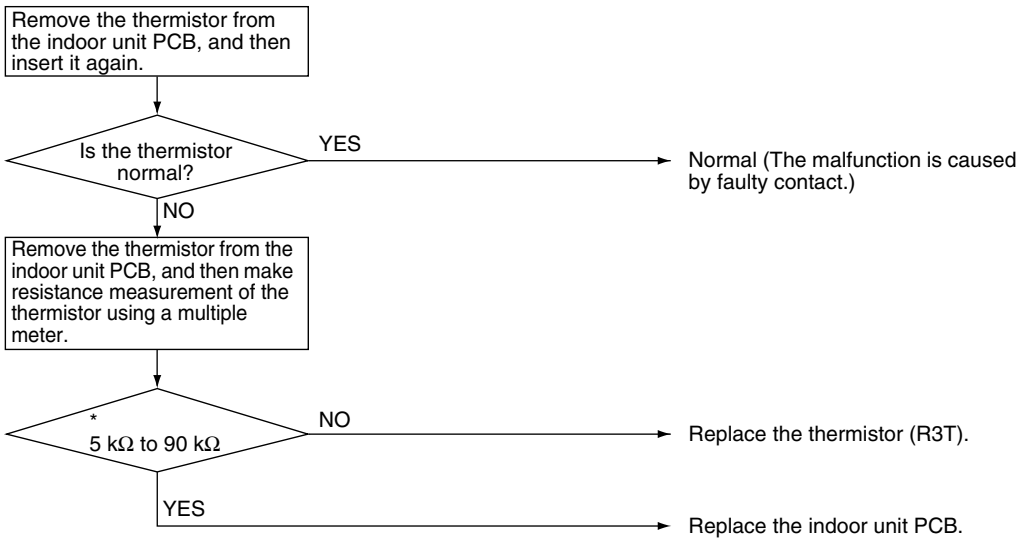
When the gas pipe thermistor becomes disconnected or shorted while the unit is running.

Supposed Causes

- Defect of indoor unit thermistor (R3T) for gas pipe
- Defect of indoor unit PCB

Troubleshooting

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



∗ Refer to "Thermistor Resistance / Temperature Characteristics" table on P.408.

4.11 "C9" Indoor Unit: Malfunction of Thermistor (R1T) for Suction Air

Remote Controller Display

C9

Applicable Models

All indoor unit models

Method of Malfunction Detection

Malfunction detection is carried out by temperature detected by suction air temperature thermistor.

Malfunction Decision Conditions

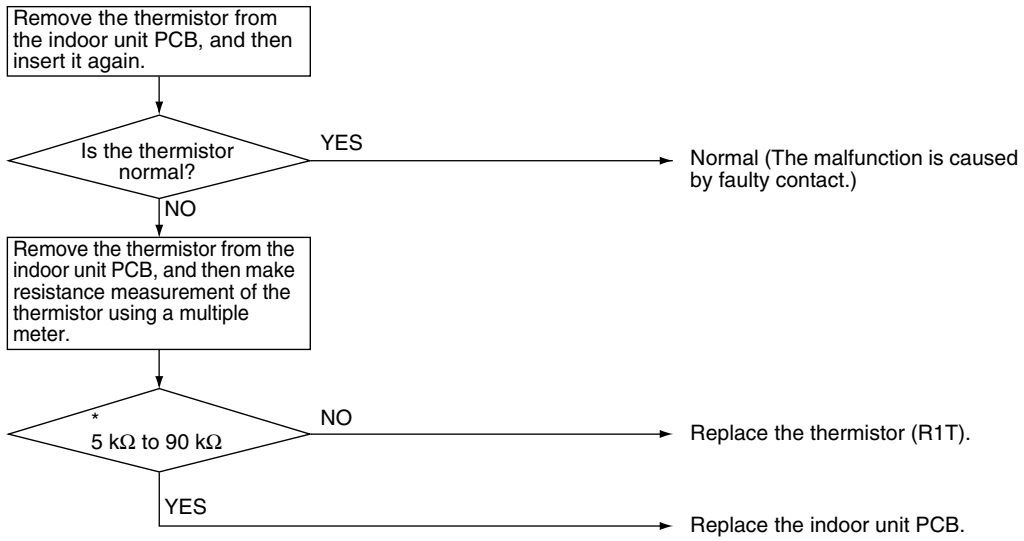
When the suction air temperature thermistor becomes disconnected or shorted while the unit is running.

Supposed Causes

- Defect of indoor unit thermistor (R1T) for suction air
- Defect of indoor unit PCB

Troubleshooting

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



∗ Refer to "Thermistor Resistance / Temperature Characteristics" table on P.408.

4.12 "C9" Indoor Unit: Malfunction of Thermistor (R4T) for Discharge Air

Remote Controller Display

C9

Applicable Models

All indoor unit models

Method of Malfunction Detection

Malfunction detection is carried out by temperature detected by suction air temperature thermistor.

Malfunction Decision Conditions

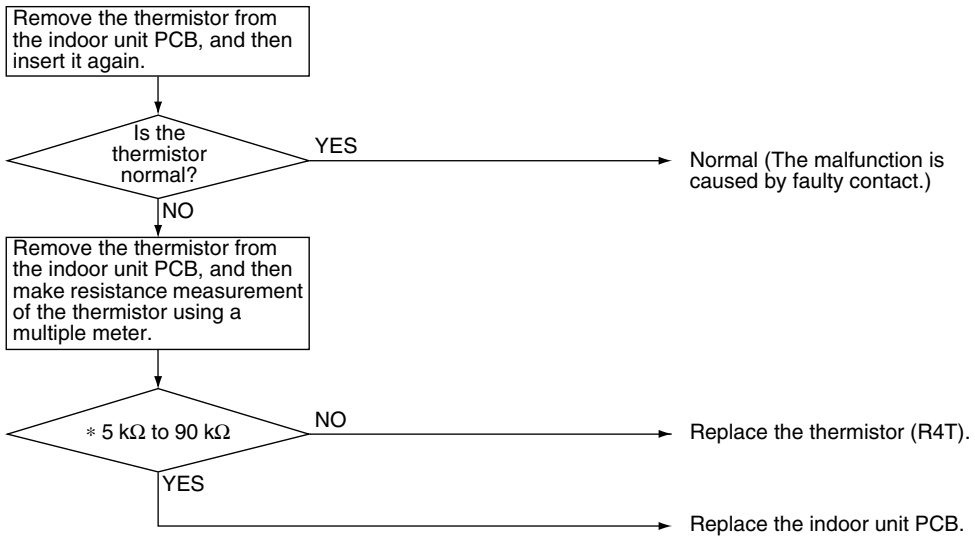
When the suction air temperature thermistor becomes disconnected or shorted while the unit is running.

Supposed Causes

- Defect of indoor unit thermistor (R4T) for air inlet
- Defect of indoor unit PCB

Troubleshooting

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



∗ Refer to "Thermistor Resistance / Temperature Characteristics" table on P.408.

4.13 "C4" Indoor Unit: Malfunction of Room Temperature Thermistor in Remote Controller

Remote Controller Display

C4

Applicable Models

All indoor unit models

Method of Malfunction Detection

Malfunction detection is carried out by temperature detected by room temperature thermistor in remote controller. (Note:)

Malfunction Decision Conditions

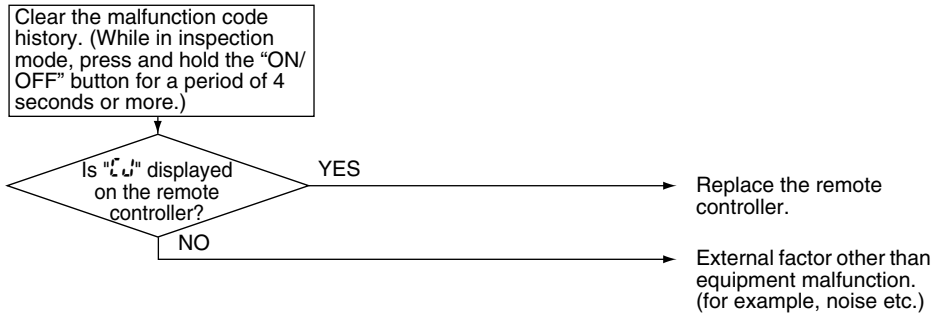
When the room temperature thermistor in remote controller becomes disconnected or shorted while the unit is running.

Supposed Causes

- Defect of room temperature thermistor in remote controller
- Defect of remote controller PCB

Troubleshooting

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



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

∗ Refer to "Thermistor Resistance / Temperature Characteristics" table on P.408.

4.14 "E 1" Outdoor Unit: PCB Defect

Remote Controller Display

E 1

Applicable Models

RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)

Method of Malfunction Detection

Abnormality is detected under the communication conditions in the hardware section between the indoor unit and outdoor unit or function unit.

Malfunction Decision Conditions

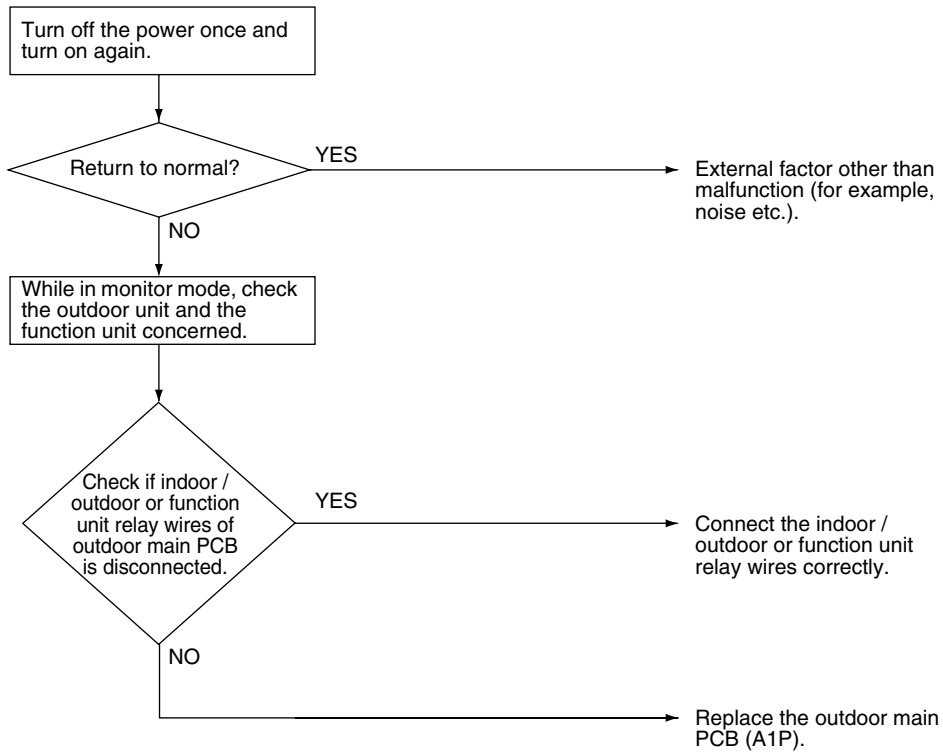
When the communication conditions in the hardware section between the indoor unit and the outdoor unit or the function unit are not normal.

Supposed Causes

- Defect of outdoor unit PCB (A1P)
- Defect of function unit PCB (A1P)
- Defective connection between the indoor and outdoor unit or function unit

Troubleshooting

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



4.15 "E3" Outdoor Unit: Actuation of High Pressure Switch

Remote Controller Display	E3
Applicable Models	RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)
Method of Malfunction Detection	Abnormality is detected when the contact of the high pressure protection switch opens.
Malfunction Decision Conditions	Error is generated when the high pressure switch activation count reaches the number specific to the operation mode. (Reference) Operating pressure of high pressure switch Operating pressure: 4.0MPa Reset pressure: 3.0MPa
Supposed Causes	■ Actuation of outdoor unit high pressure switch ■ Defect of high pressure switch ■ Defect of outdoor unit main PCB (A1P) ■ Instantaneous power failure ■ Faulty high pressure sensor

Troubleshooting

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

While in monitor mode, check the outdoor unit and the function unit concerned.

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

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

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

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

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

Service Checker
Connect the service checker to compare the "high pressure" value and the actual measurement value by pressure sensor (Refer to *1) by using the service checker.

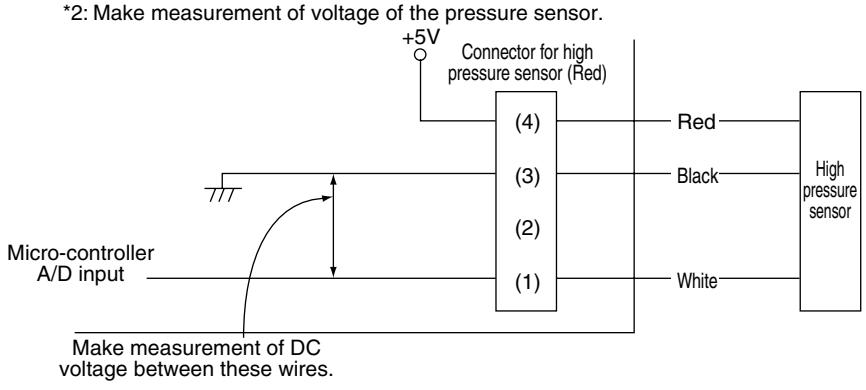
Check if the "high pressure" value and the actual measurement value by pressure sensor are the same.
- NO → Replace the main PCB (A1P).
- YES

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

CHECK 5 Referring to information on P.342, remove the causes by which the high pressure has become high.

*1: Make a comparison between the voltage of the pressure sensor and that read by the pressure gauge.
(As to the voltage of the pressure sensor, make measurement of voltage at the connector, and then convert it to pressure according to information on P.410.)

*2: Make measurement of voltage of the pressure sensor.

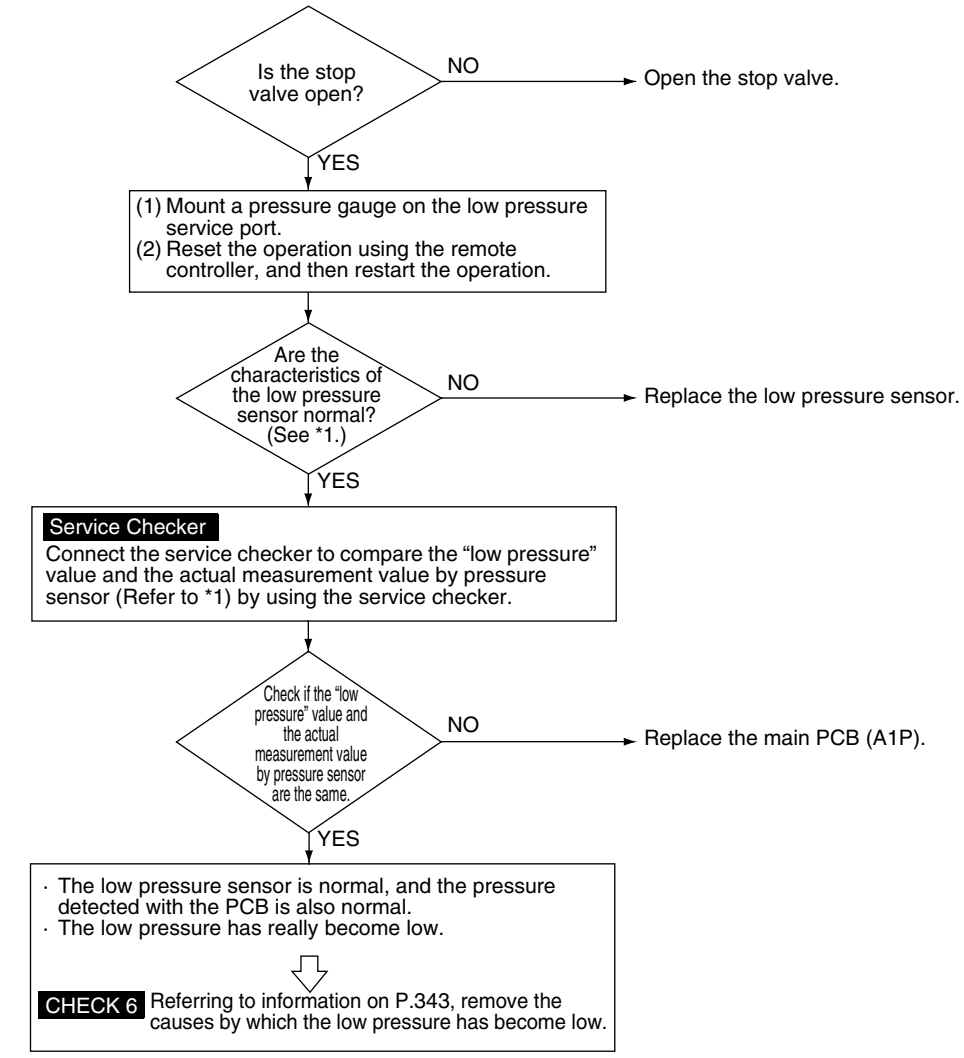


4.16 "E4" Outdoor Unit: Actuation of Low Pressure Sensor

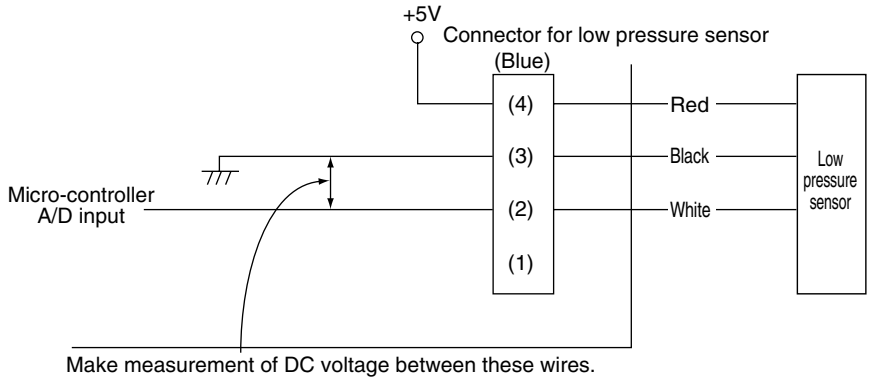
Remote Controller Display	E4
Applicable Models	RTSQ8P~16P (Outdoor Unit)
Method of Malfunction Detection	Abnormality is detected by the pressure value with the low pressure sensor.
Malfunction Decision Conditions	Error is generated when the low pressure is dropped under compressor operation. Operating pressure: 0.07MPa
Supposed Causes	■ Abnormal drop of low pressure (Lower than 0.07MPa) ■ Defect of low pressure sensor ■ Defect of outdoor unit PCB ■ Stop valve is not opened. ■ Clogged filter

Troubleshooting

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



*1: Make a comparison between the voltage of the pressure sensor and that read by the pressure gauge.
(As to the voltage of the pressure sensor, make measurement of voltage at the connector, and then convert it to pressure according to information on P.410.)
*2: Make measurement of voltage of the pressure sensor.

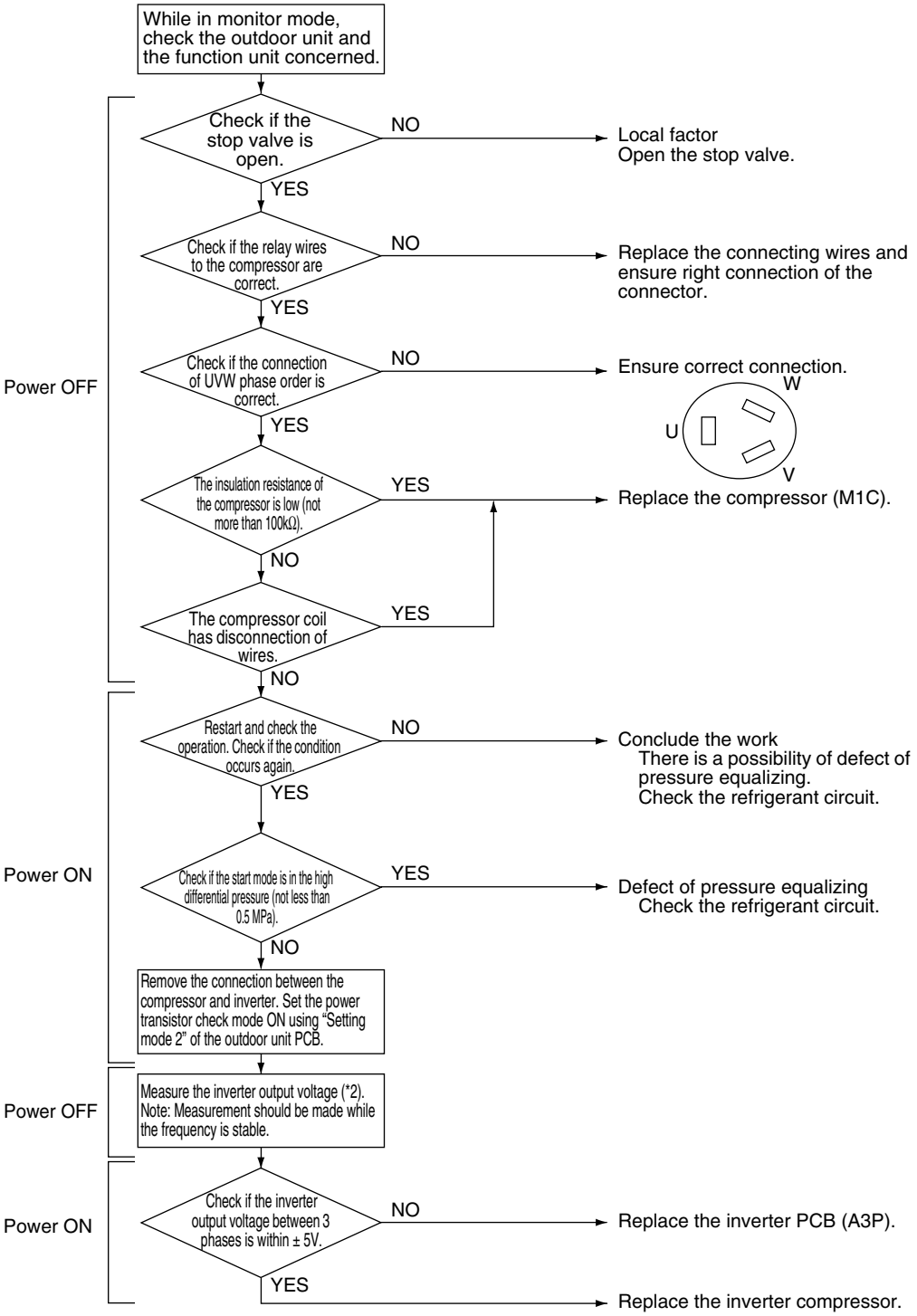


4.17 "E5" Outdoor Unit: Inverter Compressor Motor Lock

Remote Controller Display	E5
Applicable Models	RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)
Method of Malfunction Detection	Inverter PCB takes the position signal from UVW line connected between the inverter and compressor, and the malfunction is detected when any abnormality is observed in the phase-current waveform.
Malfunction Decision Conditions	This malfunction will be output when the inverter compressor motor does not start up even in forced startup mode.
Supposed Causes	■ Inverter compressor lock ■ High differential pressure (0.5MPa or more) ■ Incorrect UVW wiring ■ Faulty inverter PCB ■ Stop valve is left in closed.

Troubleshooting

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



*1: Pressure difference between high pressure and low pressure before starting.
*2: The quality of power transistors/ diode modules can be judged by executing CHECK 4 (P.341).
(Check it shutting the power supply off.)

4.18 "E6" Outdoor Unit: STD Compressor Motor Overcurrent/ Lock

Remote Controller Display

E6

Applicable Models

RTSQ8P~16P (Outdoor Unit)

Method of Malfunction Detection

Detects the overcurrent with current sensor (CT).

Malfunction Decision Conditions

Malfunction is decided when the detected current value exceeds the below mentioned value for 2 seconds.

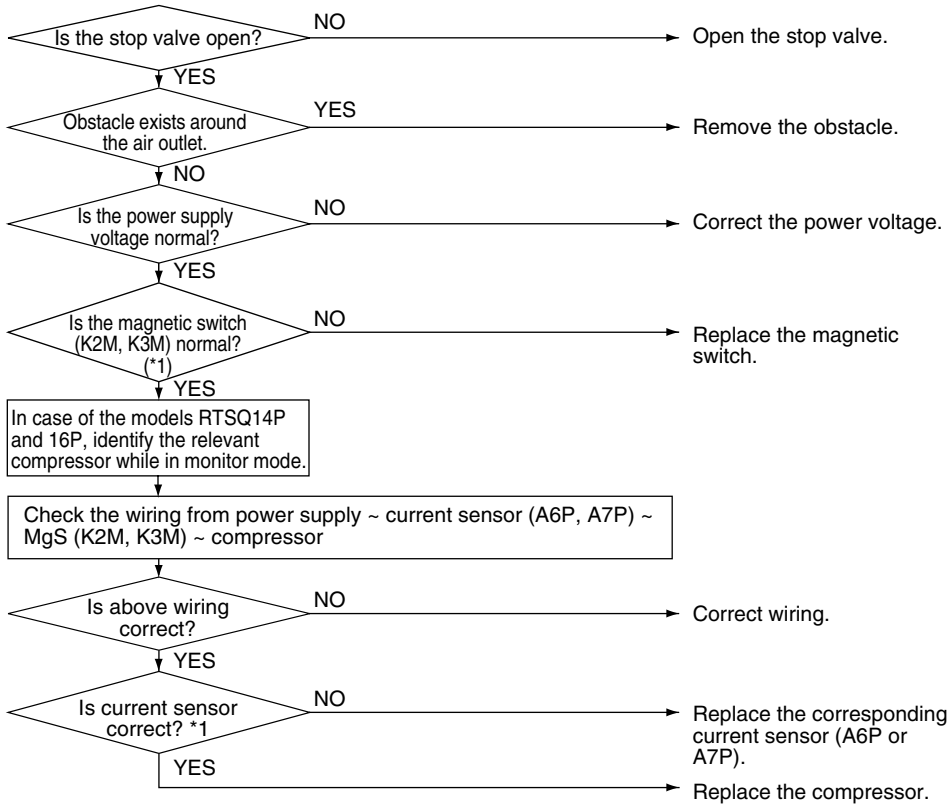
- 400 V unit : 15.0 A

Supposed Causes

- Closed stop value
- Obstacles at the air outlet
- Improper power voltage
- Faulty magnetic switch
- Faulty compressor
- Faulty current sensor (A6P, A7P)

Troubleshooting

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



Note: ∗1 One of the possible factors may be chattering due to rough MgS contact.
∗2 Abnormal case

- The current sensor value is 0 during STD compressor operation.
- The current sensor value is more than 15.0A during STD compressor stop.

4.19 "E7" Outdoor Unit: Malfunction of Outdoor Unit Fan Motor

Remote Controller Display	E7
Applicable Models	RTSQ8P~16P (Outdoor Unit)
Method of Malfunction Detection	Detect a malfunction based on the current value in the inverter PCB (as for motor 2, current value in the fan PCB). Detect a malfunction for the fan motor circuit based on the number of rotation detected by hole IC during the fan motor operation.
Malfunction Decision Conditions	■ Overcurrent is detected for inverter PCB (A4P) or fan inverter PCB (A5P) (System down is caused by 4 times of detection.) ■ In the condition of fan motor rotation, the number of rotation is below the fixed number for more than 6 seconds. (System down is caused by 4 times of detection.)
Supposed Causes	■ Failure of fan motor ■ Defect or connect ion error of the connectors/ harness between the fan motor and PCB ■ The fan can not rotate due to any foreign substances entangled. ■ Clear condition: Continue normal operation for 5 minutes

Troubleshooting

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

Check in the monitor mode
14HP ~16HP class models have 2 fans.
Check electric motor (electric motor 1 or 2) corresponding to malfunction code "ξ∩" in the monitor mode of outdoor unit PCB. (Refer to P.216~P.217 for how to check)

↓

Cut the power supply OFF and wait for 10 minutes.

↓

Check if any foreign substances around the fan. — YES → Remove the foreign substances.

↓ NO

Check the connection status of the connectors
- Fan motor 1: relay connector or X1A, X2A of compressor inverter PCB.
- Fan motor 2: relay connector or X1A, X2A of fan inverter PCB.

↓

Check if any connector is disconnected. — YES → Insert the connector.

↓ NO

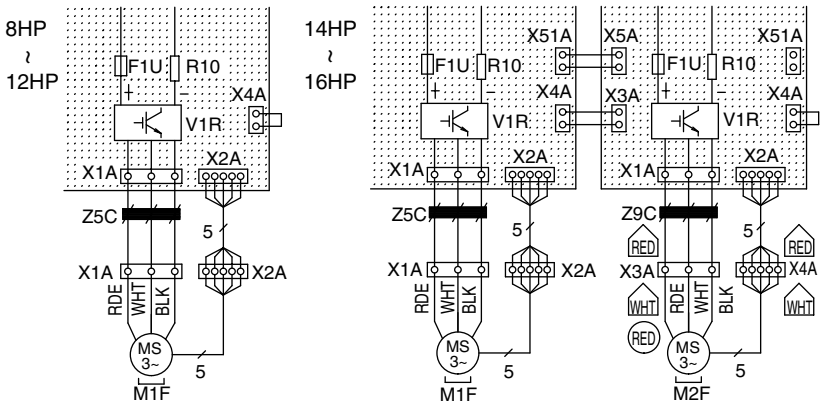
Check the color of relay connectors
- Fan motor 1: Both power supply wire and signal wire are all white.
- Fan motor 2: Both power supply wire and signal wire are red in the PCB side and white in the motor side.

↓

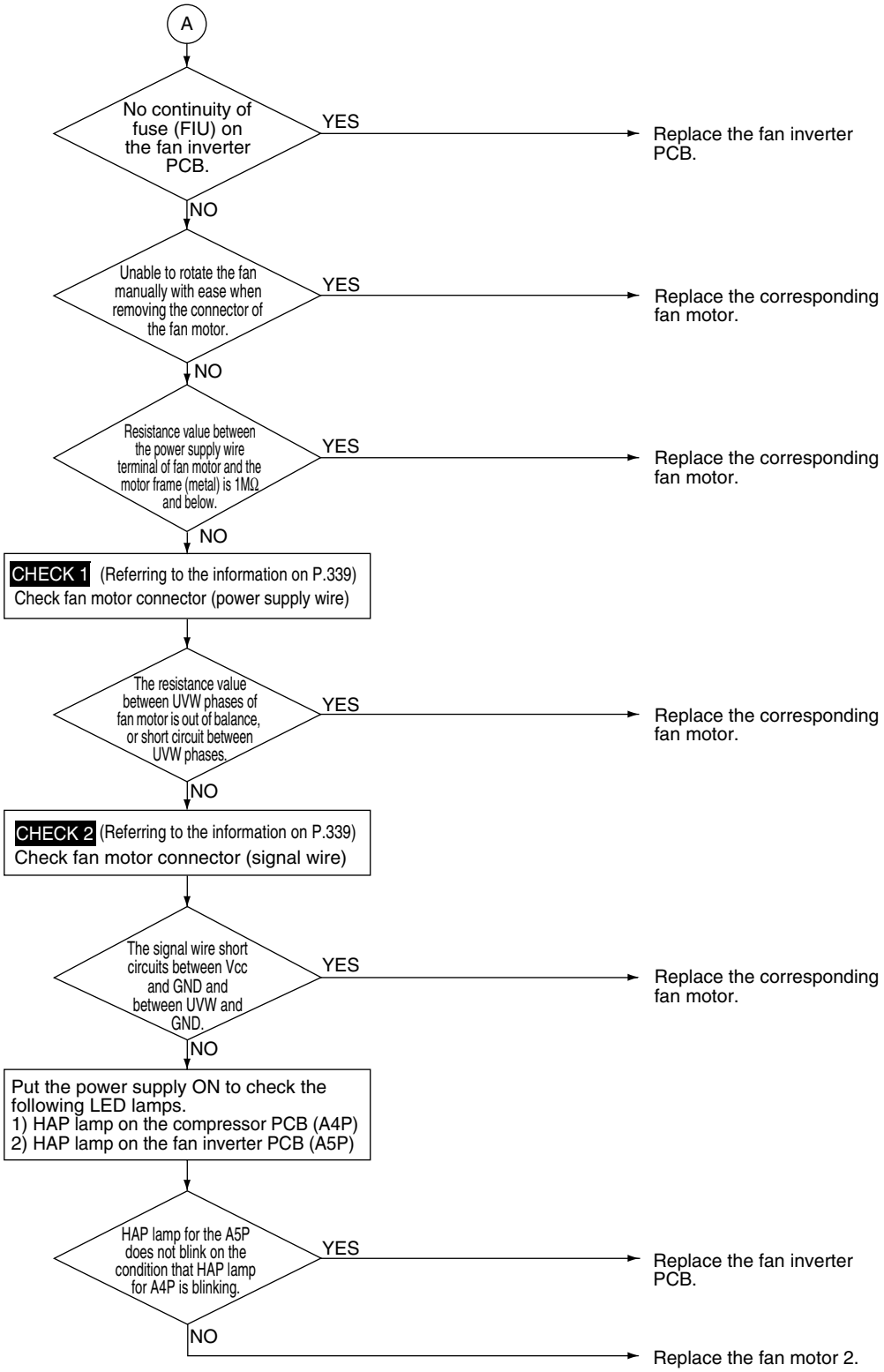
Relay connectors have any connection error. — YES → Correct the connection of the relay connectors.

↓ NO

A



Troubleshooting



4.20 "E9" Outdoor Unit: Malfunction of Electronic Expansion Valve Coil (Y1E~Y5E)

Remote Controller Display	E9
Applicable Models	RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)
Method of Malfunction Detection	Check disconnection of connector Check continuity of electronic expansion valve
Malfunction Decision Conditions	No current is detected in the common (COM [+]) when power supply is ON.
Supposed Causes	■ Disconnection of connectors for electronic expansion valve (Y1E) ■ Defect of electronic expansion valve coil ■ Defect of outdoor unit main PCB (A1P)

Troubleshooting

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

Turn power supply off, and turn power supply on again.

Return to normal?

YES → External factor other than malfunction (for example, noise etc.).

NO

Check the electronic expansion valve corresponding to the malfunction code "E9" in the monitor mode.
(Refer to P.216~217 for how to check.)

○ When Confirmation of malfunction 4 shows as follows:
◑○○●●※※ → Electronic expansion valve for main use (Y1E) or electronic expansion valve for liquid injection (Y1E)

○ When Confirmation of malfunction 4 shows as follows:
◑○○●◑※※ → Electronic expansion valve for refrigerant charge (Y2E) or 2 stage selection 1 electronic expansion valve (Y2E1)

○ When Confirmation of malfunction 4 shows as follows:
◑○○◑●※※ → Electronic expansion valve for subcooling (Y3E) or 2 stage selection 2 electronic expansion valve (Y2E2)

○ Explanation of "※※ "

● ●	Master unit
● ◑	Slave unit
◑ ●	Function unit

The connector of outdoor unit PCB (A1P) for electronic expansion valve is connected.

NO → Ensure correct connection.

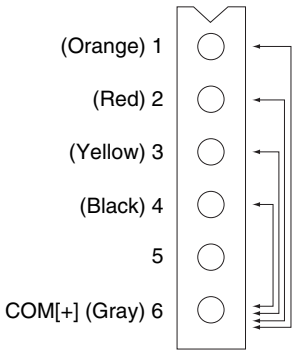
YES

The coil resistance of electronic expansion valve is normal. (Refer to ∗1)

NO → Replace the connecting cable.

YES → Replace the outdoor unit PCB (A1P).

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



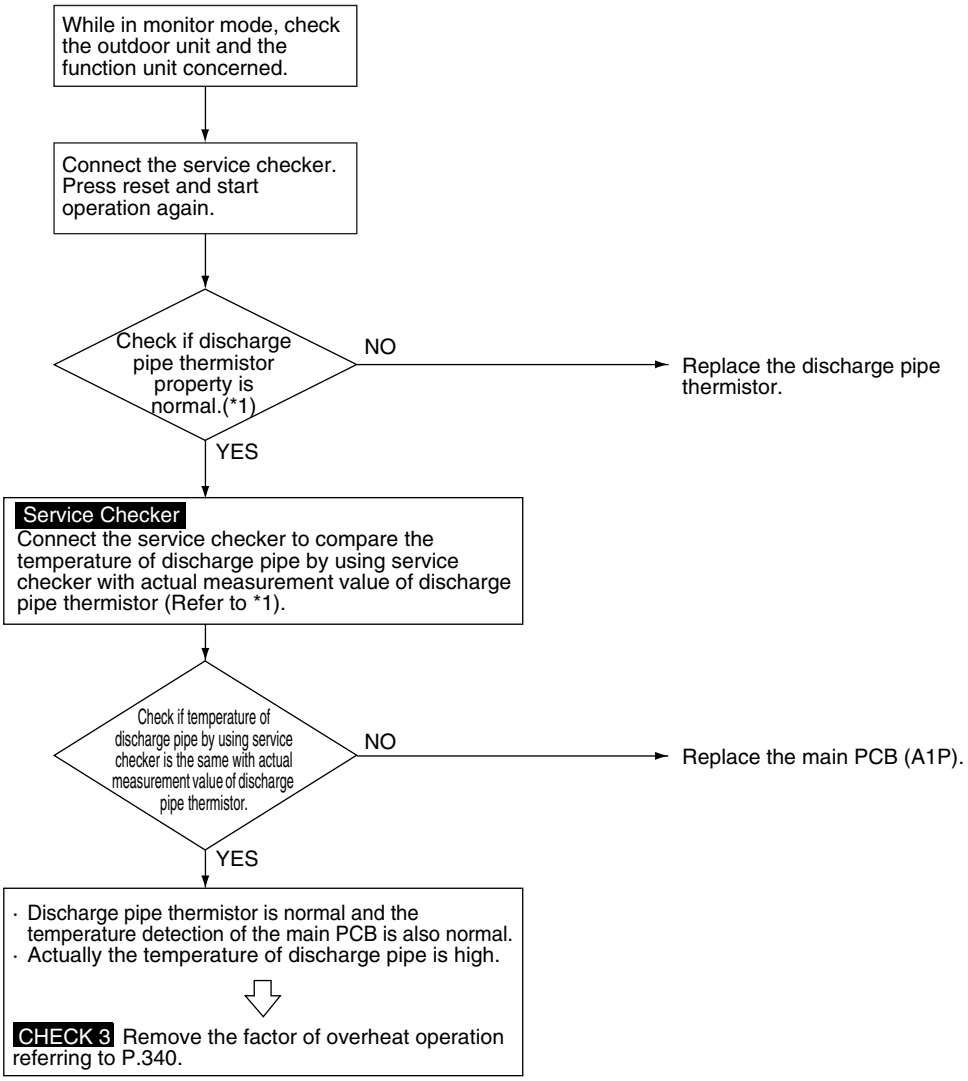
Measuring points	Judgement criteria
1 - 6	40~50Ω
2 - 6	
3 - 6	
4 - 6	

4.21 "F3" Outdoor Unit: Abnormal Discharge Pipe Temperature

Remote Controller Display	F3
Applicable Models	RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)
Method of Malfunction Detection	Abnormality is detected according to the temperature detected by the discharge pipe temperature sensor.
Malfunction Decision Conditions	When the discharge pipe temperature rises to an abnormally high level (135 °C and above) When the discharge pipe temperature rises suddenly (120 °C and above for 10 successive minutes)
Supposed Causes	■ Faulty discharge pipe temperature sensor ■ Faulty connection of discharge pipe temperature sensor ■ Faulty outdoor unit PCB (A1P)

Troubleshooting

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



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

* Refer to “Thermistor Resistance / Temperature Characteristics” table on P.409.

4.22 "F6" Outdoor Unit: Refrigerant Overcharged

Remote Controller Display

F6

Applicable Models

RTSQ8P~16P (Outdoor Unit)

Method of Malfunction Detection

Excessive charging of refrigerant is detected by using the outdoor air temperature, heat exchanging deicer temperature and liquid pipe temperature during a check run.

Malfunction Decision Conditions

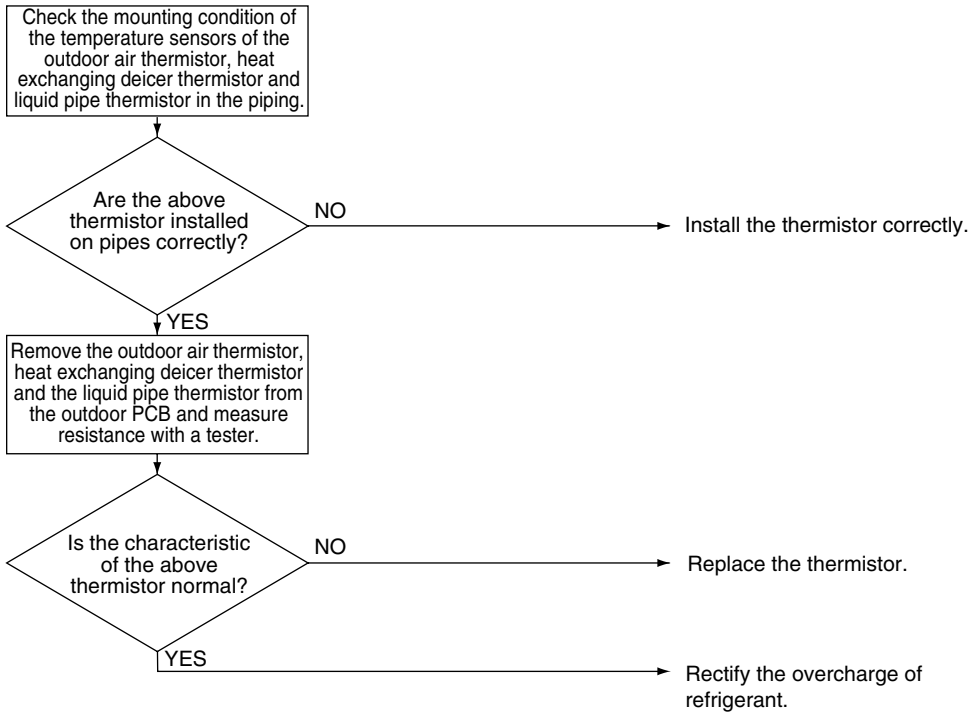
When the amount of refrigerant, which is calculated by using the outdoor air temperature, heat exchanging deicer temperature and liquid pipe temperature during a check run, exceeds the standard.

Supposed Causes

- Refrigerant overcharge
- Disconnection of outdoor air thermistor
- Disconnection of heat exchanging deicer thermistor
- Disconnection of liquid pipe thermistor

Troubleshooting

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



∗ Refer to "Thermistor Resistance / Temperature Characteristics" table on P.408.

4.23 "A7" Outdoor Unit: Abnormal Outdoor Fan Motor Signal

Remote Controller Display	A7
Applicable Models	RTSQ8P~16P (Outdoor Unit)
Method of Malfunction Detection	Detection of abnormal signal from fan motor.
Malfunction Decision Conditions	In case of detection of abnormal signal at starting fan motor.
Supposed Causes	■ Abnormal fan motor signal (circuit malfunction) ■ Broken, short circuited or disconnection connector of fan motor connection cable ■ Faulty inverter PCB (A4P) ■ Fan Inverter PCB malfunction (A5P)

Troubleshooting

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

Check the fan motor corresponding to the malfunction code "H7" in the monitor mode.
(Refer to Page 216~217 for how to check)
When Confirmation of malfunction 3 shows as follows:
◑○●●●●●→ Fan motor 1 (M1F)
When Confirmation of malfunction 3 shows as follows:
◑○●●●●◑→ Fan motor 2 (M2F)
Identify outdoor unit based on Confirmation of malfunction 4.
◑○○●●※※
Explanation for " ※※ "

● ●	Master unit
● ◑	Slave unit 1
◑ ●	Slave unit 2
◑ ◑	System

Cut the power supply off.

Check if signal wire connector for the corresponding fan motor is normal.
NO → Ensure correct connection.
YES

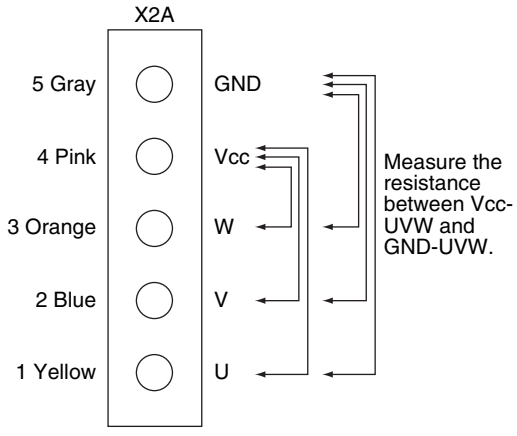
Check the connector of the fan motor (*1).

Check if the resistance of the fan motor lead wire between Vcc and UVW and between GND and UVW are balanced.
NO → Replace the fan motor.
YES → Replace the inverter PCB.
With single systems
- For fan motor 1: replace the inverter PCB (A4P)
- For fan motor 2: replace the fan inverter PCB (A5P)

With multi systems
- For fan motor 1: replace the fan inverter PCB (A4P)

*1. Check procedure for fan motor connector
(1) Power OFF the fan motor.
(2) Remove the connector (X2A or X4A) on the PCB to measure the following resistance value.
Judgement criteria: resistance value between each phase is within ±20%

Connector for signal wires
(X2A or X4A)



4.24 "H9" Outdoor Unit: Malfunction of Thermistor (R1T) for Outdoor Air

Remote Controller Display

H9

Applicable Models

RTSQ8P~16P (Outdoor Unit)

Method of Malfunction Detection

Malfunction is detected from the temperature detected by the outdoor air thermistor.

Malfunction Decision Conditions

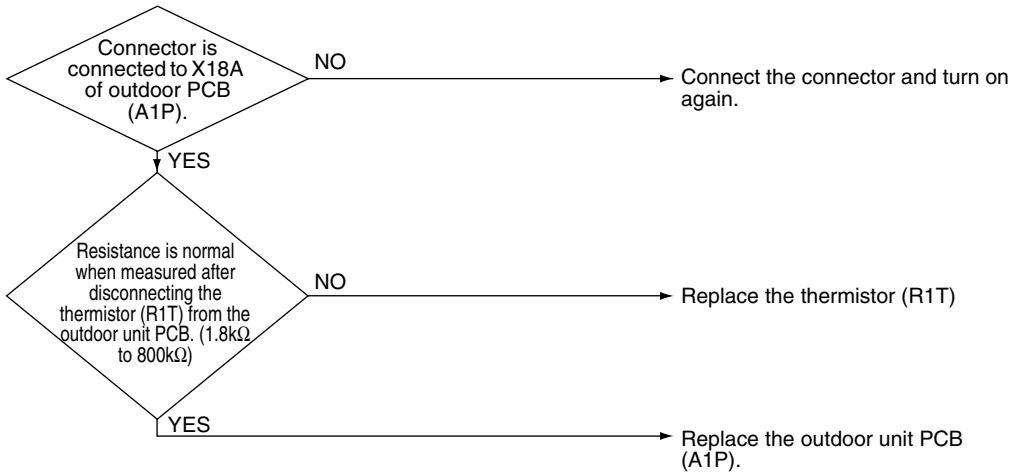
When the outdoor air temperature thermistor has short circuit or open circuit.

Supposed Causes

- Defective thermistor connection
- Defect of outdoor air thermistor (R1T)
- Defect of outdoor unit PCB (A1P)

Troubleshooting

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



∗ Refer to "Thermistor Resistance / Temperature Characteristics" table on P.408.

4.25 "U2" Outdoor Unit: Current Sensor Malfunction

Remote Controller Display

U2

Applicable Models

RTSQ8P~16P (Outdoor Unit)

Method of Malfunction Detection

Malfunction is detected according to the current value detected by current sensor.

Malfunction Decision Conditions

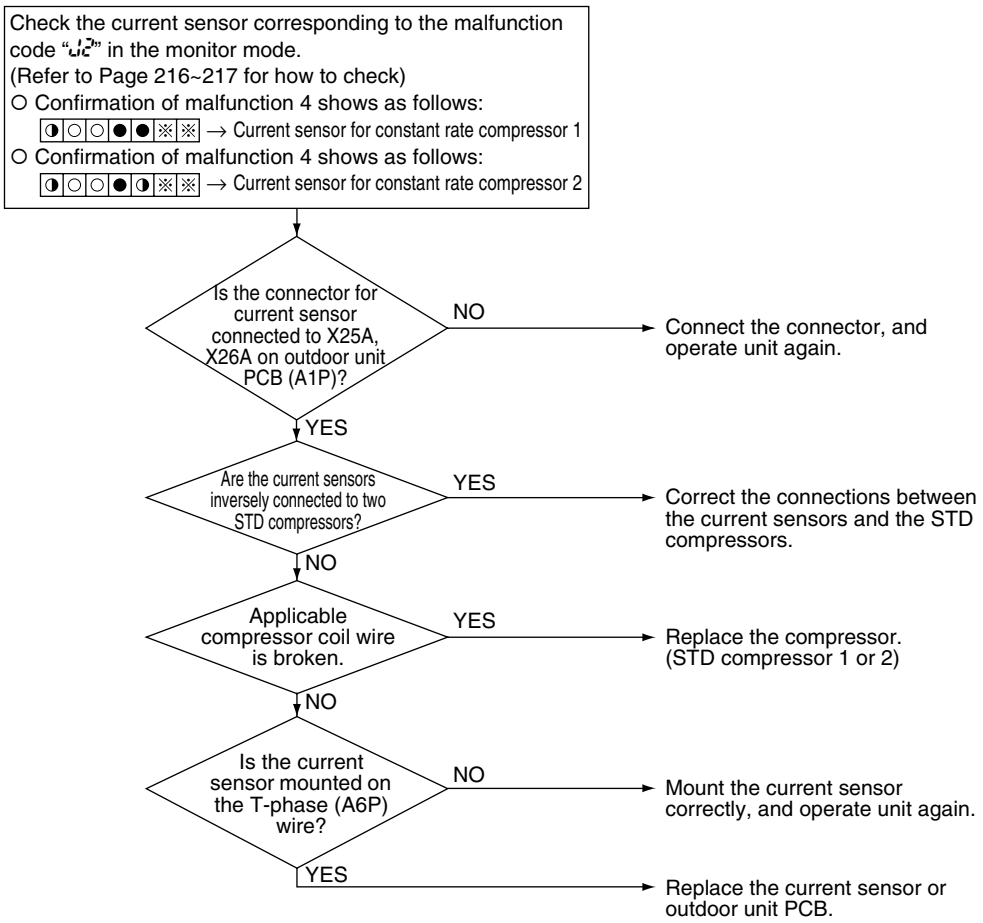
When the current value detected by current sensor becomes 5A or lower, or 40A or more during standard compressor operation.

Supposed Causes

- Faulty current sensor (A6P, A8P)
- Faulty outdoor unit PCB
- Defective compressor (M2C, M3C)

Troubleshooting

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



4.26 "U3" Outdoor Unit: Malfunction of Discharge Pipe Thermistor (R31T, R32T, R33T)

Remote Controller Display

U3

Applicable Models

RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)

Method of Malfunction Detection

Malfunction is detected from the temperature detected by discharge pipe temperature thermistor.

Malfunction Decision Conditions

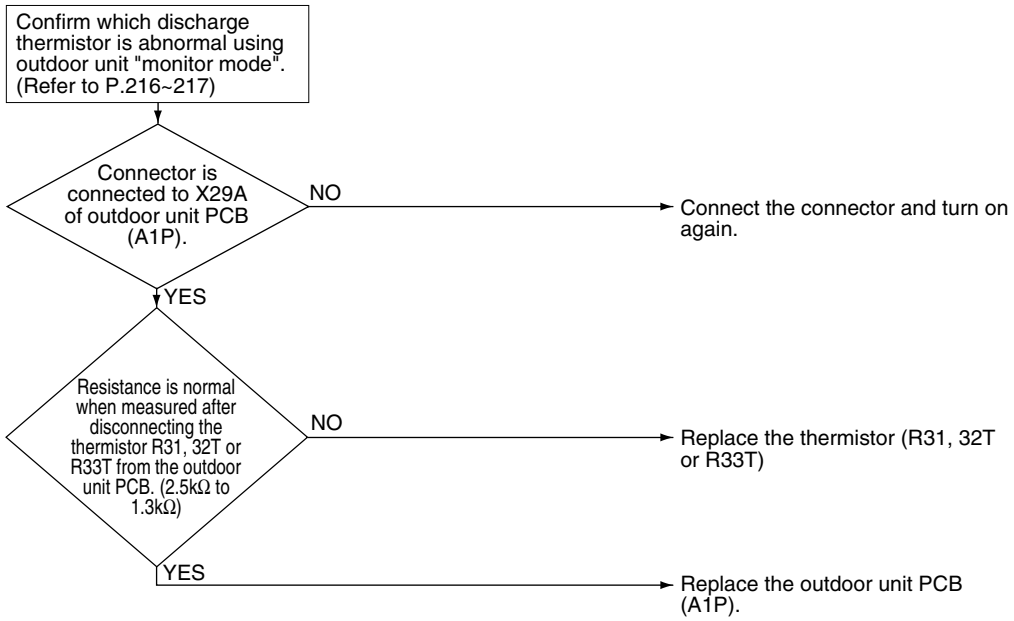
When a short circuit or an open circuit in the discharge pipe temperature thermistor is detected.

Supposed Causes

- Defect of thermistor (R31T, R32T, R33T) for outdoor unit discharge pipe
- Defect of outdoor unit PCB (A1P)
- Defect of thermistor connection

Troubleshooting

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



The alarm indicator is displayed when the fan is being used also.

∗ Refer to "Thermistor Resistance / Temperature Characteristics" table on P.408.

4.27 "U4" Outdoor Unit: Malfunction of Temperature Sensor for Heat Exchanger Gas (R2T)

Remote Controller Display

U4

Applicable Models

RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)

Method of Malfunction Detection

Detect malfunction based on the temperature detected by each thermistor.

Malfunction Decision Conditions

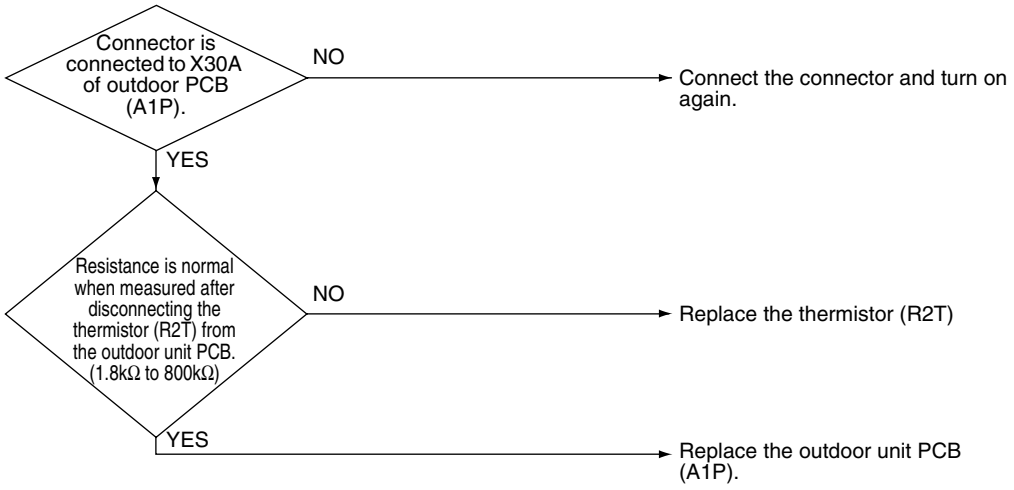
In operation, when a thermistor is disconnected or short circuits.

Supposed Causes

- Defective connection of thermistor
- Defective thermistor
- Defective outdoor unit PCB

Troubleshooting

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



∗ Refer to "Thermistor Resistance / Temperature Characteristics" table on P.408.

4.28 "U5" Outdoor Unit: Malfunction of Thermistor (R8T) for Suction Pipe

Remote Controller Display

U5

Applicable Models

RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)

Method of Malfunction Detection

Malfunction is detected from the temperature detected by the suction pipe temperature thermistor.

Malfunction Decision Conditions

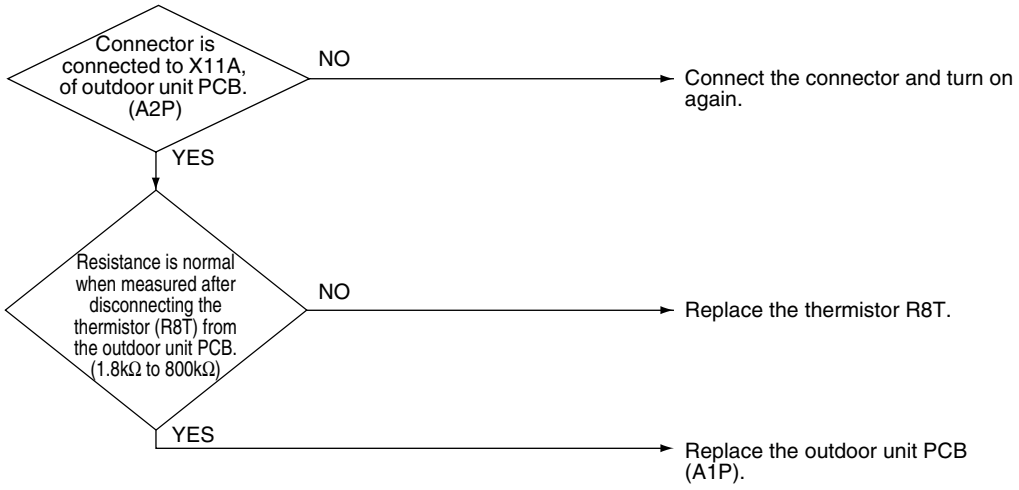
When a short circuit or an open circuit in the suction pipe temperature thermistor is detected.

Supposed Causes

- Defect of thermistor (R8T) for outdoor unit suction pipe
- Defect of outdoor unit PCB (A2P)
- Defect of thermistor connection

Troubleshooting

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



∗ Refer to "Thermistor Resistance / Temperature Characteristics" table on P.408.

4.29 "U6" Outdoor Unit: Malfunction of Thermistor (R4T) for Outdoor Unit Heat Exchanger

Remote Controller Display

U6

Applicable Models

RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)

Method of Malfunction Detection

Malfunction is detected from the temperature detected by the heat exchanger thermistor.

Malfunction Decision Conditions

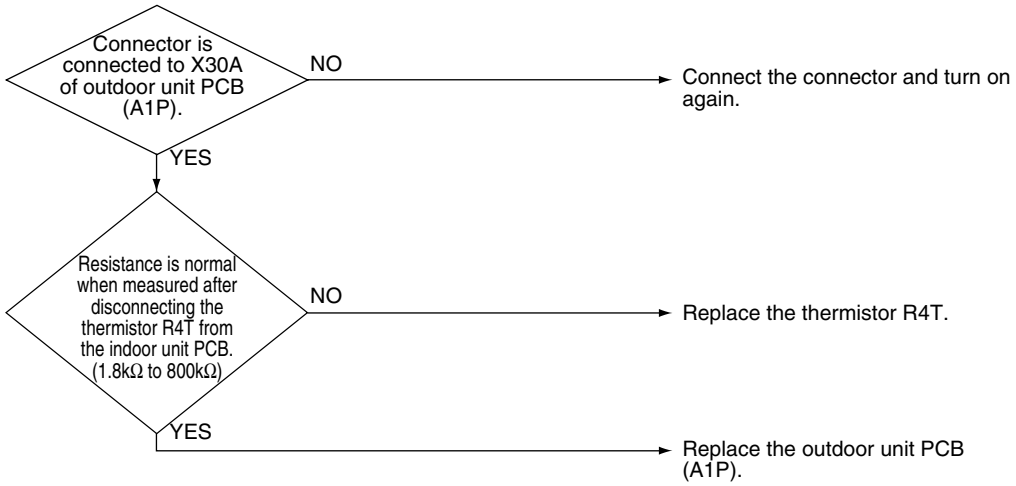
When a short circuit or an open circuit in the heat exchanger thermistor is detected.

Supposed Causes

- Defect of thermistor (R4T) for outdoor unit heat exchanger
- Defect of outdoor unit PCB (A1P)
- Defect of thermistor connection

Troubleshooting

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



∗ Refer to "Thermistor Resistance / Temperature Characteristics" table on P.408.

4.30 "U7" Outdoor Unit: Malfunction of Liquid Pipe Thermistor 1 (R6T or R9T)

Remote Controller Display

U7

Applicable Models

RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)

Method of Malfunction Detection

Malfunction is detected according to the temperature detected by liquid pipe thermistor.

Malfunction Decision Conditions

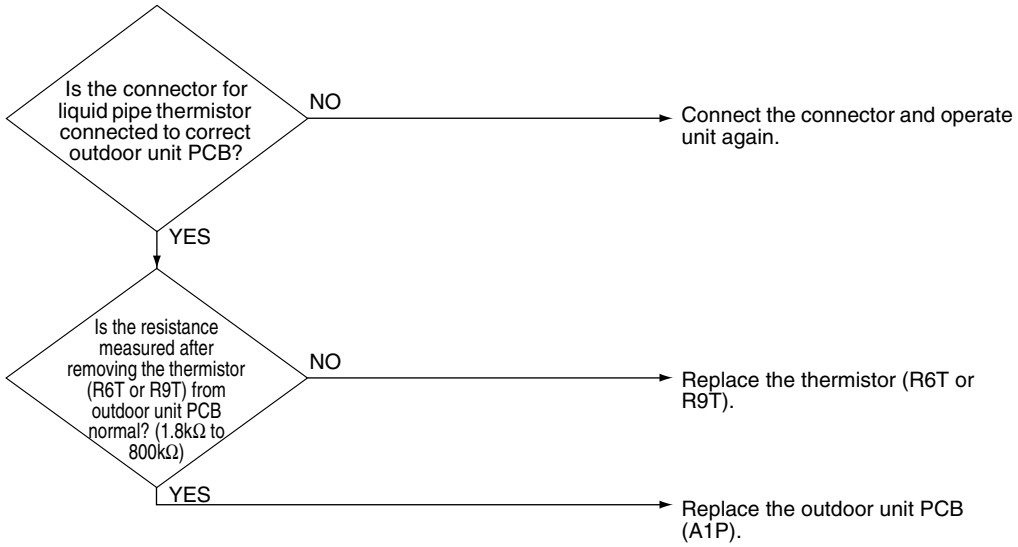
When the liquid pipe thermistor is short circuited or open circuited.

Supposed Causes

- Faulty liquid pipe thermistor 1 (R6T or R9T)
- Faulty outdoor unit PCB
- Defect of thermistor connection

Troubleshooting

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



∗ Refer to "Thermistor Resistance / Temperature Characteristics" table on P.408.

4.31 "U8" Outdoor Unit: Malfunction of Liquid Pipe Thermistor 2 (R7T)

Remote Controller Display

U8

Applicable Models

RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)

Method of Malfunction Detection

Malfunction is detected according to the temperature detected by liquid pipe thermistor.

Malfunction Decision Conditions

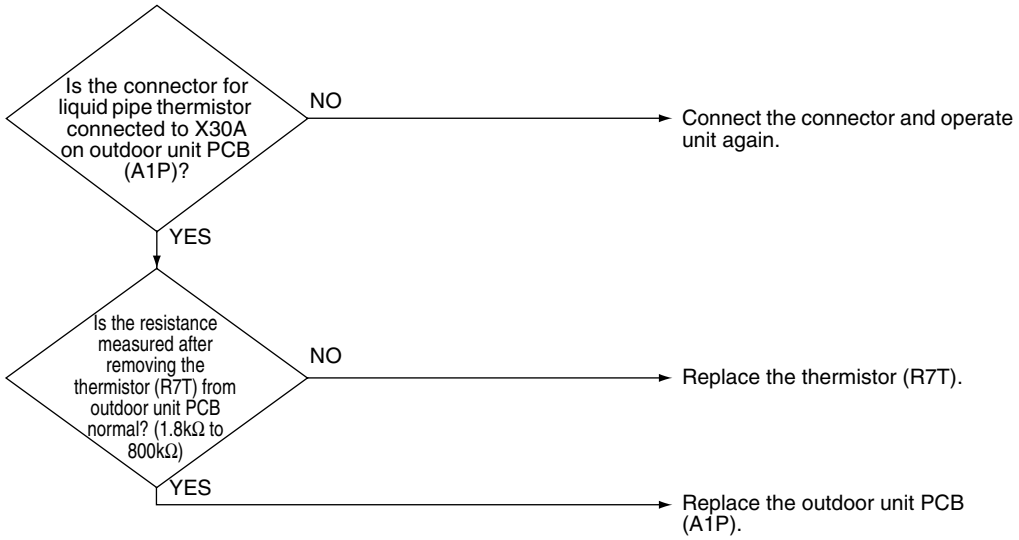
When the liquid pipe thermistor is short circuited or open circuited.

Supposed Causes

- Faulty liquid pipe thermistor 2 (R7T)
- Faulty outdoor unit PCB
- Defect of thermistor connection

Troubleshooting

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



* Refer to "Thermistor Resistance / Temperature Characteristics" table on P.408.

4.32 "U9" Outdoor Unit: Malfunction of Subcooling Heat Exchanger Gas Pipe Thermistor (R5T)

Remote Controller Display

U9

Applicable Models

RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)

Method of Malfunction Detection

Malfunction is detected according to the temperature detected by subcooling heat exchanger gas pipe thermistor.

Malfunction Decision Conditions

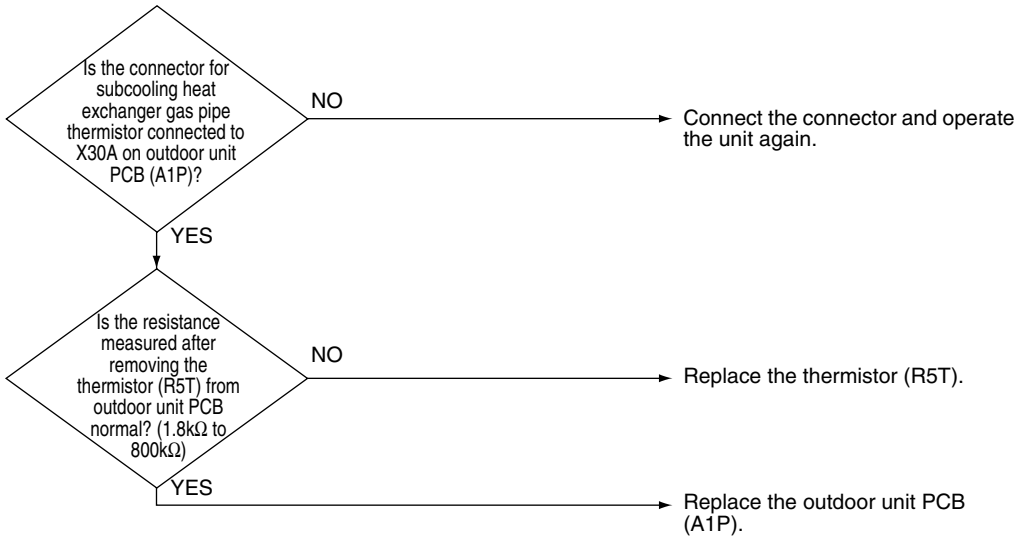
When the subcooling heat exchanger gas pipe thermistor is short circuited or open circuited.

Supposed Causes

- Faulty subcooling heat exchanger gas pipe thermistor (R5T)
- Faulty outdoor unit PCB

Troubleshooting

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



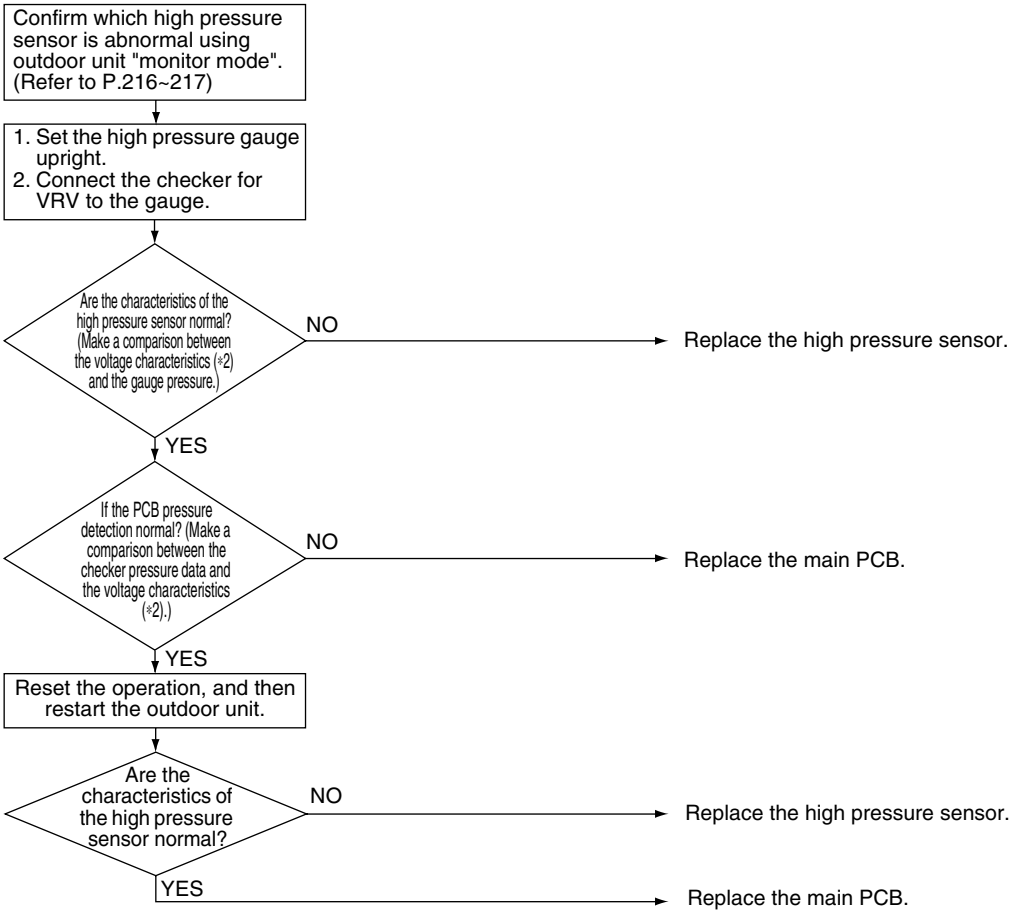
∗ Refer to "Thermistor Resistance / Temperature Characteristics" table on P.408.

4.33 "U9" Outdoor Unit: Malfunction of High Pressure Sensor

Remote Controller Display	U9
Applicable Models	RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)
Method of Malfunction Detection	Malfunction is detected from the pressure detected by the high pressure sensor.
Malfunction Decision Conditions	When the high pressure sensor is short circuit or open circuit. (Not less than 4.22MPa, or 0.01MPa and below)
Supposed Causes	■ Defect of high pressure sensor system ■ Connection of low pressure sensor with wrong connection. ■ Defect of outdoor unit PCB (A1P). ■ Defective connection of high pressure sensor

Troubleshooting

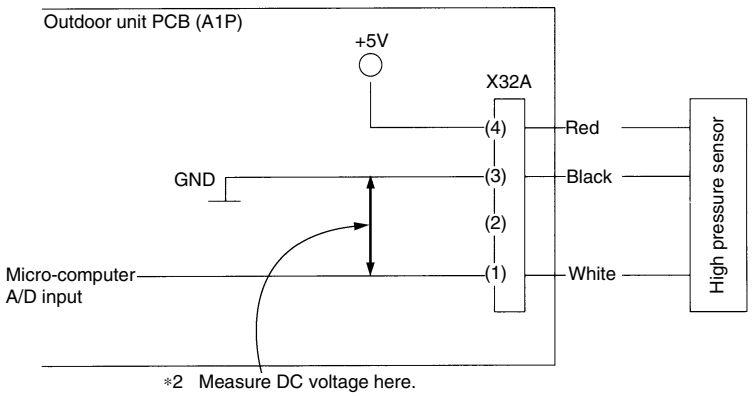
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: Pressure sensor subject to malfunction code

Malfunction code	Pressure sensor subject to malfunction code	Electric symbol
JA	High pressure sensor	S1NPH

*2: Voltage measurement point



*2: Refer to “Pressure Sensor, Pressure / Voltage Characteristics” table on P.410.

4.34 "UE" Outdoor Unit: Malfunction of Low Pressure Sensor

Remote Controller Display

UE

Applicable Models

RTSQ8P~16P (Outdoor Unit)

Method of Malfunction Detection

Malfunction is detected from the pressure detected by the low pressure sensor.

Malfunction Decision Conditions

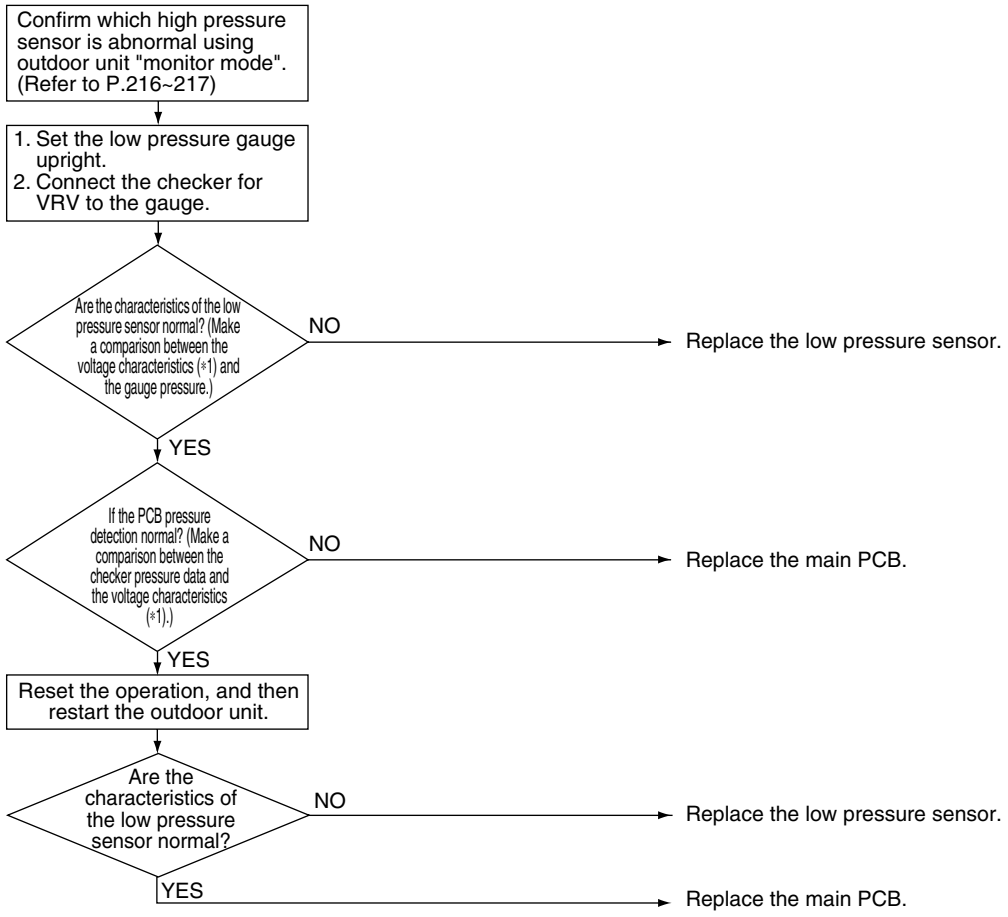
When the low pressure sensor is short circuit or open circuit.
(Not less than 1.77MPa, or -0.01MPa and below)

Supposed Causes

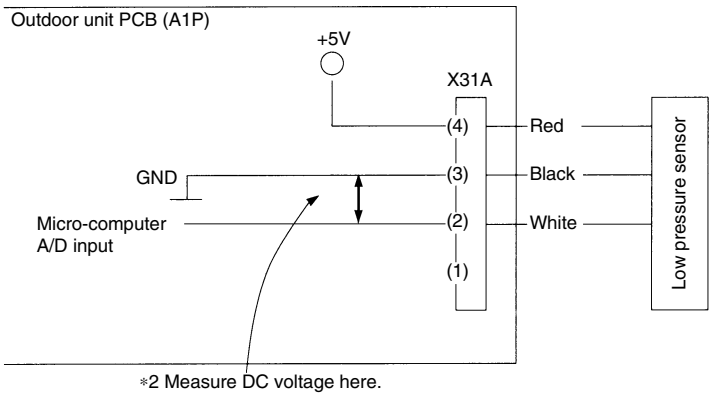
- Defect of low pressure sensor system
- Connection of high pressure sensor with wrong connection.
- Defect of outdoor unit PCB.
- Defective connection of low pressure sensor

Troubleshooting

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



∗1: Voltage measurement point



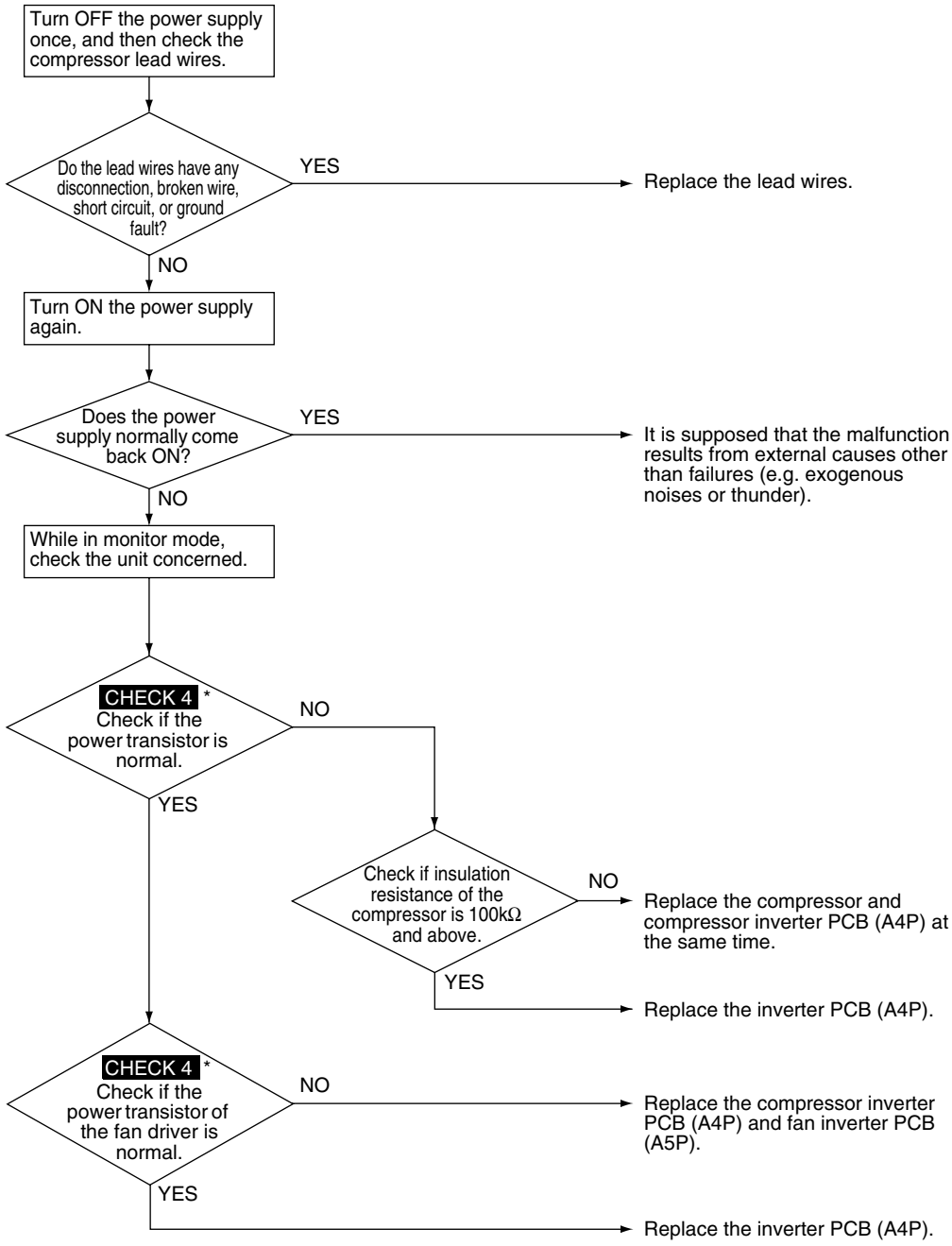
∗2: Refer to “Pressure Sensor, Pressure / Voltage Characteristics” table on P.410.

4.35 "L 1" Outdoor Unit: Defective Inverter PCB

Remote Controller Display	L 1
Applicable Models	RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)
Method of Malfunction Detection	Malfunction is detected based on the current value during waveform output before starting compressor. Malfunction is detected based on the value from current sensor during synchronous operation when starting the unit.
Malfunction Decision Conditions	Overcurrent (OCP) flows during waveform output. Malfunction of current sensor during synchronous operation. IPM failure.
Supposed Causes	■ Inverter PCB (A4P) ● IPM failure ● Current sensor failure ● Drive circuit failure

Troubleshooting

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



* CHECK 4 : Referring to the information on P.341.

*1. List of Inverter PCBs

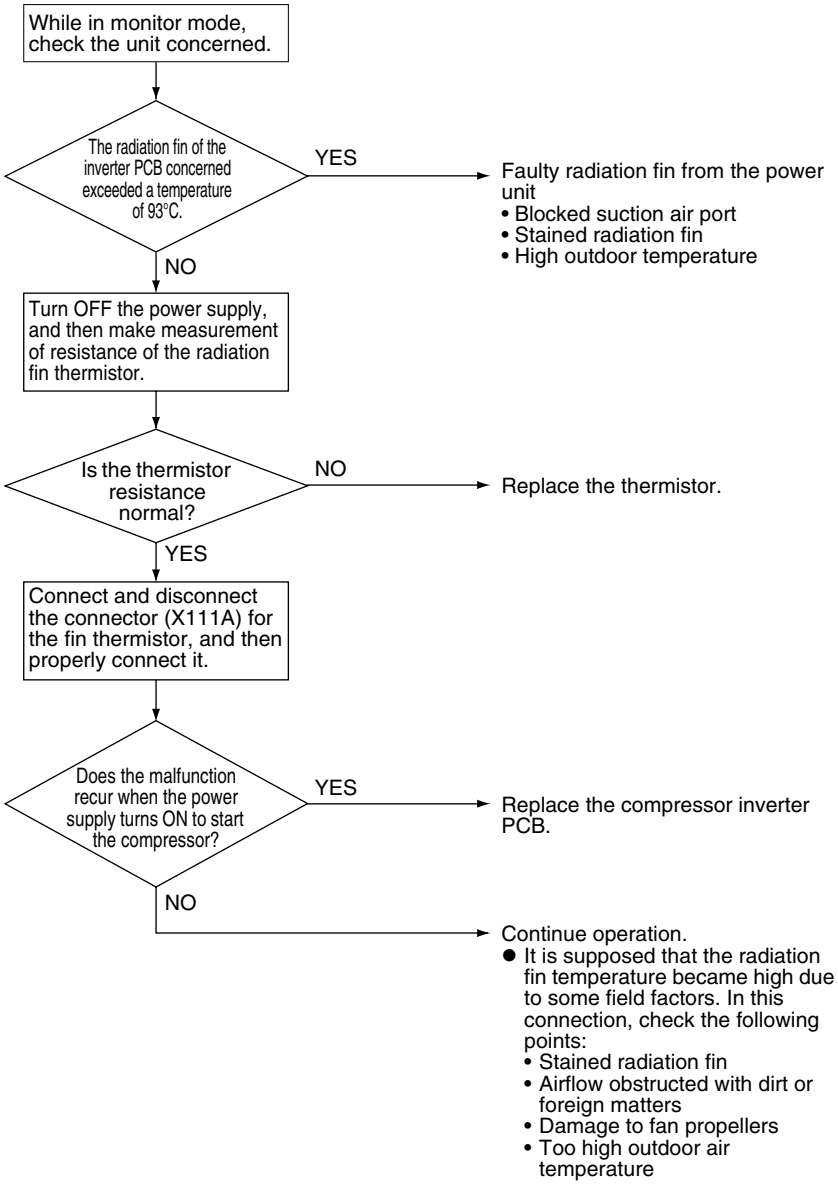
Model	Name	Electric symbol
RTSQ 8, 10, 12P	Compressor inverter PCB	A4P
	Fan inverter PCB	A5P
RTSQ 14, 16P	Compressor inverter PCB	A4P
	Fan inverter PCB	A5P, A8P
BTSQ20P	Compressor inverter PCB	A3P

4.36 "L4" Outdoor Unit: Malfunction of Inverter Radiation Fin Temperature Rise

Remote Controller Display	L4
Applicable Models	RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)
Method of Malfunction Detection	Fin temperature is detected by the thermistor of the radiation fin.
Malfunction Decision Conditions	When the temperature of the inverter radiation fin increases above 93°C.
Supposed Causes	■ Actuation of radiation fin thermal (Actuates above 93°C) ■ Defect of inverter PCB ■ Defect of radiation fin thermistor

Troubleshooting

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



∗ Refer to “Thermistor Resistance / Temperature Characteristics” table on P.408.

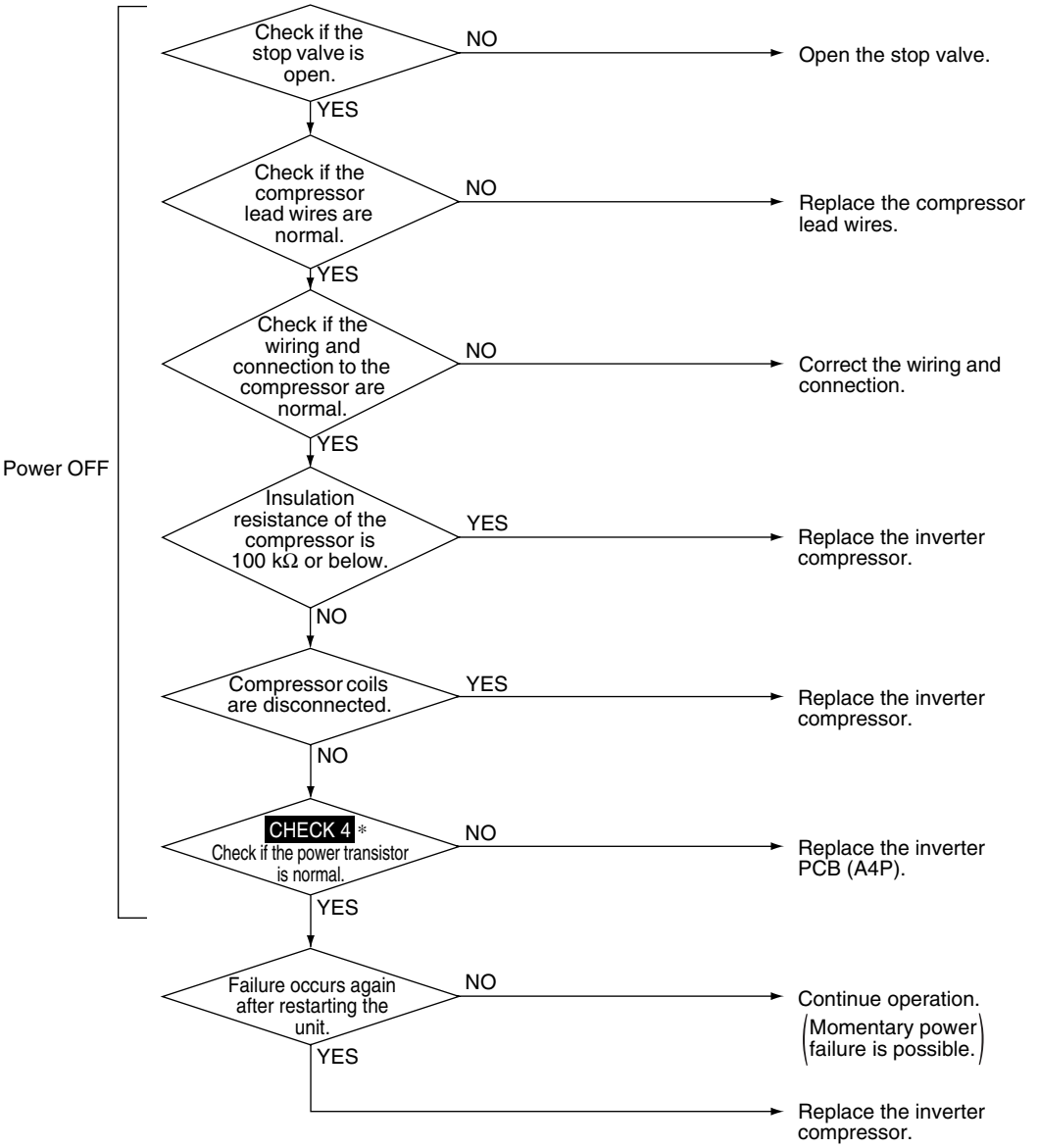
4.37 "L5" Outdoor Unit: Momentary Overcurrent of Inverter Compressor

Remote Controller Display	L5
Applicable Models	RTSQ8P~16P (Outdoor Unit)
Method of Malfunction Detection	Malfunction is detected from current flowing in the power transistor. (32.3 A)
Malfunction Decision Conditions	When an excessive current flows in the power transistor. (Instantaneous overcurrent also causes activation.)
Supposed Causes	■ Defect of compressor coil (disconnected, defective insulation) ■ Compressor start-up malfunction (mechanical lock) ■ Defect of inverter PCB

Troubleshooting

Compressor inspection

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



* CHECK 4 : Referring to the information on P.341.

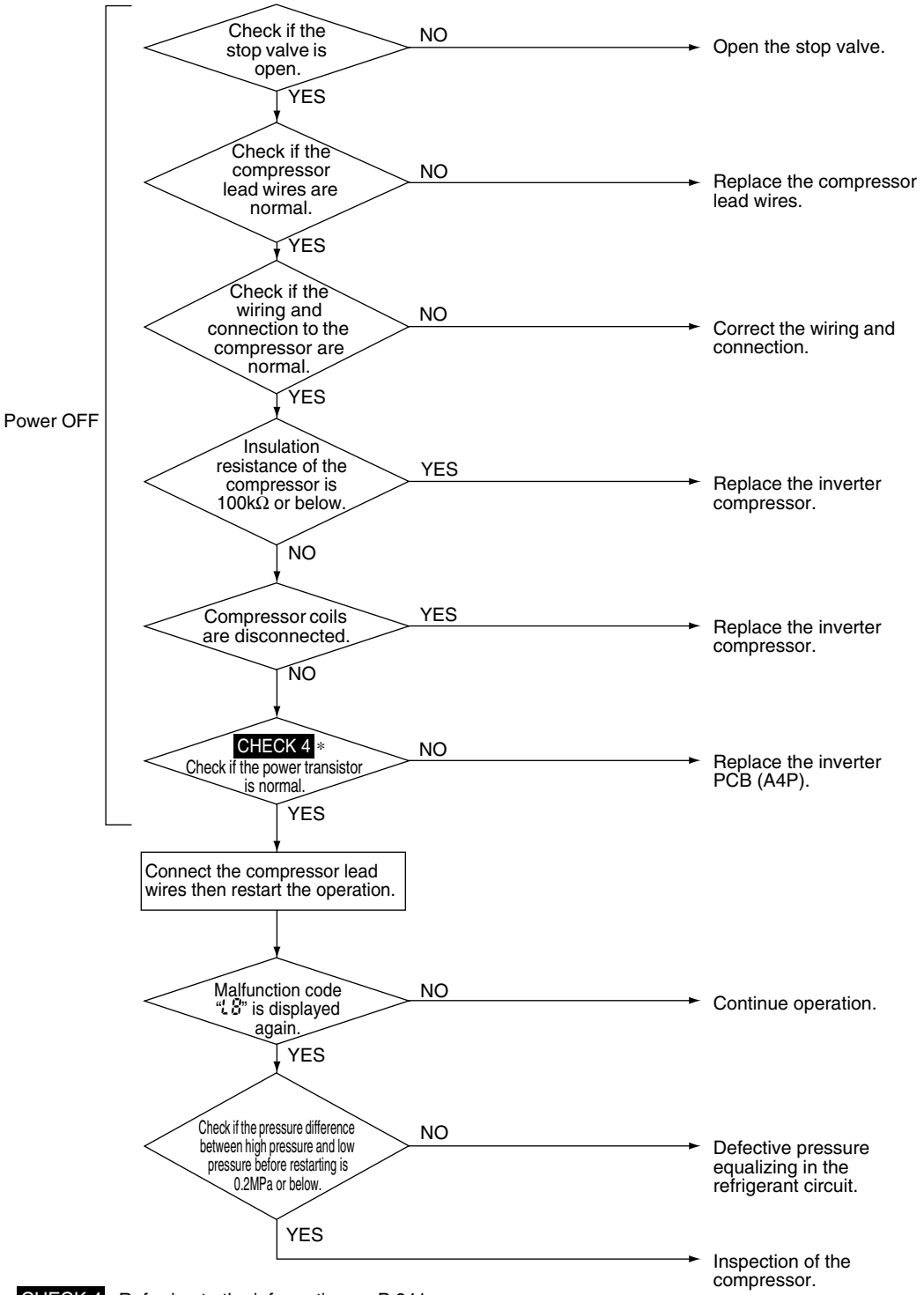
4.38 "L8" Outdoor Unit: Momentary Overcurrent of Inverter Compressor

Remote Controller Display	L8
Applicable Models	RTSQ8P~16P (Outdoor Unit)
Method of Malfunction Detection	Malfunction is detected by current flowing in the power transistor.
Malfunction Decision Conditions	When overload in the compressor is detected. (Inverter secondary current 16.1A) (1) 19.0A and over continues for 5 seconds. (2) 16.1A and over continues for 260 seconds.
Supposed Causes	■ Compressor overload ■ Compressor coil disconnected ■ Defect of inverter PCB ■ Faulty compressor

Troubleshooting

Output current check

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



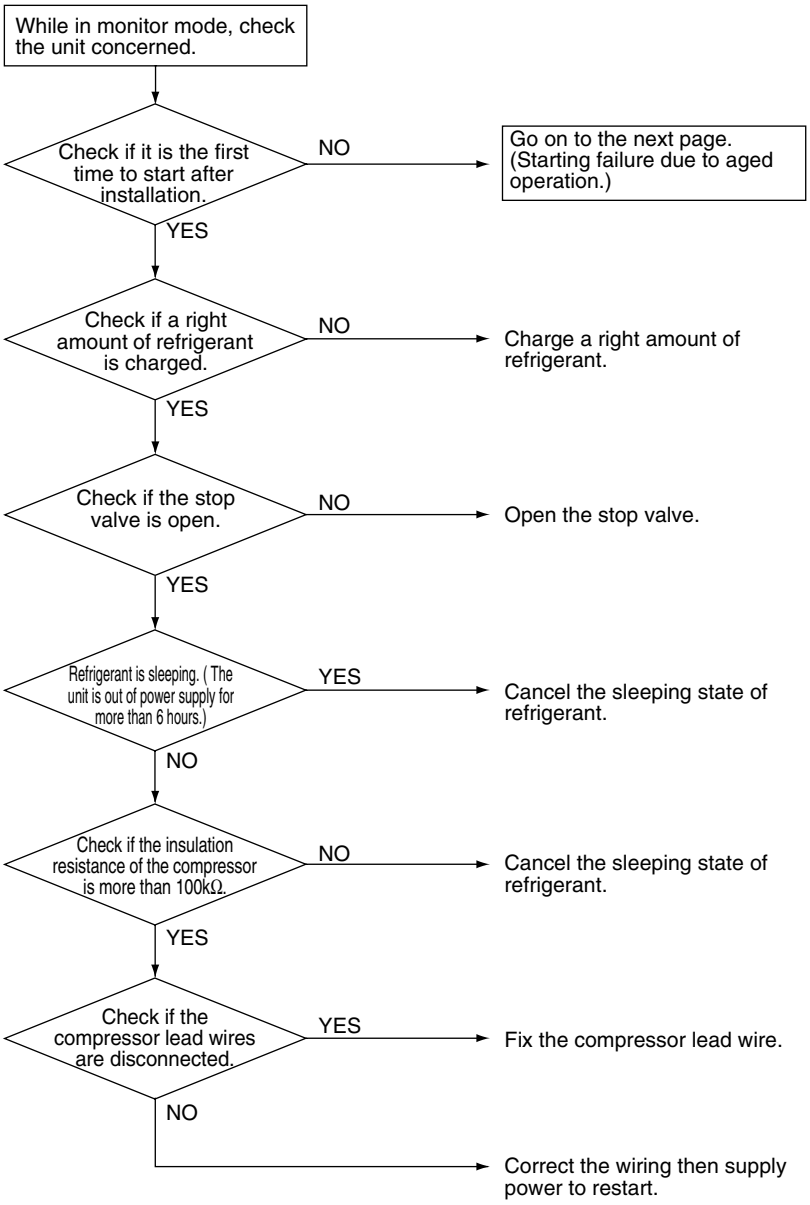
* CHECK 4 : Referring to the information on P.341.

4.39 "L9" Outdoor Unit: Inverter Compressor Starting Failure

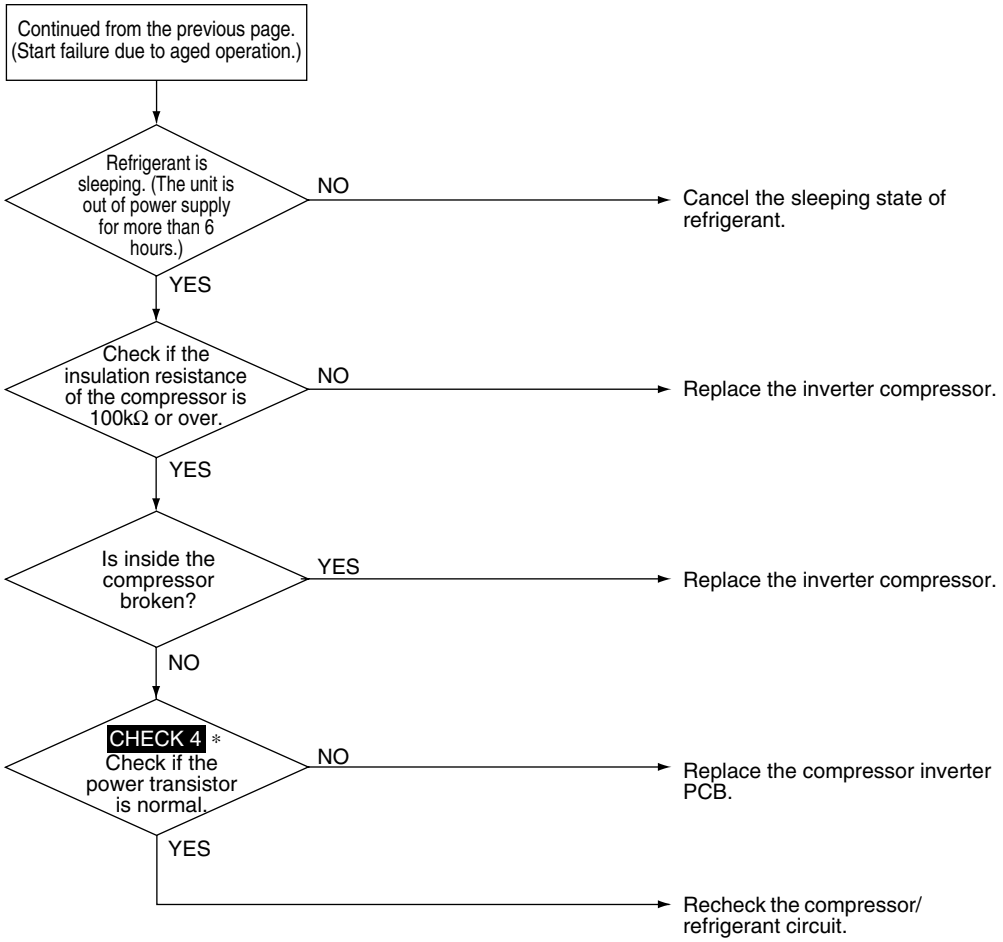
Remote Controller Display	L9
Applicable Models	RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)
Method of Malfunction Detection	Detect the failure based on the signal waveform of the compressor.
Malfunction Decision Conditions	Starting the compressor does not complete.
Supposed Causes	■ Failure to open the stop valve ■ Defective compressor ■ Wiring connection error to the compressor ■ Large pressure difference before starting the compressor ■ Defective inverter PCB

Troubleshooting

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



Troubleshooting



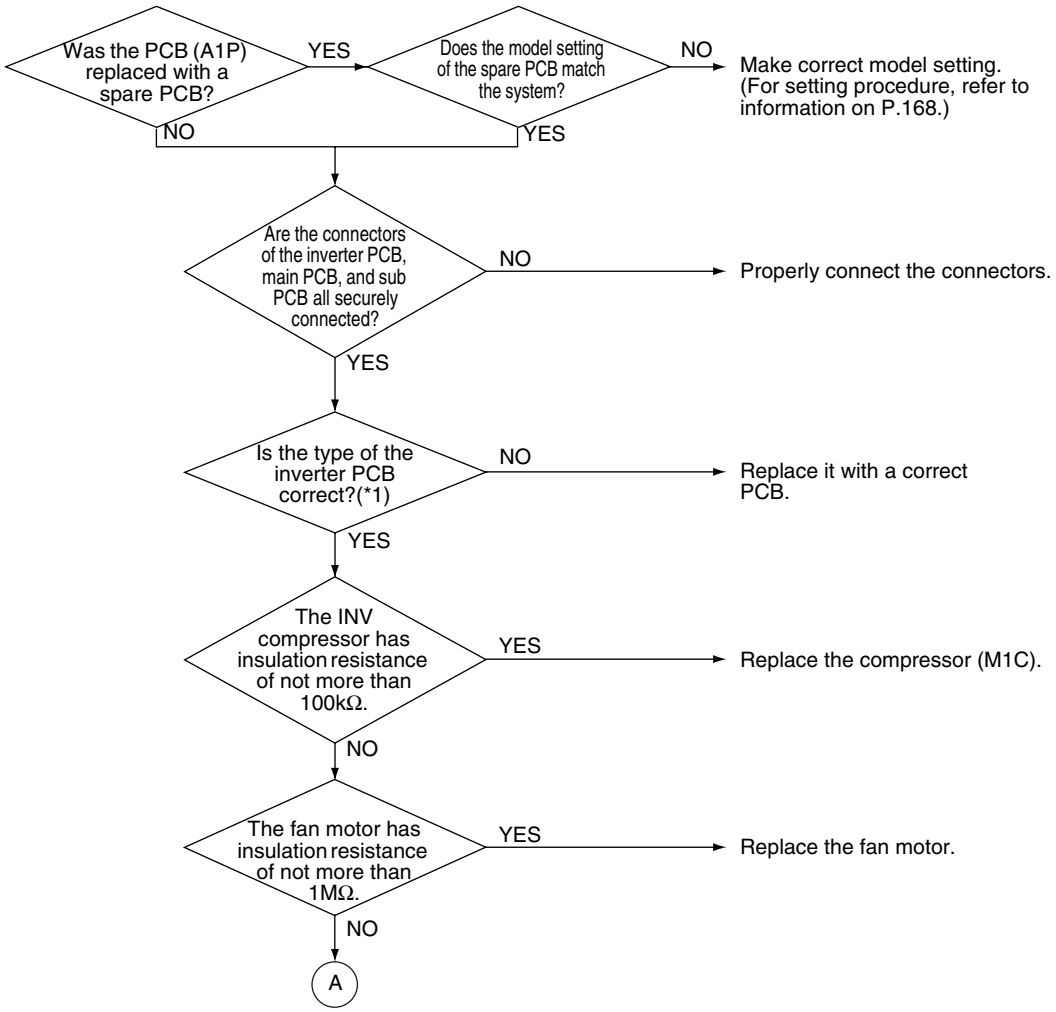
* CHECK 4 : Referring to the information on P.341.

4.40 "LC" Outdoor Unit: Malfunction of Transmission between Inverter and Control PCB

Remote Controller Display	LC
Applicable Models	RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)
Method of Malfunction Detection	Check the communication state between inverter PCB and control PCB by micro-computer.
Malfunction Decision Conditions	When the correct communication is not conducted in certain period.
Supposed Causes	■ Malfunction of connection between the inverter PCB and outdoor main PCB ■ Defect of outdoor main PCB (transmission section) ■ Defect of inverter PCB ■ Defect of noise filter ■ Faulty fan inverter ■ Incorrect type of inverter PCB ■ Faulty inverter compressor ■ Faulty fan motor ■ External factor (noise etc.)

Troubleshooting

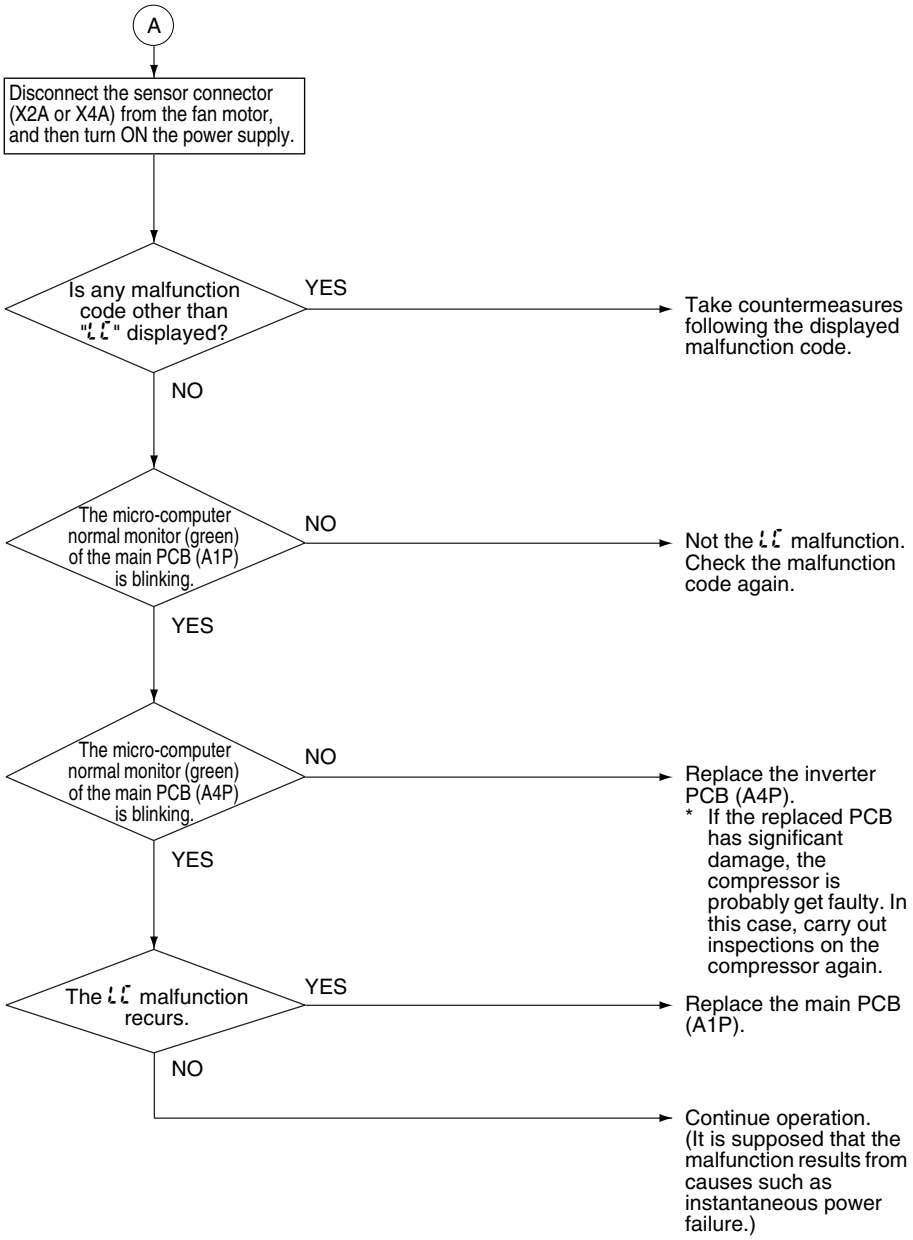
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1. List of Inverter PCBs

	Applicable Models
0509-1	RTSQ8 ~ 16P
	BTSQ20P

Troubleshooting

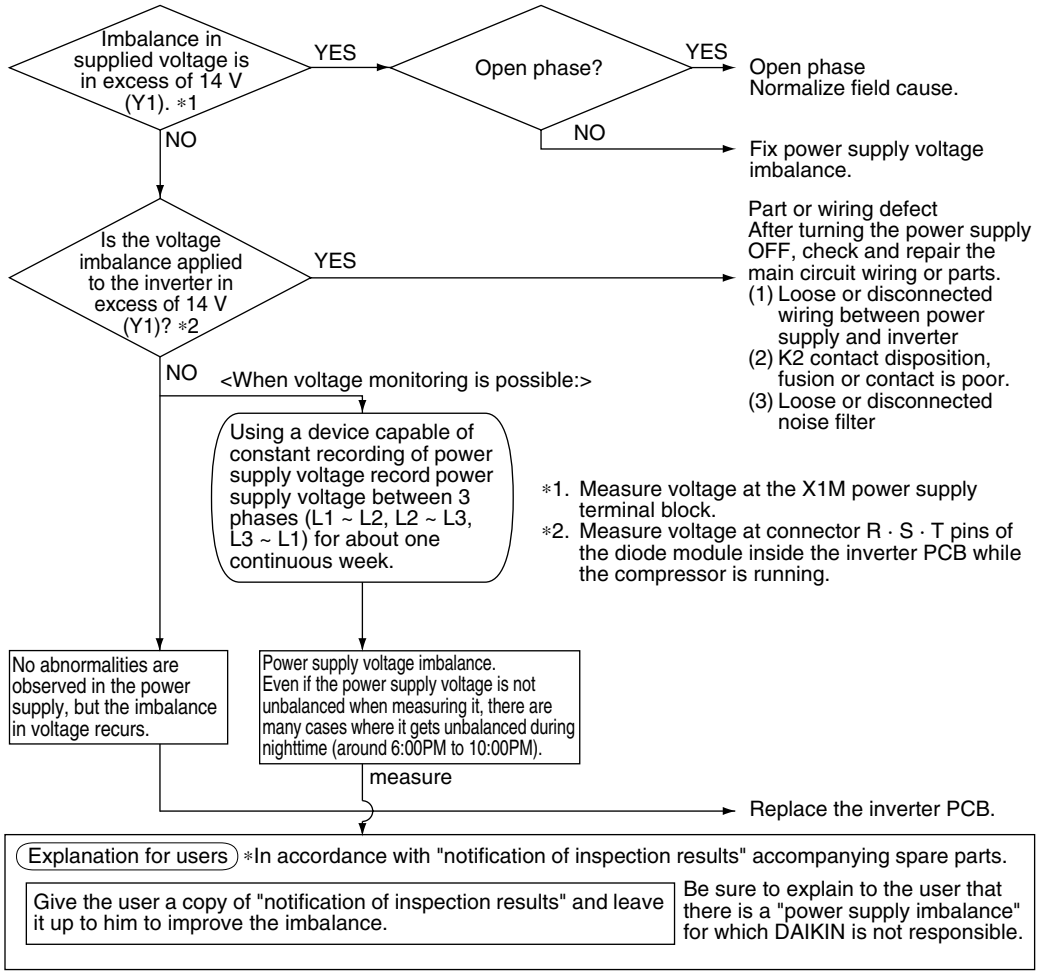


4.41 "P 1" Outdoor Unit: Inverter Over-Ripple Protection

Remote Controller Display	P 1
Applicable Models	RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)
Method of Malfunction Detection	Imbalance in supply voltage is detected in PCB.
Malfunction Decision Conditions	When the resistance value of thermistor becomes a value equivalent to open or short circuited status. ★ Malfunction is not decided while the unit operation is continued. "P 1" will be displayed by pressing the inspection button.
Supposed Causes	■ Open phase ■ Voltage imbalance between phases ■ Defect of main circuit capacitor ■ Defect of inverter PCB ■ Defect of K2 relay in inverter PCB ■ Improper main circuit wiring

Troubleshooting

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



4.42 "P4" Outdoor Unit: Malfunction of Inverter Radiation Fin Temperature Rise Sensor

Remote Controller Display

P4

Applicable Models

RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)

Method of Malfunction Detection

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

Malfunction Decision Conditions

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

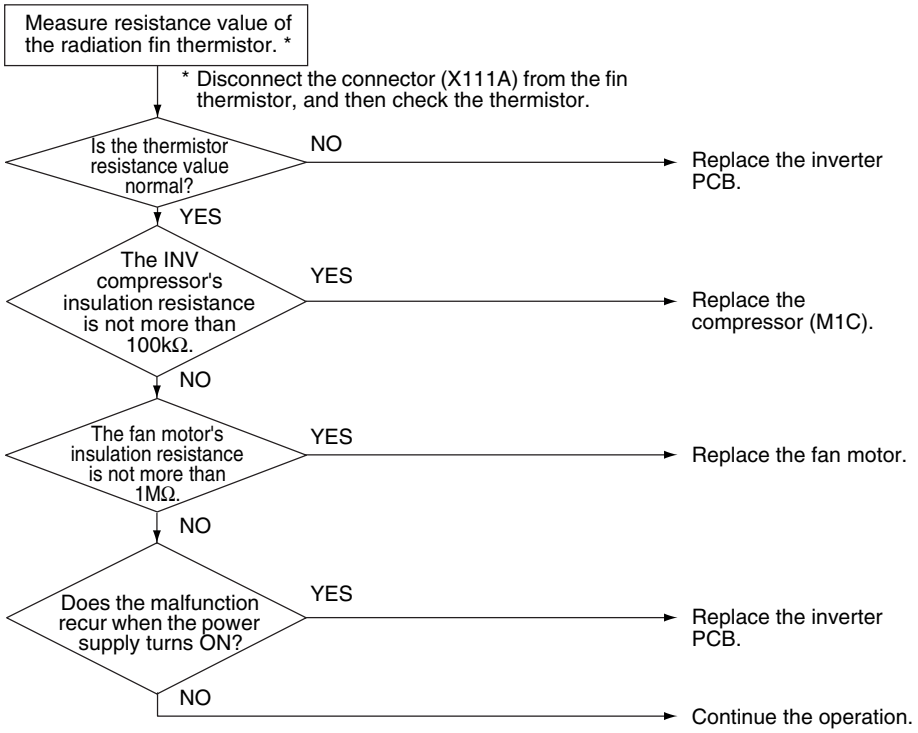
★ Malfunction is not decided while the unit operation is continued.
"P4" will be displayed by pressing the inspection button.

Supposed Causes

- Defect of radiation fin temperature sensor
- Defect of inverter PCB
- Faulty inverter compressor
- Faulty fan motor

Troubleshooting

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

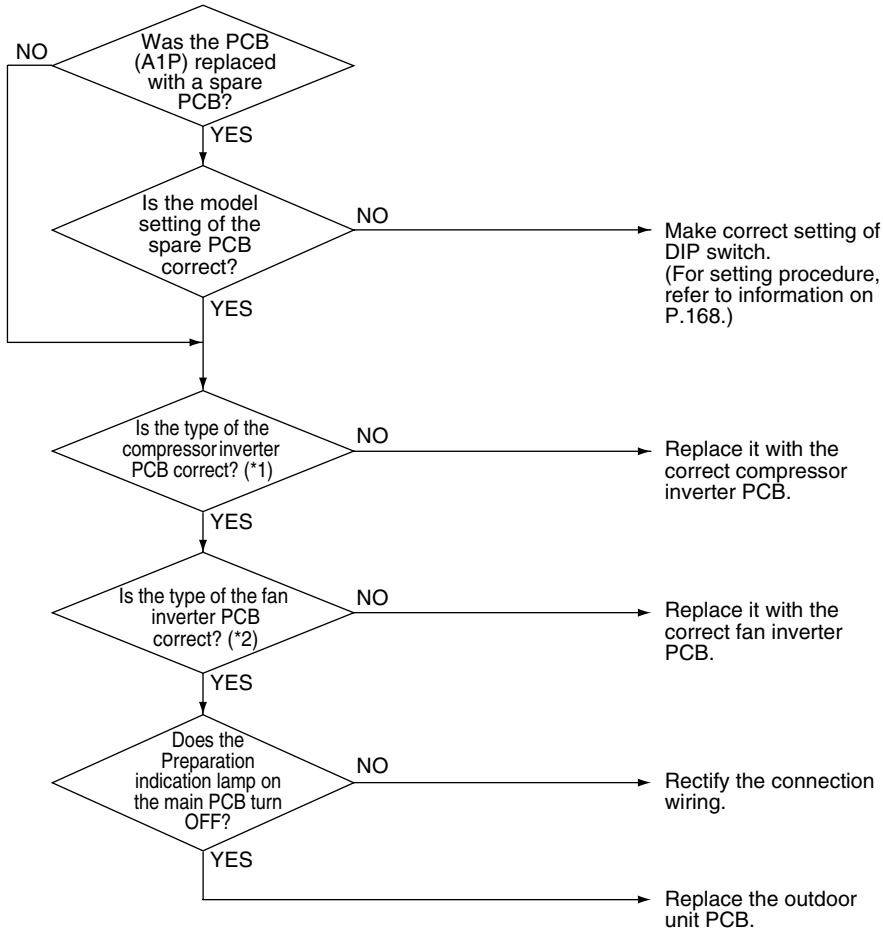


4.43 "P1" Outdoor Unit: Faulty Field Setting after Replacing Main PCB or Faulty Combination of PCB

Remote Controller Display	P1
Applicable Models	RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)
Method of Malfunction Detection	This malfunction is detected according to communications with the inverter.
Malfunction Decision Conditions	Make judgement according to communication data on whether or not the type of the inverter PCB is correct.
Supposed Causes	■ Faulty (or no) field setting after replacing main PCB ■ Mismatching of type of PCB

Troubleshooting

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



*1. List of Compressor Inverter PCBs

Model	Applicable Models
PC0509-1	RTSQ8 ~ 16P
	BTSQ20P

*2. List of fan Inverter PCBs

Model	Applicable Models
PC0511-1	RTSQ8 · 10 · 12P
PC0511-3 PC0511-4	RTSQ14P
PC0511-1 PC0511-12	RTSQ16P

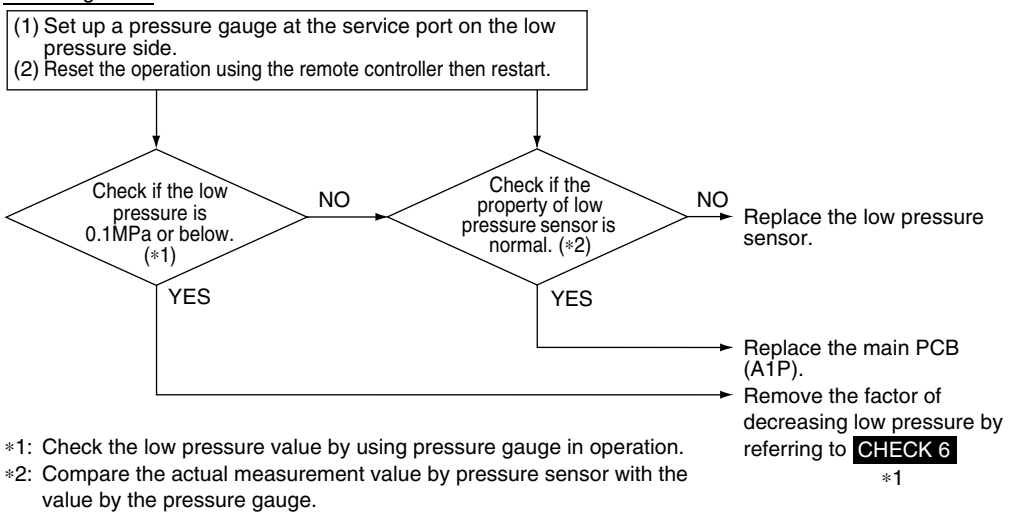
4.44 "UD" Outdoor Unit: Refrigerant Shortage Alert

Remote Controller Display	UD
Applicable Models	RTSQ8P~16P (Outdoor Unit)
Method of Malfunction Detection	Detect refrigerant shortage based on the temperature difference between low pressure or suction pipe and heat exchanger.
Malfunction Decision Conditions	[In cooling mode] Low pressure becomes 0.1MPa or below. [In heating mode] The degree of superheat of suction gas becomes 20 degrees and over. SH= Ts1 –Te Ts1: Suction pipe temperature detected by thermistor Te : Saturated temperature corresponding to low pressure ★Malfunction is not determined. The unit continues operation.
Supposed Causes	■ Refrigerant shortage or refrigerant clogging (piping error) ■ Defective thermistor (R4T, R8T) ■ Defective low pressure sensor ■ Defective outdoor unit PCB (A1P)

Troubleshooting

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

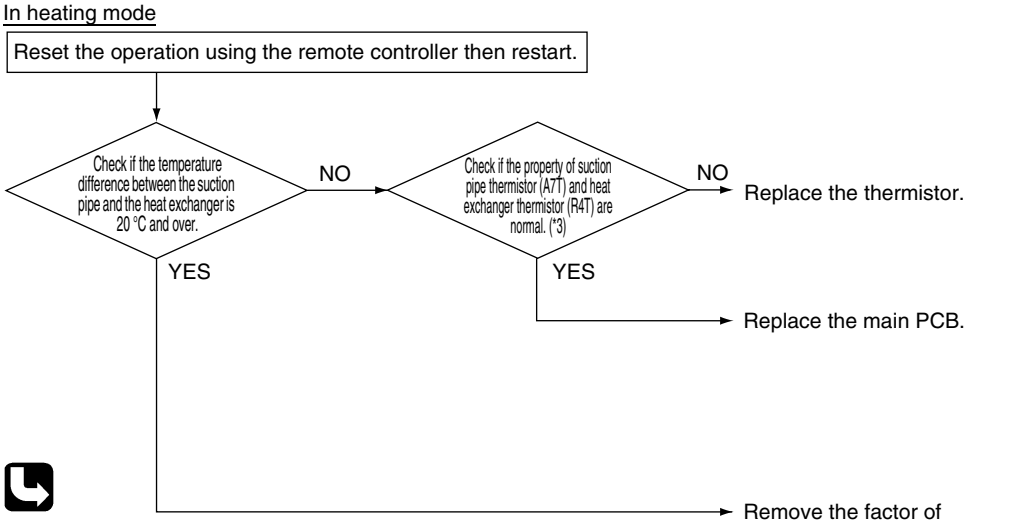
In cooling mode



*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.410.)

In heating mode



*3: Compare the thermistor resistance value with the value on the surface thermometer.

* 1 CHECK 6 : Referring to the information on P.343.

* 2 CHECK 3 : Referring to the information on P.340.

4.45 "U1" Reverse Phase, Open Phase

Remote Controller Display

U1

Applicable Models

RTSQ8P~16P

Method of Malfunction Detection

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

Malfunction Decision Conditions

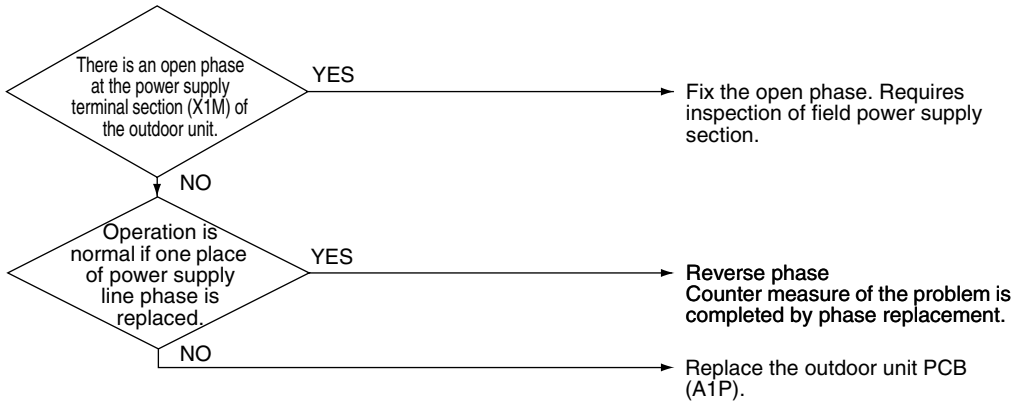
When a significant phase difference is made between phases.

Supposed Causes

- Power supply reverse phase
- Power supply open phase
- Defect of outdoor PCB (A1P)

Troubleshooting

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



4.46 "U2" Outdoor Unit: Power Supply Insufficient or Instantaneous Failure

Remote Controller Display

U2

Applicable Models

RTSQ8P~16P (Outdoor Unit), BTSQ20P (Function Unit)

Method of Malfunction Detection

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

Malfunction Decision Conditions

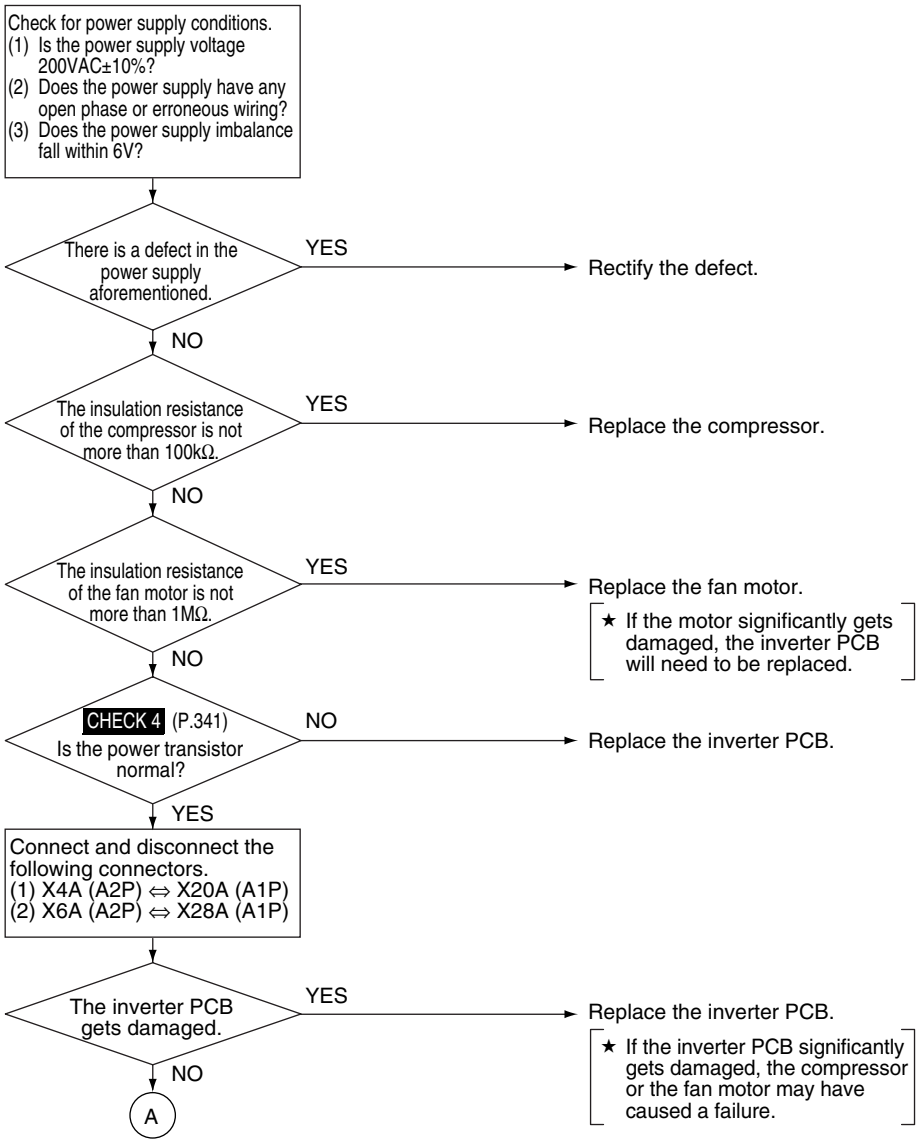
When the voltage aforementioned is not less than 780V or not more than 320V, or when the current-limiting voltage does not reach 200V or more or exceeds 740V.

Supposed Causes

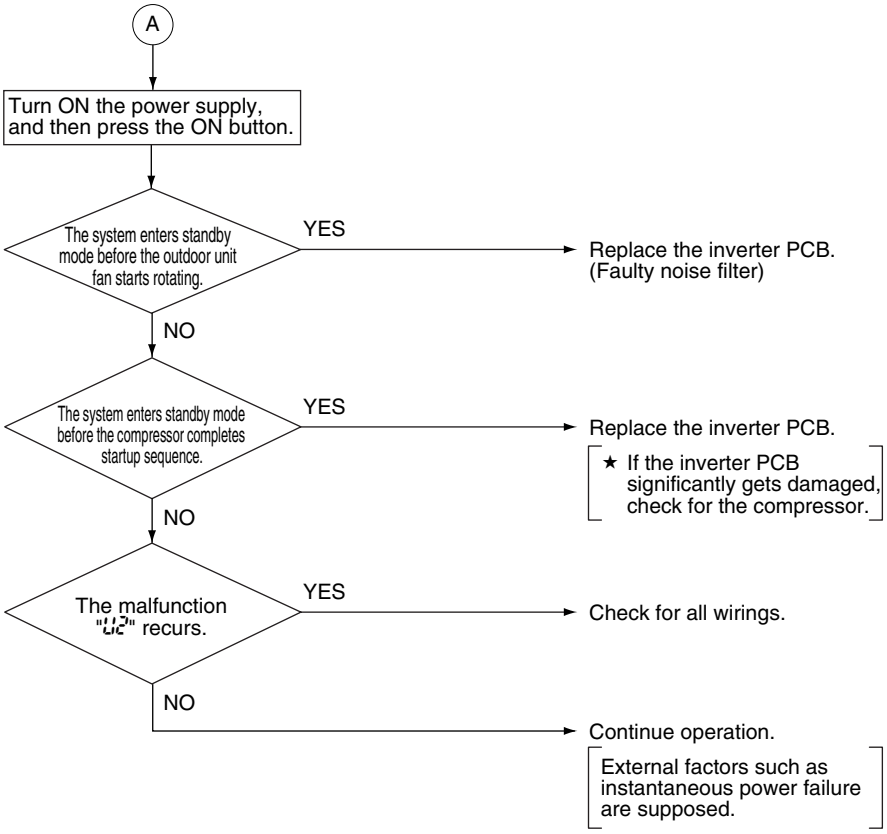
- Power supply insufficient
- Instantaneous power failure
- Open phase
- Defect of inverter PCB
- Defect of outdoor control PCB
- Main circuit wiring defect
- Faulty compressor
- Faulty fan motor
- Faulty connection of signal cable

Troubleshooting

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



Troubleshooting



4.47 "U3" Outdoor Unit: Check Operation is not Executed

Remote Controller Display

U3

Applicable Models

RTSQ8P~16P (Outdoor Unit)

Method of Malfunction Detection

Check operation is executed or not executed

Malfunction Decision Conditions

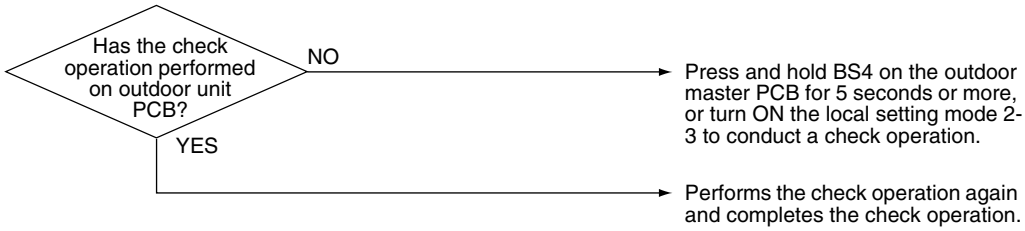
Malfunction is decided when the unit starts operation without check operation.

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 occurred.

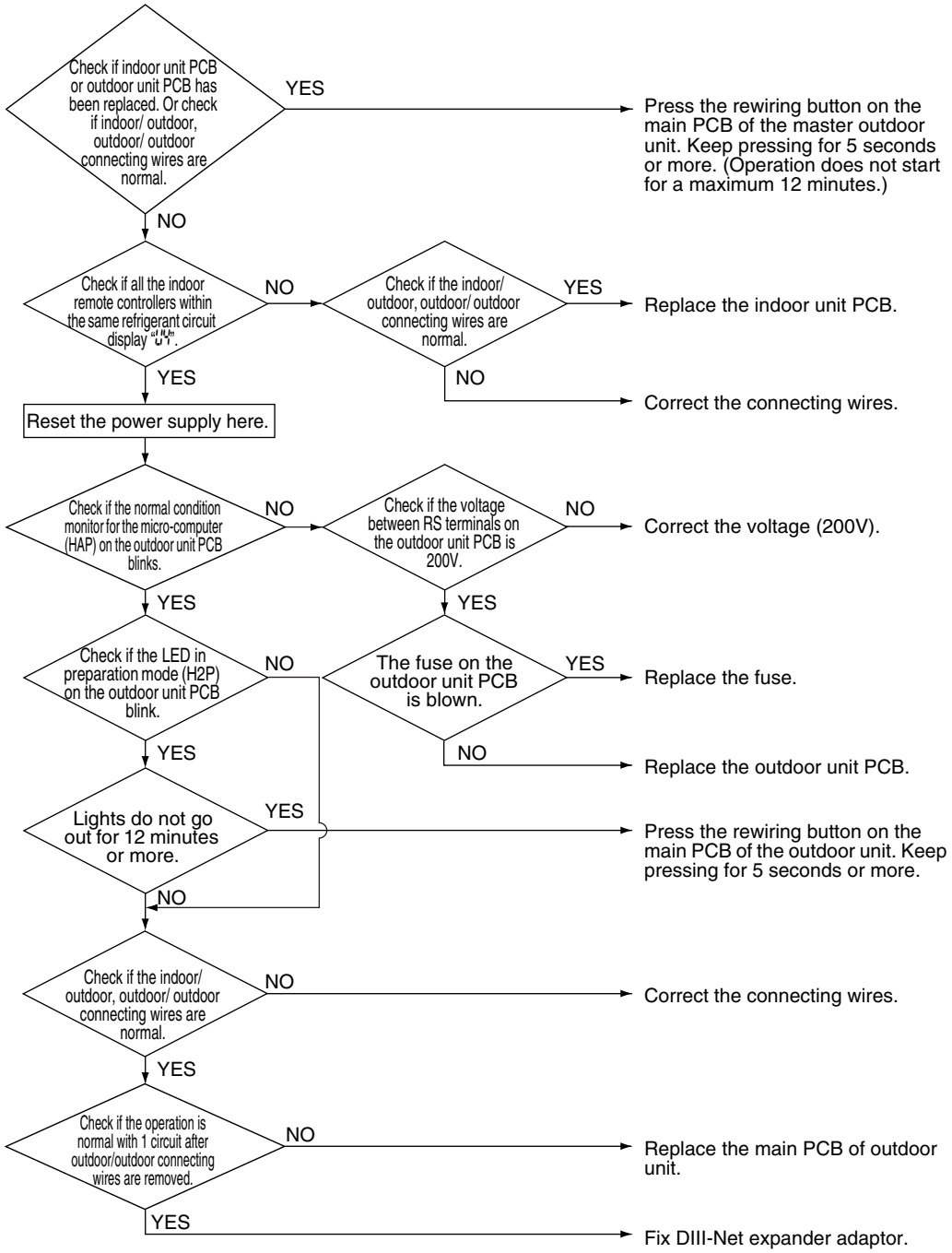


4.48 "U4" Malfunction of Transmission between Indoor Units

Remote Controller Display	U4
Applicable Models	All model of indoor unit RTSQ8P~16P (Outdoor Unit)
Method of Malfunction Detection	Check if the transmission between indoor unit and outdoor unit is correctly executed using micro-computer.
Malfunction Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	■ Indoor to outdoor, outdoor to outdoor transmission wiring F1, F2 disconnection, short circuit or wrong wiring ■ Outdoor unit power supply is OFF ■ System address does not match ■ Defect of indoor unit PCB ■ Defect of outdoor unit PCB

Troubleshooting

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



4.49 "U5" Indoor Unit: Malfunction of Transmission between Remote Controller and Indoor Unit

Remote Controller Display

U5

Applicable Models

All indoor unit models

Method of Malfunction Detection

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

Malfunction Decision Conditions

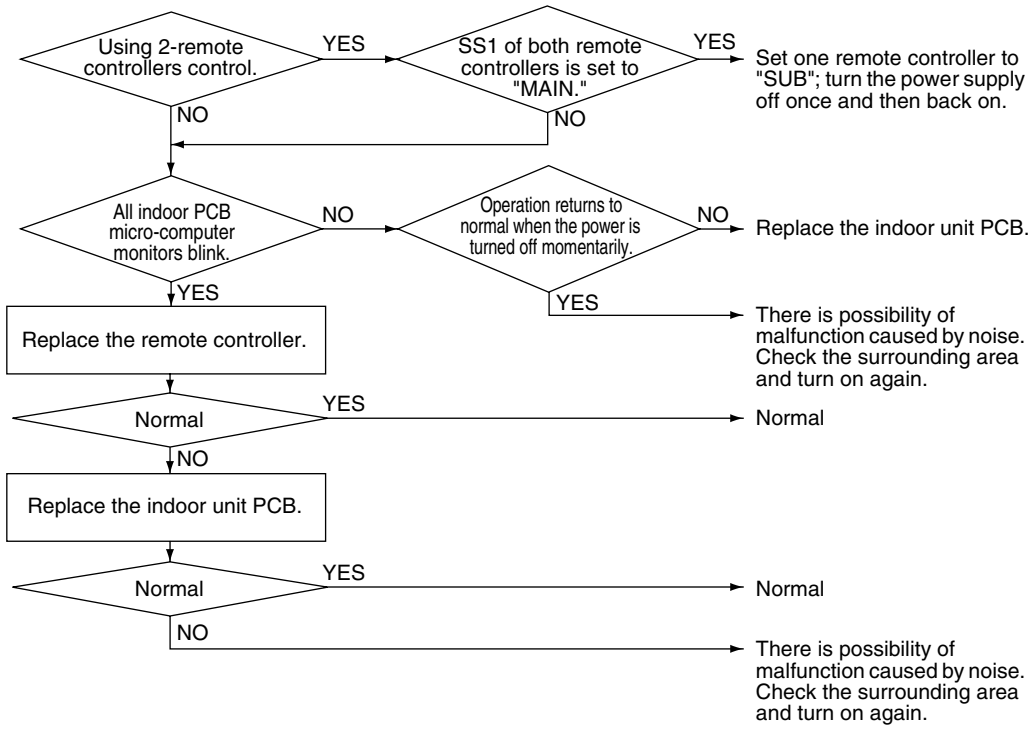
Normal transmission does not continue for specified period.

Supposed Causes

- Malfunction of indoor unit remote controller transmission
- Connection of two main remote controllers (when using 2 remote controllers)
- Defect of indoor unit PCB
- Defect of remote controller PCB
- Malfunction of transmission caused by noise

Troubleshooting

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

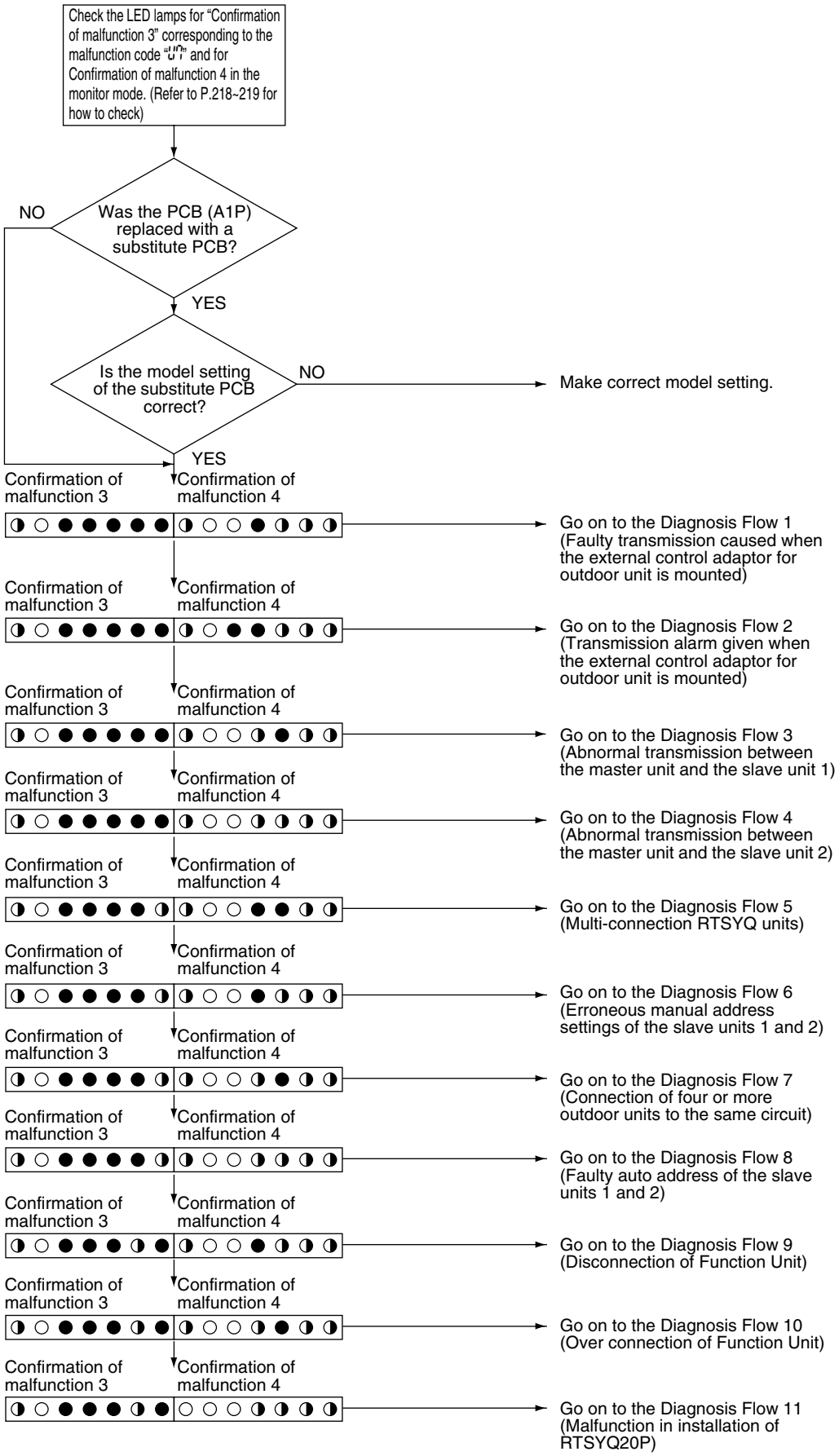


4.50 "U7" Outdoor Unit: Transmission Failure (Across Outdoor Units)

Remote Controller Display	U7
Applicable Models	All models of outdoor units and function unit
Method of Malfunction Detection	Micro-computer checks if transmission between outdoor units.
Malfunction Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	■ Connection error in connecting wires between outdoor unit and external control adaptor for outdoor unit ■ Connection error in connecting wires across outdoor units ■ Setting error in switching cooling/ heating ■ Integrated address setting error for cooling/ heating (function unit, external control adaptor for outdoor unit) ■ Defective outdoor unit PCB (A1P or A3P) ■ Defective external control adaptor for outdoor unit

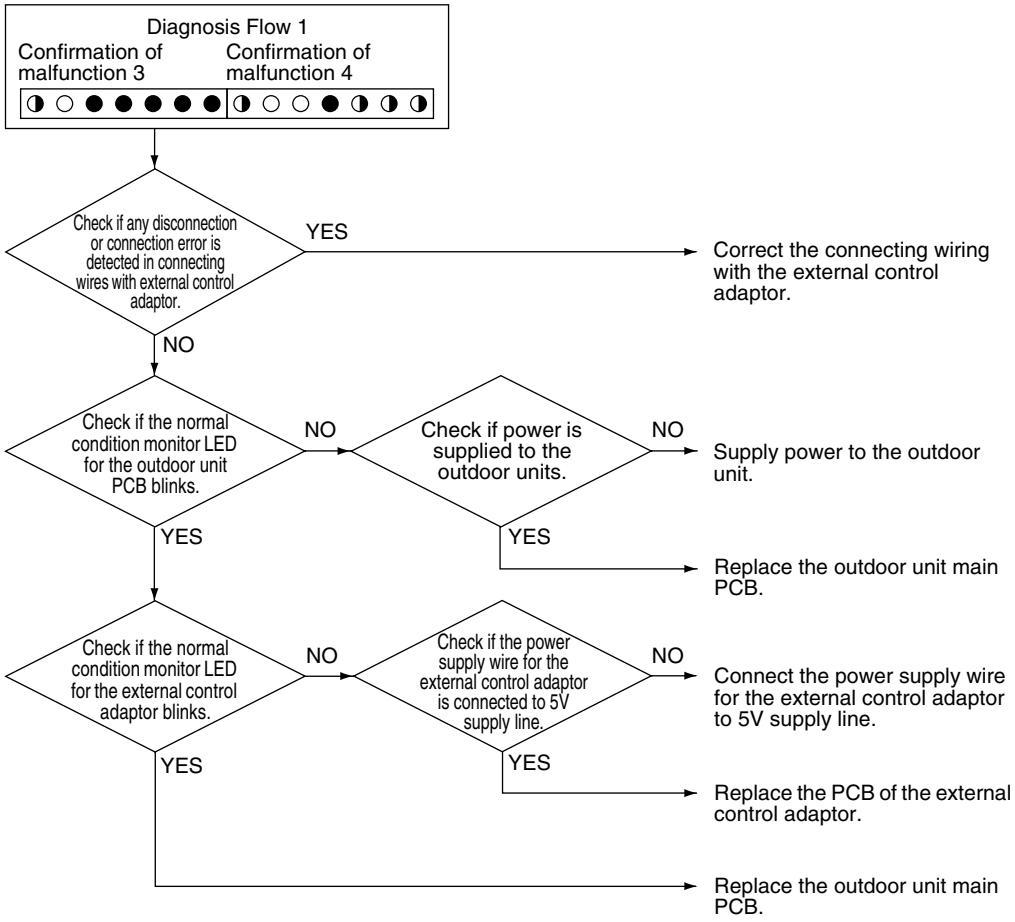
Troubleshooting

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



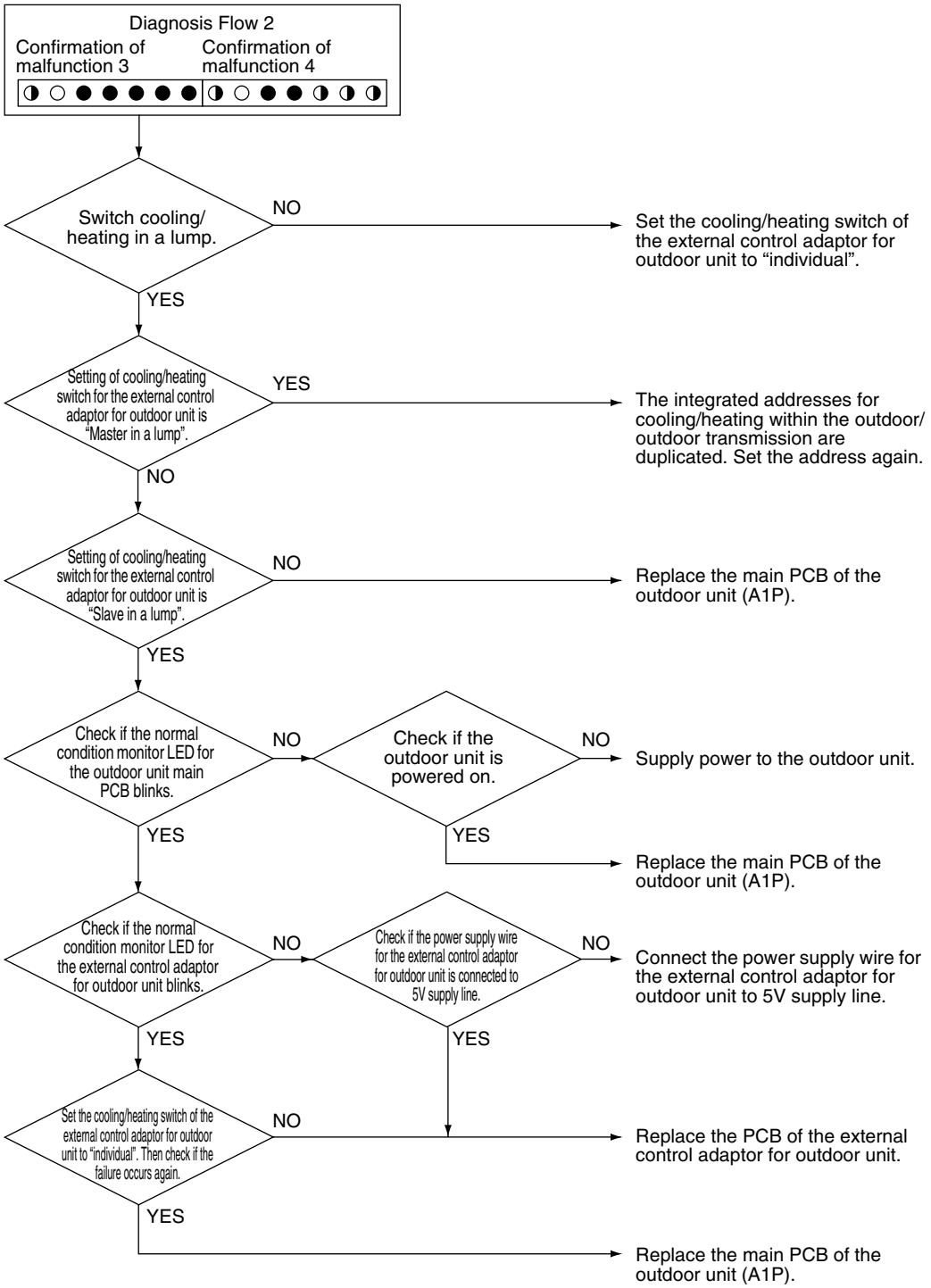
Troubleshooting

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



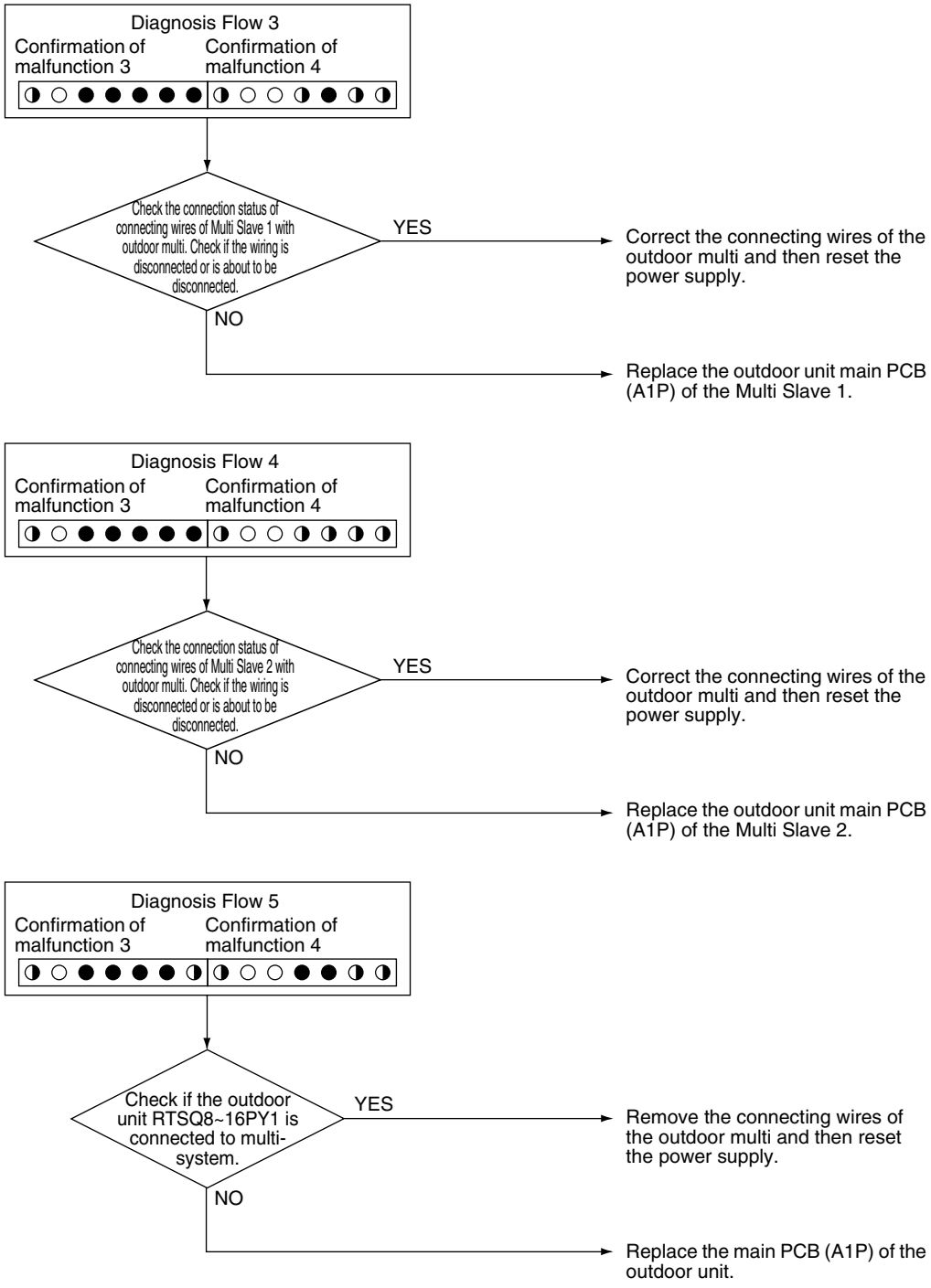
Troubleshooting

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



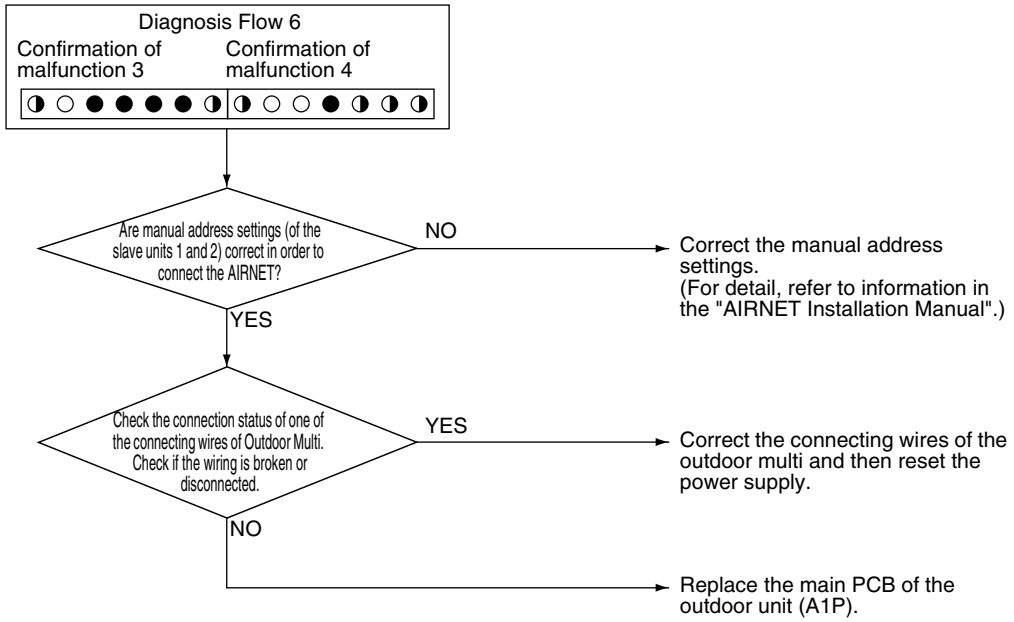
Troubleshooting

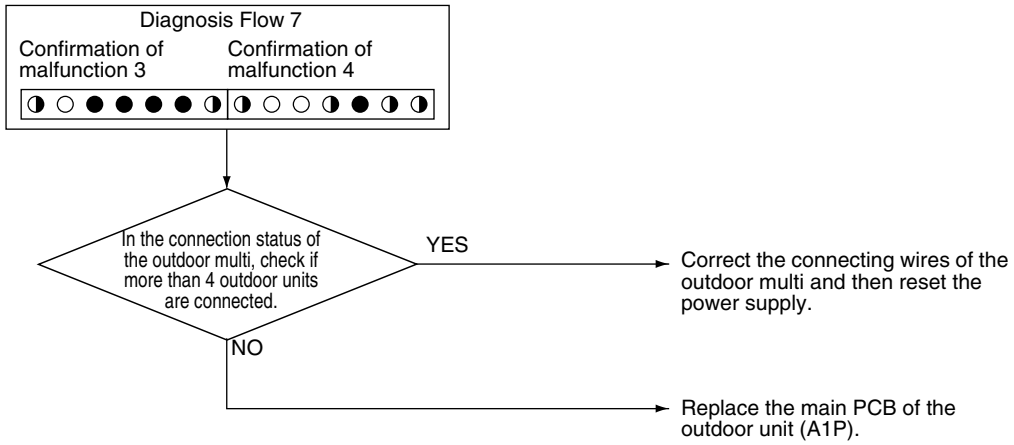
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

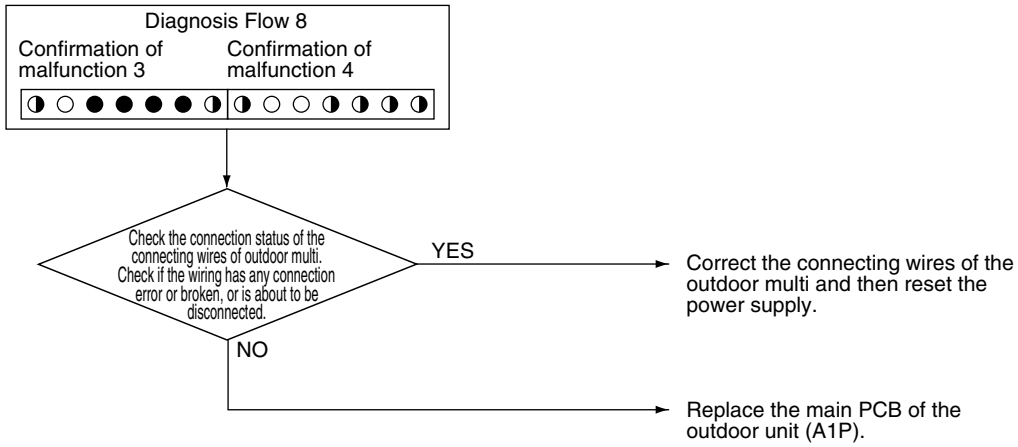


Troubleshooting

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

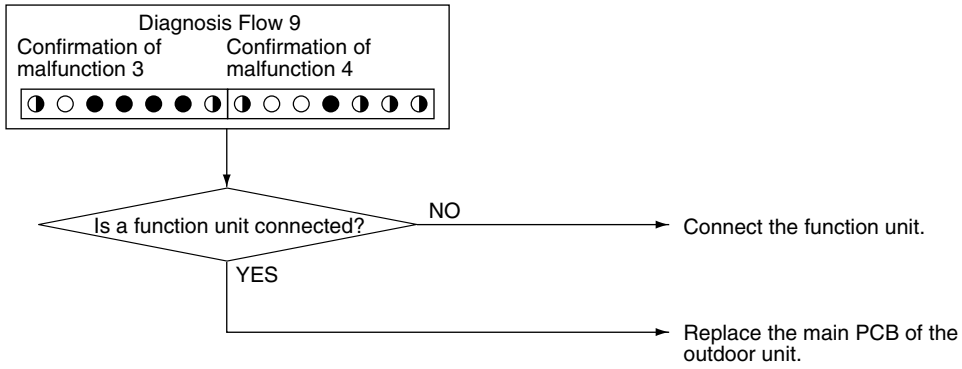


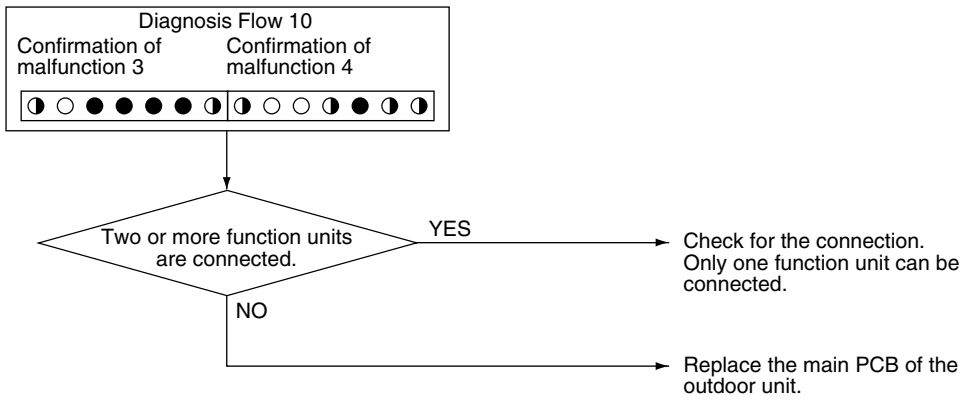


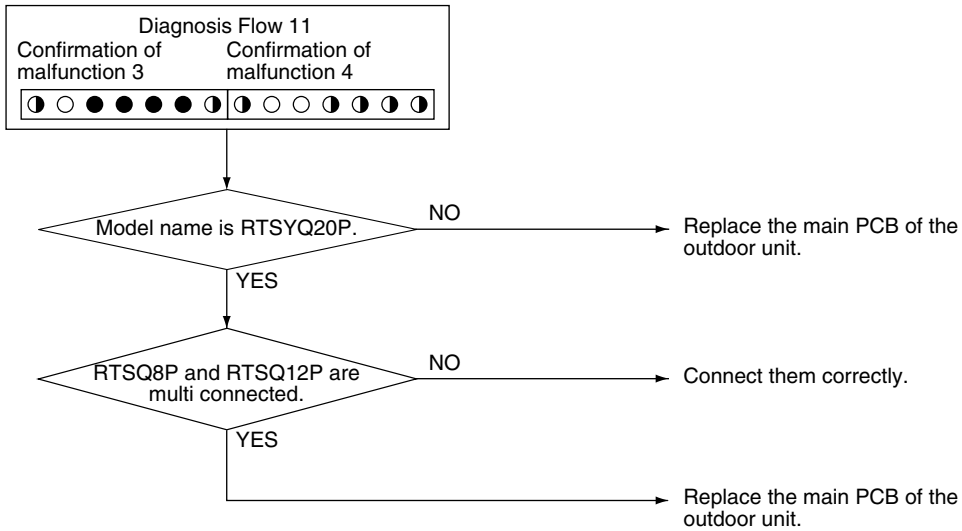


Troubleshooting

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







4.51 "U8" Indoor Unit: Malfunction of Transmission between Main and Sub Remote Controllers

Remote Controller Display

U8

Applicable Models

All indoor unit models

Method of Malfunction 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.

Malfunction Decision Conditions

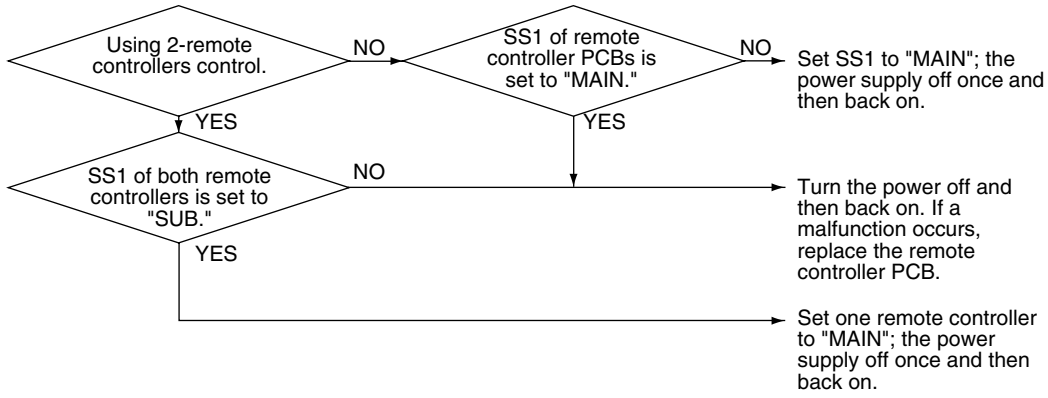
Normal transmission does not continue for specified period.

Supposed Causes

- Malfunction of transmission between main and sub remote controller
- Connection between sub remote controllers
- Defect of remote controller PCB

Troubleshooting

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



4.52 "U9" Indoor Unit: Malfunction of Transmission between Indoor and Outdoor Units in the Same System

Remote Controller Display

U9

Applicable Models

All indoor unit models
RTSQ8P~16P (Outdoor Unit)

Method of Malfunction Detection

Detect malfunction signal for the other indoor units within the circuit by outdoor unit PCB.

Malfunction Decision Conditions

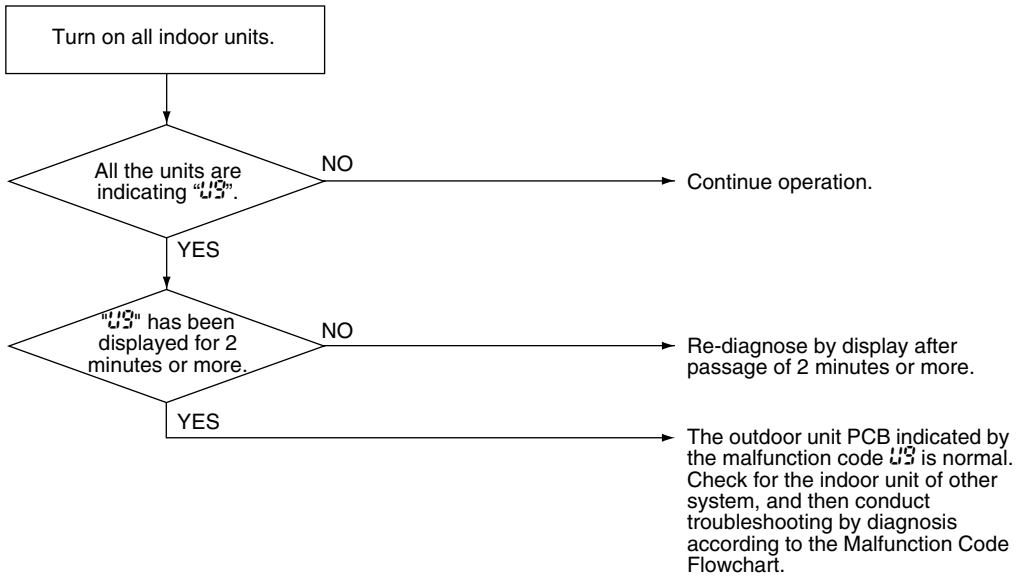
When the malfunction decision is made on any other indoor unit within the system concerned.

Supposed Causes

- Malfunction of transmission within or outside of other system
- Malfunction of electronic expansion valve in indoor unit of other system
- Defect of PCB of indoor unit in other system
- Improper connection of transmission wiring between indoor and outdoor unit

Troubleshooting

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

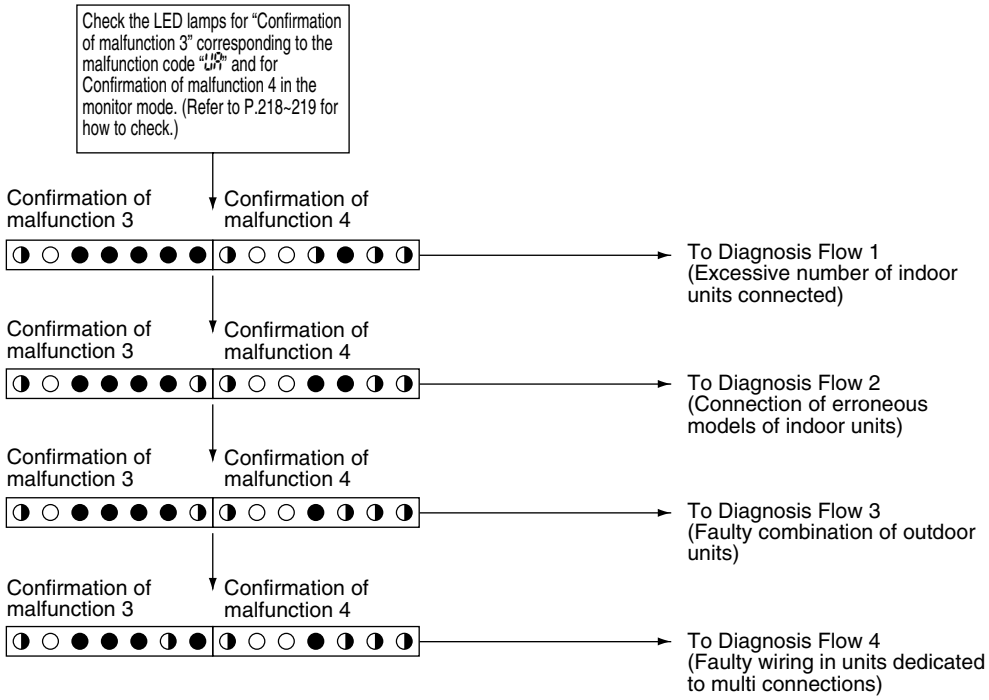


4.53 "U9" Improper Combination of Indoor and Outdoor Units, Indoor Units and Remote Controller

Remote Controller Display	U9
Applicable Models	All models of indoor unit RTSQ8P~16P (Outdoor Unit) and function unit
Method of Malfunction Detection	When the model data is different between the indoor units, outdoor units and function units. When the number of indoor unit is out of the permissible range.
Malfunction Decision Conditions	The malfunction decision is made as soon as either of the abnormalities aforementioned is detected.
Supposed Causes	■ Excess of connected indoor units ■ Defect of outdoor unit PCB (A1P) ■ Mismatching of the refrigerant type of indoor and outdoor unit. ■ Setting of outdoor PCB was not conducted after replacing to spare parts PCB.

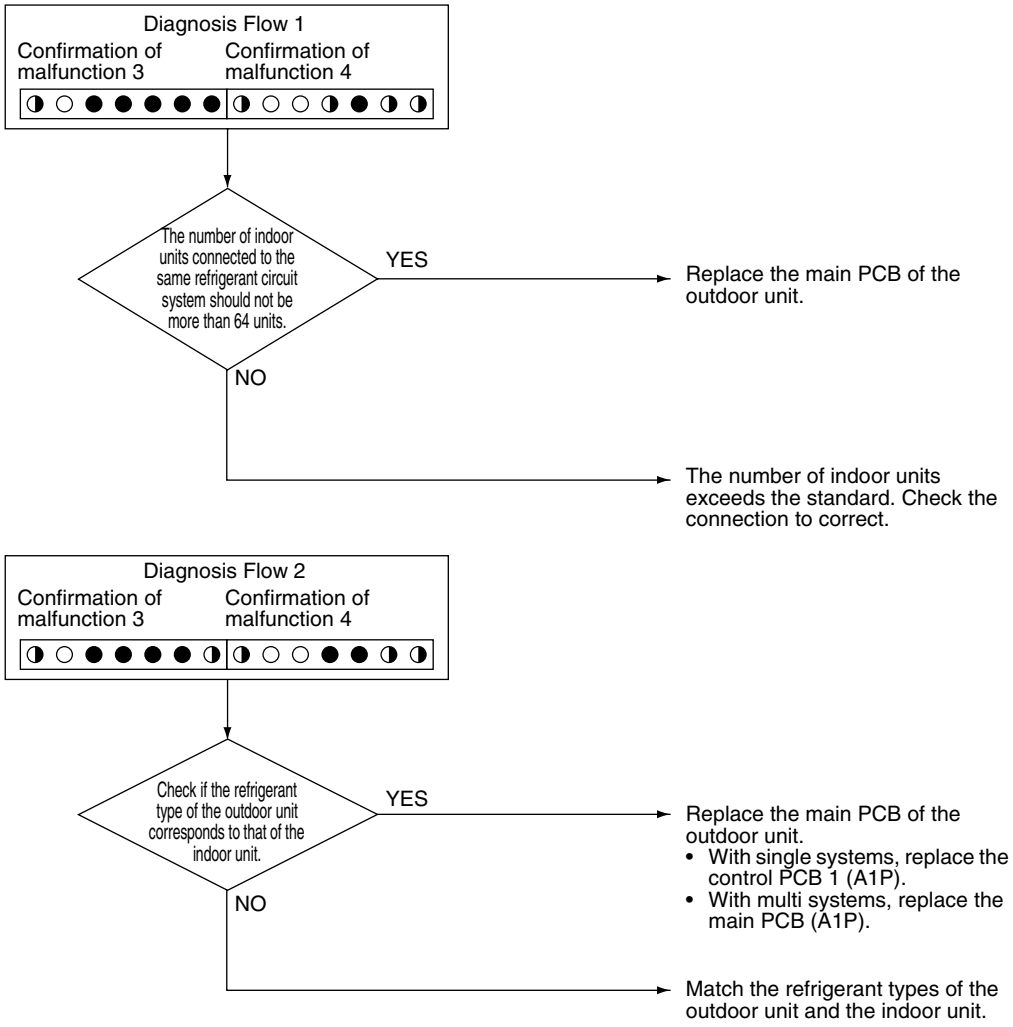
Troubleshooting

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



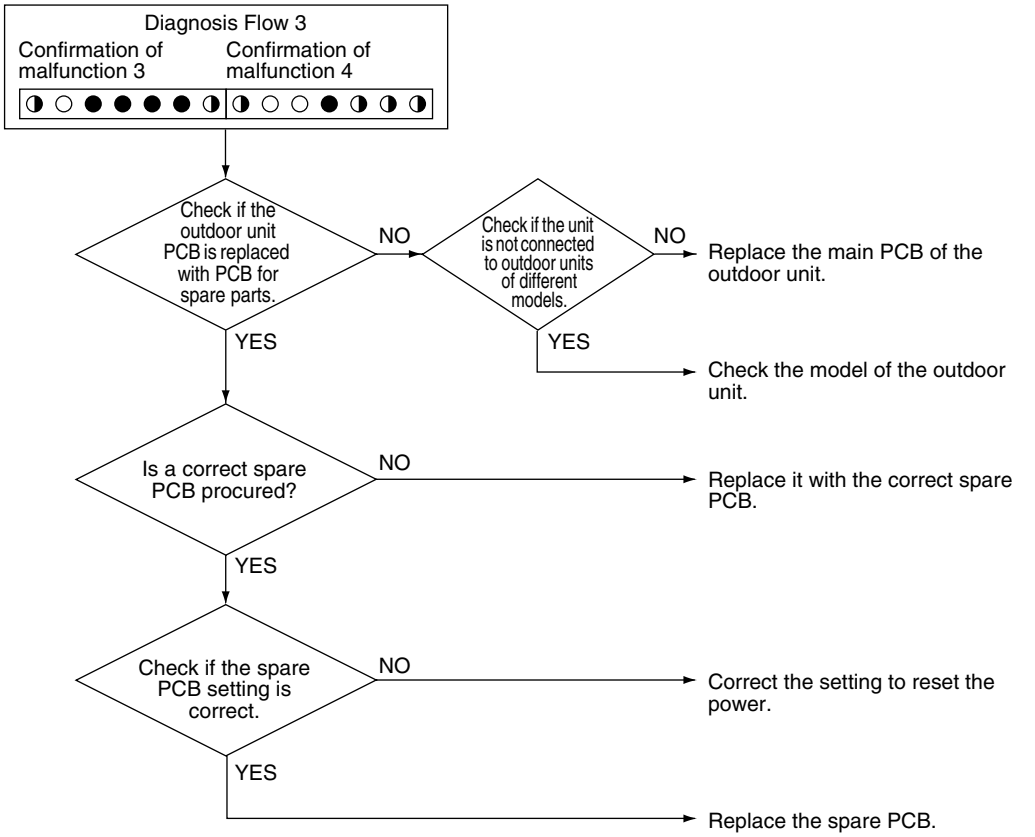
Troubleshooting

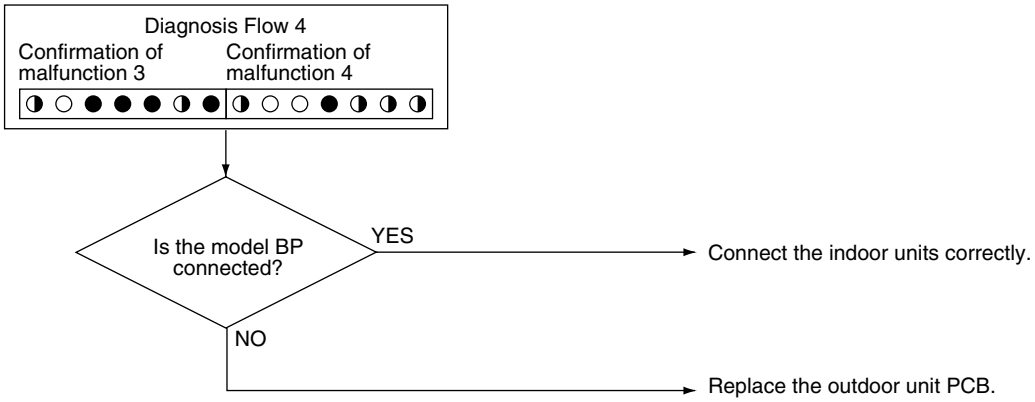
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



Troubleshooting

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





4.54 "UE" Address Duplication of Centralized Controller

Remote Controller Display

UE

Applicable Models

All indoor unit models
Centralized controller

Method of Malfunction Detection

The principal indoor unit detects the same address as that of its own on any other indoor unit.

Malfunction Decision Conditions

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

Supposed Causes

- Address duplication of centralized controller

Troubleshooting

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

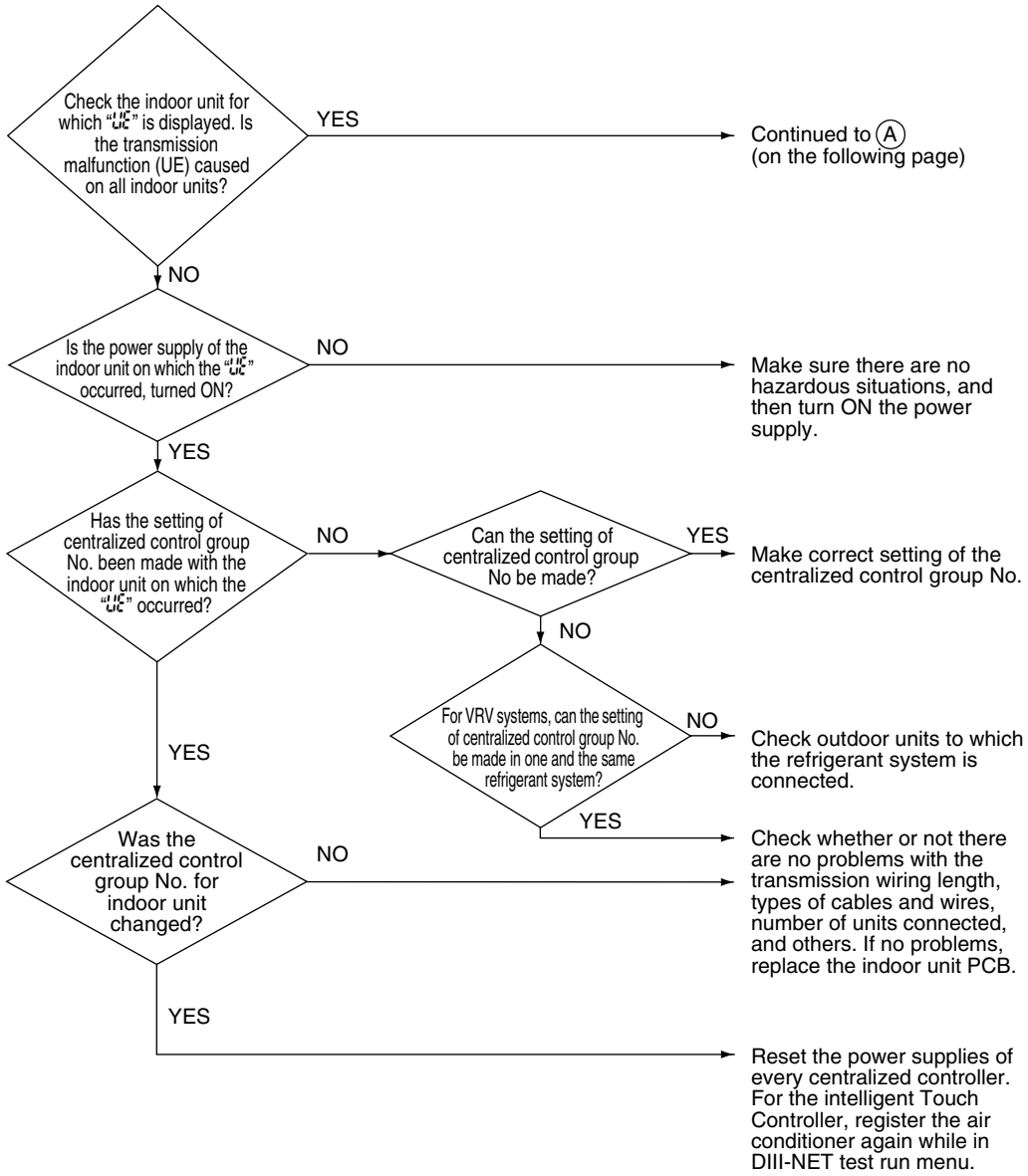
The centralized address is duplicated. → Make setting change so that the centralized address will not be duplicated.

4.55 "UE" Malfunction of Transmission between Centralized Controller and Indoor Unit

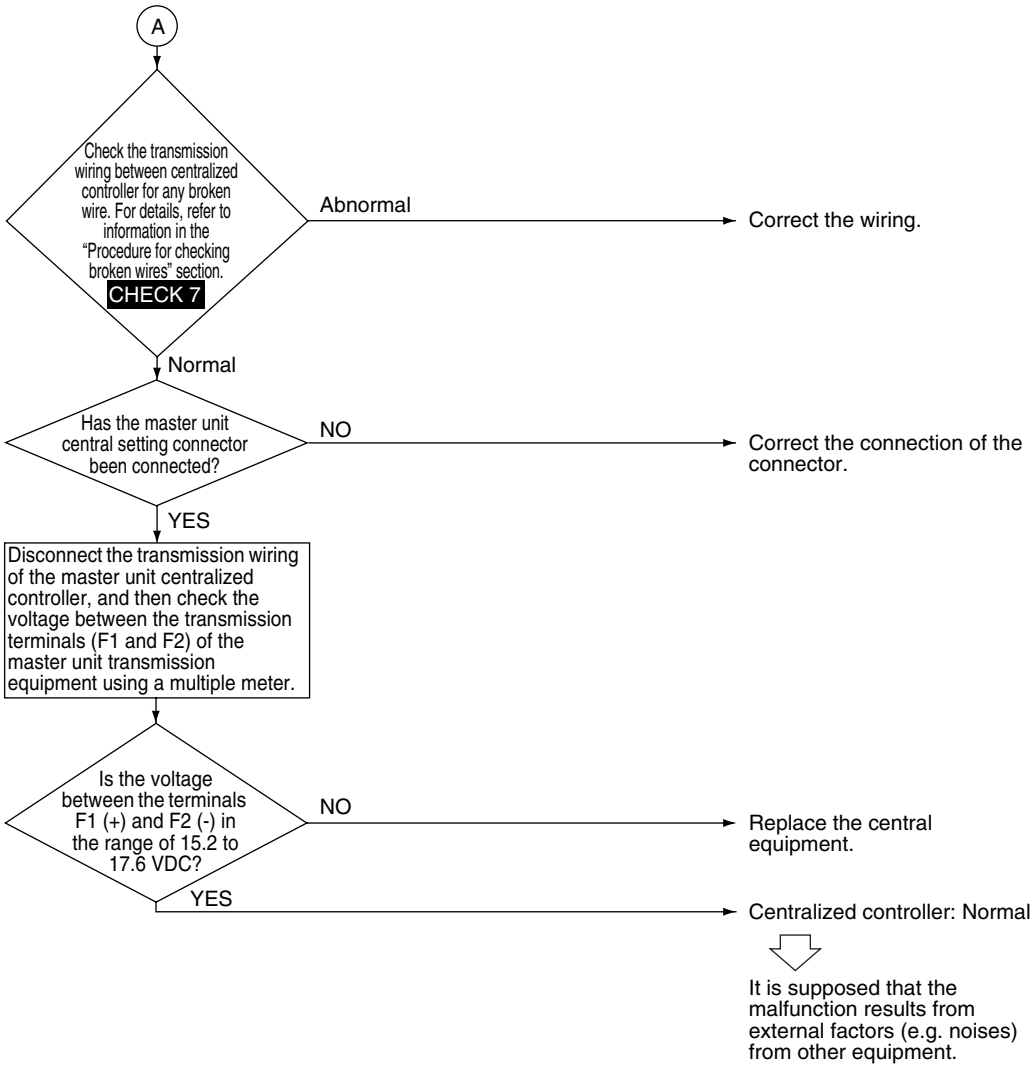
Remote Controller Display	UE
Applicable Models	All models of indoor units intelligent Touch Controller Centralized controller Schedule timer
Method of Malfunction Detection	Micro-computer checks if transmission between indoor unit and centralized controller is normal.
Malfunction Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	■ Malfunction of transmission between optional controllers for centralized control and indoor unit ■ Connector for setting master controller is disconnected. (or disconnection of connector for independent / combined use changeover switch.) ■ Failure of PCB for centralized remote controller ■ Defect of indoor unit PCB

Troubleshooting

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



Troubleshooting



* CHECK 7 : Referring to the information on P.344.

4.56 "UF" System is not Set yet

Remote Controller Display

UF

Applicable Models

All indoor unit models
RTSQ8P~16P (Outdoor Unit)

Method of Malfunction 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.

Malfunction Decision Conditions

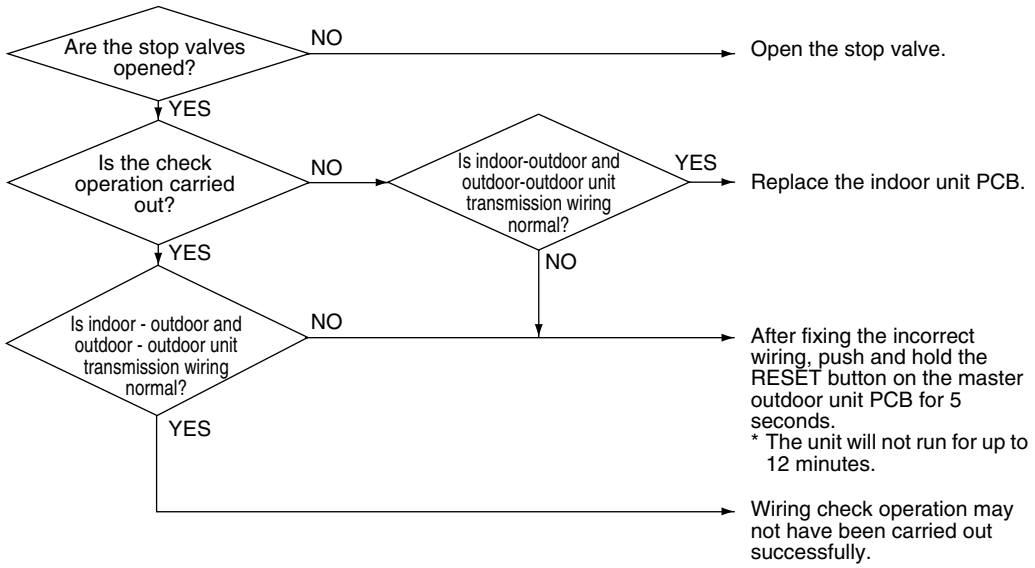
The malfunction is determined as soon as the abnormality aforementioned is detected through checking the system for any erroneous connection of units on the check operation.

Supposed Causes

- Improper connection of transmission wiring between indoor-outdoor units and outdoor-outdoor units
- Failure to execute check operation
- Defect of indoor unit PCB
- Stop valve is left in closed

Troubleshooting

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



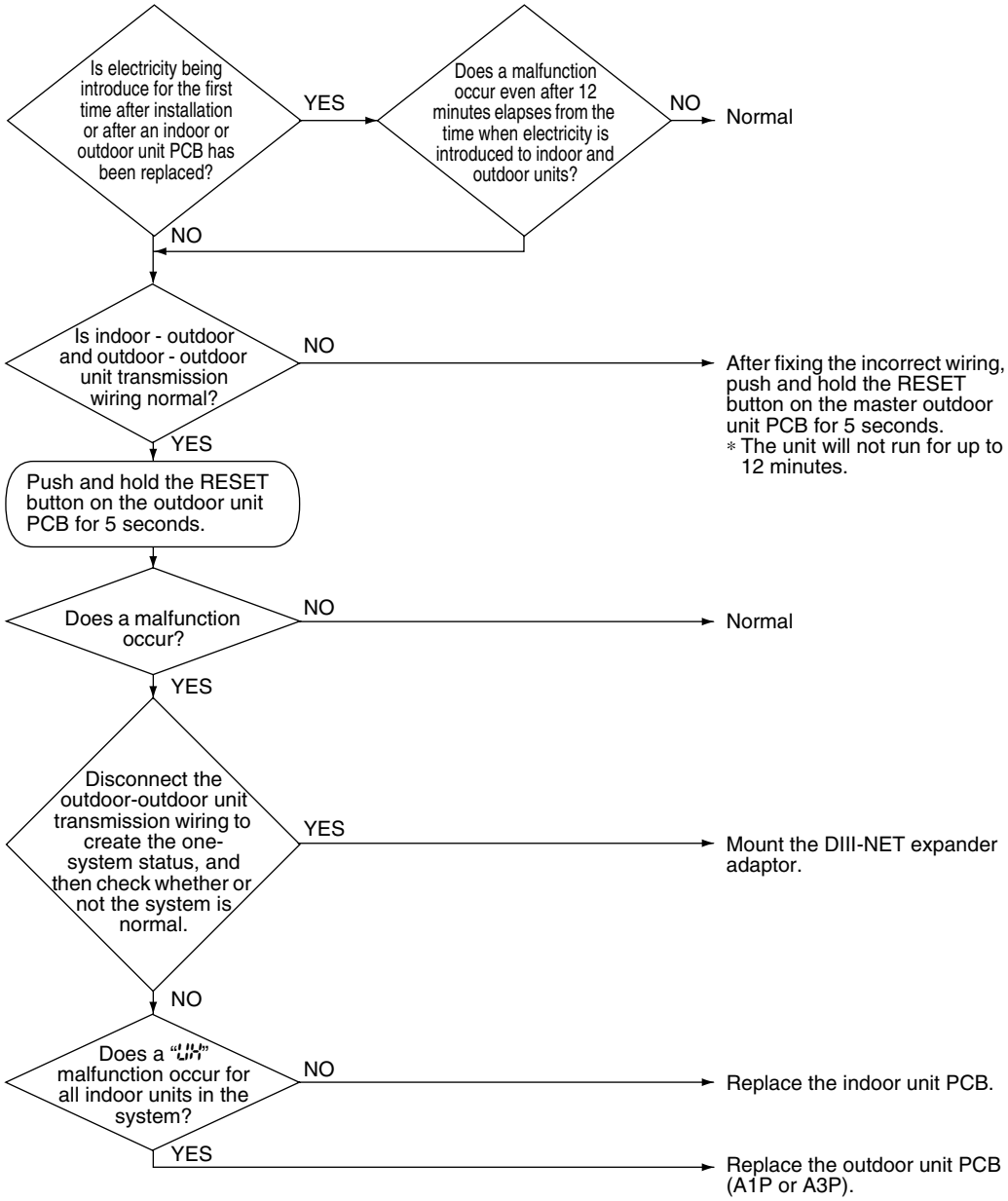
Note: Wiring check operation may not be successful if carried out after the outdoor unit has been off for more than 12 hours, or if it is not carried out after running all connected indoor units in the fan mode for at least an hour.

4.57 "LH" Malfunction of System, Refrigerant System Address Undefined

Remote Controller Display	LH
Applicable Models	All models of indoor units RTSQ8P~16P (Outdoor Unit)
Method of Malfunction Detection	Detect an indoor unit with no address setting.
Malfunction Decision Conditions	The malfunction decision is made as soon as the abnormality aforementioned is detected.
Supposed Causes	■ Improper connection of transmission wiring between indoor-outdoor units and outdoor-outdoor units ■ Defect of indoor unit PCB ■ Defect of outdoor unit main PCB (A1P or A3P)

Troubleshooting

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



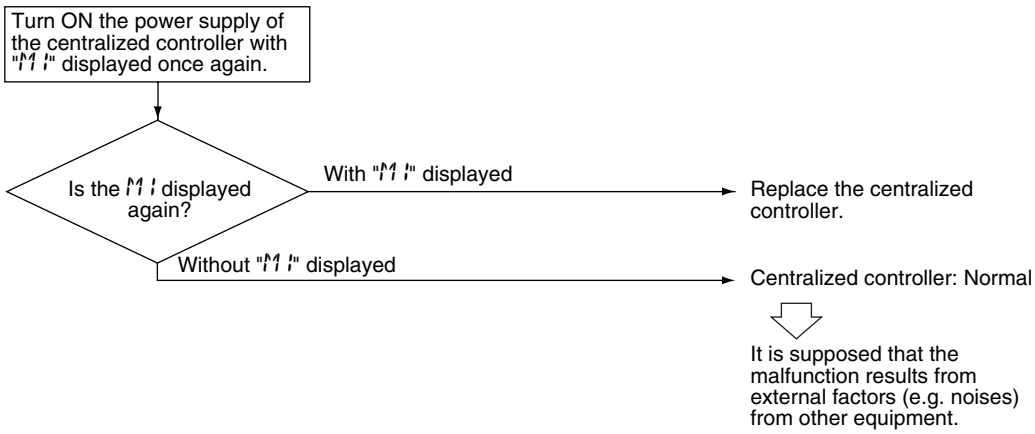
∗1: Check the correct wiring "indoor-outdoor" and "outdoor-outdoor" by Installation Instruction.
∗2: What is Auto Address?
This is the address automatically assigned to indoor units and outdoor units after initial power supply upon installation, or after executing rewiring (Keep pressing the RESET button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

5. Troubleshooting (OP: Centralized Remote Controller)

5.1 "M1" PCB Defect

Remote Controller Display	M1
Applicable Models	Centralized remote controller intelligent Touch Controller Schedule timer
Method of Malfunction Detection	Detect an abnormality in the DIII-NET polarity circuit.
Malfunction Decision Conditions	When + polarity and - polarity are detected at the same time.
Supposed Causes	■ Defect of centralized remote controller PCB ■ Defect of intelligent Touch Controller PCB ■ Defect of Schedule timer PCB
Troubleshooting	Replace the centralized remote controller.

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



5.2 "M8" Malfunction of Transmission between Optional Controllers for Centralized Control

Remote Controller Display

M8

Applicable Models

Centralized remote controller intelligent Touch Controller
Schedule timer

Method of Malfunction Detection

Detect the malfunction according to DIII-NET transmission data. (The system will be automatically reset.)

Malfunction Decision Conditions

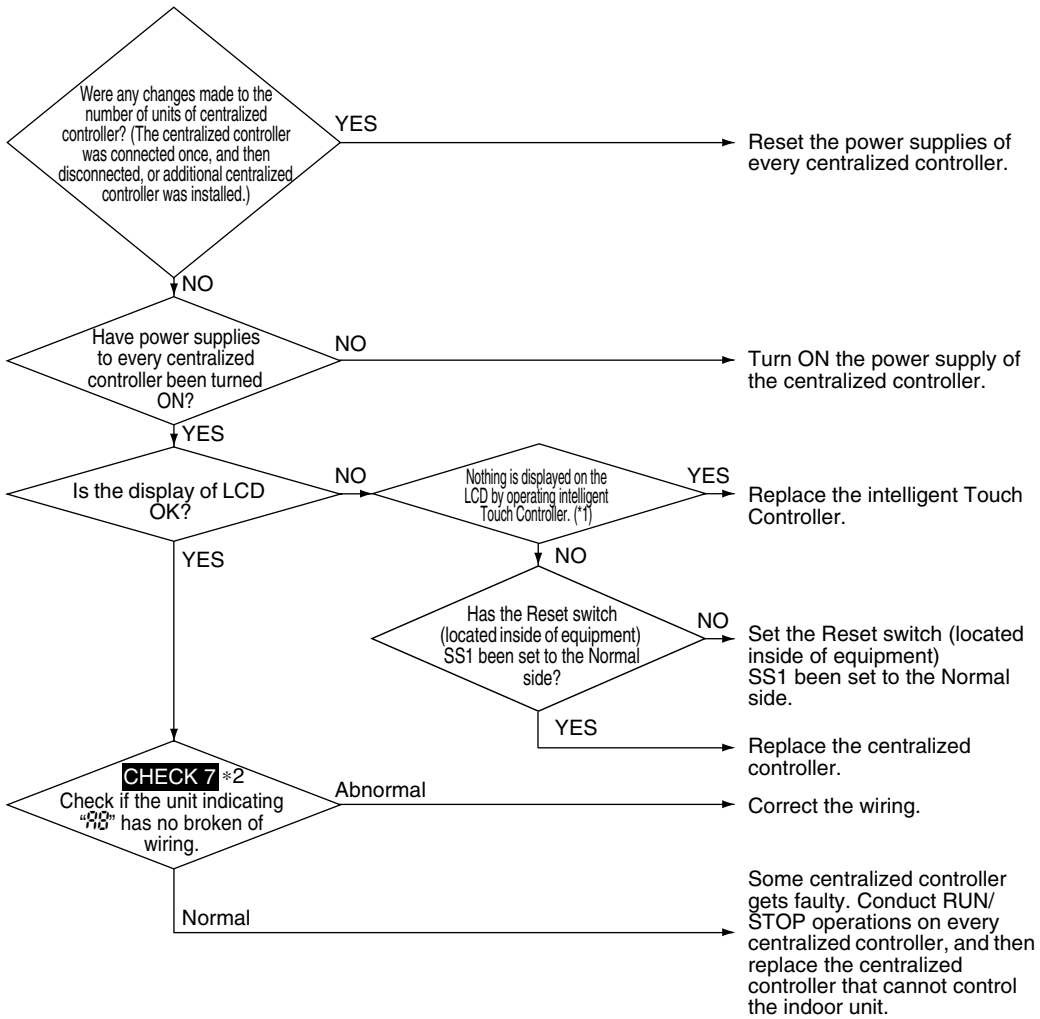
When no master controller is present at the time of the startup of slave controller.
When the centralized controller, which was connected once, shows no response.

Supposed Causes

- Malfunction of transmission between optional controllers for centralized control
- Defect of PCB of optional controllers for centralized control

Troubleshooting

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



*1: Display screen control using intelligent Touch Controller:
When the screen displays nothing by touching the screen, adjust the contrast volume.

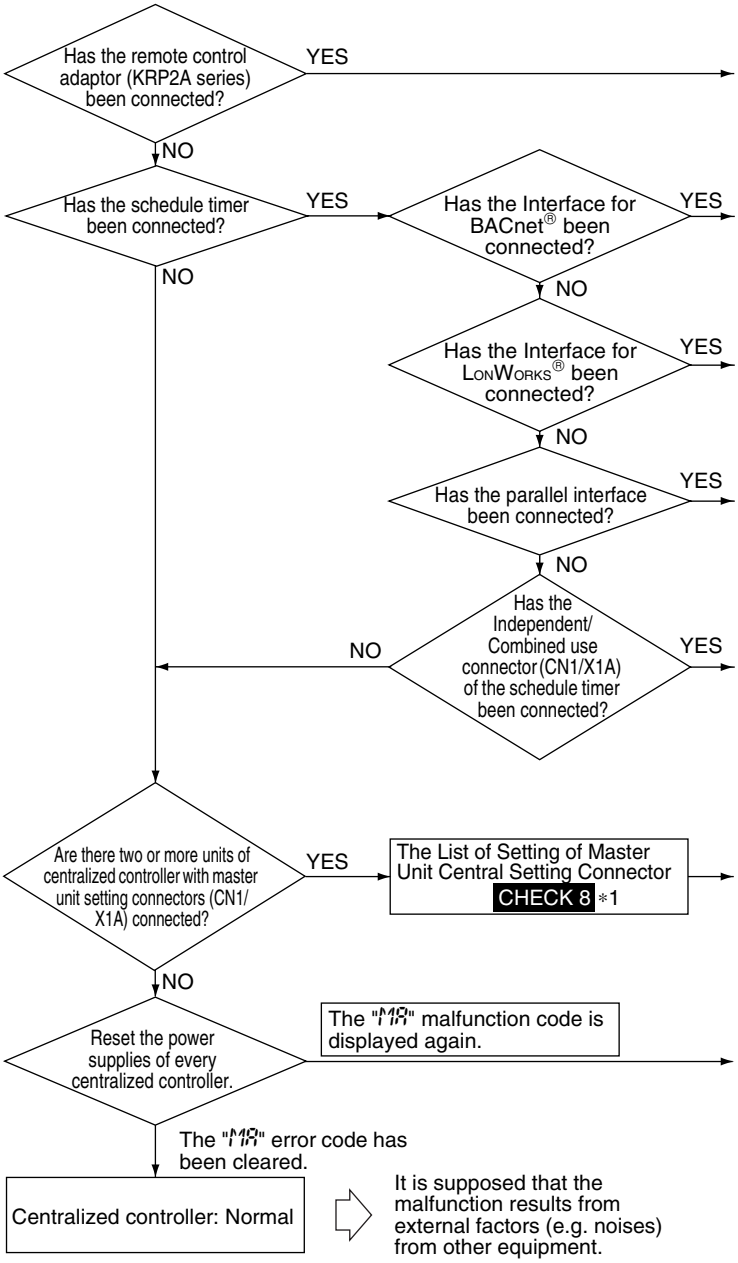
*2: CHECK 7 : Referring to the information on P.344.

5.3 "MA" Improper Combination of Optional Controllers for Centralized Control

Remote Controller Display	MA
Applicable Models	Centralized remote controller intelligent Touch Controller Schedule timer
Method of Malfunction Detection	Detect the malfunction according to DIII-NET transmission data.
Malfunction Decision Conditions	When the schedule timer is set to individual use mode, other central component is present. When multiple master controller are present. When the remote control adaptor is present.
Supposed Causes	■ Improper combination of optional controllers for centralized control ■ More than one master controller is connected ■ Defect of PCB of optional controller for centralized control

Troubleshooting

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



*1 CHECK 8 : Referring to the information on P.345.

5.4 "MC" Address Duplication, Improper Setting

Remote Controller Display

MC

Applicable Models

Centralized remote controller intelligent Touch Controller
Schedule timer

Method of Malfunction Detection

Detect the malfunction according to DIII-NET transmission data.

Malfunction Decision Conditions

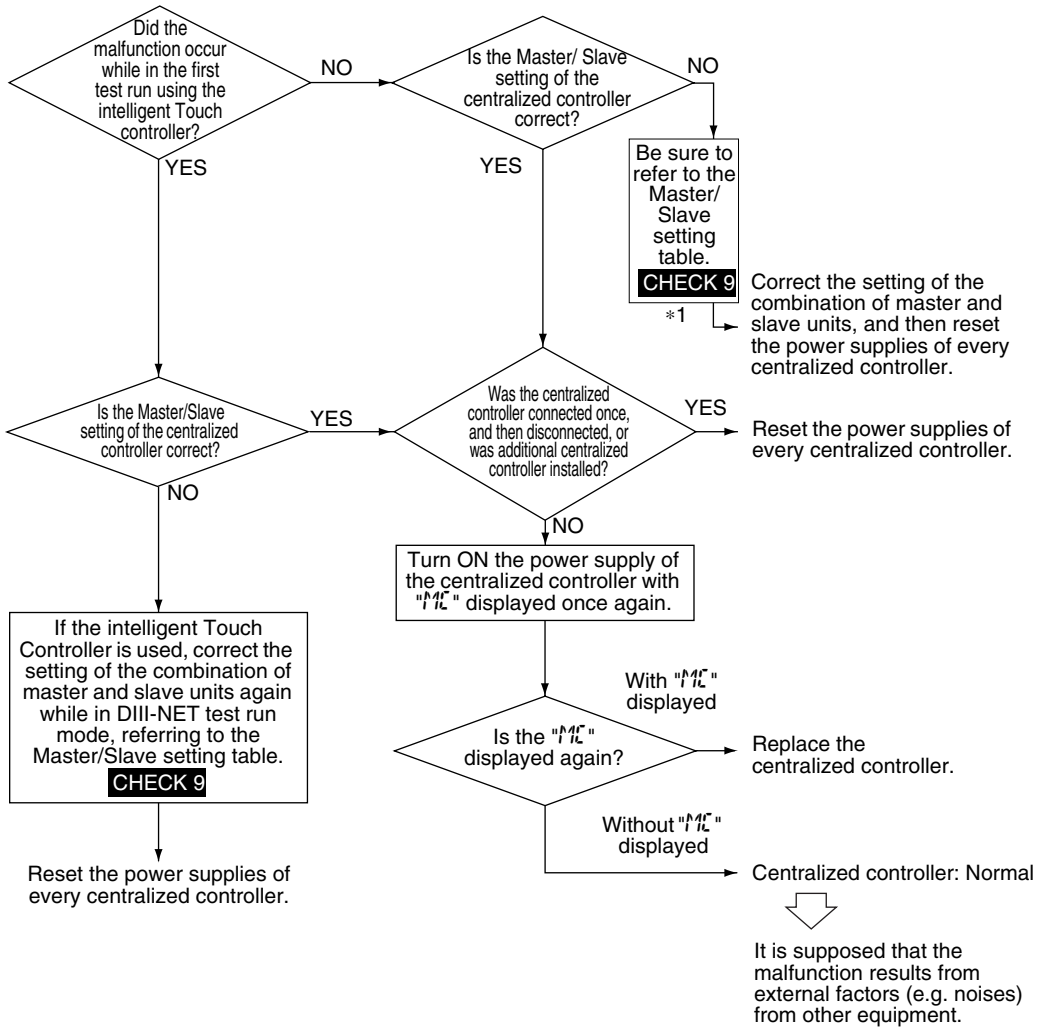
- Two or more units of centralized remote controllers and intelligent Touch Controllers are connected, and all of them are set to master unit central setting or slave unit central setting.
- Two units of schedule timers are connected.

Supposed Causes

- Address duplication of centralized controller

Troubleshooting

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



*1 CHECK 9: Referring to the information on P.346.

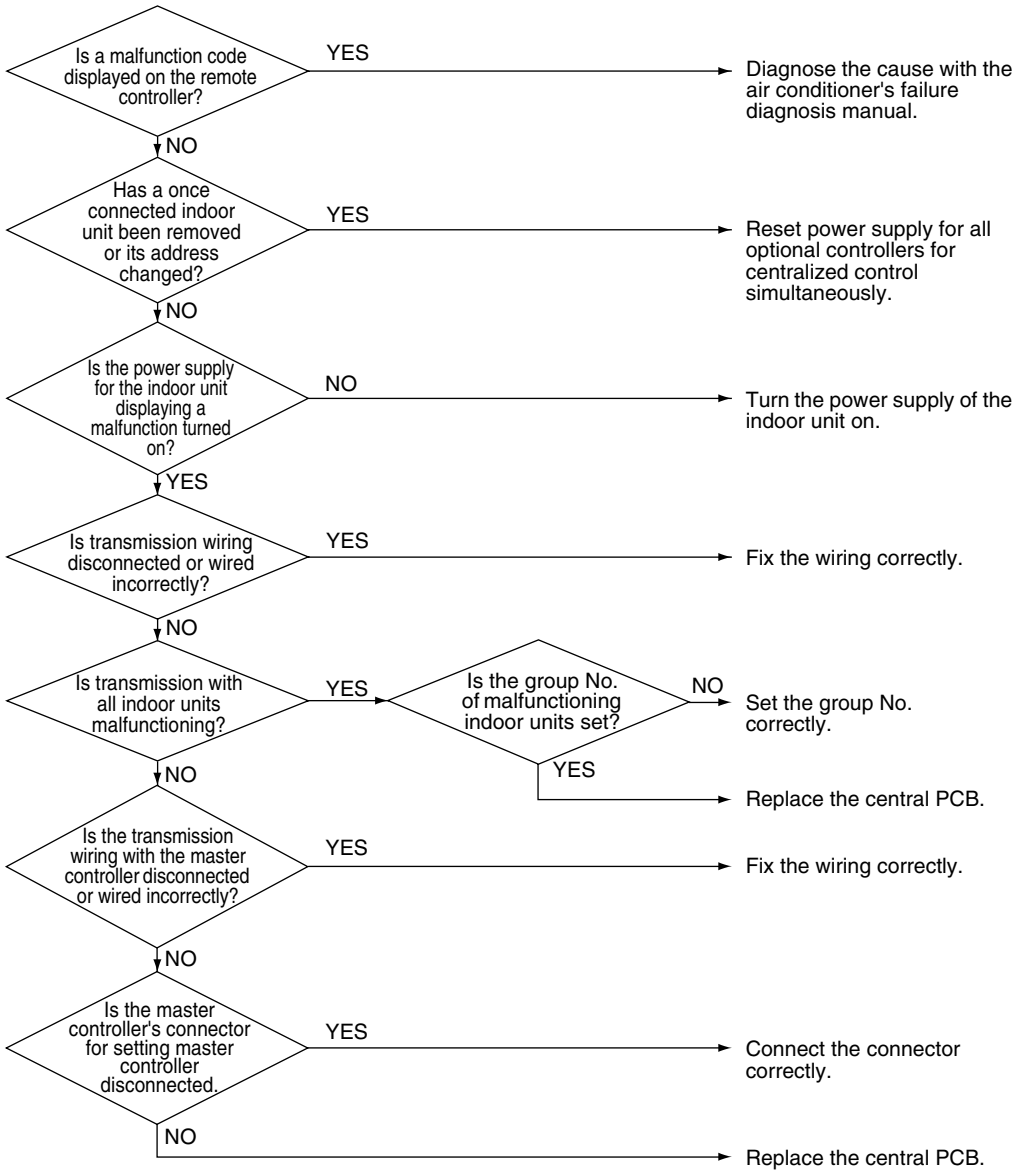
6. Troubleshooting (OP: Unified ON/OFF Controller)

6.1 Operation Lamp Blinks

Remote Controller Display	Operation lamp blinks
Applicable Models	All model of indoor units Unified ON/OFF controller
Method of Malfunction Detection	Detect the malfunction according to DIII-NET transmission data.
Malfunction Decision Conditions	
Supposed Causes	■ Malfunction of transmission between optional central controller and indoor unit ■ Connector for setting master controller is disconnected ■ Defect of unified ON/OFF controller PCB ■ Defect of indoor unit PCB ■ Malfunction of air conditioner

Troubleshooting

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

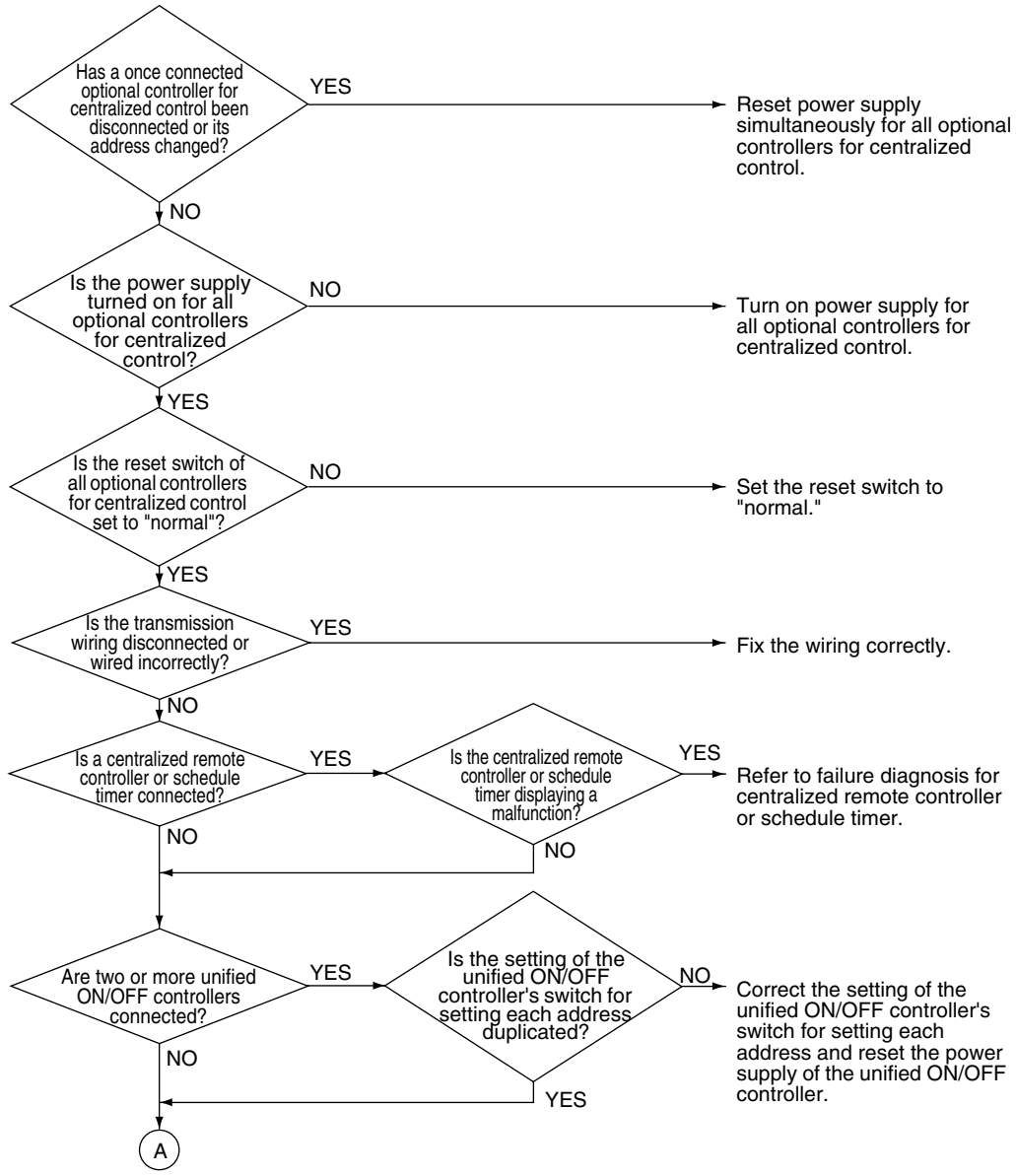


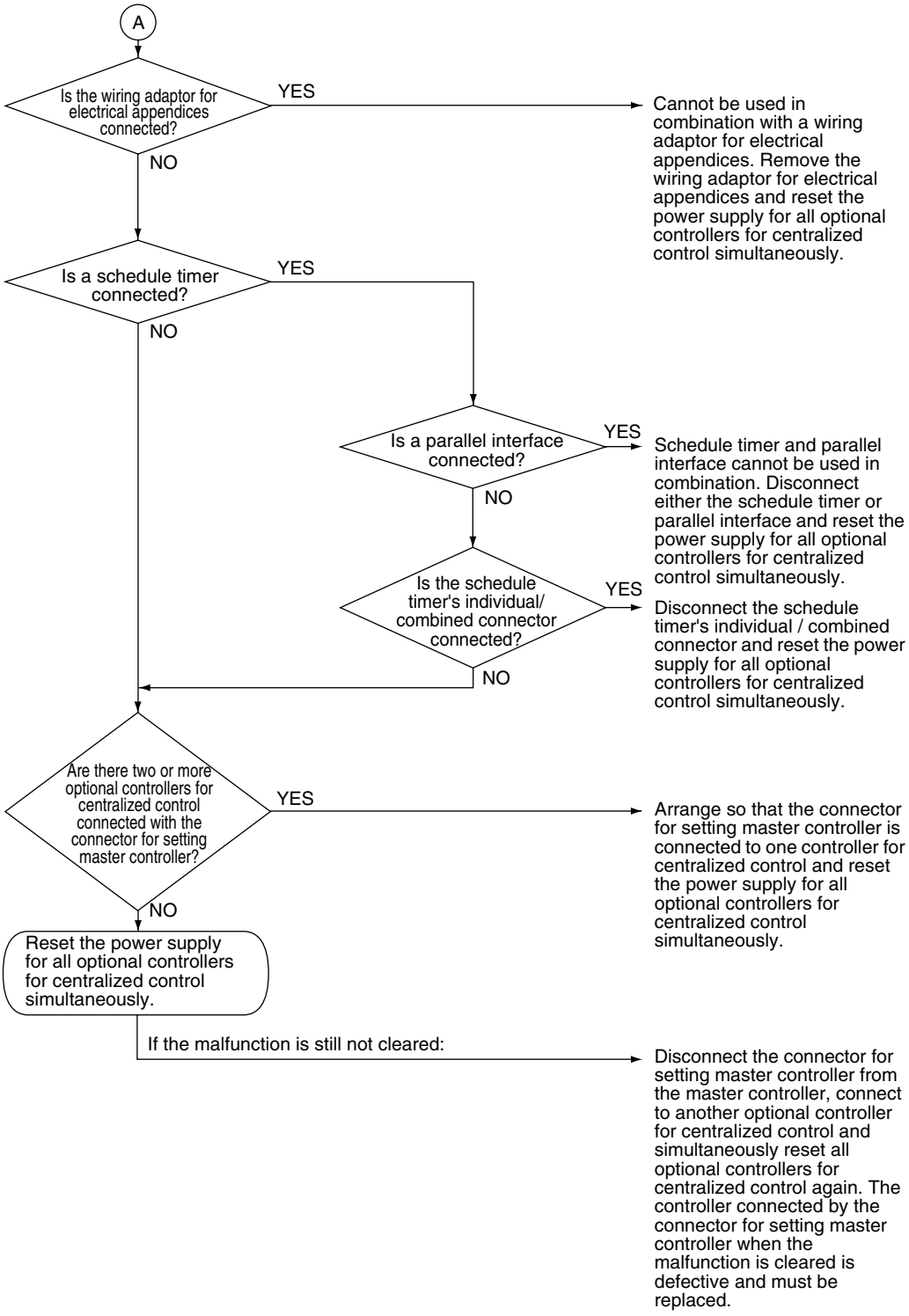
6.2 Display “Under Centralized Control” Blinks (Repeats Single Blink)

Remote Controller Display	(人) “under centralized control” (Repeats single blink)
Applicable Models	Unified ON/OFF controller Centralized remote controller, Schedule timer
Method of Malfunction Detection	Detect the malfunction according to DIII-NET transmission data.
Malfunction Decision Conditions	When the centralized controller, which was connected once, shows no response. The control ranges are overlapped. When multiple master central controller are present. When the schedule timer is set to individual use mode, other central controller is present. When the wiring adaptor for electrical appendices is present.
Supposed Causes	■ Address duplication of optional controllers for centralized control ■ Improper combination of optional controllers for centralized control ■ Connection of more than one master controller ■ Malfunction of transmission between optional controllers for centralized control ■ Defect of PCB of optional controllers for centralized control

Troubleshooting

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




A
Is the wiring adaptor for electrical appendices connected?
YES
Cannot be used in combination with a wiring adaptor for electrical appendices. Remove the wiring adaptor for electrical appendices and reset the power supply for all optional controllers for centralized control simultaneously.
NO
Is a schedule timer connected?
YES
NO
Is a parallel interface connected?
YES
Schedule timer and parallel interface cannot be used in combination. Disconnect either the schedule timer or parallel interface and reset the power supply for all optional controllers for centralized control simultaneously.
NO
Is the schedule timer's individual/ combined connector connected?
YES
Disconnect the schedule timer's individual / combined connector and reset the power supply for all optional controllers for centralized control simultaneously.
NO
Are there two or more optional controllers for centralized control connected with the connector for setting master controller?
YES
Arrange so that the connector for setting master controller is connected to one controller for centralized control and reset the power supply for all optional controllers for centralized control simultaneously.
NO
Reset the power supply for all optional controllers for centralized control simultaneously.
If the malfunction is still not cleared:
Disconnect the connector for setting master controller from the master controller, connect to another optional controller for centralized control and simultaneously reset all optional controllers for centralized control again. The controller connected by the connector for setting master controller when the malfunction is cleared is defective and must be replaced.

6.3 Display “Under Centralized Control” Blinks (Repeats Double Blink)

Remote Controller Display

“under centralized control” (Repeats double blink)

Applicable Models

Unified ON/OFF controller

Method of Malfunction Detection

Detect the malfunction according to DIII-NET transmission data.

Malfunction Decision Conditions

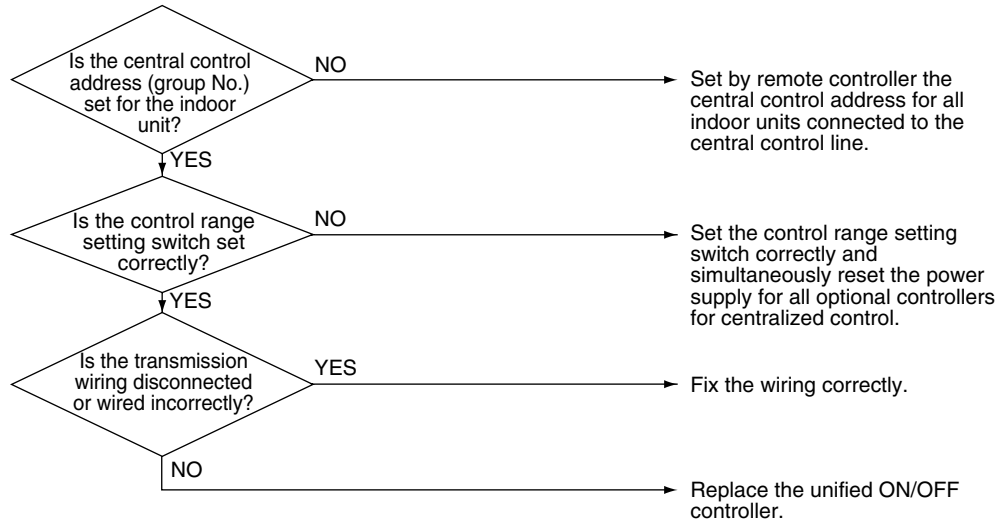
When no central control addresses are set to indoor units.
When no indoor units are connected within the control range.

Supposed Causes

- Central control address (group No.) is not set for indoor unit.
- Improper control range setting switch
- Improper wiring of transmission wiring

Troubleshooting

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



7. Troubleshooting (Heat Reclaim Ventilation)

7.1 "60" Error of External Protection Device

Remote Controller LCD Display

Error Code 60 Inspection OFF Unit No. Blinking

Applicable Models

Heat reclaim ventilation

Method of Malfunction Detection

Detect abnormal output from the external safety device with contact input (between J1 and JC).

Malfunction Decision Conditions

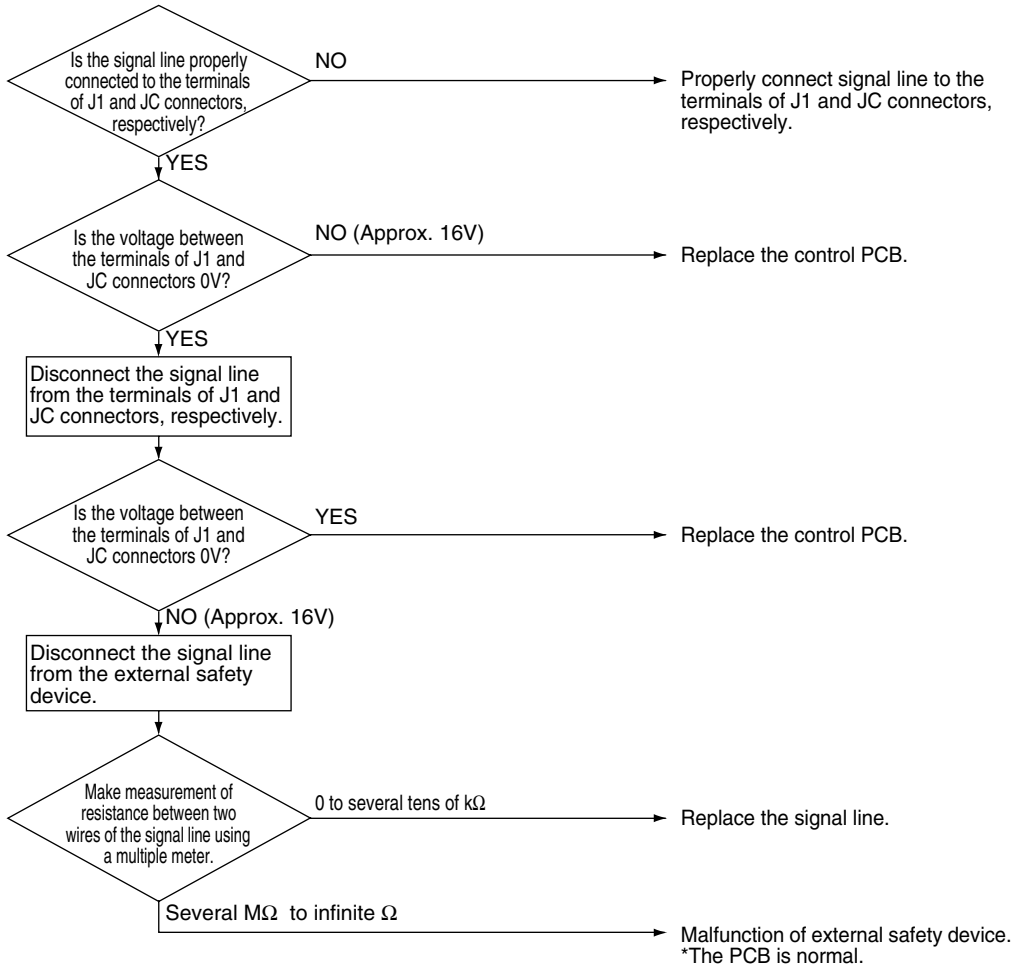
Abnormal output (short circuit) signal is issued from the external safety device.

Supposed Causes

- Activation of external safety device
- Faulty connection of the abnormal output signal line
- Short circuit established in the abnormal output signal line
- Faulty control PCB

Troubleshooting

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



7.2 "64", "65" Indoor Air Thermistor Error

Remote Controller LCD Display

Error Code 64 or 65 Inspection OFF Unit No. Blinking

Applicable Models

Heat reclaim ventilation

Method of Malfunction Detection

Temperature detected by inside air temperature sensor is used to detect errors.

Malfunction Decision Conditions

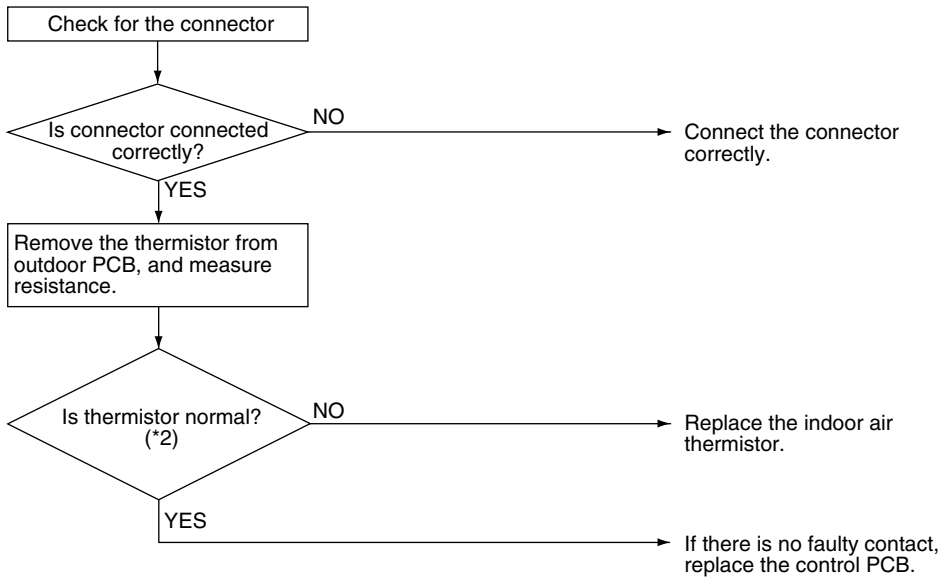
When value detected by inside air temperature sensor is -40ºC or below (open circuit) or 70ºC or higher (short-circuit).

Supposed Causes

- Defect of thermistor connection
- Defect of thermistor
- Faulty control PCB

Troubleshooting

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



Notes: ***1: Malfunction code and thermistor**

Malfunction code	Thermistor	Symbol
64	Indoor air thermistor	R1T
65	Outdoor air thermistor	R2T

***2:**
Refer to the thermistor temperature - resistance conversion table when measuring resistance.

7.3 "68" Damper System Error (Alarm)

Remote Controller LCD Display

Error Code 68 Inspection OFF Unit No. Blinking

Applicable Models

Heat reclaim ventilation

Method of Malfunction Detection

Measurement of damper motor limit ON/OFF time.

Malfunction Decision Conditions

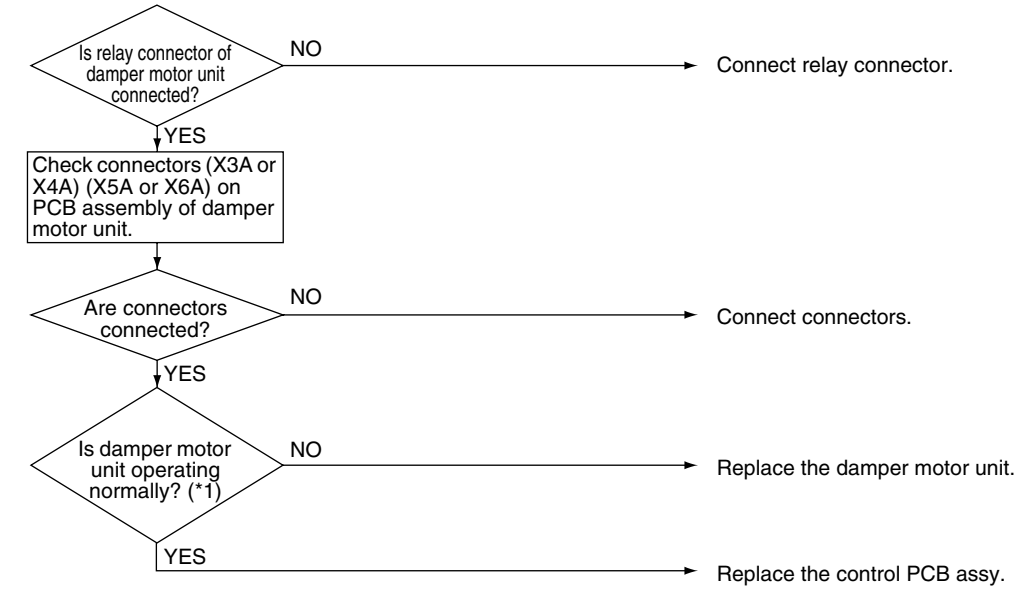
- When damper motor limit switch 1 (or 2) remains ON (or OFF) for more than a certain time duration after ventilation mode is changed.
- When damper motor limit switch 1 (or 2) repeats ON/OFF operations after damper motor 1 (or 2) stops.

Supposed Causes

- Faulty damper motor or limit switch
- Broken wire in cable
- Faulty contact in connector (including relay connector)
- Faulty control PCB assembly

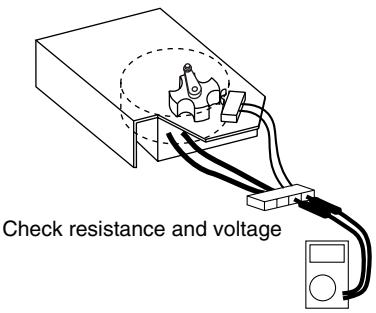
Troubleshooting

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



Note: *1:

- Place tester probes on connectors of limit switch. Move switch by hand and check continuity. If tester indicates 0Ω when limit switch turns on, and infinity when it turns off, limit switch is normal.
- Place tester probes on connectors of damper motor and check resistance. If tester indicates approx. 17 kΩ in 200-V model, damper motor is normal.



Check resistance and voltage

7.4 "68" Damper System Error (Alarm)

Remote Controller LCD Display

Error Code 68 Inspection Blinking Unit No. Blinking

Applicable Models

Heat reclaim ventilation

Method of Malfunction Detection

Measurement of damper motor limit switch ON/OFF time and temperatures detected by outdoor and indoor air thermistor.

Malfunction Decision Conditions

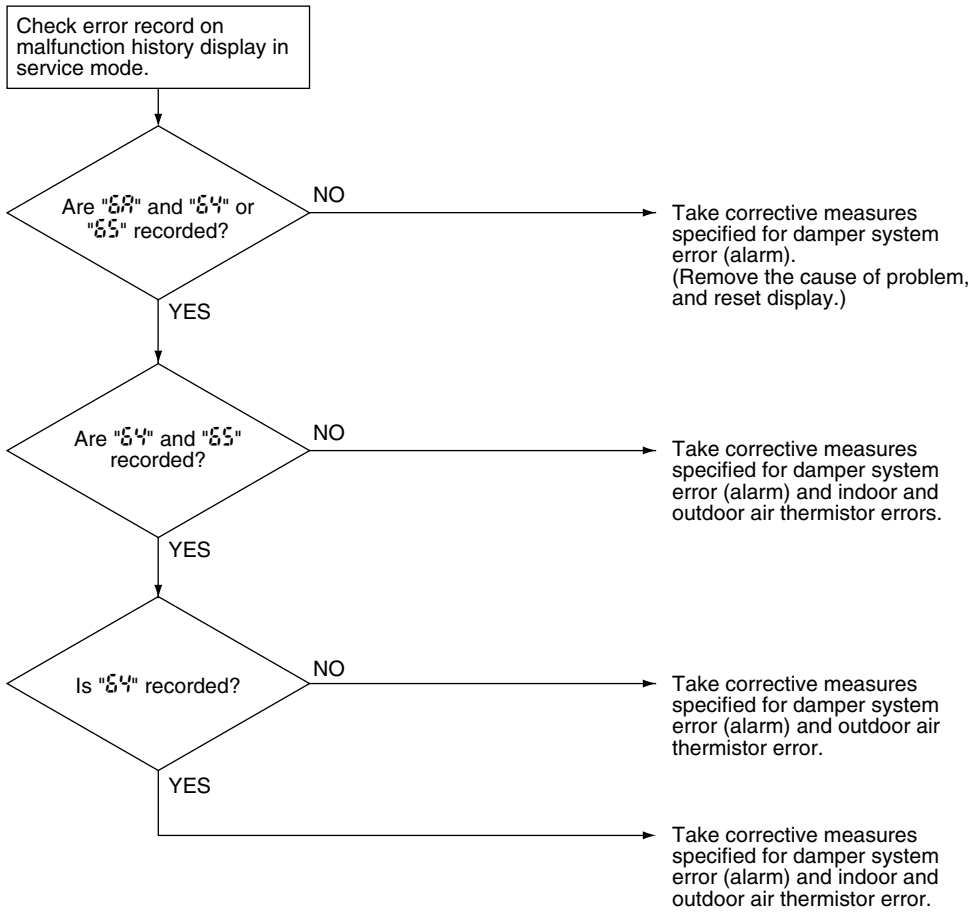
- When damper system error (alarm) and indoor (or outdoor) thermistor error are generated at the same time.
- When damper system error (alarm) occurs and values of indoor and outdoor air thermistor meet frost conditions.

Supposed Causes

- Faulty damper motor or limit switch
- Faulty indoor air thermistor
- Faulty outdoor air thermistor
- Frosting
- Broken wire in cable
- Faulty contact in connector (including relay connector)
- Faulty control PCB assembly

Troubleshooting

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



7.5 "6F" Malfunction of Simplified Remote Controller

Remote Controller LCD Display

Error Code 6F Inspection OFF Unit No. Blinking

Applicable Models

Heat reclaim ventilation

Method of Malfunction Detection

Check with the micro controller whether or not the signal between the simplified remote controller and the control PCB is able to properly detect the malfunction.

Malfunction Decision Conditions

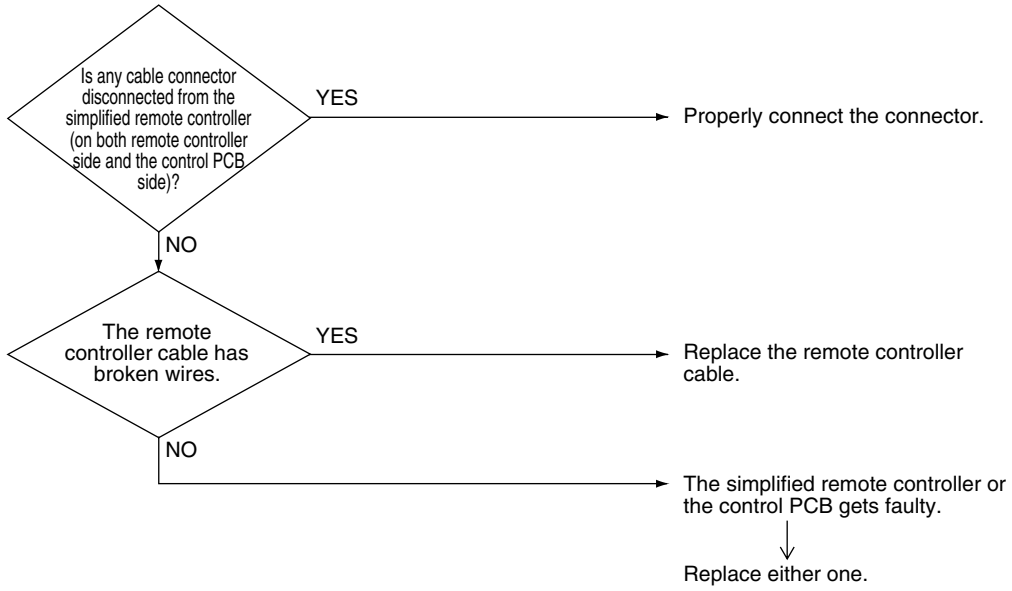
The signal cannot be detected for a period of given time or more.

Supposed Causes

- Disconnection of connector from simplified remote controller cable
- Broken wire of remote controller cable
- Faulty simplified remote controller
- Faulty control PCB

Troubleshooting

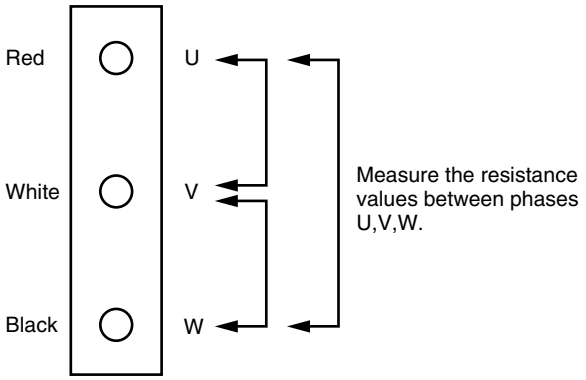
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



CHECK 1

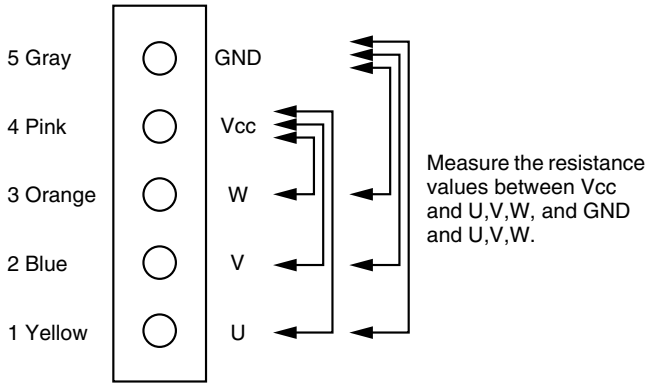
Check on connector of fan motor (Power supply cable)

(1) Turn off the power supply.
Measure the resistance between phases of U,V,W at the motor side connectors (three-core wire) to check that the values are balanced and there is no short circuiting, while connector or relay connector is disconnected.



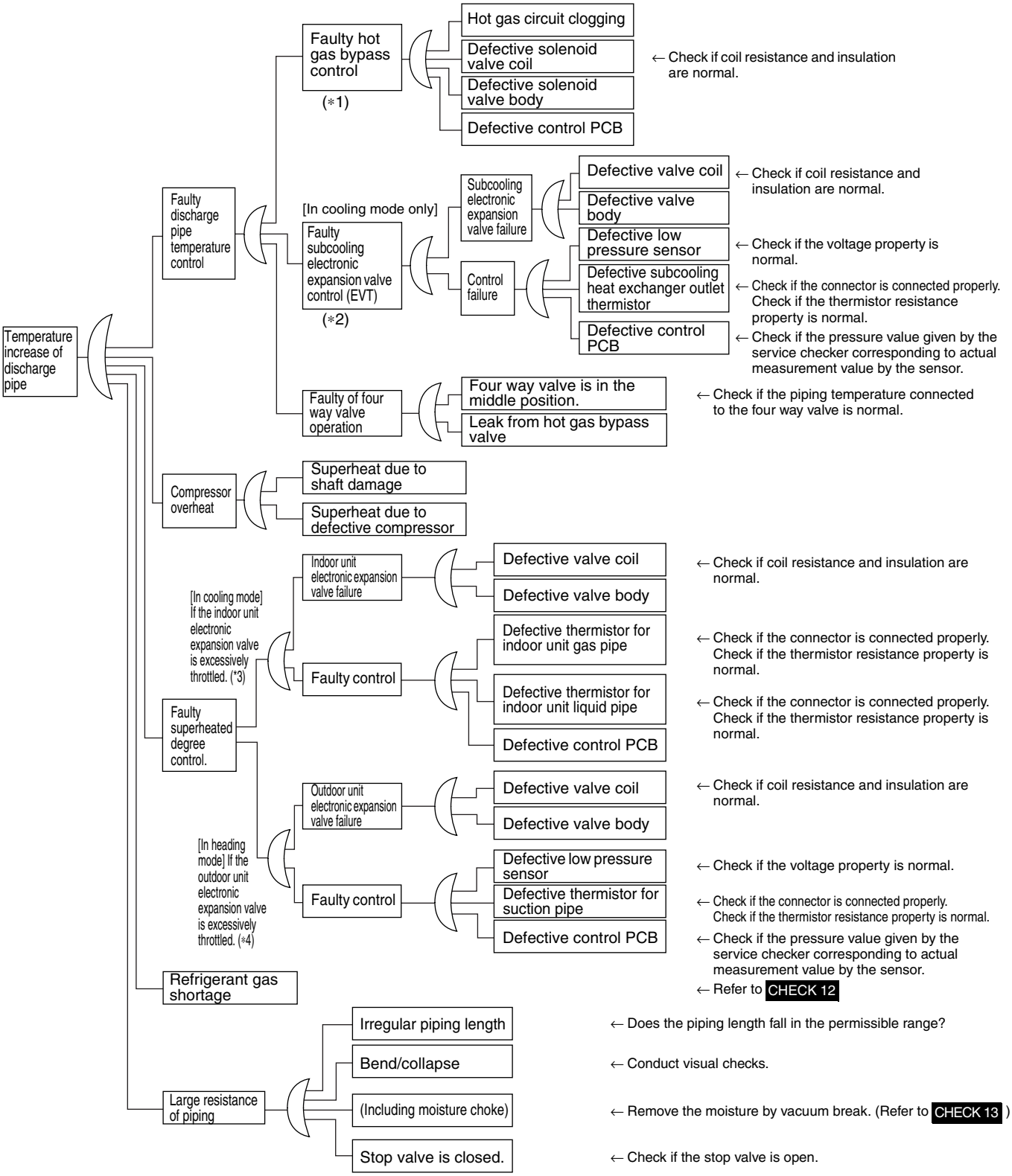
CHECK 2

(1) Turn off the power supply.
(2) Measure the resistance between Vcc and each phase of U,V,W, and GND and each phase at the motor side connectors (five-core wire) to check that the values are balanced within the range of ± 20 %, while connector or relay connector is disconnected.
Furthermore, to use a multiple meter for measurement, connect the probe of negative pole to Vcc and that of positive pole to GND.



CHECK 3 Check the Factors of Overheat Operation

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

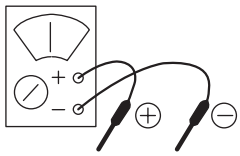


*1: Refer to “Low pressure protection control” (P.100) for hot gas bypass control.
*2: Refer to P.94 for subcooling electronic expansion valve control.
*3: “Superheating temperature control” in cooling mode is conducted by indoor unit electronic expansion valve.(Refer to P.127)
*4: Superheating temperature control in heating mode is conducted by outdoor unit electronic expansion valve (EVM). (Refer to P.94).
*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:

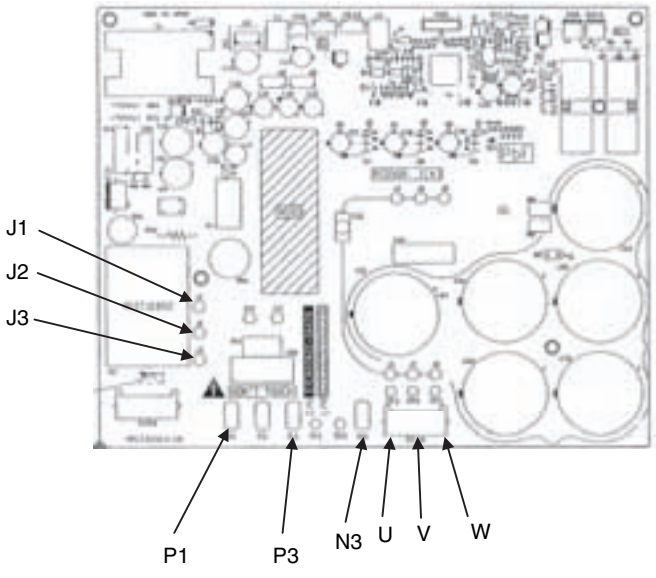
Measurement in the resistance value mode in the range of multiplying 1kΩ.

No.	Point of Measurement		Judgement Criteria	Remarks
	+	–		
1	P2	U	2 ~ 15kΩ	
2	P2	V		
3	P2	W		
4	U	P2	15kΩ and above (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. (→|—)

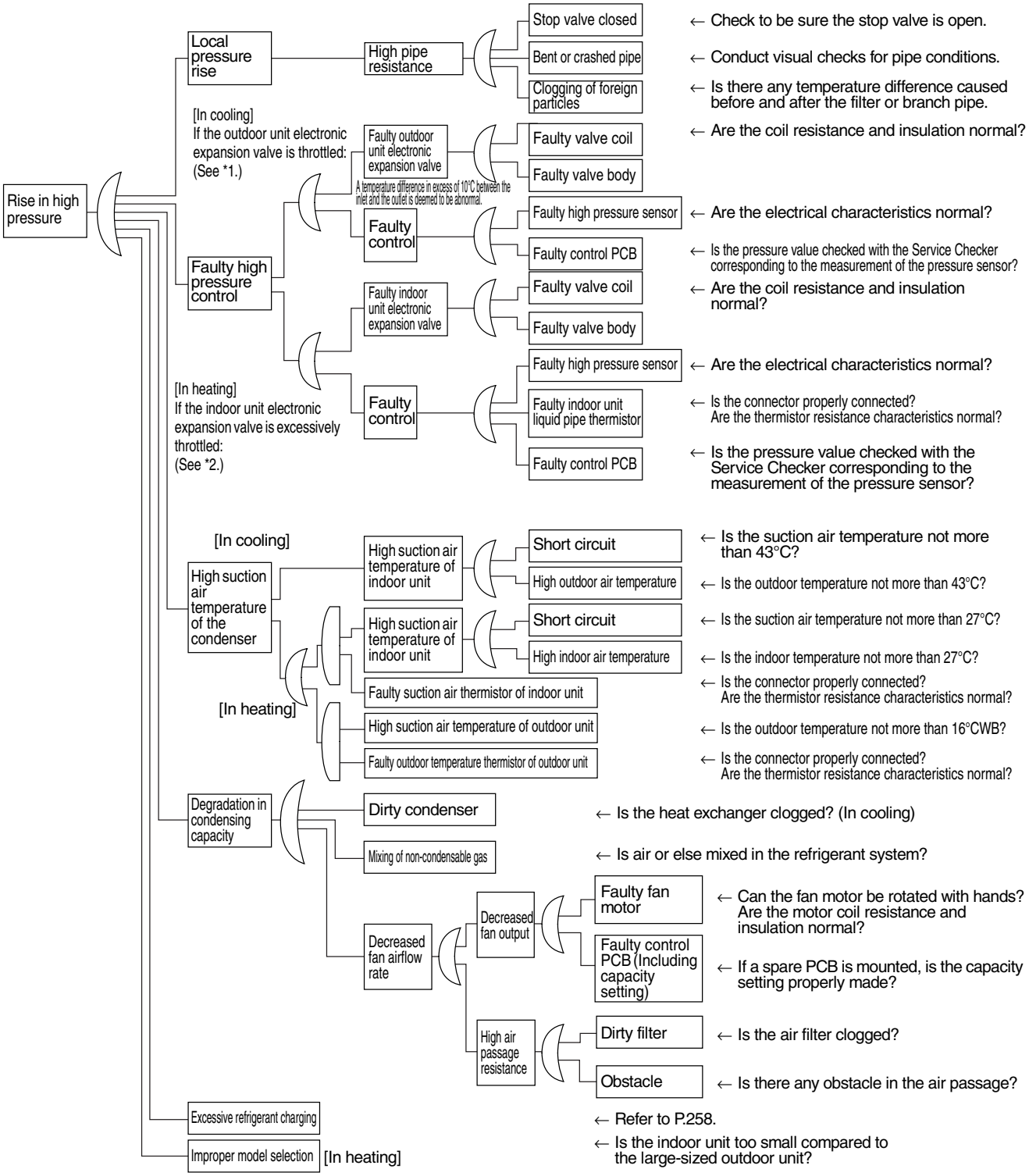
No.	Point of Measurement		Judgement Criteria	Remarks
	+	–		
1	P2	U	1.2V and over	Due to condenser charge and so on, resistance measurement may require some time.
2	P2	V		
3	P2	W		
4	U	P2	0.3 ~ 0.7V	
5	V	P2		
6	W	P2		
7	N3	U		
8	N3	V		
9	N3	W		
10	U	N3	1.2V and over	Due to condenser charge and so on,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

[PCB and Circuit Diagram]



CHECK 5 **Check for causes of rise in high pressure**

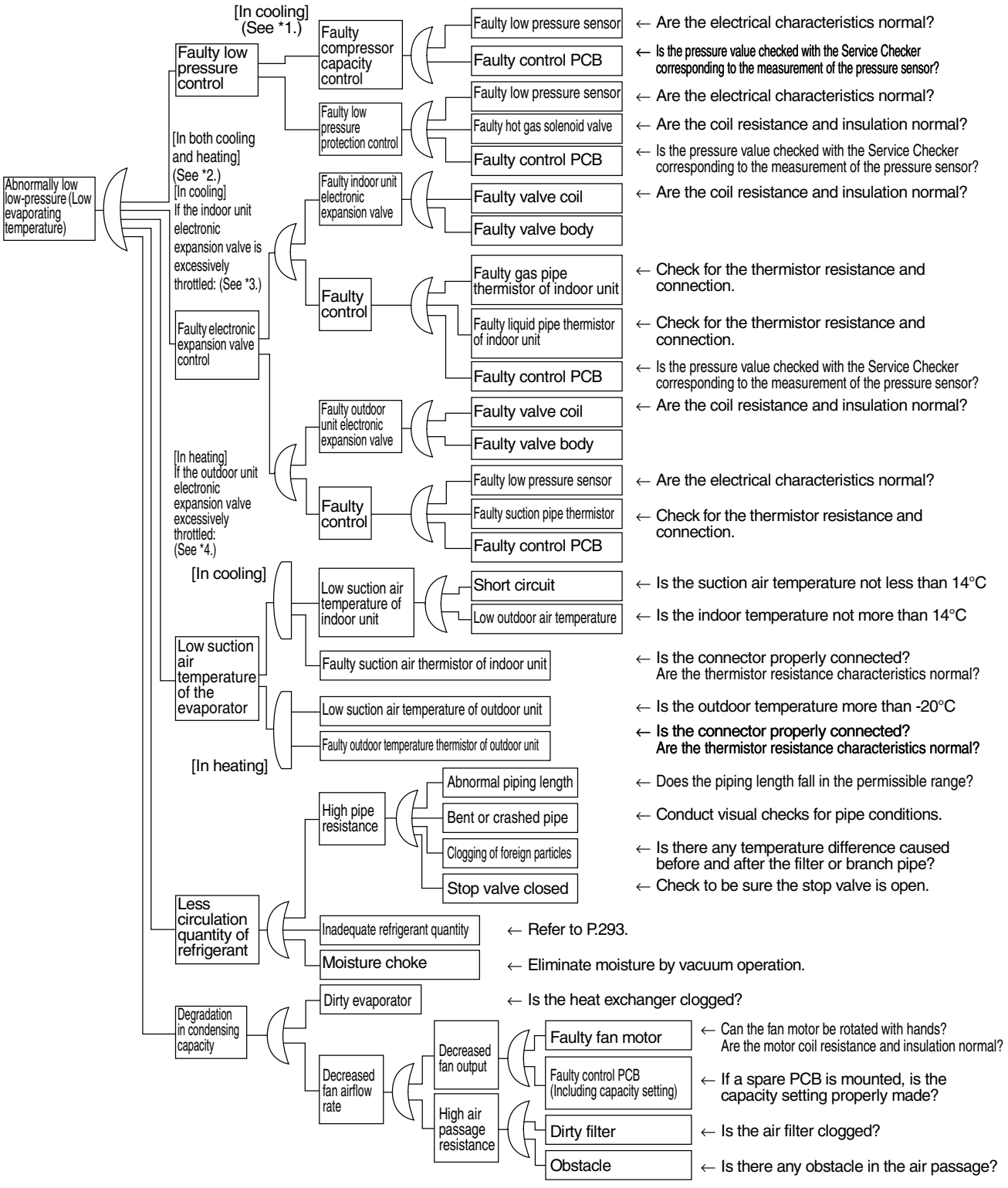
Referring to the Fault Tree Analysis (FTA) shown below, probe the faulty points.



*1: In cooling, it is normal if the outdoor unit electronic expansion valve (EVM) is fully open.
*2: In heating, the indoor unit electronic expansion valve is used for “subcooled degree control”.
(For details, refer to “Control of Electronic Expansion Valve” on P.127.)

CHECK 6 Check for causes of drop in low pressure

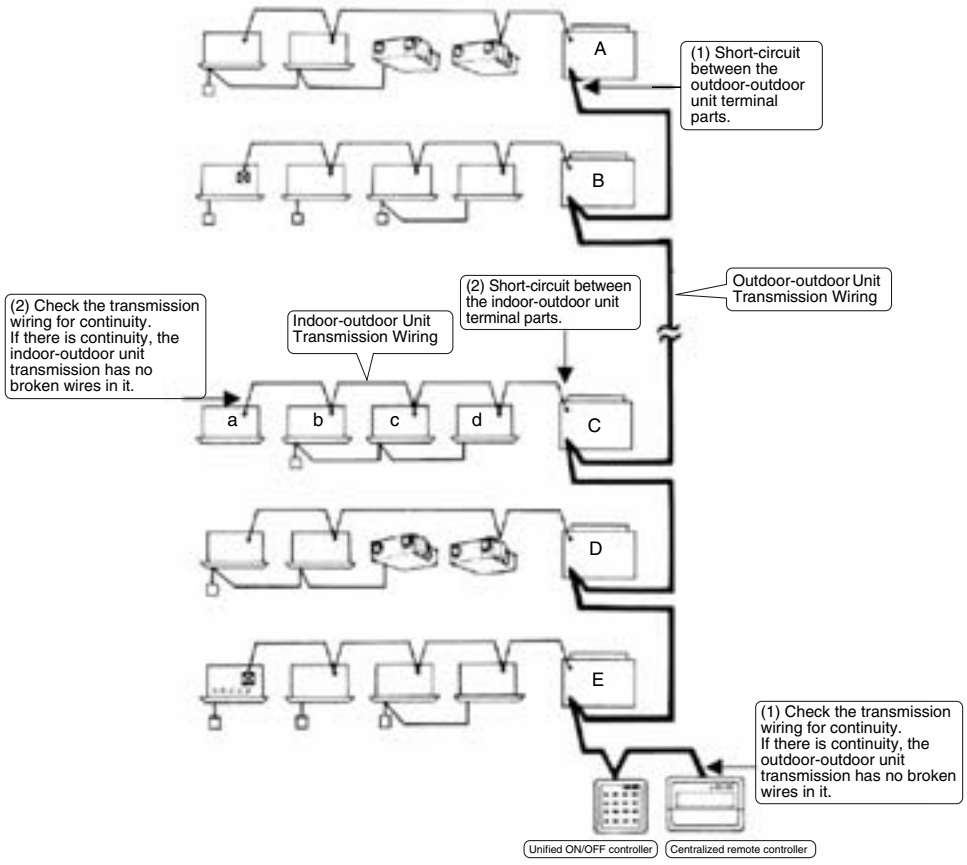
Referring to the Fault Tree Analysis (FTA) shown below, probe the faulty points.



*1: For details of the compressor capacity control while in cooling, refer to “Compressor PI Control” on P.91.
*2: The “low pressure protection control” includes low pressure protection control and hot gas bypass control. (For details, refer to P.100.)
*3: In cooling, the indoor unit electronic expansion valve is used for “superheated degree control”. (For details, refer to P.127.)
*4: In heating, the outdoor unit electronic expansion valve (EVM) is used for “superheated degree control of outdoor unit heat exchanger”.

CHECK 7 **Broken Wire Check of the Connecting Wires**

1. Procedure for checking outdoor-outdoor unit transmission wiring for broken wires
   On the system shown below, turn OFF the power supply to all equipment, short-circuit between the outdoor-outdoor unit terminal parts F1 and F2 in the "Outdoor Unit A" that is farthest from the centralized remote controller, and then conduct continuity checks between the transmission wiring terminal blocks F1 and F2 of the centralized remote controller using a multiple meter. If there is continuity between the said terminal blocks, the outdoor-outdoor unit transmission wiring has no broken wires in it.
   If there is no continuity, the transmission wiring may have broken wires. With the outdoor-outdoor unit terminal parts of the "Outdoor Unit A" short-circuited, conduct continuity checks between the transmission wiring terminal blocks F1 and F2 of the unified ON/OFF controller. If there is no continuity as well, conduct continuity checks between the outdoor-outdoor unit terminal parts of the "Outdoor Unit E", between the outdoor-outdoor unit terminal parts of the "Outdoor Unit D", between the outdoor-outdoor unit terminal parts of the "Outdoor Unit C", … in the order described, thus identifying the place with continuity.
   If the place with continuity can be identified, there may be broken wires in places before the said place with continuity.
2. Procedure for checking indoor-outdoor unit transmission wiring for broken wires (for checking the indoor-outdoor unit transmission wiring of the "Outdoor Unit C" for broken wires)
   Turn OFF the power supply to all equipment, short-circuit between the indoor-outdoor unit terminal parts F1 and F2 in the "Outdoor Unit C", and then conduct continuity checks between the transmission wirings F1 and F2 of the "Indoor Unit a" that is farthest from the "Outdoor Unit C" using a multiple meter. If there is continuity between the said transmission wirings, the indoor-outdoor unit transmission wiring has no broken wires in it.
   If there is no continuity, the transmission wiring may have broken wires. With the indoor-outdoor unit terminal parts of the "Outdoor Unit C" short-circuited, identify the place with continuity in the transmission wiring of the "Indoor Unit b", transmission wiring of the "Indoor Unit c", and transmission wiring of the "Indoor Unit d" in the order described.
   If the place with continuity can be identified, there may be broken wires in places before the said place with continuity.



CHECK 8 **Master Unit Central Connector Setting Table**

The master unit central setting connector (CN1/X1A) is mounted at the factory.

- To independently use a single unit of the intelligent Touch Controller or a single unit of the centralized remote controller, do not dismount the master unit central setting connector (i.e., use the connector with the factory setting unchanged).
- To independently use the schedule timer, insert an independent-use setting connector. No independent-use setting connector has been mounted at the factory. Insert the connector, which is attached to the casing of the main unit, in the PCB (CN1/X1A). (Independent-use connector=Master unit central setting connector)
- To use two or more centralized controller in combination, make settings according to the table shown below.

<table>
<tr><th rowspan="2">Pattern</th><th colspan="4">Centralized controller connection pattern</th><th colspan="4">Setting of master unit central setting connector(*2)</th></tr>
<tr><th>intelligent Touch Controller</th><th>Centralized remote controller</th><th>Unified ON/OFF controller</th><th>Schedule timer</th><th>intelligent Touch Controller</th><th>Centralized remote controller</th><th>Unified ON/ OFF controller</th><th>Schedule timer</th></tr>
<tr><td>(1)</td><td>1 to 2 units</td><td rowspan="2"></td><td rowspan="2"></td><td>× (*1)</td><td>Only a single unit: "Provided", Others: "Not provided"</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>(2)</td><td rowspan="2">1 unit</td><td rowspan="2">1 unit</td><td>× (*1)</td><td rowspan="2">Provided</td><td rowspan="2">Not provided</td><td rowspan="2"></td></tr>
<tr><td>(3)</td><td rowspan="2">1 to 8 units</td><td>× (*1)</td><td rowspan="2">All "Not provided"</td><td rowspan="2"></td></tr>
<tr><td>(4)</td><td>1 to 2 units</td><td></td><td>× (*1)</td><td>Only a single unit: "Provided", Others: "Not provided"</td><td></td><td></td></tr>
<tr><td>(5)</td><td rowspan="4"></td><td rowspan="4">1 to 4 units</td><td rowspan="2"></td><td></td><td rowspan="4"></td><td rowspan="4">Only a single unit: "Provided", Others: "Not provided"</td><td rowspan="2"></td><td></td></tr>
<tr><td>(6)</td><td rowspan="2">1 to 16 units</td><td>1 unit</td><td></td><td rowspan="2">All "Not provided"</td><td>Not provided</td></tr>
<tr><td>(7)</td><td rowspan="2"></td><td></td><td></td><td></td></tr>
<tr><td>(8)</td><td></td><td>1 unit</td><td></td><td></td><td>Not provided</td></tr>
<tr><td>(9)</td><td></td><td></td><td rowspan="2">1 to 16 units</td><td></td><td></td><td></td><td rowspan="2">Only a single unit: "Provided", Others: "Not provided"</td><td></td></tr>
<tr><td>(10)</td><td></td><td></td><td>1 unit</td><td></td><td></td><td>Not provided</td></tr>
<tr><td>(11)</td><td></td><td></td><td></td><td>1 unit</td><td></td><td></td><td></td><td>Provided</td></tr>
</table>

(*1) The intelligent Touch Controller and the schedule timer are not available for combined use.

(*2) The intelligent Touch Controller, centralized remote controller, and the unified ON/OFF controller have been set to "Provided with the master unit central setting connector" at the factory. The schedule timer has been set to "Not provided with the master unit central setting connector" at the factory, which is attached to the casing of the main unit.

CHECK 9 **Master-Slave Unit Setting Table**

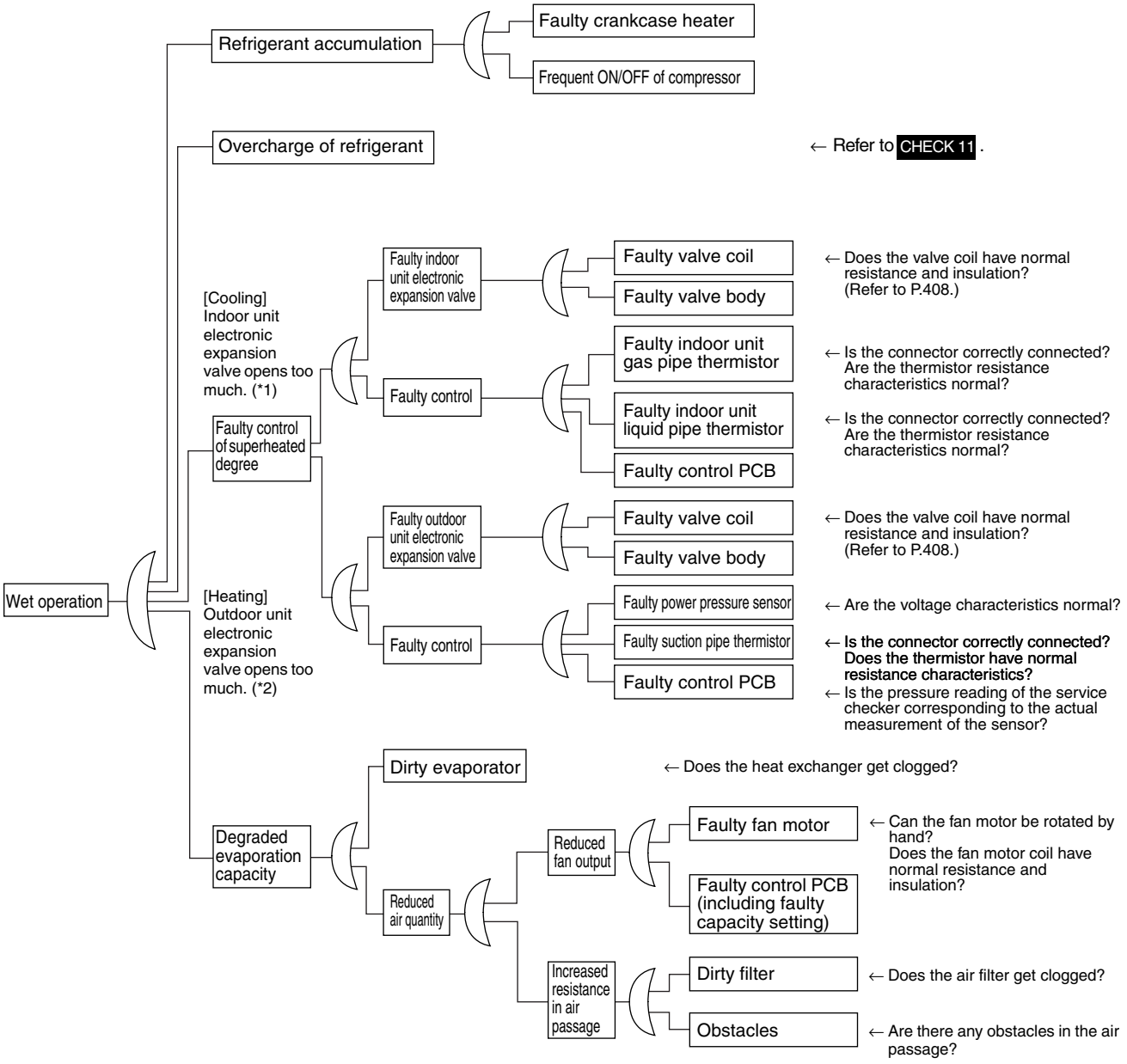
Combination of intelligent Touch Controller and Centralized Remote Controller

∗ Pattern	#1		#2		#3		#4	
	1-00~4-15	Master/ Slave	5-00~8-15	Master/ Slave	1-00~4-15	Master/ Slave	5-00~8-15	Master/ Slave
①	CRC	Master	CRC	Master	CRC	Slave	CRC	Slave
②	CRC	Master	—	—	CRC	Slave	—	—
③	intelligent Touch Controller	Master	—	—	intelligent Touch Controller	Slave	—	—
④	CRC	Master	—	—	intelligent Touch Controller	Slave	—	—
⑤	intelligent Touch Controller	Master	—	—	CRC	Slave	—	—
⑥	CRC	Master	—	—	—	—	—	—
⑦	intelligent Touch Controller	Master	—	—	—	—	—	—

CRC: Centralized remote controller <DCS302CA61>
intelligent Touch Controller: < DCS601C51 >
∗The patterns marked with "∗" have nothing to do with those described in the list of Setting of master unit central setting connector.

CHECK 10 **Check for causes of wet operation.**

Referring to the Fault Tree Analysis (FTA) shown below, identify faulty points.



*1: "Superheated degree control" in cooling operation is exercised with the indoor unit electronic expansion valve. (Refer to information on P.127.)

*2: "Superheated degree control" in heating operation is exercised with the outdoor unit electronic expansion valve (EV1).

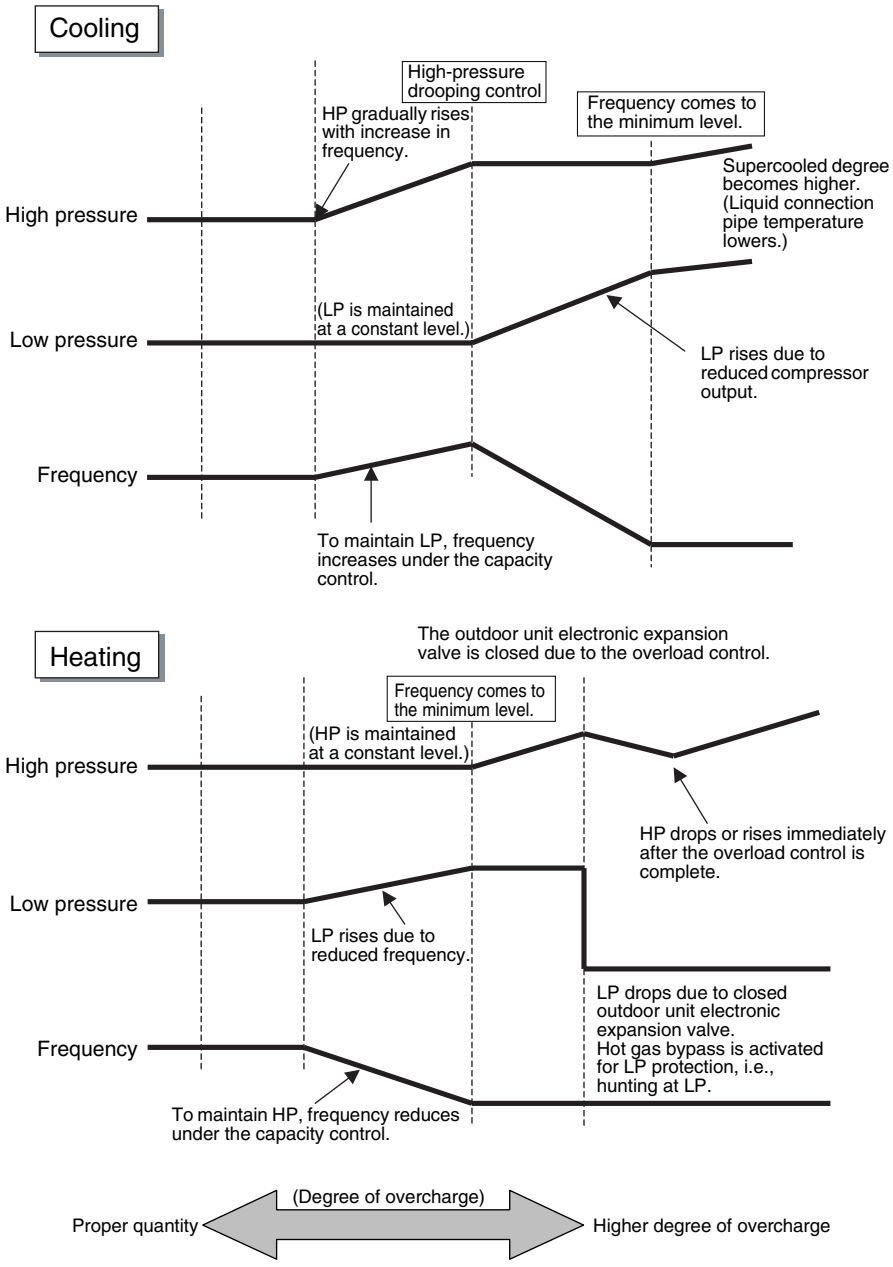
*3: Guideline of superheated degree to judge as wet operation
(1)Suction gas superheated degree: Not more than 3°C; (2)Discharge gas superheated degree: Not more than 15°C, except immediately after compressor starts up or is running under drooping control.
(Use the values shown above as a guideline. Even if the superheated degree falls in the range, the compressor may be normal depending on other conditions.)

CHECK 11 **Check for overcharge of refrigerant.**

In case of VRV Systems, the only way to judge as the overcharge of refrigerant is with operating conditions due to the relationship to pressure control and electronic expansion valve control. As information for making a judgement, refer to information provided below.

Diagnosis of overcharge of refrigerant

1. High pressure rises. Consequently, overload control is exercised to cause scant cooling capacity.
2. The superheated degree of suction gas lowers (or the wet operation is performed). Consequently, the compressor becomes lower in discharge pipe temperature despite of pressure loads.
3. The subcooling degree of condensate rises. Consequently, in heating operation, the temperature of outlet air passing through the subcooling section becomes lower.

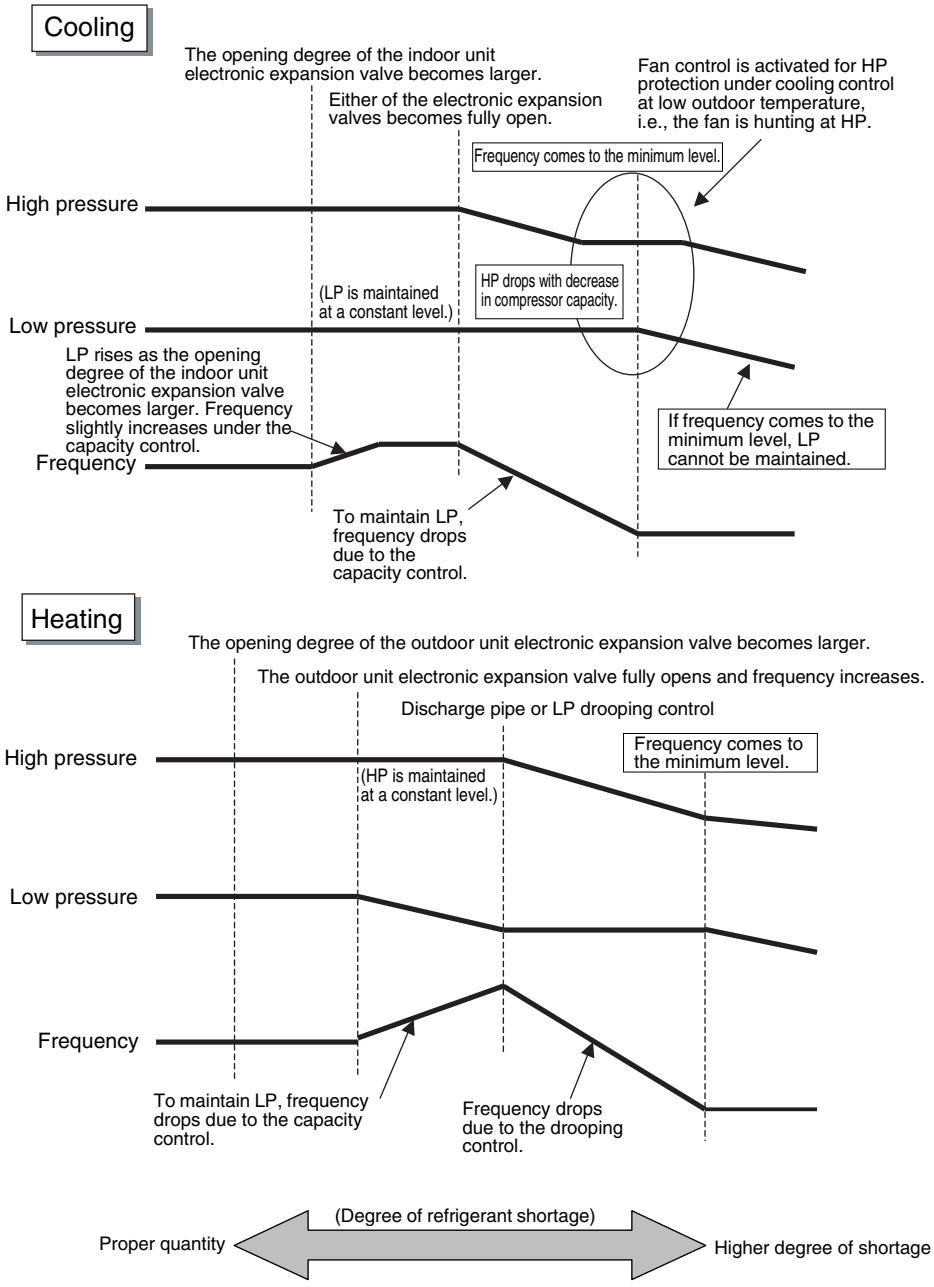


CHECK 12 **Check for shortage of refrigerant.**

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 13 **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 two 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 two hours, moisture will have entered the system or refrigerant leakage will have been caused. In this case, conduct evacuation for a period of another one hour.
- If the degree of vacuum does not reach -100.7kPa or less even though evacuation is conducted for a period of three 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 one 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 one 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 one hour or more, and then check to be sure that the vacuum gauge reading does not rise.

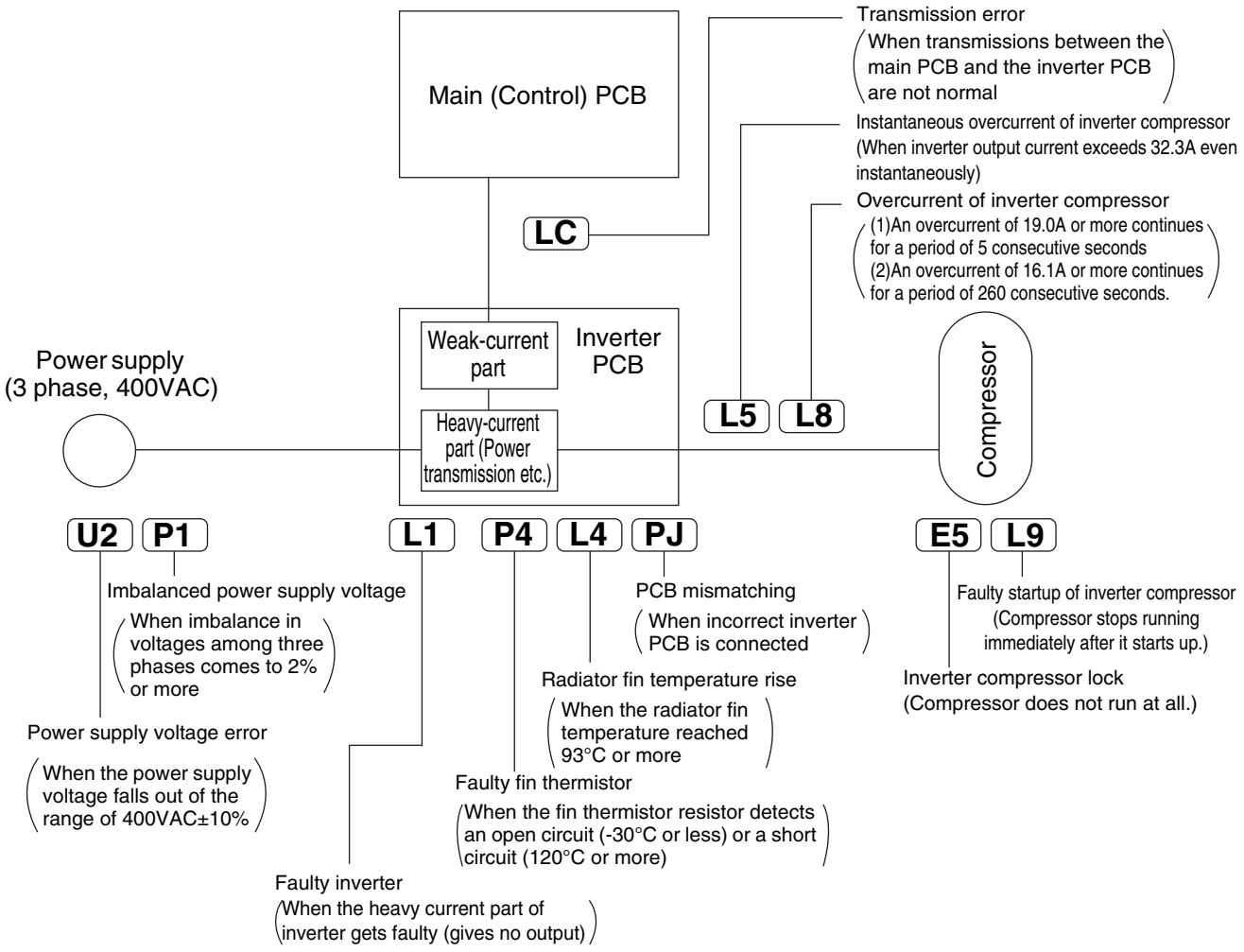
⑤ Refrigerant charge
- Purge air from the manifold gauge connection hoses, and then charge a necessary quantity of refrigerant.

* 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:

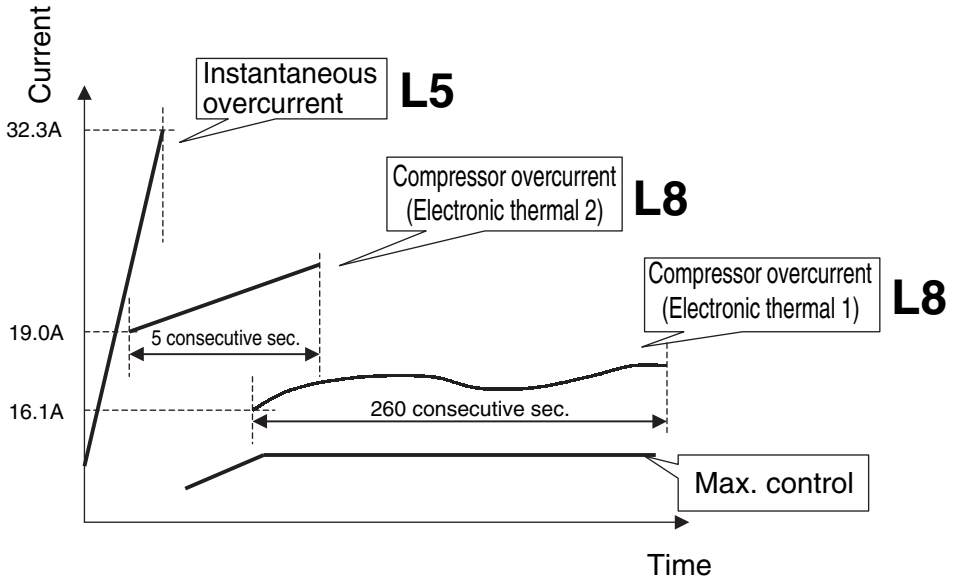
CHECK 14 List of inverter-related malfunction codes

	Code	Name	Condition for determining malfunction	Major cause
Compressor current	L5	Instantaneous overcurrent of inverter compressor	• Inverter output current exceeds 32.3A even instantaneously.	• Liquid sealing • Faulty compressor • Faulty inverter PCB
	L8	Overcurrent of inverter compressor (Electronic thermal)	• Compressor overload running An overcurrent of 19.0A or more continues for a period of 5 consecutive seconds or that of 16.1A or more continues for a period of 260 consecutive seconds. • The inverter loses synchronization.	• Backflow of compressor liquid • Sudden changes in loads • Disconnected compressor wiring • Faulty inverter PCB
Protection device and others	L1	Faulty inverter PCB	• No output is given.	• Faulty heavy current part of compressor
	L9	Faulty startup of inverter compressor	• The compressor motor fails to start up.	• Liquid sealing or faulty compressor • Excessive oil or refrigerant • Faulty inverter PCB
	E5	Inverter compressor lock	• The compressor is in the locked status (does not rotate).	• Faulty compressor
	L4	Radiator fin temperature rise	• The radiator fin temperature reaches 93°C or more (while in operation).	• Malfunction of fan • Running in overload for an extended period of time • Faulty inverter PCB
	U2	Power supply voltage error	• The inverter power supply voltage is high or low.	• Power supply error • Faulty inverter PCB
	P1	Imbalanced power supply	• Power supply voltages get significantly imbalanced among three phases.	• Power supply error (imbalanced voltages of 2% or more) • Faulty inverter PCB • Dead inverter PCB
	LC	Transmission error (between inverter PCB and control PCB)	• With the outdoor unit PCB, no communications are carried out across control PCB - inverter PCB - fan PCB.	• Broken wire in communication line • Faulty control PCB • Faulty inverter PCB • Faulty fan PCB
	PJ	PCB mismatching	• Any PCB of specification different from that of the product is connected.	• PCB of different specification mounted
	P4	Faulty fin thermistor	• The fin thermistor gets short-circuited or open.	• Faulty fin thermistor

CHECK 15 Concept of inverter-related malfunction codes



Malfunction codes related to compressor current



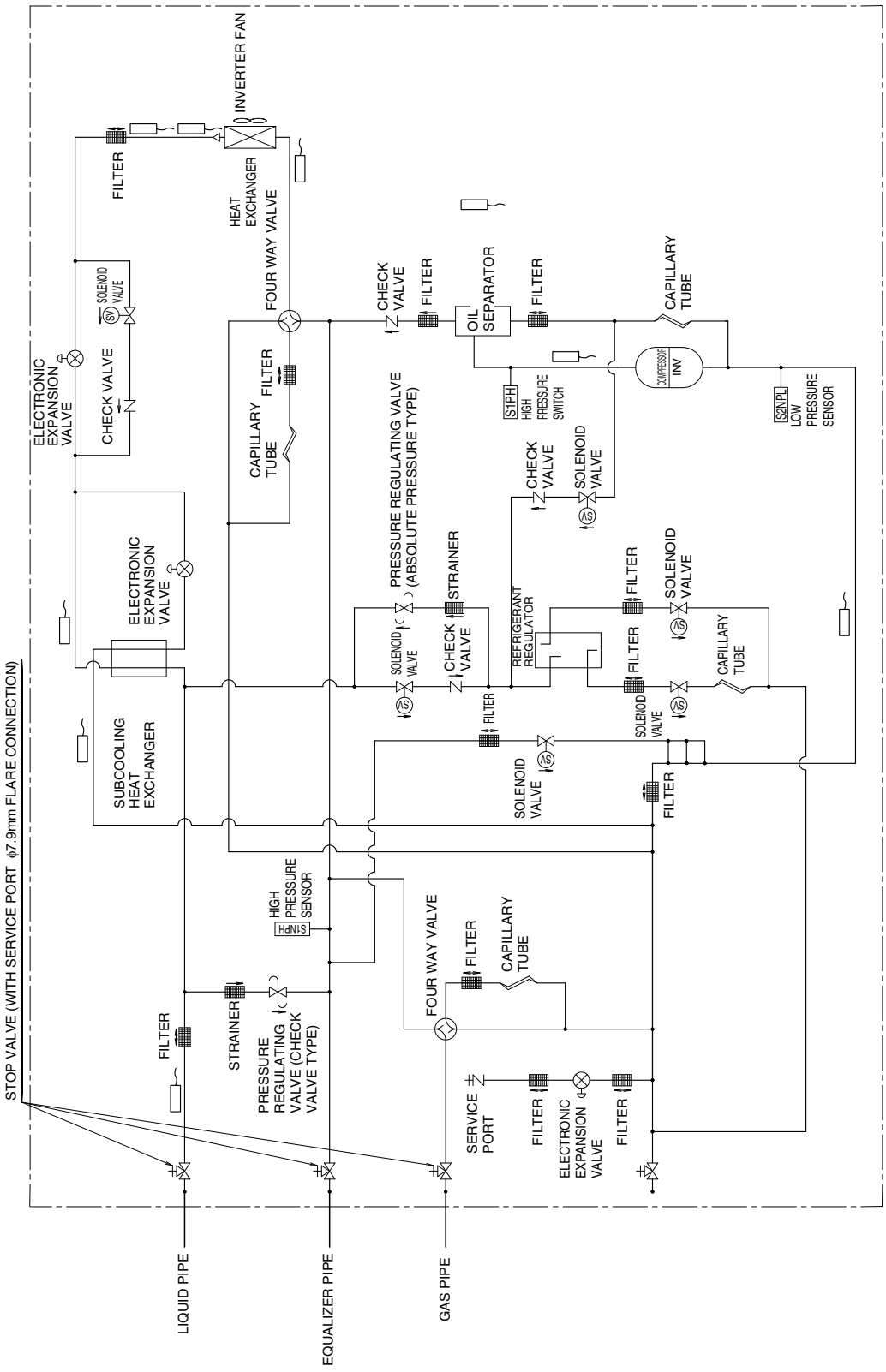
Part 7
Appendix

1. Piping Diagrams

1.1 Outdoor Unit

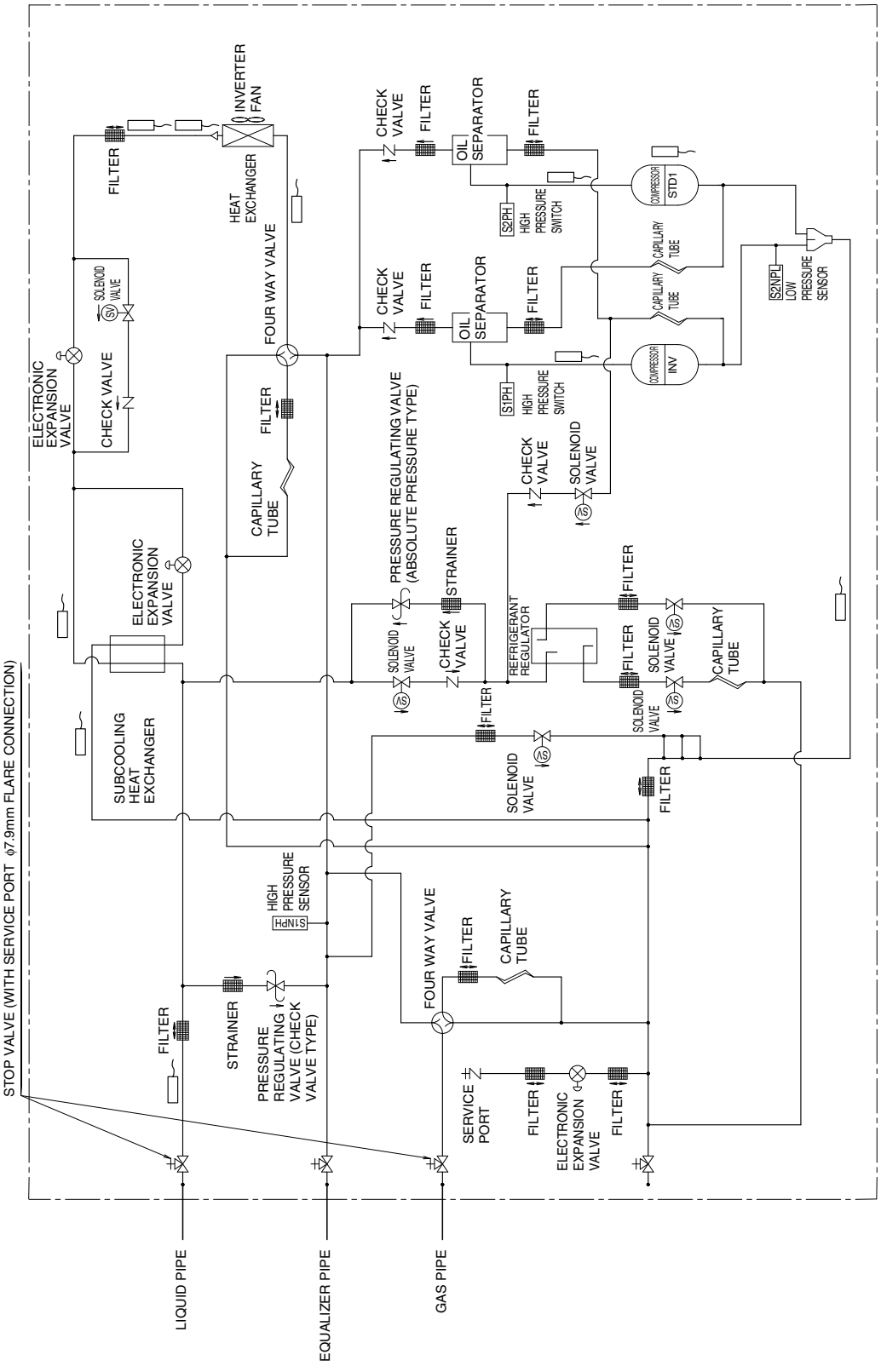
RTSQ8PY1

3D060784



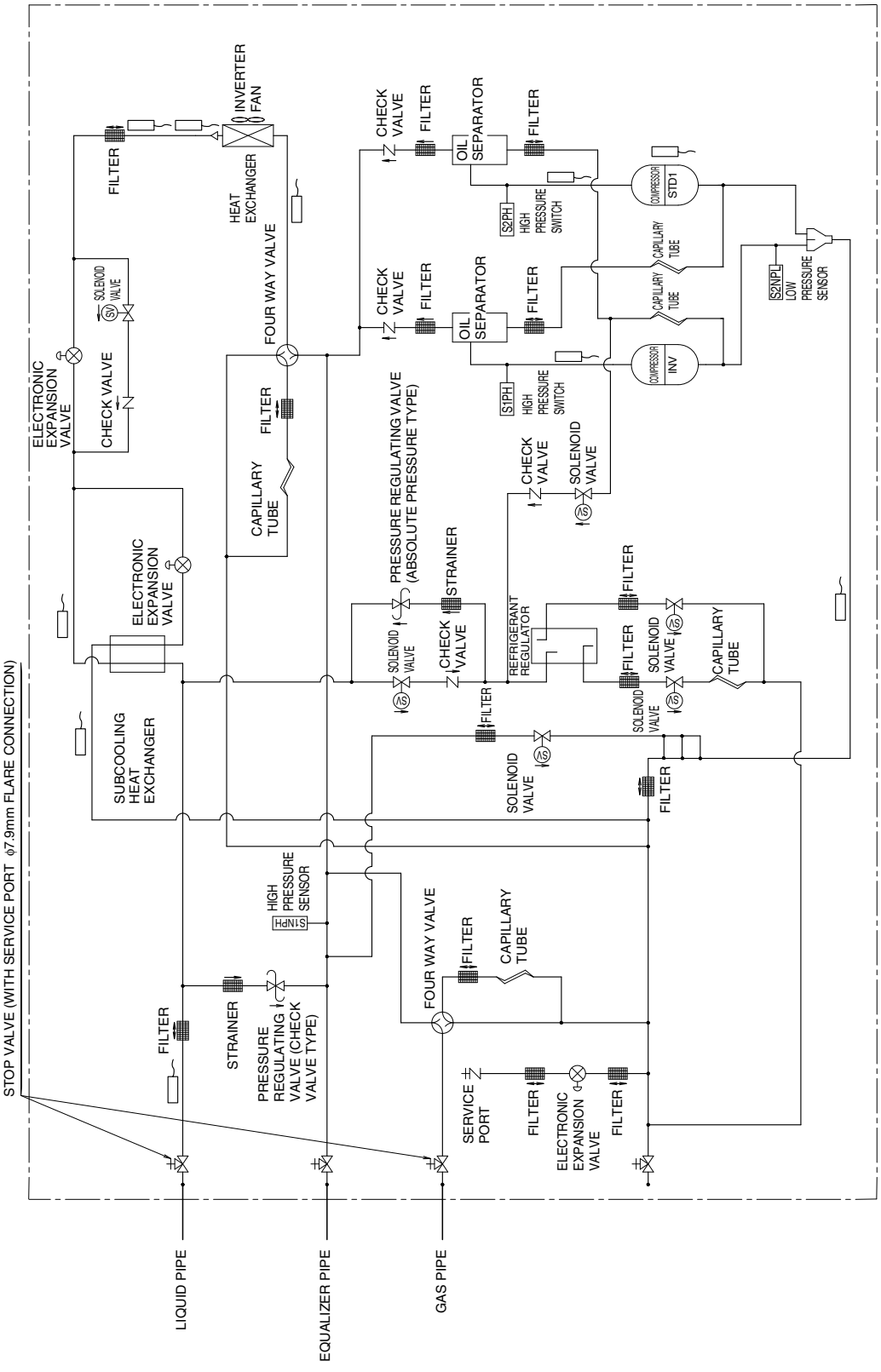
RTSQ10PY1

3D060785

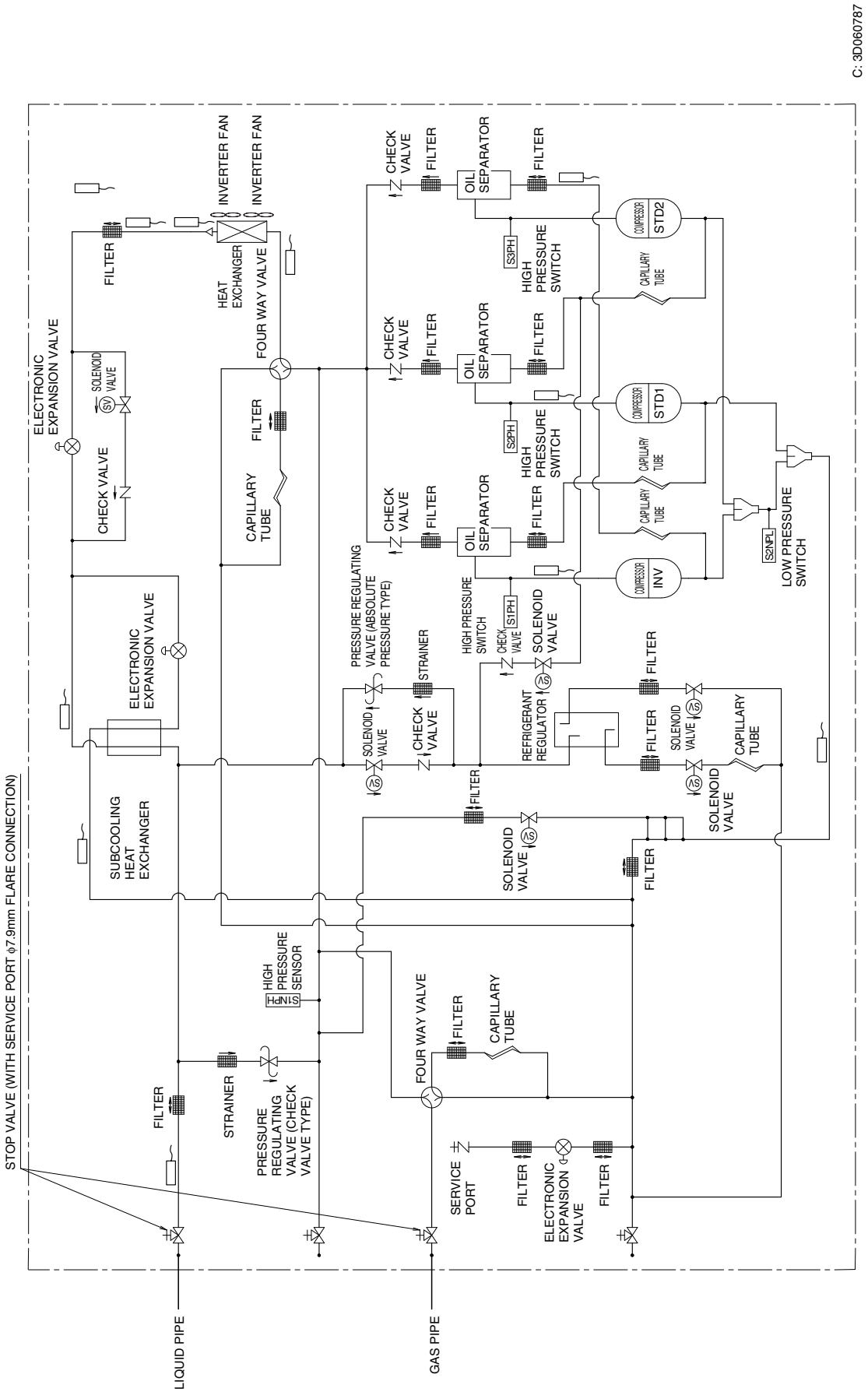


RTSQ12PY1

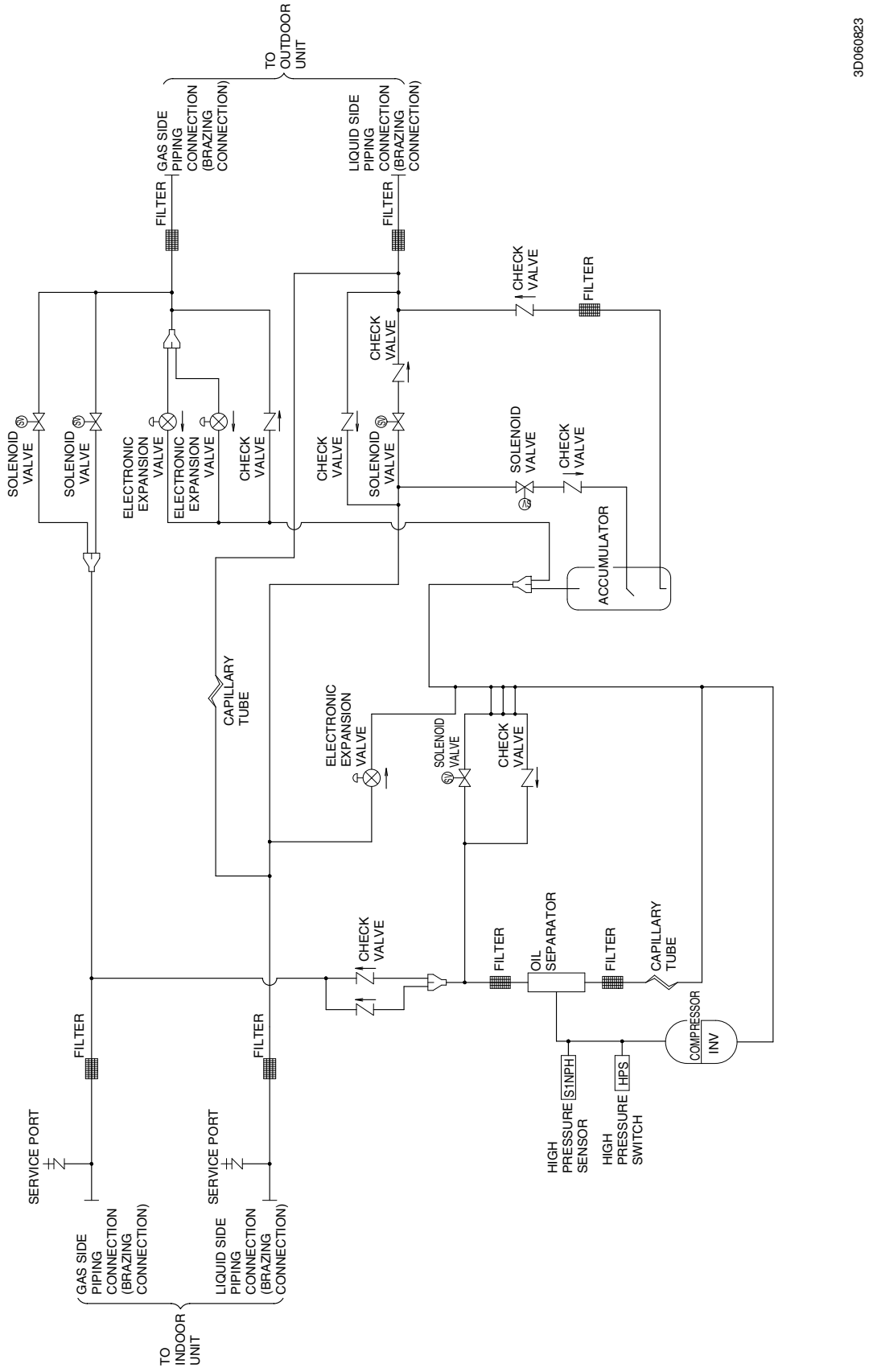
3D060786



RTSQ14PY1, 16PY1

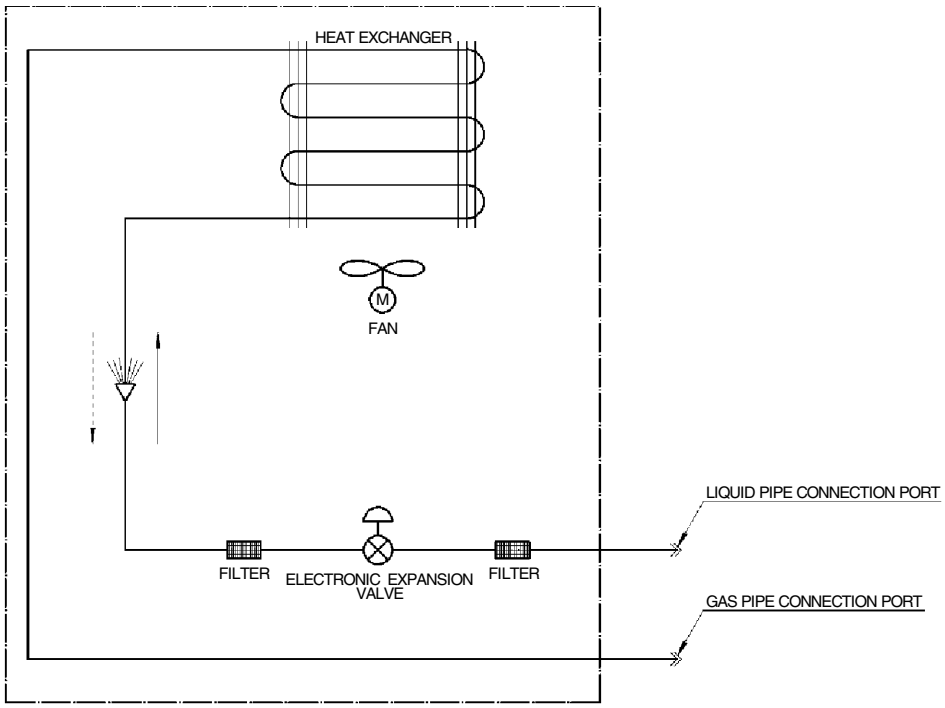


BTSQ20PY1


3D060823
TO OUTDOOR UNIT
GAS SIDE PIPING CONNECTION (BRAZING CONNECTION)
LIQUID SIDE PIPING CONNECTION (BRAZING CONNECTION)
FILTER
FILTER
CHECK VALVE
FILTER
CHECK VALVE
SOLENOID VALVE
SOLENOID VALVE
ELECTRONIC EXPANSION VALVE
ELECTRONIC EXPANSION VALVE
CHECK VALVE
CHECK VALVE
SOLENOID VALVE
SOLENOID VALVE
CHECK VALVE
ACCUMULATOR
CAPILLARY TUBE
ELECTRONIC EXPANSION VALVE
SOLENOID VALVE
CHECK VALVE
CHECK VALVE
FILTER
OIL SEPARATOR
FILTER
CAPILLARY TUBE
COMPRESSOR
INV
FILTER
FILTER
SERVICE PORT
SERVICE PORT
HIGH PRESSURE SENSOR
S1NPH
HIGH PRESSURE SWITCH
HPS
GAS SIDE PIPING CONNECTION (BRAZING CONNECTION)
LIQUID SIDE PIPING CONNECTION (BRAZING CONNECTION)
TO INDOOR UNIT

1.2 Indoor Unit

FXFQ-P



REFRIGERANT FLOW

COOLING ——————→

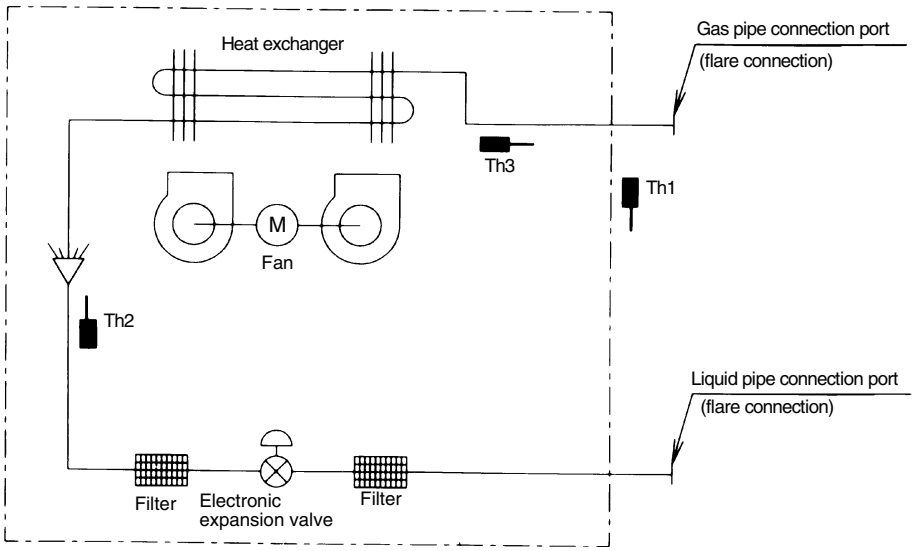
HEATING - - - - - - - - - →

REFRIGERANT PIPE CONNECTION PORT DIAMETERS

MODEL	GAS	LIQUID
FXFQ20, 25, 32, 40, 50P	ϕ12.70	ϕ6.35
FXFQ63, 80, 100, 125P	ϕ15.90	ϕ9.52

3TW28835-1

FXZQ



Th1: Thermistor for suction air temp.
Th2: Thermistor for liquid line temp.
Th3: Thermistor for gas line temp.

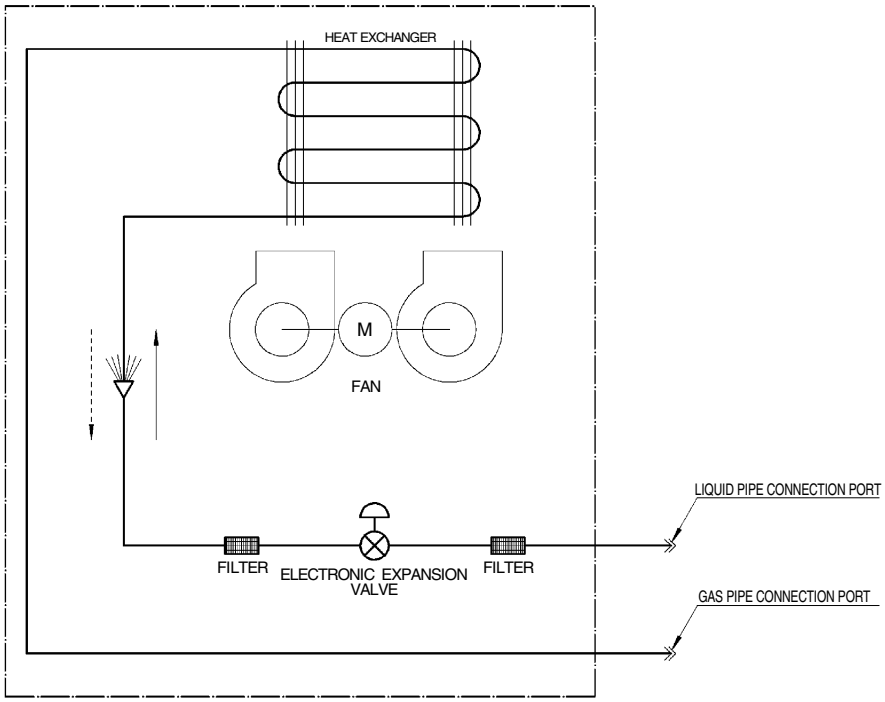
4D040157

■ Refrigerant pipe connection port diameters

(mm)

Model	Gas	Liquid
FXZQ20M / 25M / 32M / 40M / 50M	ϕ12.7	ϕ6.4

FXCQ, FXDQ25/25-M, FXSQ



REFRIGERANT FLOW

COOLING ——————►

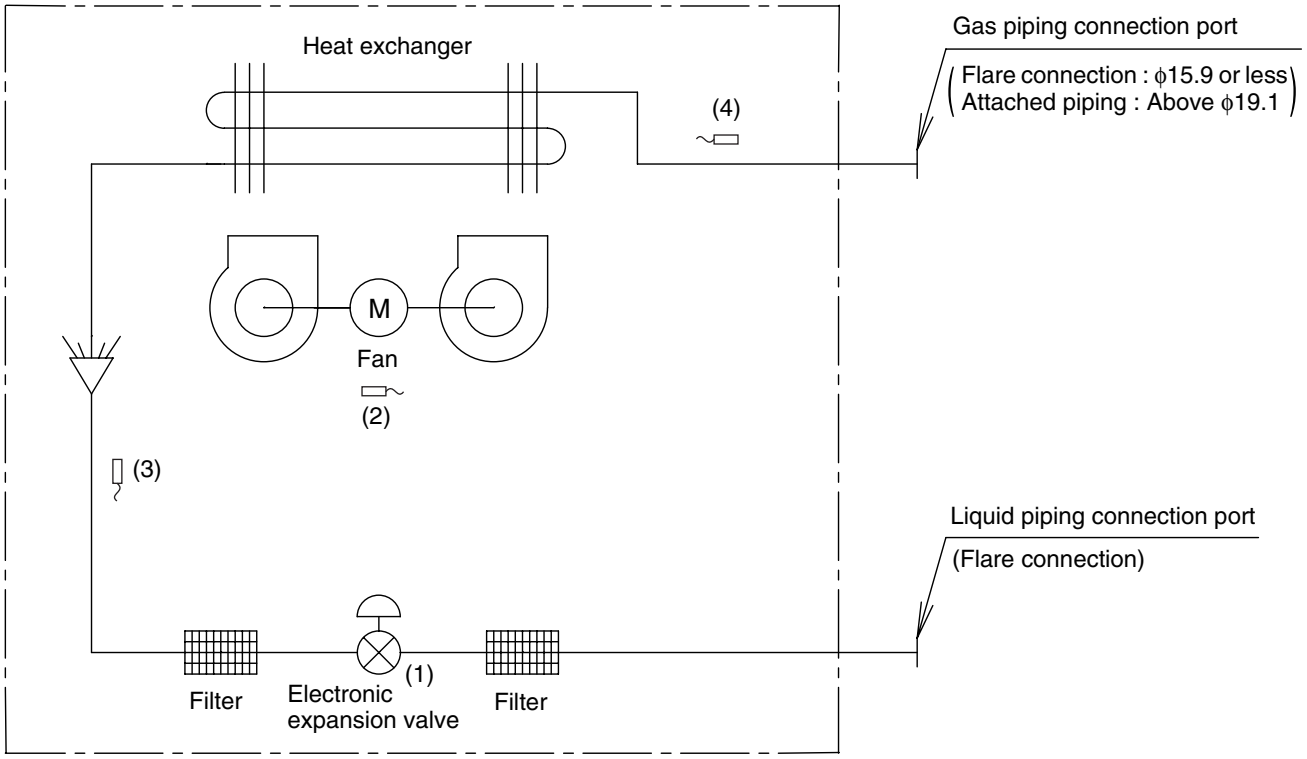
HEATING - - - - - - - - - - ►

■ Refrigerant pipe connection port diameters

Model	Gas	Liquid
FXSQ20, 25, 32, 40, 50	ϕ12.70	ϕ6.35
FXSQ63, 80, 100, 125	ϕ15.90	ϕ9.52
FXCQ20, 25, 32, 40, 50	ϕ12.70	ϕ6.35
FXCQ63, 80, 125	ϕ15.90	ϕ9.52
FXDQ20, 25	ϕ12.70	ϕ6.35

C:3TW25515-1
C:3TW21175-1C
C:3TW31185-1

FXKQ-MA, FXHQ-MA, FXLQ-MA, FXNQ-MA, FXMQ-MA



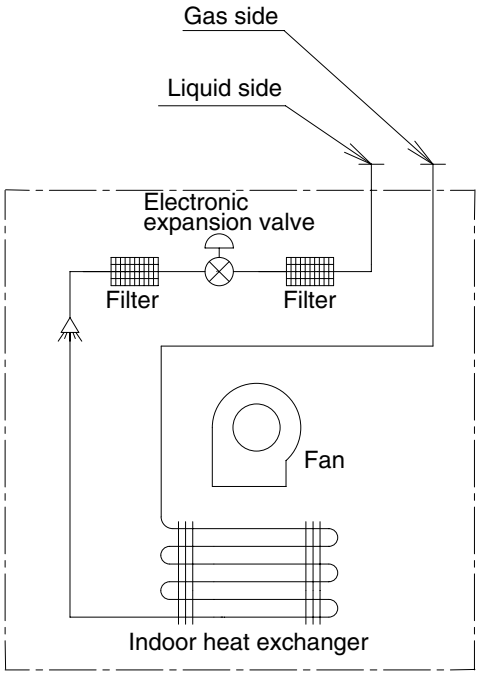
Code	Name	Code	Main function
(1)	Electronic expansion valve	Y1E	Used for gas superheated degree control while in cooling operation or subcooled degree control while in heating operation.
(2)	Suction air temperature thermistor	R1T	Used for thermostat control.
(3)	Liquid pipe thermistor	R2T	Used for gas superheated degree control while in cooling operation or subcooled degree control while in heating operation.
(4)	Gas pipe thermistor	R3T	Used for gas superheated degree control while in cooling operation.

(mm)

Capacity	GAS	Liquid
20 / 25 / 32 / 40 / 50MA	ϕ12.7	ϕ6.4
63 / 80 / 100 / 115MA	ϕ15.9	ϕ9.5
200MA	ϕ19.1	ϕ9.5
250MA	ϕ22.2	ϕ9.5

4D034245D

FXDQ-NB, PB



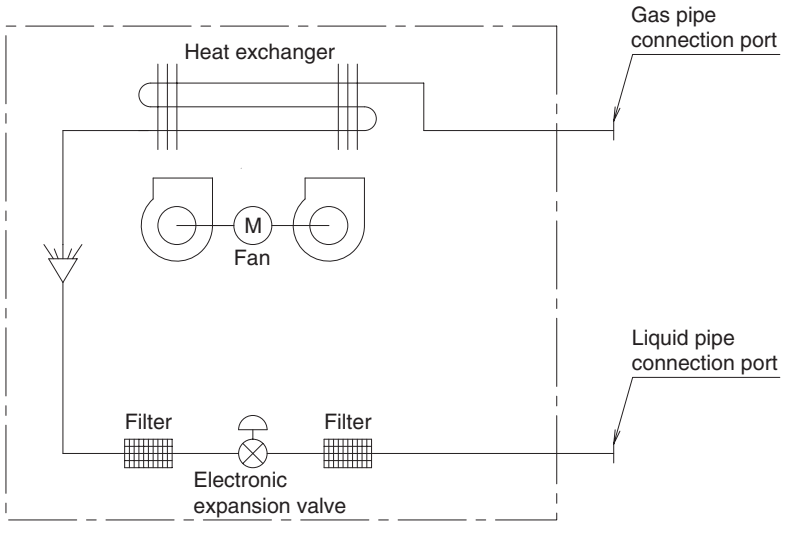
4D060927

■ Refrigerant pipe connection port diameters

(mm)

Model	Gas	Liquid
FXDQ20NB, PB / 25NB, PB / 32NB, PB / 40NB / 50NBVE	ϕ12.7	ϕ6.4
FXDQ63NBVE	ϕ15.9	ϕ9.5

FXMQ20P / 25P / 32P / 40P / 50P / 63P / 80P / 100P / 125P / 140PVE



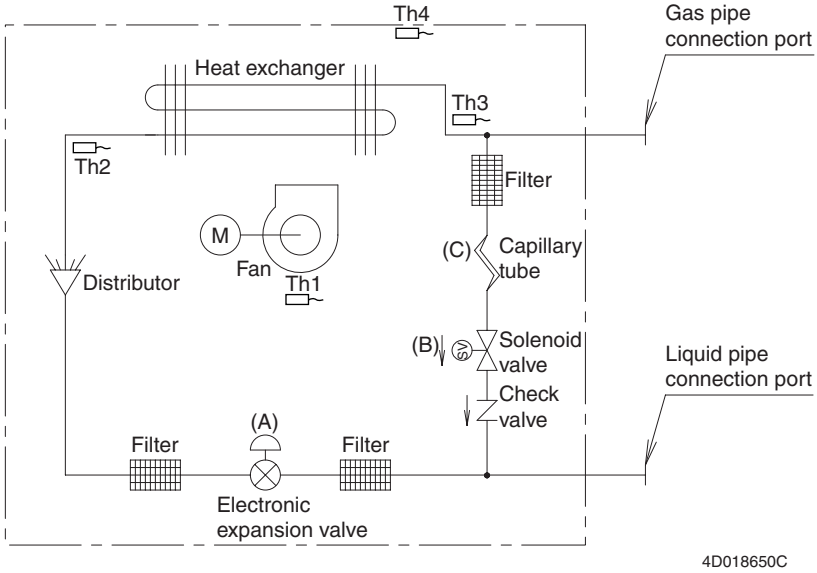
4D034245D

■ Refrigerant pipe connection port diameters

(mm)

Model	Gas	Liquid
FXMQ20P / 25P / 32P / 40P / 50PVE	ϕ12.7	ϕ6.4
FXMQ63P / 80P / 100P / 125P / 140PVE	ϕ15.9	ϕ9.5

FXMQ125MF / 200MF / 250MFV1



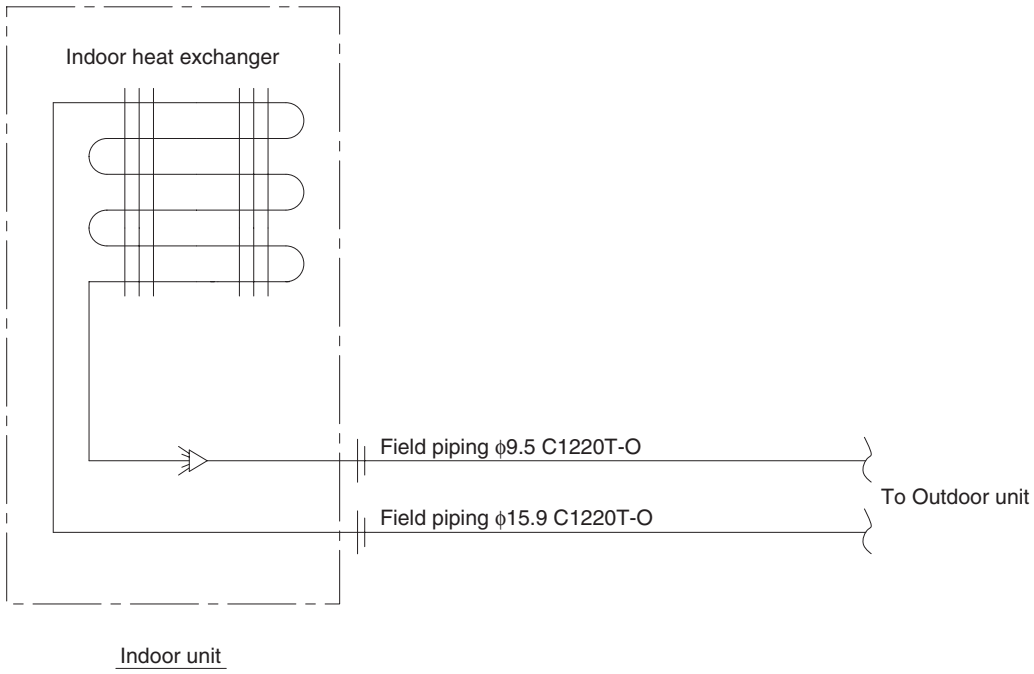
■ Refrigerant pipe connection port diameters

(mm)

Model	Gas	Liquid
FXMQ125MFV1	ϕ15.9	ϕ9.5
FXMQ200MFV1	ϕ19.1	ϕ9.5
FXMQ250MFV1	ϕ22.2	ϕ9.5

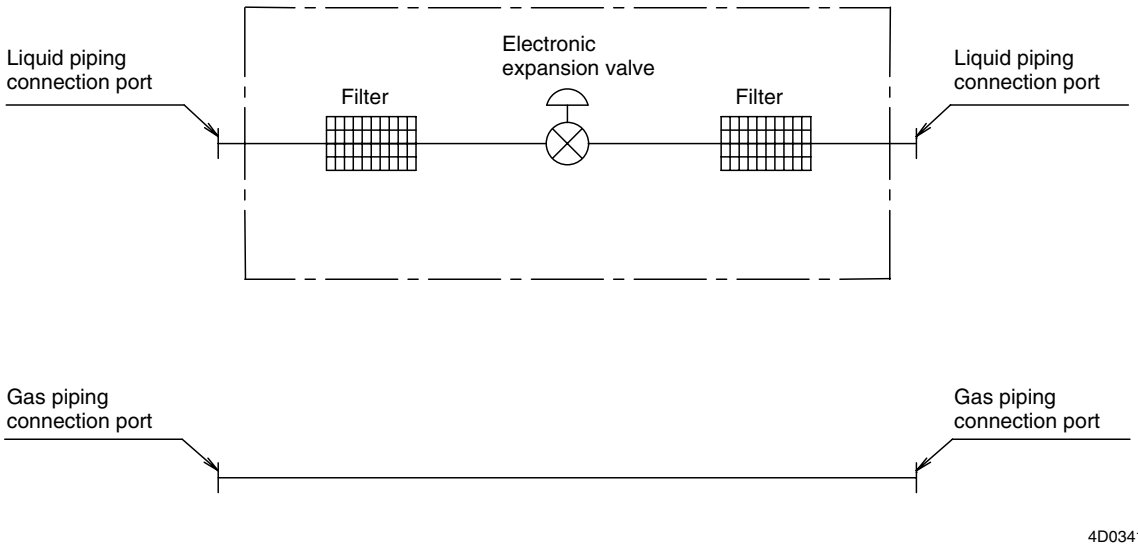
FXUQ + BEVQ

Indoor Unit



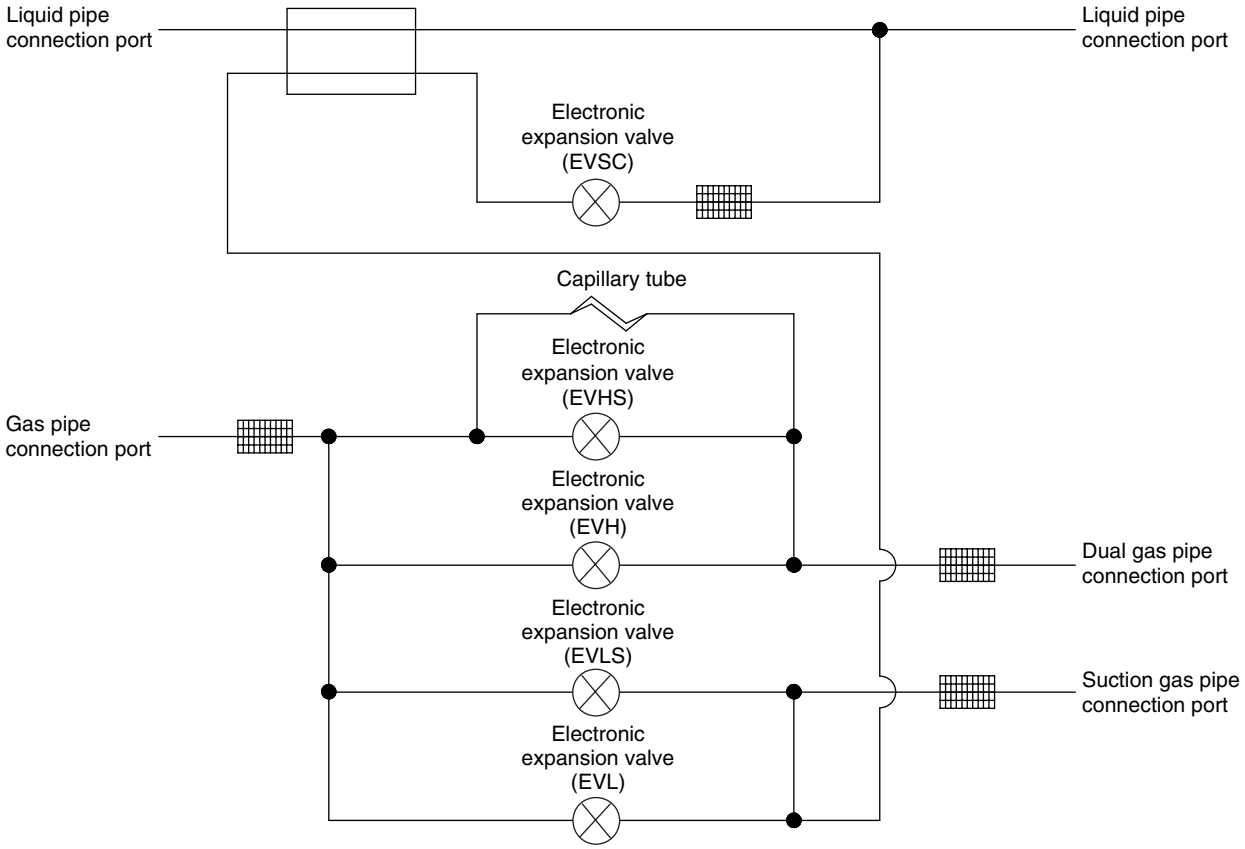
4D037995J

Connection Unit



4D034127B

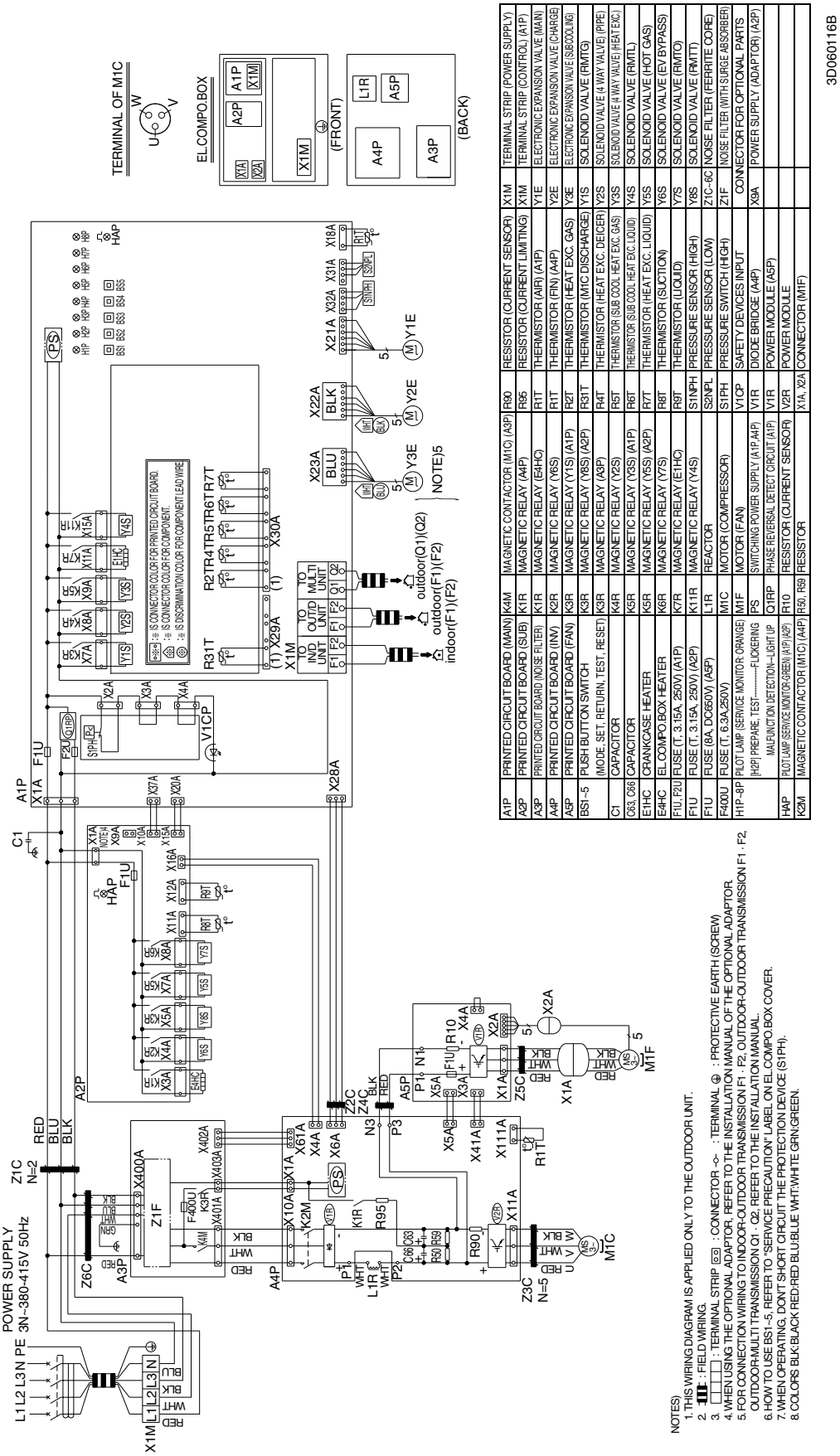
1.3 BS Unit


Liquid pipe connection port
Liquid pipe connection port
Electronic expansion valve (EVSC)
Capillary tube
Electronic expansion valve (EVHS)
Gas pipe connection port
Electronic expansion valve (EVH)
Dual gas pipe connection port
Electronic expansion valve (EVLS)
Suction gas pipe connection port
Electronic expansion valve (EVL)

2. Wiring Diagrams for Reference

2.1 Outdoor Unit

RTSQ8PY1

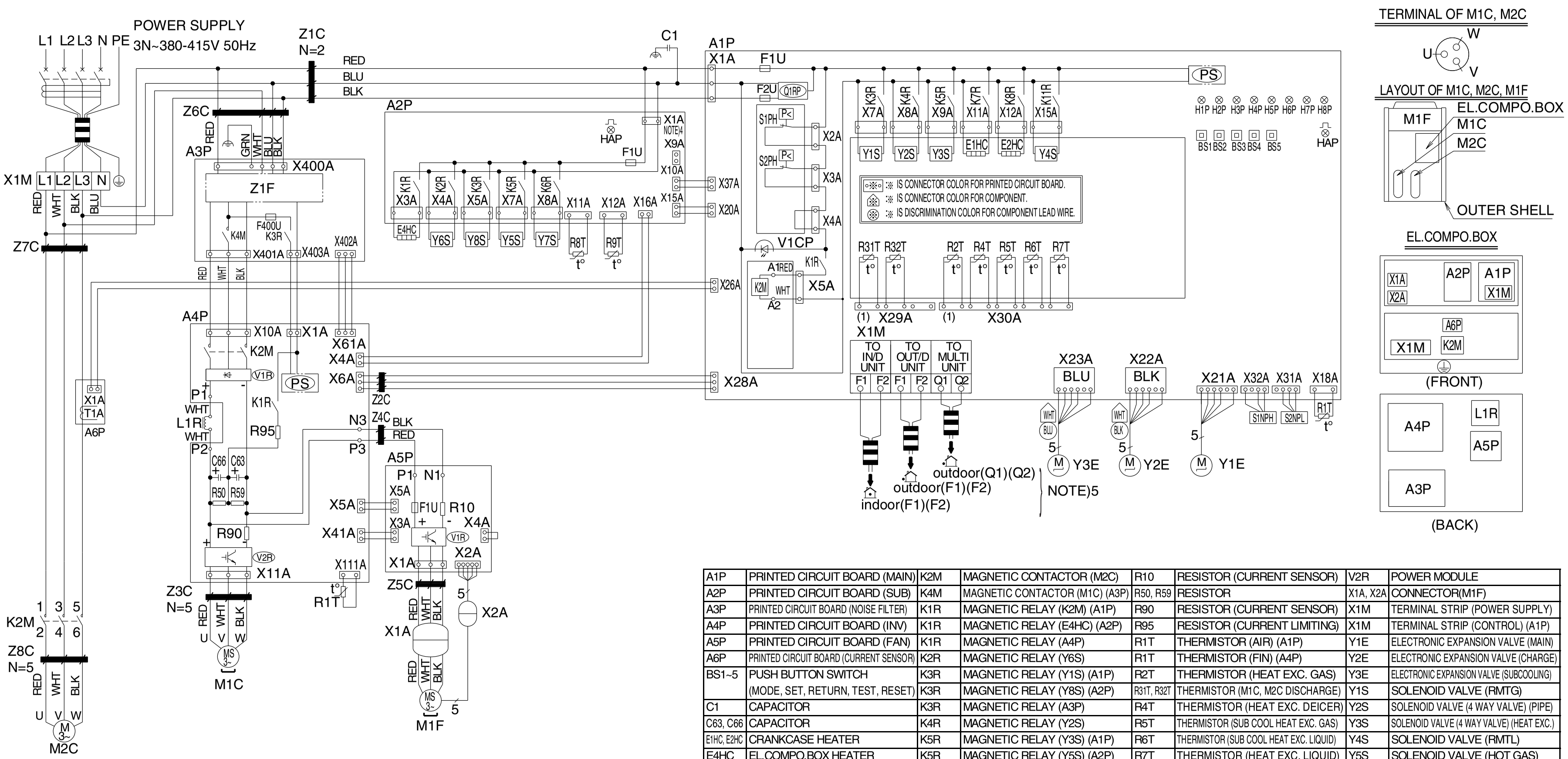


A1P	PRINTED CIRCUIT BOARD (MAIN)	K4M	MAGNETIC CONTACTOR (M1C) (A3P)	R90	RESISTOR (CURRENT SENSOR)	X1M	TERMINAL STRIP (POWER SUPPLY)
A2P	PRINTED CIRCUIT BOARD (SUB)	K1R	MAGNETIC RELAY (A4P)	R95	RESISTOR (CURRENT LIMITING)	X1M	TERMINAL STRIP (CONTROL) (A1P)
A3P	PRINTED CIRCUIT BOARD (NOISE FILTER)	K1R	MAGNETIC RELAY (E4HC)	R1T	THERMISTOR (AIR) (A1P)	Y1E	ELECTRONIC EXPANSION VALVE (MAIN)
A4P	PRINTED CIRCUIT BOARD (INV)	K2R	MAGNETIC RELAY (Y6S)	R1T	THERMISTOR (FIN) (A4P)	Y2E	ELECTRONIC EXPANSION VALVE (CHARGE)
A5P	PRINTED CIRCUIT BOARD (FAN)	K3R	MAGNETIC RELAY (Y1S) (A1P)	R2T	THERMISTOR (HEAT EXC. GAS)	Y3E	ELECTRONIC EXPANSION VALVE (SUBCOOLING)
BS1~5	PUSH BUTTON SWITCH (MODE, SET, RETURN, TEST, RESET)	K3R	MAGNETIC RELAY (Y8S) (A2P)	R31T	THERMISTOR (M1C DISCHARGE)	Y1S	SOLENOID VALVE (RMTG)
		K3R	MAGNETIC RELAY (A3P)	R4T	THERMISTOR (HEAT EXC. DEICER)	Y2S	SOLENOID VALVE (4 WAY VALVE) (PIPE)
C1	CAPACITOR	K4R	MAGNETIC RELAY (Y2S)	R5T	THERMISTOR (SUB COOL HEAT EXC. GAS)	Y3S	SOLENOID VALVE (4 WAY VALVE) (HEAT EXC)
C63, C66	CAPACITOR	K5R	MAGNETIC RELAY (Y3S) (A1P)	R6T	THERMISTOR (SUB COOL HEAT EXC. LIQUID)	Y4S	SOLENOID VALVE (RMTL)
E1HC	CRANKCASE HEATER	K5R	MAGNETIC RELAY (Y5S) (A2P)	R7T	THERMISTOR (HEAT EXC. LIQUID)	Y5S	SOLENOID VALVE (HOT GAS)
E4HC	EL.COMPO.BOX HEATER	K6R	MAGNETIC RELAY (Y7S)	R8T	THERMISTOR (SUCTION)	Y6S	SOLENOID VALVE (EV BYPASS)
F1U, F2U	FUSE (T, 3.15A, 250V) (A1P)	K7R	MAGNETIC RELAY (E1HC)	R9T	THERMISTOR (LIQUID)	Y7S	SOLENOID VALVE (RMTO)
F1U	FUSE (T, 3.15A, 250V) (A2P)	K11R	MAGNETIC RELAY (Y4S)	S1NPH	PRESSURE SENSOR (HIGH)	Y8S	SOLENOID VALVE (RMTT)
F1U	FUSE (8A, DC650V) (A5P)	L1R	REACTOR	S2NPL	PRESSURE SENSOR (LOW)	Z1C~6C	NOISE FILTER (FERRITE CORE)
F400U	FUSE (T, 6.3A,250V)	M1C	MOTOR (COMPRESSOR)	S1PH	PRESSURE SWITCH (HIGH)	Z1F	NOISE FILTER (WITH SURGE ABSORBER)
H1P~6P	PILOT LAMP (SERVICE MONITOR: ORANGE)	M1F	MOTOR (FAN)	V1CP	SAFETY DEVICES INPUT		CONNECTOR FOR OPTIONAL PARTS
	[H2P] PREPARE TEST---------FLICKERING MALFUNCTION DETECTION---LIGHT UP	PS	SWITCHING POWER SUPPLY (A1P,A4P)	V1R	DIODE BRIDGE (A4P)	X9A	POWER SUPPLY (ADAPTOR) (A2P)
		Q1RP	PHASE REVERSAL DETECT CIRCUIT (A1P)	V1R	POWER MODULE (A5P)		
HAP	PILOT LAMP (SERVICE MONITOR:GREEN) (A1P,A2P)	R10	RESISTOR (CURRENT SENSOR)	V2R	POWER MODULE		
K2M	MAGNETIC CONTACTOR (M1C) (A4P)	R50, R59	RESISTOR	X1A, X2A	CONNECTOR (M1F)		

NOTES)
1. THIS WIRING DIAGRAM IS APPLIED ONLY TO THE OUTDOOR UNIT.
2. : FIELD WIRING.
3. : TERMINAL STRIP : CONNECTOR : TERMINAL : PROTECTIVE EARTH (SCREW)
4. WHEN USING THE OPTIONAL ADAPTOR, REFER TO THE INSTALLATION MANUAL OF THE OPTIONAL ADAPTOR.
5. FOR CONNECTION WIRING TO INDOOR-OUTDOOR TRANSMISSION F1 · F2, OUTDOOR-OUTDOOR TRANSMISSION F1 · F2, OUTDOOR-MULTI TRANSMISSION Q1 · Q2, REFER TO THE INSTALLATION MANUAL.
6. HOW TO USE BS1~5, REFER TO "SERVICE PRECAUTION" LABEL ON EL.COMPO.BOX COVER.
7. WHEN OPERATING, DON'T SHORT CIRCUIT THE PROTECTION DEVICE (S1PH).
8. COLORS BLK:BLACK RED:RED BLU:BLUE WHT:WHITE GRN:GREEN.

3D060116B

RTSQ10PY1, 12PY1



A1P	PRINTED CIRCUIT BOARD (MAIN)	K2M	MAGNETIC CONTACTOR (M2C)	R10	RESISTOR (CURRENT SENSOR)	V2R	POWER MODULE
A2P	PRINTED CIRCUIT BOARD (SUB)	K4M	MAGNETIC CONTACTOR (M1C) (A3P)	R50, R59	RESISTOR	X1A, X2A	CONNECTOR(M1F)
A3P	PRINTED CIRCUIT BOARD (NOISE FILTER)	K1R	MAGNETIC RELAY (K2M) (A1P)	R90	RESISTOR (CURRENT SENSOR)	X1M	TERMINAL STRIP (POWER SUPPLY)
A4P	PRINTED CIRCUIT BOARD (INV)	K1R	MAGNETIC RELAY (E4HC) (A2P)	R95	RESISTOR (CURRENT LIMITING)	X1M	TERMINAL STRIP (CONTROL) (A1P)
A5P	PRINTED CIRCUIT BOARD (FAN)	K1R	MAGNETIC RELAY (A4P)	R1T	THERMISTOR (AIR) (A1P)	Y1E	ELECTRONIC EXPANSION VALVE (MAIN)
A6P	PRINTED CIRCUIT BOARD (CURRENT SENSOR)	K2R	MAGNETIC RELAY (Y6S)	R1T	THERMISTOR (FIN) (A4P)	Y2E	ELECTRONIC EXPANSION VALVE (CHARGE)
BS1~5	PUSH BUTTON SWITCH	K3R	MAGNETIC RELAY (Y1S) (A1P)	R2T	THERMISTOR (HEAT EXC. GAS)	Y3E	ELECTRONIC EXPANSION VALVE (SUBCOOLING)
	(MODE, SET, RETURN, TEST, RESET)	K3R	MAGNETIC RELAY (Y8S) (A2P)	R31T, R32T	THERMISTOR (M1C, M2C DISCHARGE)	Y1S	SOLENOID VALVE (RMTG)
C1	CAPACITOR	K3R	MAGNETIC RELAY (A3P)	R4T	THERMISTOR (HEAT EXC. DEICER)	Y2S	SOLENOID VALVE (4 WAY VALVE) (PIPE)
C63, C66	CAPACITOR	K4R	MAGNETIC RELAY (Y2S)	R5T	THERMISTOR (SUB COOL HEAT EXC. GAS)	Y3S	SOLENOID VALVE (4 WAY VALVE) (HEAT EXC.)
E1HC, E2HC	CRANKCASE HEATER	K5R	MAGNETIC RELAY (Y3S) (A1P)	R6T	THERMISTOR (SUB COOL HEAT EXC. LIQUID)	Y4S	SOLENOID VALVE (RMTL)
E4HC	EL.COMPO.BOX HEATER	K5R	MAGNETIC RELAY (Y5S) (A2P)	R7T	THERMISTOR (HEAT EXC. LIQUID)	Y5S	SOLENOID VALVE (HOT GAS)
F1U, F2U	FUSE (T, 3.15A, 250V) (A1P)	K6R	MAGNETIC RELAY (Y7S)	R8T	THERMISTOR (SUCTION)	Y6S	SOLENOID VALVE (EV BYPASS)
F1U	FUSE (T, 3.15A, 250V) (A2P)	K7R	MAGNETIC RELAY (E1HC)	R9T	THERMISTOR (LIQUID)	Y7S	SOLENOID VALVE (RMTO)
F1U	FUSE (8A, DC650V) (A5P)	K8R	MAGNETIC RELAY (E2HC)	S1NPH	PRESSURE SENSOR (HIGH)	Y8S	SOLENOID VALVE (RMTT)
F400U	FUSE (T, 6.3A, 250V) (A3P)	K11R	MAGNETIC RELAY (Y4S)	S2NPL	PRESSURE SENSOR (LOW)	Z1C~8C	NOISE FILTER (FERRITE CORE)
H1P~8P	PILOT LAMP (SERVICE MONITOR: ORANGE)	L1R	REACTOR	S1PH, S2PH	PRESSURE SWITCH (HIGH)	Z1F	NOISE FILTER (WITH SURGE ABSORBER)
	[H2P] PREPARE, TEST-----------FLICKERING	M1C, M2C	MOTOR (COMPRESSOR)	T1A	CURRENT SENSOR		
	MALFUNCTION DETECTION---LIGHT UP	M1F	MOTOR (FAN)	V1CP	SAFETY DEVICES INPUT	CONNECTOR FOR OPTIONAL PARTS	
HAP	PILOT LAMP (SERVICE MONITOR-GREEN) (A1P) (A2P)	PS	SWITCHING POWER SUPPLY (A1P, A4P)	V1R	DIODE BRIDGE (A4P)	X9A	POWER SUPPLY (ADOPTOR) (A2P)
K2M	MAGNETIC CONTACTOR (M1C) (A4P)	Q1RP	PHASE REVERSAL DETECT CIRCUIT	V1R	POWER MODULE (A5P)		

NOTES)
1. THIS WIRING DIAGRAM IS APPLIED ONLY TO THE OUTDOOR UNIT.
2. : FIELD WIRING.
3. : TERMINAL STRIP : CONNECTOR : TERMINAL : PROTECTIVE EARTH (SCREW)
4. WHEN USING THE OPTIONAL ADAPTOR, REFER TO THE INSTALLATION MANUAL OF THE OPTIONAL ADAPTOR.
5. FOR CONNECTION WIRING TO INDOOR-OUTDOOR TRANSMISSION F1 · F2, OUTDOOR-OUTDOOR TRANSMISSION F1 · F2, OUTDOOR-MULTI TRANSMISSION Q1 · Q2, REFER TO THE INSTALLATION MANUAL.
6. HOW TO USE BS1~5, REFER TO "SERVICE PRECAUTION" LABEL ON EL. COMPO. BOX COVER.
7. WHEN OPERATING, DON'T SHORT CIRCUIT THE PROTECTION DEVICE (S1PH,S2PH).
8. COLORS BLK : BLACK RED : RED BLU : BLUE WHT : WHITE GRN : GREEN.

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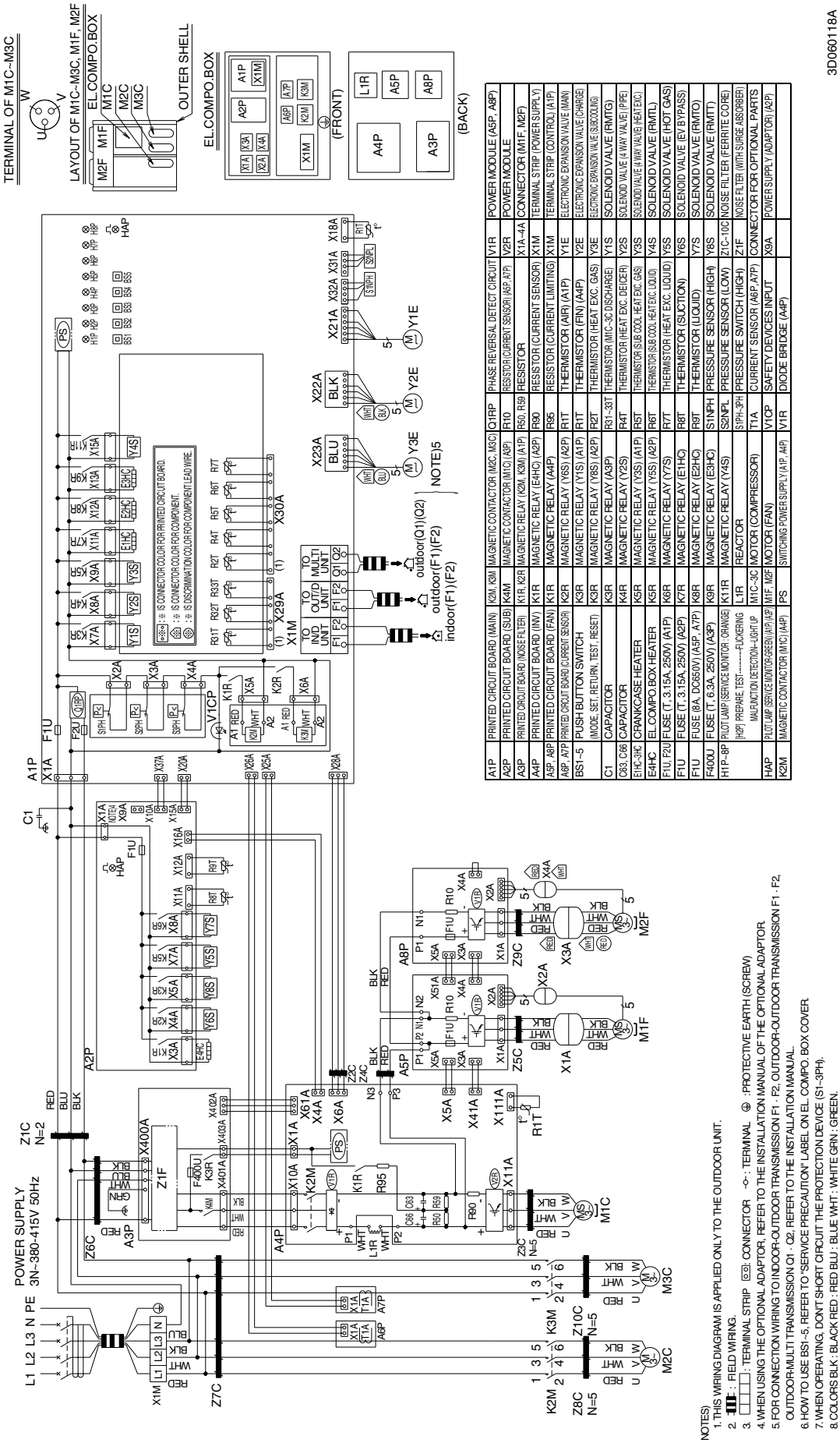
RTSQ14PY1, 16PY1

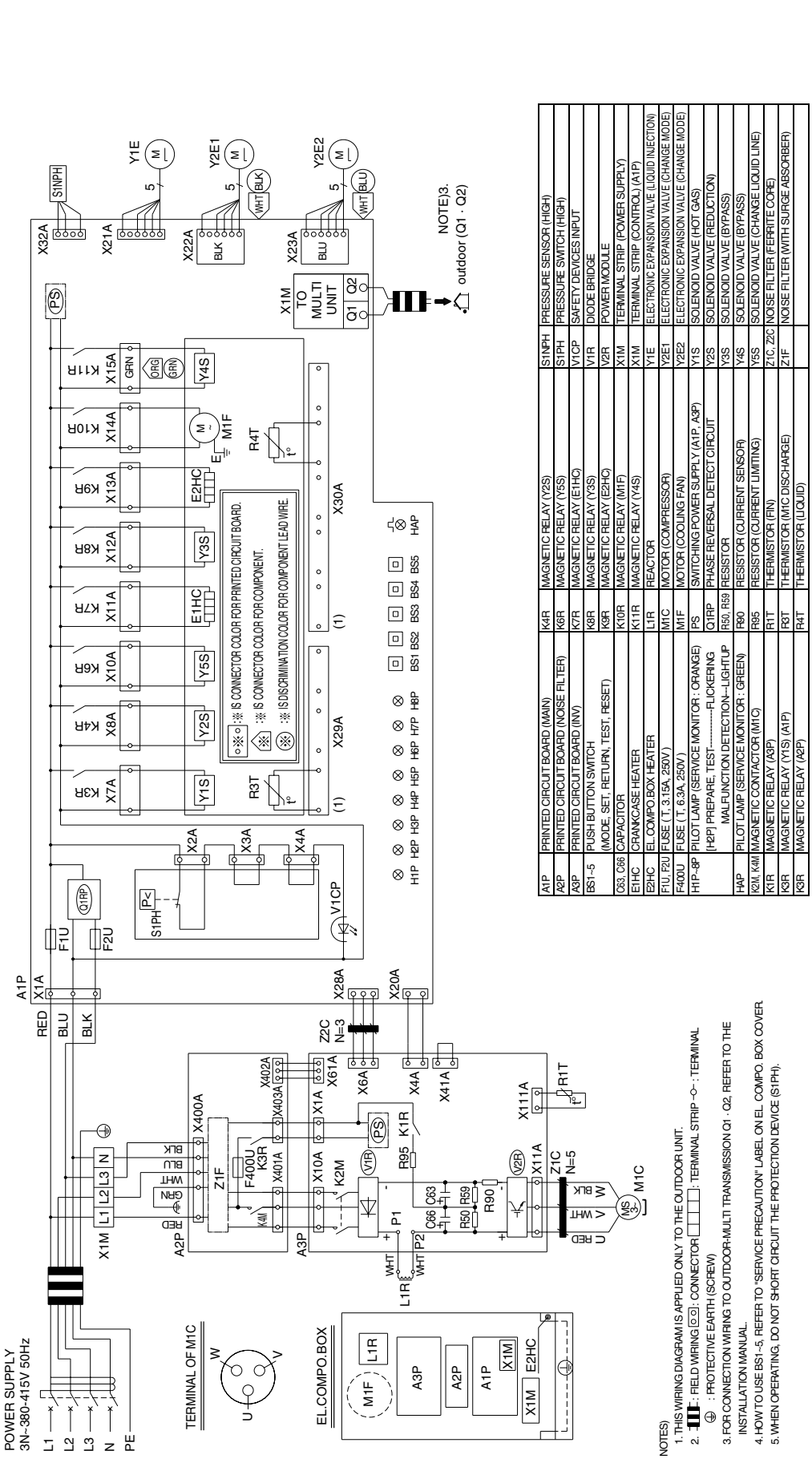


A1P	PRINTED CIRCUIT BOARD (MAIN)	K2M, K3M	MAGNETIC CONTACTOR (M2C, M3C)	Q1RP	PHASE REVERSAL DETECT CIRCUIT
A2P	PRINTED CIRCUIT BOARD (SUB)	K4M	MAGNETIC CONTACTOR (M1C)	R10	RESISTOR (CURRENT SENSOR)
A3P	PRINTED CIRCUIT BOARD (NOISE FILTER)	K1R, K2R	MAGNETIC RELAY (K2M, K3M)	R50, R59	RESISTOR
A4P	PRINTED CIRCUIT BOARD (INV.)	K1R	MAGNETIC RELAY (E4HC)	R90	RESISTOR (CURRENT SENSOR)
A5P, A6P	PRINTED CIRCUIT BOARD (FAN)	K1R	MAGNETIC RELAY (A4P)	R95	RESISTOR (CURRENT LIMITING)
A6P, A7P	PRINTED CIRCUIT BOARD (CURRENT SENSOR)	K2R	MAGNETIC RELAY (Y6S)	R1T	THERMISTOR (AIR)
BS1~5	PUSH BUTTON SWITCH (MODE, SET, RETURN, TEST, RESET)	K3R	MAGNETIC RELAY (Y1S)	R1T	THERMISTOR (FIN)
		K3R	MAGNETIC RELAY (Y8S)	R2T	THERMISTOR (HEAT EXC. GAS)
C1	CAPACITOR	K3R	MAGNETIC RELAY (A3P)	R31~33T	THERMISTOR (M1C~3C DISCHARGE)
C63, C86	CAPACITOR	K4R	MAGNETIC RELAY (Y2S)	R4T	THERMISTOR (HEAT EXC. DEICER)
E1HC~3HC	CRANKCASE HEATER	K5R	MAGNETIC RELAY (Y3S)	R5T	THERMISTOR (SUB COOL HEAT EXC. GAS)
E4HC	EL.COMPO.BOX HEATER	K5R	MAGNETIC RELAY (Y5S)	R6T	THERMISTOR (SUB COOL HEAT EXC. LIQUID)
F1U, F2U	FUSE (T, 3.15A, 250V) (A1P)	K6R	MAGNETIC RELAY (Y7S)	R7T	THERMISTOR (HEAT EXC. LIQUID)
F1U	FUSE (T, 3.15A, 250V) (A2P)	K7R	MAGNETIC RELAY (E1HC)	R8T	THERMISTOR (SUCTION)
F1U	FUSE (8A, DC650V) (A5P, A7P)	K8R	MAGNETIC RELAY (E2HC)	R9T	THERMISTOR (LIQUID)
F400U	FUSE (T, 6.3A, 250V) (A3P)	K9R	MAGNETIC RELAY (E3HC)	S1NPH	PRESSURE SENSOR (HIGH)
H1P~8P	PILOT LAMP (SERVICE MONITOR, ORANGE)	K1R	MAGNETIC RELAY (Y4S)	S2NPL	PRESSURE SENSOR (LOW)
	(H2P) PREPARE TEST ·····FLICKERING MALFUNCTION DETECTION~LIGHT UP	L1R	REACTOR	S1PH~3PH	PRESSURE SWITCH (HIGH)
		M1C~3C	MOTOR (COMPRESSOR)	T1A	CURRENT SENSOR (A6P, A7P)
HAP	PILOT LAMP (SERVICE MONITOR~GREEN) (A1P) (A2P)	M1F, M2F	MOTOR (FAN)	V1CP	SAFETY DEVICES INPUT
K2M	MAGNETIC CONTACTOR (M1C) (A4P)	PS	SWITCHING POWER SUPPLY (A1P, A4P)	V1R	DIODE BRIDGE (A4P)

Y1R	POWER MODULE (A5P, A6P)		
Y2R	POWER MODULE		
X1A~4A	CONNECTOR (M1F, M2F)		
X1M	TERMINAL STRIP (POWER SUPPLY)		
X1M	TERMINAL STRIP (CONTROL) (A1P)		
Y1E	ELECTRONIC EXPANSION VALVE (MAIN)		
Y2E	ELECTRONIC EXPANSION VALVE (CHARGE)		
Y3E	ELECTRONIC EXPANSION VALVE (SUBCOOLING)		
Y1S	SOLENOID VALVE (RMTG)		
Y2S	SOLENOID VALVE (4 WAY VALVE) (PIPE)		
Y3S	SOLENOID VALVE (4 WAY VALVE) (HEAT EXC.)		
Y4S	SOLENOID VALVE (RMTL)		
Y5S	SOLENOID VALVE (HOT GAS)		
Y6S	SOLENOID VALVE (EV BYPASS)		
Y7S	SOLENOID VALVE (RMTO)		
Y8S	SOLENOID VALVE (RMTT)		
Z1C~10C	NOISE FILTER (FERRITE CORE)		
Z1F	NOISE FILTER (WITH SURGE ABSORBER)		
	CONNECTOR FOR OPTIONAL PARTS		
X9A	POWER SUPPLY (ADAPTOR) (A2P)		

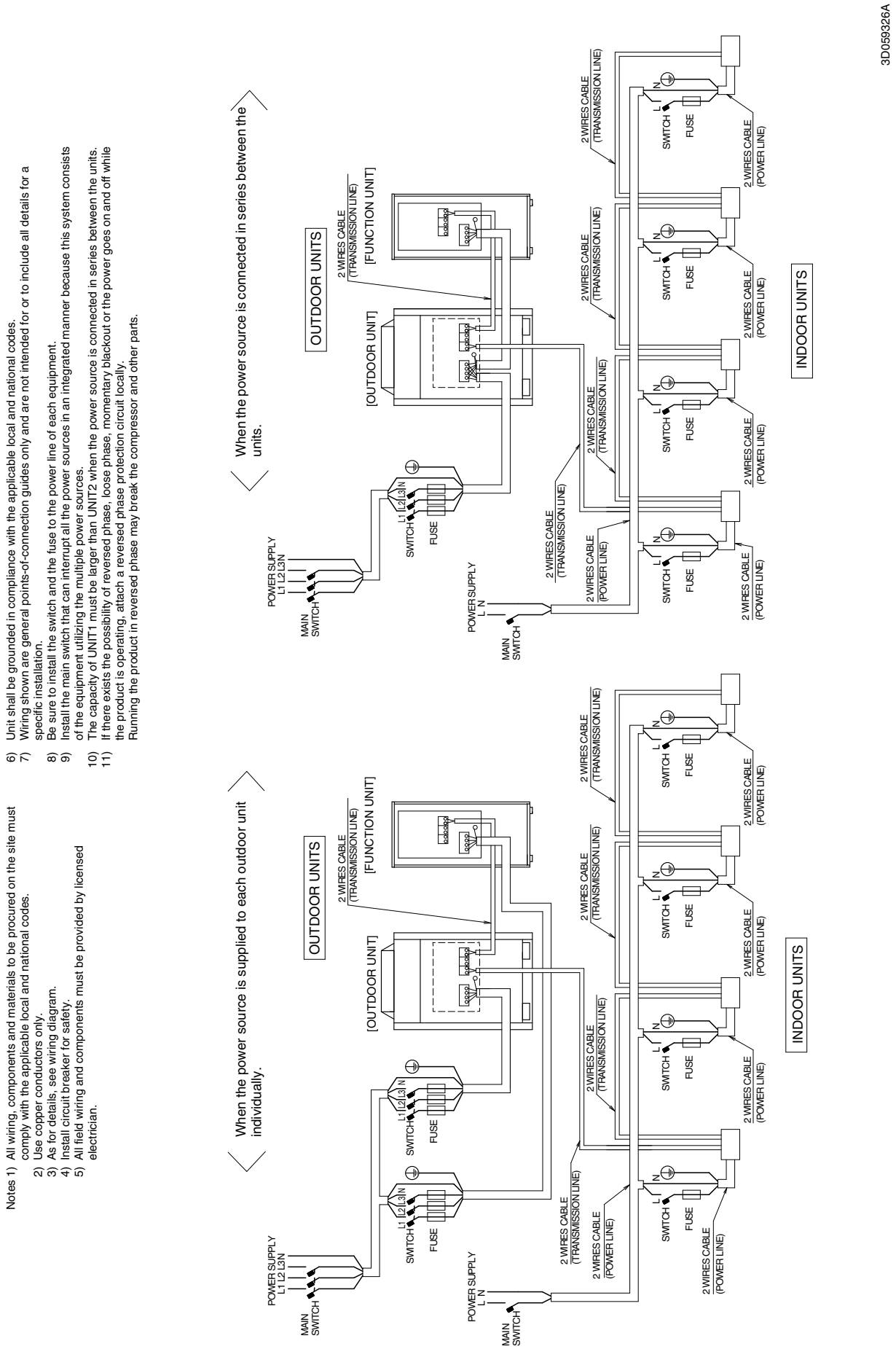
NOTES)
1. THIS WIRING DIAGRAM IS APPLIED ONLY TO THE OUTDOOR UNIT.
2. : FIELD WIRING.
3. : TERMINAL STRIP (□□): CONNECTOR : TERMINAL : PROTECTIVE EARTH (SCREW)
4. WHEN USING THE OPTIONAL ADAPTOR, REFER TO THE INSTALLATION MANUAL OF THE OPTIONAL ADAPTOR.
5. FOR CONNECTION WIRING TO INDOOR-OUTDOOR TRANSMISSION F1 · F2, OUTDOOR-OUTDOOR TRANSMISSION F1 · F2, OUTDOOR-MULTI TRANSMISSION Q1 · Q2, REFER TO THE INSTALLATION MANUAL.
6. HOW TO USE BS1~5, REFER TO "SERVICE PRECAUTION" LABEL ON EL.COMPO. BOX COVER.
7. WHEN OPERATING, DON'T SHORT CIRCUIT THE PROTECTION DEVICE (S1~3PH).
8. COLORS BLK : BLACK RED : RED BLU : BLUE WHT : WHITE GRN : GREEN.

BTSQ20PY1


3D060119A
POWER SUPPLY
3N~380-415V 50Hz
L1
L2
L3
N
PE
TERMINAL OF M1C
EL.COMPO.BOX
M1F
L1R
A3P
A2P
A1P
X1M
E2HC
NOTES)
1. THIS WIRING DIAGRAM IS APPLIED ONLY TO THE OUTDOOR UNIT.
2. : FIELD WIRING, : CONNECTOR, : TERMINAL STRIP, : TERMINAL
: PROTECTIVE EARTH (SCREW)
3. FOR CONNECTION WIRING TO OUTDOOR-MULTI TRANSMISSION Q1 · Q2, REFER TO THE INSTALLATION MANUAL.
4. HOW TO USE BS1~5, REFER TO "SERVICE PRECAUTION" LABEL ON EL. COMPO. BOX COVER.
5. WHEN OPERATING, DO NOT SHORT CIRCUIT THE PROTECTION DEVICE (S1PH).
A1P PRINTED CIRCUIT BOARD (MAIN)
A2P PRINTED CIRCUIT BOARD (NOISE FILTER)
A3P PRINTED CIRCUIT BOARD (INV)
BS1~5 PUSH BUTTON SWITCH (MODE, SET, RETURN, TEST, RESET)
C63, C66 CAPACITOR
E1HC CRANKCASE HEATER
E2HC EL.COMPO.BOX HEATER
F1U, F2U FUSE (T, 3.15A, 250V)
F400U FUSE (T, 6.3A, 250V)
H1P~6P PILOT LAMP (SERVICE MONITOR : ORANGE)
[H2P] PREPARE, TEST----------FLICKERING
MALFUNCTION DETECTION---LIGHT UP
HAP PILOT LAMP (SERVICE MONITOR : GREEN)
K2M, K4M MAGNETIC CONTACTOR (M1C)
K1R MAGNETIC RELAY (A3P)
K3R MAGNETIC RELAY (Y1S) (A1P)
K3R MAGNETIC RELAY (A2P)
K4R MAGNETIC RELAY (Y2S)
K6R MAGNETIC RELAY (Y5S)
K7R MAGNETIC RELAY (E1HC)
K8R MAGNETIC RELAY (Y3S)
K9R MAGNETIC RELAY (E2HC)
K10R MAGNETIC RELAY (M1F)
K11R MAGNETIC RELAY (Y4S)
L1R REACTOR
M1C MOTOR (COMPRESSOR)
M1F MOTOR (COOLING FAN)
PS SWITCHING POWER SUPPLY (A1P, A3P)
Q1RP PHASE REVERSAL DETECT CIRCUIT
R50, R59 RESISTOR
R90 RESISTOR (CURRENT SENSOR)
R95 RESISTOR (CURRENT LIMITING)
R1T THERMISTOR (FIN)
R3T THERMISTOR (M1C DISCHARGE)
R4T THERMISTOR (LIQUID)
S1NPH PRESSURE SENSOR (HIGH)
S1PH PRESSURE SWITCH (HIGH)
V1CP SAFETY DEVICES INPUT
V1R DIODE BRIDGE
V2R POWER MODULE
X1M TERMINAL STRIP (POWER SUPPLY)
X1M TERMINAL STRIP (CONTROL) (A1P)
Y1E ELECTRONIC EXPANSION VALVE (LIQUID INJECTION)
Y2E1 ELECTRONIC EXPANSION VALVE (CHANGE MODE)
Y2E2 ELECTRONIC EXPANSION VALVE (CHANGE MODE)
Y1S SOLENOID VALVE (HOT GAS)
Y2S SOLENOID VALVE (REDUCTION)
Y3S SOLENOID VALVE (BYPASS)
Y4S SOLENOID VALVE (BYPASS)
Y5S SOLENOID VALVE (CHANGE LIQUID LINE)
Z1C, Z2C NOISE FILTER (FERRITE CORE)
Z1F NOISE FILTER (WITH SURGE ABSORBER)
NOTE)3.
outdoor (Q1 · Q2)

2.2 Field Wiring

RTSYQ10P / 14P / 16PY1



Notes 1) All wiring, components and materials to be procured on the site must comply with the applicable local and national codes.
2) Use copper conductors only.
3) As for details, see wiring diagram.
4) Install circuit breaker for safety.
5) All field wiring and components must be provided by licensed electrician.
6) Unit shall be grounded in compliance with the applicable local and national codes.
7) Wiring shown are general points-of-connection guides only and are not intended for or to include all details for a specific installation.
8) Be sure to install the switch and the fuse to the power line of each equipment.
9) Install the main switch that can interrupt all the power sources in an integrated manner because this system consists of the equipment utilizing the multiple power sources.
10) The capacity of UNIT1 must be larger than UNIT2 when the power source is connected in series between the units.
11) If there exists the possibility of reversed phase, loose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally.
Running the product in reversed phase may break the compressor and other parts.

RTSYQ20PY1

Notes 1) All wiring, components and materials to be procured on the site must comply with the applicable local and national codes.
2) Use copper conductors only.
3) As for details, see wiring diagram.
4) Install circuit breaker for safety.
5) All field wiring and components must be provided by licensed electrician.
6) Unit shall be grounded in compliance with the applicable local and national codes.
7) Wiring shown are general points-of-connection guides only and are not intended for or to include all details for a specific installation.
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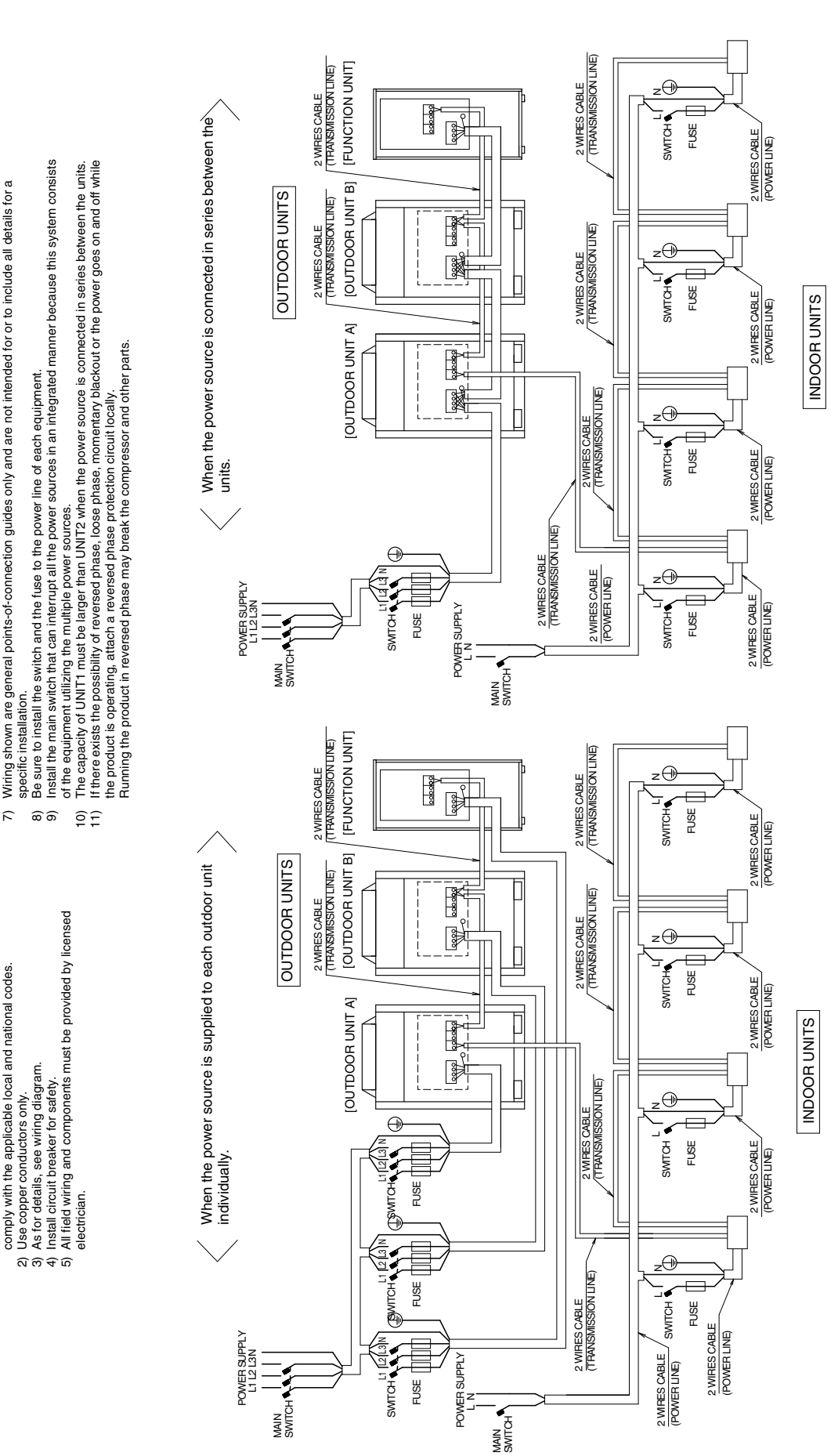
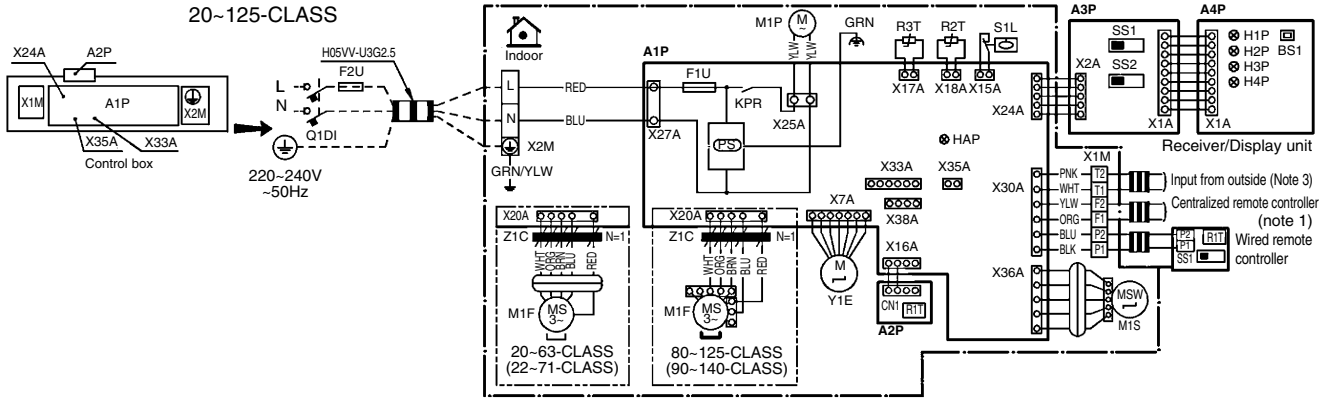
Running the product in reversed phase may break the compressor and other parts.



2.3 Indoor Unit

FXFQ20P / 25P / 32P / 40P / 50P / 63P / 80P / 100P / 125P8VEB



Indoor unit		R2T	Thermistor (coil)	SS1	Selector switch (main/sub)
A1P	Printed circuit board	R3T	Thermistor (header)	SS2	Selector switch (Wireless address set)
A2P	Printed circuit board	S1L	Float Switch	**Connector for optional parts**	
C1	Capacitor	X1M	Terminal strip	X24A	Connector (Wireless remote control)
F1U	Fuse (T, 5A, 250V)	X2M	Terminal strip	X33A	Connector (Adaptor for wiring)
F2U	Field fuse	Y1E	Electronic expansion valve	X35A	Connector (Group control adaptor)
HAP	Light emitting diode (service motor green)	Z1C	Ferrite core	X38A	Connector (Multi tenant)
KPR	Magnetic relay (M1P)	**Receiver/display unit (attached to wireless remote control)**		**Wired remote control**	
L1	Coil	A3P	Printed circuit board	R1T	Thermistor (air)
M1F	Motor fan (indoor fan)	A4P	Printed circuit board	SS1	Selector switch (main/sub)
M1P	Motor fan (drain pump)	BS1	Push button (on/off)		
M1S	Motor (swing flap)	H1P	Light emitting diode (on-red)		
PS	Power supply circuit	H2P	Light emitting diode (timer-green)		
O1DI	Earth leak detector	H3P	Light emitting diode (filter sign-red)		
R1T	Thermistor (air)	H4P	Light emitting diode (defrost-orange)		

: Terminal
: Connector
: Connector
: Field wiring

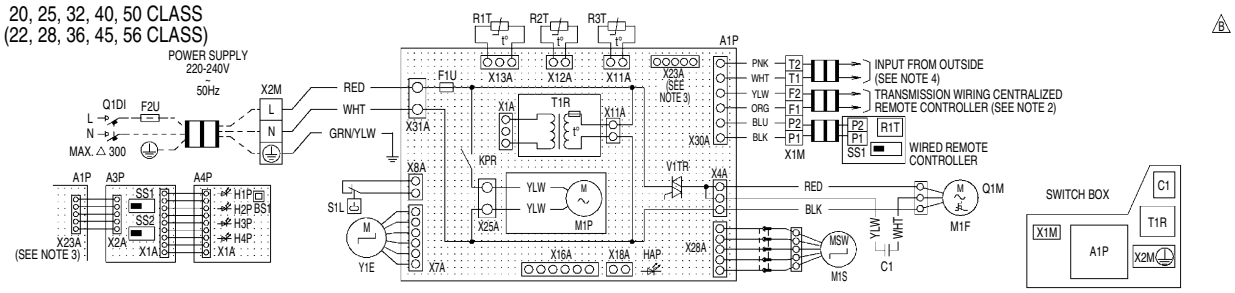
Colors: RED: Red BLK: Black WHT: White YLW: Yellow PRP: Purple GRY: Gray Blu: Blue PNK: Pink ORG: Orange GRN: Green

NOTES

1 In case of using centralized remote control, connect it to the unit in accordance with the attached installation manual.
2 X24A, X33A, X35A en X38A are connected when the optional accessories are being used.
3 When connecting the input wires from outside, forced of on/off control operation can be selected by the remote controller. see installation manual for more details.
4 Confirm the method of setting the selector switch (SS1, SS2) by installation manual and engineering data, etc.

3TW31056-1

FXZQ20M / 25M / 32M / 40M / 50M9V1B



A1P	PRINTED CIRCUIT BOARD	T1R	TRANSFORMER (220-240V/22V)	H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
C1	CAPACITOR (M1F)	V1TR	TRIAC		
F1U	FUSE ((B), 5A, 250V)	X1M	TERMINAL STRIP	H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
F2U	FIELD FUSE	X2M	TERMINAL STRIP		
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR GREEN)	Y1E	ELECTRONIC EXPANSION VALVE	SS1	SELECTOR SWITCH (MAIN/SUB)
		WIRED REMOTE CONTROLLER		SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
KPR	MAGNETIC RELAY (M1P)	R1T	THERMISTOR (AIR)		
M1F	MOTOR (INDOOR FAN)	SS1	SELECTOR SWITCH (MAIN/SUB)	CONNECTOR FOR OPTIONAL PARTS	
M1P	MOTOR (DRAIN PUMP)	WIRELESS REMOTE CONTROLLER (RECEIVER/DISPLAY UNIT)		X16A	CONNECTOR (ADAPTOR FOR WIRE)
M1S	MOTOR (SWING FLAP)				
Q1DI	FIELD EARTH LEAK DETECTOR (MAX. 300mA)	A3P	PRINTED CIRCUIT BOARD	X18A	CONNECTOR (ON/OFF) (WIRING ADAPTOR FOR ELECTRICAL APPENDICES)
		A4P	PRINTED CIRCUIT BOARD		
Q1M	THERMAL PROTECTOR (M1F EMBEDDED)	BS1	PUSH BUTTON (ON/OFF)		
R1T	THERMISTOR (AIR)	H1P	LIGHT EMITTING DIODE (ON-RED)		
R2T	THERMISTOR (COIL-LIQUID)	H2P	LIGHT EMITTING DIODE (TIMER-GREEN)		
R3T	THERMISTOR (COIL-GAS)				
S1L	FLOAT SWITCH				

RED:RED PNK:PINK
BLK:BLACK ORG:ORANGE
WHT:WHITE GRN:GREEN
YLW:YELLOW BLU:BLUE

: TERMINAL

: CONNECTOR

: WIRE CLAMP

: FIELD WIRING

NOTES:

1. IN CASE OF USING A REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE TO THE ATTACHED INSTALLATION MANUAL.
2. X23A IS CONNECTED WHEN THE WIRELESS REMOTE CONTROLLER KIT IS BEING USED.
3. 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 TO THE UNIT.
4. REMOTE CONTROLLER MODEL VARIES ACCORDING TO THE COMBINATION SYSTEM. SEE TECHNICAL DATA AND CATALOGS, ETC. BEFORE CONNECTION.

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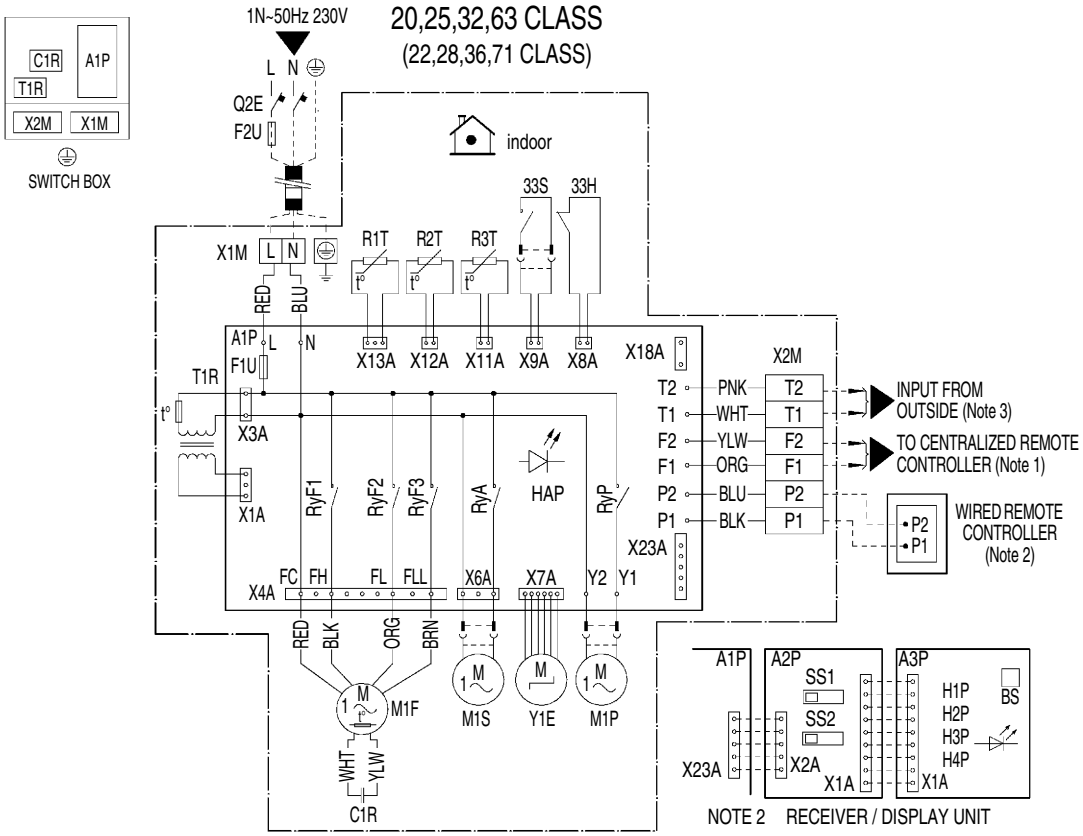
FXCQ20M / 25M / 32M / 63M8V3B

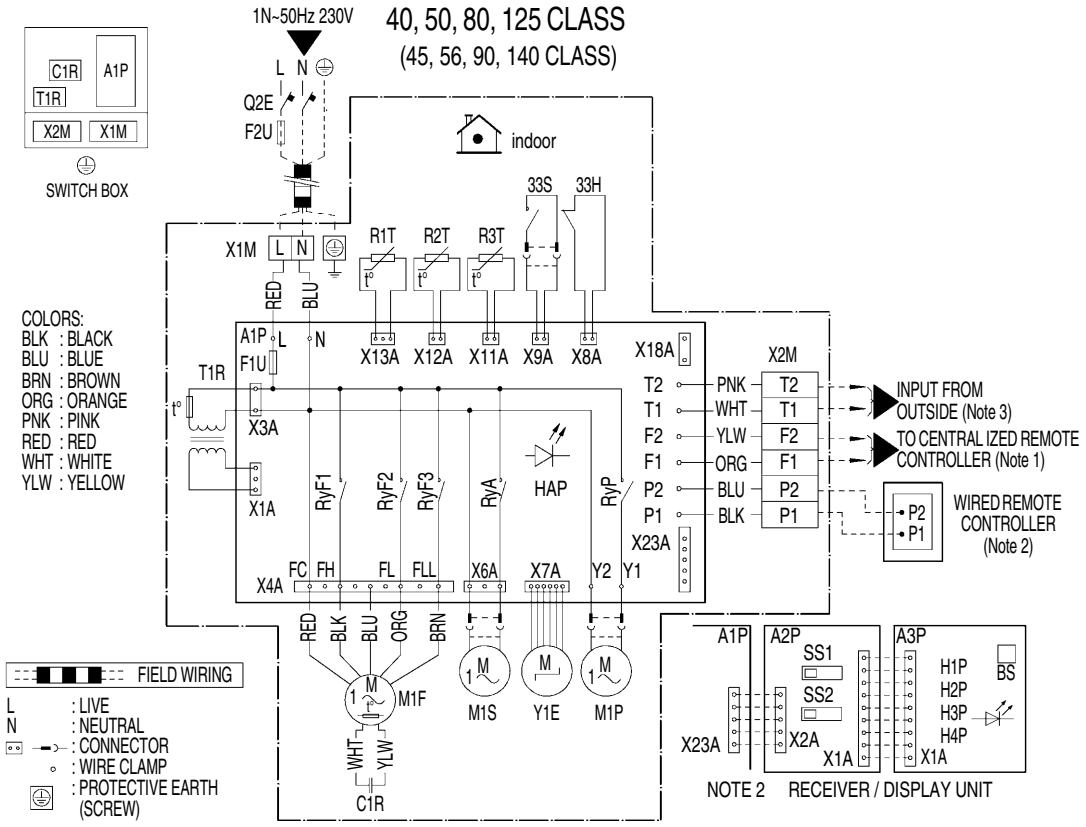


33H	FLOAT SWITCH	R2T, R3T	THERMISTOR (COIL)	H1P	LIGHT EMITTING DIODE (ON-RED)
33S	LIMIT SWITCH (SWING FLAP)	Q2E	EARTH LEAK DETECTOR	H2P	LIGHT EMITTING DIODE (TIMER-GREEN)
A1P	PRINTED CIRCUIT BOARD	RyA	MAGNETIC RELAY (M1S)	H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
C1R	CAPACITOR (M1F)	RyF1-3	MAGNETIC RELAY (M1F)	H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
F1T	THERMAL FUSE (152°C) (M1F EMBEDDED)	RyP	MAGNETIC RELAY (M1P)	SS1	SELECTOR SWITCH (MAIN/SUB)
F1U	FUSE (250V, 5A)	T1R	TRANSFORMER (220-240V/22V)	SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
F2U	FIELD FUSE	X1M	TERMINAL STRIP (POWER)		CONNECTOR FOR OPTIONAL PARTS
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	X2M	TERMINAL STRIP (CONTROL)	X18A	CONNECTOR (WIRING, ADAPTOR FOR ELECTRICAL APPENDICES)
		Y1E	ELECTRONIC EXPANSION VALVE		
M1F	MOTOR (INDOOR FAN)	RECEIVER/DISPLAY UNIT (ATTACHED TO WIRELESS REMOTE CONTROLLER)		X23A	CONNECTOR (WIRELESS REMOTE CONTROLLER)
M1S	MOTOR (SWING FLAP)				
M1P	MOTOR (DRAIN PUMP)	A2P, A3P	PRINTED CIRCUIT BOARD		
R1T	THERMISTOR (AIR)	BS	ON/OFF BUTTON		

NOTES:
1. WHEN USING A CENTRALIZED REMOTE CONTROLLER, SEE MANUAL FOR CONNECTION TO THE UNIT.
2. X23A IS CONNECTED WHEN THE WIRELESS REMOTE CONTROLLER KIT IS USED.
3. WHEN CONNECTING THE INPUT WIRES FROM THE OUTDOOR UNIT, "FORCED OFF" OR "ON/OFF" OPERATION CAN BE SELECTED BY THE REMOTE CONTROLLER. FOR MORE DETAILS SEE INSTALLATION MANUAL.
4. USE COPPER CONDUCTORS ONLY.

2TW23776-1D

FXCQ40M / 50M / 80M / 125M8V3B

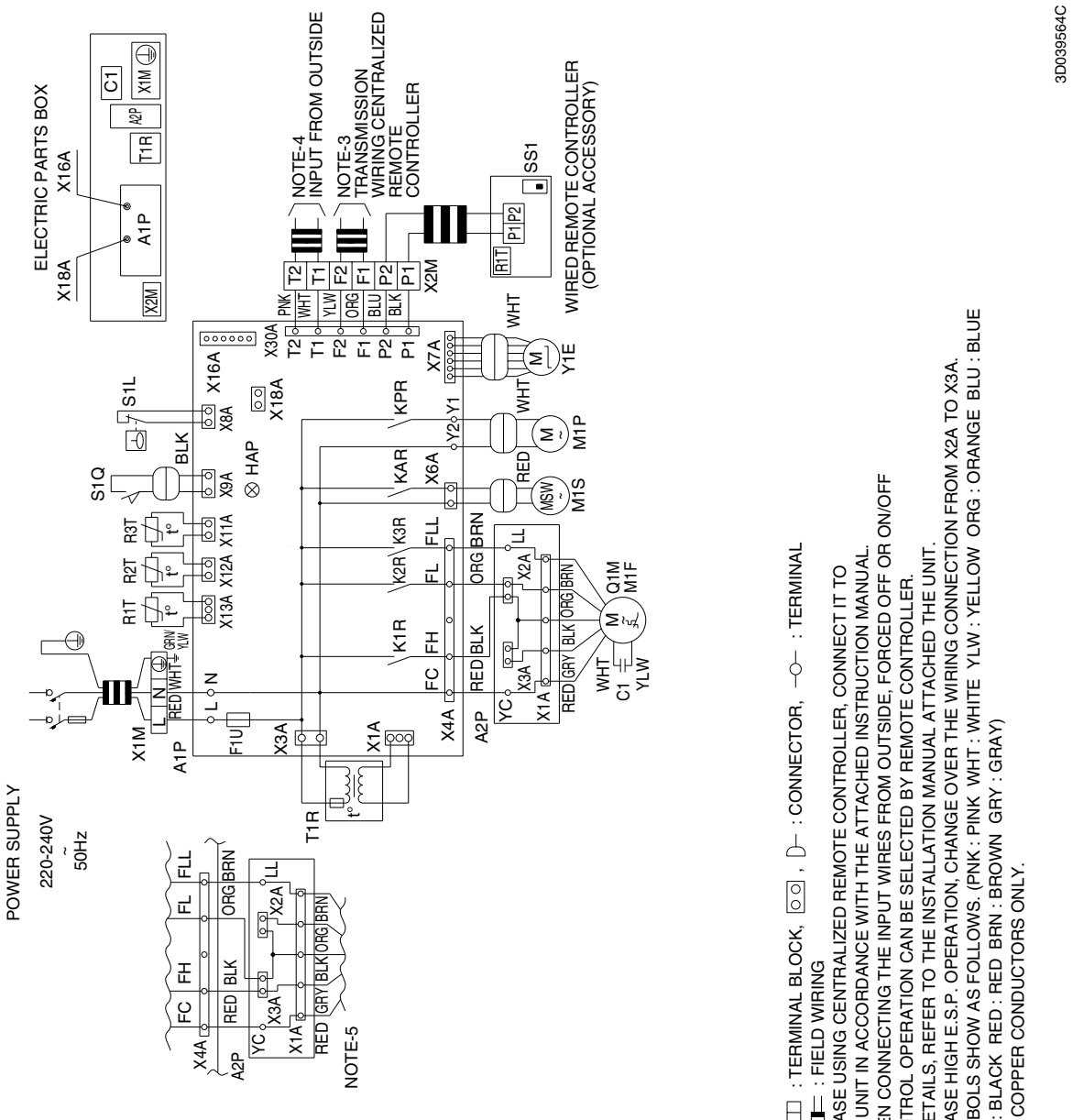


33H	FLOAT SWITCH	R2T, R3T	THERMISTOR (COIL)	H1P	LIGHT EMITTING DIODE (ON-RED)
33S	LIMIT SWITCH (SWING FLAP)	Q2E	EARTH LEAK DETECTOR	H2P	LIGHT EMITTING DIODE (TIMER-GREEN)
A1P	PRINTED CIRCUIT BOARD	RyA	MAGNETIC RELAY (M1S)	H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
C1R	CAPACITOR (M1F)	RyF1-3	MAGNETIC RELAY (M1F)	H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
F1T	THERMAL FUSE (152°C) (M1F EMBEDDED)	RyP	MAGNETIC RELAY (M1P)	SS1	SELECTOR SWITCH (MAIN/SUB)
F1U	FUSE (250V, 5A)	T1R	TRANSFORMER (220-240V/22V)	SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
F2U	FIELD FUSE	X1M	TERMINAL STRIP (POWER)		CONNECTOR FOR OPTIONAL PARTS
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	X2M	TERMINAL STRIP (CONTROL)	X18A	CONNECTOR (WIRING, ADAPTOR FOR ELECTRICAL APPENDICES)
		Y1E	ELECTRONIC EXPANSION VALVE		
M1F	MOTOR (INDOOR FAN)	RECEIVER/DISPLAY UNIT (ATTACHED TO WIRELESS REMOTE CONTROLLER)		X23A	CONNECTOR (WIRELESS REMOTE CONTROLLER)
M1S	MOTOR (SWING FLAP)				
M1P	MOTOR (DRAIN PUMP)	A2P, A3P	PRINTED CIRCUIT BOARD		
R1T	THERMISTOR (AIR)	BS	ON/OFF BUTTON		

NOTES:
1. WHEN USING A CENTRALIZED REMOTE CONTROLLER, SEE MANUAL FOR CONNECTION TO THE UNIT.
2. X23A IS CONNECTED WHEN THE WIRELESS REMOTE CONTROLLER KIT IS USED.
3. WHEN CONNECTING THE INPUT WIRES FROM THE OUTDOOR UNIT, "FORCED OFF" OR "ON/OFF" OPERATION CAN BE SELECTED BY THE REMOTE CONTROLLER. FOR MORE DETAILS SEE INSTALLATION MANUAL.
4. USE COPPER CONDUCTORS ONLY.

2TW23806-1D

FXKQ25MA / 32MA / 40MA / 63MAVE

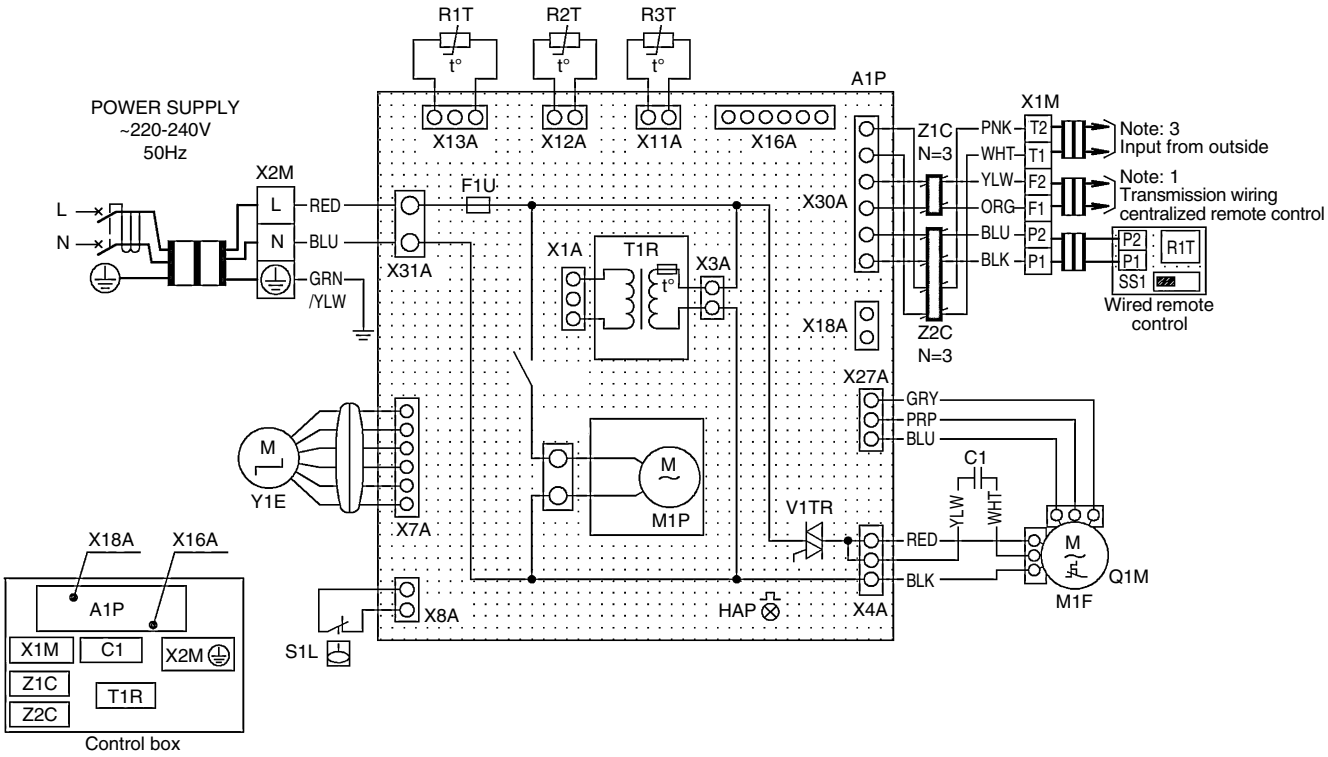


INDOOR UNIT	
A1P	PRINTED CIRCUIT BOARD
A2P	TERMINAL BOARD
C1	CAPACITOR (M1F)
F1U	FUSE((B),5A, 250V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)
K1R-K3R	MAGNETIC RELAY (M1F)
KAR	MAGNETIC RELAY (M1S)
KPR	MAGNETIC RELAY (M1P)
M1F	MOTOR (INDOOR FAN)
M1P	MOTOR (DRAIN PUMP)
M1S	MOTOR (SWING FLAP)
Q1M	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 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. 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. USE COPPER CONDUCTORS ONLY.

3D039564C

FXDQ20PB / 25PB / 32PB / 40NB / 50NB / 63NBVE



A1P	Printed circuit board	R1T	Thermistor (air)	Z1C•Z2C	Noise filter (ferrite core)
C1	Capacitor (M1F)	R2T	Thermistor (coil - 1)	Wired remote control	
F1U	Fuse (F5A, 250V)	R3T	Thermistor (coil - 2)	R1T	Thermistor (air)
HAP	Light emitting diode (service monitor-green)	S1L	Float switch	SS1	Selector switch (main/sub)
		T1R	Transformer (220V/22V)	Connector for optional parts	
KPR	Magnetic relay (M1P)	V1TR	Phase control circuit	X16A	Connector (adaptor for wiring)
M1F	Motor (indoor fan)	X1M	Terminal block	X18A	Connector (wiring adaptor for electrical appendices)
M1P	Motor (drain pump)	X2M	Terminal block		
Q1M	Thermal protector (M1F embedded)	Y1E	Electronic expansion valve		

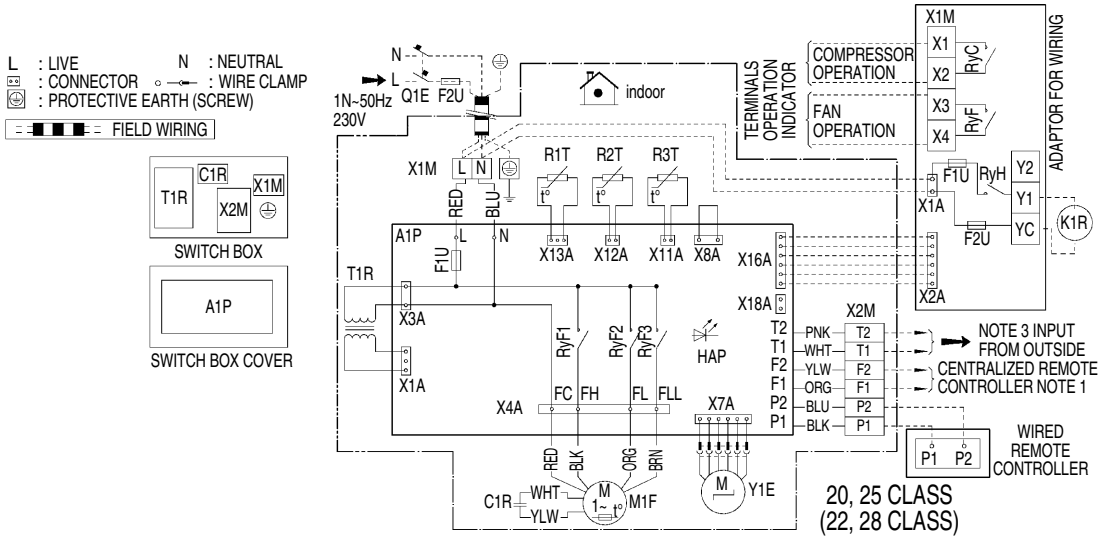
: Terminal
: Connector
: Field wiring

Colors: BLK: Black, BUL: Blue, GRY: Gray, GRN: Green, ORG: Orange, PNK: Pink, PRP: Purple, RED: Red, WHT: White, YLW: Yellow

NOTES
1 In case of using centralized remote control, connect it to the unit in accordance with the attached installation manual.
2 Remote control model varies according to the combination system, confirm engineering materials and catalogs, etc. before connecting.
3 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.

3D060547

FXDQ20M / 25M9V3B



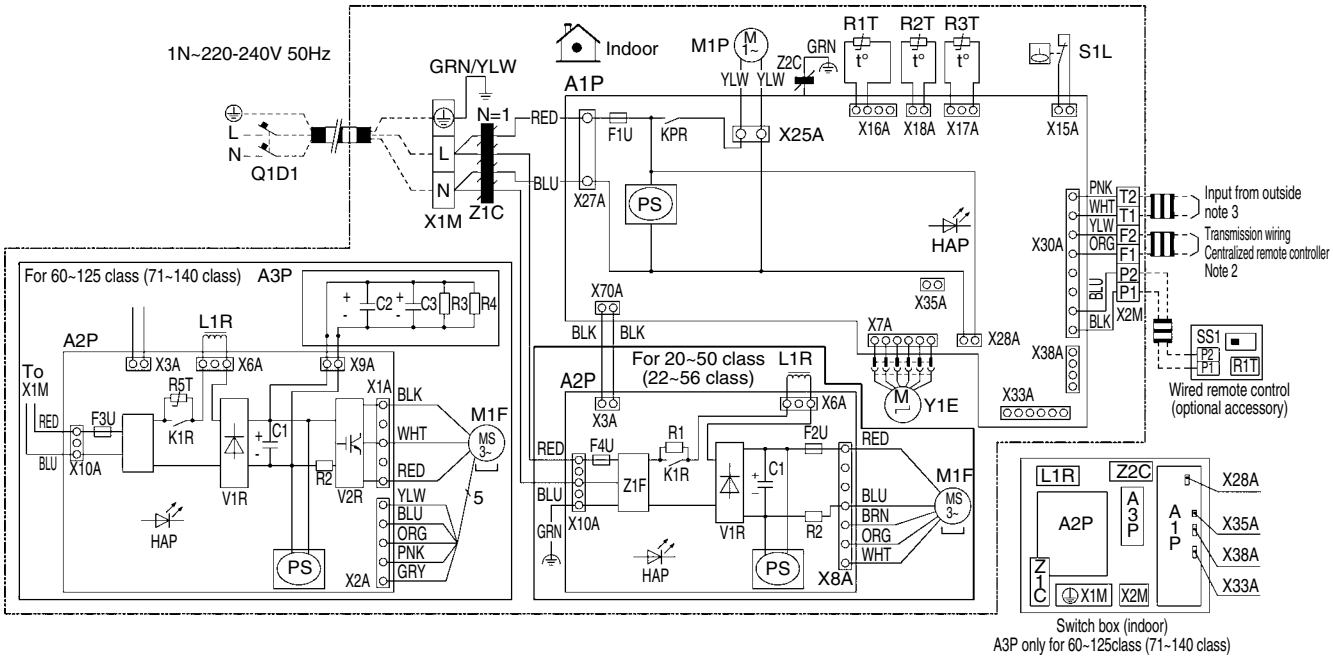
A1P	PRINTED CIRCUIT BOARD	RyF1-3	MAGNETIC RELAY (FAN)	ADAPTOR FOR WIRING		X1M	TERMINAL STRIP
C1R	CAPACITOR (FAN)	T1R	TRANSFORMER (220-240V/22V)	RyC, RyF	MAGNETIC RELAY	CONNECTOR FOR OPTIONAL PARTS	
F1U	FUSE (250V, 10A)			RyH	MAGNETIC RELAY (J1EH)	X16A	CONNECTOR (WIRING ADAPTOR)
F2U	FIELD FUSE	X1M	TERMINAL STRIP (POWER)	F1U, F2U	FUSE (250V, 5A)	X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRONICAL APPENDICES)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	X2M	TERMINAL STRIP (CONTROL)	X1A, X2A	CONNECTOR (WIRING ADAPTOR)		
		Y1E	ELECTRONIC EXPANSION VALVE				
M1F	MOTOR (FAN)						
Q1E	EARTH LEAK DETECTOR	OPTIONAL PARTS					
R1T	THERMISTOR (AIR)	J1EH	ELECTRIC HEATER				
R2T, R3T	THERMISTOR (REFRIGERANT)	K1R	MAGNETIC RELAY (J1EH)				

COLORS:
BLK : BLACK; BLU : BLUE; BRN : BROWN; ORG : ORANGE;
PNK : PINK; WHT : WHITE; YLW : YELLOW; RED : RED

NOTES:
1. USE COPPER CONDUCTORS ONLY.
2. WHEN USING THE CENTRALIZED REMOTE CONTROLLER, SEE MANUAL FOR CONNECTION TO THE UNIT.
3. WHEN INSTALLING THE ELECTRIC HEATER, CHANGE THE WIRING FOR THE HEATER CIRCUIT. THE MAIN POWER SUPPLY HAS TO BE SUPPLIED INDEPENDENTLY.
4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, “FORCED OFF” OR “ON/OFF” OPERATION CAN BE SELECTED BY THE REMOTE CONTROLLER. SEE INSTALLATION MANUAL FOR DETAILS.

2TW23666-1E

FXSQ20P / 25P / 32P / 40P / 50P / 63P / 80P / 100P / 125P7VEB



Indoor unit		PS	Switching power supply	Y1E	Electronic expansion valve
A1P	Printed circuit board	Q1DI	Earth leak detector	Z1C, Z2C	Noise filter
A2P	Printed circuit board (fan)	R1	Resistor (current limiting)	Z1F	Noise filter
A3P	Printed circuit board (capacitor)	R2	Current sensing device		
C1, C2, C3	Capacitor	R3, R4	Resistor (electric discharge)		
F1UF	use (T, 3.15A, 250V)	R1T	Thermistor (suction air)	Connector optional accessory	
F2UF	use (T, 5A, 250V)	R2T	Thermistor (Liquid)	X28A	Connector (power supply for wiring)
F3UF	use (T, 6.3A, 250V)	R3T	Thermistor (gas)	X35A	Connector (adaptor)
F4UF	use (T, 6.3A, 250V)	R5T	Thermistor NTC (current limiting)	X38A	Connector (for wiring)
HAP	Light emitting diode (service monitor green)	S1L	Float switch		
KPR, K1R	Magnetic relay	V1R	Diode bridge		
L1R	Reactor	V2R	Power module	Wired remote control	
M1F	Motor (fan)	X1M	Terminal strip (power supply)	R1T	Thermistor (air)
M1P	Motor (drain pump)	X2M	Terminal strip (control)	SS1	Selector switch (main/sub)

: Field wiring
: Connector
: Wire clamp
: Protective earth screw

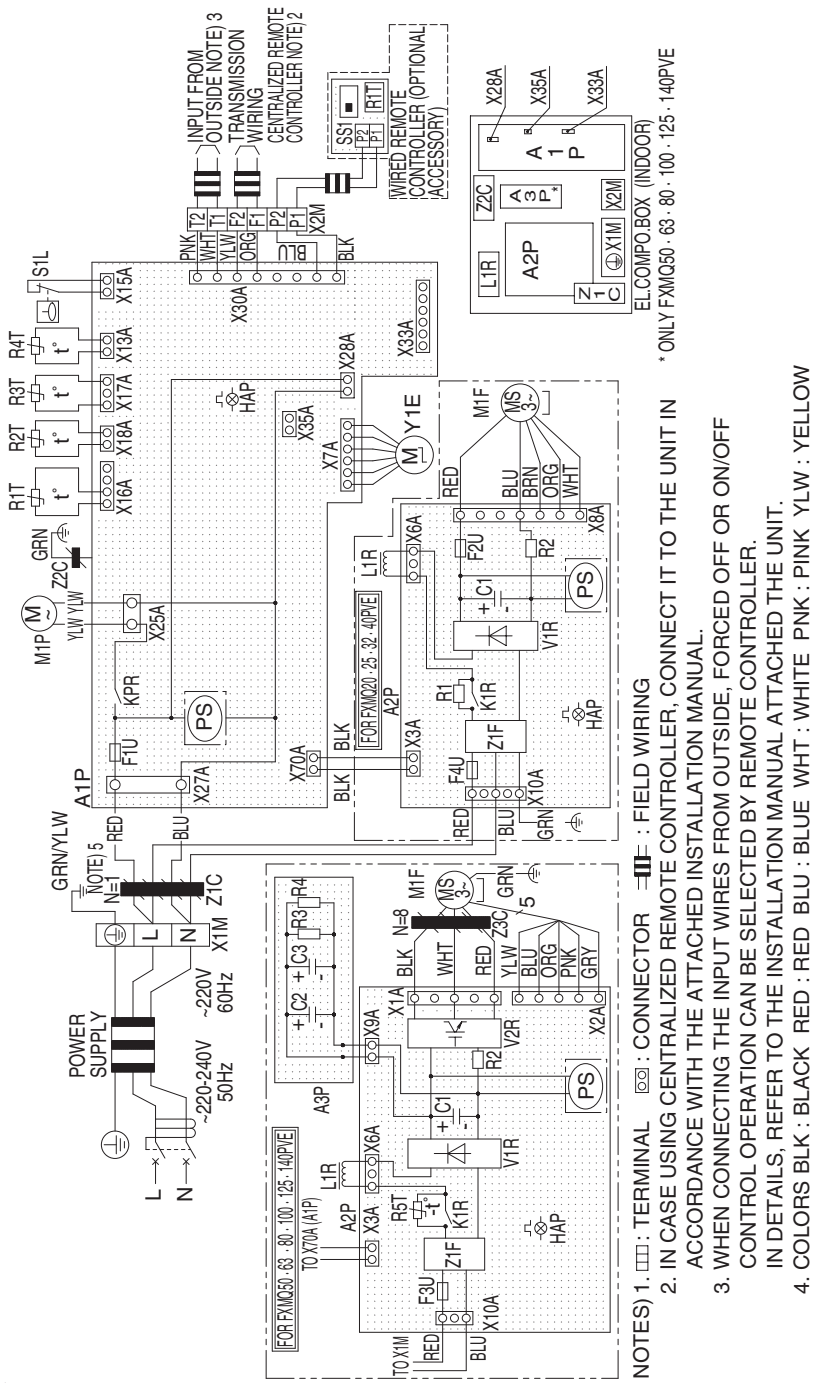
L: Live
N: Neutral

Colors: RED: Red, BLK: Black, WHT: White, YLW: Yellow, ORG: Orange, BRN: Brown, GRY: Gray, BLU: Blue, PNK: Pink, GRN: Green

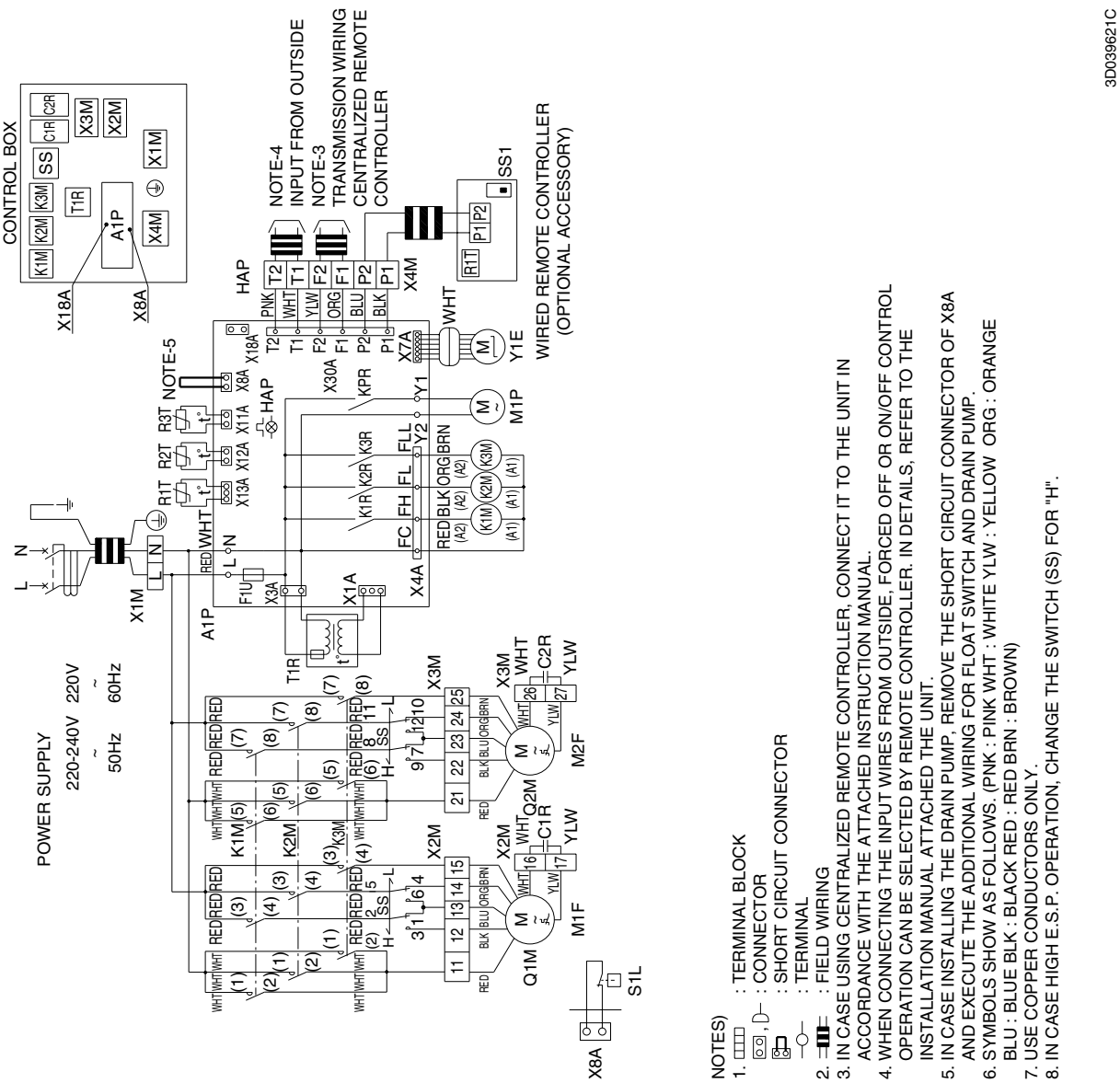
NOTES
1 Use copper conductors only.
2 When using the centralized remote control, see manual for connection to the unit.
3 When connecting the input wires from outside, forced off or on/off operation can be selected by the remote control. See installation manual for more details.

2TW31186-1C

FXMQ20P / 25P / 32P / 40P / 50P / 63P / 80P / 100P / 125P / 140PVE



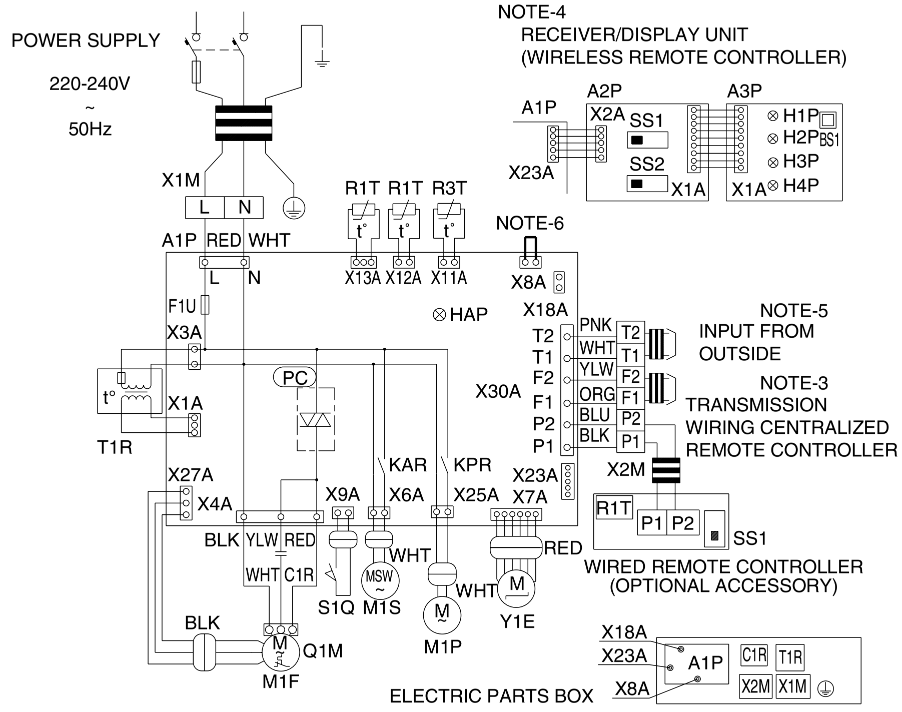
FXMQ200MA / 250MAVE



INDOOR UNIT	
A1P	PRINTED CIRCUIT BOARD
C1R-C2R	CAPACITOR (M1F-2F)
F1U	FUSE (Ⓑ,5A, 250V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)
K1M	MAGNETIC CONTACTOR (M1F-2F)
K2M	MAGNETIC CONTACTOR (M1F-2F)
K3M	MAGNETIC CONTACTOR (M1F-2F)
K1R-K3R	MAGNETIC RELAY (M1F-2F)
KPR	MAGNETIC RELAY (M1P)
M1F-M2F	MOTOR (INDOOR FAN)
Q1M-Q2M	THERMO SWITCH (M1F-2F EMBEDDED)
R1T	THERMISTOR (AIR)
R2T-R3T	THERMISTOR (COIL)
SS	SELECTOR SWITCH (STATIC PRESSURE)
T1R	TRANSFORMER (220-240V/22V)
X1M	TERMINAL BLOCK (POWER)
X2M-X3M	TERMINAL BLOCK
X4M	TERMINAL BLOCK (CONTROL)
Y1E	ELECTRONIC EXPANSION VALVE
OPTIONAL PARTS	
M1P	MOTOR (DRAIN PUMP)
WIRED REMOTE CONTROLLER	
R1T	THERMISTOR (AIR)
SS1	SELECTOR SWITCH (MAIN/SUB)
CONNECTOR FOR OPTIONAL PARTS	
X8A	CONNECTOR (FLOAT SWITCH)
X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTORICAL APPENDICES)

NOTES)
1. : TERMINAL BLOCK
   : CONNECTOR
   : SHORT CIRCUIT 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. IN CASE INSTALLING THE DRAIN PUMP, REMOVE THE SHORT CIRCUIT CONNECTOR OF X8A AND EXECUTE THE ADDITIONAL WIRING FOR FLOAT SWITCH AND DRAIN PUMP.
6. SYMBOLS SHOW AS FOLLOWS. (PNK : PINK WHT : WHITE YLW : YELLOW ORG : ORANGE BLU : BLUE BLK : BLACK RED : RED BRN : BROWN)
7. USE COPPER CONDUCTORS ONLY.
8. IN CASE HIGH E.S.P. OPERATION, CHANGE THE SWITCH (SS) FOR "H".

FXHQ32MA / 63MA / 100MAVE



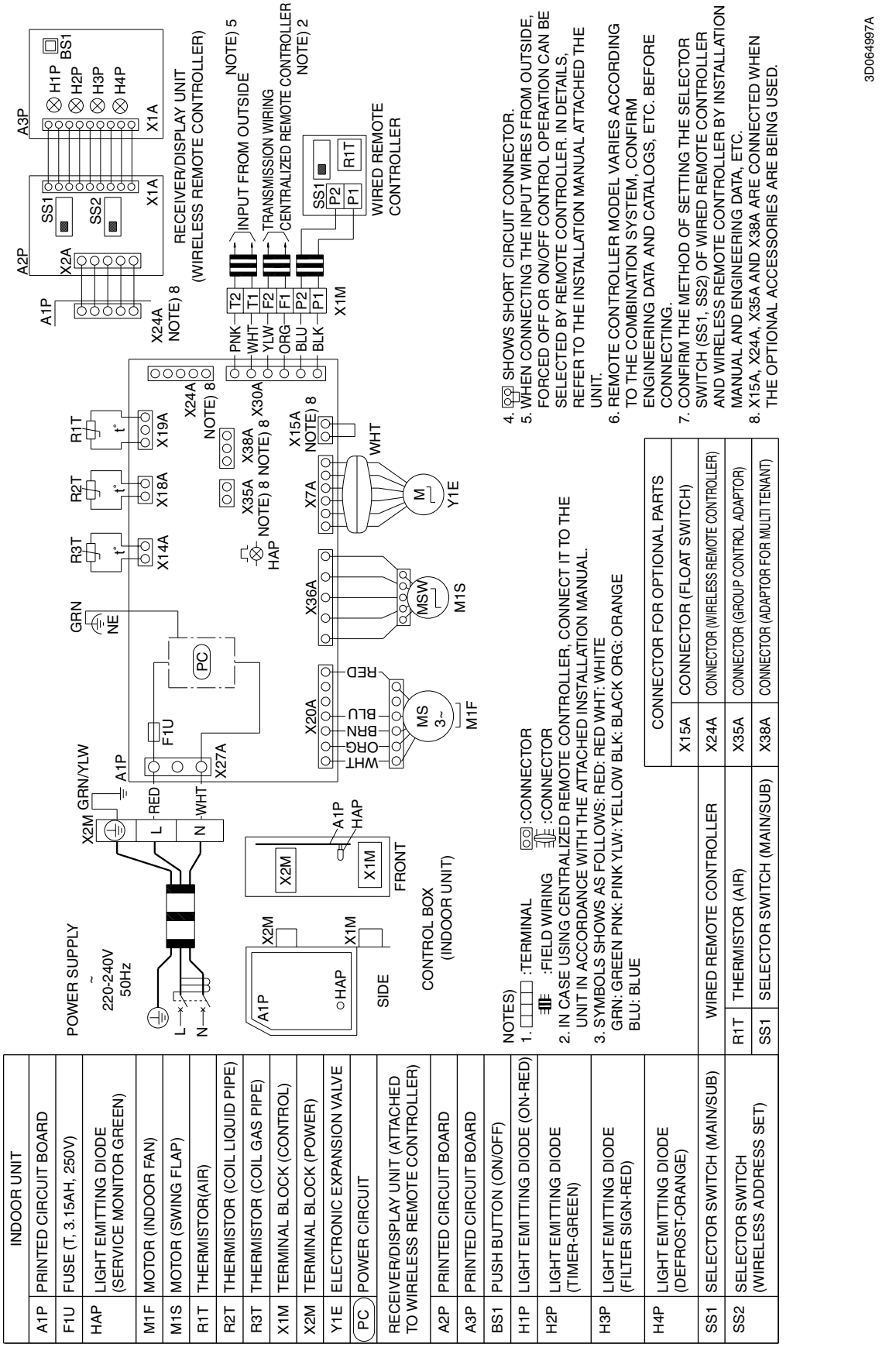
INDOOR UNIT	
A1P	PRINTED CIRCUIT BOARD
C1R	CAPACITOR (M1F)
F1U	FUSE ((B), 5A, 250V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)
KAR	MAGNETIC RELAY (M1S)
KPR	MAGNETIC RELAY (M1P)
M1F	MOTOR (INDOOR FAN)
M1S	MOTOR (SWING FLAP)
Q1M	THERMO. SWITCH (M1F EMBEDDED)
R1T	THERMISTOR (AIR)
R2T	THERMISTOR (COIL LIQUID)
R3T	THERMISTOR (COIL GAS)
S1Q	LIMIT SWITCH (SWING FLAP)
T1R	TRANSFORMER (220-240V/22V)
X1M	TERMINAL BLOCK (POWER)
X2M	TERMINAL BLOCK (CONTROL)
Y1E	ELECTRONIC EXPANSION VALVE
(PC)	PHASE CONTROL CIRCUIT
OPTIONAL PARTS	
M1P	MOTOR (DRAIN PUMP)
WIRED REMOTE CONTROLLER	
R1T	THERMISTOR (AIR)
SS1	SELECTOR SWITCH (MAIN/SUB)
RECEIVER/DISPLAY UNIT(ATTACHED TO WIRELESS REMOTE CONTROLLER)	
A2P	PRINTED CIRCUIT BOARD
A3P	PRINTED CIRCUIT BOARD
BS1	PUSH BUTTON (ON/OFF)
H1P	LIGHT EMITTING DIODE (ON-RED)
H2P	LIGHT EMITTING DIODE (TIMER-GREEN)

H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
SS1	SELECTOR SWITCH (MAIN/SUB)
SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
CONNECTOR FOR OPTIONAL PARTS	
X8A	CONNECTOR (FLOAT SWITCH)
X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRICAL APPENDICES)
X23A	CONNECTOR (WIRELESS REMOTE CONTROLLER)

NOTES)
1. : TERMINAL BLOCK , : CONNECTOR : SHORT CIRCUIT CONNECTOR
2. : FIELD WIRING
3. IN CASE USING CENTRALIZED REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
4. X23A IS CONNECTED WHEN THE WIRELESS REMOTE CONTROLLER KIT IS BEING USED.
5. 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.
6. IN CASE INSTALLING THE DRAIN PUMP, REMOVE THE SHORT CIRCUIT CONNECTOR OF X8A AND EXECUTE THE ADDITIONAL WIRING FOR FLOAT SWITCH AND DRAIN PUMP.
7. SYMBOLS SHOW AS FOLLOWS.
(PNK : PINK WHT : WHITE YLW : YELLOW
ORG : ORANGE BLU : BLUE BLK : BLACK RED : RED)
8. USE COPPER CONDUCTORS ONLY.

3D039801D

FXAQ20P / 25P / 32P / 40P / 50P / 63PV1



INDOOR UNIT		
A1P	PRINTED CIRCUIT BOARD	
F1U	FUSE (T, 3.15AH, 250V)	
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR GREEN)	
M1F	MOTOR (INDOOR FAN)	
M1S	MOTOR (SWING FLAP)	
R1T	THERMISTOR(AIR)	
R2T	THERMISTOR (COIL LIQUID PIPE)	
R3T	THERMISTOR (COIL GAS PIPE)	
X1M	TERMINAL BLOCK (CONTROL)	
X2M	TERMINAL BLOCK (POWER)	
Y1E	ELECTRONIC EXPANSION VALVE	
(PC)	POWER CIRCUIT	
	RECEIVER/DISPLAY UNIT (ATTACHED TO WIRELESS REMOTE CONTROLLER)	
A2P	PRINTED CIRCUIT BOARD	
A3P	PRINTED CIRCUIT BOARD	
BS1	PUSH BUTTON (ON/OFF)	
H1P	LIGHT EMITTING DIODE (ON-RED)	
H2P	LIGHT EMITTING DIODE (TIMER-GREEN)	
H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)	
H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)	
SS1	SELECTOR SWITCH (MAIN/SUB)	
SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)	

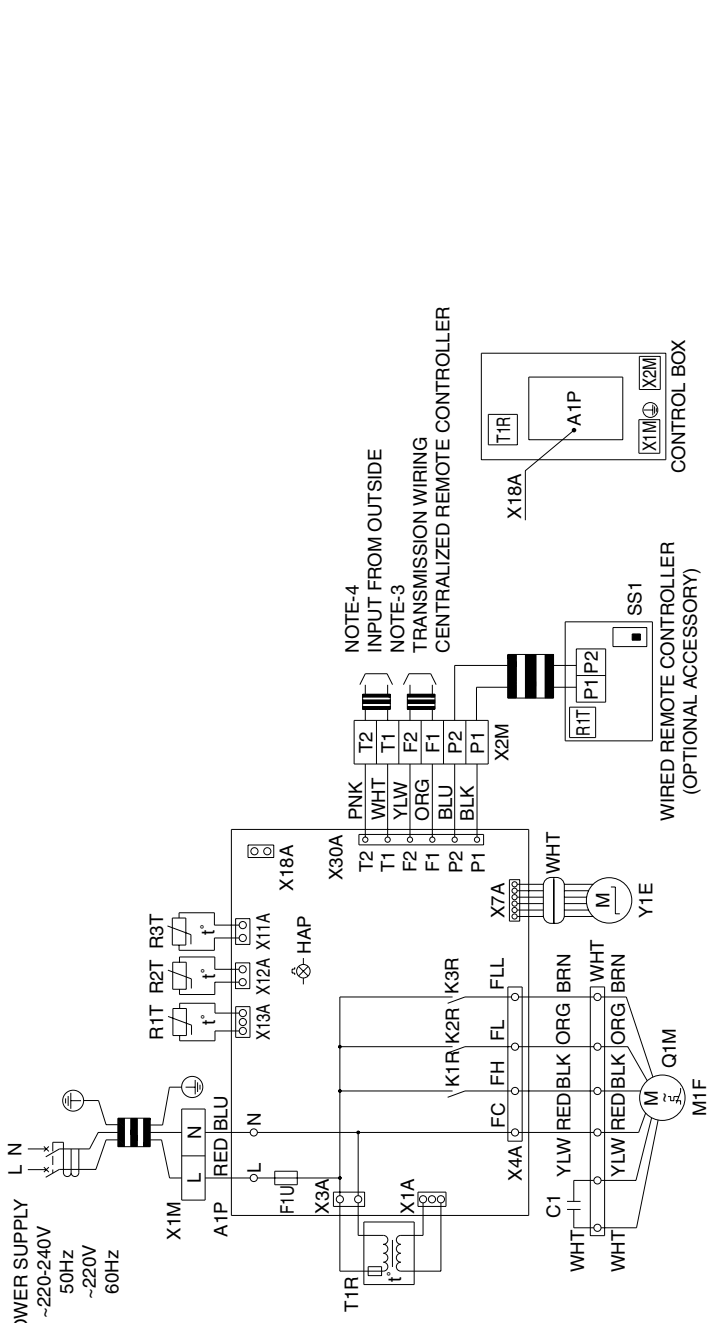
NOTES)
1. □□□ :TERMINAL
:FIELD WIRING
:CONNECTOR
:CONNECTOR
2. IN CASE USING CENTRALIZED REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
3. SYMBOLS SHOWS AS FOLLOWS: RED: RED WHT: WHITE
GRN: GREEN PNK: PINK YLW: YELLOW BLK: BLACK ORG: ORANGE
BLU: BLUE
4. SHOWS SHORT CIRCUIT CONNECTOR.
5. 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.
6. REMOTE CONTROLLER MODEL VARIES ACCORDING TO THE COMBINATION SYSTEM. CONFIRM ENGINEERING DATA AND CATALOGS, ETC. BEFORE CONNECTING.
7. CONFIRM THE METHOD OF SETTING THE SELECTOR SWITCH (SS1, SS2) OF WIRED REMOTE CONTROLLER AND WIRELESS REMOTE CONTROLLER BY INSTALLATION MANUAL AND ENGINEERING DATA, ETC.
8. X15A, X24A, X35A AND X38A ARE CONNECTED WHEN THE OPTIONAL ACCESSORIES ARE BEING USED.

CONNECTOR FOR OPTIONAL PARTS	
X15A	CONNECTOR (FLOAT SWITCH)
X24A	CONNECTOR (WIRELESS REMOTE CONTROLLER)
X35A	CONNECTOR (GROUP CONTROL ADAPTOR)
X38A	CONNECTOR (ADAPTOR FOR MULTI TENANT)

	WIRED REMOTE CONTROLLER	
R1T	THERMISTOR (AIR)	
SS1	SELECTOR SWITCH (MAIN/SUB)	

3D064997A

FXLQ20MA / 25MA / 32MA / 40MA / 50MA / 63MAVE
FXNQ20MA / 25MA / 32MA / 40MA / 50MA / 63MAVE

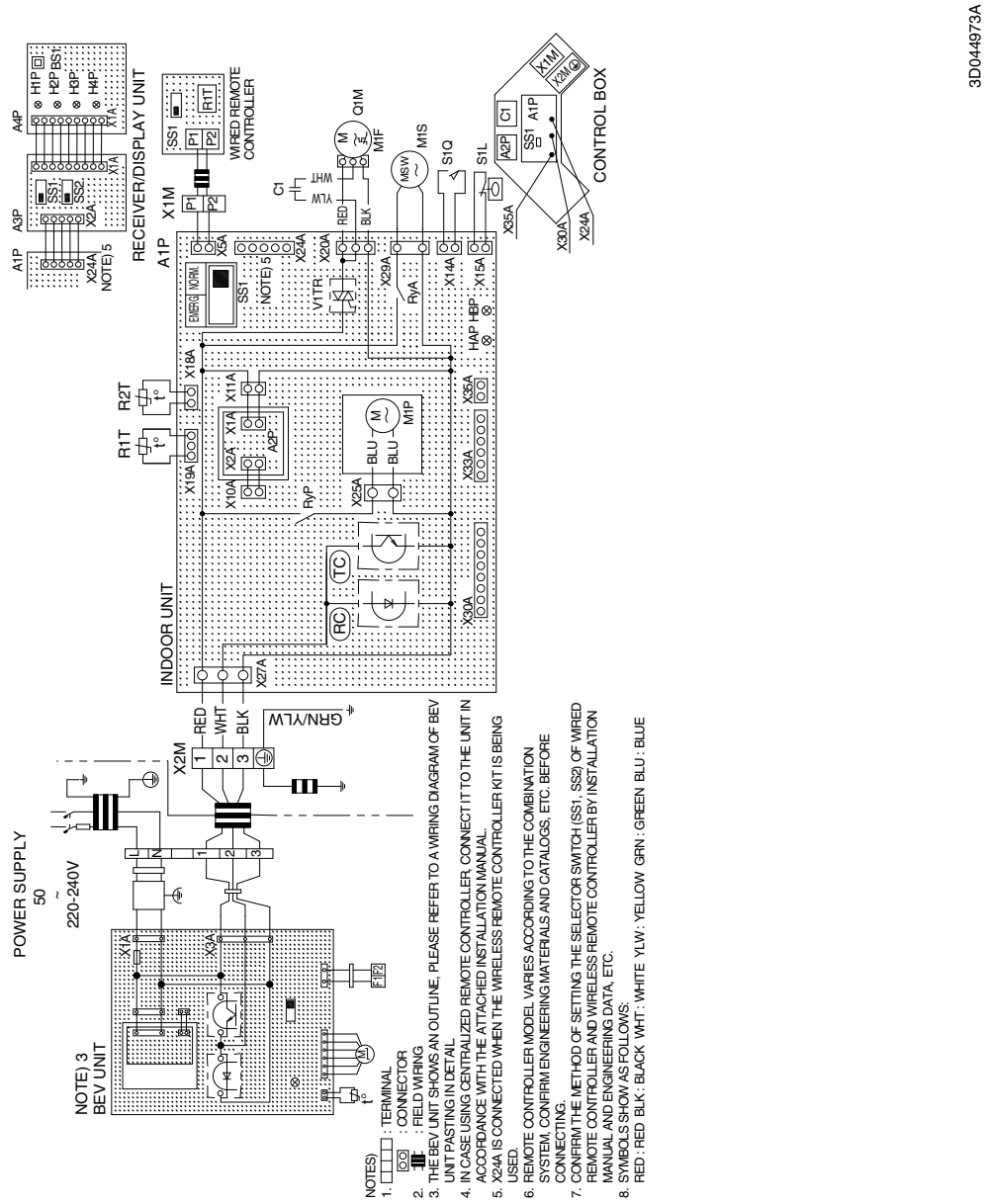


NOTES)
1. □□□ : TERMINAL BLOCK, ○○ , ⊃— : CONNECTOR, —○— : TERMINAL
2. ▬▬ : FIELD WIRING
3. IN CASE USING CENTRALIZED REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTIO MANUAL.
4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN 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.

INDOOR UNIT		X2M	TERMINAL BLOCK (CONTROL)
A1P	PRINTED CIRCUIT BOARD	Y1E	ELECTRONIC EXPANSION VALVE
C1	CAPACITOR (M1F)	WIRED REMOTE CONTROLLER	
F1U	FUSE (Ⓑ,5A, 50V)	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 ELECTORICAL 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)		

3D039826F

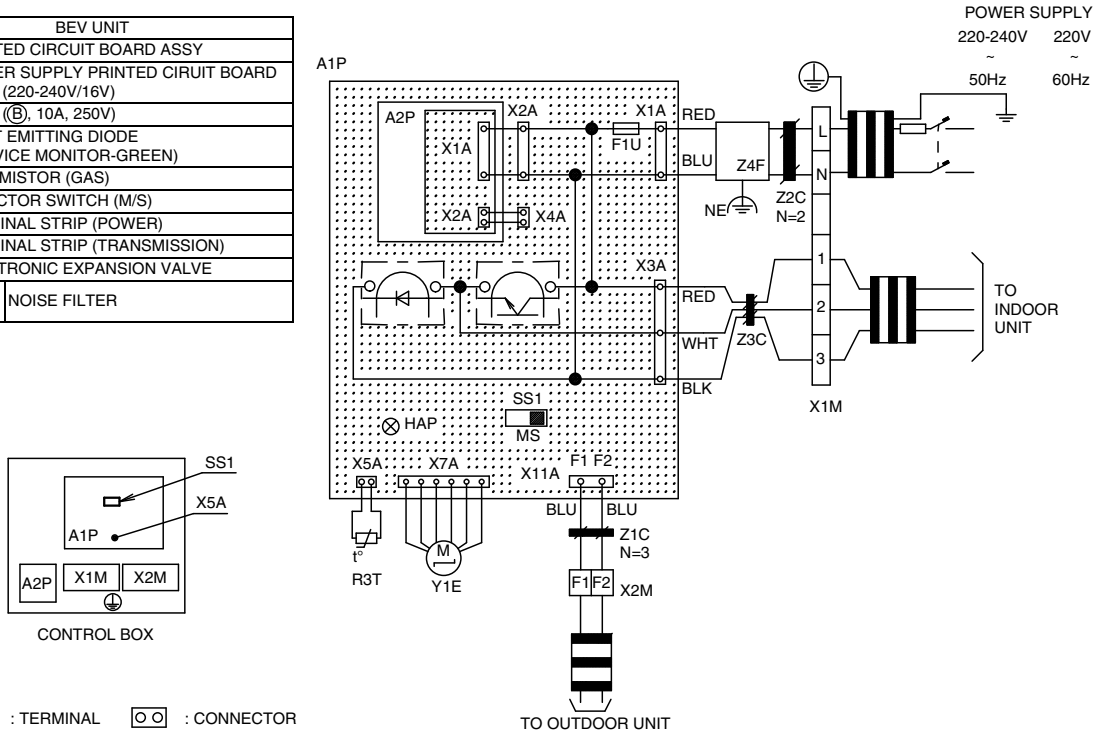
FXUQ71MA / 100MA / 125MAV1



INDOOR UNIT		WIRED REMOTE CONTROLLER		
A1P	PRINTED CIRCUIT BOARD	R1T	THERMISTOR (AIR)	
A2P	PRINTED CIRCUIT BOARD (TRANSFORMER 220~240V/16V)	SS1	SELECTOR SWITCH (MAIN/SUB)	
		RECEIVER/DISPLAY UNIT (ATTACHED TO WIRELESS REMOTE CONTROLLER)		
C1	CAPACITOR (M1F)	A3P	PRINTED CIRCUIT BOARD	
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR GREEN)	A4P	PRINTED CIRCUIT BOARD	
HBP	LIGHT EMITTING DIODE (SERVICE MONITOR GREEN)	BS1	PUSH BUTTON (ON/OFF)	
M1S	MOTOR (SWING FLAP)	H1P	LIGHT EMITTING DIODE (ON-RED)	
M1F	MOTOR (INDOOR FAN)	H2P	LIGHT EMITTING DIODE (TIMER-GREEN)	
M1P	MOTOR (DRAIN PUMP)			
Q1M	THERMO SWITCH (M1F EMBEDDED)	H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)	
R1T	THERMISTOR (AIR)			
R2T	THERMISTOR (COIL)	H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)	
RyA	MAGNETIC RELAY (M1A)			
RyP	MAGNETIC RELAY (M1P)	SS1	SELECTOR SWITCH (MAIN/SUB)	
S1Q	LIMIT SWITCH (SWING FLAP)	SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)	
S1L	FLOAT SWITCH			
SS1	SELECTOR SWITCH (EMERGENCY)	CONNECTOR FOR OPTIONAL PARTS		
V1TR	PHASE CONTROL CIRUIT	X24A	CONNECTOR (WIRELESS REMOTE CONTROLLER)	
X1M	TERMINAL STRIP	X30A	CONNECTOR (INTERFACE ADAPTOR FOR SKY AIR SERIES	
X2M	TERMINAL STRIP			
RC	SIGNAL RECEIVER	X35A	CONNECTOR (GROUP CONTROL ADAPTOR)	
TC	SIGNAL TRANSMISSION CIRCUIT			

BEVQ71MA / 100MA / 125MAVE

BEV UNIT	
A1P	PRINTED CIRCUIT BOARD ASSY
A2P	POWER SUPPLY PRINTED CIRUIT BOARD ASSY (220-240V/16V)
F1U	FUSE (Ⓑ, 10A, 250V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)
R3T	THERMISTOR (GAS)
SS1	SELECTOR SWITCH (M/S)
X1M	TERMINAL STRIP (POWER)
X2M	TERMINAL STRIP (TRANSMISSION)
Y1E	ELECTRONIC EXPANSION VALVE
Z1C • Z2C Z3C • Z4F	NOISE FILTER

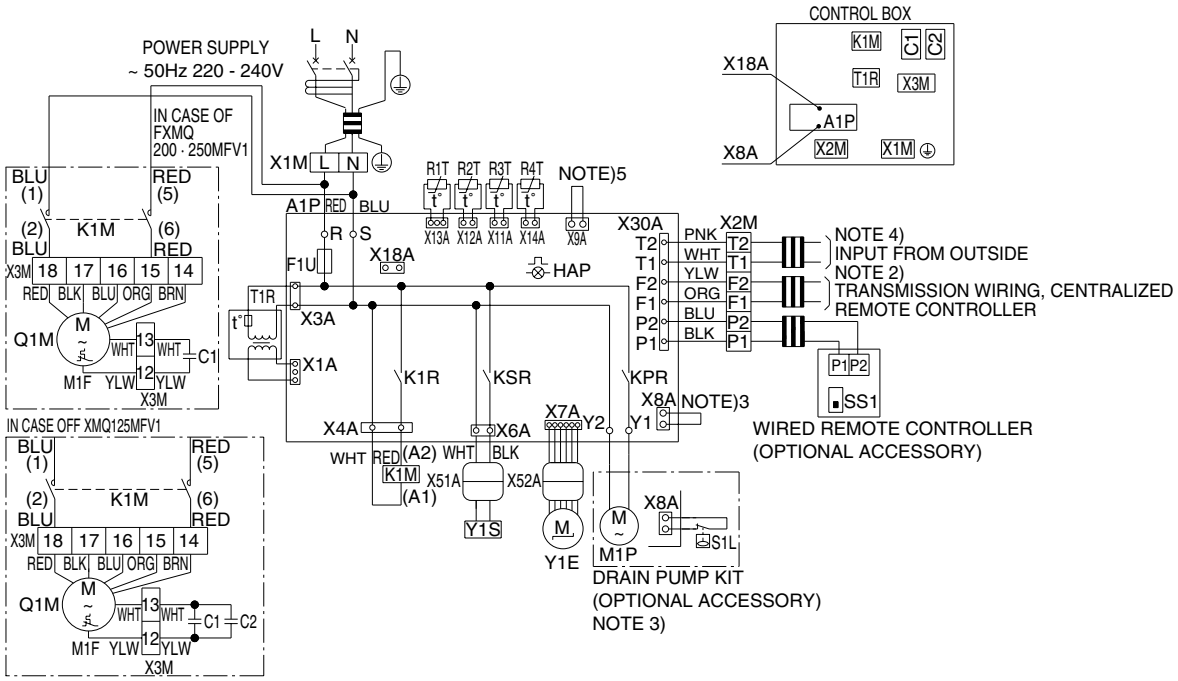


NOTES)

1. ▭▭▭ : TERMINAL ▭○○ : CONNECTOR
2. ═▮▮═ : FIELD WIRING
3. THIS WIRING DIAGRAM ONLY SHOWS THE BEV UNIT.
   SEE THE WIRING DIAGRAMS AND INSTALLATION MANUALS FOR THE WIRING AND SETTINGS FOR THE INDOOR, OUTDOOR, AND BS UNITS.
4. SEE THE INDOOR UNIT'S WIRING DIAGRAM WHEN INSTALLING OPTIONAL PARTS FOR THE INDOOR UNIT.
5. ONLY ONE INDOOR UNIT MAY BE CONNECTED TO THE BEV UNIT.
   SEE THE INDOOR UNIT'S WIRING DIAGRAM FOR WHEN CONNECTING THE REMOTE CONTROL.
6. ALWAYS USE THE SKY AIR CONNECTION ADAPTER FOR THE INDOOR UNIT WHEN USING A CENTRAL CONTROL UNIT.
   REFER TO THE MANUAL ATTACHED THE UNIT WHEN CONNECTING.
7. COOL/HEAT CHANGEOVER OF INDOOR UNITS CONNECTED TO BEV UNIT CANNOT BE CARRIED OUT UNLESS THEY ARE CONNECTED TO BS UNIT.
   IN CASE OF A SYSTEM WITH BEV UNIT ONLY, COOL/HEAT SELECTOR IS REQUIRED.
8. SET THE SS1 TO "M" ONLY FOR THE BEV UNIT CONNECTED TO THE INDOOR UNIT WHICH IS TO HAVE COOL/HEAT SWITCHING CAPABILITY, WHEN CONNECTING THE BS UNIT.
   THE "M/S" ON THE SS1 STANDS FOR "MAIN/SUB".
   THIS IS SET TO "S" WHEN SHIPPED FROM THE FACTORY.
9. CONNECT THE ATTACHED THERMISTOR TO THE R3T.
10. SYMBOLS SHOW AS FOLLOWS.
    (BLU : BLUE RED : RED WHT : WHITE BLK : BLACK)

3D044901B

FXMQ125MF / 200MF / 250MFV1



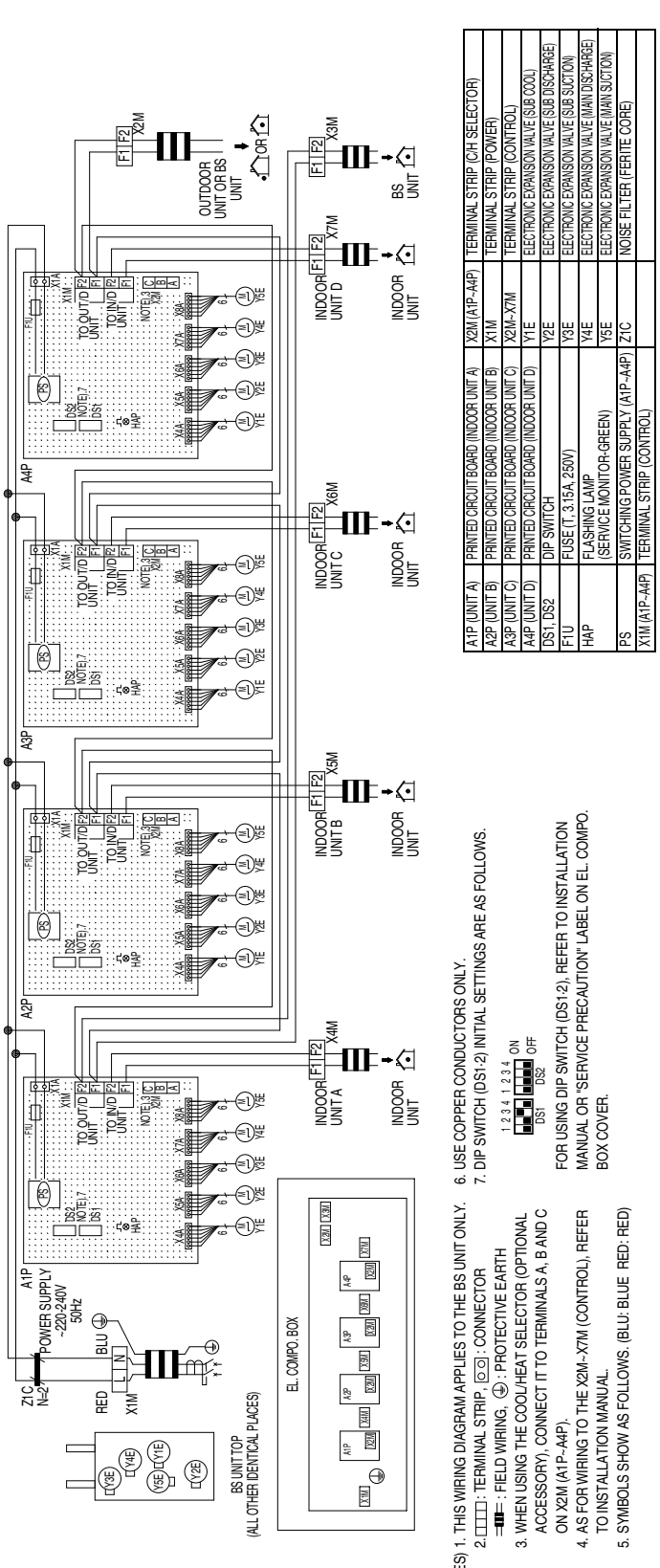
INDOOR UNIT		X1M	TERMINAL BLOCK (POWER)
A1P	PRINTED CIRCUIT BOARD	X2M	TERMINAL BLOCK (CONTROL)
C1, C2	CAPACITOR (M1F)	X3M	TERMINAL BLOCK
F1U	FUSE (Ⓑ,5A,250V) (A1P)	X51A, X52A	CONNECTOR
HAP	LIGHT EMMITING DIODE	Y1E	ELECTRIC EXPANSION VALVE
	(SERVICE MONITOR-GREEN)	Y1S	SOLENOID VALVE (HOT GAS)
K1M	MAGNETIC RELAY (M1F)		
K1R	MAGNETIC RELAY (M1F)	OPTIONAL PARTS	
KPR	MAGNETIC RELAY (M1P)	M1P	MOTOR (DRAIN PUMP)
KSR	MAGNETIC RELAY (Y1S)	S1L	FLOAT SWITCH (DRAIN PUMP)
M1F	MOTOR (FAN)		
Q1M	THERMAL PROTECTOR	WIRED REMOTE CONTROLLER	
	(M1F EMBEDDED 135˚C)	SS1	SELECT SWITCH (MAIN/SUB)
R1T	THERMISTOR (SUCTION AIR)		
R2T	THERMISTOR (COIL, LIQUID)	CONNECTOR FOR OPTIONAL PARTS	
R3T	THERMISTOR (COIL, GAS)	X18A	CONNECTOR (WIRING ADAPTOR
R4T	THERMISTOR (DISCHARGE AIR)		FOR ELECTRICAL APPENDICES)
T1R	TRANSFORMAR (220-240V/22V)		

NOTES)
1. ▭:TERMINAL BLOCK, ⊙⊙, ⊃⊢:CONNECTOR, —○—:TERMINAL.
   ⊡:SHORT CIRCUIT CONNECTOR, ▮▮▮:FIELD WIRING.
2. IN CASE USING CENTRALIZED REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
3. IN CASE INSTALLING THE DRAIN PUMP KIT, REMOVE THE SHORT CIRCUIT CONNECTOR OF X8A AND EXECUTE THE ADDITIONAL WIRING FOR FLOAT SWITCH AND DRAIN PUMP.
4. IN CASE 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 TO THE UNIT.
5. DO NOT REMOVE SHORT CIRCUIT CONNECTOR OF X9A.
6. SYMBOLS SHOW AS FOLLOWS. (PNK : PINK WHT : WHITE YLW : YELLOW ORG : ORANGE BLU : BLUE BLK : BLACK RED : RED BRN : BROWN)

C: 3D044996D

2.4 BS Unit

BSV4Q100PV1

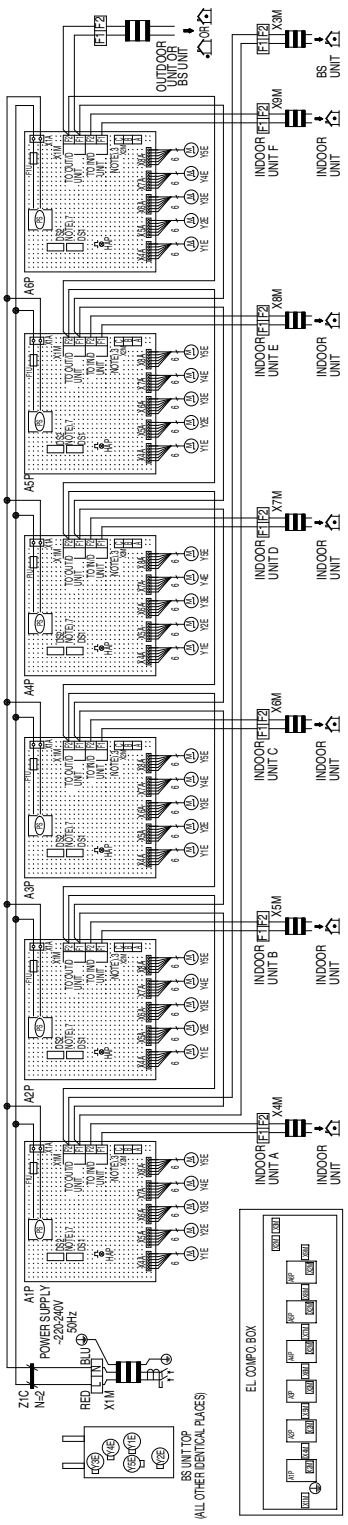


A1P (UNIT A)	PRINTED CIRCUIT BOARD (INDOOR UNIT A)	X2M (A1P-A4P)	TERMINAL STRIP (C/H SELECTOR)
A2P (UNIT B)	PRINTED CIRCUIT BOARD (INDOOR UNIT B)	X1M	TERMINAL STRIP (POWER)
A3P (UNIT C)	PRINTED CIRCUIT BOARD (INDOOR UNIT C)	X2M-X7M	TERMINAL STRIP (CONTROL)
A4P (UNIT D)	PRINTED CIRCUIT BOARD (INDOOR UNIT D)	Y1E	ELECTRONIC EXPANSION VALVE (SUB COOL)
DS1, DS2	DIP SWITCH	Y2E	ELECTRONIC EXPANSION VALVE (SUB DISCHARGE)
F1U	FUSE (T, 3.15A, 250V)	Y3E	ELECTRONIC EXPANSION VALVE (SUB SUCTION)
HAP	FLASHING LAMP (SERVICE MONITOR-GREEN)	Y4E	ELECTRONIC EXPANSION VALVE (MAIN DISCHARGE)
		Y5E	ELECTRONIC EXPANSION VALVE (MAIN SUCTION)
PS	SWITCHING POWER SUPPLY (A1P-A4P)	Z1C	NOISE FILTER (FERITE CORE)
X1M (A1P-A4P)	TERMINAL STRIP (CONTROL)		

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~A4P).
4. AS FOR WIRING TO THE X2M~X7M (CONTROL), REFER TO INSTALLATION MANUAL.
5. SYMBOLS SHOW AS FOLLOWS. (BLU: BLUE RED: RED)
6. USE COPPER CONDUCTORS ONLY.
7. DIP SWITCH (DS1-2) INITIAL SETTINGS ARE AS FOLLOWS.

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

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~A4P).
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	ELECTRONIC EXPANSION VALVE (SUB COOL)
A1P (UNIT F)	PRINTED CIRCUIT BOARD (INDOOR UNIT F)	Y2E	ELECTRONIC EXPANSION VALVE (SUB DISCHARGE)
DS1, DS2	DIP SWITCH	Y3E	ELECTRONIC EXPANSION VALVE (SUB SUCTION)
F1U	FUSE (T, 3.15A, 250V)	Y4E	ELECTRONIC EXPANSION VALVE (MAIN DISCHARGE)
HAP	FLASHING LAMP (SERVICE MONITOR-GREEN)	Y5E	ELECTRONIC EXPANSION VALVE (MAIN SUCTION)
		Z1C	NOISE FILTER (FERITE CORE)
PS	SWITCHING POWER SUPPLY (A1P~A6P)		

3D063929B

3. List of Electrical and Functional Parts

3.1 Outdoor Unit

3.1.1 RTSQ8PY1

Item	Name		Symbol	Model	
				RTSQ8PY1	
Compressor	Inverter	Type	M1C	JT1GEDKYR@SB	
		OC protection device		14.7A	
	STD 1	Type	M2C	—	
		OC protection device		—	
	STD 2	Type	M3C	—	
		OC protection device		—	
Fan motor		OC protection device	M1F	3.0A	
Electronic expansion valve (Main)			Y1E	Fully closed : 0pls	Fully open : 480pls
Electronic expansion valve (Refrigerant charge)			Y2E	Fully closed : 0pls	Fully open : 480pls
Electronic expansion valve (Subcooling)			Y3E	Fully closed : 0pls	Fully open : 480pls
Pressure protection	High pressure switch	For M1C	S1PH	OFF : $4.0^{+0}_{-0.12}$ MPa	ON : 3.0±0.15MPa
		For M2C	S2PH	—	
		For M3C	S3PH	—	
	Low pressure sensor		S1NPL	OFF : 0.07MPa	
Temperature protection	Discharge gas temperature protection (Discharge pipe thermistor)		R31T	OFF : 135°C	
	Inverter fin temperature protection (Radiator fin thermistor)		R1T	OFF : 93°C	
Others	Fuse	For main PCB	F1U	Time-lag 3.15A AC 250V / 250V AC 10A Class B	
			F2U	Time-lag 3.15A AC 250V / 250V AC 10A Class B	
		For Noise filter PCB	F1U	250V AC 5A Class B	

3.1.2 RTSQ10PY1, 12PY1

Item	Name		Symbol	Model	
				RTSQ10PY1	RTSQ12PY1
Compressor	Inverter	Type	M1C	JT1GEDKYR@SB	
		OC protection device		14.7A	
	STD 1	Type	M2C	JT170GEKYE@SB	
		OC protection device		15.0A	
	STD 2	Type	M3C	—	
		OC protection device		—	
Fan motor		OC protection device	M1F	3.0A	
Electronic expansion valve (Main)			Y1E	Fully closed : 0pls	Fully open : 480pls
Electronic expansion valve (Refrigerant charge)			Y2E	Fully closed : 0pls	Fully open : 480pls
Electronic expansion valve (Subcooling)			Y3E	Fully closed : 0pls	Fully open : 480pls
Pressure protection	High pressure switch	For M1C	S1PH	OFF : $4.0^{+0}_{-0.12}$ MPa	ON : 3.0±0.15MPa
		For M2C	S2PH	OFF : $4.0^{+0}_{-0.12}$ MPa	ON : 3.0±0.15MPa
		For M3C	S3PH	—	
	Low pressure sensor		S1NPL	OFF : 0.07MPa	
Temperature protection	Discharge gas temperature protection (Discharge pipe thermistor)		R31T	OFF : 135°C	
	Inverter fin temperature protection (Radiator fin thermistor)		R1T	OFF : 93°C	
Others	Fuse	For main PCB	F1U	Time-lag 3.15A AC 250V / 250V AC 10A Class B	
			F2U	Time-lag 3.15A AC 250V / 250V AC 10A Class B	
		For Noise filter PCB	F1U	250V AC 5A Class B	

3.1.3 RTSQ14PY1, 16PY1

Item	Name		Symbol	Model	
				RTSQ14PY1	RTSQ16PY1
Compressor	Inverter	Type	M1C	JT1GEDKYR@SB	
		OC protection device		14.7A	
	STD 1	Type	M2C	JT170GEKYE@SB	
		OC protection device		15.0A	
	STD 2	Type	M3C	JT170GEKYE@SB	
		OC protection device		15.0A	
Fan motor		OC protection device	M1F, M2F	1.2A	
Electronic expansion valve (Main)			Y1E	Fully closed : 0pls	Fully open : 480pls
Electronic expansion valve (Refrigerant charge)			Y2E	Fully closed : 0pls	Fully open : 480pls
Electronic expansion valve (Subcooling)			Y3E	Fully closed : 0pls	Fully open : 480pls
Pressure protection	High pressure switch	For M1C	S1PH	OFF : $4.0^{+0}_{-0.12}$ MPa	ON : 3.0±0.15MPa
		For M2C	S2PH	OFF : $4.0^{+0}_{-0.12}$ MPa	ON : 3.0±0.15MPa
		For M3C	S3PH	OFF : $4.0^{+0}_{-0.12}$ MPa	ON : 3.0±0.15MPa
	Low pressure sensor		S1NPL	OFF : 0.07MPa	
Temperature protection	Discharge gas temperature protection (Discharge pipe thermistor)		R3T	OFF : 135°C	
	Inverter fin temperature protection (Radiator fin thermistor)		R1T	OFF : 93°C	
Others	Fuse	For main PCB	F1U	Time-lag 3.15A AC 250V / 250V AC 10A Class B	
			F2U	Time-lag 3.15A AC 250V / 250V AC 10A Class B	
		For Noise filter PCB	F1U	250V AC 5A Class B	

3.1.4 BTSQ20PY1

Item	Name		Symbol	Model	
				BTSQ20PY1	
Compressor	Inverter	Type	M1C	JT1GEDKYR@SB	
		OC protection device		14.7A	
	STD 1	Type	M2C	—	
		OC protection device		—	
	STD 2	Type	M3C	—	
		OC protection device		—	
Fan motor		OC protection device	M1F	—	
Electronic expansion valve (Liquid injection)			Y1E	Fully closed : 0pls	Fully open : 480pls
Electronic expansion valve (2 stage selection-1)			Y2E1	Fully closed : 0pls	Fully open : 480pls
Electronic expansion valve (2 stage selection-2)			Y2E2	Fully closed : 0pls	Fully open : 480pls
Pressure protection	High pressure switch	For M1C	S1PH	OFF : $4.0^{+0}_{-0.12}$ MPa	ON : 3.0±0.15MPa
		For M2C	S2PH	—	
		For M3C	S3PH	—	
	Low pressure sensor		S1NPL	—	
Temperature protection	Discharge gas temperature protection (Discharge pipe thermistor)		R3T	OFF : 135°C	
	Inverter fin temperature protection (Radiator fin thermistor)		R1T	—	
Others	Fuse	For main PCB	F1U	Time-lag 3.15A AC 250V / 250V AC 10A Class B	
			F2U	Time-lag 3.15A AC 250V / 250V AC 10A Class B	
		For Noise filter PCB	F1U	250V AC 5A Class B	

3.2 Indoor Unit

3.2.1 Indoor Unit

Parts Name		Symbol	Model								Remark
			FXFQ25 PVE	FXFQ32 PVE	FXFQ40 PVE	FXFQ50 PVE	FXFQ63 PVE	FXFQ80 PVE	FXFQ100 PVE	FXFQ125 PVE	
Remote Controller	Wired Remote Controller		BRC1E51								Option
	Wireless Remote Controller		BRC7F634F								
Motors	Fan Motor	M1F	DC280V 56W 8P						DC 320V 120W 8P		
	Drain Pump	M1P	AC220-240V (50Hz) PLD-12230DM Thermal Fuse 145°C								
	Swing Motor	M1S	MP35HCA[3P080801-1] Stepping Motor DC12V								
Thermistors	Thermistor (Suction Air)	R1T	In PCB A2P or wired remote controller								
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-14 ϕ8 L1000 20kΩ (25°C)								
	Thermistor (Heat Exchanger)	R2T	ST8602A-15 ϕ6 L1000 20kΩ (25°C)								
Others	Float Switch	S1L	FS-0211B								
	Fuse	F1U	250V 5A ϕ5.2								
	Thermal Fuse	TFu	—								
	Transformer	T1R	—								

Parts Name		Symbol	Model								Remark
			FXCQ 20MVE	FXCQ 25MVE	FXCQ 32MVE	FXCQ 40MVE	FXCQ 50MVE	FXCQ 63MVE	FXCQ 80MVE	FXCQ 125MVE	
Remote Controller	Wired Remote Controller		BRC1E51								Option
	Wireless Remote Controller		BRC7C62								
Motors	Fan Motor	M1F	AC 220~240V 50Hz								
			1ϕ10W	1ϕ15W		1ϕ20W		1ϕ30W	1ϕ50W	1ϕ85W	
			Thermal Fuse 152°C				—	Thermal protector 135°C : OFF 87°C : ON			
	Drain Pump	M1P	AC220-240V (50Hz) PLD-12230DM Thermal Fuse 145°C								
	Swing Motor	M1S	MT8-L[3PA07509-1] AC200~240V								
Thermistors	Thermistor (Suction Air)	R1T	ST8601-6 ϕ4 L1250 20kΩ (25°C)								
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-6 ϕ8 L1250 20kΩ (25°C)								
	Thermistor (Heat Exchanger)	R2T	ST8602A-5 ϕ6 L1000 20kΩ (25°C)								
Others	Float Switch	S1L	FS-0211B								
	Fuse	F1U	250V 5A ϕ5.2								
	Transformer	T1R	TR22H21R8								

Parts Name		Symbol	Model					Remark
			FXZQ 20MV1	FXZQ 25MV1	FXZQ 32MV1	FXZQ 40MV1	FXZQ 50MV1	
Remote Controller	Wired Remote Controller		BRC1E51					Option
	Wireless Remote Controller		BRC7E530					
Motors	Fan Motor	M1F	AC 220~240V 50Hz					
			1φ55W 4P					
			Thermal Fuse OFF : $130^{\pm5}$ / ON : $80^{\pm20}$					
	Capacitor, fan motor	C1	4.0μ F 400VAC					
	Drain Pump	M1P	AC220-240V (50Hz) PLD-12230DM Thermal Fuse 145°C					
	Swing Motor	M1S	MP35HCA [3P080801-1] AC200~240V					
Thermistors	Thermistor (Suction Air)	R1T	ST8601A-1 φ4 L250 20kΩ (25°C)					
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-3 φ8 L630 20kΩ (25°C)					
	Thermistor (Heat Exchanger)	R2T	ST8602A-3 φ6 L630 20kΩ (25°C)					
Others	Float Switch	S1L	FS-0211					
	Fuse	F1U	250V 5A φ5.2					
	Transformer	T1R	TR22H21R8					

Parts Name		Symbol	Model				Remark
			FXKQ 25MAVE	FXKQ 32MAVE	FXKQ 40MAVE	FXKQ 63MAVE	
Remote Controller	Wired Remote Controller		BRC1E51				Option
	Wireless Remote Controller		BRC4C61				
Motors	Fan Motor	M1F	AC 220~240V 50Hz				
			1φ15W 4P		1φ20W 4P	1φ45W 4P	
			Thermal Fuse 146°C		Thermal protector 120°C : OFF 105°C : ON		
	Drain Pump	M1P	AC 220-240V (50Hz) PLD-12200DM Thermal Fuse 145°C				
	Swing Motor	M1S	MP35HCA [3P080801-1] AC200~240V				
Thermistors	Thermistor (Suction Air)	R1T	ST8601-13 φ4 L630 20kΩ (25°C)				
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-7 φ8 L1600 20kΩ (25°C)				
	Thermistor (Heat Exchanger)	R2T	ST8602A-7 φ6 L1600 20kΩ (25°C)				
Others	Float Switch	S1L	FS-0211B				
	Fuse	F1U	250V 5A φ5.2				
	Transformer	T1R	TR22H21R8				

Parts Name		Symbol	Model						Remark
			FXDQ 20PBVE	FXDQ 25PBVE	FXDQ 32PBVE	FXDQ 40NBVE	FXDQ 50NBVE	FXDQ 63NBVE	
Remote Controller	Wired Remote Controller		BRC1E51						Option
	Wireless Remote Controller		BRC4C65						
Motors	Fan Motor	M1F	AC 220~240V 50Hz						
			1φ62W				1φ130W		
			Thermal protector 130°C: OFF, 83°C: ON						
	Drain Pump	M1P	AC220-240V (50Hz) PLD-12230DM Thermal Fuse 145°C						
Thermistors	Thermistor (Suction Air)	R1T	ST8601-1 φ4 L=250 20kΩ (25°C)						
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-4 φ8 L=800 20kΩ (25°C)						
	Thermistor (Heat Exchanger)	R2T	ST8602A-4 φ6 L=800 20kΩ (25°C)						
Others	Float Switch	S1L	FS-0211E						
	Fuse	F1U	250V 5A φ5.2						
	Transformer	T1R	TR22H21R8						

Parts Name		Symbol	Model								Remark
			FXSQ 20MVE	FXSQ 25MVE	FXSQ 32MVE	FXSQ 40MVE	FXSQ 50MVE	FXSQ 63MVE	FXSQ 80MVE	FXSQ 100MVE	FXSQ 125MVE	
Remote Controller	Wired Remote Controller		BRC1E51									Option
	Wireless Remote Controller		BRC4C62									
Motors	Fan Motor	M1F	AC 220~240V 50Hz									
			1φ50W			1φ65W	1φ85W	1φ125W	1φ225W			
			Thermal Fuse 152°C						Thermal protector 135°C : OFF 87°C : ON			
	Drain Pump	M1P	AC220-240V (50Hz) PLD-12230DM Thermal Fuse 145°C									
Thermistors	Thermistor (Suction Air)	R1T	ST8601-4 φ4 L800 20kΩ (25°C)									
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-7 φ8 L1600 20kΩ (25°C)									
	Thermistor (Heat Exchanger)	R2T	ST8602A-6 φ6 L1250 20kΩ (25°C)									
Others	Float Switch	S1L	FS-0211B									
	Fuse	F1U	250V 5A φ5.2									
	Transformer	T1R	TR22H21R8									

Parts Name		Symbol	Model										Remark
			FXMQ 20PVE	FXMQ 25PVE	FXMQ 32PVE	FXMQ 40PVE	FXMQ 50PVE	FXMQ 63PVE	FXMQ 80PVE	FXMQ 100PVE	FXMQ 125PVE	FXMQ 140PVE	
Remote Controller	Wired Remote Controller		BRC1E51										
	Wireless Remote Controller		BRC4C65										
Motors	Fan Motor	M1F	DC280V 140W 8P							DC373V 350W 8P			
	Drain Pump	M1P	AC220-240V (50Hz) PLD-12230DM Thermal protector 145°C										
Thermistors	Thermistor (Suction Air)	R1T	ST8601-3 ϕ L630 20kΩ (25°C)										
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-14 ϕ8 L1000 20kΩ (25°C)										
	Thermistor (for Heat Exchanger)	R2T	ST8602A-6 ϕ8 L1250 20kΩ (25°C)										
Others	Float Switch	S1L	FS-0211B										
	Fuse (A1P)	F1U	250V 3.15A										
	Fuse (A2P, A3P)	F3U· F4U	250V 6.3A										
	Fuse (A2P)	F2U	250V 5A				—						

Parts Name		Symbol	Model		Remark
			FXMQ200MAVE	FXMQ250MAVE	
Remote Controller	Wired Remote Controller		BRC1E51		Option
	Wireless Remote Controller		BRC4C62		
Motors	Fan Motor	M1F	AC 220~240V 50Hz		
			1ϕ380W×2		
	Capacitor for Fan Motor	C1R	10μ F 400V	12μ F 400V	
Thermistors	Thermistor (Suction Air)	R1T	ST8601A-13 ϕ4 L630		
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605A-5 ϕ8 L1000		
	Thermistor (Heat Exchanger)	R2T	ST8602A-6 ϕ6 L1250		
Others	Float switch	S1L	FS-0211		
	Fuse	F1U	250V 5A ϕ5.2		
	Transformer	T1R	TR22H21R8		

Parts Name		Symbol	Model			Remark
			FXHQ 32MAVE	FXHQ 63MAVE	FXHQ 100MAVE	
Remote Controller	Wired Remote Controller		BRC1E51			Option
	Wireless Controller		BRC7E63W			
Motors	Fan Motor	M1F	AC 220~240V 50Hz			
			1ϕ63W		1ϕ130W	
			Thermal protector 130°C : OFF 80°C : ON			
	Capacitor for Fan Motor	C1R	3.0μF-400V		9.0μF-400V	
	Swing Motor	M1S	MT8-L[3P058751-1] AC200~240V			
Thermistors	Thermistor (Suction Air)	R1T	ST8601A-1 ϕ4 L250 20kΩ (25°C)			
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-6 ϕ8 L = 1250 20kΩ (25°C)		ST8605-6 ϕ8 L = 1250 20kΩ (25°C)	
	Thermistor (Heat Exchanger)	R2T	ST8602A-6 ϕ6 L = 1250 20kΩ (25°C)		ST8602A-6 ϕ6 L = 1250 20kΩ (25°C)	
Others	Fuse	F1U	250V 5A ϕ5.2			
	Transformer	T1R	TR22H21R8			

Parts Name		Symbol	Model						Remark
			FXAQ 20PV1	FXAQ 25PV1	FXAQ 32PV1	FXAQ 40PV1	FXAQ 50PV1	FXAQ 63PV1	
Remote Controller	Wired Remote Controller		BRC1E51						Option
	Wireless Remote Controller		BRC7E618						
Motors	Fan Motor	M1F	AC 220~240V 50Hz						
			1φ40W			1φ43W			
			Thermal protector 130°C : OFF 80°C : ON						
	Swing Motor	M1S	MP24 [3SB40333-1] AC200~240V			MSFBC20C21 [3SB40550-1] AC200~240V			
Thermistors	Thermistor (Suction Air)	R1T	ST8601-2 φ4 L400 20kΩ (25°C)						
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-2 φ8 L400 20kΩ (25°C)						
	Thermistor (for Heat Exchanger)	R2T	ST8602-2 φ6 L400 20kΩ (25°C)						
Others	Float Switch	S1L	OPTION						
	Fuse	F1U	250V 3A φ5.2						

Parts Name		Symbol	Model						Remark
			FXLQ 20MAVE	FXLQ 25MAVE	FXLQ 32MAVE	FXLQ 40MAVE	FXLQ 50MAVE	FXLQ 63MAVE	
Remote Controller	Wired Remote Controller		BRC1E51						Option
	Wireless Remote Controller		BRC4C62						
Motors	Fan Motor	M1F	AC 220~240V 50Hz						
			1φ15W		1φ25W		1φ35W		
			Thermal protector 135°C : OFF 120°C : ON						
	Capacitor for Fan Motor	C1R	1.0μF-400V		0.5μF-400V	1.0μF-400V	1.5μF-400V	2.0μF-400V	
Thermistors	Thermistor (Suction Air)	R1T	ST8601-6 φ4 L1250 |20kΩ (25°C)						
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-9 φ8 L2500 20kΩ (25°C)						
	Thermistor (for Heat Exchanger)	R2T	ST8602A-9 φ6 L2500 20kΩ (25°C)						
Others	Fuse	F1U	AC250V 5A						
	Transformer	T1R	TR22H21R8						

Parts Name		Symbol	Model						Remark
			FXNQ 20MAVE	FXNQ 25MAVE	FXNQ 32MAVE	FXNQ 40MAVE	FXNQ 50MAVE	FXNQ 63MAVE	
Remote Controller	Wired Remote Controller		BRC1E51						Option
	Wireless Remote Controller		BRC4C62						
Motors	Fan Motor	M1F	AC 220~240V 50Hz						
			1φ15W		1φ25W		1φ35W		
			Thermal protector 135°C : OFF 120°C : ON						
	Capacitor for Fan Motor	C1R	1.0μF-400V		0.5μF-400V	1.0μF-400V	1.5μF-400V	2.0μF-400V	
Thermistors	Thermistor (Suction Air)	R1T	ST8601-6 φ4 L1250 20kΩ (25°C)						
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-9 φ8 L2500 20kΩ (25°C)						
	Thermistor (for Heat Exchanger)	R2T	ST8602A-9 φ6 L2500 20kΩ (25°C)						
Others	Fuse	F1U	AC250V 5A						
	Transformer	T1R	TR22H21R8						

Parts Name		Symbol	Model			Remark
			FXUQ71MAV1	FXUQ100MAV1	FXUQ125MAV1	
Remote Controller	Wired Remote Controller		BRC1E51			Option
	Wireless Remote Controller		BRC7C528W			
Motors	Fan Motor	M1F	AC 220~240V 50Hz			
			1φ45W	1φ90W		
			Thermal protector 130°C	Thermal protector 130°C : OFF 83°C : ON		
	Drain Pump	M1P	AC220-240V (50Hz) PJV-1426			
	Swing Motor	M1S	MT8-L[3PA07572-1] AC200~240V			
Thermistors	Thermistor (Suction Air)	R1T	ST8601-1 φ4 L=250 20kΩ (25°C)			
	Thermistor (Heat Exchanger)	R2T	ST8602A-4 φ6 L=800 20kΩ (25°C)			
Others	Float Switch	S1L	FS-0211B			

Parts Name		Symbol	Model			Remark
			FXMQ125MFV1	FXMQ200MFV1	FXMQ250MFV1	
Remote Controller	Wired Remote Controller		BRC1E51			Option
	Wireless Remote Controller		—			
Motors	Fan Motor	M1F	AC200~240V 50Hz			
			1φ380W			
			Thermal protector 135°C : OFF 87°C : ON			
	Capacitor for Fan Motor	C1R	10μ F 400V×2	10μ F 400V	16μ F 400V	
Solenoid valve	Solenoid valve (Hot gas)	Y1S	Body: VPV-603D Coil: NEV-MOAJ532C1 AC220-240V			
Thermistors	Thermistor (Suction Air)	R1T	ST8601-13 φ4 L=630 20kΩ (25°C)			
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-6 φ8 L=1250 20kΩ (25°C)			
	Thermistor (Heat Exchanger)	R2T	ST8602A-2 φ6 L=1250 20kΩ (25°C)			
	Thermistor (for discharge air)	R4T	ST8605-8 L=2000 20kΩ (25°C)			
Others	Float switch	S1L	Option			
	Fuse	F1U	250V 5A φ5.2			
	Transformer	T1R	TR22H21R8			

4. Option List

4.1 Option List of Controllers

Operation Control System Optional Accessories

No.	Item \ Type		FXFQ-P	FXZQ-M	FXCQ-M	FXKQ-MA	FXDQ-NB FXDQ-PB	FXDQ-M	FXUQ-MA	FXSQ-P	FXMQ-MA	FXMQ-P	FXHQ-MA	FXAQ-MA	FXLQ-MA FXNQ-MA
1	Remote controller	Wireless	BRC7F634F	BRC7E530	BRC7C62	BRC4C61	BRC4C65	BRC4C62	BRC7C528W	BRC4C62		BRC4C65	BRC7E63W	BRC7E618	BRC4C62
		Wired	BRC1E51												
2	Wired remote controller with weekly schedule timer		BRC1D61												
3	Simplified remote controller		—				Note 8 BRC2C51	BRC2C51	—	Note 8 BRC2C51			—		Note 8 BRC2C51
4	Remote controller for hotel use		—				BRC3A61		—	BRC3A61			—		BRC3A61
5	Adaptor for wiring		★KRP1C63	★KRP1B57	★KRP1B61	KRP1B61	★KRP1B56	KRP1B61	—	KRP1B61		★KRP1C64	KRP1C3	—	KRP1B61
6-1	Wiring adaptor for electrical appendices (1)		★KRP2A62	★KRP2A526	★KRP2A61	KRP2A61	★KRP2A53	KRP2A51	★KRP2A62	KRP2A61		★KRP2A61	★KRP2A62	★KRP2A61	KRP2A61
6-2	Wiring adaptor for electrical appendices (2)		★KRP4AA53	★KRP4A536	★KRP4A51	KRP4A51	★KRP4A54	KRP4A51	★KRP4A53	KRP4A51		★KRP4AA51	★KRP4A52	★KRP4A51	KRP4A51
7	Remote sensor		KRCS01-4B	KRCS01-1	KRCS01-1	KRCS01-1	KRCS01-1					KRCS01-4B	KRCS01-1		
8	Installation box for adaptor PCB		Note 2, 3 KRP1H98	Note 4,6 KRP1BA101	Note 2, 3 KRP1B96	—	Note 4, 6 KRP1B101	—	KRP1B97	Note 5 KRP4A91	—	Note 2, 3 KRP4A96	Note 3 KRP1C93	Note 2, 3 KRP4A93	—
9	Centralized remote controller		DCS302CA61	★DTA104A52	DCS302CA61			DTA104A61	DCS302CA61						
9-1	El. compo. box with earth terminal (3 blocks)		KJB311AA												
10	Unified on/off controller		DCS301BA61												
10-1	El. compo. box with earth terminal (2 blocks)		KJB212AA												
10-2	Noise filter (for electromagnetic interface use only)		KEK26-1A												
11	Schedule timer		DST301BA61												
12	External control adaptor for outdoor unit (Must be installed on indoor units)		★ DTA104A62	DTA104A52	★ DTA104A61	DTA104A61	★ DTA104A53		—	DTA104A61		★ DTA104A61	★ DTA104A62	★ DTA104A61	DTA104A61
13	Interface adaptor for SkyAir-series		—						Note 7 DTA102A52	—					

Note:

1. Installation box (No.8) is necessary for each adaptor marked ★.
2. Up to 2 adaptors can be fixed for each installation box.
3. Only one installation box can be installed for each indoor unit.
4. Up to 2 installation boxes can be installed for each indoor unit.
5. Installation box (No. 8) is necessary for second adaptor.
6. Installation box (No. 8) is necessary for each adaptor.
7. This adaptor is required when connecting with optional controller for centralized control.
8. BRC2A51 is also available.

Various PCBs

No.	Part name	Model No.	Function
1	Adaptor for wiring	KRP1B56 KRP1B57 KRP1B61 KRP1B3	■ PCB when equipped with auxiliary electric heater in the indoor unit.
2	DIII-NET Expander Adaptor	DTA109A51	■ Up to 1,024 units can be centrally controlled in 64 different groups. ■ Wiring restrictions (max. length: 1,000 m, total wiring length: 2,000 m, max. number of branches: 16) apply to each adaptor.

System Configuration

No.	Part name		Model No.	Function
1	Central remote controller		DCS302C51 DCS302CA51 (FXFQ-P)	• Up to 64 groups of indoor units (128 units) can be connected, and ON/OFF, temperature setting and monitoring can be accomplished individually or simultaneously. Connectable up to 2 controllers in one system.
1-1	El. compo. box with earth terminal (3 blocks)		KJB311A	
2	Unified ON/OFF controller		DCS301B51 DCS301BA51 (FXFQ-P)	• Up to 16 groups of indoor units (128 units) can be turned, ON/OFF individually or simultaneously, and operation and malfunction can be displayed. Can be used in combination with up to 8 controllers.
2-1	El. compo. box with earth terminal (2 blocks)		KJB212A	
2-2	Noise filter (for electromagnetic interface use only)		KEK26-1	
3	Schedule timer		DST301B51 DST301BA51 (FXFQ-P)	• Programmed time weekly schedule can be controlled by unified control for up to 64 groups of indoor units (128 units). Can turn units ON/OFF twice per day.
4	Interface adaptor for SkyAir-series	R-407C/R-22	★DTA102A52	• Adaptors required to connect products other than those of the VRV System to the high-speed DIII-NET communication system adopted for the VRV System. * To use any of the above optional controllers, an appropriate adaptor must be installed on the product unit to be controlled.
		R-410A	★DTA112B51	
5	Central control adaptor kit	For UAT(Y)-K(A),FD-K	★DTA107A55	
6	Wiring adaptor for other air-conditioner		★DTA103A51	
7	DIII-NET Expander Adaptor		DTA109A51	• Up to 1024 units can be centrally controlled in 64 different groups. • Wiring restrictions (max. length : 1,000m, total wiring length : 2,000m, max. number of branches : 16) apply to each adaptor.
7-1	Mounting plate		KRP4A92	• Fixing plate for DTA109A51

Note:

1. Installation box for ★ adaptor must be procured onsite.

Building Management System

No.	Part name					Model No.	Function
1	intelligent Touch Controller	Basic	Hardware	intelligent Touch Controller		DCS601C51	• Air-Conditioning management system that can be controlled by a compact all-in-one unit.
1-1		Option	Hardware	DIII-NET plus adaptor		DCS601A52	• Additional 64 groups (10 outdoor units) is possible.
1-2			Software	P. P. D.		DCS002C51	• P. P. D.: Power Proportional Distribution function
1-3				Web		DCS004A51	• Monitors and controls the air conditioning system using the Internet and a Web browser application on a PC.
1-4	El. compo. box with earth terminal (4 blocks)					KJB411A	• Wall embedded switch box.
2	intelligent Manager III	Basic	Hardware	Number of units to be connected	128 units	DAM602B52	• Air conditioner management system that can be controlled by personal computers.
					256 units	DAM602B51	
					512 units	DAM602B51×2	
					768 units	DAM602B51×3	
					1024 units	DAM602B51×4	
2-1		Option	Software		P.P.D.	DAM002A51	• Power Proportional Distribution function
2-2					Web	DAM004A51	• Monitors and controls the air conditioning system using the Internet and a Web browser application on a PC.
2-3					Eco	DAM003A51	• ECO (Energy saving functions.)
2-4	Optional DIII Ai unit					DAM101A51	• External temperature sensor for intelligent Manager III.
2-5	Di unit					DEC101A51	• 8 pairs based on a pair of On/Off input and abnormality input.
2-6	Dio unit					DEC102A51	• 4 pairs based on a pair of On/Off input and abnormality input.
3	Communication line	*1 Interface for use in BACnet®				DMS502B51	• Interface unit to allow communications between VRV and BMS. Operation and monitoring of air-conditioning systems through BACnet® communication.
3-1		Optional DIII board				DAM411B51	• Expansion kit, installed on DMS502B51, to provide 2 more DIII-NET communication ports. Not usable independently.
3-2		Optional Di board				DAM412B51	• Expansion kit, installed on DMS502B51, to provide 16 more wattmeter pulse input points. Not usable independently.
4		*2 Interface for use in LONWORKS®				DMS504B51	• Interface unit to allow communications between VRV and BMS. Operation and monitoring of air-conditioning systems through LONWORKS® communication.
5	Contact/analog signal	Parallel interface Basic unit				DPF201A51	• Enables ON/OFF command, operation and display of malfunction; can be used in combination with up to 4 units.
6		Temperature measurement units				DPF201A52	• Enables temperature measurement output for 4 groups; 0-5VDC.
7		Temperature setting units				DPF201A53	• Enables temperature setting input for 16 groups; 0-5VDC.
8		Unification adaptor for computerized control				★DCS302A52	• Interface between the central monitoring board and central control units.

Notes:

*1. BACnet® is a registered trademark of American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

*2. LONWORKS®, is a registered trade mark of Echelon Corporation.

*3. Installation box for ⋆ adaptor must be procured on site.

4.2 Option Lists (Outdoor Unit)

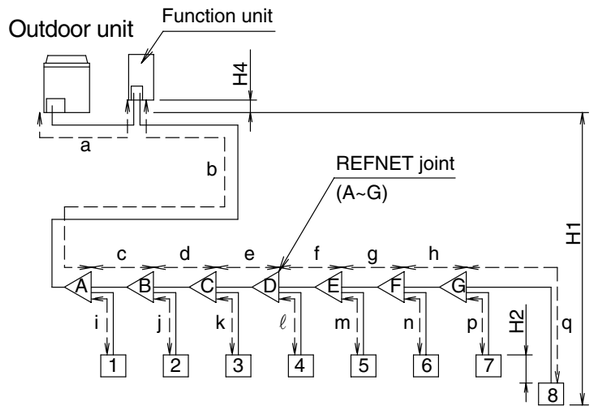
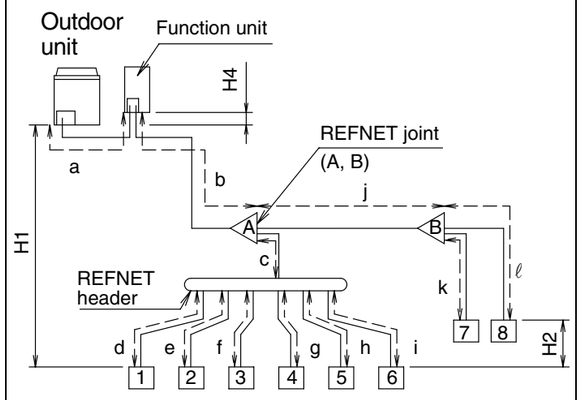
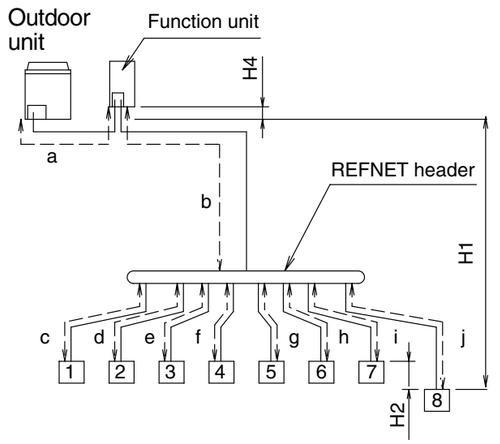
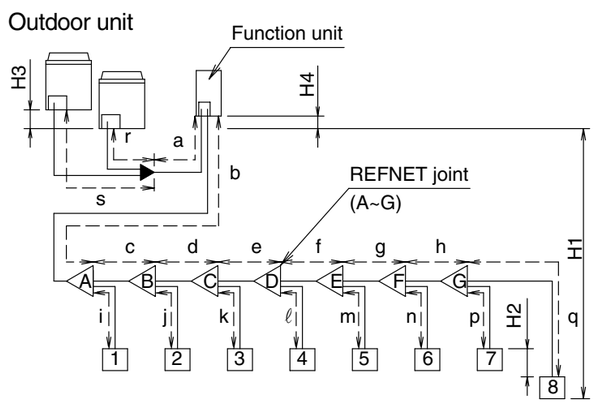
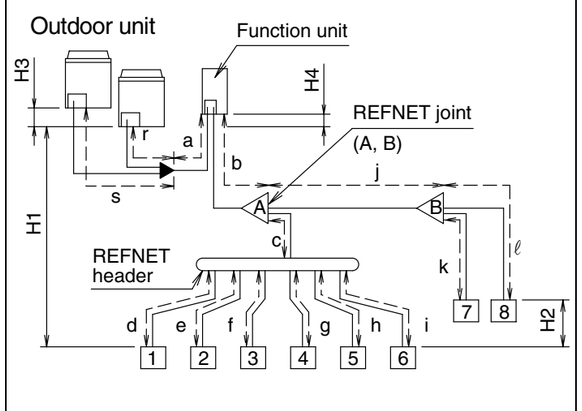
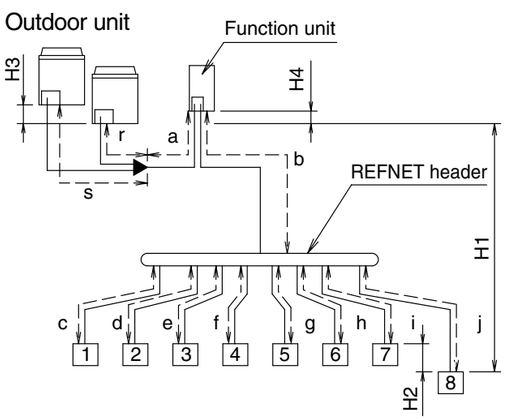
RTSYQ10 ~ 20PY1

Optional Accessories \ Models		RTSYQ10PY1	RTSYQ14PY1 RTSYQ16PY1	RTSYQ20PY1
Distributive piping	REFNET joint	KHRP26MC22T	KHRP26MC22T	KHRP26MC22T
		KHRP26MC33T	KHRP26MC33T	KHRP26MC33T
		—	KHRP26MC72T	KHRP26MC72T
		—	—	KHRP26MC73T
Outdoor unit multi connection piping kit		—	—	BHFP30AC56

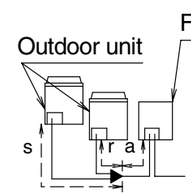
5. Example of Connection (R-410A Type)

Example of connection
(Connection of 8 indoor units)

(*1) “ ⇐ ” Indicate the Outdoor unit multi connection piping kit.
(*2) In case of multi outdoor system, re-read “outdoor unit” to “Outdoor unit multi connection piping kit” as seen from the indoor unit.

			Branch with REFNET joint	Branch with REFNET joint and header	Branch with REFNET header
	Single outdoor system		 1 ~ 8 : Indoor unit	 1 ~ 8 : Indoor unit	 1 ~ 8 : Indoor unit
	Multi outdoor system		 1 ~ 8 : Indoor unit	 1 ~ 8 : Indoor unit	 1 ~ 8 : Indoor unit

Maximum allowable length	Between outdoor unit (*2) and indoor unit	Actual pipe length	Pipe length between outdoor unit (*2) and indoor unit ≤ 165m		
			Example 8 : a + b + c + d + e + f + g +h +q ≤ 165m	Example 6 : a + b + c + i ≤ 165m, 8 : a + b + j + ℓ ≤ 165m	Example 8 : a + b + j ≤ 165m
		Equivalent length	Equivalent pipe length between outdoor unit (*2) and indoor unit ≤ 190m (Note 1) (Assume equivalent pipe length of REFNET joint to be 0.5m, that of REFNET header to be 1m, that of function unit to be 6m for calculation purposes)		
		Total extension length	Total piping length from outdoor unit (*2) to all indoor unit ≤ 500m		
	Between outdoor unit and function unit Between outdoor unit and outdoor unit multi connection piping kit	Actual and Equivalent pipe length	Actual pipe length from outdoor unit to function unit, that from first outdoor unit multi connection piping kit to outdoor unit 10m Equivalent pipe length from outdoor unit to function unit, that from first outdoor unit multi connection piping kit to outdoor unit 13m		
Allowable height difference	Between outdoor and indoor units	Difference in height	Difference in height between outdoor unit and indoor unit (H1) ≤ 50m (Max 40m if the outdoor unit is below)		
	Between indoor and indoor units	Difference in height	Difference in height between indoor units (H2) ≤ 15m		
	Between outdoor and outdoor units	Difference in height	Difference in height between outdoor units (H3) ≤ 5m		
	Between outdoor unit and function unit	Difference in height	Difference in height between outdoor unit and function unit (H4) ≤ 1m		
Allowable length after the branch		Actual pipe length	Actual pipe length from first refrigerant branch kit (either REFNET joint or REFNET header) to indoor unit ≤ 40m (Note 2)		
			Example 8 : c + d + e + f + g + h + q ≤ 40m	Example 6 : c + i ≤ 40m, 8 : j + ℓ ≤ 40m	Example 8 : j ≤ 40m



a ≤ 10m
(Equivalent length ≤ 13m)
r ≤ 10m
(Equivalent length ≤ 13m)
s ≤ 10m
(Equivalent length ≤ 13m)

Outdoor unit multi connection piping kit and Refrigerant branch kit selection

- Refrigerant branch kits can only be used with R-410A.
- When multi outdoor system are installed, be sure to use the special separately sold Outdoor unit multi connection piping kit. (BHFP30A56).
  (For how to select the proper kit, follow the table at right.)

How to select the REFNET joint

- When using REFNET joint at the first branch counted from the outdoor unit side, choose from the following table in accordance with the outdoor system capacity type. (Example : REFNET joint A)

Outdoor system capacity type	Refrigerant branch kit name
10HP type	KHRP26A33T
14~20HP type	KHRP26A72T

- Choose the REFNET joints other than the first branch from the following table in accordance with the total capacity index of all the indoor units connected below the REFNET joint.

Indoor unit total capacity index	Refrigerant branch kit name
x < 200	KHRP26A22T
200 ≤ x < 290	KHRP26A33T
290 ≤ x < 640	KHRP26A72T

How to select the REFNET header

- Choose from the following table in accordance with the total capacity index of all the indoor units connected below the REFNET header.
- 250 type indoor unit can not be connected below the REFNET header.

Indoor unit total capacity index	Refrigerant branch kit name
x < 200	KHRP26M22H or KHRP26A33H
200 ≤ x < 290	KHRP26M33H
290 ≤ x < 640	KHRP26M72H
640 ≤ x	KHRP26M73H + KHRP26M73HP

How to select the outdoor unit multi connection piping kit
(This is required when the system is multi outdoor unit system.)

- Choose from the following table in accordance with the number of outdoor units.

Number of outdoor unit	Connecting piping kit name
2 units	BHFP30AP56

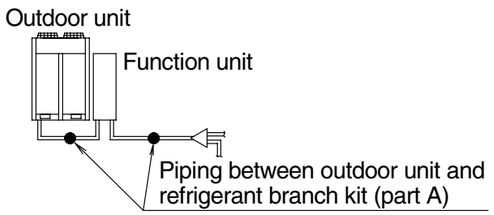
Example for indoor units connected downstream

Example REFNET joint C : Indoor units [3]+[4]+[5]+[6]+[7]+[8]
Example REFNET joint B : Indoor units [7] + [8]
Example REFNET header : Indoor units [1]+[2]+[3]+[4]+[5]+[6]
Example REFNET header : Indoor units [1] + [2] + [3] + [4] + [5] + [6] + [7] + [8]

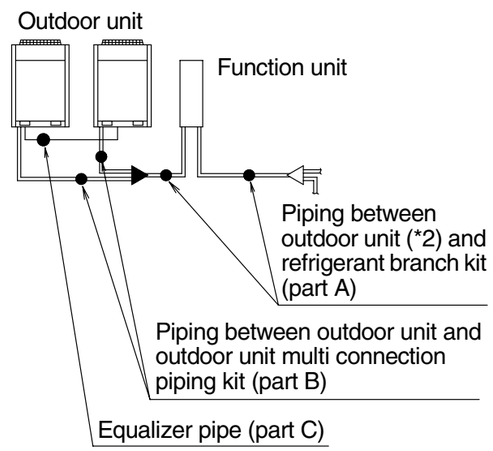
Pipe size selection

⚠ 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.

<In case of single outdoor unit system>



<In case of multi outdoor unit system>



Piping between outdoor unit (*2) and refrigerant branch kit (part A)

- Choose from the following table in accordance with the outdoor unit system capacity type. (unit : mm)

Outdoor system capacity type	Piping size (O. D.)	
	Gas pipe	Liquid pipe
10HP type	ϕ22.2	ϕ9.5
14,16HP type	ϕ28.6	ϕ12.7
20HP type		ϕ15.9

Piping between outdoor unit multi connection piping kit and outdoor unit (part B)

- Choose from the following table in accordance with the capacity type of the outdoor unit connected. (unit : mm)

Outdoor unit capacity type	Piping size (O. D.)	
	Gas pipe	Liquid pipe
RTSP8 type	ϕ22.2	ϕ9.5
RTSP12 type	ϕ28.6	ϕ12.7

Piping between refrigerant branch kits

- Choose from the following table in accordance with the total capacity type of all the indoor units connected downstream.
- Do not let the connection piping exceed the main refrigerant piping size (Part A). If the piping size selected from the following table exceeds the piping size of part A, decide the piping size in either of the following methods.
  (1) Reduce the size of the connection piping to the piping size of part A.
  (2) Replace the piping of part A with piping that is a size larger (see the table in Note 1) so that it will be the same as the size of the connection piping.

(unit : mm)

Indoor capacity index	Piping size (O. D.)	
	Gas pipe	Liquid pipe
x < 150	ϕ15.9	ϕ9.5
150 ≤ x < 200	ϕ19.1	
200 ≤ x < 290	ϕ22.2	
290 ≤ x < 420	ϕ28.6	ϕ12.7
420 ≤ x < 640		ϕ15.9

Piping between refrigerant branch kit, and indoor unit

- Match to the size of the connection piping on the indoor unit. (unit : mm)

Indoor unit capacity type	Piping size (O. D.)	
	Gas pipe	Liquid pipe
20 · 25 · 32 · 40 · 50 type	ϕ12.7	ϕ6.4
63 · 80 · 100 · 125 type	ϕ15.9	ϕ9.5
200 type	ϕ19.1	
250 type	ϕ22.2	

Equalizer pipe (part D) (multi outdoor unit system only) (unit : mm)

Piping size (O. D.)	ϕ19.1

Temper grade and wall thickness for pipes
(Temper grade, O type and 1/2H type indicate the material type specified in JIS H 3300.)

Copper tube O. D.	ϕ6.4	ϕ9.5	ϕ12.7	ϕ15.9	ϕ19.1	ϕ22.2	ϕ25.4	ϕ28.6	ϕ31.8	ϕ34.9	ϕ38.1	ϕ41.3
Temper grade	O type				1/2H type							
Wall thickness (Min. requirement)	0.80	0.80	0.80	0.99	0.80	0.80	0.88	0.99	1.10	1.21	1.32	1.43

How to calculate the additional refrigerant to be charged

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

$$R = \left(\begin{array}{l} (\text{Total length(m) of liquid piping size at } \phi 22.2) \times 0.37 + (\text{Total length(m) of liquid piping size at } \phi 19.1) \times 0.26 \\ + (\text{Total length(m) of liquid piping size at } \phi 15.9) \times 0.18 + (\text{Total length(m) of liquid piping size at } \phi 12.7) \times 0.12 \\ + (\text{Total length(m) of liquid piping size at } \phi 9.5) \times 0.059 + (\text{Total length(m) of liquid piping size at } \phi 6.4) \times 0.022 \end{array} \right) + \text{FOR THE SYSTEM}$$

FOR THE SYSTEM	
SYSTEM NAME	THE AMOUNT OF REFRIGERANT
RTSYQ10PY1	—
RTSYQ14PY1	1.3kg
RTSYQ16PY1	2.3kg
RTSYQ20PY1	—

Example for refrigerant branch using REFNET joint and REFNET header for the systems and each pipe length as shown below.

System : RTSYQ20PY1
Independent outdoor unit : RTSQ8PY1, RTSQ12PY1
Function unit : BTSQ20PY1

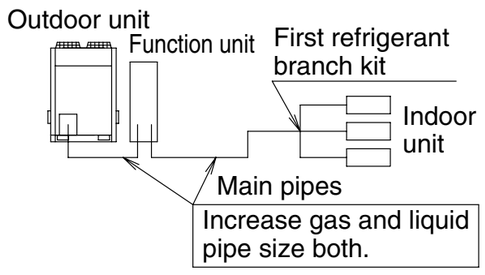
a : ϕ15.9 × 10m	e : ϕ6.4 × 10m	i : ϕ6.4 × 10m	r : ϕ12.7 × 5m
b : ϕ15.9 × 30m	f : ϕ6.4 × 20m	j : ϕ9.5 × 20m	s : ϕ9.5 × 10m
c : ϕ12.7 × 20m	g : ϕ6.4 × 20m	k : ϕ9.5 × 10m	
d : ϕ6.4 × 10m	h : ϕ6.4 × 10m	ℓ : ϕ9.5 × 10m	

$R = \boxed{40 \times 0.18}_{a,b} + \boxed{25 \times 0.12}_{c,r} + \boxed{50 \times 0.059}_{j,k,\ell,s} + \boxed{80 \times 0.022}_{d\sim i} = 14.91 \Longrightarrow \boxed{14.9kg}$
Round off in units of 0.1 kg.

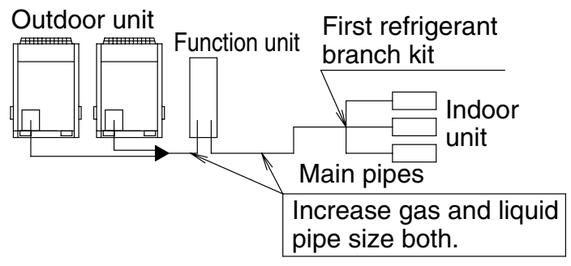
Note 1.
When the equivalent pipe length between outdoor (*2) and indoor units is 90m or more, the size of main pipes (figure on right) must be increased according to the right table.

System	Gas	Liquid
RTSYQ10 type	ϕ22.2 → ϕ25.4 (*)	ϕ9.5 → ϕ12.7
RTSYQ14 type	Not Increased	ϕ12.7 → ϕ15.9
RTSYQ16 type	ϕ28.6 → ϕ31.8 (*)	
RTSYQ20 type		ϕ15.9 → ϕ19.1

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

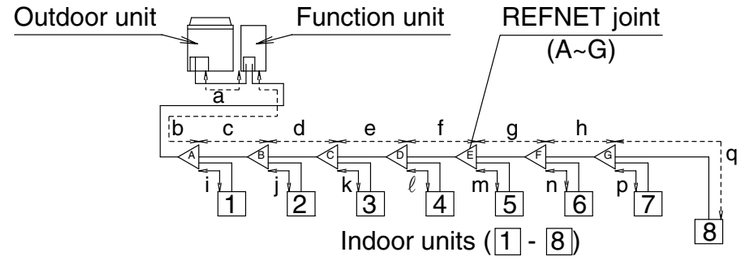


In case of single outdoor unit system



In case of multi outdoor unit system

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.

Required Conditions	Example Drawings (In case of "**Branch with REFNET joint**")	
1.It is necessary to increase the pipe size if the pipe length between the first branch kit and the final branch kit is over 40m. (Reducers must be procured on site) If the increased pipe size is larger than main pipe size, then increase the main pipe size to the same pipe size.	8 c + d + e + f + g + h + q ≤ 90 m increase the pipe size of c, d, e, f, g, h	Increase the 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 + c × 2 + d × 2 + e × 2 + f × 2 + g × 2 + h × 2 + i + j + k + ℓ + m + n + p + q ≤ 500 m	
3.Indoor unit to the nearest branch kit ≤ 40 m	i, j..... p, q ≤ 40 m	
4.The difference between [Outdoor unit to the farthest indoor unit] and [Outdoor 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 + h + q) - (a + b + i) ≤ 40 m	

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

6. Thermistor Resistance / Temperature Characteristics

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

Outdoor unit for fin thermistor R1T	Outdoor unit	For outdoor air R1T
		For coil R2T
		For suction pipe R4T
		For Receiver gas pipe R5T
		For Receiver outlet liquid pipe R6T

T°C	kΩ
-10	-
-8	-
-6	88.0
-4	79.1
-2	71.1
0	64.1
2	57.8
4	52.3
6	47.3
8	42.9
10	38.9
12	35.3
14	32.1
16	29.2
18	26.6
20	24.3
22	22.2
24	20.3
26	18.5
28	17.0
30	15.6
32	14.2
34	13.1
36	12.0
38	11.1
40	10.3
42	9.5
44	8.8
46	8.2
48	7.6
50	7.0
52	6.7
54	6.0
56	5.5
58	5.2
60	4.79
62	4.46
64	4.15
66	3.87
68	3.61
70	3.37
72	3.15
74	2.94
76	2.75
78	2.51
80	2.41
82	2.26
84	2.12
86	1.99
88	1.87
90	1.76
92	1.65
94	1.55
96	1.46
98	1.38

T°C	kΩ	T°C	kΩ	T°C	kΩ	T°C	kΩ
-20	197.81	-19.5	192.08	30	16.10	30.5	15.76
-19	186.53	-18.5	181.16	31	15.43	31.5	15.10
-18	175.97	-17.5	170.94	32	14.79	32.5	14.48
-17	166.07	-16.5	161.36	33	14.18	33.5	13.88
-16	156.80	-15.5	152.38	34	13.59	34.5	13.31
-15	148.10	-14.5	143.96	35	13.04	35.5	12.77
-14	139.94	-13.5	136.05	36	12.51	36.5	12.25
-13	132.28	-12.5	128.63	37	12.01	37.5	11.76
-12	125.09	-11.5	121.66	38	11.52	38.5	11.29
-11	118.34	-10.5	115.12	39	11.06	39.5	10.84
-10	111.99	-9.5	108.96	40	10.63	40.5	10.41
-9	106.03	-8.5	103.18	41	10.21	41.5	10.00
-8	100.41	-7.5	97.73	42	9.81	42.5	9.61
-7	95.14	-6.5	92.61	43	9.42	43.5	9.24
-6	90.17	-5.5	87.79	44	9.06	44.5	8.88
-5	85.49	-4.5	83.25	45	8.71	45.5	8.54
-4	81.08	-3.5	78.97	46	8.37	46.5	8.21
-3	76.93	-2.5	74.94	47	8.05	47.5	7.90
-2	73.01	-1.5	71.14	48	7.75	48.5	7.60
-1	69.32	-0.5	67.56	49	7.46	49.5	7.31
0	65.84	0.5	64.17	50	7.18	50.5	7.04
1	62.54	1.5	60.96	51	6.91	51.5	6.78
2	59.43	2.5	57.94	52	6.65	52.5	6.53
3	56.49	3.5	55.08	53	6.41	53.5	6.53
4	53.71	4.5	52.38	54	6.65	54.5	6.53
5	51.09	5.5	49.83	55	6.41	55.5	6.53
6	48.61	6.5	47.42	56	6.18	56.5	6.06
7	46.26	7.5	45.14	57	5.95	57.5	5.84
8	44.05	8.5	42.98	58	5.74	58.5	5.43
9	41.95	9.5	40.94	59	5.14	59.5	5.05
10	39.96	10.5	39.01	60	4.96	60.5	4.87
11	38.08	11.5	37.18	61	4.79	61.5	4.70
12	36.30	12.5	35.45	62	4.62	62.5	4.54
13	34.62	13.5	33.81	63	4.46	63.5	4.38
14	33.02	14.5	32.25	64	4.30	64.5	4.23
15	31.50	15.5	30.77	65	4.16	65.5	4.08
16	30.06	16.5	29.37	66	4.01	66.5	3.94
17	28.70	17.5	28.05	67	3.88	67.5	3.81
18	27.41	18.5	26.78	68	3.75	68.5	3.68
19	26.18	19.5	25.59	69	3.62	69.5	3.56
20	25.01	20.5	24.45	70	3.50	70.5	3.44
21	23.91	21.5	23.37	71	3.38	71.5	3.32
22	22.85	22.5	22.35	72	3.27	72.5	3.21
23	21.85	23.5	21.37	73	3.16	73.5	3.11
24	20.90	24.5	20.45	74	3.06	74.5	3.01
25	20.00	25.5	19.56	75	2.96	75.5	2.91
26	19.14	26.5	18.73	76	2.86	76.5	2.82
27	18.32	27.5	17.93	77	2.77	77.5	2.72
28	17.54	28.5	17.17	78	2.68	78.5	2.64
29	16.80	29.5	16.45	79	2.60	79.5	2.55
30	16.10	30.5	15.76	80	2.51	80.5	2.47

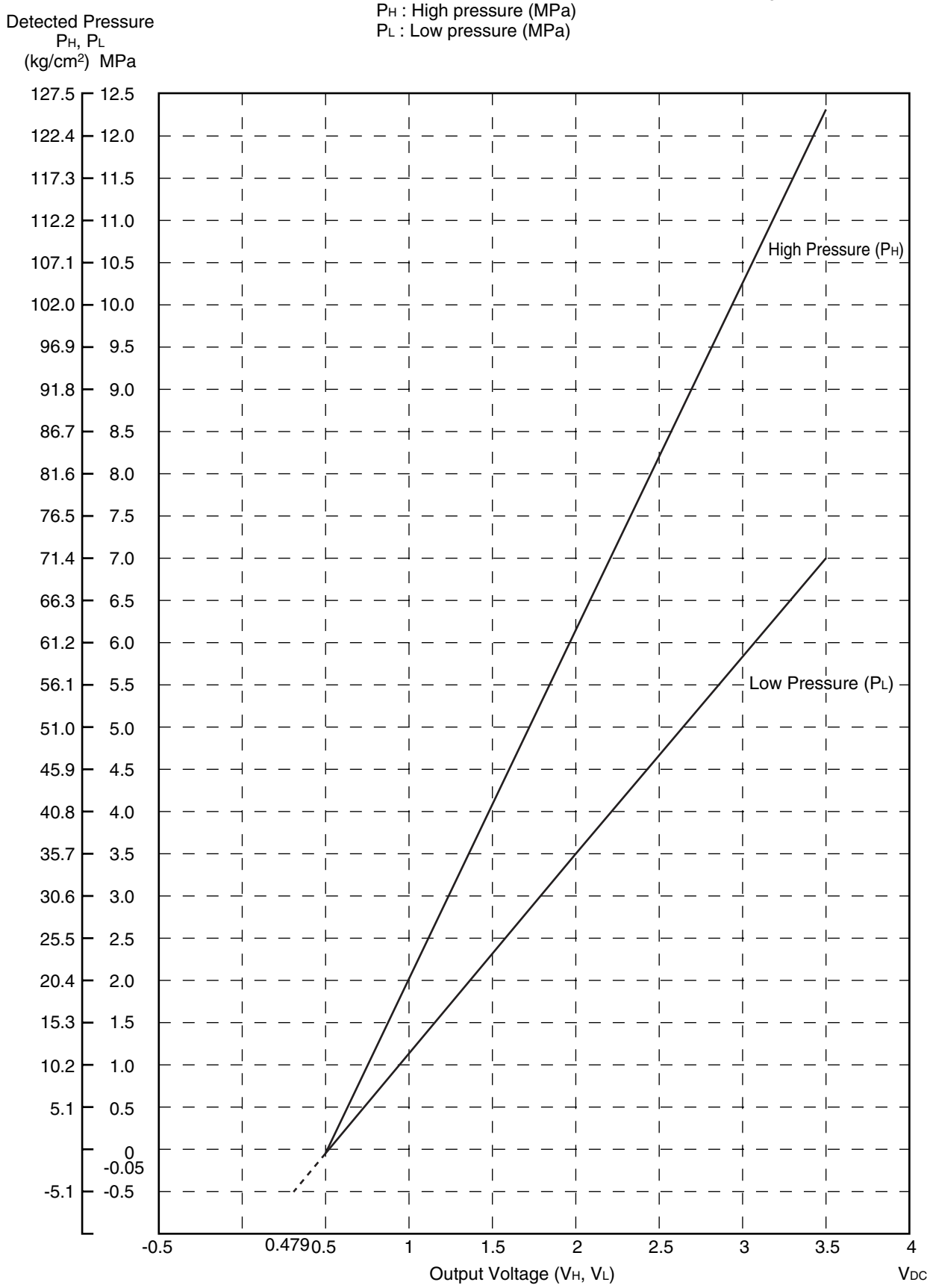
Outdoor Unit Thermistors for Discharge Pipe (R3T, R31~33T)

T°C	kΩ	T°C	kΩ	T°C	kΩ	T°C	kΩ	T°C	kΩ	T°C	kΩ
0	640.44	0.5	624.65	50	72.32	50.5	70.96	100	13.35	100.5	13.15
1	609.31	1.5	594.43	51	69.64	51.5	68.34	101	12.95	101.5	12.76
2	579.96	2.5	565.78	52	67.06	52.5	65.82	102	12.57	102.5	12.38
3	552.00	3.5	538.63	53	64.60	53.5	63.41	103	12.20	103.5	12.01
4	525.63	4.5	512.97	54	62.24	54.5	61.09	104	11.84	104.5	11.66
5	500.66	5.5	488.67	55	59.97	55.5	58.87	105	11.49	105.5	11.32
6	477.01	6.5	465.65	56	57.80	56.5	56.75	106	11.15	106.5	10.99
7	454.60	7.5	443.84	57	55.72	57.5	54.70	107	10.83	107.5	10.67
8	433.37	8.5	423.17	58	53.72	58.5	52.84	108	10.52	108.5	10.36
9	413.24	9.5	403.57	59	51.98	59.5	50.96	109	10.21	109.5	10.06
10	394.16	10.5	384.98	60	49.96	60.5	49.06	110	9.92	110.5	9.78
11	376.05	11.5	367.35	61	48.19	61.5	47.33	111	9.64	111.5	9.50
12	358.88	12.5	350.62	62	46.49	62.5	45.67	112	9.36	112.5	9.23
13	342.58	13.5	334.74	63	44.86	63.5	44.07	113	9.10	113.5	8.97
14	327.10	14.5	319.66	64	43.30	64.5	42.54	114	8.84	114.5	8.71
15	312.41	15.5	305.33	65	41.79	65.5	41.06	115	8.59	115.5	8.47
16	298.45	16.5	291.73	66	40.35	66.5	39.65	116	8.35	116.5	8.23
17	285.18	17.5	278.80	67	38.96	67.5	38.29	117	8.12	117.5	8.01
18	272.58	18.5	266.51	68	37.63	68.5	36.98	118	7.89	118.5	7.78
19	260.60	19.5	254.72	69	36.34	69.5	35.72	119	7.68	119.5	7.57
20	249.00	20.5	243.61	70	35.11	70.5	34.51	120	7.47	120.5	7.36
21	238.36	21.5	233.14	71	33.92	71.5	33.35	121	7.26	121.5	7.16
22	228.05	22.5	223.08	72	32.78	72.5	32.23	122	7.06	122.5	6.97
23	218.24	23.5	213.51	73	31.69	73.5	31.15	123	6.87	123.5	6.78
24	208.90	24.5	204.39	74	30.63	74.5	30.12	124	6.69	124.5	6.59
25	200.00	25.5	195.71	75	29.61	75.5	29.12	125	6.51	125.5	6.42
26	191.53	26.5	187.44	76	28.64	76.5	28.16	126	6.33	126.5	6.25
27	183.46	27.5	179.57	77	27.69	77.5	27.24	127	6.16	127.5	6.08
28	175.77	28.5	172.06	78	26.79	78.5	26.35	128	6.00	128.5	5.92
29	168.44	29.5	164.90	79	25.91	79.5	25.49	129	5.84	129.5	5.76
30	161.45	30.5	158.08	80	25.07	80.5	24.66	130	5.69	130.5	5.61
31	154.79	31.5	151.57	81	24.26	81.5	23.87	131	5.54	131.5	5.46
32	148.43	32.5	145.37	82	23.48	82.5	23.10	132	5.39	132.5	5.32
33	142.37	33.5	139.44	83	22.73	83.5	22.36	133	5.25	133.5	5.18
34	136.59	34.5	133.79	84	22.01	84.5	21.65	134	5.12	134.5	5.05
35	131.06	35.5	128.39	85	21.31	85.5	20.97	135	4.98	135.5	4.92
36	125.79	36.5	123.24	86	20.63	86.5	20.31	136	4.86	136.5	4.79
37	120.76	37.5	118.32	87	19.98	87.5	19.67	137	4.73	137.5	4.67
38	115.95	38.5	113.62	88	19.36	88.5	19.05	138	4.61	138.5	4.55
39	111.35	39.5	109.13	89	18.75	89.5	18.46	139	4.49	139.5	4.44
40	106.96	40.5	104.84	90	18.17	90.5	17.89	140	4.38	140.5	4.32
41	102.76	41.5	100.73	91	17.61	91.5	17.34	141	4.27	141.5	4.22
42	98.75	42.5	96.81	92	17.07	92.5	16.80	142	4.16	142.5	4.11
43	94.92	43.5	93.06	93	16.54	93.5	16.29	143	4.06	143.5	4.01
44	91.25	44.5	89.47	94	16.04	94.5	15.79	144	3.96	144.5	3.91
45	87.74	45.5	86.04	95	15.55	95.5	15.31	145	3.86	145.5	3.81
46	84.38	46.5	82.75	96	15.08	96.5	14.85	146	3.76	146.5	3.72
47	81.16	47.5	79.61	97	14.62	97.5	14.40	147	3.67	147.5	3.62
48	78.09	48.5	76.60	98	14.18	98.5	13.97	148	3.58	148.5	3.54
49	75.14	49.5	73.71	99	13.76	99.5	13.55	149	3.49	149.5	3.45
50	72.32	50.5	70.96	100	13.35	100.5	13.15	150	3.41	150.5	3.37

7. Pressure Sensor

$P_H = 4.1V_H-2.05$
$P_L = 7/3 \times V_L-7/6$
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}



8. Method of Checking the Inverter's Power Transistors and Diode Modules

8.1 Method of Checking the Inverter's Power Transistors and Diode Modules

Checking failures in power semiconductors mounted on inverter PCB

Check the power semiconductors mounted on the inverter PCB by the use of a multiple tester.

<Items to be prepared>

- Multiple tester : Prepare the analog type of multiple tester.
  For the digital type of multiple tester, those with diode check function are available for the checking.

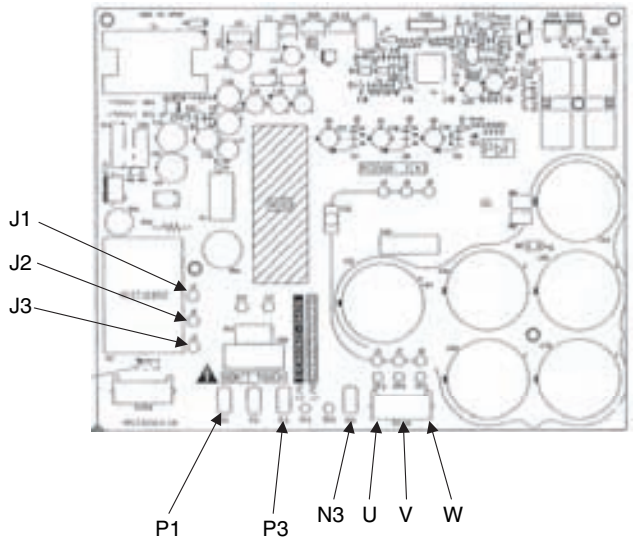
<Test points>

- Turn OFF the power supply. Then, after a lapse of 10 minutes or more, make measurement of resistance.

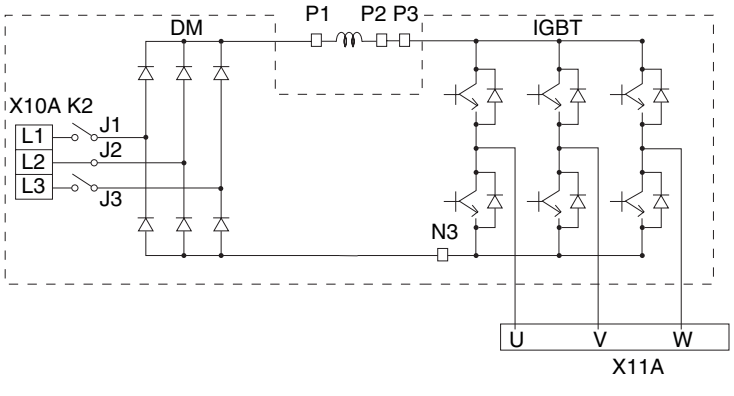
<Preparation>

- To make measurement, disconnect all connectors and terminals.

Inverter PCB



Electronic circuit



- According to the checking aforementioned, it is probed that the malfunction results from the faulty inverter. The following section describes supposed causes of the faulty inverter.
- Faulty compressor (ground leakage)
- Faulty fan motor (ground leakage)
- Entry of conductive foreign particles
- Abnormal voltage (e.g. overvoltage, surge (thunder), or unbalanced voltage)

In order to replace the faulty inverter, be sure to check for the points aforementioned.

1. Power module checking

When using the analog type of multiple tester, make measurement in resistance measurement mode in the x1kΩ range.

No.	Measuring point		Criterion	Remark
	+	-		
1	P3	U	2 to 15kΩ	
2	P3	V		
3	P3	W		
4	U	P3	Not less than 15kΩ (including)	It may take time to determine the resistance due to capacitor charge or else.
5	V	P3		
6	W	P3		
7	N3	U		
8	N3	V		
9	N3	W		
10	U	N3	2 to 15kΩ	
11	V	N3		
12	W	N3		

When using the digital type of multiple tester, make measurement in diode check mode (→|—).

No.	Measuring point		Criterion	Remark
	+	-		
1	P3	U	Not less than 1.2V (including)	It may take time to determine the voltage due to capacitor charge or else.
2	P3	V		
3	P3	W		
4	U	P3	0.3 to 0.7V	
5	V	P3		
6	W	P3		
7	N3	U		
8	N3	V		
9	N3	W		
10	U	N3	Not less than 1.2V (including)	It may take time to determine the voltage due to capacitor charge or else.
11	V	N3		
12	W	N3		

2. Diode module checking

When using the analog type of multiple tester, make measurement in resistance measurement mode in the x1kΩ range.

No.	Measuring point		Criterion	Remark
	+	-		
1	P1	J1	2 to 15kΩ	
2	P1	J2		
3	P1	J3		
4	J1	P1	Not less than 15kΩ (including)	It may take time to determine the resistance due to capacitor charge or else.
5	J2	P1		
6	J3	P1		
7	N3	J1		
8	N3	J2		
9	N3	J3		
10	J1	N3	2 to 15kΩ	
11	J2	N3		
12	J3	N3		

When using the digital type of multiple tester, make measurement in diode check mode (→|—).

No.	Measuring point		Criterion	Remark
	+	-		
1	P1	J1	Not less than 1.2V (including)	It may take time to determine the voltage due to capacitor charge or else.
2	P1	J2		
3	P1	J3		
4	J1	P1	0.3 to 0.7V	
5	J2	P1		
6	J3	P1		
7	N3	J1		
8	N3	J2		
9	N3	J3		
10	J1	N3	Not less than 1.2V (including)	It may take time to determine the voltage due to capacitor charge or else.
11	J2	N3		
12	J3	N3		

Part 8
Precautions for New Refrigerant (R-410A)

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

1.1 Outline

1.1.1 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.

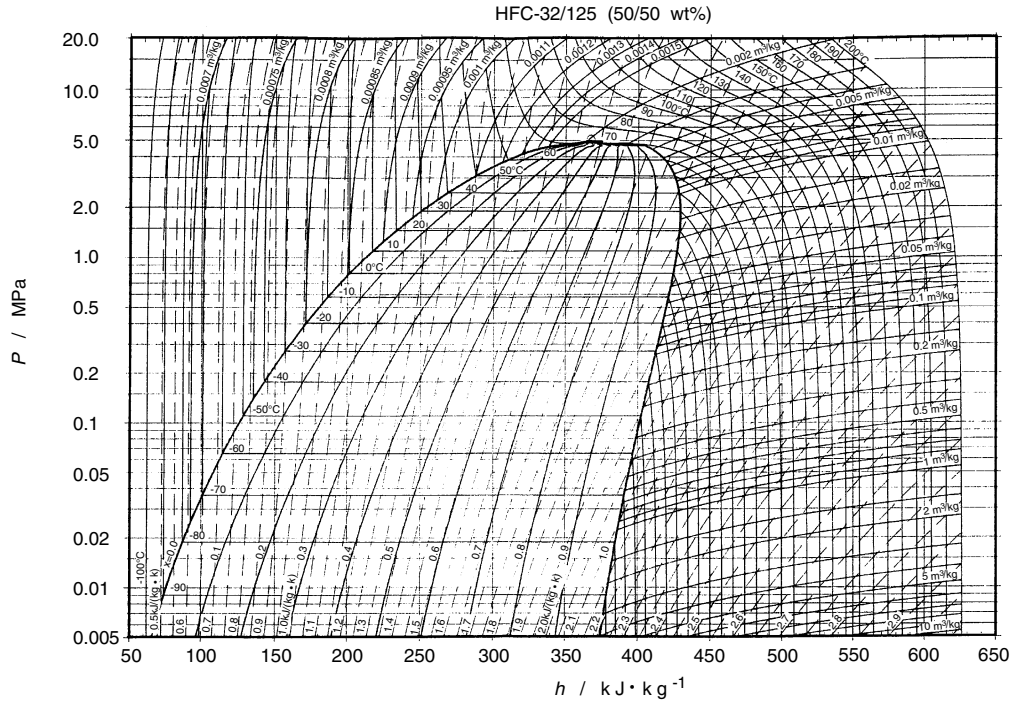
	HFC units (Units using new refrigerants)		HCFC units
Refrigerant name	R-407C	R-410A	R-22
Composing substances	Non-azeotropic mixture of HFC32, HFC125 and HFC134a (*1)	Quasi-azeotropic mixture of HFC32 and HFC125 (*1)	Single-component refrigerant
Design pressure	3.2 MPa (gauge pressure) = 32.6 kgf/cm^2	4.0 MPa (gauge pressure) = 40.8 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 two or more refrigerants having different boiling points.

★2. Quasi-azeotropic mixture refrigerant: mixture of two 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

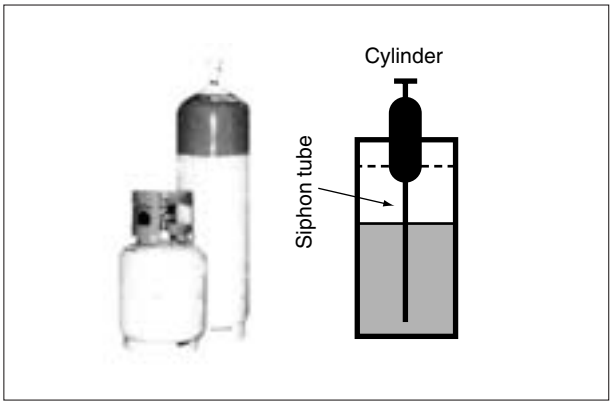
DAIREP ver2.0

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

1.2 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).

1.3 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".

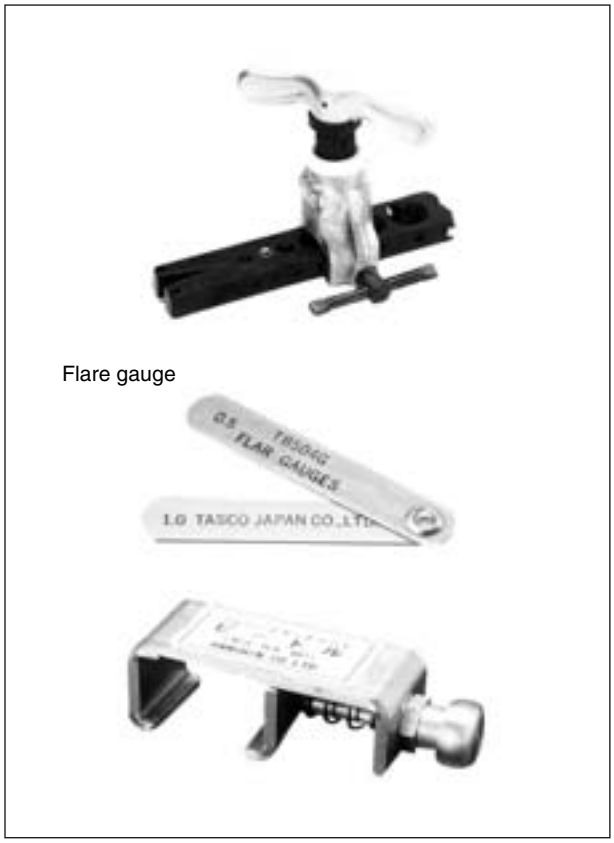
As for the charge mouthpiece and packing, 1/2UNF20 is necessary for mouthpiece size of charge hose.

■ Copper tube material and thickness

Pipe size	R-407C		R-410A	
	Material	Thickness t (mm)	Material	Thickness t (mm)
ϕ6.4	○	0.8	○	0.8
ϕ9.5	○	0.8	○	0.8
ϕ12.7	○	0.8	○	0.8
ϕ15.9	○	1.0	○	1.0
ϕ19.1	○	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

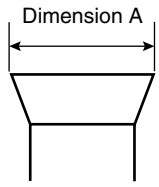
• Dimension A

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

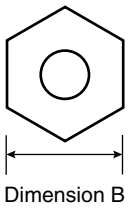
• Dimension B Unit:mm

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

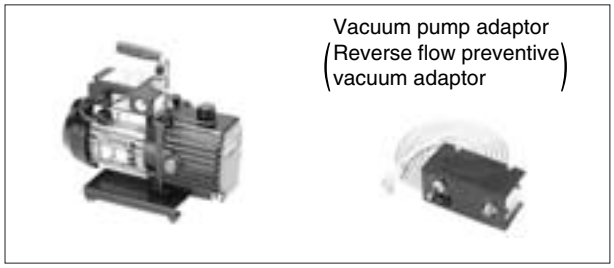
■ Differences

• 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.

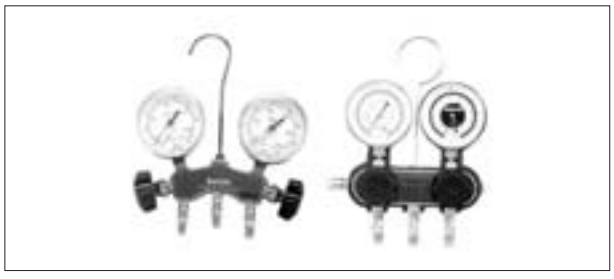
■ Differences
- Previous testers detected chlorine. Since HFCs do not contain chlorine, new tester detects hydrogen.

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

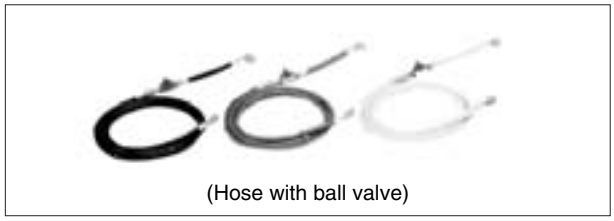


■ Specifications
- High pressure gauge
  - 0.1 to 5.3 MPa (-76 cmHg to 53 kg/cm^2)
- Low pressure gauge
  - 0.1 to 3.8 MPa (-76 cmHg to 38 kg/cm^2)
- 1/4" → 5/16" (2min → 2.5min)
- No oil is used in pressure test of gauges.
  → For prevention of contamination

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

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

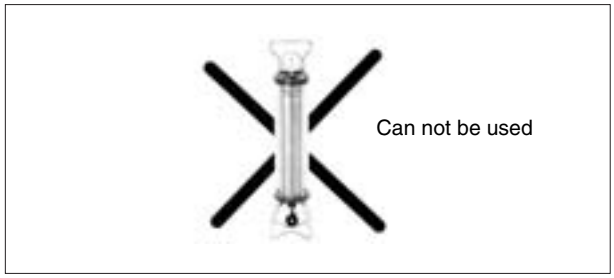
7. Charge hose for R-410A


(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



■ 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.

9. Weigher for refrigerant charge

■ Specifications
- High accuracy
  TA101A (for 10-kg cylinder) = ± 2g
  TA101B (for 20-kg cylinder) = ± 5g
- Equipped with pressure-resistant sight glass to check liquid refrigerant charging.
- A manifold with separate ports for HFCs and previous refrigerants is equipped as standard accessories.

■ Differences
- Measurement is based on weight to prevent change of mixing ratio during charging.

10. Charge mouthpiece

■ Specifications
- For R-410A, 1/4"→ 5/16" (2min → 2.5min)
- Material is changed from CR to H-NBR.

■ Differences
- Change of thread specification on hose connection side (For the R-410A use)
- Change of sealer material for the HFCs use.

Revision History

Month / Year	Version	Revised contents
04/2008	SiBE31-801	–
08/2009	SiBE31-801_A	Model change of the concealed ceiling type
12/2010	SiBE31-801_B	Correction of data
03/2011	SiBE31-801_C	Correction of text

Warning

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

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

Cautions on product corrosion

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

JMI-0107

Organization:
DAIKIN INDUSTRIES, LTD.
AIR CONDITIONING MANUFACTURING DIVISION

Scope of Registration:
THE DESIGN/DEVELOPMENT AND MANUFACTURE OF COMMERCIAL AIR CONDITIONING, HEATING, COOLING, REFRIGERATING EQUIPMENT, COMMERCIAL HEATING EQUIPMENT, RESIDENTIAL AIR CONDITIONING EQUIPMENT, HEAT RECLAIM VENTILATION, AIR CLEANING EQUIPMENT, MARINE TYPE CONTAINER REFRIGERATION UNITS, 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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