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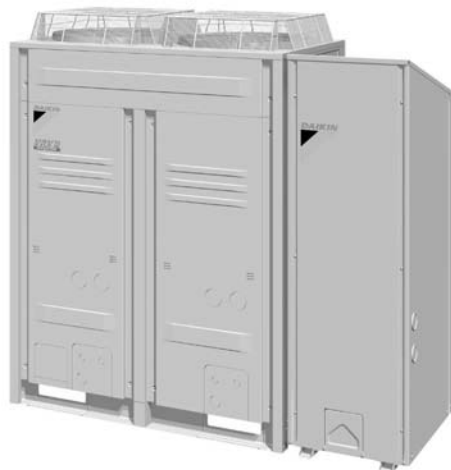
SiBE311209

R-410A

Service Manual

VRV III-C

RTSQ8-16PAY1 R-410A Heat Pump 50Hz



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

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1. Introduction







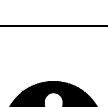

1.1 Safety Cautions

Cautions and Warnings


- Be sure to read the following safety cautions before conducting repair work.
- The caution items are classified into “ **Warning**” and “ **Caution**”. The “ **Warning**” items are especially important since they can lead to death or serious injury if they are not followed closely. The “ **Caution**” items can also lead to serious accidents under some conditions if they are not followed. Therefore, be sure to observe all the safety caution items described below.
- About the pictograms
 - △ This symbol indicates 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. Defective insulation can cause an electrical shock.	
Be sure to check the drainage of the indoor unit after the repair. Defective 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, lose data, get an unexpected result or has to restart (part of) a procedure.
 Warning	Warning	A “warning” is used when there is danger of personal injury.
	Reference	A “reference” guides the reader to other places in this binder or in this manual, where he/she will find additional information on a specific topic.

Part 1

General Information

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1. Model Names of Indoor/Outdoor Units

Indoor Unit

Type	Model Name															Power Supply
Round Flow Ceiling Mounted Cassette	FXFQ	—	20P8	25P8	32P8	40P8	50P8	63P8	—	80P8	100P8	125P8	—	—	—	VEB
600x600 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	—	—	—	—	—	—	—	—	—	—	
	FXDQ-NBVE	—	—	—	—	40NB	50NB	63NB	—	—	—	—	—	—	—	
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	
Ceiling Suspended Unit	FXHQ	—	—	—	32MA	—	—	63MA	—	—	100MA	—	—	—	—	
Wall Mounted Unit	FXAQ	15PA	20PA	25PA	32PA	40PA	50PA	63PA	—	—	—	—	—	—	—	V1
Floor Standing Unit	FXLQ	—	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—	—	VE
Concealed Floor Standing Unit	FXNQ	—	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—	—	
Outdoor Air Processing Unit	FXMQ-MF	—	—	—	—	—	—	—	—	—	—	125MF	—	200MF	250MF	V1
4-way blow ceiling suspended unit	FXUQ	—	—	—	—	—	—	—	71MA	—	100MA	125MA	—	—	—	
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	10PA	14PA	16PA	20PA	Y1

Function Unit

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

VE: 1 ϕ , 220 ~ 240V, 50Hz










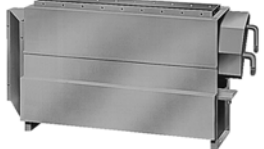


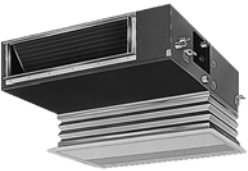



V1: 1 ϕ , 220 ~ 240V, 50Hz

V3: 1 ϕ , 230V, 50Hz

Y1: 3 ϕ , 380 ~ 415V, 50Hz

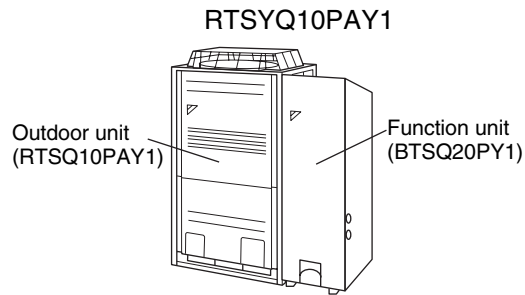
2. External Appearance

2.1 Indoor Units

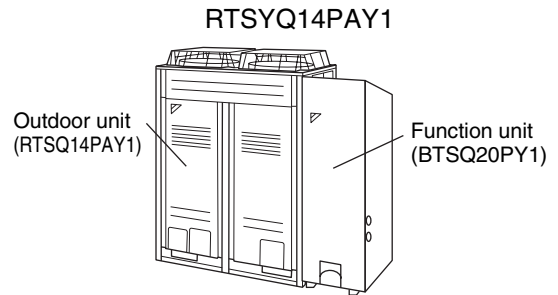
<p>Round Flow Ceiling Mounted Cassette</p> <p>FXFQ20P FXFQ25P FXFQ32P FXFQ40P FXFQ50P FXFQ63P FXFQ80P FXFQ100P FXFQ125P</p> 	<p>Concealed Ceiling Unit (Large)</p> <p>FXMQ200MA FXMQ250MA</p> 
<p>600x600 4-Way Blow Ceiling Mounted Cassette</p> <p>FXZQ20M FXZQ25M FXZQ32M FXZQ40M FXZQ50M</p> 	<p>Ceiling Suspended Unit</p> <p>FXHQ32MA FXHQ63MA FXHQ100MA</p> 
<p>2-Way Blow Ceiling Mounted Cassette</p> <p>FXCQ20M FXCQ25M FXCQ32M FXCQ40M FXCQ50M FXCQ63M FXCQ80M FXCQ125M</p> 	<p>Wall Mounted Unit</p> <p>FXAQ15PA FXAQ20PA FXAQ25PA FXAQ32PA FXAQ40PA FXAQ50PA FXAQ63PA</p> 
<p>Ceiling Mounted Corner Cassette</p> <p>FXKQ25MA FXKQ32MA FXKQ40MA FXKQ63MA</p> 	<p>Floor Standing Unit</p> <p>FXLQ20MA FXLQ25MA FXLQ32MA FXLQ40MA FXLQ50MA FXLQ63MA</p> 
<p>Slim Concealed Ceiling Unit</p> <p>FXDQ20PB FXDQ40NB FXDQ25PB FXDQ50NB FXDQ32PB FXDQ63NB with Drain Pump (VE)</p> 	<p>Concealed Floor Standing Unit</p> <p>FXNQ20MA FXNQ25MA FXNQ32MA FXNQ40MA FXNQ50MA FXNQ63MA</p> 
<p>Concealed Ceiling Unit (Small)</p> <p>FXDQ20M FXDQ25M</p> 	<p>BS Units</p> <p>BSV4Q100P BSV6Q100P</p> 
<p>Concealed Ceiling Unit</p> <p>FXSQ20P FXSQ25P FXSQ32P FXSQ40P FXSQ50P FXSQ63P FXSQ80P FXSQ100P FXSQ125P</p> 	<p>4-way Blow Ceiling Suspended Unit (Connection Unit Series)</p> <p>FXUQ71MA + BEVQ71MA FXUQ100MA + BEVQ100MA FXUQ125MA + BEVQ125MA</p> <p>Connection Unit</p> 
<p>Concealed Ceiling Unit</p> <p>FXMQ20P FXMQ25P FXMQ32P FXMQ40P FXMQ50P FXMQ63P FXMQ80P FXMQ100P FXMQ125P FXMQ140P</p> 	<p>Outdoor Air Processing Unit</p> <p>FXMQ125MF FXMQ200MF FXMQ250MF</p> 

2.2 Outdoor Units and Function Units

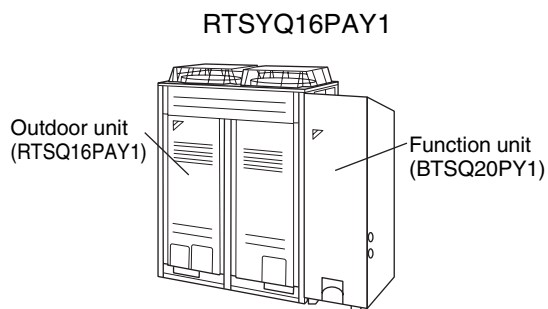
■ 10HP System



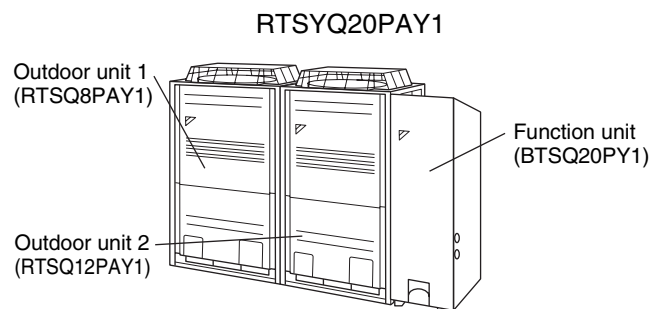
■ 14HP System



■ 16HP System



■ 20HP System



3. Model Selection

VRV III-C Heat Pump Series

Connectable indoor units number and capacity

HP	10HP	14HP	16HP	20HP
System name	RTSYQ10PAY1	RTSYQ14PAY1	RTSYQ16PAY1	RTSYQ20PAY1
Outdoor unit 1	RTSQ10PAY1	RTSQ14PAY1	RTSQ16PAY1	RTSQ8PAY1
Outdoor unit 2	—	—	—	RTSQ12PAY1
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	20.0~52.0	22.5~58.5	28.0~72.8

Connectable Indoor Unit

Type		Model Name														Power Supply
Round Flow Ceiling Mounted Cassette	FXFQ	—	20P8	25P8	32P8	40P8	50P8	63P8	—	80P8	100P8	125P8	—	—	—	VEB
600x600 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	—	—	—	—	—	—	—	—	—	—	
	FXDQ-NBVE	—	—	—	—	40NB	50NB	63NB	—	—	—	—	—	—	—	
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	
Ceiling Suspended Unit	FXHQ	—	—	—	32MA	—	—	63MA	—	—	100MA	—	—	—	—	
Wall Mounted Unit	FXAQ	15PA	20PA	25PA	32PA	40PA	50PA	63PA	—	—	—	—	—	—	—	V1
Floor Standing Unit	FXLQ	—	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—	—	VE
Concealed Floor Standing Unit	FXNQ	—	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—	—	
Outdoor Air Processing Unit	FXMQ-MF	—	—	—	—	—	—	—	—	—	—	125MF	—	200MF	250MF	V1
4-way blow ceiling suspended unit	FXUQ	—	—	—	—	—	—	—	71MA	—	100MA	125MA	—	—	—	
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	P15 type	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	1.7 kW	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	0.6HP	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 air temperatures.

<Two-stage Compression System>

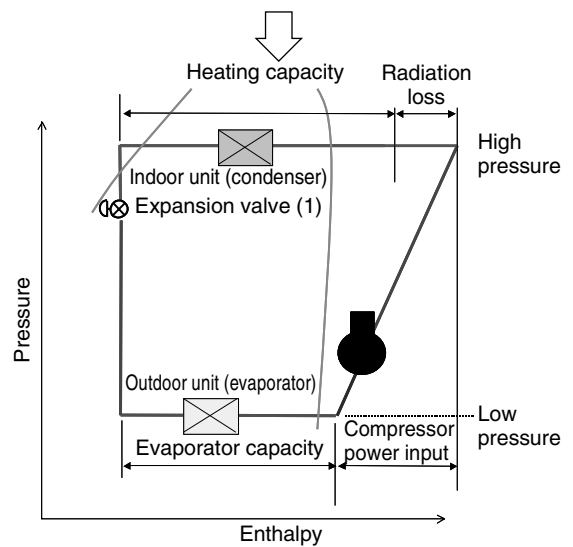
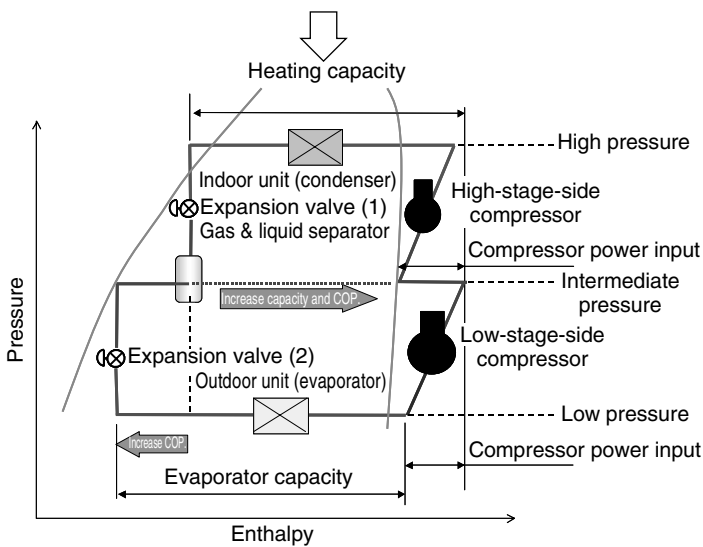
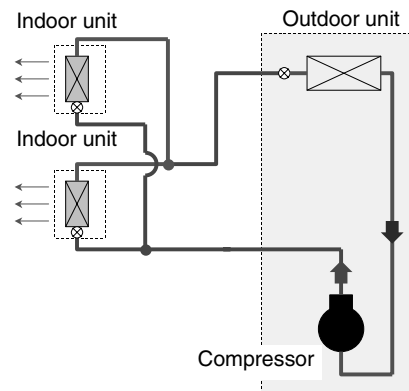
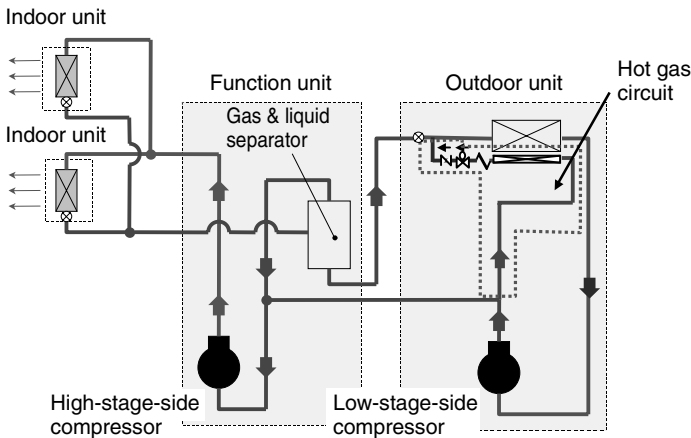
This is a system to conduct efficient heating operation by two-stage compression with two compressors connected in series.

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 air temperatures)

Conventional System



Part 2

Specifications

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1. Specifications

1.1 Outdoor Units

Heat Pump 50Hz <RTSYQ-PA>

Model Name		RTSYQ10PAY1	
Independent Unit	Outdoor Unit	RTSQ10PAY1	
	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	mm	φ9.5 C1220T (Brazing Connection)
	Suction Gas Pipe	mm	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: 4D076315	

Notes:

- ★1 Indoor temp. : 27°CDB, 19°CWB / Outdoor temp. : 35°CDB
Equivalent piping length : 7.5m, level difference : 0m
Function unit length : 6m
- ★2 Indoor temp. : 20°CDB / Outdoor temp. : 7°CDB, 6°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit length : 6m
- ★3 Indoor temp. : 20°CDB / Outdoor temp. : -10°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit length : 6m
- ★4 Displacement value are at nominal capacity.
- ★5 Motor output are nominal.

Conversion Formulae

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

Model Name			RTSYQ14PAY1
Independent Unit	Outdoor Unit		RTSQ14PAY1
	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: (HxWxD)		mm	(1,680x1,240x765)+(1,570x460x765)
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	mm	φ12.7 C1220T (Brazing Connection)
	Suction Gas Pipe	mm	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: 4D076316

Notes:

- ★1 Indoor temp. : 27°CDB, 19°CWB / Outdoor temp. : 35°CDB
Equivalent piping length : 7.5m, level difference : 0m
Function unit length : 6m
- ★2 Indoor temp. : 20°CDB / Outdoor temp. : 7°CDB, 6°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit length : 6m
- ★3 Indoor temp. : 20°CDB / Outdoor temp. : -10°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit length : 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			RTSYQ16PAY1
Independent Unit	Outdoor Unit		RTSQ16PAY1
	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: (HxWxD)	mm	(1,680x1,240x765)+(1,570x460x765)	
Heat Exchanger			Cross Fin Coil
Comp.	Type	Hermetically Sealed Scroll Type	
	Displacement ★4	m³/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	m³/min	239
	Drive	Direct Drive	
Connecting Pipes	Liquid Pipe	mm	φ12.7 C1220T (Brazing Connection)
	Suction Gas Pipe	mm	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: 4D076317

Notes:

- ★1 Indoor temp. : 27°CDB, 19°CWB / Outdoor temp. : 35°CDB
Equivalent piping length : 7.5m, level difference : 0m
Function unit length : 6m
- ★2 Indoor temp. : 20°CDB / Outdoor temp. : 7°CDB, 6°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit length : 6m
- ★3 Indoor temp. : 20°CDB / Outdoor temp. : -10°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit length : 6m
- ★4 Displacement value are at nominal capacity.
- ★5 Motor output are nominal.

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

Model Name		RTSYQ20PAY1	
Independent Unit	Outdoor Unit	RTSQ8PAY1+RTSQ12PAY1	
	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: (HxWxD)	mm	(1,680x930x765)x2+(1,570x460x765)	
Heat Exchanger		Cross Fin Coil	
Comp.	Type	Hermetically Sealed Scroll Type	
	Displacement ★4	m³/h	16.9+(13.72+10.53)+16.9
	Number of Revolutions	r.p.m	7980, (6300, 2900), 7980
	Motor OutputxNumber of Units ★5	kW	4.7+(3.5+4.5)+4.7
	Starting Method	Soft Start	
Fan	Type	Propeller Fan	
	Motor Output	kW	(0.75x1)+(0.75x1)
	Airflow Rate	m³/min	185+200
	Drive	Direct Drive	
Connecting Pipes	Liquid Pipe	mm	φ15.9 C1220T (Brazing Connection)
	Suction Gas Pipe	mm	φ28.6 C1220T (Brazing Connection)
	Equalizer pipe	mm	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: 4D076314	

Notes:

- ★1 Indoor temp. : 27°CDB, 19°CWB / Outdoor temp. : 35°CDB
Equivalent piping length : 7.5m, level difference : 0m
Function unit length : 6m
- ★2 Indoor temp. : 20°CDB / Outdoor temp. : 7°CDB, 6°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit length : 6m
- ★3 Indoor temp. : 20°CDB / Outdoor temp. : -10°CWB
Equivalent piping length : 7.5m, level difference : 0m
Function unit length : 6m
- ★4 Displacement value are at nominal capacity.
- ★5 Motor output are nominal.

Conversion Formulae
kcal/h=kWx860
Btu/h=kWx3412
cfm=m³/minx35.3

1.2 Indoor Units

Round Flow 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		Galvanized 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	m ²	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	m ³ /min	12.5	12.5	12.5	13.5	15.5
		Low	m ³ /min	9.0	9.0	9.0	9.0	10.0
	Heating	High	m ³ /min	12.5	12.5	12.5	13.5	15.0
		Low	m ³ /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)	dB(A)	49	49	49	50	51
Cooling	Sound Pressure	High	dB(A)	31	31	31	32	33
		Low	dB(A)	28				
Heating	Sound Pressure	High	dB(A)	31	31	31	32	33
		Low	dB(A)	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					

Round Flow 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 air temperature : 35°CDB, equivalent refrigerant piping : 5m, level difference : 0m.				
	Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor air 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.					

Round Flow 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			Galvanized 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		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 air temperature : 35°CDB, equivalent refrigerant piping : 5m, level difference : 0m.			
	Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor air 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			Galvanized 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	m ²	0.269				
		Nr of Stages		10				
Fan	Type			Turbo fan				
	Quantity			1				
Cooling	High	m ³ /min		9.0	9.0	9.5	11.0	14.0
	Low	m ³ /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
		Sound Pressure	High	dBa	30	30	32	36
	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 air temperature : 35°CDB, equivalent refrigerant piping : 7.5m (horizontal)				
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor air 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			Galvanized 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	m ²	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	m ³ /min	7.0	9.0	9.0	12.0	12.0	
		Low	m ³ /min	5.0	6.5	6.5	9.0	9.0	
	Heating	High	m ³ /min	7.0	9.0	9.0	12.0	12.0	
		Low	m ³ /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)	dB(A)	45.0	50.0	50.0	50.0	50.0	
Cooling	Sound Pressure	High	dB(A)	33.0	35.0	35.0	35.5	35.5	
		Low	dB(A)	28.0	29.0	29.0	30.5	30.5	
Heating	Sound Pressure	High	dB(A)	33.0	35.0	35.0	35.5	35.5	
		Low	dB(A)	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	
	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 air temperature : 35°CDB, equivalent refrigerant piping : 8m, level difference : 0m.				
		Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor air 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	Galvanized 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)	dB	52.0	54.0	60.0	
Cooling	Sound Pressure	High	dB	38.0	40.0	45.0	
		Low	dB	33.0	35.0	39.0	
Heating	Sound Pressure	High	dB	38.0	40.0	45.0	
		Low	dB	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 air temperature : 35°CDB, equivalent refrigerant piping : 8m, level difference : 0m.		
		Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor air 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			Galvanized 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	m ²	0.180	0.180	0.180	0.226
		Nr of Stages		11			
Fan	Type			Sirocco fan			
	Quantity			1			
Airflow Rate	Cooling	High	m ³ /min	11.00	11.00	13.00	18.00
		Low	m ³ /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 air temperature : 35°CDB, equivalent refrigerant piping : 7.5m (horizontal)			
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor air 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 x FLA			
			MFA <= 4 x 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			Galvanized 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	m ²	0.126		
		Nr of Stages		12		
Fan	Type			Sirocco fan		
Airflow Rate	Cooling	High high	m ³ /min	8.0		
		High	m ³ /min	7.2		
		Low	m ³ /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 heating capacities are based on : indoor temperature : 20°CDB, outdoor air 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			Galvanized 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	m ²	0.176	0.176	0.227
		Nr of Stages		12	12	12
Fan	Type			Sirocco fan		
Airflow Rate	Cooling	High high	m ³ /min	10.5	12.5	16.5
		High	m ³ /min	9.5	11.0	14.5
		Low	m ³ /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 heating capacities are based on : indoor temperature : 20°CDB, outdoor air 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	Galvanized 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	m ²	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	m ³ /min		6.7	7.4	
	Low	m ³ /min		5.2	5.8	
Heating	High	m ³ /min		6.7	7.4	
	Low	m ³ /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 air temperature : 35°CDB, equivalent refrigerant piping : 8m, level difference : 0m.					
	Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor air 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	Galvanized 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	m ²	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	m ³ /min	9	9	9.5	16	16	
	Low	m ³ /min	6.5	6.5	7	11	11	
Heating	High	m ³ /min	9	9	9.5	16	16	
	Low	m ³ /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				
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 air temperature : 35°CDB, equivalent refrigerant piping : 7.5m, level difference : 0m.				
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor air 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	Galvanized 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	m ²	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	m ³ /min		19.5	25	32	39	
	Low	m ³ /min		16	20	23	28	
Heating	High	m ³ /min		19.5	25	32	39	
	Low	m ³ /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			Galvanized 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	m ²	0.098	0.098	0.098	0.148	0.249
		Nr of Stages		16				
Fan	Type			Sirocco fan				
Airflow Rate	Cooling	High high	m ³ /min	9	9	9	16	18
		High	m ³ /min	7.5	7.5	8	13	16.5
		Low	m ³ /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 air 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 air 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			Galvanized 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	m ²	0.249	0.249	0.383	0.383	0.383
		Nr of Stages		16				
Fan	Type			Sirocco fan				
Airflow Rate	Cooling	High high	m ³ /min	19.5	25	32	39	46
		High	m ³ /min	17.5	22.5	27	33	39
		Low	m ³ /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 air 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 air 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			Galvanized 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	m ²	0.68		0.68		
		Nr of Stages		26		26		
Fan	Type			Sirocco fan				
	Quantity			2		2		
Cooling	High	m ³ /min		58		72		
	Low	m ³ /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 air temperature : 35°CDB, equivalent refrigerant piping : 7.5m (horizontal)				
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor air 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	m ²	0.182	0.233	0.293
		Nr of Stages		12	12	12
Fan	Type			Sirocco fan		
Cooling	High	m ³ /min		12	17.5	25
	Low	m ³ /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 air temperature : 35°CDB, equivalent refrigerant piping : 7.5m (horizontal)		
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor air 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			FXAQ15PAV1	FXAQ20PAV1	FXAQ25PAV1	FXAQ32PAV1	FXAQ40PAV1	FXAQ50PAV1	FXAQ63PAV1	
Capacity	Cooling	kW	1.7	2.2	2.8	3.6	4.5	5.6	7.1	
	Heating	kW	1.9	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	795	1,050	1,050	1,050
		Depth	mm	238						
Weight	Unit	kg	11	11	11	11	14	14	14	
Heat Exchanger	Dimensions	Nr of Rows		2						
		Fin Pitch	mm	1.40						
		Face Area	m ²	0.161	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	m ³ /min	7.0	7.5	8	8.5	12	15	19	
	Low	m ³ /min	4.5	4.5	5	5.5	9	12	14	
Fan	Motor	Quantity		1						
		Model		QCL9661M	QCL9661M	QCL9661M	QCL9661M	QCL9686M	QCL9686M	QCL9686M
		Output (high)	W	40	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	6.35	9.52
	Gas	Type		Flare connection						
		Diameter	mm	12.7	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 air temperature : 35°CDB, equivalent refrigerant piping : 5m (horizontal)									
	Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor air 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			FXAQ15PAV1	FXAQ20PAV1	FXAQ25PAV1	FXAQ32PAV1	FXAQ40PAV1	FXAQ50PAV1	FXAQ63PAV1
Power Supply	Name	VE							
	Phase	1~							
	Frequency	Hz	50						
	Voltage	V	220-240						
Current	Minimum circuit amps (MCA)	A	0.4	0.3	0.4	0.4	0.4	0.4	0.6
	Maximum fuse amps (MFA)	A	15						
	Full load amps (FLA)	A	0.3	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 air temperature : 35°CDB, equivalent refrigerant piping : 7.5m (horizontal)					
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor air 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			Galvanized 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 air temperature : 35°CDB, equivalent refrigerant piping : 7.5m (horizontal)					
				Nominal heating capacities are based on : indoor temperature : 20°CDB, outdoor air 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: (HxWxD)		mm	100x350x225	100x350x225	100x350x225
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: (HxWxD)		mm 470x744x1,100	470x1,380x1,100	470x1,380x1,100	
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm 3x26x2.0	3x26x2.0	3x26x2.0	
	Face Area	m ² 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)	m ³ /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=m ³ /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		
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		
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

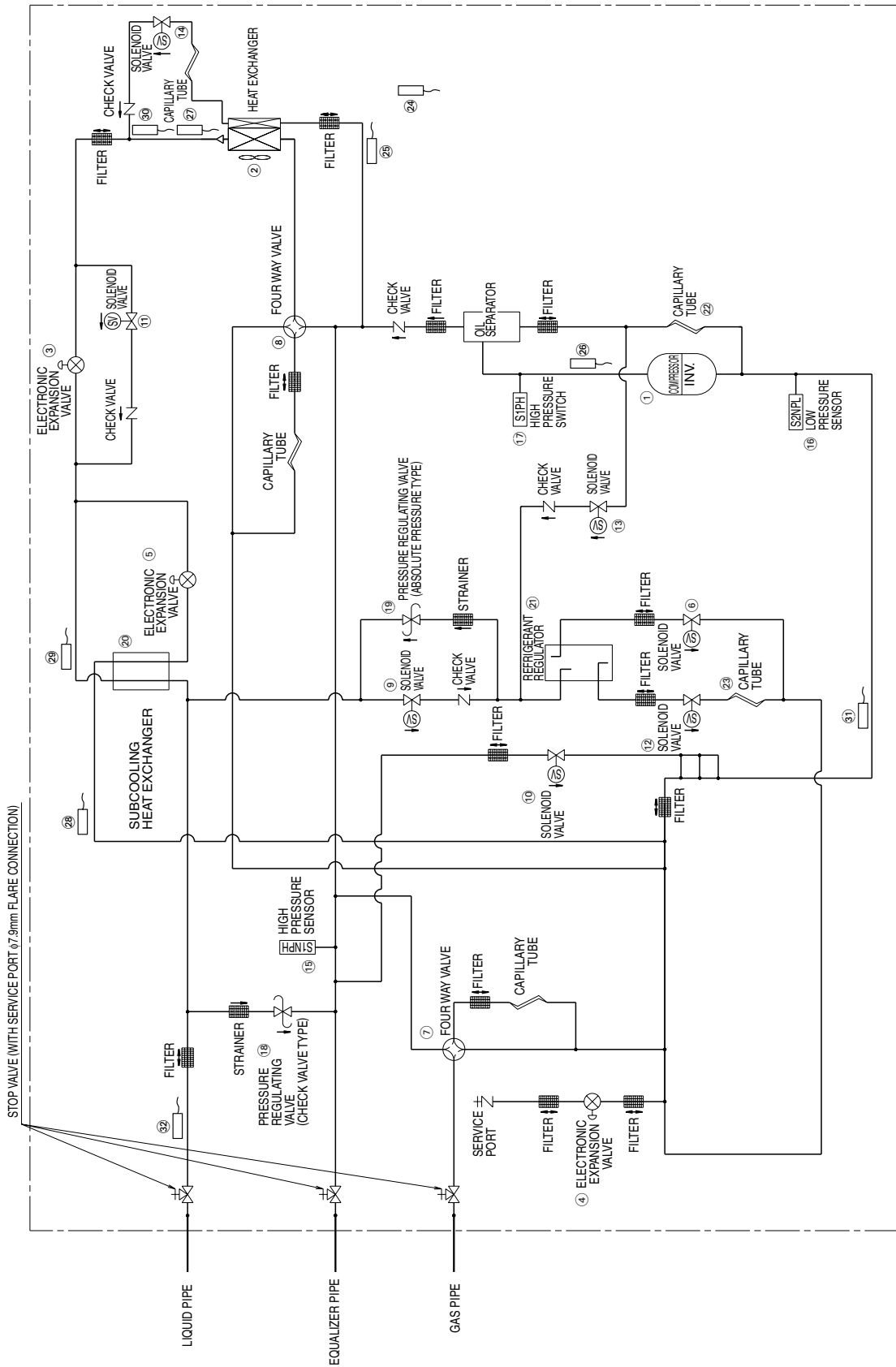
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1. Refrigerant Circuit

1.1 RTSQ8PAY1

No. in refrigerant system diagram	Electric 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 unit 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 unit 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	Y9S	Solenoid valve (Hot gas: SVHG)	Bypass the high pressure gas to the outdoor unit heat exchanger.
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 the pressure increases to stop operation and avoid high pressure increase in the fault operation.
⑱	—	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.
⑲	—	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.
⑳	—	Subcooling heat exchanger	Apply subcooling to liquid refrigerant.
㉑	—	Refrigerant regulator	Surplus refrigerant is held according to the operation conditions.
㉒	—	Capillary tube	Used to return the refrigerating oil separated through the oil separator to the INV. compressor.
㉓	—	Capillary tube	This is used to discharge refrigerant from the refrigerant regulator.
㉔	R1T	Thermistor (Outdoor air: Ta)	Used to detect outdoor air temperature, correct discharge pipe temperature, and others.
㉕	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.
㉖	R31T	Thermistor (INV. discharge pipe: Tdi)	Used to detect discharge pipe temperature. Used for compressor temperature protection control.
㉗	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.
㉘	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.
㉙	R6T	Thermistor (Subcooling heat exchanger liquid pipe: Tl)	This detects temperature of liquid pipe between the main electronic expansion valve and subcooling heat exchanger.
㉚	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.
㉛	R8T	Thermistor (Suction pipe: TsA)	Used to detect suction pipe temperature.
㉜	R9T	Thermistor (Liquid pipe: Tsc)	This detects temperature of liquid pipe between the liquid stop valve and subcooling heat exchanger.

RTSQ8PAY1



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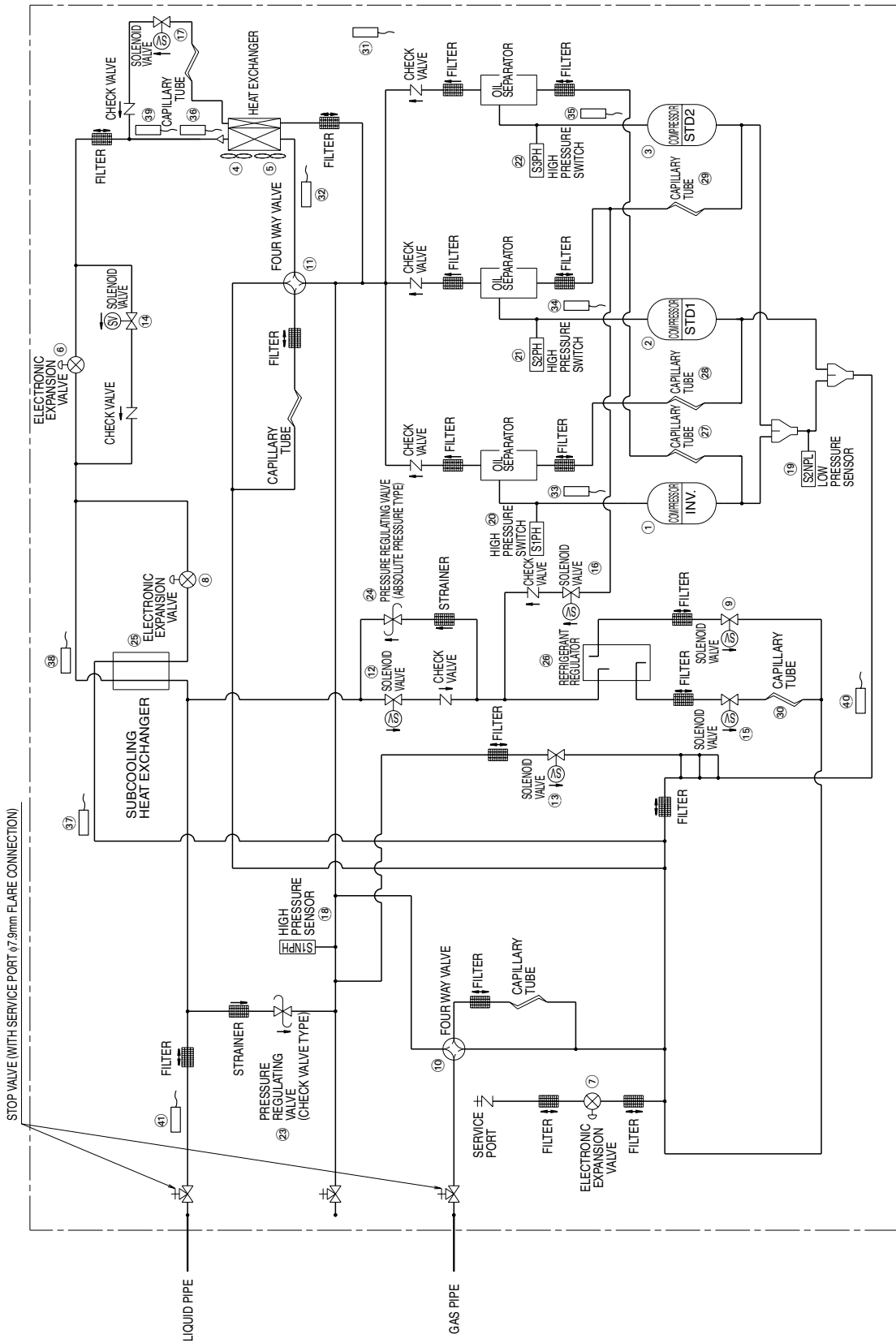
1.2 RTSQ10PAY1, 12PAY1

No. in refrigerant system diagram	Electric Symbol	Name	Major Function
①	M1C	Inverter compressor	Inverter compressor is operated on frequencies between 52Hz and 280Hz (266 for RTSQ12PA) 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 unit 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 unit 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	Y9S	Solenoid valve (Hot gas: SVHG)	Bypass the high pressure gas to the outdoor unit heat exchanger.
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 the pressure increases to stop operation and avoid high pressure increase in the fault operation.
⑲	S2PH	High pressure switch (For STD compressor 1)	
⑳	—	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.
㉑	—	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.
㉒	—	Subcooling heat exchanger	Apply subcooling to liquid refrigerant.
㉓	—	Refrigerant regulator	Surplus refrigerant is held according to the operation conditions.
㉔	—	Capillary tube	Used to return the refrigerating oil separated through the oil separator to the INV. compressor.
㉕	—	Capillary tube	Used to return the refrigerating oil separated through the oil separator to the STD1 compressor.
㉖	—	Capillary tube	Used to discharge refrigerant from the refrigerant regulator.
㉗	R1T	Thermistor (Outdoor air: Ta)	Used to detect outdoor air temperature, correct discharge pipe temperature, and others.
㉘	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.
㉙	R31T	Thermistor (INV. discharge pipe: Tdi)	Used to detect discharge pipe temperature. Used for compressor temperature protection control.
㉚	R32T	Thermistor (STD1 discharge pipe: Tds1)	
㉛	R4T	Thermistor (Heat exchanger deicer: Tb)	Used to detect liquid pipe temperature of air heat exchanger. Used to make judgements on defrosting operation.
㉜	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.
㉝	R6T	Thermistor (Subcooling heat exchanger liquid pipe: Tl)	This detects temperature of liquid pipe between the main electronic expansion valve and subcooling heat exchanger.
㉞	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.
㉟	R8T	Thermistor (Suction pipe: TsA)	Used to detect suction pipe temperature.
㊱	R9T	Thermistor (Liquid pipe: Tsc)	This detects temperature of liquid pipe between the liquid stop valve and subcooling heat exchanger.

1.3 RTSQ14PAY1, 16PAY1

No. in refrigerant system diagram	Electric 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 unit 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 unit 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	Y8S	Solenoid valve (Discharge pipe of refrigerant regulator: SVT)	This is used to discharge refrigerant from the refrigerant regulator.
⑰	Y9S	Solenoid valve (Hot gas: SVHG)	Bypass the high pressure gas to the outdoor unit heat exchanger.
⑱	S1NPH	High pressure sensor	Used to detect high pressure.
⑲	S2NPL	Low pressure sensor	Used to detect low pressure.
⑳	S1PH	High pressure switch (For INV. compressor)	This functions when the pressure increases to stop operation and avoid high pressure increase in the fault operation.
㉑	S2PH	High pressure switch (For STD compressor 1)	
㉒	S3PH	High pressure switch (For STD compressor 2)	
㉓	—	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.
㉔	—	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.
㉕	—	Subcooling heat exchanger	Apply subcooling to liquid refrigerant.
㉖	—	Refrigerant regulator	Surplus refrigerant is held according to the operation conditions.
㉗	—	Capillary tube	Used to return the refrigerating oil separated through the oil separator to the INV. compressor.
㉘	—	Capillary tube	Used to return the refrigerating oil separated through the oil separator to the STD1 compressor.
㉙	—	Capillary tube	Used to return the refrigerating oil separated through the oil separator to the STD2 compressor.
㉚	—	Capillary tube	This is used to discharge refrigerant from the refrigerant regulator.
㉛	R1T	Thermistor (Outdoor air: Ta)	Used to detect outdoor air temperature, correct discharge pipe temperature, and others.
㉜	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.
㉝	R31T	Thermistor (INV discharge pipe: Tdi)	Used to detect discharge pipe temperature. Used for compressor temperature protection control.
㉞	R32T	Thermistor (STD1 discharge pipe: Tds1)	
㉟	R33T	Thermistor (STD2 discharge pipe: Tds2)	
㊱	R4T	Thermistor (Heat exchanger deicer: Tb)	Used to detect liquid pipe temperature of air heat exchanger. Used to make judgements on defrosting operation.
㊲	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.
㊳	R6T	Thermistor (Subcooling heat exchanger liquid pipe: Tl)	This detects temperature of liquid pipe between the main electronic expansion valve and subcooling heat exchanger.
㊴	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.
㊵	R8T	Thermistor (Suction pipe: TsA)	Used to detect suction pipe temperature.
㊶	R9T	Thermistor (Liquid pipe: Tsc)	This detects temperature of liquid pipe between the liquid stop valve and subcooling heat exchanger.

RTSQ14PAY1, 16PAY1



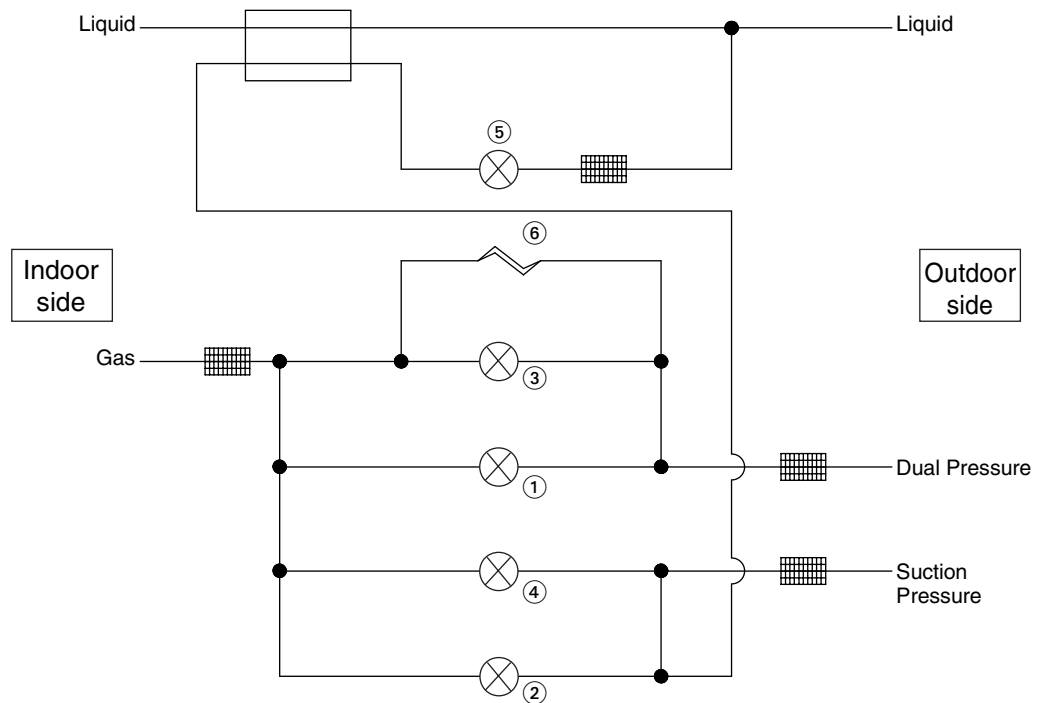
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1.4 BS Unit Functional Parts

BSV4Q100PV1, 6Q100PV1

No.	Name	Electric 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.

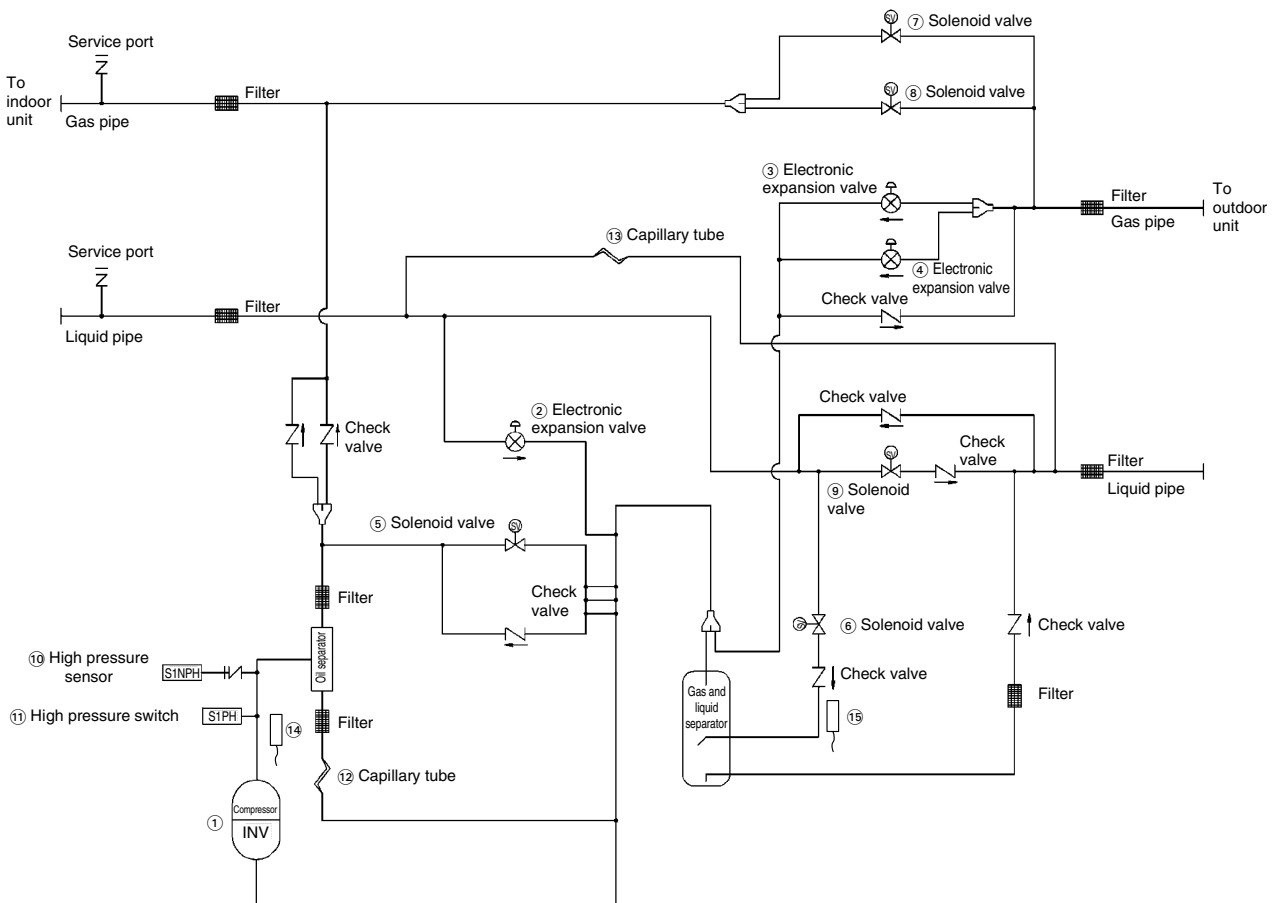
Note: Factory setting of all EV opening: 60pls



1.5 Function Unit

BTSQ20P

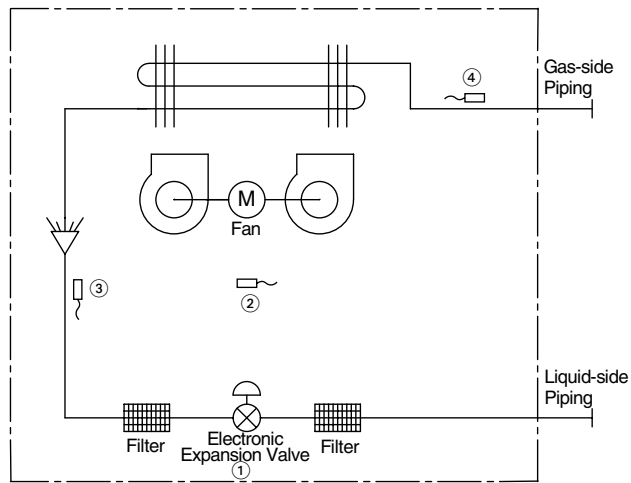
No.	Electric Symbol	Name	Function
①	M1C	Inverter compressor	Inverter compressor is operated on frequencies between 52Hz and 280Hz by using the inverter. Compressor operation steps: Refer to P.93.
②	Y1E	Electronic expansion valve (Liquid injection)	Used to conduct PI control so that the discharge pipe 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 air 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 air 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.



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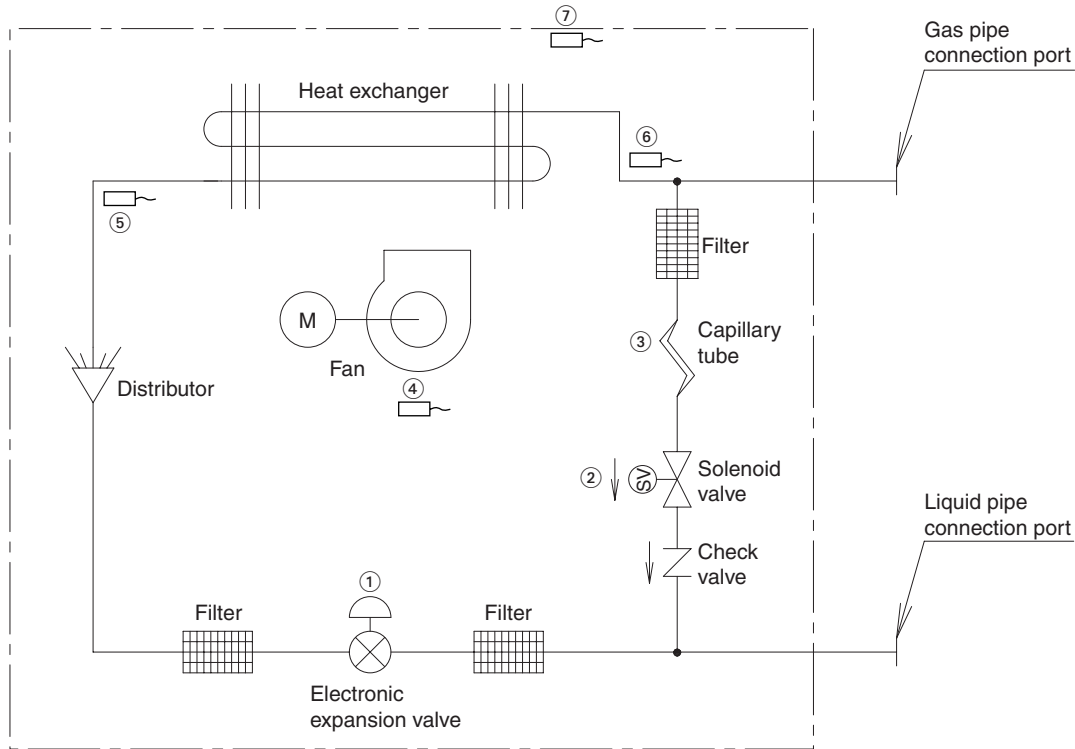
1.6 Indoor Units

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



No.	Name	Electric 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



4D018650C

Main Control Equipment

No.	Electric Symbol	Name	Main function
①	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.*
②	Y1S	Solenoid valve	Used to bypass hot gas while in heating with thermostat OFF.
③	-	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

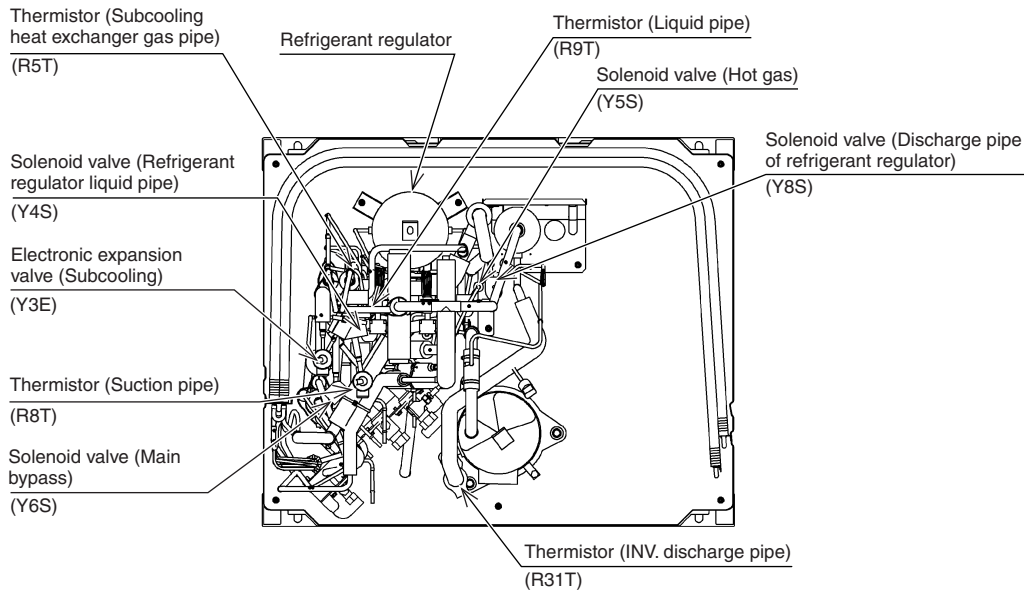
Thermistor

No.	Electric Symbol	Name	Main function
④	R1T	Suction air temperature thermistor	Used to turn ON or OFF the thermostat and select cooling or heating operation.
⑤	R2T	Liquid pipe temperature thermistor	Used to control the opening degree of EV (Y1F) under the SC control.
⑥	R3T	Gas pipe temperature thermistor	Used to control the opening degree of EV (Y1E) under the SH control.
⑦	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.

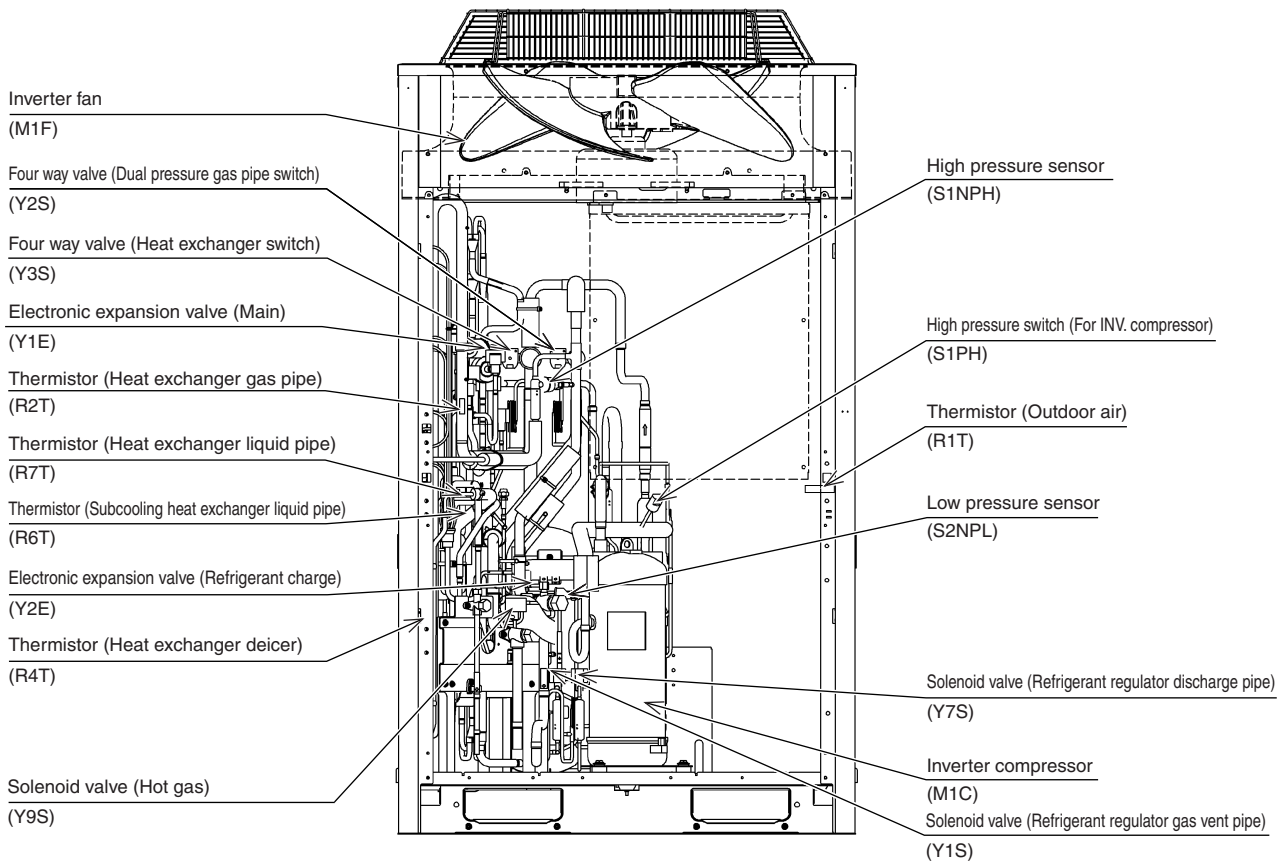
2. Functional Parts Layout

2.1 RTSQ8PAY1

Plan

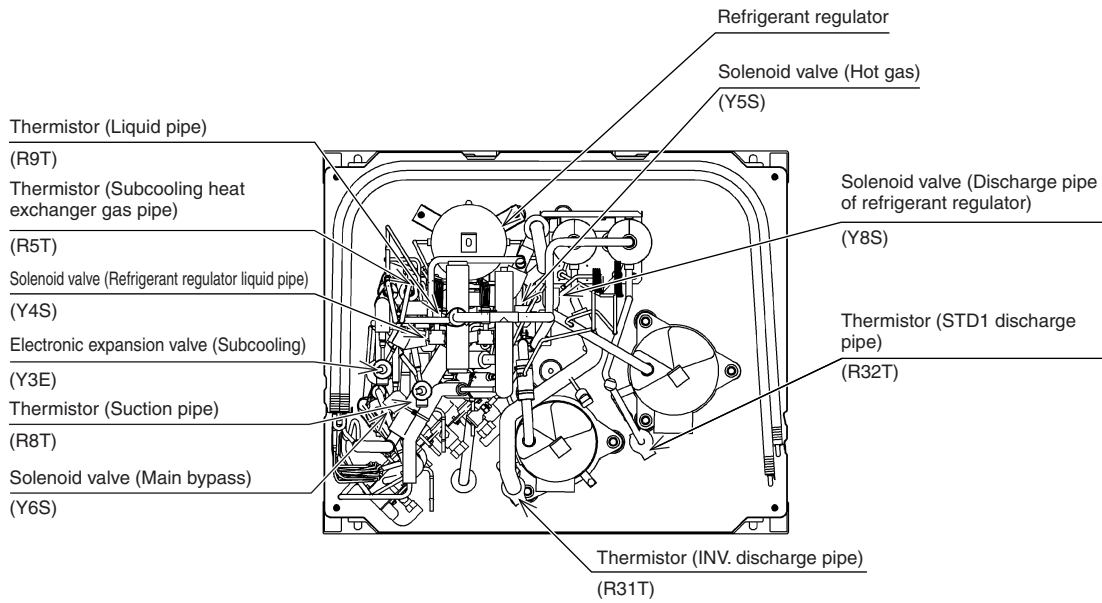


Front View

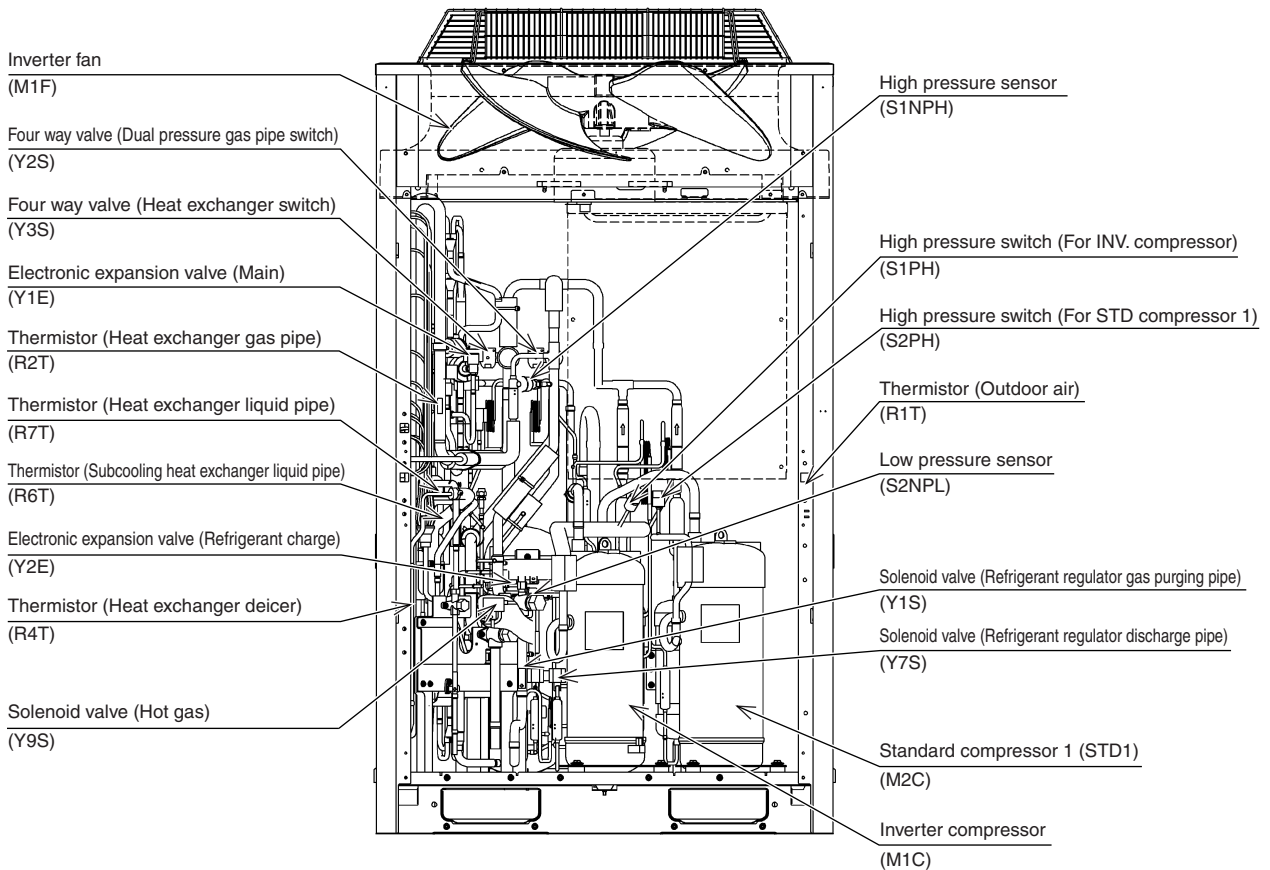


2.2 RTSQ10PAY1, 12PAY1

Plan

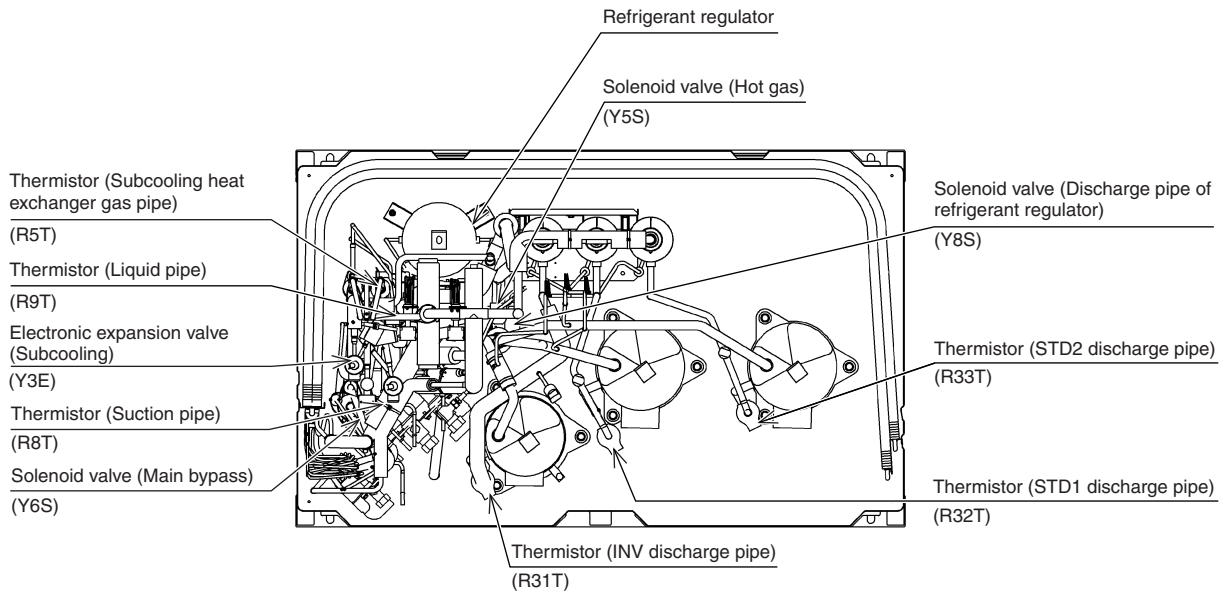


Front View

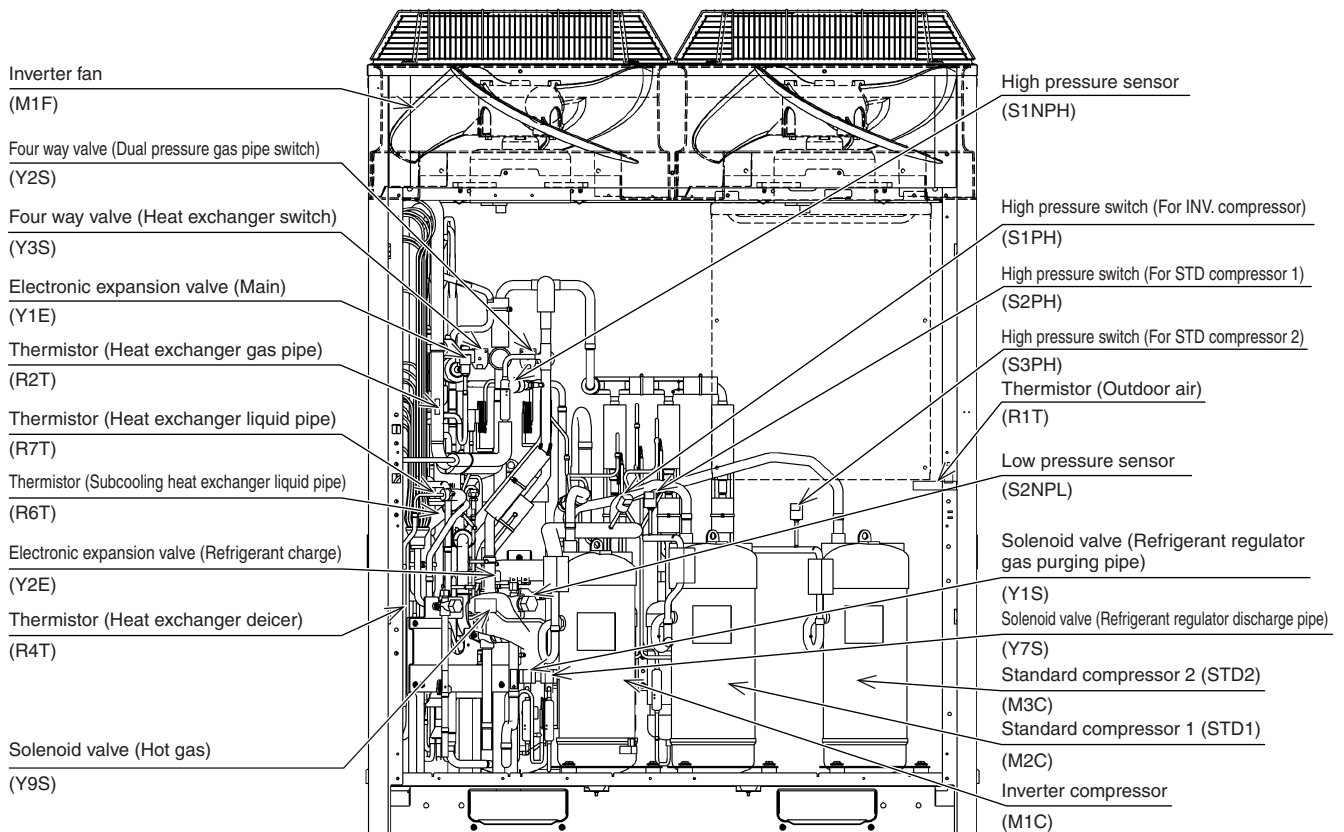


2.3 RTSQ14PAY1, 16PAY1

Plan

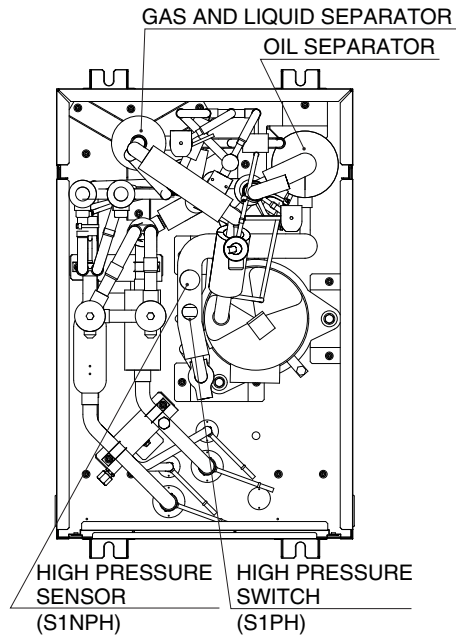


Front View

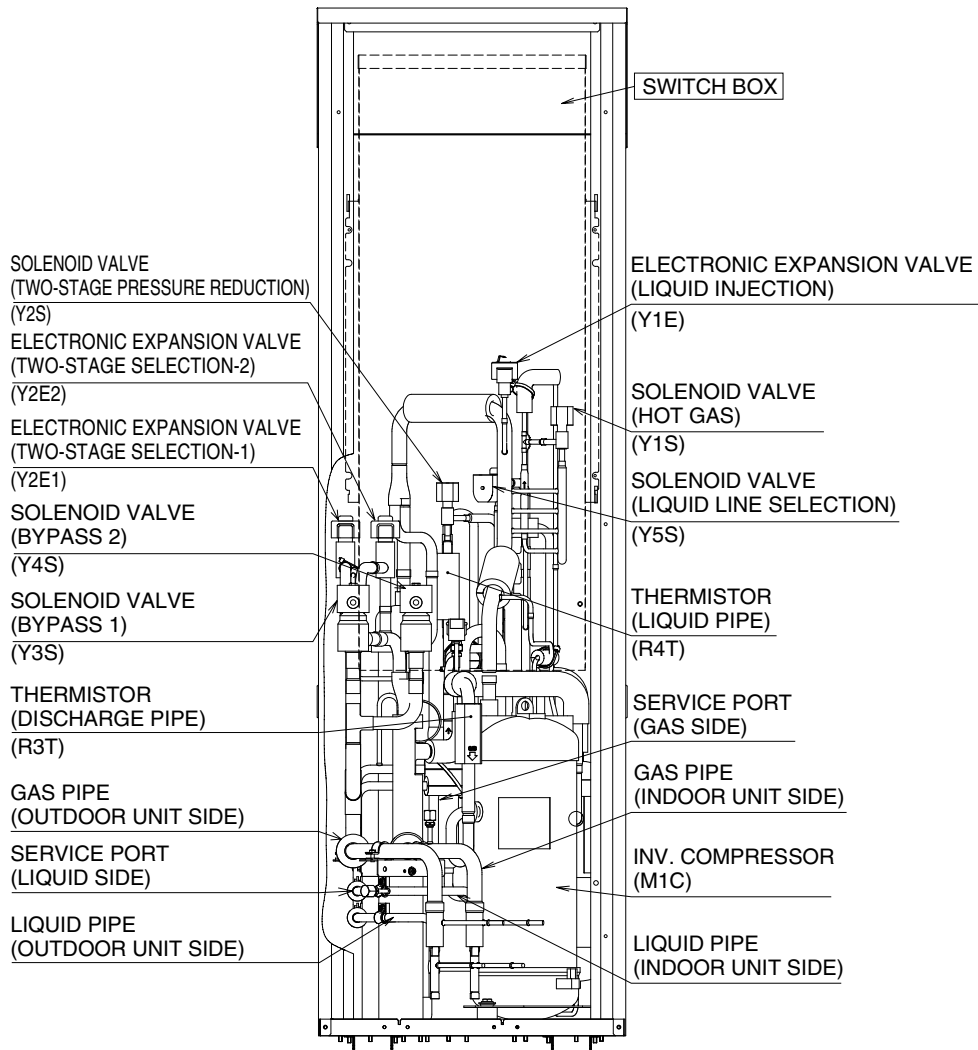


2.4 BTSQ20PY1

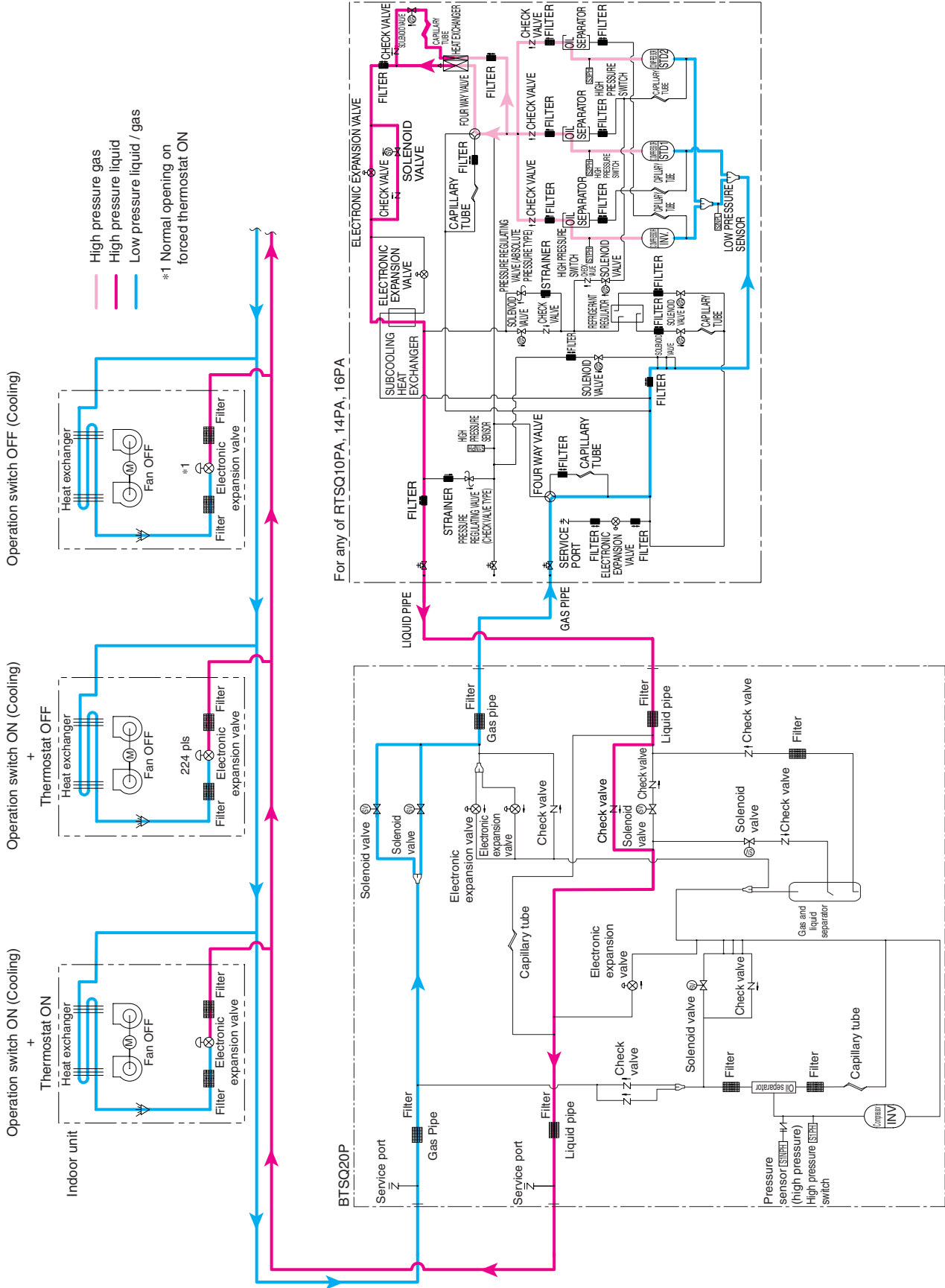
Plan



Front View

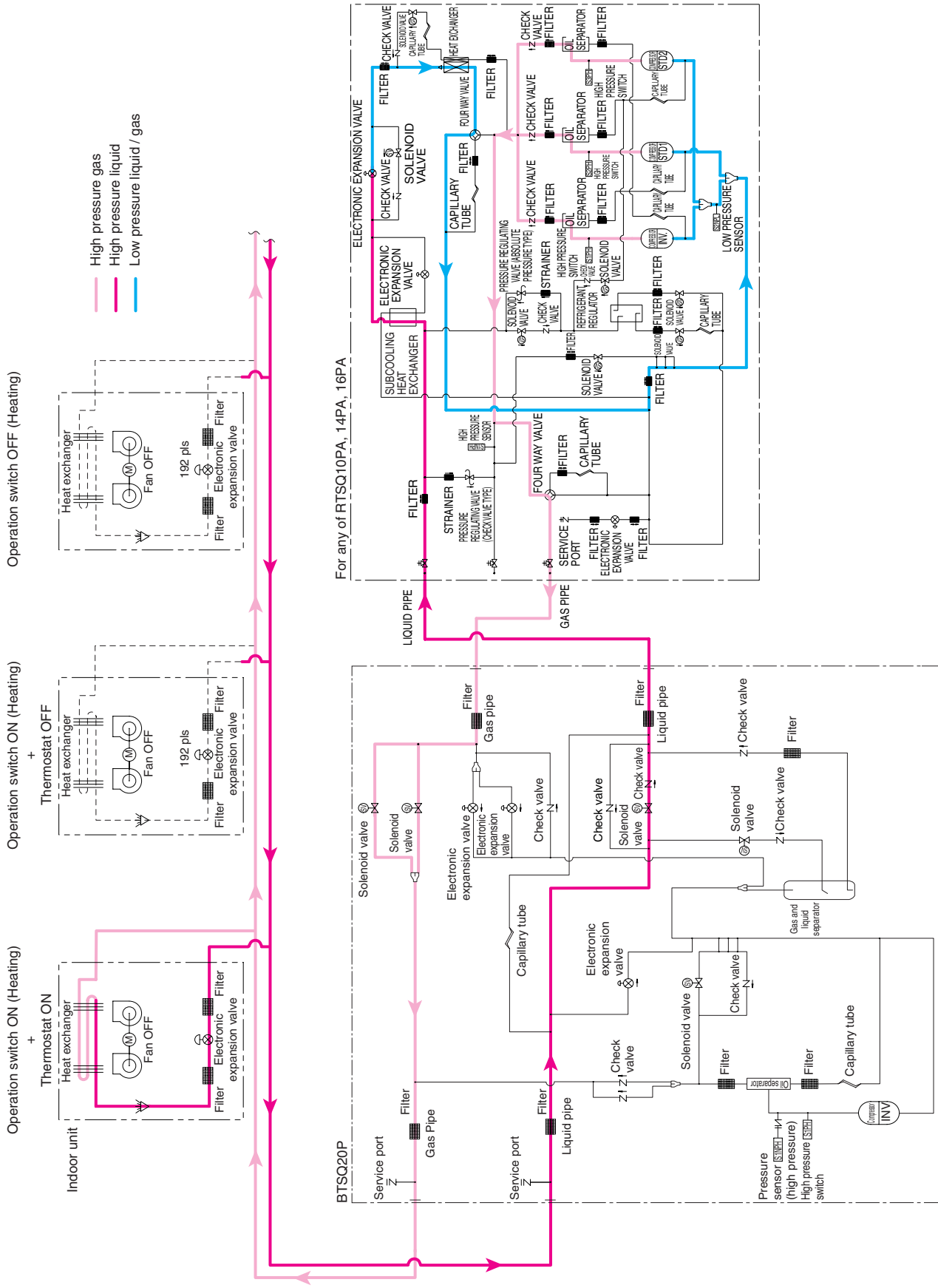


Cooling Oil Return Operation



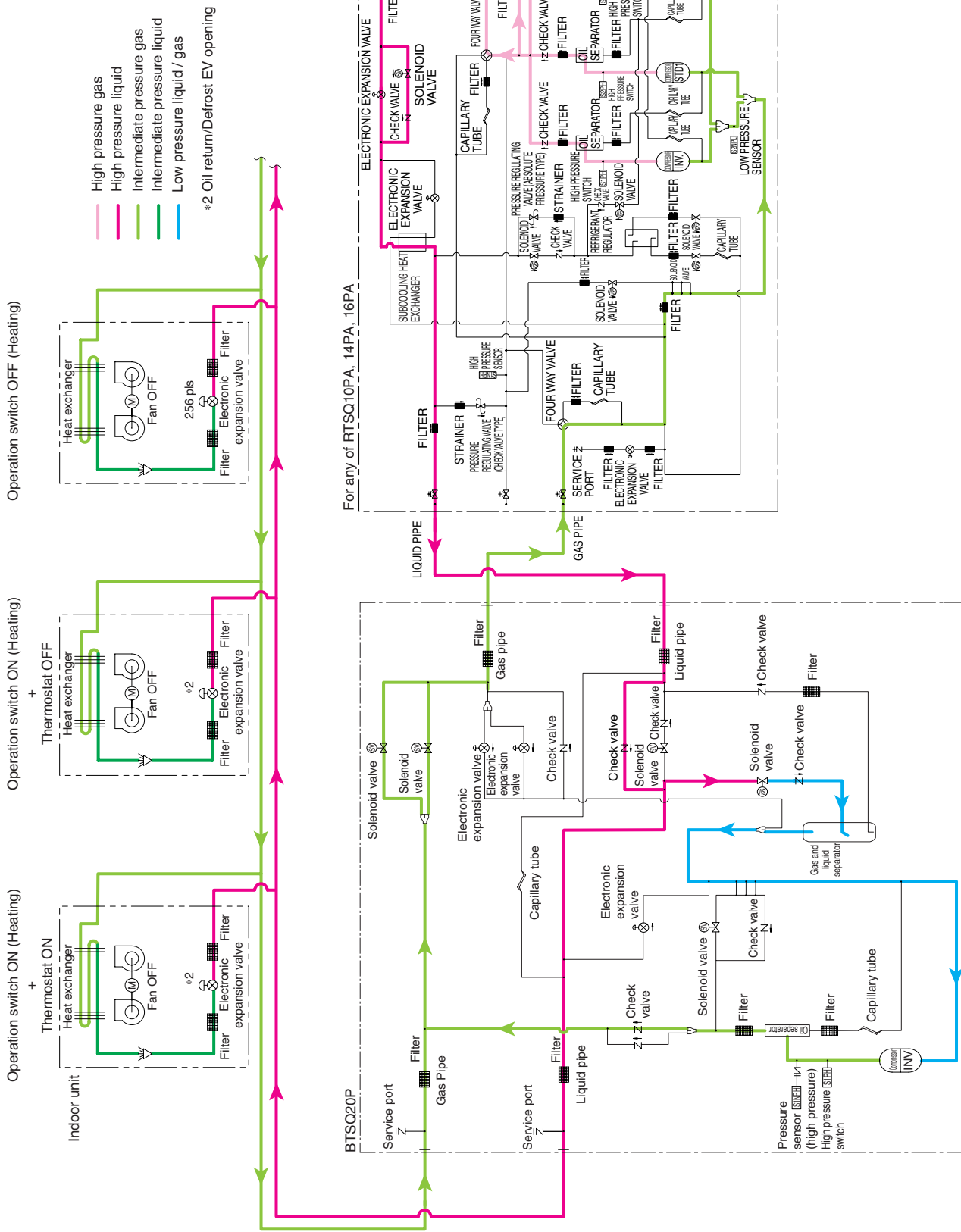
*: The figure above shows the refrigerant flow for RTSQ14PA, 16PA. RTSQ10PA has 2 compressors.

Heating Operation (Normal)



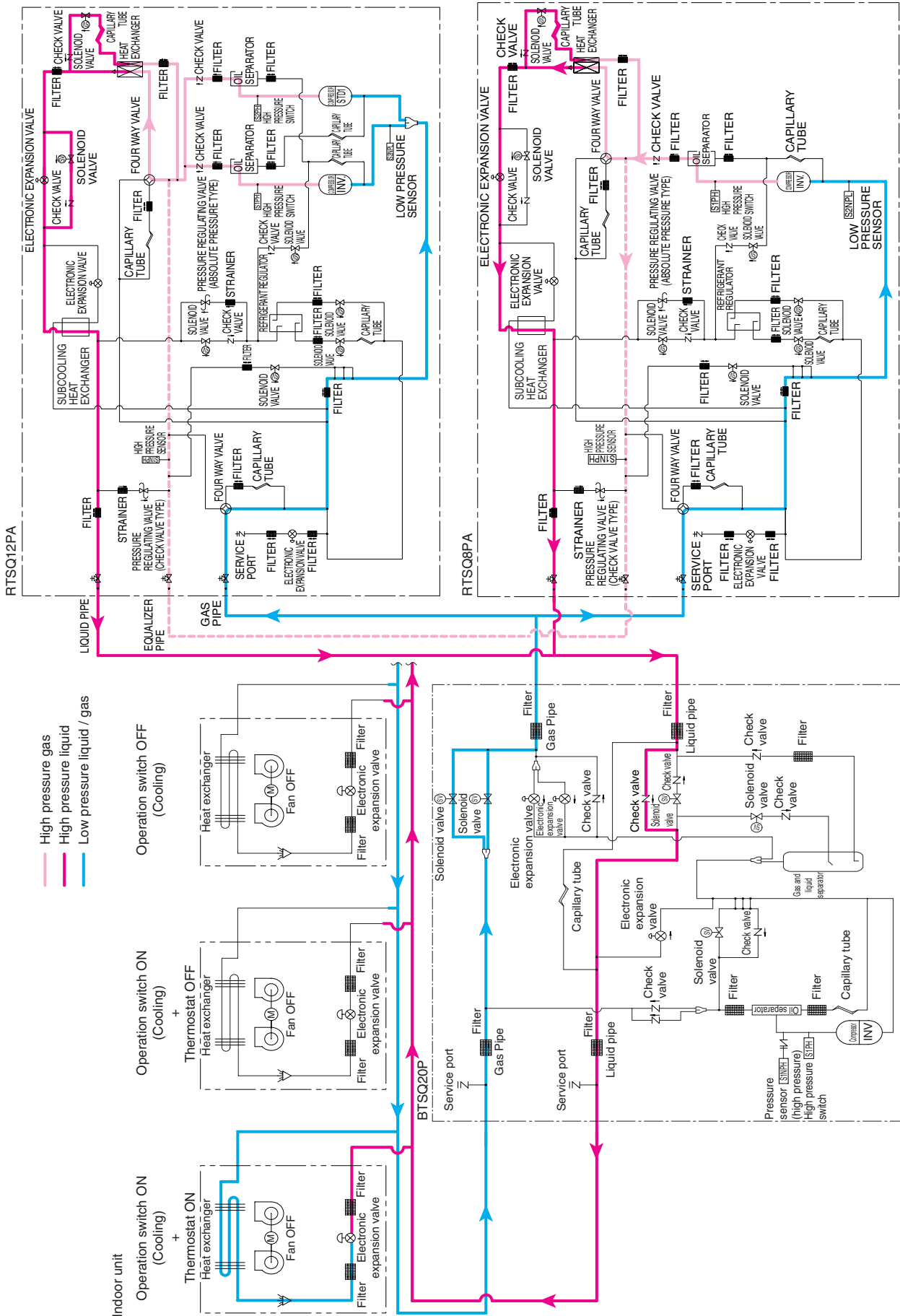
*: The figure above shows the refrigerant flow for RTSQ14PA, 16PA, RTSQ10PA has 2 compressors.

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

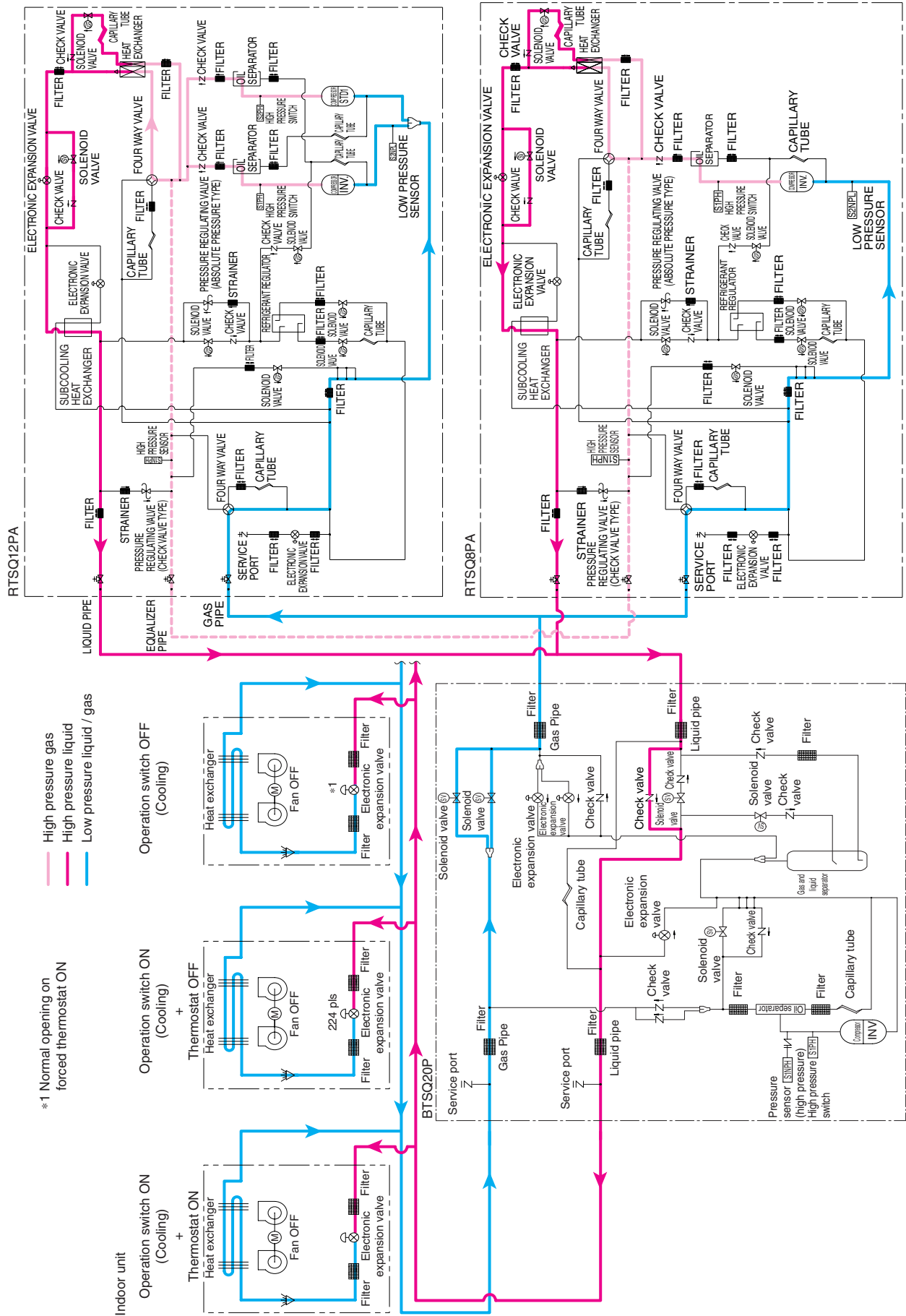


*: The figure above shows the refrigerant flow for RTSQ14PA, 16PA. RTSQ10PA has 2 compressors.

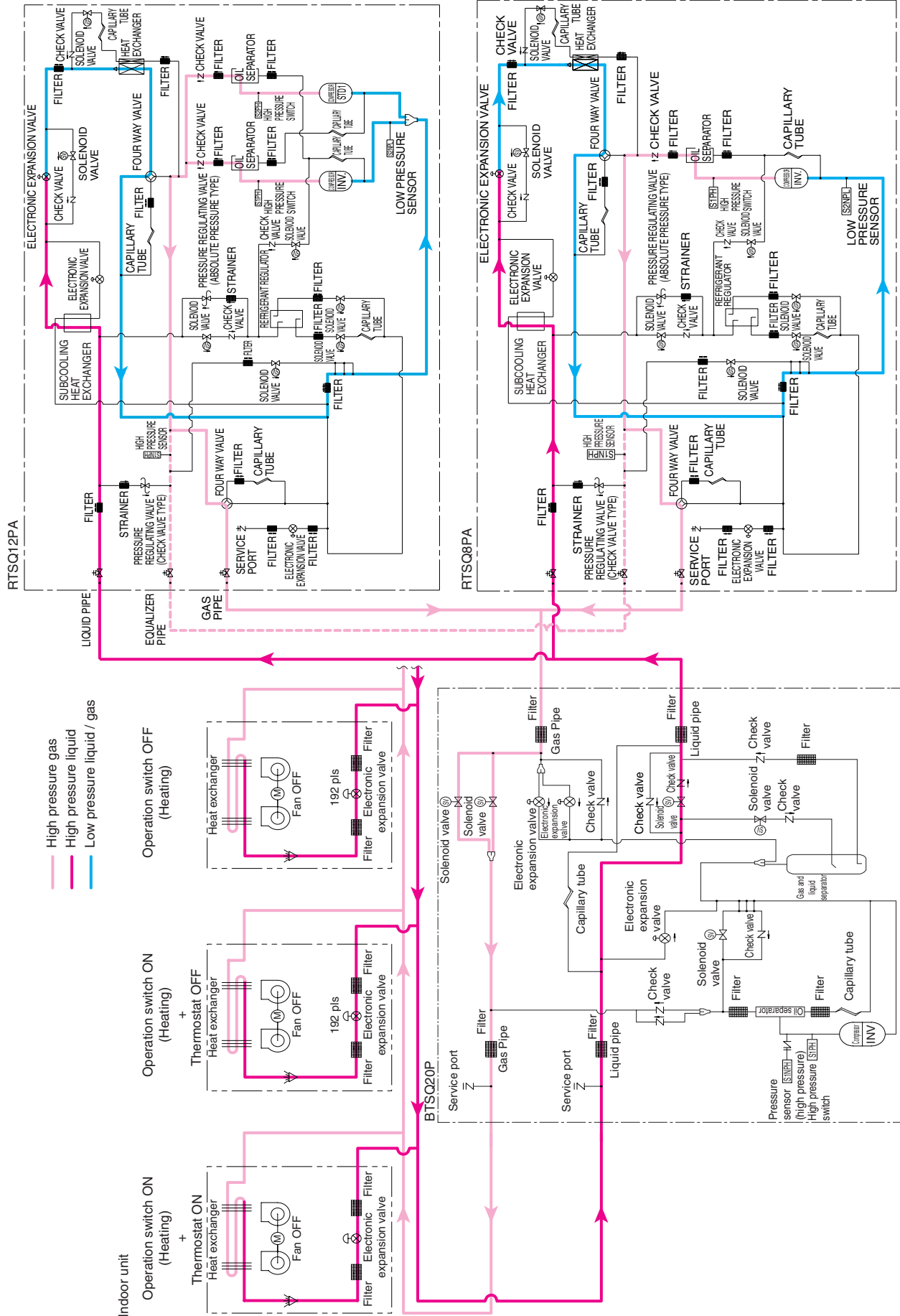
RTSYQ20PA
Cooling Operation



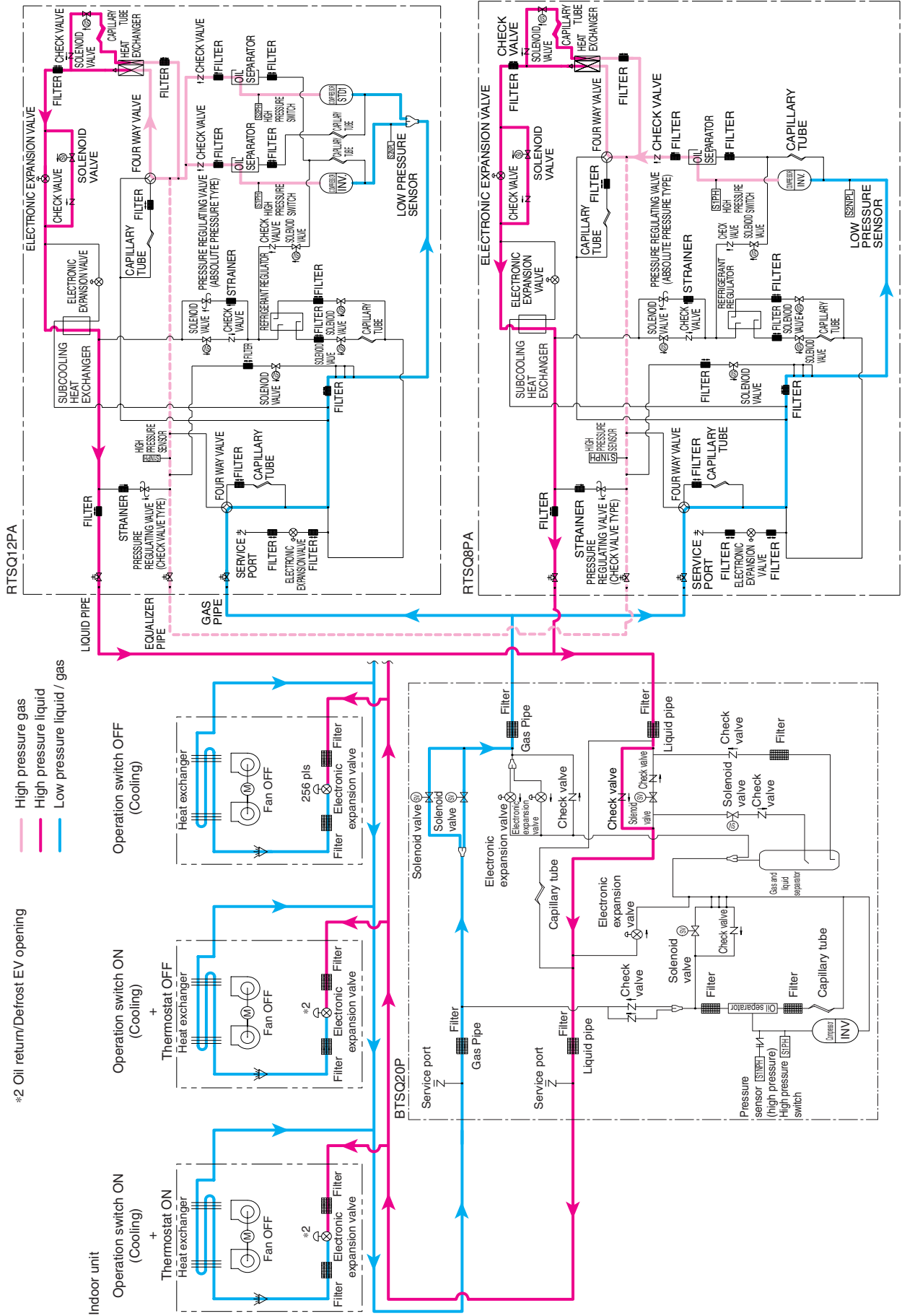
Cooling Oil Return Operation



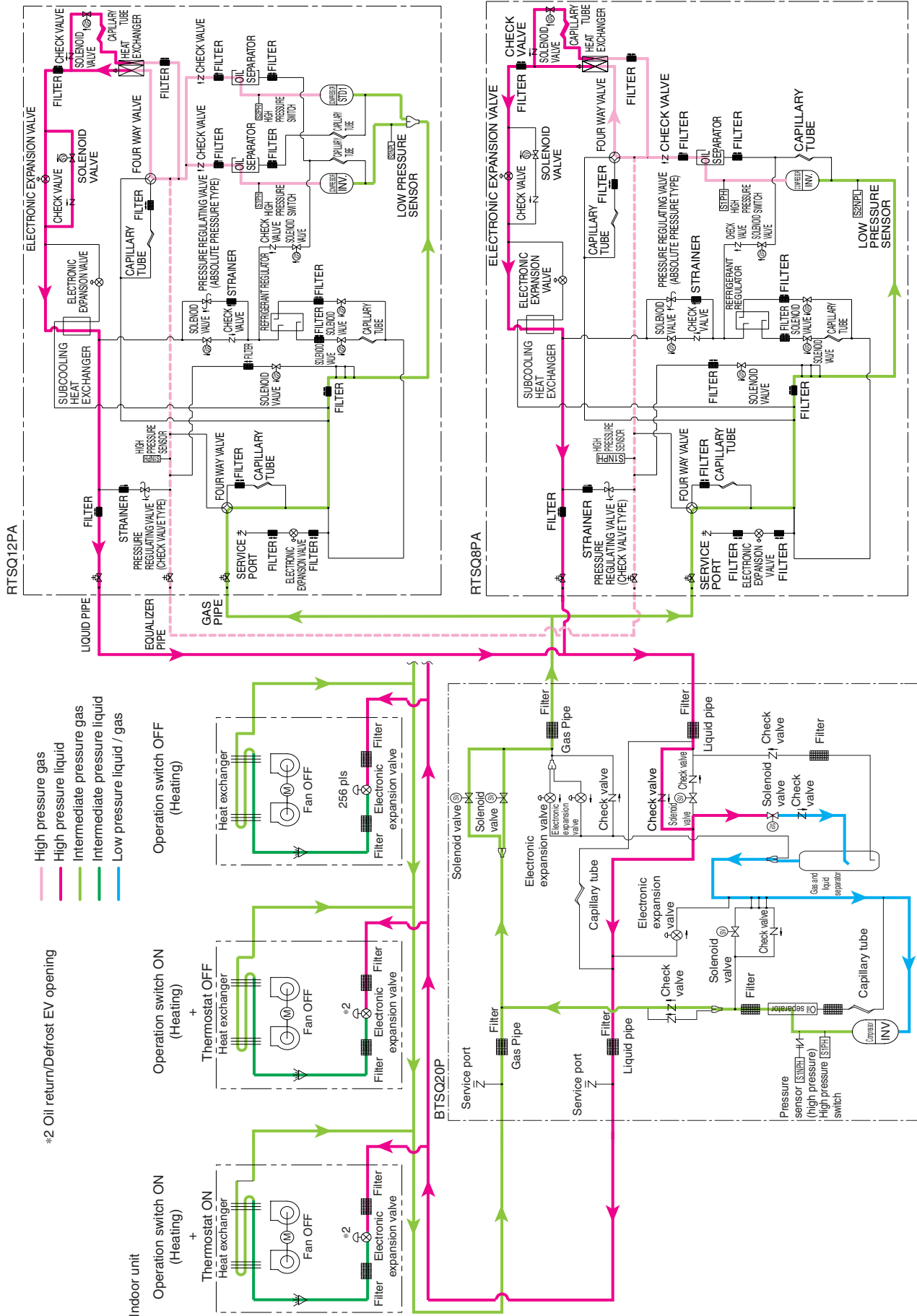
Heating Operation (Normal)



Heating Oil Return & Defrost Operation (Normal)



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



Part 4

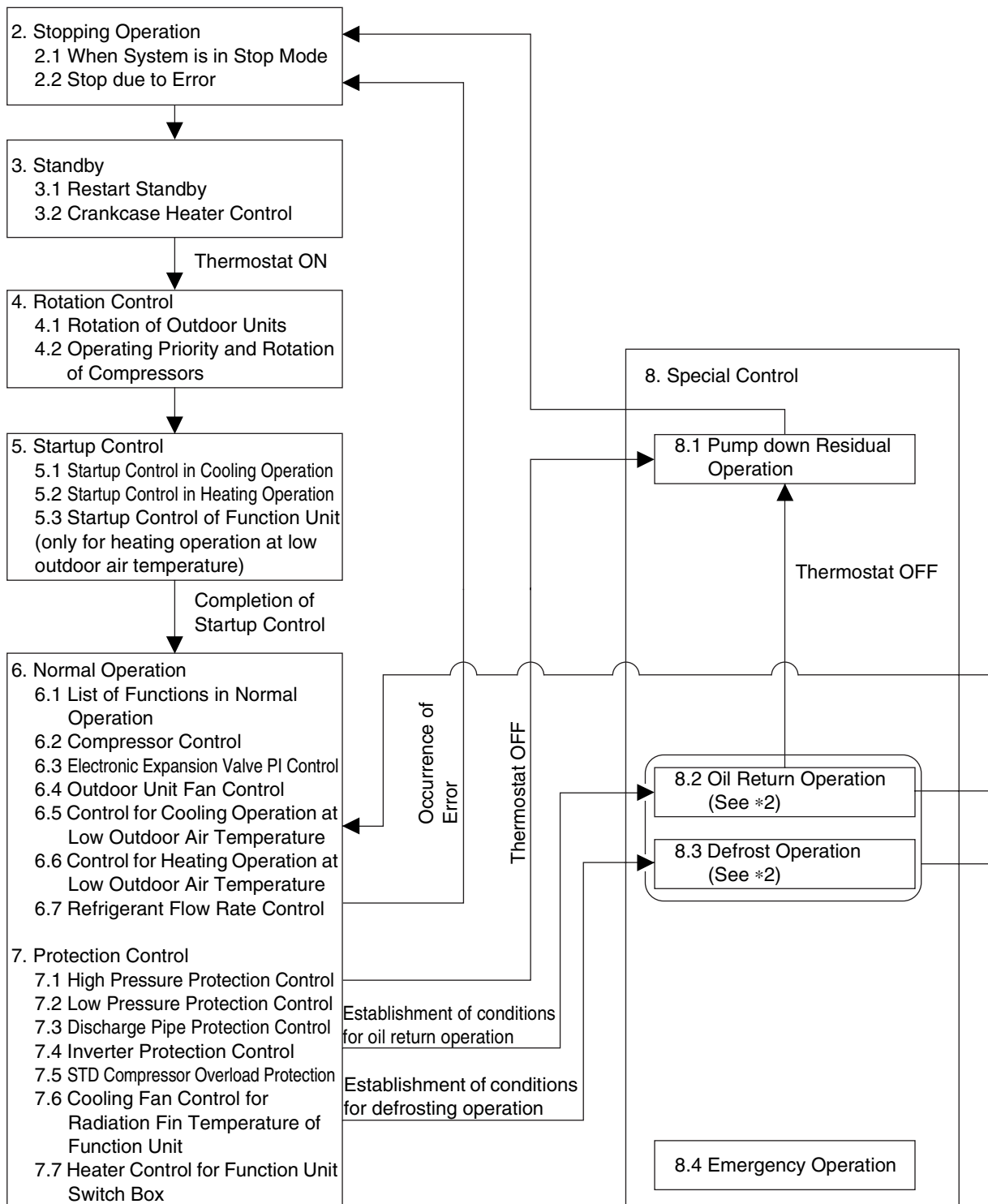
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1. Function General

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 superheated degree of INV. compressor
DSHs	–	Discharge pipe superheated degree of STD compressor
EV	–	Opening degree 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
HPS	S1PH~S3PH	This function when the pressure increases to stop operation and avoid high pressure increase in the fault operation.
SH	–	Evaporator outlet superheated degree (Suction pipe temp.–low pressure equivalent saturation temp.)
SHS	–	Target evaporator outlet superheated degree
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 vent pipe solenoid valve
SVO	Y7S	Refrigerant regulator discharge pipe solenoid valve
SVT	Y8S	Refrigerant regulator discharge pipe solenoid valve
SVHG	Y9S	Solenoid valve Bypass the high pressure gas to the outdoor unit heat exchanger. (Heat exchanger hot gas)
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 INV. compressor
Tds	R32T, R33T	Discharge pipe temperature of STD 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
TI	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	Electric symbol	Operation		
			RTSQ8PA	RTSQ10 · 12PA	RTSQ14 · 16PA
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 vent 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		
Solenoid valve (Heat exchanger hot gas)	SVHG	Y9S	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 Error

In order to protect compressors, if abnormal conditions occur, the system will make "stop with thermostat OFF" and the error will be determined according to the number of retry times.

(Refer to P.202~203 "List of Error Code" in Part 6 "Service Diagnosis" about the items of error decision.)

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

3. Standby

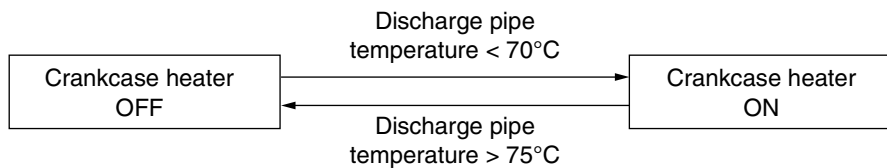
3.1 Restart Standby

This function is used to forcibly 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 unit fan continues residual operation for a while to facilitate pressure equalization and prevent the stay of refrigerant in evaporator.

Actuator	Symbol	Electric symbol	Operation		
			RTSQ8PA	RTSQ10 · 12PA	RTSQ14 · 16PA
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 vent 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		
Solenoid valve (Heat exchanger hot gas)	SVHG	Y9S	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

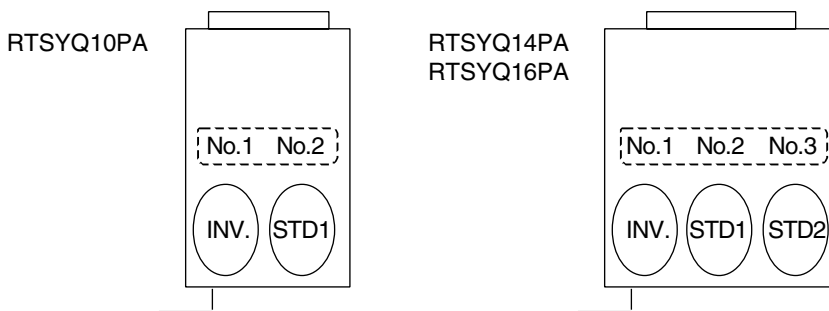
Each compressor operates in the following order of priority.

INV.: Inverter compressor

STD1: Standard compressor 1

STD2: Standard compressor 2

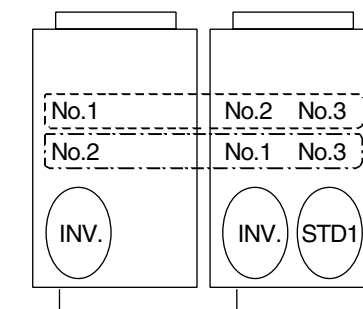
[System with one outdoor unit]



[System with two outdoor units]

Used in 2 patterns of "Rotation Operation" as shown in the following.

RTSYQ20PA



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 startup.

5.1 Startup Control in Cooling Operation

Actuator	Symbol	Electric 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 vent 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
Solenoid valve (Heat exchanger hot gas)	SVHG	Y9S	ON	ON	ON
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 (<ul style="list-style-type: none"> • A lapse of 90 sec. • Pc - Pe > 0.39 MPa

5.2 Startup Control in Heating Operation

Actuator	Symbol	Electric 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 vent 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
Solenoid valve (Heat exchanger hot gas)	SVHG	Y9S	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 (<ul style="list-style-type: none"> • 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 vent 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
Solenoid valve (Heat exchanger hot gas)	SVHG	Y9S	ON	A lapse of 10 min. after defrost and Ta < 0: ON Conditions other than above condition
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
		Stopping unit	OFF
		Thermostat OFF unit	Remote controller setting
Electronic expansion valve	Y1E	Thermostat ON unit	Normal opening *1
		Stopping unit	0 pls
		Thermostat OFF unit	0 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 (°C)

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).

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

Tc setting (°C)

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.

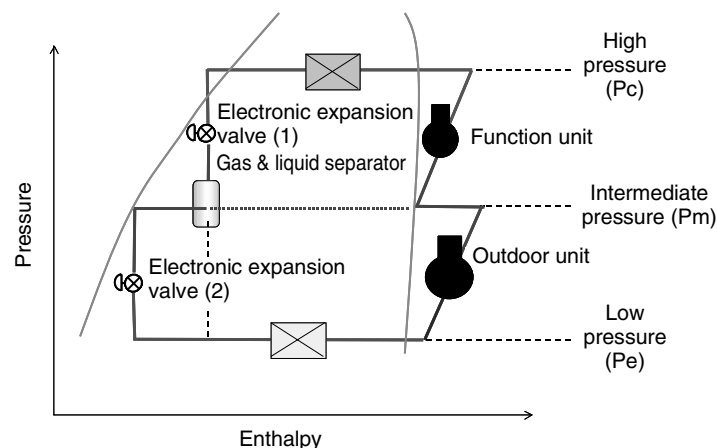
$$\text{Ph} = \frac{\text{High-stage-side compression ratio}}{\text{Low-stage-side compression ratio}} = \frac{P_c/P_m}{P_m/P_e}$$

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".

RTSYQ10PA

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
38	218 Hz	ON
39	232 Hz	ON
40	248 Hz	ON
41	266 Hz	ON

*1

*2

*1: Upper limit frequency for single-stage compression

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

RTSYQ14 · 16PA

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

STEP No.	INV.	STD1	STD2
49	188 Hz	ON	ON
50	202 Hz	ON	ON
51	210 Hz	ON	ON
52	218 Hz	ON	ON
53	232 Hz	ON	ON
54	248 Hz	ON	ON
55	266 Hz	ON	ON

*1

*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

RTSYQ20PA

(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

[Function unit]

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
23	248Hz
24	266Hz
25	280Hz

← RTSYQ10PA upper limit
 ← RTSYQ14PA upper limit
 ← RTSYQ16PA, 20PA 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.

$$SH = T_g - T_e$$

SH: Evaporator outlet superheated degree (°C)

T_g: Gas pipe temperature (°C) detected by the heat exchanger gas pipe thermistor R2T.

T_e: 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 air 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.

$$SH = T_{sh} - T_e$$

SH: Evaporator outlet superheated degree (°C)

T_{sh}: Gas pipe temperature (°C) detected by the subcooling heat exchanger outlet thermistor R5T

T_e: 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 air temperature.

$$DSH = HT_{dik} - T_{ck}$$

DSH: Discharge pipe superheated degree (°C)

HT_{dik}: Discharge pipe temperature (°C)

T_{ck}: High pressure equivalent saturation temperature (°C)

6.4 Outdoor Unit Fan Control

6.4.1 Step Control of Outdoor Unit Fans

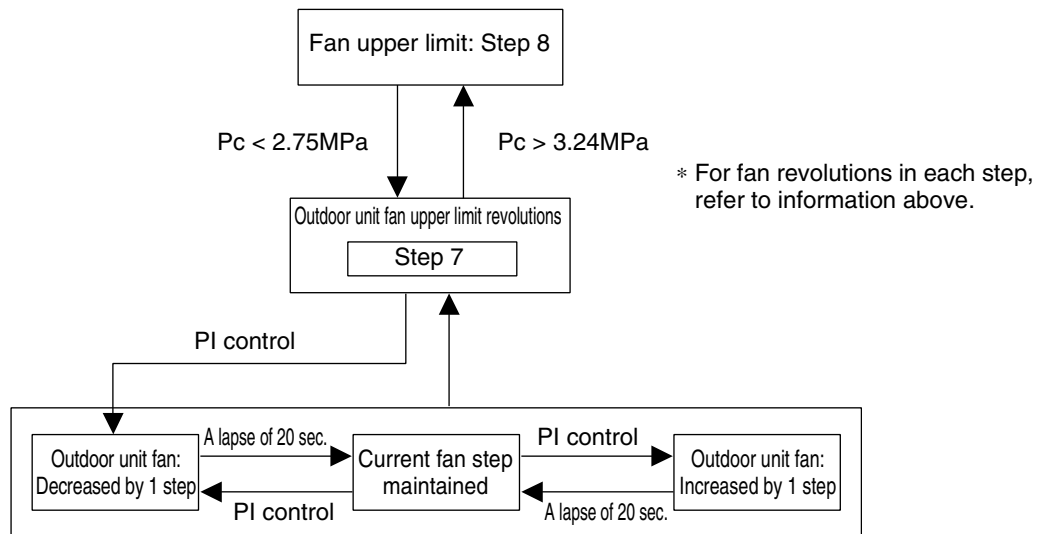
Used to control the revolutions of outdoor unit fans in the steps listed in table below, according to condition changes.

STEP No.	Fan revolutions (rpm)						
	RTSQ8PA	RTSQ10PA	RTSQ12PA	RTSQ14PA		RTSQ16PA	
				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 priority mode.

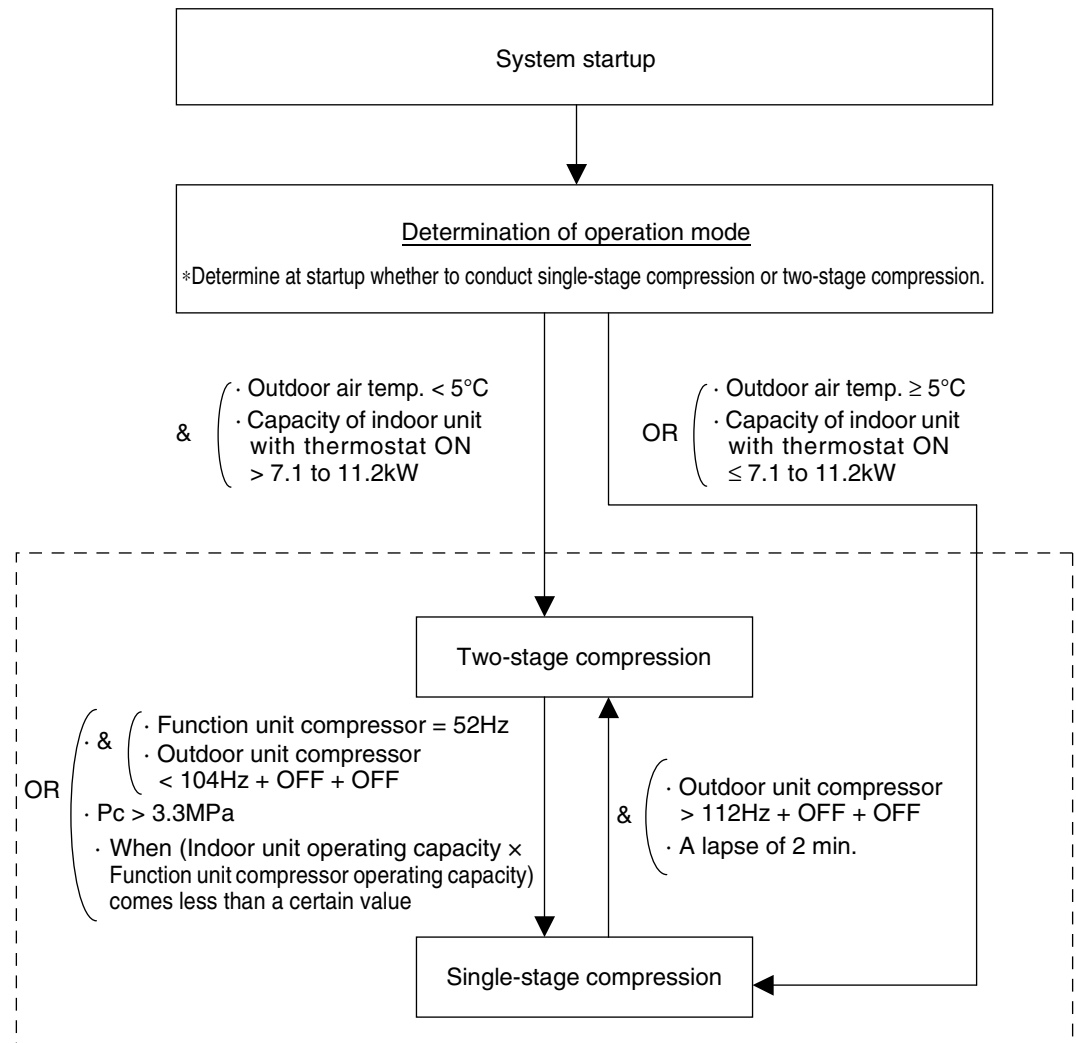
6.5 Control for Cooling Operation at Low Outdoor Air Temperature

For cooling operation at low outdoor air 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

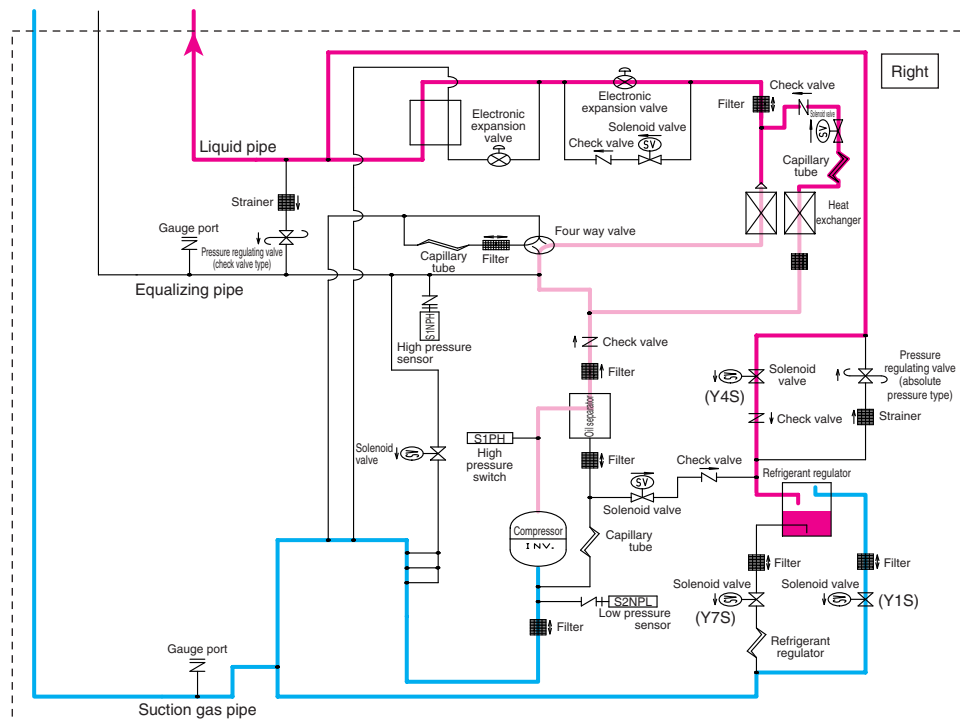
To conduct optimal heating operation, the two operation modes, "Two-stage compression" and "Single-stage compression", are available according to outdoor air temperatures and loads.



6.7 Refrigerant Flow Rate Control

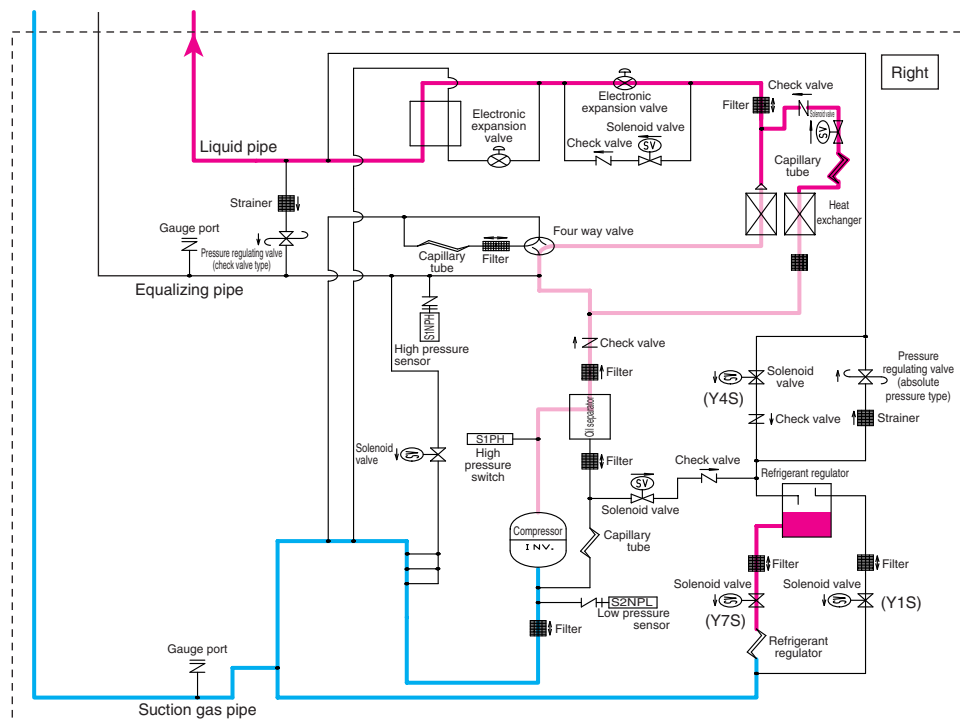
Recovery of Refrigerant

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.

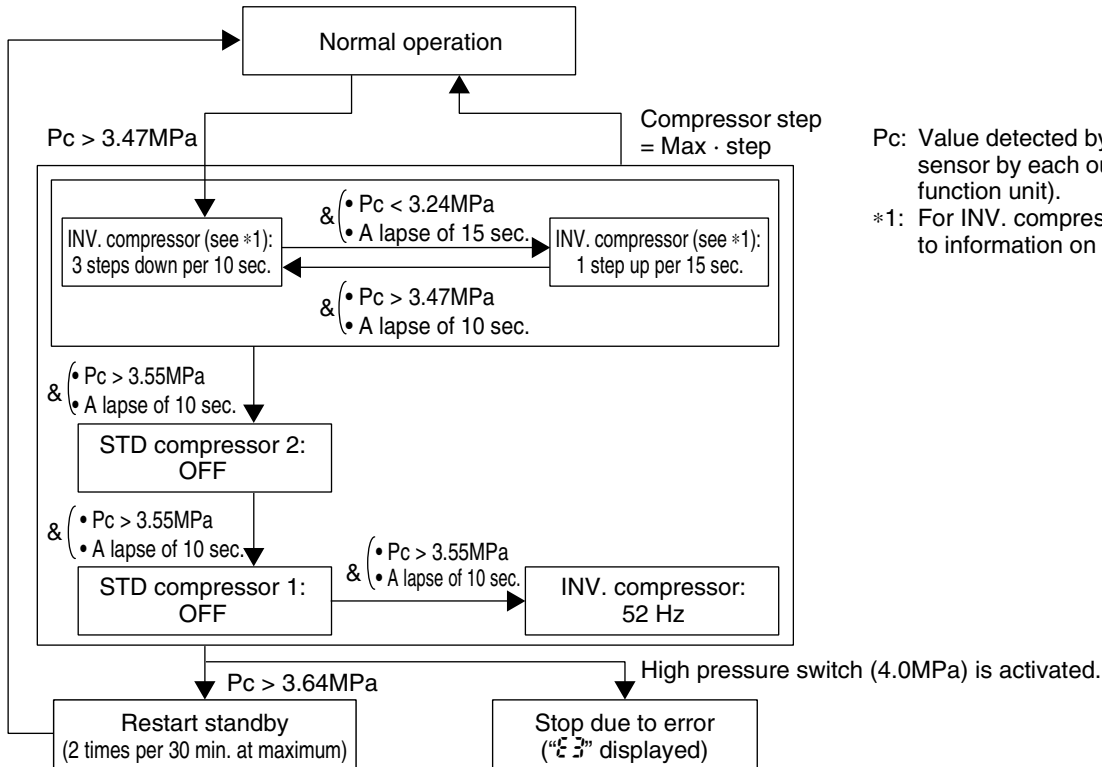
7. Protection Control

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.

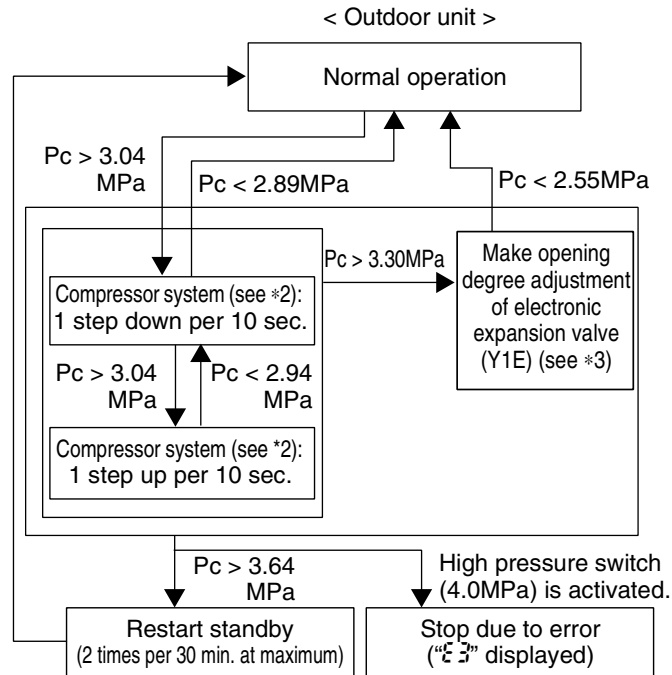
[In cooling operation]

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

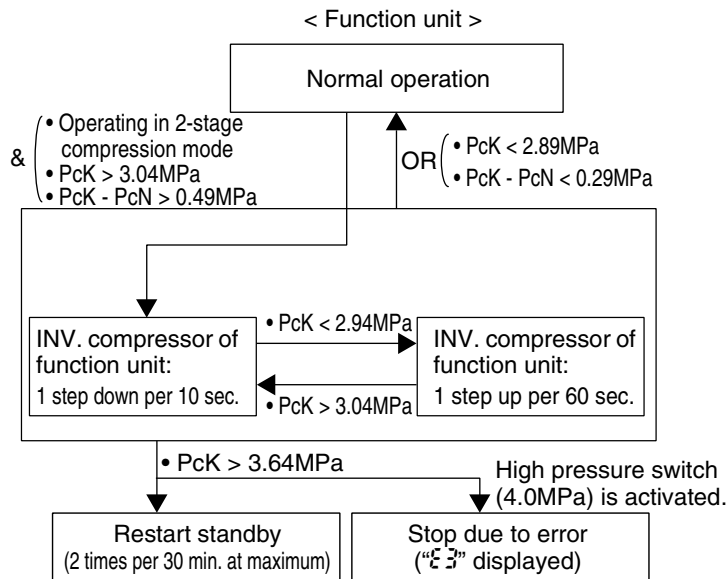


Pc: Value detected by high pressure sensor by each outdoor unit (and function unit).
*1: For INV. compressor steps, refer to information on P.92 and 93.

[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.



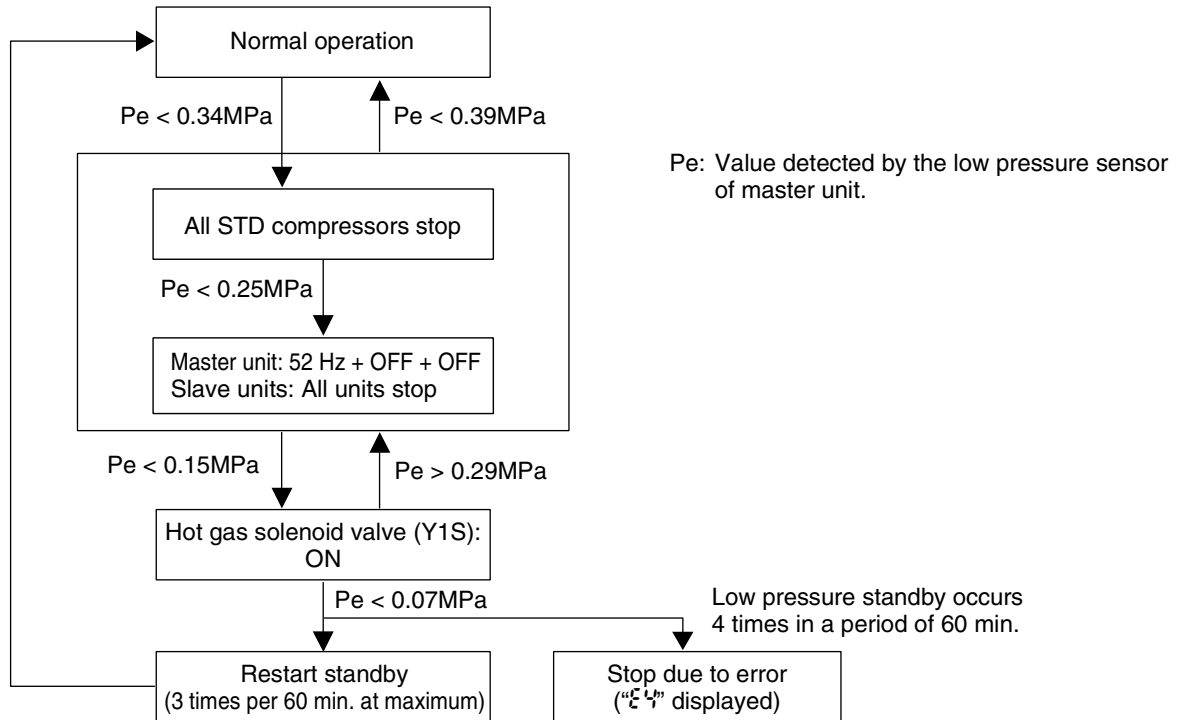
PcK: Value detected by the high pressure sensor of function unit.
 PcN: Value detected by the high pressure sensor of master outdoor unit.

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.

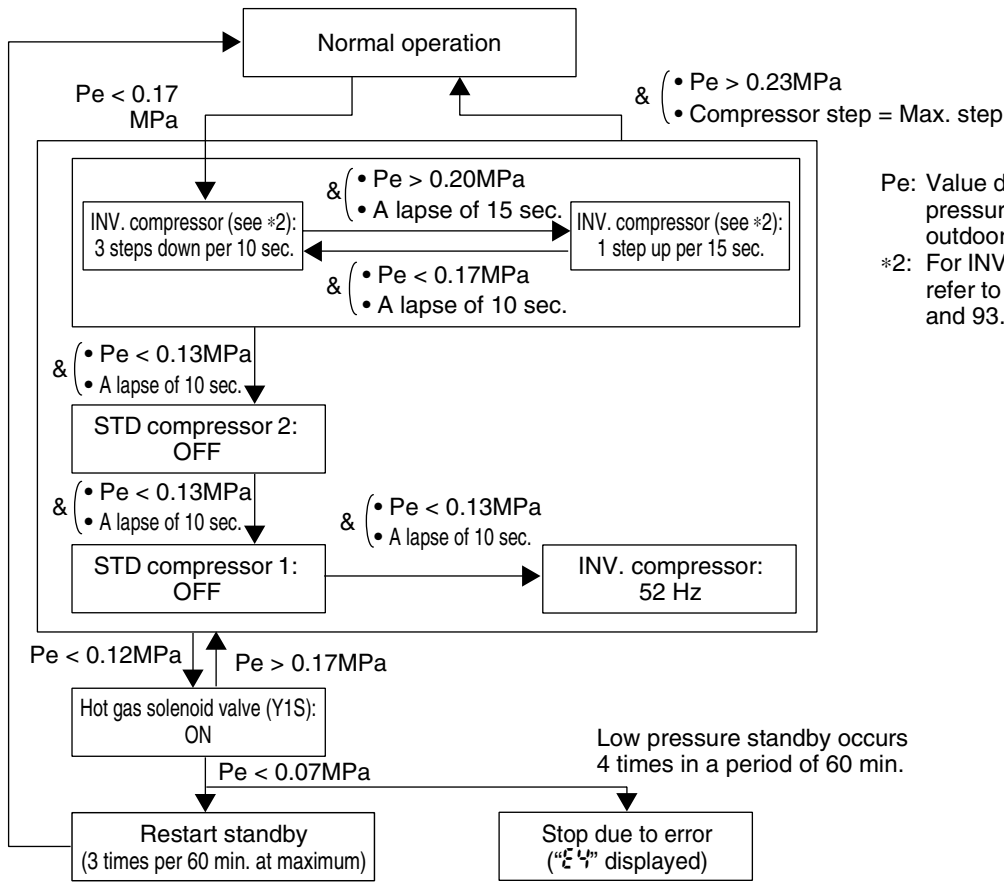
[In cooling operation]

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



[In heating operation]

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



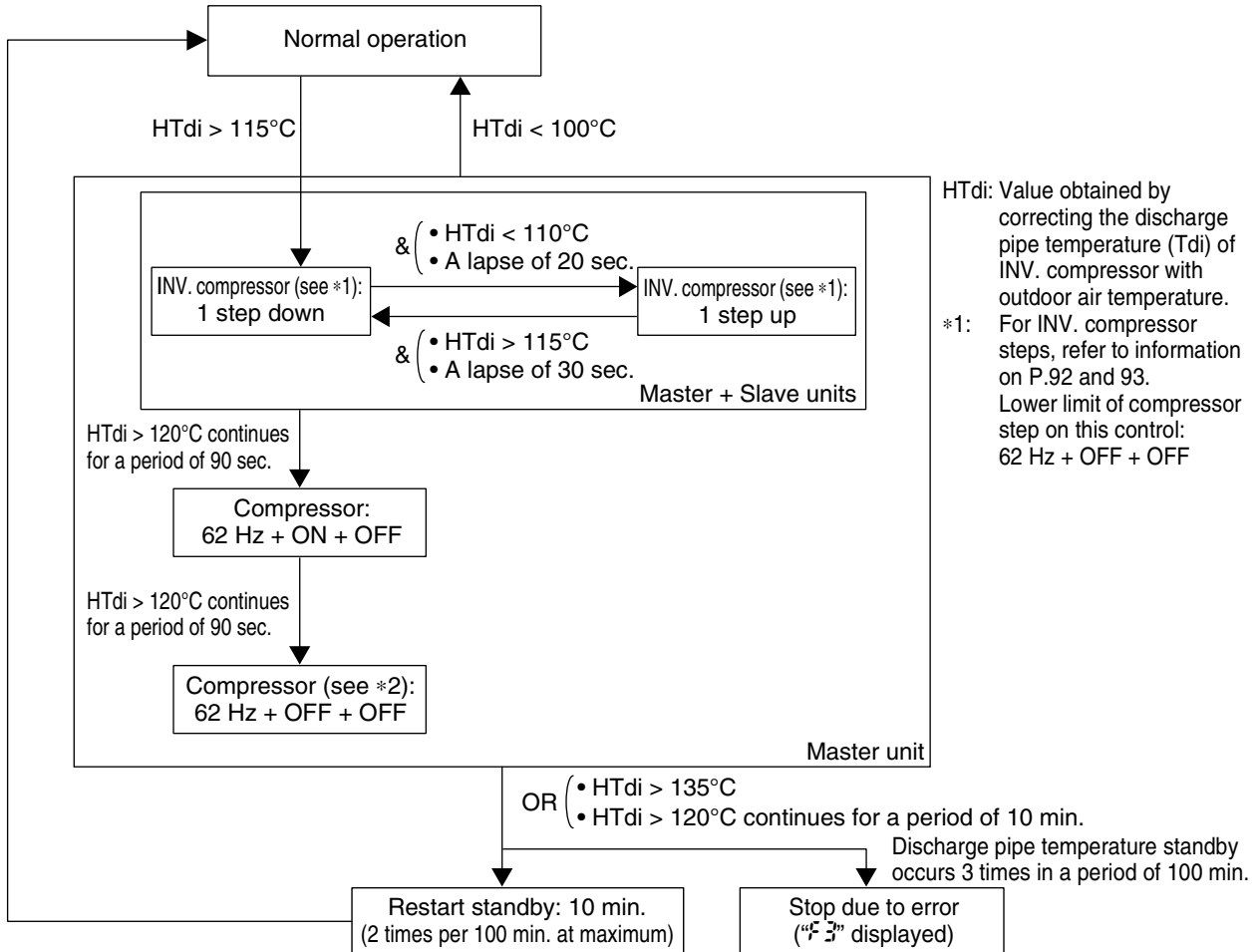
Pe: Value detected by the low pressure sensor by each outdoor unit.
*2: For INV. compressor steps, refer to information on P.92 and 93.

7.3 Discharge Pipe Protection Control

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

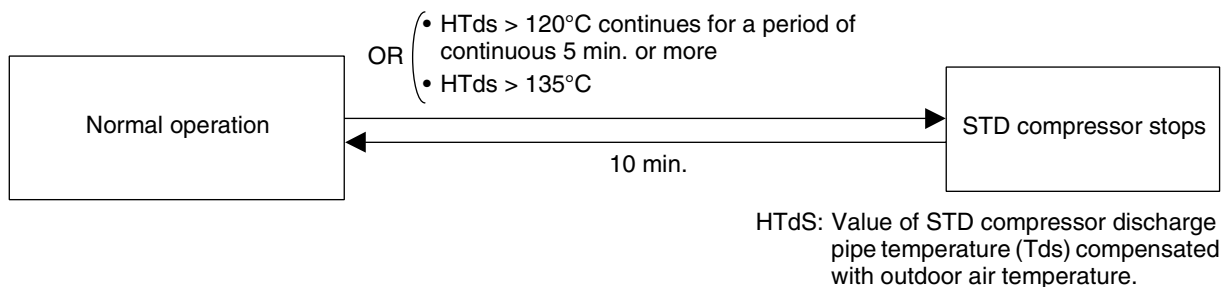
[INV. compressor]

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



[STD compressor]

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



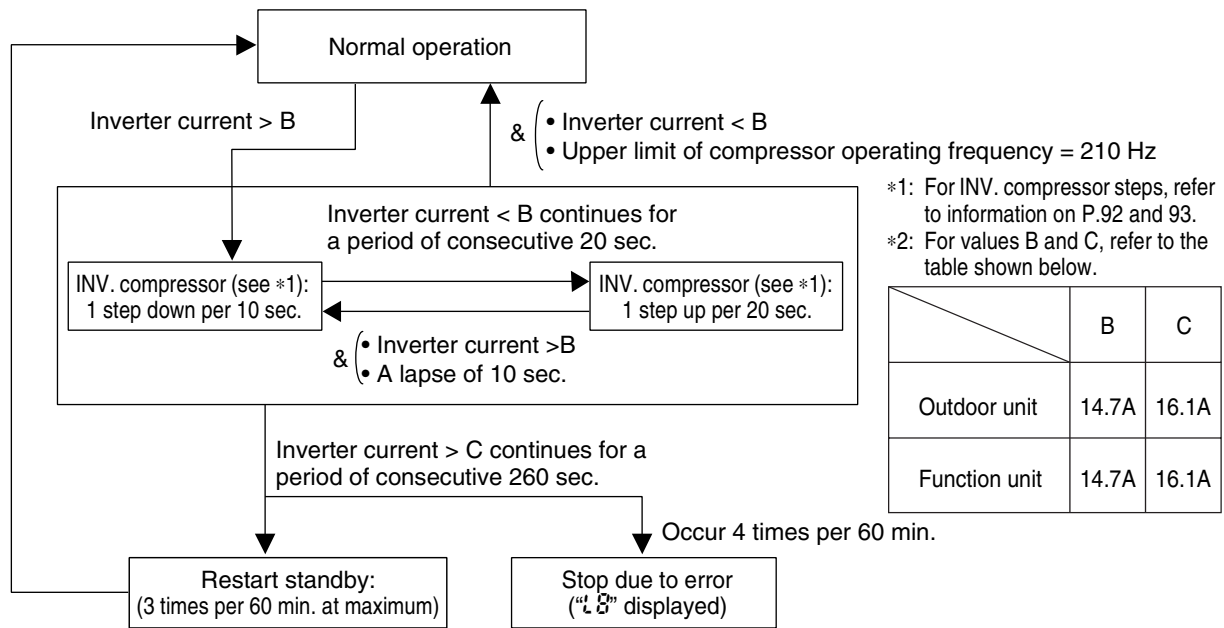
7.4 Inverter Protection Control

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

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

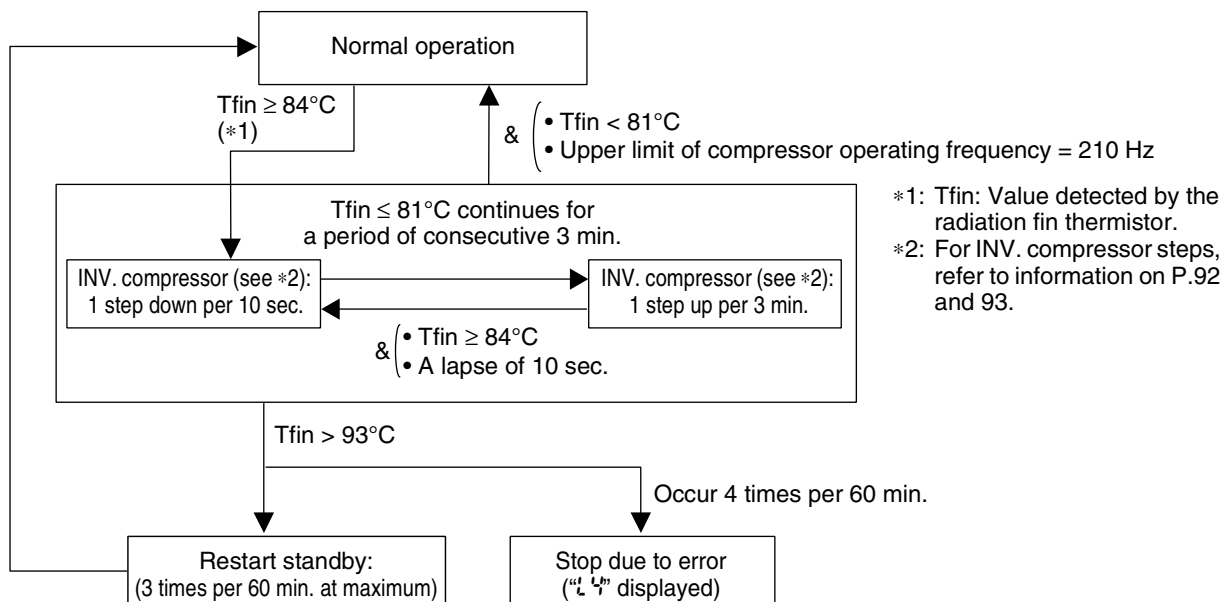
7.4.1 Inverter Overcurrent Protection Control

* This control is conducted by each INV. compressor.



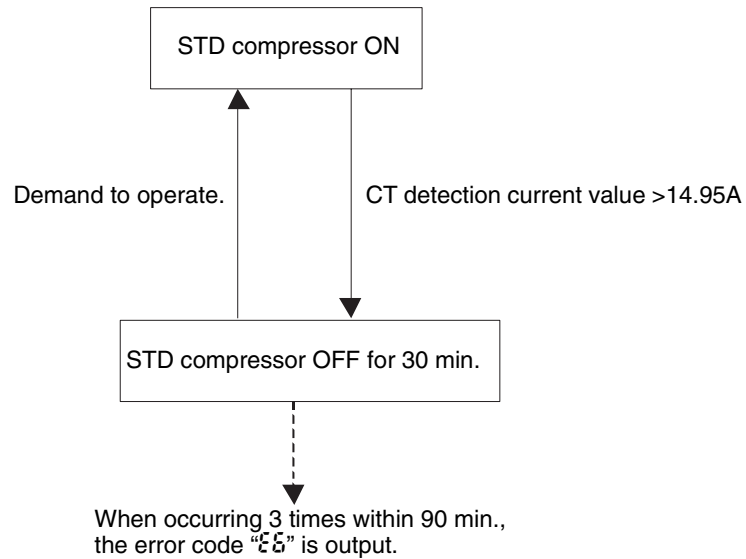
7.4.2 Radiation Fin Temperature Control

* This control is conducted by each INV. compressor.



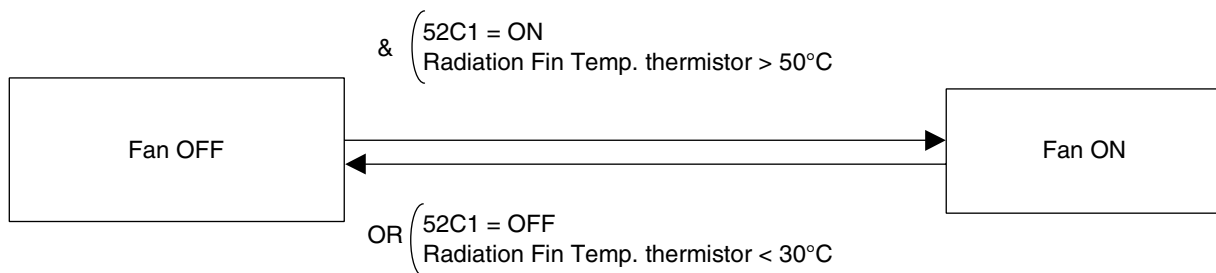
7.5 STD Compressor Overload Protection

- * 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 radiation 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 air temperature, and it is controlled as follows by the outdoor air temperature.

- The operation range of function unit "ON" (Outdoor air temp. < -20°C)
 "OFF" (Outdoor air temp. > -17°C)
- The range of compressor stop "ON" (Outdoor air temp. < -17°C)
 "OFF" (Outdoor air 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	Electric symbol	STEP 1		STEP 2	
		Master unit operation	Slave unit operation (RTSYQ20PAY1 only)	Master unit operation	Slave unit operation (RTSYQ20PAY1 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 vent 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
Solenoid valve (Heat exchanger hot gas)	Y9S	ON	ON	ON	ON
Four way valve (High/low pressure gas pipe switch)	Y2S	ON	ON	ON	ON
Ending conditions		OR (<ul style="list-style-type: none"> • 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 (<ul style="list-style-type: none"> • 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	Electric symbol	Master unit operation	Slave unit operation (RTSYQ20PAY1 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 vent 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
Solenoid valve (Heat exchanger hot gas)	Y9S	OFF	OFF
Four way valve (High/low pressure gas pipe switch)	Y2S	OFF	OFF
Ending conditions	OR (<ul style="list-style-type: none"> • 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 air temperature]

Part name	Electric 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	Electric 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 (Refrigerant charge)	Y2E	80 pls	80 pls	80 pls
Solenoid valve (Refrigerant regulator gas vent pipe)	Y1S	OFF	OFF	OFF
Four way valve (Heat exchanger switch)	Y3S	OFF	OFF	OFF
Solenoid valve (Refrigerant regulator liquid pipe)	Y4S	OFF	OFF	OFF
Solenoid valve (Hot gas)	Y5S	OFF	OFF	OFF
Solenoid valve (Main bypass)	Y6S	ON	ON	ON
Solenoid valve (Refrigerant regulator discharge pipe)	Y7S	OFF	OFF	OFF
Solenoid valve (Refrigerant regulator discharge pipe)	Y8S	OFF	OFF	OFF
Solenoid valve (Heat exchanger hot gas)	Y9S	ON	ON	ON
Four way valve (High and low pressure gas pipe switch)	Y2S	ON	ON	ON
End conditions		20 sec.	OR (OR (
			<ul style="list-style-type: none"> • After a lapse of 3 min. • $T_{sA} - T_e < 5^{\circ}\text{C}$ 	<ul style="list-style-type: none"> • After a lapse of 3 min. • $P_e < 0.59\text{MPa}$ • $P_c > 3.53\text{MPa}$ • $HT_{di} > 110^{\circ}\text{C}$

*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	Electric 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

[Starting 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	Electric 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, 12PA: 232Hz RTSQ14, 16PA: 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 (Refrigerant regulator gas vent pipe)	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 (Heat exchanger switch)	Y3S	ON	OFF	OFF	OFF	ON	
Solenoid valve (Refrigerant regulator liquid pipe)	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 (Refrigerant regulator discharge pipe)	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 (Refrigerant regulator discharge pipe)	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	
Solenoid valve (Heat exchanger hot gas)	Y9S	OFF	ON	ON	ON	Ta < 0 ON	Ta > = 0 OFF
Four way valve (High/low pressure gas pipe switch)	Y2S	OFF	ON	ON	ON	OFF	
Ending Conditions		170 sec.	OR (<ul style="list-style-type: none"> • After a lapse of 1 min. • Pc - Pe < 0.5MPa 	OR (<ul style="list-style-type: none"> • After a lapse of 4 min. • TsA - Te < 5°C 	OR (<ul style="list-style-type: none"> • After a lapse of 1 min. • Pc - Pe < 0.5MPa 	OR (<ul style="list-style-type: none"> • 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	Electric 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 (<ul style="list-style-type: none"> • After a lapse of 1 min. • $P_c - P_e < 0.5\text{MPa}$ 	OR (<ul style="list-style-type: none"> • After a lapse of 4 min. • $T_{sA} - T_e < 5^\circ\text{C}$ 	OR (<ul style="list-style-type: none"> • After a lapse of 1 min. • $P_c - P_e < 0.5\text{MPa}$

<Indoor Unit>

Part Name	Electric 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 unit 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	Electric Symbol	In preparation		In defrosting operation	After defrosting operation		
		Step 1	Step 2		Step 1	Step 2	
Compressor 1	M1C	52 Hz	OFF	RTSQ10, 12PA: 232Hz RTSQ14, 16PA: 210Hz	OFF	124 Hz	Increase the operating frequency in increments of 2 steps per 20 sec. until $P_c - P_e > 4\text{MPa}$.
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 (Refrigerant charge)	Y2E	80 pls	80 pls	80 pls	80 pls	80 pls	
Solenoid valve (Refrigerant regulator gas vent pipe)	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 (Heat changer switch)	Y3S	ON	OFF	OFF	OFF	ON	
Solenoid valve (Refrigerant regulator liquid pipe)	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 (Refrigerant regulator discharge pipe)	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 (Refrigerant regulator discharge pipe)	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	
Solenoid valve (Heat exchanger hot gas)	Y9S	OFF	ON	ON	ON	Ta < 0 ON	Ta > = 0 OFF
Four way valve (High/low pressure gas pipe switch)	Y2S	OFF	ON	ON	ON	OFF	
Ending Conditions		170 sec.	OR (OR (OR (OR (
			<ul style="list-style-type: none"> • After a lapse of 1 min. • $P_c - P_e < 0.5\text{MPa}$ 	<ul style="list-style-type: none"> • After a lapse of 12 min. • $T_b > 11^\circ\text{C}$ 	<ul style="list-style-type: none"> • After a lapse of 1 min. • $P_c - P_e < 0.5\text{MPa}$ 	<ul style="list-style-type: none"> • After a lapse of 160sec. • $P_c - P_e > 0.4\text{MPa}$ 	

*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	Electric 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 (<ul style="list-style-type: none"> • After a lapse of 1 min. • Pc - Pe < 0.5MPa 	OR (<ul style="list-style-type: none"> • After a lapse of 12 min. • Tb > 11°C 	OR (<ul style="list-style-type: none"> • After a lapse of 1 min. • Pc - Pe < 0.5MPa

<Indoor unit>

Part Name	Elect. symbol	Indoor unit actuator operation during defrost operation	
		Thermo. ON unit	Thermo. OFF unit
Fan	M1F	Unit not in operation	OFF
		Thermo. OFF unit	OFF
		Thermo. ON unit	Defrost EV degree
		Unit not in operation	256pls
Electronic expansion valve	Y1E	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 2 ways of conducting the Emergency operation : ① with remote controller reset and ② by setting outdoor unit PCB.

Operating method	① Emergency operation with remote controller reset (Auto backup operation)	② Emergency operation with outdoor unit PCB setting (Manual backup operation)
Applicable model		
RTSYQ10 ~ 16PAY1	–	Backup operation by the compressor
RTSYQ20PAY1	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 **ON/OFF** 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]

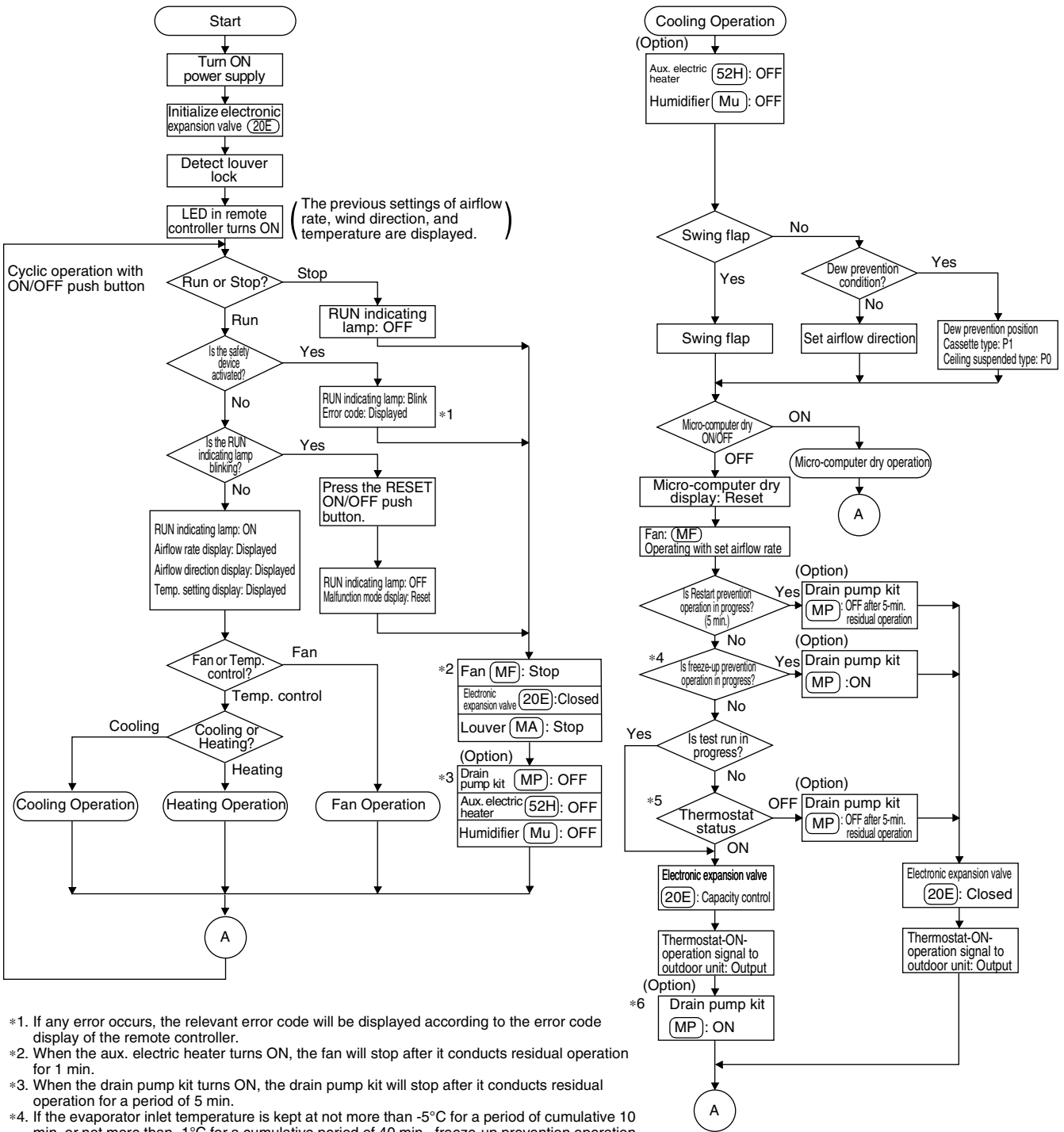
- Make setting of compressor to be set to "Operation prohibited" while in field setting mode (Setting mode 2).
- Make setting of outdoor unit to be set to "Operation prohibited" while in field setting mode (Setting mode 2).
(For detail of the setting procedure, refer to information on P.184 to 186.)

[Operation]

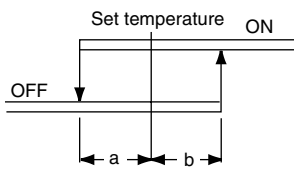
- Prohibit the compressor that is "set to Operation Prohibited" from operating, and only operate other compressor(s).
- Prohibit the outdoor unit that is "set to Operation Prohibited" from operating, and only operate other out door unit(s).

9. Outline of Control (Indoor Unit)

9.1 Operation Flow Chart

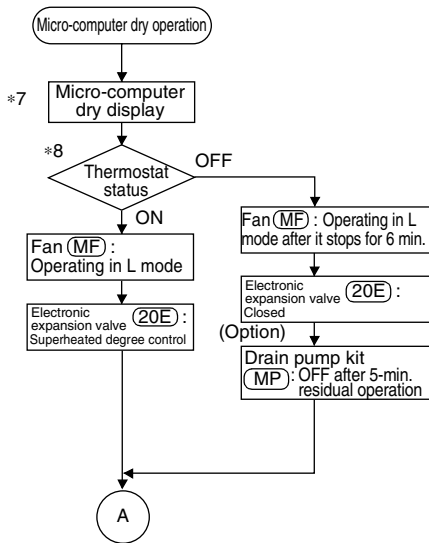


- *1. If any error occurs, the relevant error code will be displayed according to the error code display of the remote controller.
- *2. When the aux. electric heater turns ON, the fan will stop after it conducts residual operation for 1 min.
- *3. When the drain pump kit turns ON, the drain pump kit 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., freeze-up 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 freeze-up prevention operation will be reset.
- *5. Thermostat status

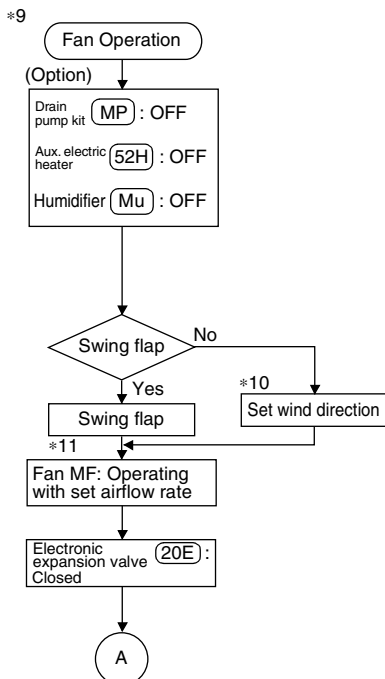
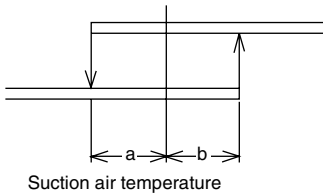


Suction air temperature
 $a = b = 1$
 $(a = b = 0.5 \text{ is only available for the FXCQ, FXFQ, FXHQ, and FXKQ series.})$

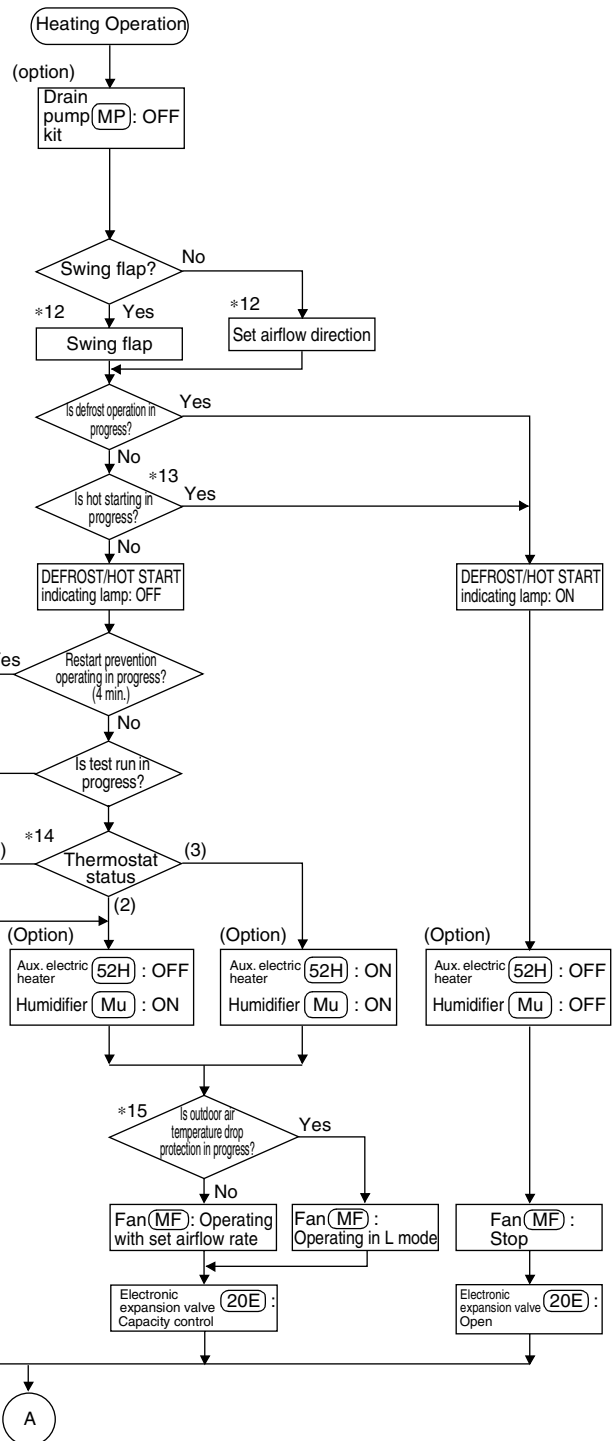
*6. The FXCQ, FXFQ, FXKQ, and FXSQ series have the drain pump as standard equipment.



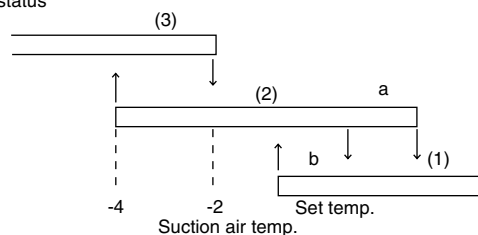
- *7. Micro-computer dry display
No set temperature and airflow rate of the remote controller are displayed.
- *8. Thermostat status
Set temperature when operating the micro-computer dry mechanism.



- *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 airflow direction
According to airflow direction instruction from the remote controller, the airflow 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. Airflow direction
When the heating thermostat turns OFF, the airflow 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 52°C or more, hot starting will be conducted.
- *14. Thermostat status



- *15. Outdoor 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 3 patterns shown below.

1. Using suction air thermistor (body thermostat) and remote control thermistor in combination (Factory setting)

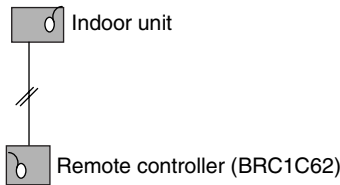
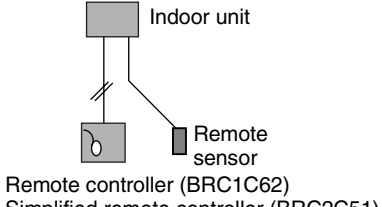
- For VRV multi system, the suction air thermistor (body thermostat) of indoor unit and the thermistor of remote controller (BRC1C62) are used in combination to control room temperatures.
- For the operating ranges of thermistors, refer to information on the following page.

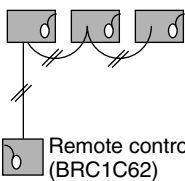
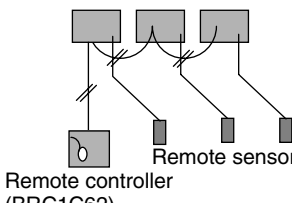
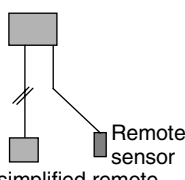
2. Only using suction air thermistor (body thermostat)

- 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
<p>· Using suction air thermistor and remote control thermistor in combination (Factory setting)</p> <p>· Only using suction air thermistor</p>  <p style="text-align: center;">Simplified remote controller (BRC2C51) (See *1)</p>	<p>· Replacing suction air thermistor with a remote sensor</p>  <p style="text-align: center;">Remote controller (BRC1C62) Simplified remote controller (BRC2C51)</p>

Thermostat control 2		Thermostat control 3
<p>Only using suction air thermistor:</p> <p>○ For group control</p>  <p style="text-align: center;">Remote controller (BRC1C62)</p>	<p>Since the remote controller is set to group control mode, the thermostat setting of remote controller is automatically changed to "Not use". (See *2)</p>	<p>Replacing suction air thermistors with remote sensors:</p>  <p style="text-align: center;">Remote controller (BRC1C62)</p>
<p>Only using suction air thermistor:</p> <p>○ The remote controller is</p> <ul style="list-style-type: none"> · wireless remote controller, or · simplified remote controller BRC2C51. (See *1) 	<p>Since the remote controller has no thermistor, the thermostat setting of remote controller is automatically changed to "Not use". (See *2)</p>	<p>Replacing suction air thermistor with a remote sensor:</p>  <p style="text-align: center;">In case a simplified remote controller is used</p>

*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.

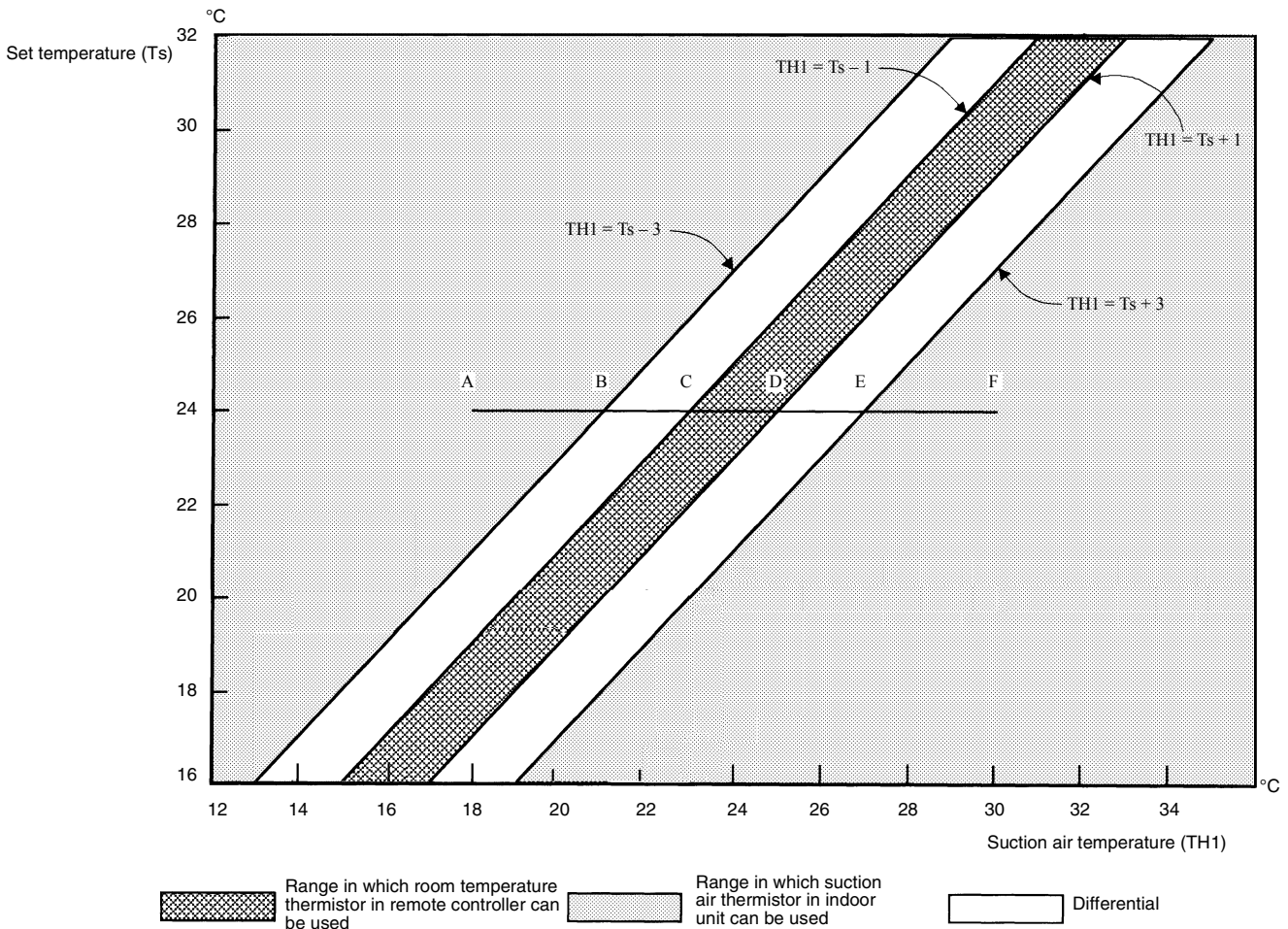
Remark: For the SkyAir Series, factory setting is made to "Only using suction air thermistor".

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 is 24°C or more, 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 room temperature thermistor 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 air temperature has changed from 30°C to 18°C (F → A):

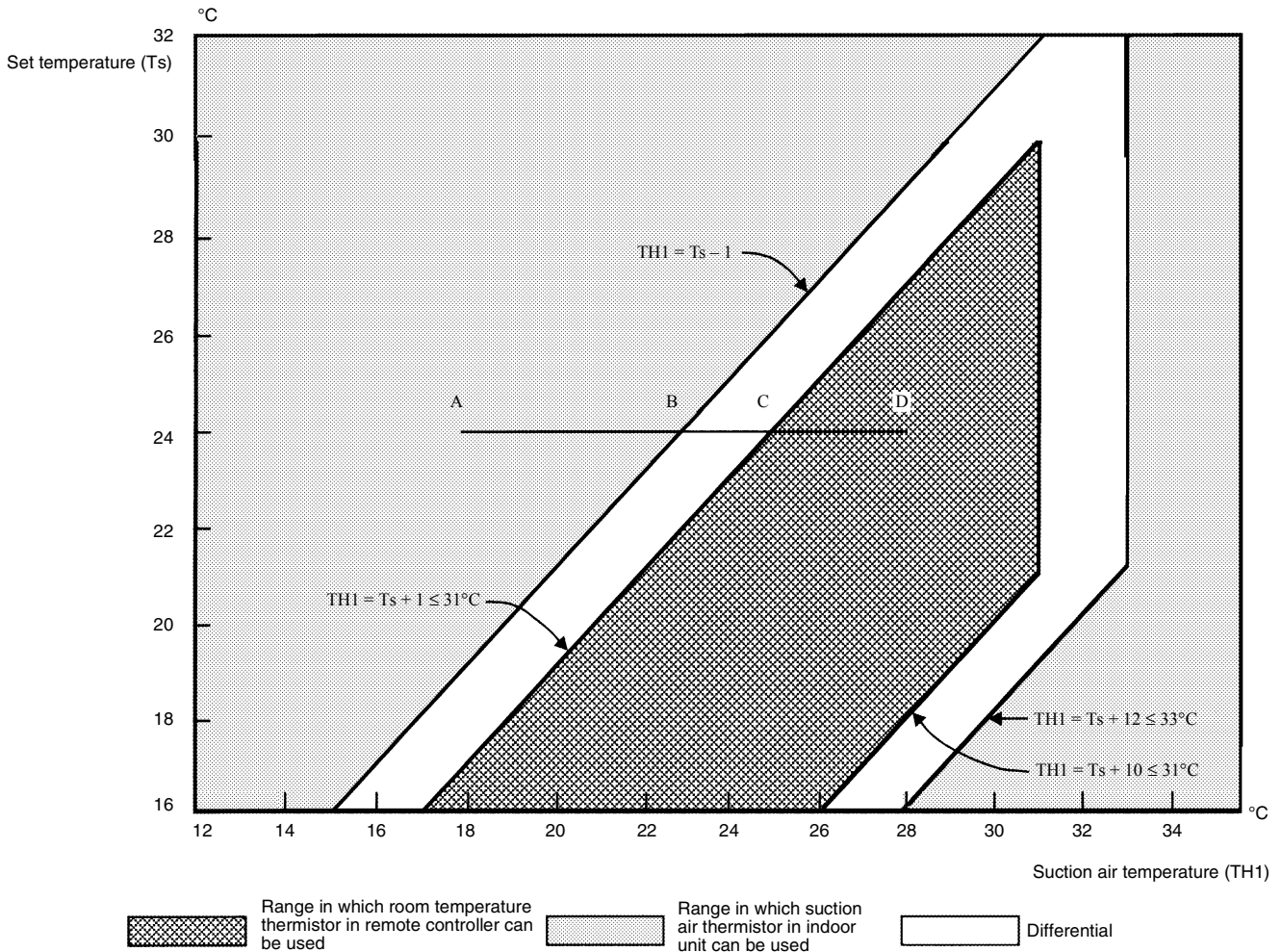
Suction air thermistor in indoor unit is used for temperatures from 30°C to 25°C (F → D).

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 is 24°C or more, and the suction air temperature has changed from 18°C to 28°C (A → D):

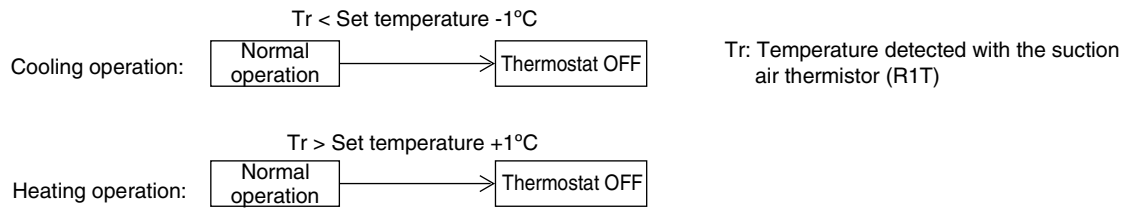
(This example also assumes there are several other air conditioners, the VRV system is OFF, and that temperature changes even when the room temperature thermistor is OFF.)
 Suction air thermistor in indoor unit is used for temperatures from 18°C to 25°C (A → C).
 Room temperature thermistor in remote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

And, assuming suction air 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 $+1^{\circ}\text{C}$ from that while in heating operation.



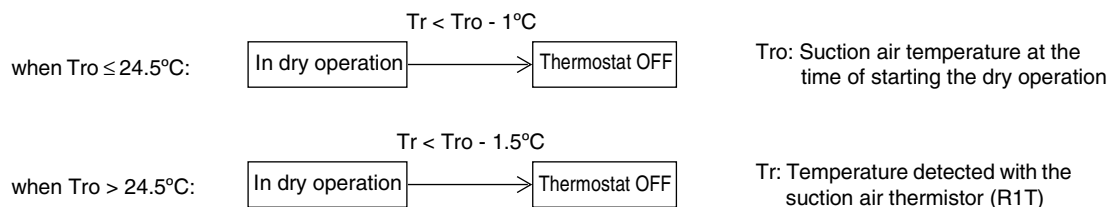
While in a single remote controller group control, the body thermostat is only used for this control.

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 6 minutes while the thermostat is OFF, and then return to operation at L flow rate. (This control is used to prevent a rise in indoor temperature while in thermostat OFF mode.)

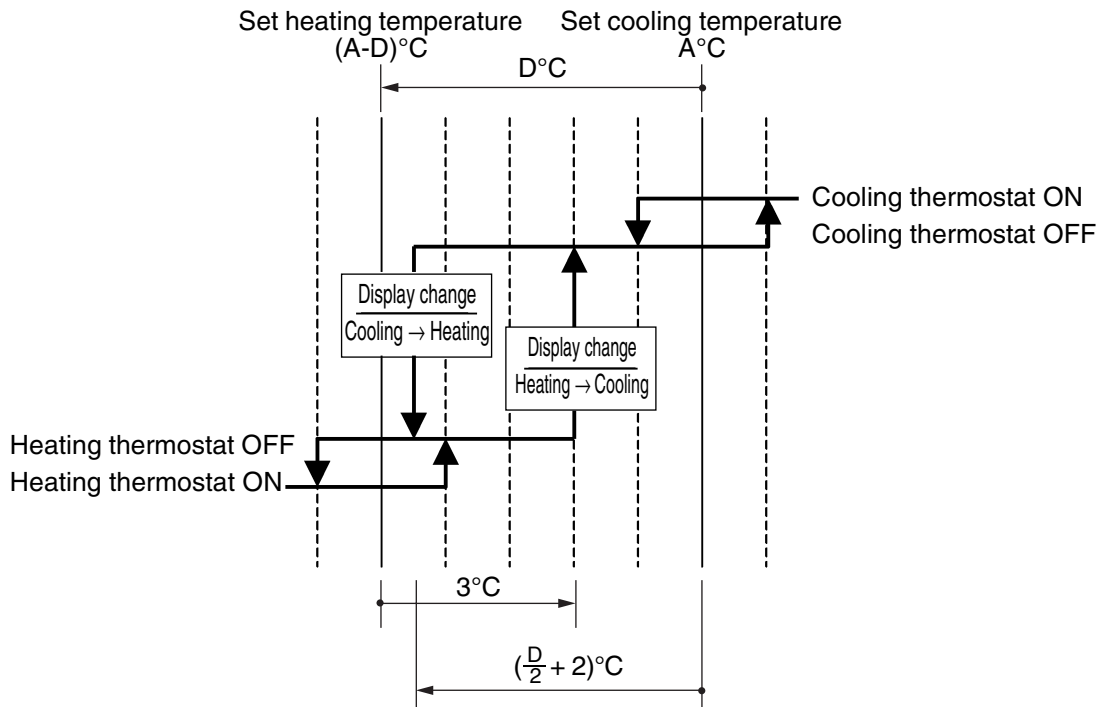
9.2.5 Thermostat Control with Operation Mode Set to "AUTO"

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

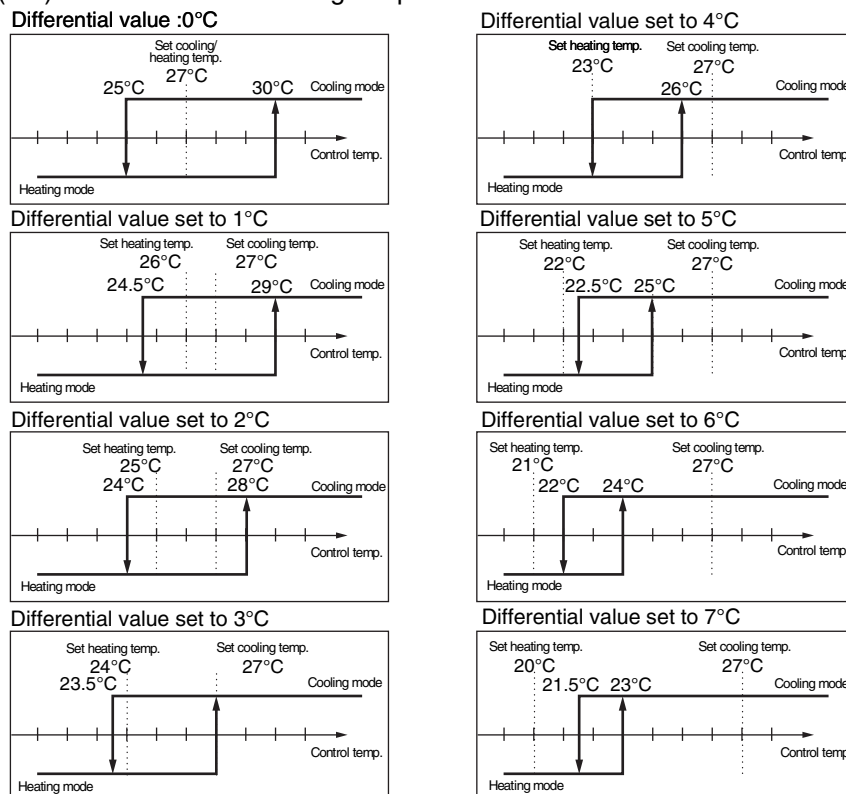
Furthermore, setting changes of the differential value (D°C) can be made according to information in the "Field settings with remote controller (P.146 and later)" section.

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

01: Factory setting



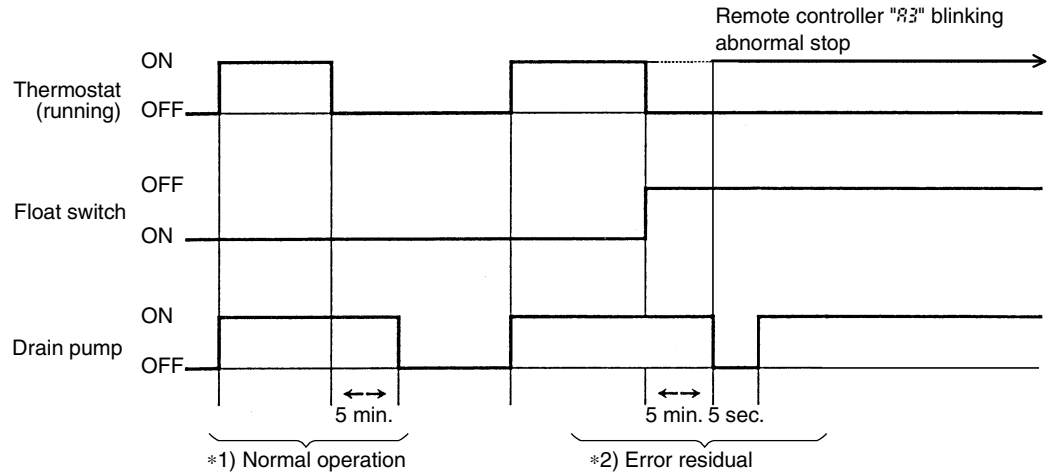
(Ex.) When automatic cooling temperature is set to 27°C:



9.3 Drain Pump Control

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:



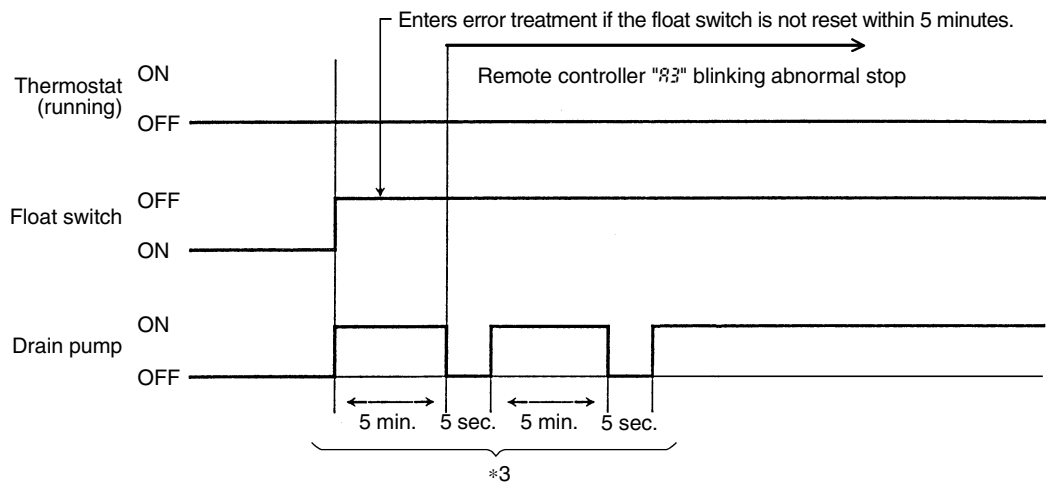
*1. (Normal operation):

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. (Error residual):

The remote controller will display "E3" 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.

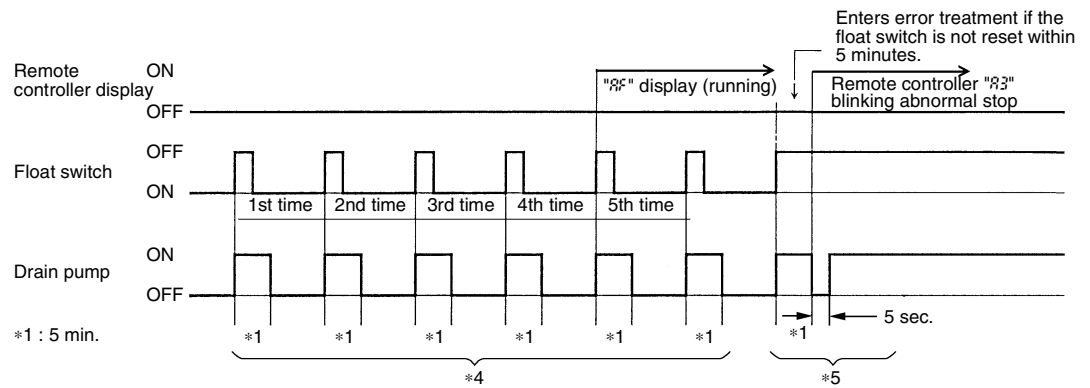
9.3.2 When the Float Switch is Tripped while the Cooling Thermostat is OFF:



*3. (Error residual):

The remote controller will display "E3" 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. (Error residual):

If the float switch is tripped 5 times in succession, a drain error is determined to have occurred. "AF" is then displayed as operation continues.

*5. (Error residual):

The remote controller will display "R3" 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.

9.4 Freeze-up Prevention

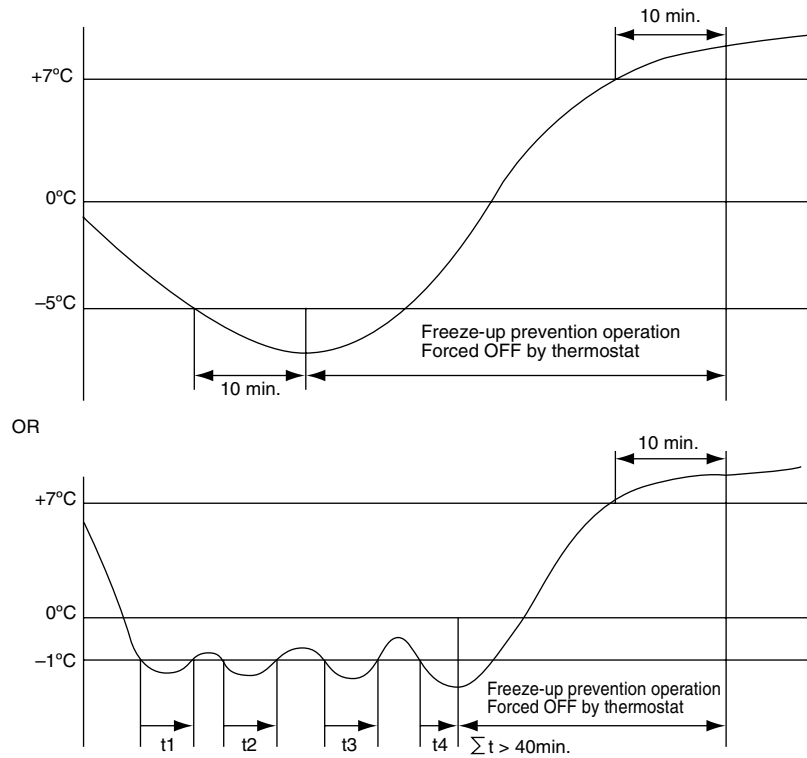
Freeze-up Prevention by Off Cycle (Indoor Unit)

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

When freeze-up prevention is activated, the electronic expansion valve is closed, the drain pump turns ON and the fan tap is fixed to L airflow. When the following conditions for stopping are satisfied, it returns.

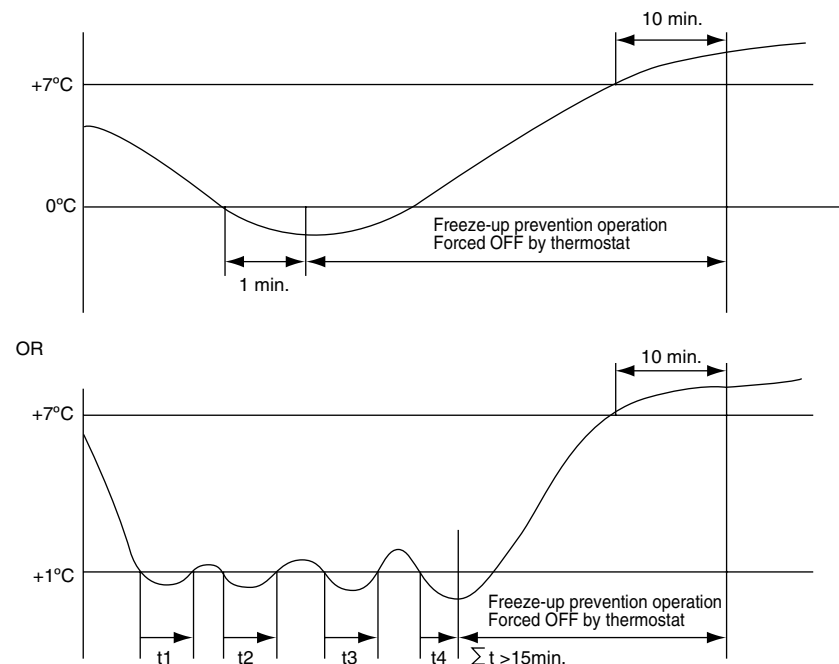
Conditions for starting freeze-up prevention: Temperature is -1°C or less for total of 40 min., or temperature is -5°C or less for total of 10 min.

Conditions for stopping freeze-up prevention: Temperature is $+7^{\circ}\text{C}$ or more for 10 min. continuously



[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.

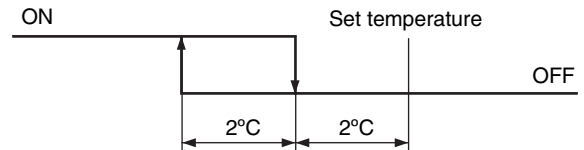


9.5 Heater Control (Optional PCB KRP1B...is required.)

The heater control is conducted in the following manner.

[Normal control]

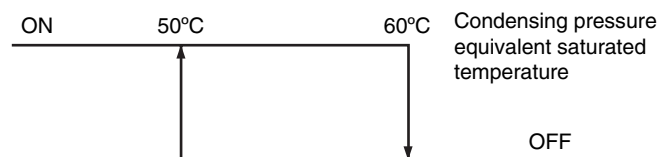
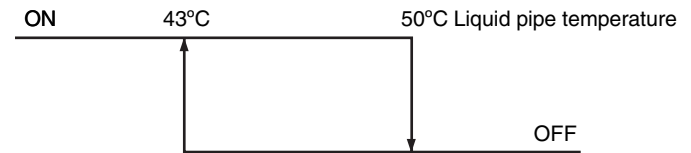
While in heating operation, the heater control (ON/OFF) is conducted as shown on the right.



[Overload control]

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

- (1) The heater control (ON/OFF) is conducted through the liquid pipe temperature (R2T) of the indoor unit.
- (2) The heater control (ON/OFF) is conducted by converting the heater temperature into the condensing pressure equivalent saturated temperature (T_c) 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
		Airflow direction set	OFF	Horizontal	Horizontal	Horizontal
	Defrosting operation	Swing	OFF	Horizontal	Horizontal	Horizontal
		Airflow direction set	OFF	Horizontal	Horizontal	Horizontal
	Thermostat OFF	Swing	LL	Horizontal	Horizontal	Horizontal
		Airflow direction set	LL	Horizontal	Horizontal	Horizontal
	Hot start from thermostat OFF mode (for prevention of cold air)	Swing	LL	Horizontal	Horizontal	Horizontal
		Airflow direction set	LL	Horizontal	Horizontal	Horizontal
Stop	Swing	OFF	Horizontal	Horizontal	Totally closed	
	Airflow direction set	OFF	Horizontal	Horizontal	Totally closed	
Cooling	Thermostat ON in dry operation using micro computer	Swing	L*1	Swing	Swing	Swing
		Airflow direction set	L*1	Set	Set	Set
	Thermostat OFF in dry operation using micro computer	Swing	OFF or L	Swing	Swing	Swing
		Airflow direction set		Horizontal or Set	Set	Set
	Thermostat OFF in cooling	Swing	Set	Swing	Swing	Swing
		Airflow direction set	Set	Set	Set	Set
	Stop	Swing	OFF	Horizontal	Horizontal	Totally closed
		Airflow direction set	OFF	Horizontal	Horizontal	Totally closed
Micro computer control (including cooling operation)	Swing	L	Swing	Swing	Swing	
	Airflow direction set	L	Set	Set	Set	

*1. L or LL only on FXFQ models

9.7 Control of Electronic Expansion Valve

Electronic expansion valves in indoor units have the functions of conducting superheated degree control in cooling operation and subcooling degree control in heating operation. However, if the indoor units receive any control command such as a protection control command or a special control command from the 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 (T_g) of the gas pipe thermistor (R3T) and the detection temperature (T_1) of the liquid temperature thermistor (R2T) of the indoor unit, will come close to a target superheated degree (SHS). At that time, correction to the superheated degree is made according to the differences (ΔT) between set temperature and suction air temperature.

$$SH = T_g - T_1$$

SH: Evaporator outlet superheated degree ($^{\circ}\text{C}$)

T_g : Indoor unit gas pipe temperature (R3T)

T_1 : 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.

• Subcooling degree control in heating operation

This function is used to adjust the opening of the electronic expansion valve so that the high pressure equivalent saturated temperature (T_c), which is converted from the detected pressure of the high pressure sensor in the outdoor unit, and the subcooling degree (SC), which is calculated from the detected temperature (T_1) of the liquid temperature thermistor (R2T) in the indoor unit, will come close to the target subcooling degree (SCS).

At that time, corrections to the subcooling degree are made according to differences (ΔT) between set temperature and suction air temperatures.

$$SC = T_c - T_1$$

SC: Condenser outlet subcooling degree ($^{\circ}\text{C}$)

T_c : High pressure equivalent saturated temperature detected by the high pressure sensor (S1NPH)

T_1 : 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

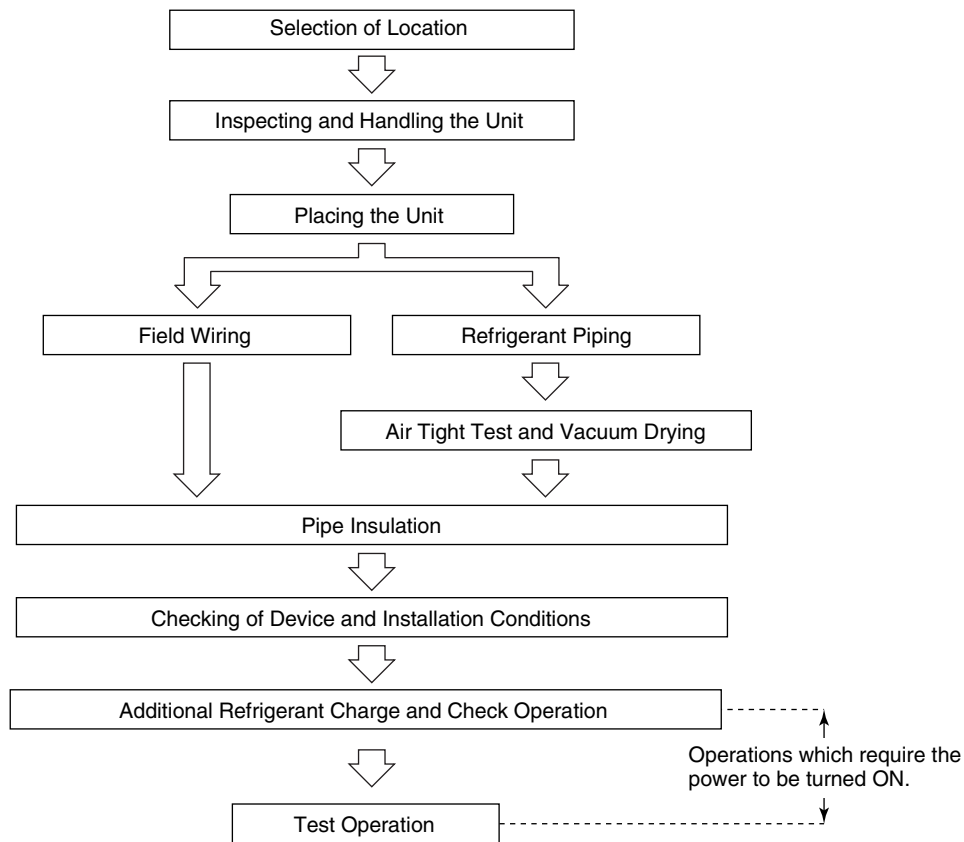
Test Operation

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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

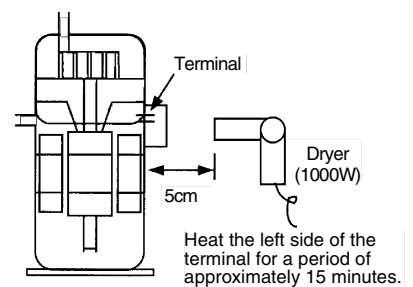


- Is the wiring performed as specified?
- Is the designated wire used?
- Is the wiring screw of wiring not loose?
- Is the grounding work completed?
- Is the insulation of the main power supply circuit deteriorated?
Use a 500V megger tester to measure the insulation. (*1)
- Do not use a megger tester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



Check air tight test and vacuum drying.



Check on amount of refrigerant charge



Check the stop valves for conditions.

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

- Is a proper quantity of refrigerant charged?

- * Refer to P.359 for the calculation of the amount of additionally refrigerant charge.
- When the refrigerant level is insufficient, leave the liquid and gas stop valves closed and charge with the liquid refrigerant via the liquid stop valve service port. (*Do not charge via the gas stop valve service port. Doing so will result in error.)

- Is the amount of additional refrigerant charge recorded in the [Service Precaution] label?

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

System Name \ Name	Liquid-pipe stop valve	Equalizing pipe stop valve	Gas pipe stop valve
RTSYQ10~16PA	Open	—	Open
RTSYQ20PA	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.

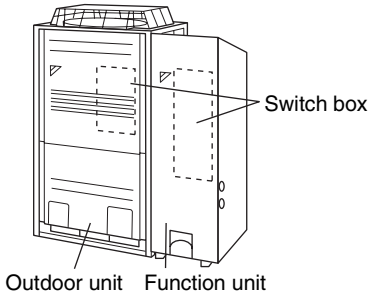


Make the field settings with outdoor unit PCB.

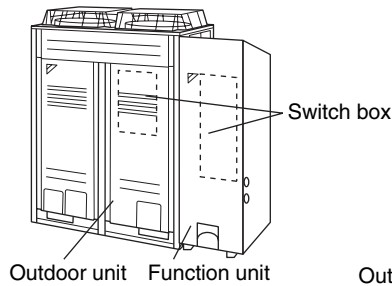


(Reference)

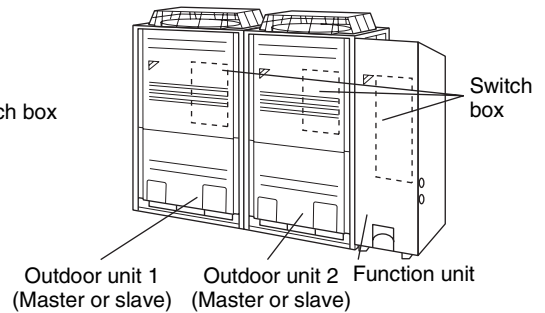
<RTSYQ10PA>



<RTSYQ14 · 16PA>



<RTSYQ20PA>



- 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.

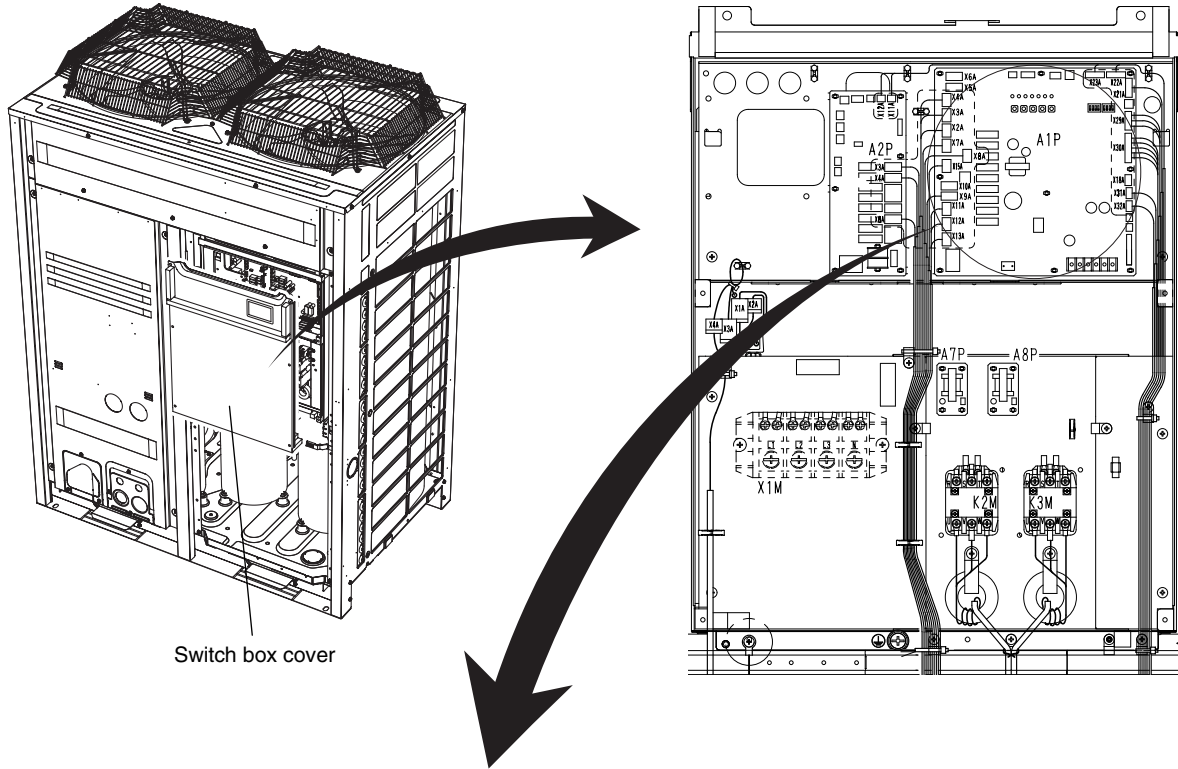
LED display ○: ON ●: OFF ◐: Blinking

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

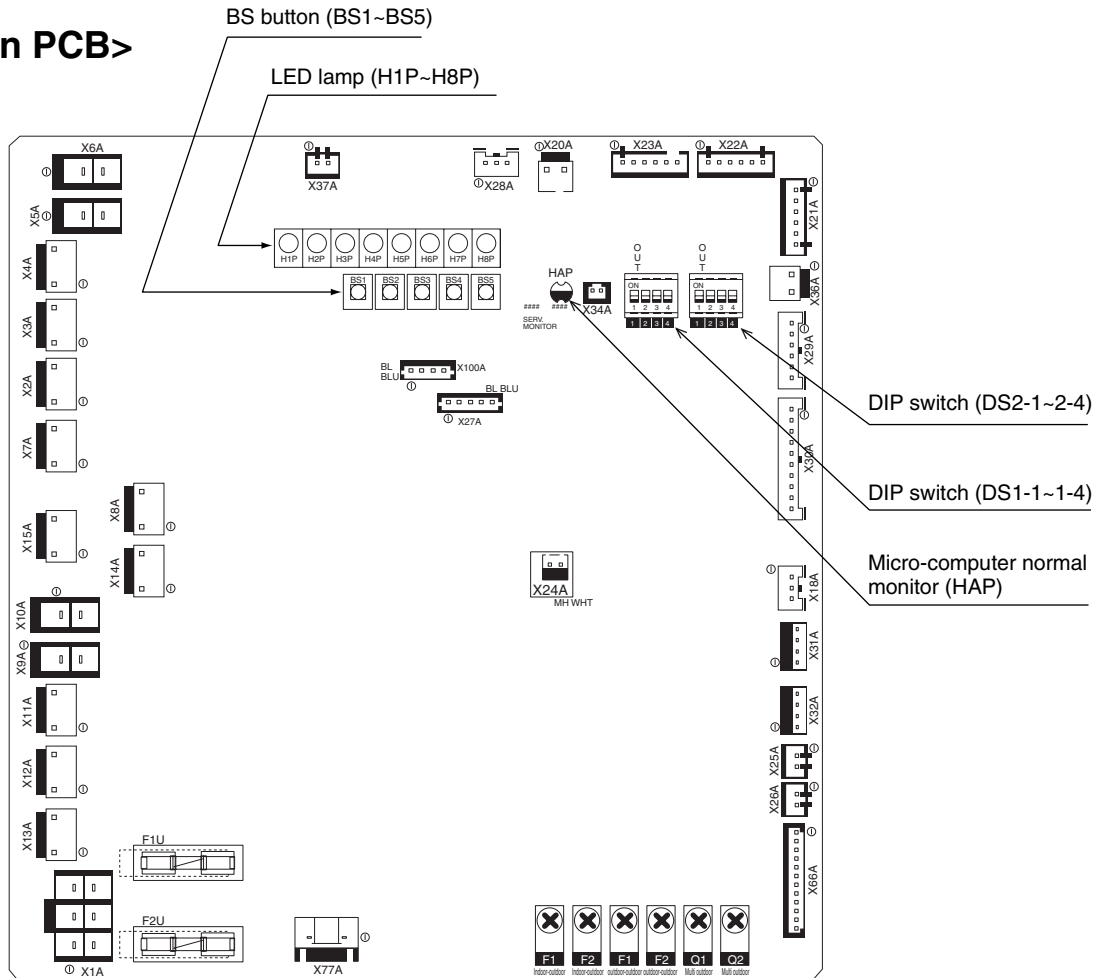
- (*) The master unit is the outdoor unit to which the transmission wiring for the indoor units is connected.
The other outdoor units are slave units.

- Make the field settings if needed.
(For the setting procedure, refer to information in "3.2. Field Setting from Outdoor Unit" on P.162 onward.)
For the outdoor-multi system, make the field settings with the master unit.
(Field settings made with the slave unit will be all invalid.)

Inside of the switch box

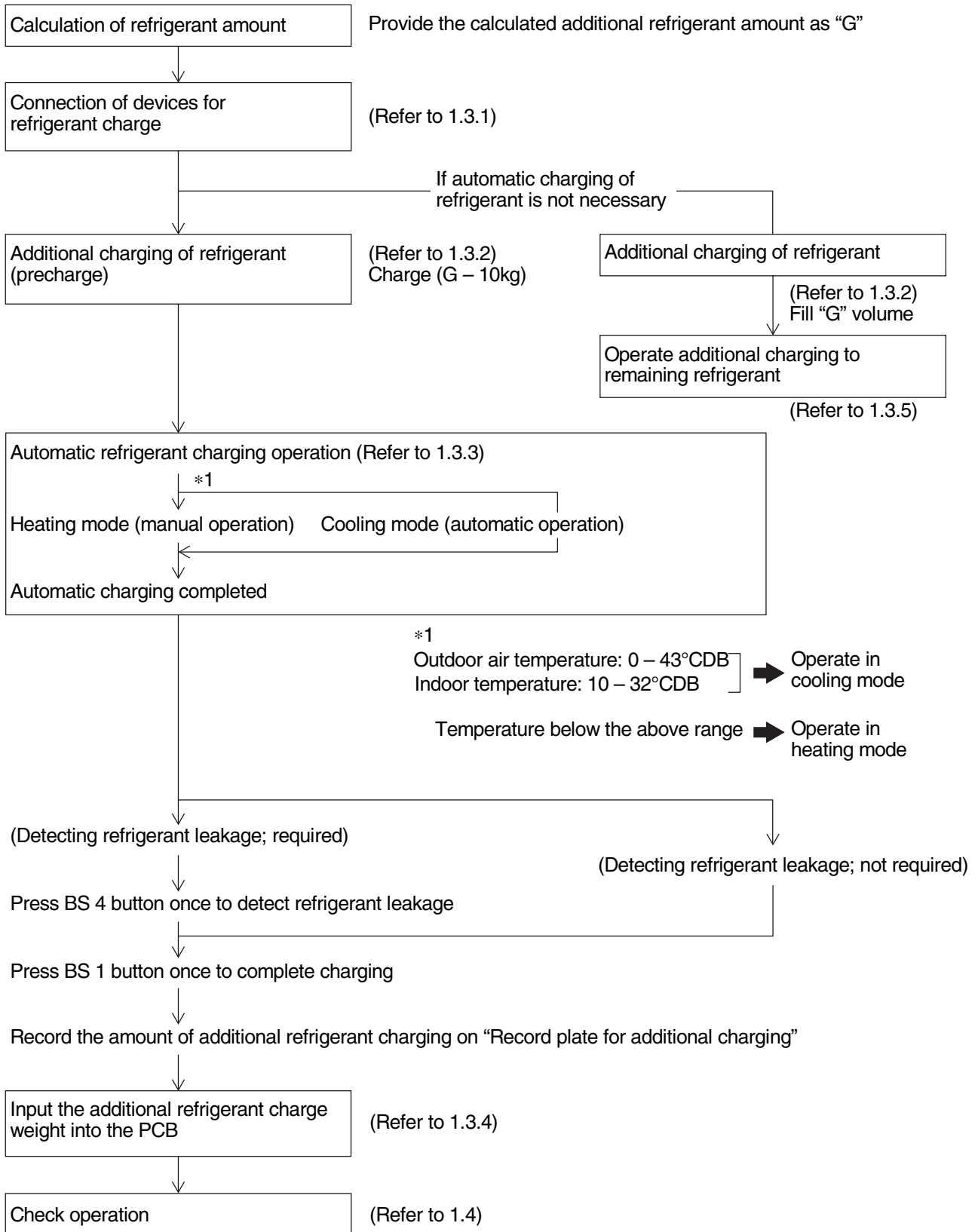


<Main PCB>



1.3 Additional Refrigerant Charge Procedure

Charge the additional refrigerant by following procedure before test operation.

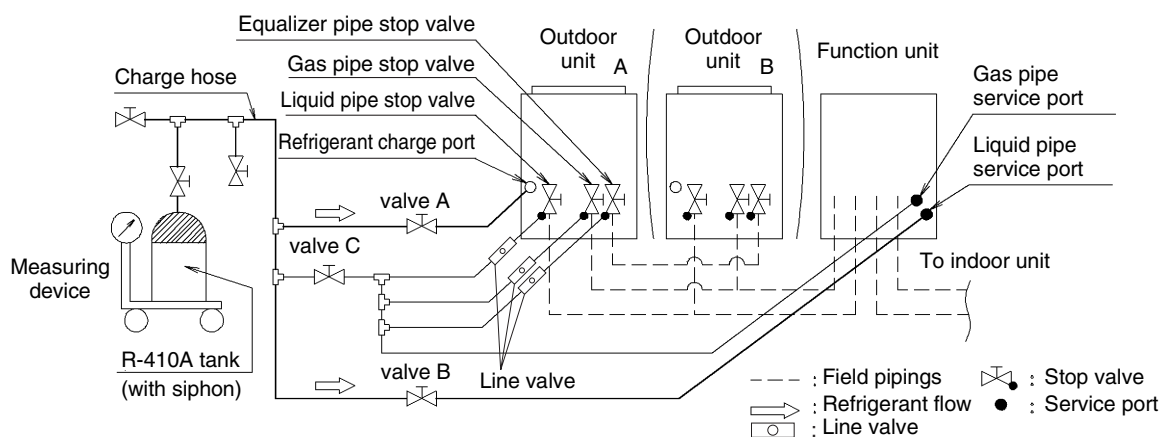




- Note 1.** When the refrigerant charging procedure is done or when pausing, close the valve of the refrigerant tank immediately.
- The refrigerant charge port has an electronic expansion valve and will be closed at the end of the refrigerant charging. However, the valve will be opened when operating 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 PCB (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 el.compo. 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 startup after the unit has started operation. This is not an error.



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.359.
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.

i 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 P.142.

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.134)

1. Turn the power ON 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 P.139.

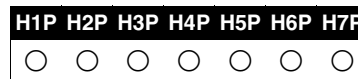
i Note 1: If the H2P LED is not flashing (in 12 minutes time after turning ON the power), make sure it is displayed as shown in the "2. Normal system display" on P.139.
If the H2P LED is flashing, check the error code on the remote controller "3. Remote controller error code display" on P.140.

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 P.139.

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



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



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 air 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.

i 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 "4. Example of Connection (R-410A Type)" on P.357), therefore, the weight must be monitored constantly.

<Charging in heating mode >

8. Startup

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

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Pressure control (for the first minute)	●	◐	●	●	●	●	○
Startup 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 pressed within 5 minutes, "P2" will be displayed on the remote controller. Refer to "3. Remote controller error code display" on P.140.

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 error code display" on P.140.

Note 2: When an error occurs, check the display of the remote controller and refer to "3. Remote controller error code display" on P.140.

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 P.140.

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 P.140.

<Charging in cooling mode>

8. Startup

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

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Pressure control (for the first minute)	●	◐	●	●	●	●	○
Startup 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 pressed within 5 minutes, "P2" will be displayed on the remote controller. Refer to "3. Remote controller error code display" on P.140.

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 error code display" on P.140.

Note 2: When an error occurs, check the display of the remote controller and refer to "3. Remote controller error code display" on P.140.

11. Complete



The display on the remote controller shows a blinking "Pξ" 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 "Pξ" code is displayed on the remote controller.



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

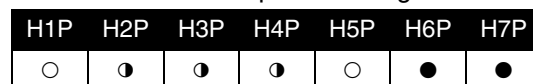


Beware of the fan blades when you open the front panel.

The fan may still rotate for a while after unit operation has stopped.

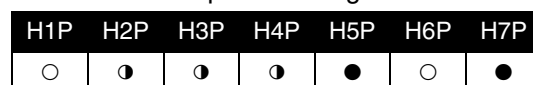
- When the unit displays an out of temperature range, the automatic charging of refrigerant can not be completed.

- Out of outdoor air temperature range



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

- Out of indoor temperature range



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.140.

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.140.

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 BS button on the PCB (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

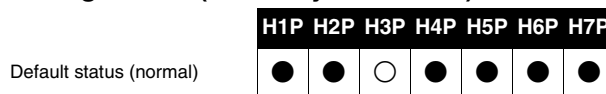
- The number of units that are active can be read from the LED display in the "Monitor Mode" procedure below.

Example: in the following procedure there are 22 units active:



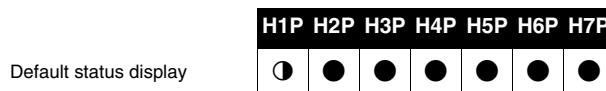
Note: Wherever during this procedure, press the **BS1 MODE** button if something becomes unclear. You will return to setting mode 1 (H1P = ● "OFF").

1 Setting mode 1 (default system status)



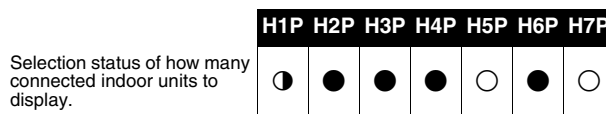
Press the **BS1 MODE** button to switch from setting mode 1 to monitor mode.

2 Monitor mode



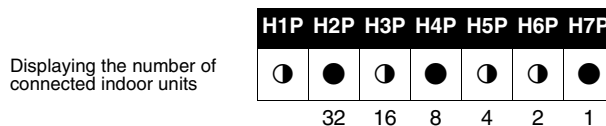
To check the number of indoor units, press the **BS2 SET** button 5 times.

3 Monitor mode



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



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
				Individual	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 transmission wiring.

3. Remote controller error code display

Remote controller heating mode error 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 error codes

Error code	
P8	Charging is almost finished. Ready to close valve A.
P9	Charging is finished. Close valve A and remove the refrigerant tank.
PR, 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 error code by the remote controller and correct the abnormality by following the "Correcting after abnormal completion of the check operation" on P.144.

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

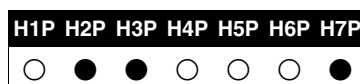
Availability of the leak detection function feature requires input of the additional refrigerant charge amount immediately after finishing the automatic charging. The input must be executed before performing the test operation.



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 el. compo. box lid and all front panels except the one on the side of the el compo. 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:



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	$5 \leq x < 10$	○	●	●	●	●	○	●
3	$10 \leq x < 15$	○	●	●	●	●	○	○
4	$15 \leq x < 20$	○	●	●	●	○	●	●
5	$20 \leq x < 25$	○	●	●	●	○	●	○
6	$25 \leq x < 30$	○	●	●	●	○	○	●
7	$30 \leq x < 35$	○	●	●	●	○	○	○
8	$35 \leq x < 40$	○	●	●	○	●	●	●
9	$40 \leq x < 45$	○	●	●	○	●	●	○
10	$45 \leq x < 50$	○	●	●	○	●	○	●
11	$50 \leq x < 55$	○	●	●	○	●	○	○
12	$55 \leq x < 60$	○	●	●	○	○	●	●
13	$60 \leq x < 65$	○	●	●	○	○	●	○
14	$65 \leq x < 70$	○	●	●	○	○	○	●
15	$70 \leq x < 75$	○	●	●	○	○	○	○
16	$75 \leq x < 80$	○	●	○	●	●	●	●
17	$80 \leq x < 85$	○	●	○	●	●	●	○
18	$85 \leq x < 90$	○	●	○	●	●	○	●
19	$90 \leq x < 95$	○	●	○	●	●	○	○
20	$95 \leq x < 100$	○	●	○	●	○	●	●
21	$100 \leq x$	○	●	○	●	○	●	○

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.143.

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 P.134), 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, press 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 blinking (●) 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 error 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 main remote controller.
- In case the unit is operated with the leak detection function available:
 - the outdoor air 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 el. compo. 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 P.162.
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.



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



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



- 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 errors.
 - 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 P.144 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 error code displayed on the remote controller. In case of a displayed error code, perform the following actions to correct the abnormality:

1.4.2 Confirm the Error Code on the Remote Controller

Installation error	Error code	Remedial action
The stop valve of an outdoor unit is not opened.	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).	LL 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 amount 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 P.140.
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 error 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.
- Press the fan direction and fan strength buttons on the remote controller to check if they are operating properly.

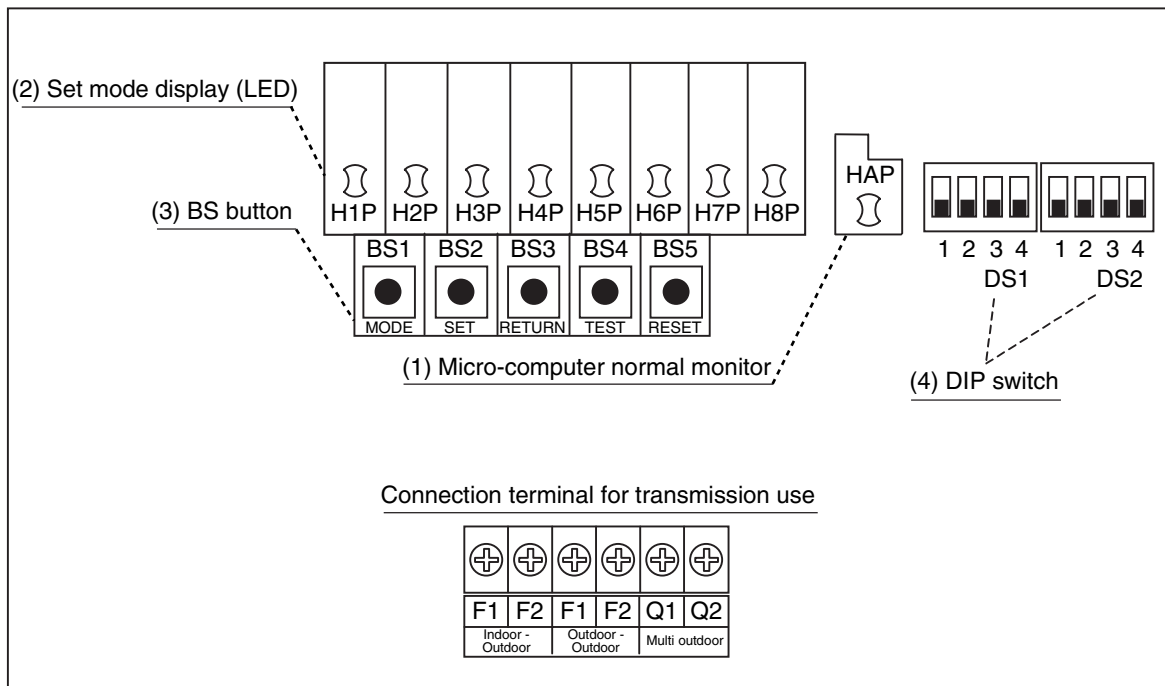


Note:

- Heating is not possible if the outdoor air 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 pressed.
- When the system operation is stopped by the remote controller, the outdoor unit may continue operation for a maximum of 5 minutes.
- The outdoor unit fan may rotate at low speeds in the low night noise setting or the external low noise level setting is made; but this is not an error.

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 an error occurs.
- (2) Set mode display (LED)
LEDs display mode according to the setting.
- (3) BS button
Used to change mode.
- (4) DIP switch
Used to make field settings.

3. Field Setting

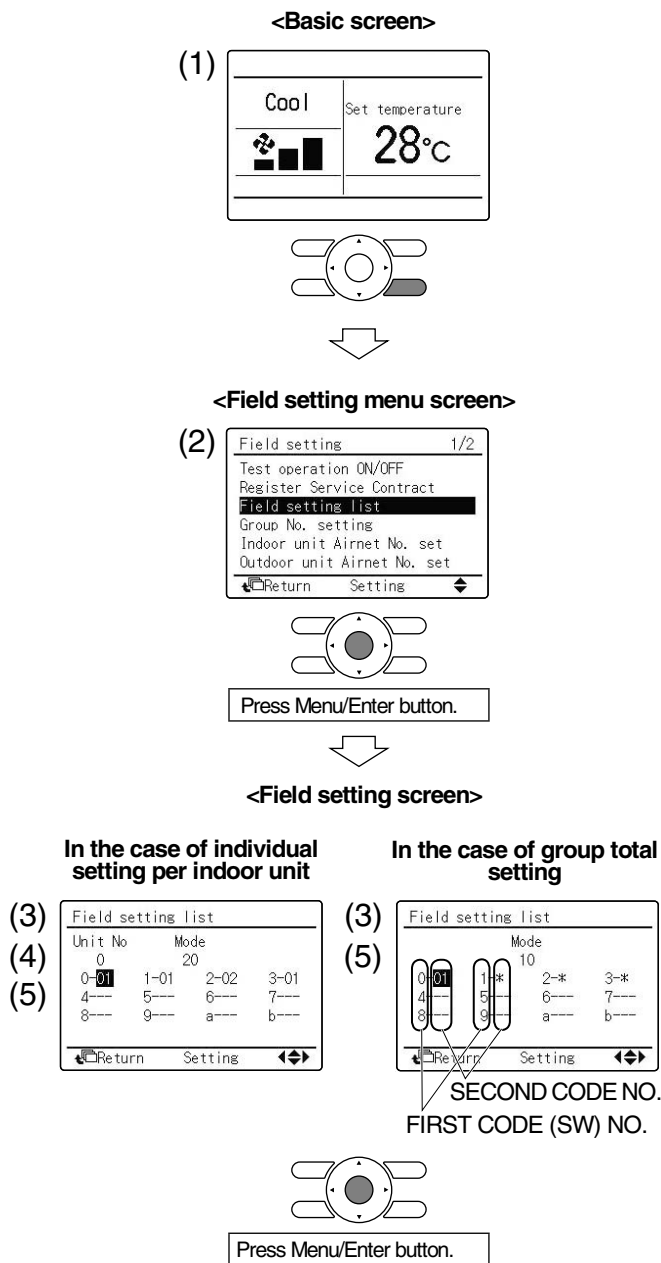
3.1 Field Setting from Remote Controller

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 error.

(When optional accessory is mounted on the indoor unit, setting for the indoor unit may be required to change. Refer to information in the option handbook.)

3.1.1 Wired Remote Controller <BRC1E51>



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.

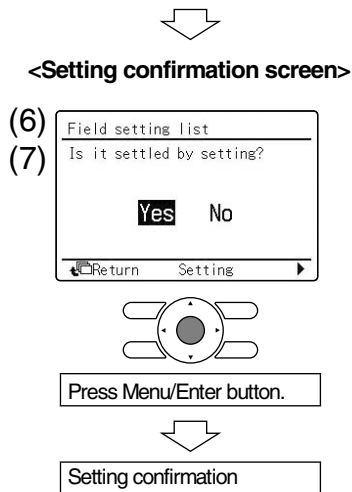
4 In the case of setting per indoor unit during group control (When Mode No. such as **20**, **21**, **22**, **23**, **25** are selected), highlight the unit No. and select "Indoor unit No." to be set by using ▲▼ (Up/Down) button.

(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.]



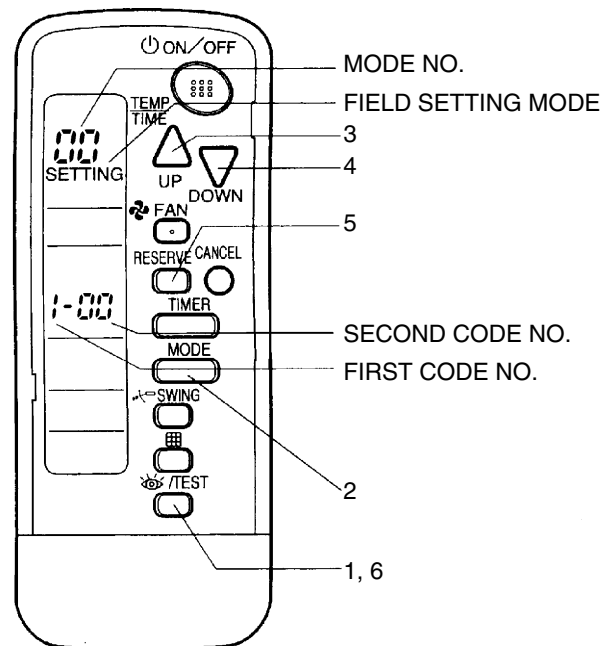
- 6 Press Menu/Enter button. Setting confirmation screen is displayed.
- 7 Select **Yes** and press Menu/Enter button. Setting details are determined and field setting list screen returns.
- 8 In the case of multiple setting changes, repeat “ (3) ” to “ (7) ”.
- 9 After all setting changes are completed, 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



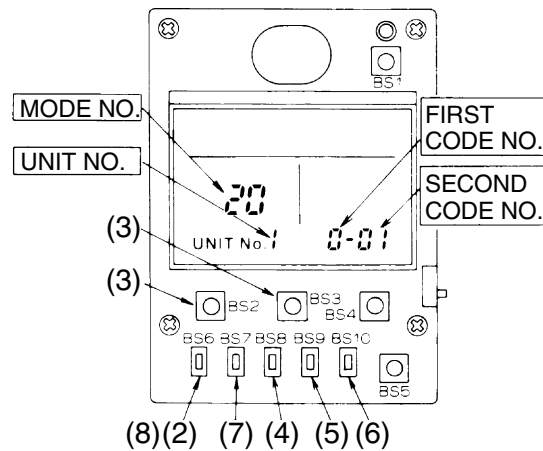
1. When in the normal mode, press the “/TEST” button for 4 seconds or more, and operation then enters the “field setting mode.”
2. Select the desired “mode No.” with the “” button.
3. Pressing the “” button, select the first code No.
4. Pressing the “” button, select the second code No.
5. Press the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

(Example)

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

3.1.4 Setting Contents and Code No. for Indoor Units

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	Selection of thermistor		Room temperature thermistor and suction air thermistor		Suction air thermistor	Remote controller thermistor		—		(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		Error 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 (automatic temperature differential setting for VRV system heat recovery series cool/heat)	01:0	02:1	03:2	04:3	05:4	06:5	07:6	08:7	(10)	
	5	Power failure automatic reset	Not equipped		Equipped		—		—		(11)	
6	Airflow setting when Cooling thermostat is OFF	LL		Set airflow		—		—		(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	Setting of airflow direction adjustment range	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	*7			
15(25)	1	Thermostat OFF excess humidity	Not equipped		Equipped		—		—		(19)	
	2	Direct duct connection (when the indoor unit and heat reclaim ventilator are connected by duct directly.) *Note 6	Not equipped		Equipped		—		—		(20)	
	3	Drain pump humidifier interlock selection	Not equipped		Equipped		—		—		(21)	
	5	Field setting selection for individual ventilation setting by remote controller	Not equipped		Equipped		—		—		(22)	



- Note:**
- 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.
 - The mode numbers inside parentheses cannot be used by wireless remote controllers, so they cannot be set individually. Setting changes also cannot be checked.
 - Marked are factory setting.
 - Do not make settings other than those described above. Nothing is displayed for functions the indoor unit is not equipped with.
 - “00” may be displayed to indicate the remote controller is resetting when returning to the normal mode.
 - If the setting mode to “Equipped”, heat reclaim ventilator fan conducts the fan residual operation by linking to indoor unit.
 - The FXMQ50-63-80-100-125-140PVE cannot be set to 30Pa.
 - The FXMQ20-25-32-40PVE cannot be set to 180 or 200Pa.

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											
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 setting 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

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

(2) Ultra Long Life Filter Sign Setting

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

Setting Table

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

(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
		03	Room temperature thermistor in remote controller

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

When the Second Code No. is set to "02", room temperature is controlled by the suction air thermistor.

When the Second Code No. is set to "03", room temperature is controlled by the room temperature thermistor in remote controller.

(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

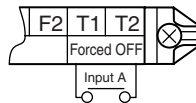
(6) Optional Output Switching

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

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

(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 in the el. compo. box.

**Setting Table**

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

(8) Thermostat Switching

Differential value during thermostat ON/OFF control can be changed. (For details, refer to "9.2 Thermostat Control" on P.116.)

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 "(7) Fan Stop When Thermostat is OFF."

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

(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**

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 FXHQ**

Mode No.	First code No.	Second code No.	Ceiling height (m)
13(23)	0	01	2.7 or less
		02	2.7 - 3.5

■ **In the Case of FXFQ25~80 (All round outlet)**

Mode No.	First code No.	Second code No.	Setting	Ceiling height (m)
13 (23)	0	01	Standard · All round outlet	≤ 2.7
		02	High Ceiling (1)	2.7 - 3
		03	Higher Ceiling (2)	3 - 3.5

■ In the Case of FXFQ100~125 (All round outlet)

Mode No.	First code No.	Second code No.	Setting	Ceiling height (m)
13 (23)	0	01	Standard · All round outlet	≤ 3.2
		02	High Ceiling (1)	3.2 - 3.6
		03	Higher Ceiling (2)	3.6 - 4.2

■ In the Case of FXFQ25~80 (*24-Way, 3-Way, 2-Way Outlets)

Mode No.	First code No.	Second code No.	Setting	Ceiling height		
				4-way Outlets	3-way Outlets	2-way Outlets
13 (23)	0	01	Standard (N)	Lower than 3.1 m	Lower than 3.0 m	Lower than 3.5 m
		02	High Ceiling (H)	Lower than 3.4 m	Lower than 3.3 m	Lower than 3.8 m
		03	Higher Ceiling (S)	Lower than 4.0 m	Lower than 3.5 m	—

■ In the Case of FXFQ100~125 (*24-Way, 3-Way, 2-Way Outlets)

Mode No.	First code No.	Second code No.	Setting	Ceiling height		
				4-way Outlets	3-way Outlets	2-way Outlets
13 (23)	0	01	Standard (N)	Lower than 3.4 m	Lower than 3.6 m	Lower than 4.2 m
		02	High Ceiling (H)	Lower than 3.9 m	Lower than 4.0 m	Lower than 4.2 m
		03	Higher Ceiling (S)	Lower than 4.5 m	Lower than 4.2 m	—

■ 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	—



Note:

- *1 “Mode No.” setting is done in a batch for the group. To make or confirm settings for an individual unit, set the internal mode number in parentheses.
- *2 The figure of the ceiling height is for the all round outlet. For the settings for 4-direction (part of corner closed off), 3-direction and 2-direction outlets, see the installation manual supplied with the separately sold sealing material kit.

(14) Airflow Direction Setting

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

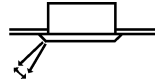
When only the front-flow is used, sets yes/no of the swing flap operation of down-flow.

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**■ In the Case of FXDQ**

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

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

Mode No.	First Code No.	Second Code No.	External Static Pressure
13 (23)	6	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 20°C or above and turns OFF the humidifier if suction air temperature is 18°C 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 unit fan carries out residual operation for 1 minute after the thermostat is stopped. (For the purpose of preventing dust on the air filter from falling off.)

Mode No.	First Code No.	Second Code No.	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 ventilator using the remote controller/central unit when heat reclaim ventilator is built in.
(Switch only when heat reclaim ventilator is built in.)

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

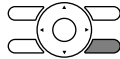
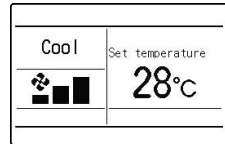
3.1.7 Centralized Control Group No. Setting

BRC1E Type

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

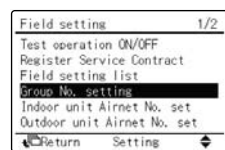
Make Group No. settings for centralized remote control using the operating remote controller.

(1) <Basic screen>



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

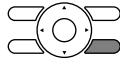
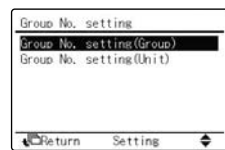
(2) <Field setting menu screen>



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

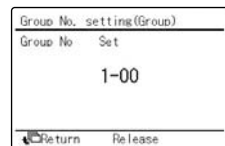
Group No. setting screen is displayed.

(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:

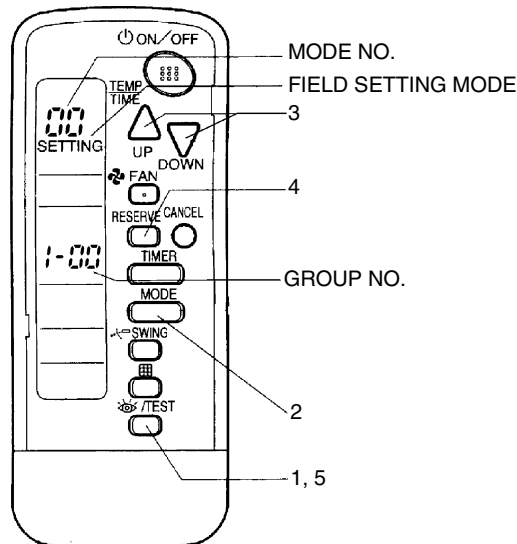
- For wireless remote controller, see the following.
- For setting group No. of Heat Reclaim Ventilator and wiring adaptor for other air conditioners, etc., refer to the operation manual attached.

NOTICE

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

**BRC7C Type
BRC7E Type
BRC4C Type**

- Group No. setting by wireless remote controller for centralized control
- 1. When in the normal mode, press “ ” button for 4 seconds or more, and operation then enters the “field setting mode.”
- 2. Set mode No. “00” with “ ” button.
- 3. Set the group No. for each group with “ ” “ ” button (advance/backward).
- 4. Enter the selected group numbers by pressing “ ” button.
- 5. Press “ ” button and return to the normal mode.

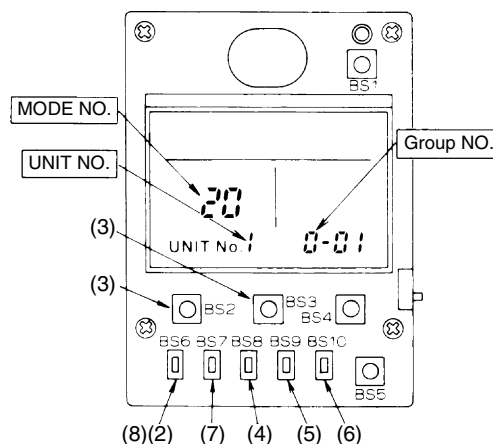


**BRC2A Type
BRC2C Type**

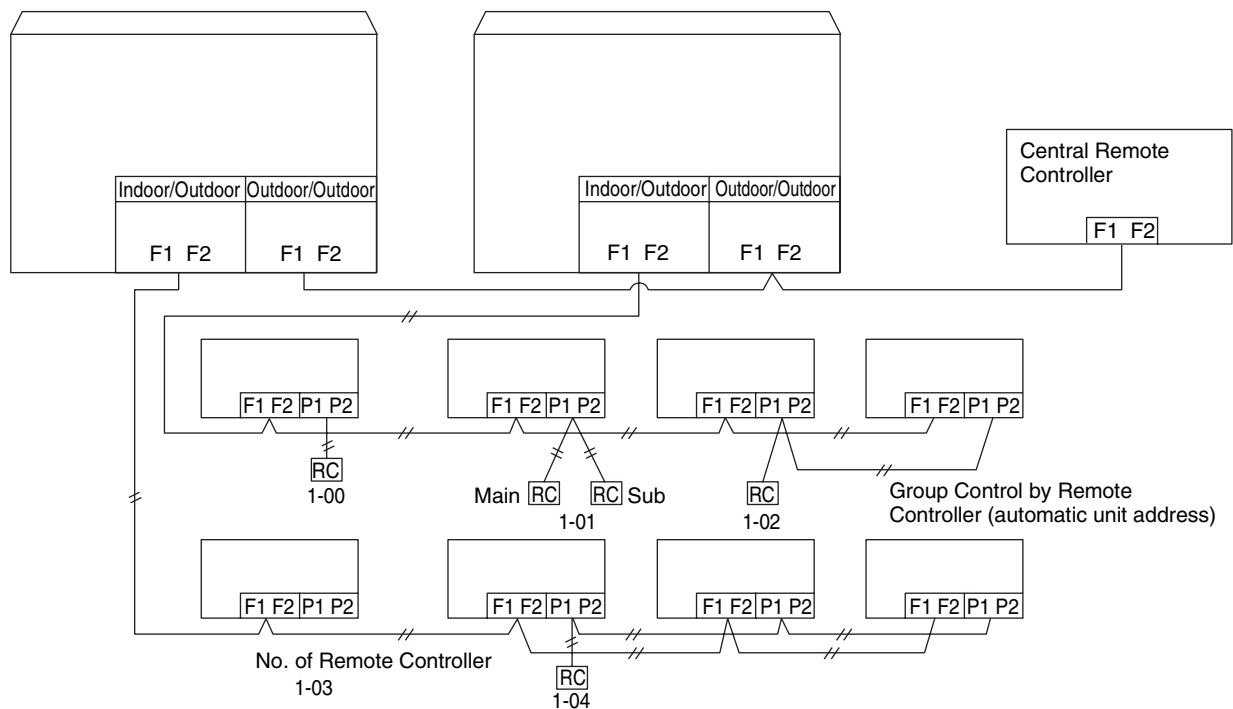
- Group No. setting by simplified remote controller for centralized control.
- 1. Dismount the upper casing from the remote controller.
- 2. Press the [BS6] button (2) (field setting) to set the system to field setting mode.
- 3. Press the [BS2] button (3) (temperature setting "▲") or the [BS3] (3) temperature 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 centralized 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 remote 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 (Field Setting)

The operation control mode is compatible with a variety of controls and operations by limiting the functions of the operation remote controller. Furthermore, operations such as remote controller ON/OFF can be limited in accordance with the combination conditions. (Refer to information in the next page.)

Central remote controller is normally available for operations. (Except when centralized monitor is connected)

3.1.9 Contents of Control Modes

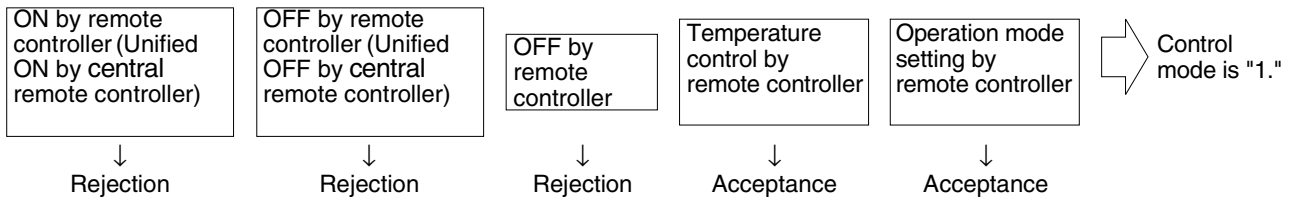
Twenty modes consisting of combinations of the following five operation modes with temperature and operation mode setting by remote controller can be set and displayed by operation modes 0 through 19.

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

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.

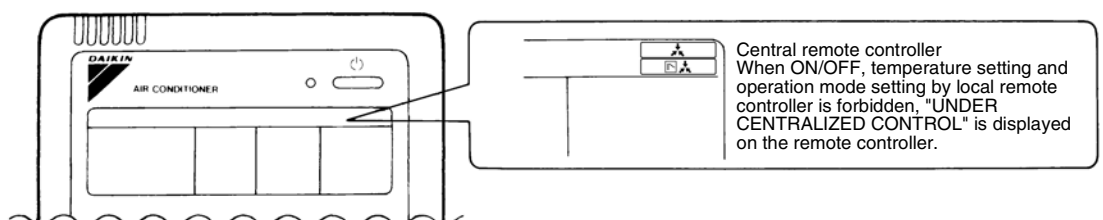
Example



Control mode	Control by remote controller					Control mode
	Operation		OFF	Temperature control	Operation mode setting	
	Unified operation, individual operation by central remote controller, or operation controlled by timer	Unified OFF, individual stop by central remote controller, or timer stop				
ON/OFF control impossible by remote controller	Rejection (Example)	Rejection (Example)	Rejection (Example)	Rejection	Acceptance	0
OFF control only possible by remote controller				Acceptance (Example)	Acceptance (Example)	1 (Example)
Centralized	Acceptance	Acceptance	Acceptance	Rejection	Acceptance	2
Individual				Acceptance	Acceptance	3
Timer operation possible by remote controller	Acceptance (During timer at ON position only)	Rejection (During timer at OFF position only)	Acceptance	Rejection	Acceptance	4
				Acceptance	Acceptance	5
				Rejection	Acceptance	6
				Acceptance	Acceptance	7 *1
				Rejection	Rejection	16
				Acceptance	Acceptance	17
				Rejection	Acceptance	8
				Acceptance	Rejection	18
				Rejection	Acceptance	9
				Acceptance	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.174 onward.

3.2.1 Function Setting

Setting item		Content and objective of setting	Overview of setting procedure
1	Setting of COOL/HEAT selection (*1)	<ul style="list-style-type: none"> ■ COOL/HEAT selection methods are possible to select from the following <ol style="list-style-type: none"> (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 central remote controller 	<ul style="list-style-type: none"> ■ For outdoor unit group control, set the system to "BATCH MASTER" or "SLAVE" while in "Setting mode 1". Then, make setting of COOL/HEAT unified address.
2	Setting of low noise operation (*1)	<p>A. Use external input to step down the upper limit of the fan (factory setting to Step 8), providing low noise level.</p> <ol style="list-style-type: none"> (1) Mode 1: Step 5 or lower (2) Mode 2: Step 4 or lower (3) Mode 3: Step 3 or lower 	<ul style="list-style-type: none"> ■ 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.
		<p>B. The low noise operation aforementioned is enabled in nighttime automatic low noise operation mode.</p> <p>Start time: Possible to select in the range of 20:00 to 24:00 hours.</p> <p>End time: Possible to select in the range of 06:00 to 08:00 hours.</p> <p>(Use the said time as a guide since the start time and the end time are estimated according to outdoor air temperatures.)</p>	<ul style="list-style-type: none"> ■ 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)	<ul style="list-style-type: none"> ■ Used to place limits on the compressor operating frequency to control the upper limit of power consumption. <ol style="list-style-type: none"> (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 	<ul style="list-style-type: none"> ■ Method of setting with "External control adaptor for outdoor unit" Select Demands 1 to 3 following the method of short circuit the terminal block (TeS1).
			<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Used to make address setting with AIRNET connected. 	<ul style="list-style-type: none"> ■ Set the AIRNET to an intended address using binary numbers with No. 13 of "Setting mode 2".
5	Setting of high static pressure	<ul style="list-style-type: none"> ■ 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.) <p>* In order to mount the diffuser duct, remove the cover from the outdoor unit fan.</p>	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> Used to operate the indoor unit in the stopped state in forced H operation mode. 	<ul style="list-style-type: none"> Set No. 5 of "Setting mode 2" to indoor unit forced fan H.
	2	Indoor unit forced operation	<ul style="list-style-type: none"> Used to operate the indoor unit in forced operation mode. 	<ul style="list-style-type: none"> Set No. 6 of "Setting mode 2" to indoor unit forced operation mode.
	3	Change of target of evaporating temperature (in cooling)	<ul style="list-style-type: none"> In cooling operation, used to change the target of evaporating temperature for compressor capacity control. 	<ul style="list-style-type: none"> Select high side or low side with No. 8 of "Setting mode 2".
	4	Change of target of condensing temperature (in heating)	<ul style="list-style-type: none"> In heating operation, used to change the target of condensing temperature for compressor capacity control. 	<ul style="list-style-type: none"> Select high side or low side with No. 9 of "Setting mode 2".
	5	Setting of defrost selection	<ul style="list-style-type: none"> Used to change a temperature at which the defrost operation is initiated, thus making the initiation easy or hard. 	<ul style="list-style-type: none"> Select fast side or slow side with No. 10 of "Setting mode 2".
	6	Setting of sequential startup	<ul style="list-style-type: none"> Used to start units not in sequence but simultaneously. 	<ul style="list-style-type: none"> Set No. 11 of "Setting mode 2" to NONE.
	7	Emergency operation (*1)	<ul style="list-style-type: none"> 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). 	<ul style="list-style-type: none"> Make this setting while in "Setting mode 2". For system with multiple outdoor units: Set with No. 38, 39, or 40.
	8	Airtight test	<ul style="list-style-type: none"> Fully open the expansion valves of the indoor and outdoor units, and energize part of solenoid valves. 	<ul style="list-style-type: none"> Set No. 21 of "Setting mode 2" to ON.
	9	Refrigerant recovery mode (*1)	<ul style="list-style-type: none"> Used to recover refrigerant on site. With operations of indoor and outdoor units prohibited, fully open the electronic expansion valve of the indoor and outdoor units. 	<ul style="list-style-type: none"> Set No. 21 of "Setting mode 2" to ON.
	10	Vacuumping mode (*1)	<ul style="list-style-type: none"> Used to conduct vacuuming on site. Fully open the electronic expansion valves of the indoor and outdoor units, and energize part of solenoid valves. Use a vacuum pump to conduct vacuuming. 	<ul style="list-style-type: none"> Set No. 21 of "Setting mode 2" to ON.
	11	Power transistor check mode	<ul style="list-style-type: none"> Used for the troubleshooting of DC compressors. Inverter waveform output makes it possible to judge whether an error results from the compressor or the PCB. 	<ul style="list-style-type: none"> Set No. 28 of "Setting mode 2" to ON.
	12	Setting of model with spare PCB	<ul style="list-style-type: none"> In order to replace the PCB by a spare one, be sure to make model setting. 	<ul style="list-style-type: none"> 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.183 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.

DIP switch		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 PCB.

After the replacement by the spare PCB, be sure to make settings shown below. When you change the main PCB (A1P) to spare 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)	<table border="1"> <thead> <tr> <th></th> <th>Domestic Japan</th> <th>Overseas General</th> <th>Europe</th> </tr> </thead> <tbody> <tr> <td>DS1-4</td> <td>OFF</td> <td>OFF</td> <td>ON</td> </tr> <tr> <td>DS2-1</td> <td>OFF</td> <td>ON</td> <td>OFF</td> </tr> </tbody> </table>		Domestic Japan	Overseas General	Europe	DS1-4	OFF	OFF	ON	DS2-1	OFF	ON	OFF											
	Domestic Japan	Overseas General	Europe																							
DS1-4	OFF	OFF	ON																							
DS2-1	OFF	ON	OFF																							
DS2-2	Model setting	Make the following settings according to models of outdoor units. (All models are set to OFF at factory.)																								
DS2-3		<table border="1"> <thead> <tr> <th></th> <th>RTSQ8PA</th> <th>RTSQ10PA</th> <th>RTSQ12PA</th> <th>RTSQ14PA</th> <th>RTSQ16PA</th> </tr> </thead> <tbody> <tr> <td>DS2-2</td> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>DS2-3</td> <td>ON</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>ON</td> </tr> <tr> <td>DS2-4</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>ON</td> <td>ON</td> </tr> </tbody> </table>		RTSQ8PA	RTSQ10PA	RTSQ12PA	RTSQ14PA	RTSQ16PA	DS2-2	OFF	ON	OFF	ON	OFF	DS2-3	ON	ON	OFF	OFF	ON	DS2-4	OFF	OFF	ON	ON	ON
		RTSQ8PA	RTSQ10PA	RTSQ12PA	RTSQ14PA	RTSQ16PA																				
DS2-2	OFF	ON	OFF	ON	OFF																					
DS2-3	ON	ON	OFF	OFF	ON																					
DS2-4	OFF	OFF	ON	ON	ON																					
DS2-4																										



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) RTSQ8PAY1		Set DS2-1 and DS2-3 to ON.
HEAT PUMP(10HP) RTSQ10PAY1		Set DS2-1, DS2-2 and DS2-3 to ON.
HEAT PUMP(12HP) RTSQ12PAY1		Set DS2-1 and DS2-4 to ON.
HEAT PUMP(14HP) RTSQ14PAY1		Set DS2-1, DS2-2 and DS2-4 to ON.
HEAT PUMP(16HP) RTSQ16PAY1		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 BS Button

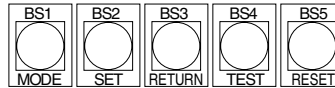
The following settings are made by BS button on PCB.
 In case of multi-outdoor unit system, various items should be set with the master unit.
 (Setting with the slave unit is disabled.)

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”.

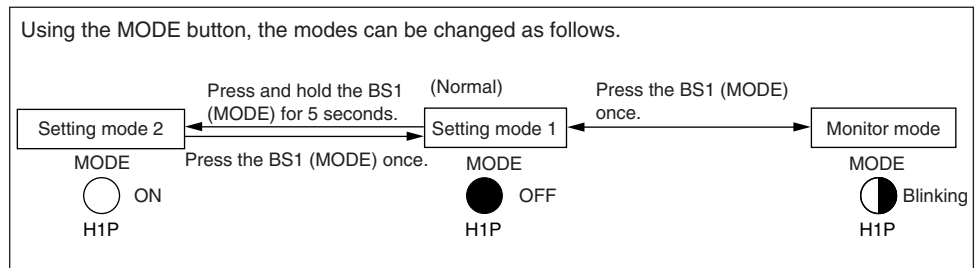
② **Setting mode 2 (H1P ON)**

Used to modify the operating status and to set program addresses, etc. Usually used in servicing the system.

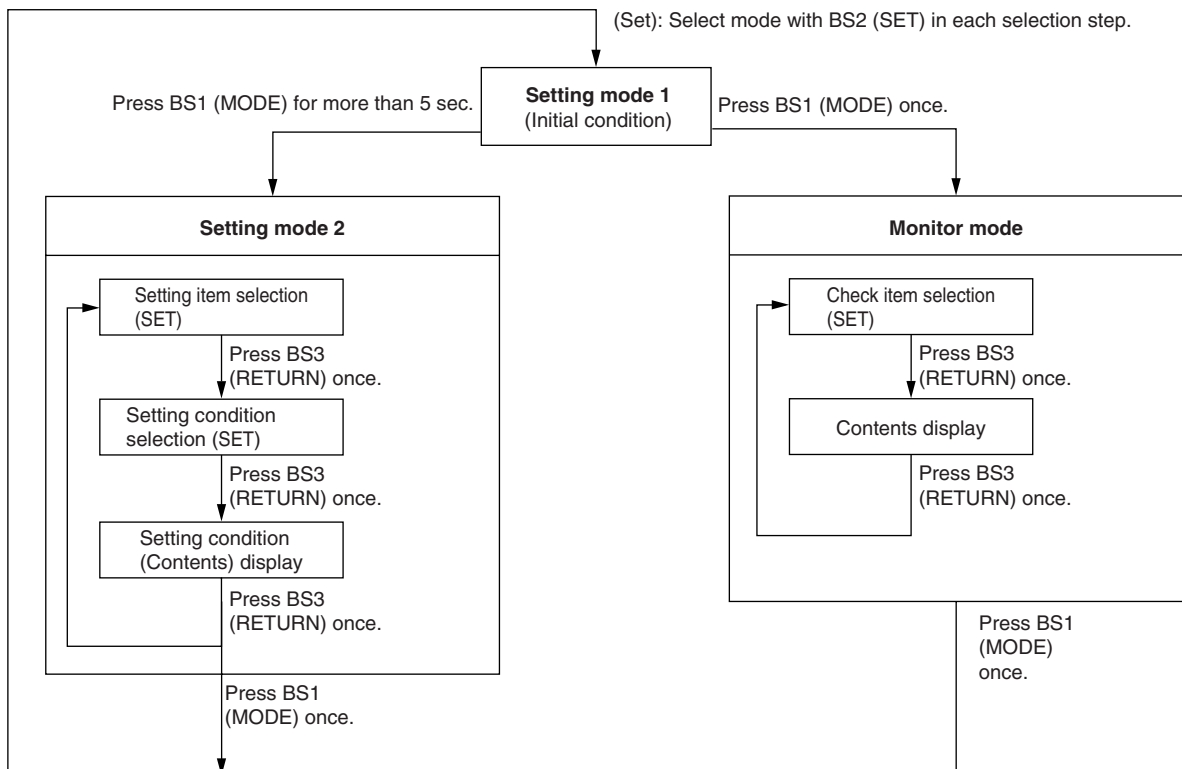
③ **Monitor mode (H1P blinks)**

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, press [MODE (BS1)] button once and set to "Setting mode 1".

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

Press the [RETURN (BS3)] button to determine the setting.

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	●	●	●	●	○	●	●

○: ON
●: OFF
○: Blink

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

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, press 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.)

Pressing 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"

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

<Selection of setting items>

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

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

<Selection of setting conditions>

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

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

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

* If you become unsure of how to proceed, press 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 evaporating temperature for cooling
9	Tc setting	Target condensing 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.
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 errors. This is a temporary operation extremely impairing comfortable environment. Therefore, prompt replacement of the compressor is required. (This operation, however, is not set with RTSYQ10PA.)
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	Low night noise operation setting	Sets automatic low night noise operation 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	Low night noise operation start setting	Sets starting time of low night noise operation. (Night-time low noise setting is also required.)
27	Low night noise operation end setting	Sets ending time of low night noise operation. (Night-time low noise setting is also required.)
28	Power transistor check mode *Check after disconnection of compressor wires	Used for service diagnosis of DC compressor. Since the waveform of inverter is output without wiring to the compressor, it is convenient to probe whether the trouble comes from the compressor or PCB.
29	Capacity priority setting	If the capacity control is required, the low noise control is automatically released by this setting during carrying out low noise operation and low night 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)	<RTSYQ20PA> 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-unit	Set up master and slave units for multi-outdoor-unit. After setting up, press the BS5 RESET 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			* Factory setting	
				IND H3P	Master H4P	Slave H5P						
0	Digital pressure gauge kit display	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Address	0	<input type="radio"/> ●●●●●●●●	
									Binary number (4 digits)	1	<input type="radio"/> ●●●●●●●○	
										~		
										15	<input type="radio"/> ●●●○●●●○	
1	Cool/Heat Unified address	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Address	0	<input type="radio"/> ●●●●●●●●*	
									Binary number (6 digits)	1	<input type="radio"/> ●●●●●●●○	
										~		
										31	<input type="radio"/> ●●○●●●●○	
2	Low noise/demand address	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Address	0	<input type="radio"/> ●●●●●●●●*	
									Binary number (6 digits)	1	<input type="radio"/> ●●●●●●●○	
										~		
										31	<input type="radio"/> ●●○●●●●○	
3	Test operation (Refer to the description on P. 129)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Test operation: OFF		<input type="radio"/> ●●●●●●●○*	
									Test operation: ON		<input type="radio"/> ●●●●●●●○	
5	Indoor forced fan H	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Normal operation		<input type="radio"/> ●●●●●●●○*	
									Indoor forced fan H		<input type="radio"/> ●●●●●●●○	
6	Indoor forced operation	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Normal operation		<input type="radio"/> ●●●●●●●○*	
									Indoor forced operation		<input type="radio"/> ●●●●●●●○	
8	Te setting	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Low (Level L)		<input type="radio"/> ●●●●●●●○	
									Normal (Level M)		<input type="radio"/> ●●●●●●●○*	
									High ①	} (Level H)	<input type="radio"/> ●●●●●●●○	
									High ②		<input type="radio"/> ●●●●●●●○	
									High ③		<input type="radio"/> ●●●●●●●○	
									High ④		<input type="radio"/> ●●●●●●●○	
									High ⑤		<input type="radio"/> ●●●●●●●○	
9	Tc setting	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Low		<input type="radio"/> ●●●●●●●○	
									Normal (factory setting)		<input type="radio"/> ●●●●●●●○*	
									High		<input type="radio"/> ●●●●●●●○	
10	Defrost changeover setting	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Slow defrost		<input type="radio"/> ●●●●●●●○	
									Normal (factory setting)		<input type="radio"/> ●●●●●●●○*	
									Quick defrost		<input type="radio"/> ●●●●●●●○	
11	Sequential operation setting	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	OFF		<input type="radio"/> ●●●●●●●○	
									ON		<input type="radio"/> ●●●●●●●○*	
12	External low noise/demand setting	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	External low noise/demand: NO		<input type="radio"/> ●●●●●●●○*	
									External low noise/demand: YES		<input type="radio"/> ●●●●●●●○	
13	AIRNET address	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Address	0	<input type="radio"/> ●●●●●●●●*	
									Binary number (6 digits)	1	<input type="radio"/> ●●●●●●●○	
										~		
										63	<input type="radio"/> ○●○●○●○●	
18	High static pressure setting	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	High static pressure setting: OFF		<input type="radio"/> ●●●●●●●○*	
									High static pressure setting: ON		<input type="radio"/> ●●●●●●●○	
19	Emergency operation (STD compressor is inhibited to operate.)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	OFF		<input type="radio"/> ●●●●●●●○*	
									STD 1, 2 operation: Inhibited		<input type="radio"/> ●●●●●●●○	
									STD 2 operation: Inhibited		<input type="radio"/> ●●●●●●●○	
20	Additional refrigerant charging operation setting	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Refrigerant charging: OFF		<input type="radio"/> ●●●●●●●○*	
									Refrigerant charging: ON		<input type="radio"/> ●●●●●●●○	
21	Refrigerant recovery/vacuumping mode setting	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Refrigerant recovery / vacuumping: OFF		<input type="radio"/> ●●●●●●●○*	
									Refrigerant recovery / vacuumping: ON		<input type="radio"/> ●●●●●●●○	

No.	Setting item display								Setting condition display * Factory setting
	Setting item	MODE H1P	TEST H2P	C/H selection			Low noise H6P	Demand H7P	
				IND H3P	Master H4P	Slave H5P			
22	Night-time low noise setting	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	OFF <input type="radio"/> ●●●●●●●●* Level 1 (outdoor fan with 6 step or lower) <input type="radio"/> ●●●●●●○ Level 2 (outdoor fan with 5 step or lower) <input type="radio"/> ●●●●●○● Level 3 (outdoor fan with 4 step or lower) <input type="radio"/> ●●●●○●●
24	ENECUT test operation (Domestic Japan only)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	ENECUT output OFF <input type="radio"/> ●●●●●●○* ENECUT output forced ON <input type="radio"/> ●●●●●●●
25	Low noise setting	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Level 1 (outdoor fan with 5 step or lower) <input type="radio"/> ●●●●●●○ Level 2 (outdoor fan with 4 step or lower) <input type="radio"/> ●●●●●○●* Level 3 (outdoor fan with 3 step or lower) <input type="radio"/> ●●●●○●●
26	Low night noise operation start setting	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	About 20:00 <input type="radio"/> ●●●●●●○ About 22:00 (factory setting) <input type="radio"/> ●●●●●○●* About 24:00 <input type="radio"/> ●●●●○●●
27	Low night noise operation end setting	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	About 6:00 <input type="radio"/> ●●●●●●○ About 7:00 <input type="radio"/> ●●●●●○● About 8:00 (factory setting) <input type="radio"/> ●●●●○●●*
28	Power transistor check mode	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	OFF <input type="radio"/> ●●●●●●○* ON <input type="radio"/> ●●●●●●●
29	Capacity priority setting	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	OFF <input type="radio"/> ●●●●●●○* ON <input type="radio"/> ●●●●●●●
30	Demand setting 1	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	60 % demand (Level 1) <input type="radio"/> ●●●●●●○ 70 % demand (Level 2) <input type="radio"/> ●●●●●○●* 80 % demand (Level 3) <input type="radio"/> ●●●●○●●
32	Normal demand setting	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	OFF <input type="radio"/> ●●●●●●○* Demand 1 <input type="radio"/> ●●●●●○● Demand 2 <input type="radio"/> ●●●●○●●
38	Emergency operation 1	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	OFF <input type="radio"/> ●●●●●●○* Master unit operation: Inhibited <input type="radio"/> ●●●●●○●
39	Emergency operation 2	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	OFF <input type="radio"/> ●●●●●●○* Slave unit 1 operation: Inhibited <input type="radio"/> ●●●●●○●
42	Emergency operation 3	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	OFF <input type="radio"/> ●●●●●●○* Prohibition of INV compressor operation <input type="radio"/> ●●●●●○●
51	Master-slave set-up for multi-outdoor-unit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Automatic judgement <input type="radio"/> ●●●●●●○* Master <input type="radio"/> ●●●●●○● Slave <input type="radio"/> ●●●●○●●

↑ 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, press the **MODE (BS1)** button when in "Setting mode 1".

<Selection of setting item>

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

<Confirmation on setting contents>

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

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

* Press 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	●	●	●	○	●	●	●	Lower 6 digits
11	Number of zone units	●	●	●	○	●	○	○	
12	Number of terminal units *5	●	●	●	○	○	●	●	Lower 4 digits: upper
13	Number of terminal units *5	●	●	●	○	○	●	○	Lower 4 digits: lower
14	Contents of error (the latest)	●	●	●	○	○	○	●	Error code table Refer to P.202~203
15	Contents of error (1 cycle before)	●	●	●	○	○	○	○	
16	Contents of error (2 cycle before)	●	●	○	●	●	●	●	
20	Contents of retry (the latest)	●	●	○	●	○	●	●	
21	Contents of retry (1 cycle before)	●	●	○	●	○	●	○	
22	Contents of retry (2 cycle before)	●	●	○	●	○	○	●	
25	Number of multi-outdoor-unit	●	●	○	○	●	●	○	Lower 6 digits

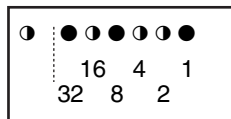
The numbers in the "No." column represent the number of times to press the SET (BS2) button.

- *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”

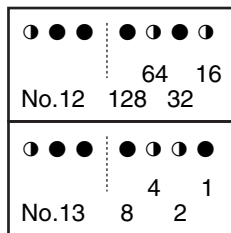
EMG operation / backup operation setting	ON	●	●	●	○	●	●	●
	OFF	●	●	●	●	●	●	●
Defrost select setting	Short	●	●	●	○	●	●	●
	Medium	●	●	●	●	●	●	●
	Long	●	●	●	●	●	●	●
Te setting	L	●	●	●	●	●	●	●
	M	●	●	●	●	●	○	●
	H ①~⑤	●	●	●	●	●	○	●
Tc setting	L	●	●	●	●	●	●	●
	M	●	●	●	●	●	●	○
	H	●	●	●	●	●	●	○

* Data such as addresses and number of units is expressed as binary numbers; the 2 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 4 upper, and 4 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 2 is 01010110 (binary number), which translates to $64 + 16 + 4 + 2 = 86$ (base 10 number). In other words, the number of terminal block is 86.

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

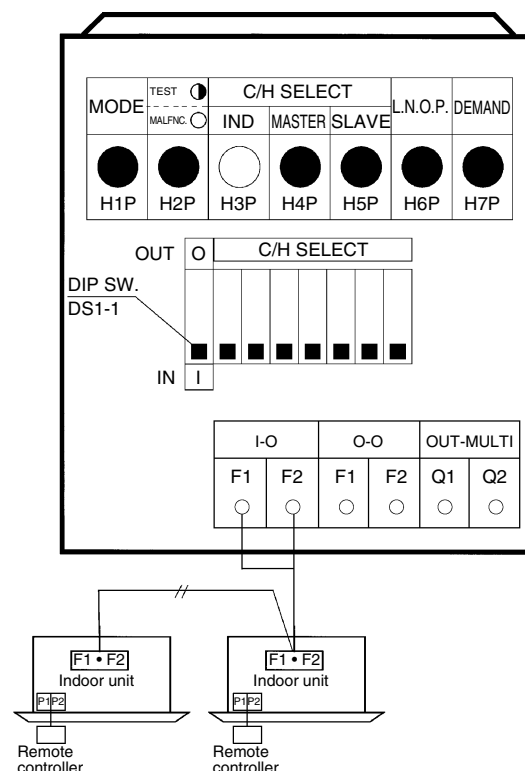
3.2.5 Cool / Heat Mode Switching

There are the following 3 cool/heat switching modes.

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

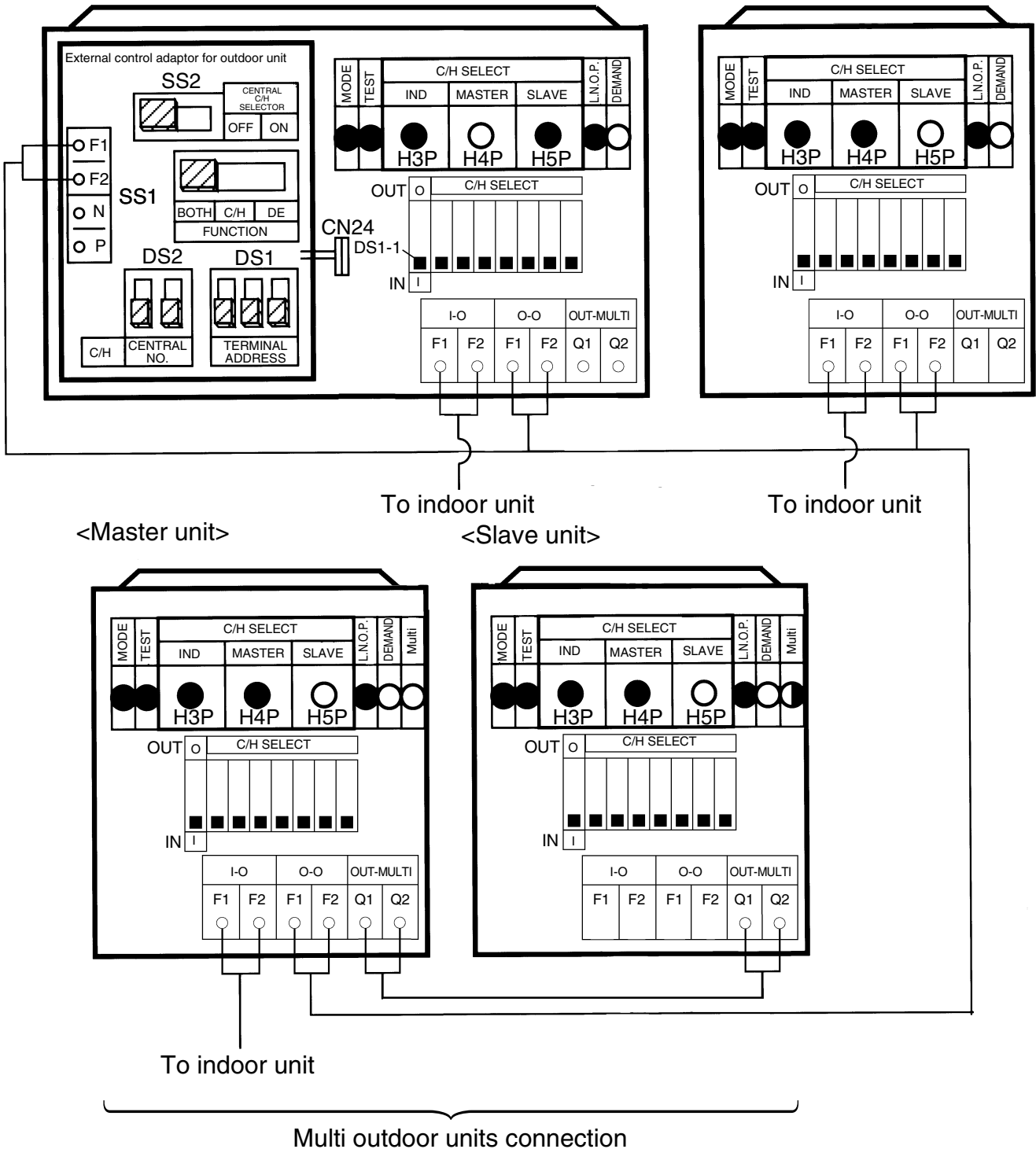
For the details, refer to the installation manual supplied together with the indoor unit.

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.

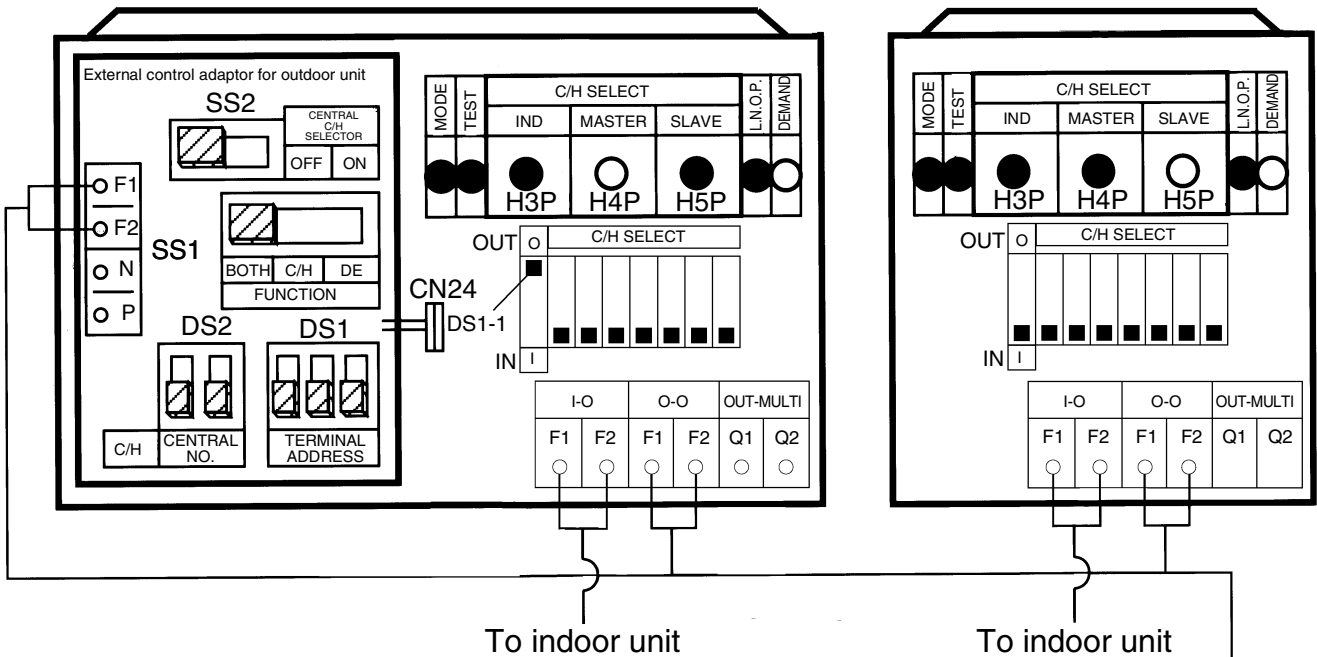
(2) Set Cool / Heat for More Than One Outdoor Unit System Simultaneously in Accordance with Unified Master Outdoor Unit by Indoor Unit Remote Controller

- ◆ 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).



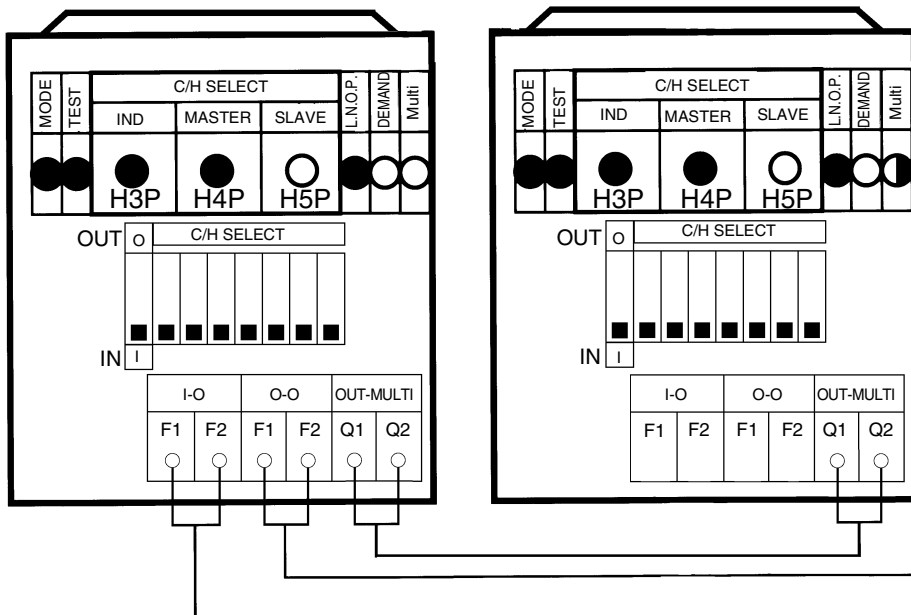
(3) Set Cool / Heat for More Than One Outdoor Unit System Simultaneously in Accordance with Unified Master Outdoor Unit by Cool / Heat Selector

- ◆ 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).



<Master unit>

<Slave unit>

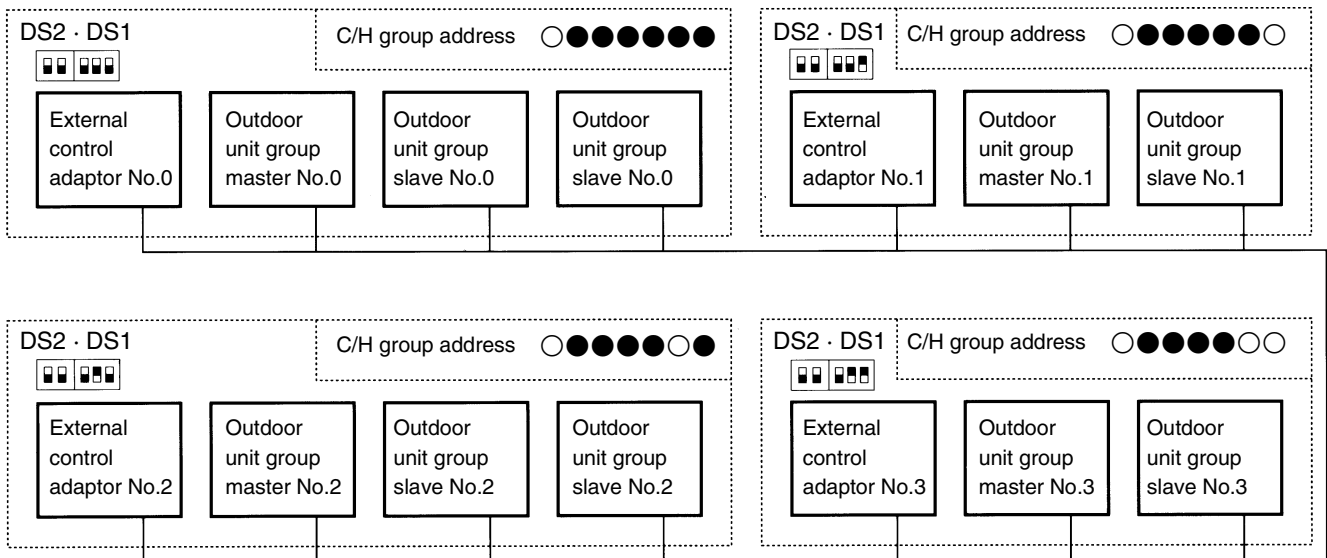


To indoor unit

Multi outdoor units connection

Supplementation on (2) and (3).

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 ② and ③ (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	DS2	DS1
No 0	○ ●	● ● ● ● ● 0		
No 1	○ ●	● ● ● ● ○ 1		
No 2	○ ●	● ● ● ○ ● 2		
No 3	○ ●	● ● ● ○ ○ 3		
No 4	○ ●	● ● ○ ● ● 4		
}	}	}	}	}
No 30	○ ●	○ ○ ○ ○ ● 30		
No 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 external control adaptor for outdoor unit (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 priority) 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 Low night noise operation 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 Low night noise operation).
(Use the start time as a guide since it is estimated according to outdoor air 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 Low night noise operation).
(Use the end time as a guide since it is estimated according to outdoor air temperatures.)
4. If necessary, while in "Setting mode 2", set the setting condition for set item No. 29 (Setting of capacity priority) 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 night-time.)

Image of operation in the case of A

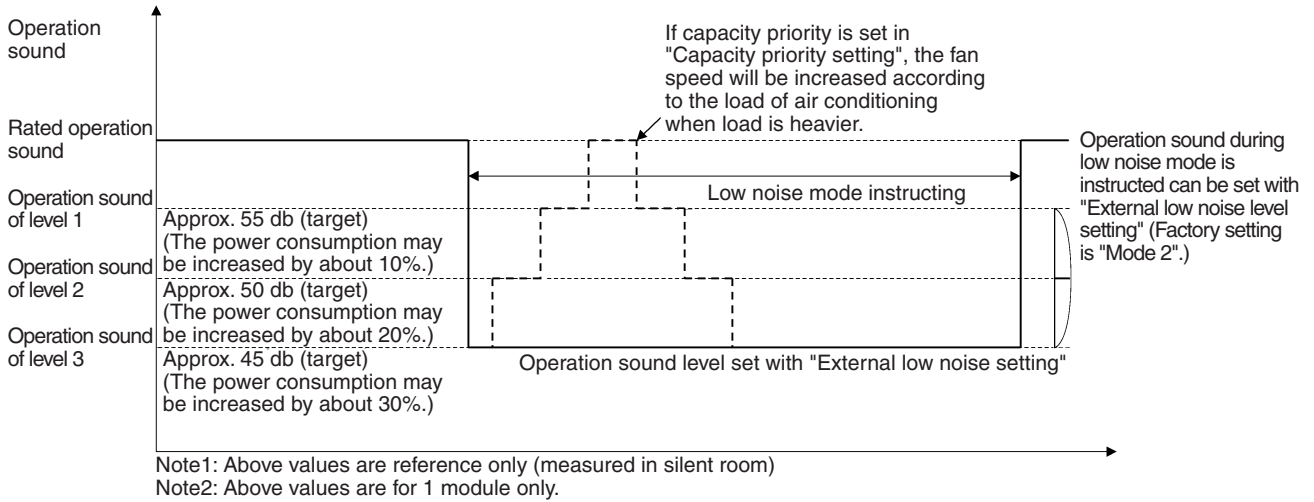


Image of operation in the case of B

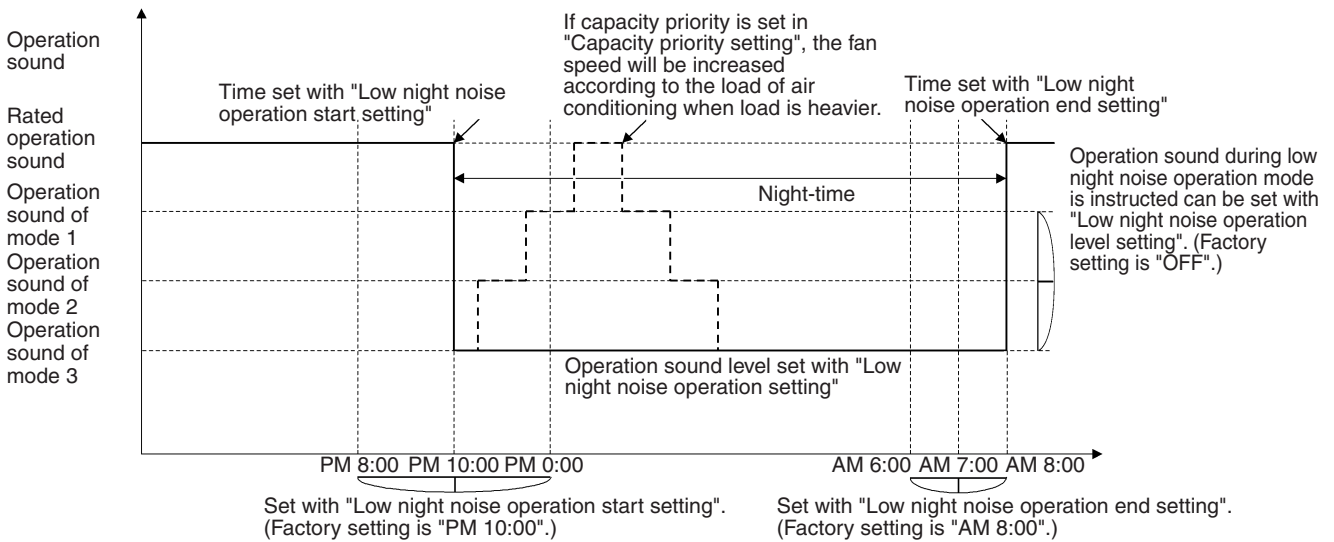
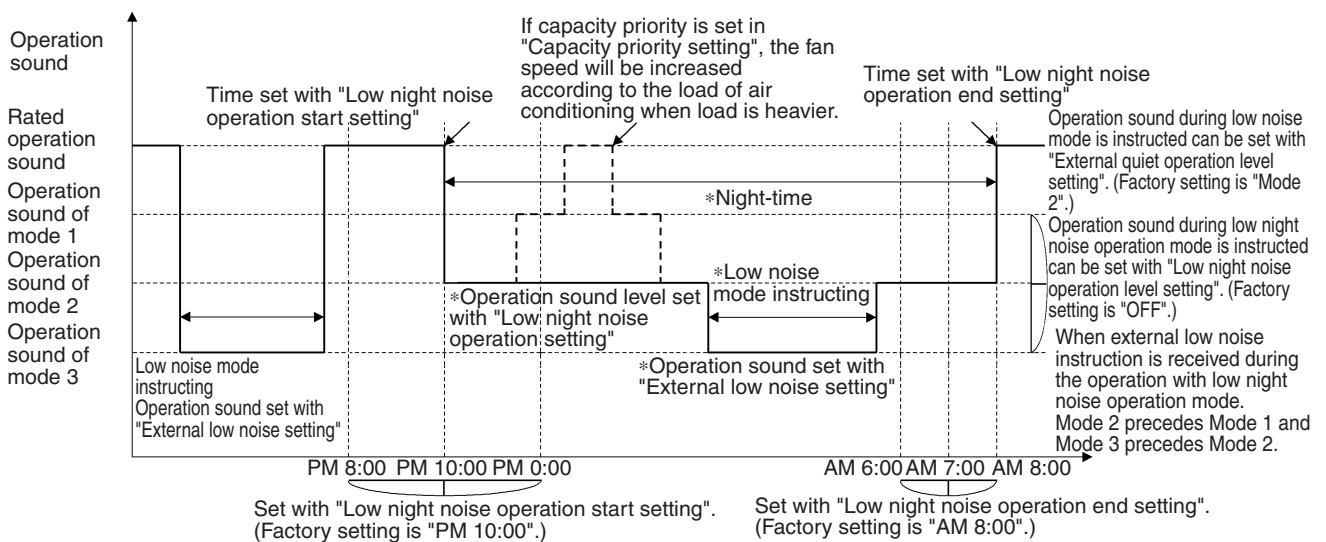


Image of operation in the case of A and B



(2) Setting of Demand Operation

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

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

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 control adaptor for outdoor unit, and short circuit 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 Normal 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

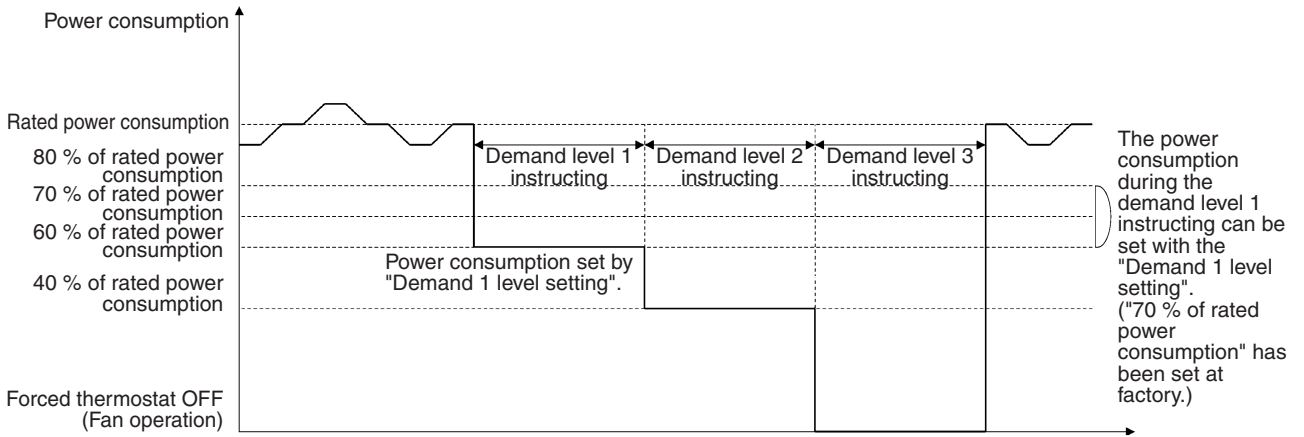


Image of operation in the case of B

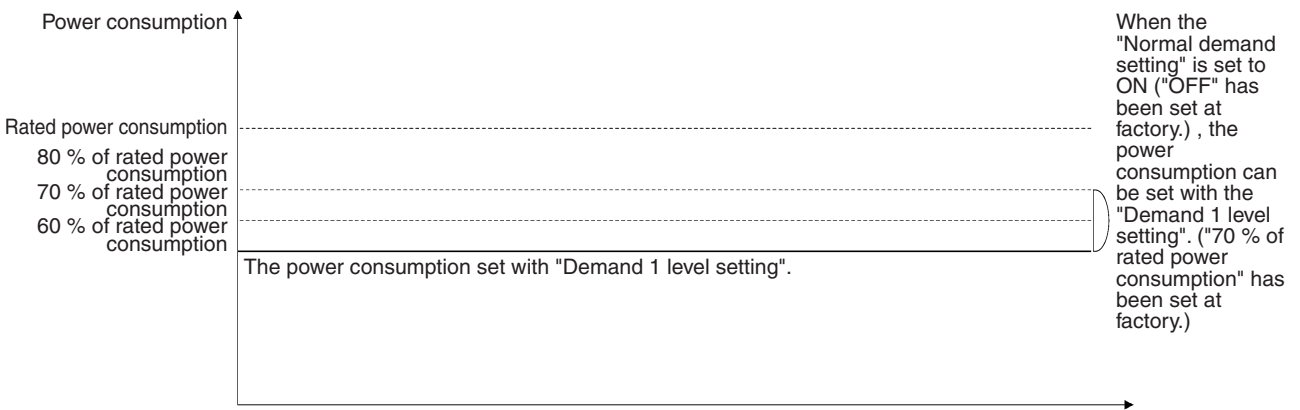
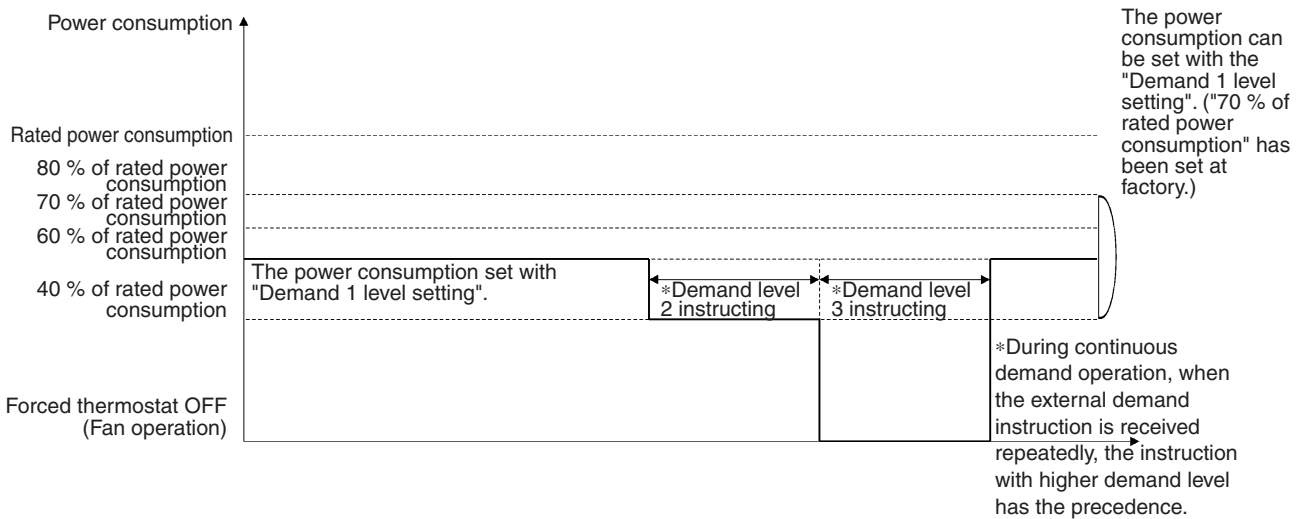


Image of operation in the case of A and B



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

1. Setting mode 1 (H1P OFF)

① In setting mode 2, press the BS1 (MODE) one time. → Setting mode 1 is entered and H1P 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, press and hold the BS1 (MODE) for more than 5 seconds. → Setting mode 2 is entered and H1P lights.

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

③ Press the BS3 (RETURN) one time, and the present setting content is displayed.

→ Press the BS2 (SET) several times and match the LED display with the setting content (as shown on next page) you want.

④ Press the BS3 (RETURN) two times. → Returns to ①.

⑤ Press the BS1 (MODE) one time. → Returns to the setting mode 1 and turns H1P OFF.

○: ON ●: OFF ◐: Blink

Setting No.	Setting contents	① Setting No. indication							② Setting No. indication							Setting contents	③ 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	Low night noise operation setting	○	●	○	○	○	○	●	○	●	○	○	○	○	●	OFF (Factory setting)	○	●	●	●	●	●	○	●
									○	●	○	○	○	○	●	Mode 1	○	●	●	●	●	○	○	
									○	●	○	○	○	○	●	Mode 2	○	●	●	●	●	○	○	
									○	●	○	○	○	○	●	Mode 3	○	●	●	●	●	○	○	
25	External low noise setting	○	●	○	○	○	○	●	○	○	○	○	○	○	Mode 1	○	●	●	●	●	○	○		
															Mode 2 (Factory setting)	○	●	●	●	●	○	○		
															Mode 3	○	●	●	●	○	○	○		
26	Low night noise operation start setting	○	●	○	○	○	○	○	○	○	○	○	○	○	PM 8:00	○	●	●	●	●	○	○		
															PM 10:00 (Factory setting)	○	●	●	●	○	○	○		
															PM 0:00	○	●	●	●	○	○	○		
27	Low night noise operation end setting	○	●	○	○	○	○	○	○	○	○	○	○	○	AM 6:00	○	●	●	●	○	○	○		
															AM 7:00	○	●	●	●	○	○	○		
															AM 8:00 (Factory setting)	○	●	●	●	○	○	○		
29	Capacity priority setting	○	●	○	○	○	○	○	○	○	○	○	○	○	Low noise precedence (Factory setting)	○	●	●	●	○	○	○		
															Capacity priority	○	●	●	●	○	○	○		
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 air tight testing after the completion of internal service for the system onsite. For this purpose, fully open the electronic 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 electronic 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 centralized 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 air tight testing at 4.0-MPa pressure.
3. Press the MODE (BS1) to clear Setting Mode 2.

<CAUTION>

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

3.2.8 Setting of Refrigerant Recovery Mode

When carrying out the refrigerant collection onsite, 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 onsite, fully open the electronic 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 electronic 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 error), the defective 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 an error, 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 error 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

- Error codes that enable the emergency operation are as listed above.

*1: While in heating operation, if "E7" or "H7" error 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 error, 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			Remark
		RTSYP10PA	RTSYP14 · 16PA	RTSYP20PA	
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: RTSYQ10~16PA)

○ Disabling the INV. compressor from operating

Set No. 42 of setting mode 2 to "Disable-INV. 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 · 16PA]

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 RTSQ14PA and 16PA, if the INV. compressor is set to "Operation prohibited", only one STD compressor will operate due to oil equalization.
- On the models RTSQ14PA and 16PA, the STD compressor 1 cannot be set to "Operation prohibited" due to oil equalization.

<Disable-operation setting of the outdoor unit> (Applied model: RTSYQ20PA)

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".

LED display (○: ON ●: OFF ◐: Blink)
 H1P-----H7P

(Step)		
(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".

LED display (○: ON ●: OFF ◐: Blink)
 H1P-----H7P

(Step)		
(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: RTSYQ10~20PA)

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

Make the following setting with the function unit.

LED display (○: ON ●: OFF ◐: Blink)
 H1P-----H7P

(Step)		
(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.	●●○ ●●●●●●	

Part 6

Service Diagnosis

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1. Check Items for Service

1.1 For Troubleshooting

1.1.1 Initial Check and Service Diagnosis

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

1.1.2 Taking Countermeasures

1. According to the result of service diagnosis, rectify the fault or replace the defective part(s).
2. To conduct the dismantling 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 the 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 anti corrosion treatment and heavy anti corrosion treatment units) to eliminate static electricity.

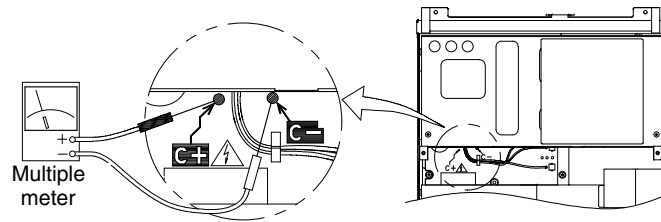
1.2.2 Precautions for Access Lid for Service

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 El. Compo. Box

1. Do not open the el. compo. box lid. for a period of 10 minutes after turning OFF the power supply.
2. After opening the el. compo. box lid., 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 earth terminal in the el. compo. box by hand right before disconnecting and connecting a connector to eliminate static electricity from the body.
4. Disconnect the junction connectors X1A, X2A, X3A, and X4A (X3A and X4A are only equipped on systems with 2 outdoor units) from the outdoor unit fan motors, and then commence the 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 error code "E7" is displayed on the remote controller to disable normal operation.
 - To connect the connectors, refer to information of "Wiring Diagrams" on P.332 ~ .



1.2.4 Precautions for Field Settings

<Independent systems>

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

<Systems with multi outdoor units>

- Make various settings with the el. compo. 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 slave unit.
2. The outdoor units can be discriminated as shown in the table above according to LED displays on the outdoor unit PCB (A1P).

1.2.5 Precautions for Piping Work and Refrigerant Charging

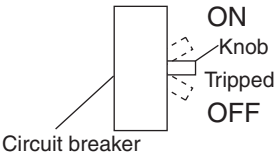
This unit uses R-410A refrigerant. Pay careful attention to the precautions shown below.

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 air tight tests and vacuum drying without fail. (Air tight 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 error indicating LEDs on the outdoor unit PCB may turn ON. In this case, press the **RETURN** (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)	<ul style="list-style-type: none"> 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.  <p style="text-align: center;">Circuit breaker</p>	
		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.	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 control equipment. Blinking display indicates that the system cannot be operated using the remote controller.	Operate the system using the COOL/HEAT central 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 error codes "U4" and "U5", and the system stops but restarts after a lapse of several minutes.	The system stops due to an interruption in communication between units caused by electrical noises coming from equipment other than air conditioners.	Remove causes of electrical noises. If these causes are removed, the system will automatically restart operation.
6	COOL-HEAT selection is disabled.	The remote controller displays "UNDER CENTRALIZED CONTROL".	This remote controller has no option to select cooling operation.	Use a remote controller with option to select cooling operation.
		The remote controller displays "UNDER CENTRALIZED CONTROL", and the COOL-HEAT selection remote controller is provided.	COOL-HEAT selection is made using the COOL-HEAT selection remote controller.	Use the COOL-HEAT selection remote controller to select cool or heat.

	Symptom	Supposed Cause	Countermeasure
7	The system conducts fan operation but not cooling or heating operation.	This symptom occurs immediately after turning ON the power supply.	The system is in preparation mode of operation. Wait for a period of approximately 10 minutes.
		The remote controller displays "UNDER CENTRALIZED CONTROL", but the system is switched to blasting operation without conducting cooling or heating operation.	While in thermal 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 CENTRALIZED 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 temperature, 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 ambient 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 1 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.

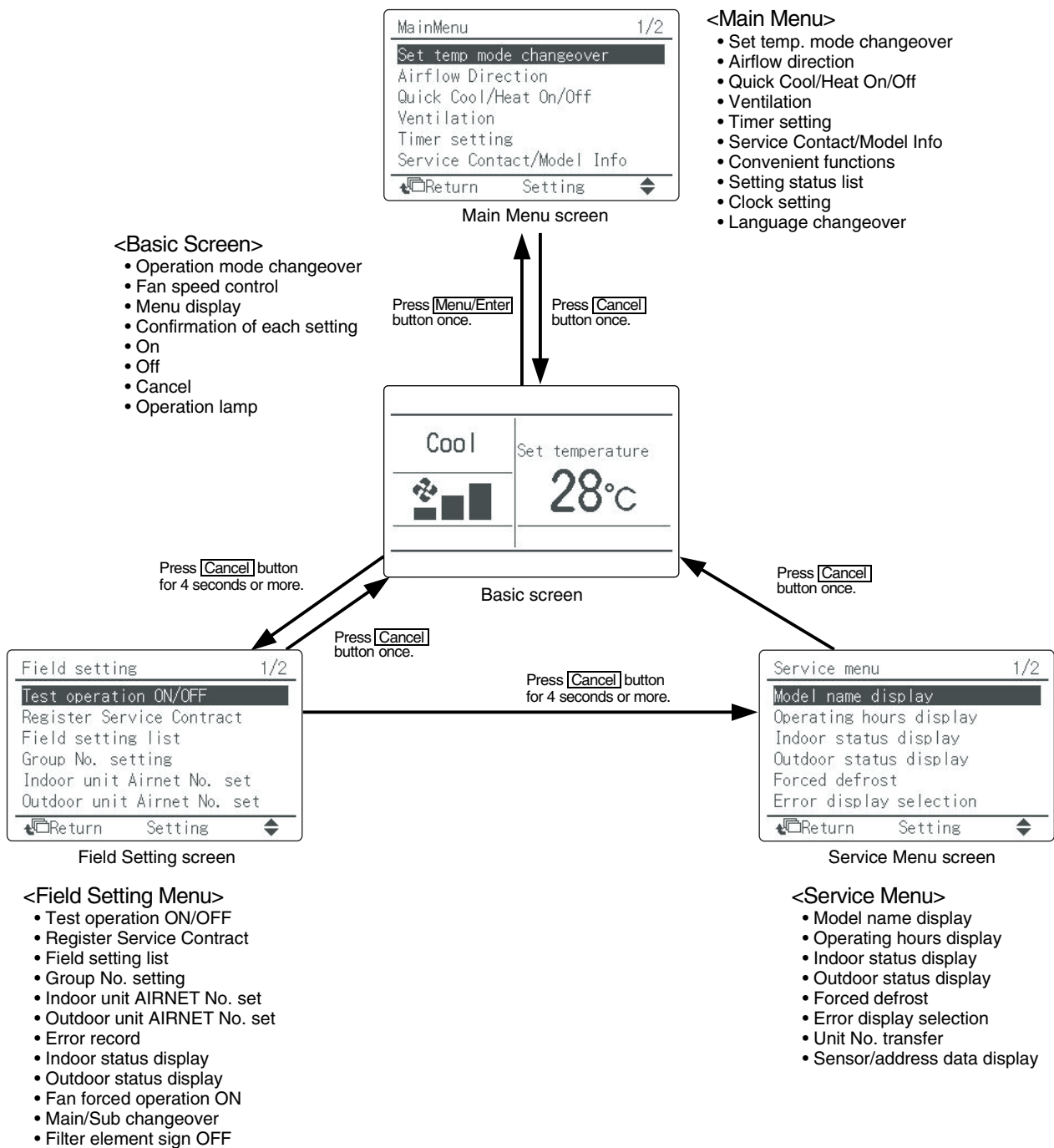
	Symptom		Supposed Cause	Countermeasure
12	Dust comes out from the system.	Dust comes out from the system when it restarts after the stop for an extended period of time.	Dust, which has deposited on the inside of indoor unit, is blown out from the system.	Normal operation.
13	Odors come out from the system.	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 "E8" appears on the remote controller.	Immediately after turning ON the power supply	The reason is that the system is checking to be sure the remote controller is normal.	Normal operation. This code is displayed for a period of approximately 1 minute at maximum.
16	The 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.)

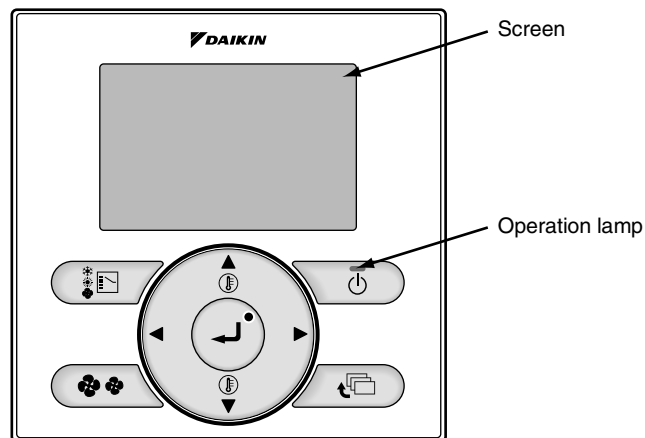


3.2 Self-diagnosis by Wired Remote Controller

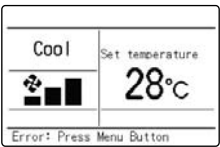
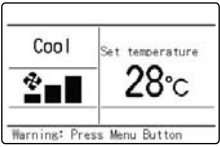
Explanation

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

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



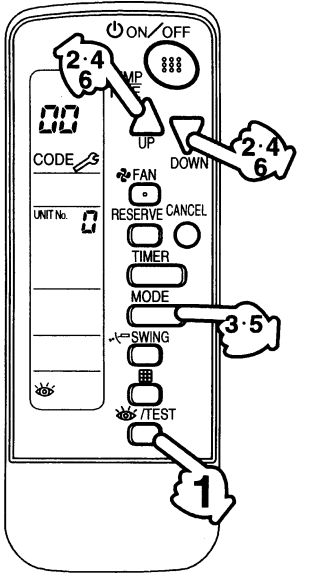
(1) Checking an error or warning

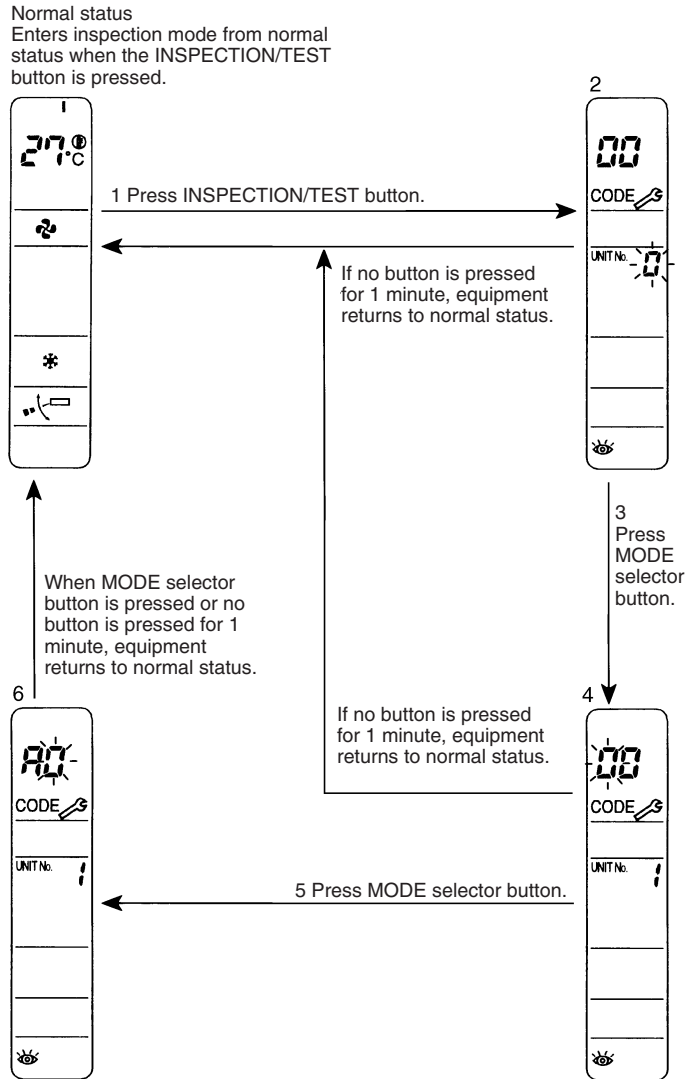
	Operation Status	Display
Abnormal shutdown	The system stops operating.	<p>The operation lamp (green) starts to blink. The message "Error: Press Menu button" will appear and blink at the bottom of the screen.</p> 
Warning	The system continues its operation.	<p>The operation lamp (green) remains on. The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

3.3 Self-diagnosis by Wireless Remote Controller

If unit stops due to an error, the operation indicating LED on the signal receiving part of indoor unit blinks.

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

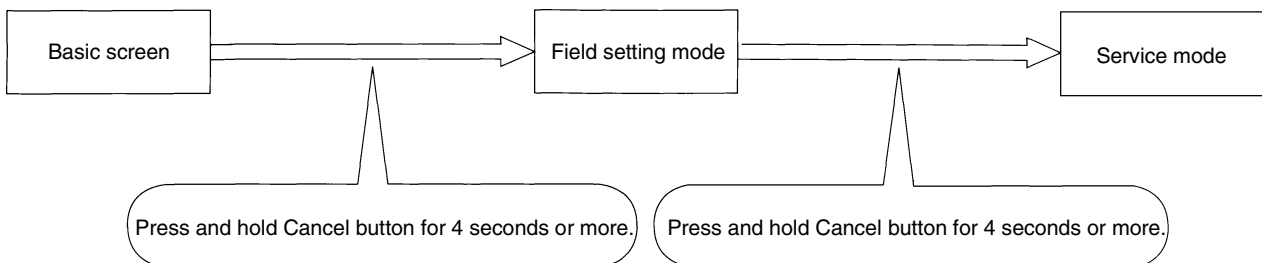
1	<p>Press the INSPECTION/TEST button to select "inspection". The equipment enters the inspection mode. The "Unit" indication is displayed and the Unit No. display shows blinking "U" indication.</p>	
2	<p>Set the Unit No. Press the UP or DOWN button and change the Unit No. display until the buzzer (*1) is generated from the indoor unit. *1 Number of beeps 3 short beeps: Conduct all of the following operations. 1 short beep: Conduct steps 3 and 4. Continue the operation in step 4 until a buzzer remains ON. The continuous buzzer indicates that the error code is confirmed. Continuous beep: No abnormality.</p>	
3	<p>Press the MODE selector button. The left "U" (upper digit) indication of the error code blinks.</p>	
4	<p>Error code upper digit diagnosis Press the UP or DOWN button and change the error code upper digit until the error code matching buzzer (*2) is generated.</p> <p>■ The upper digit of the code changes as shown below when the UP and DOWN buttons are pressed.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>0 → 1 → 2 → 3 → 4 → 5 → 6 → 7 → 8 → 9 → U → L → P → U → 9 → 8 → 7 → 6 → 5 → 4</p> <p>⇒ "UP" button ← "DOWN" button</p> </div> <p>*2 Number of beeps Continuous beep: Both upper and lower digits matched. (Error code confirmed) 2 short beeps: Upper digit matched. 1 short beep: Lower digit matched.</p>	
5	<p>Press the MODE selector button. The right "U" (lower digit) indication of the error code blinks.</p>	
6	<p>Error code lower digit diagnosis Press the UP or DOWN button and change the error code lower digit until the continuous error code matching buzzer (*2) is generated.</p> <p>■ The lower digit of the code changes as shown below when the UP and DOWN buttons are pressed.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>0 → 1 → 2 → 3 → 4 → 5 → 6 → 7 → 8 → 9 → U → L → E → F</p> <p>⇒ "UP" button ← "DOWN" button</p> </div>	



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

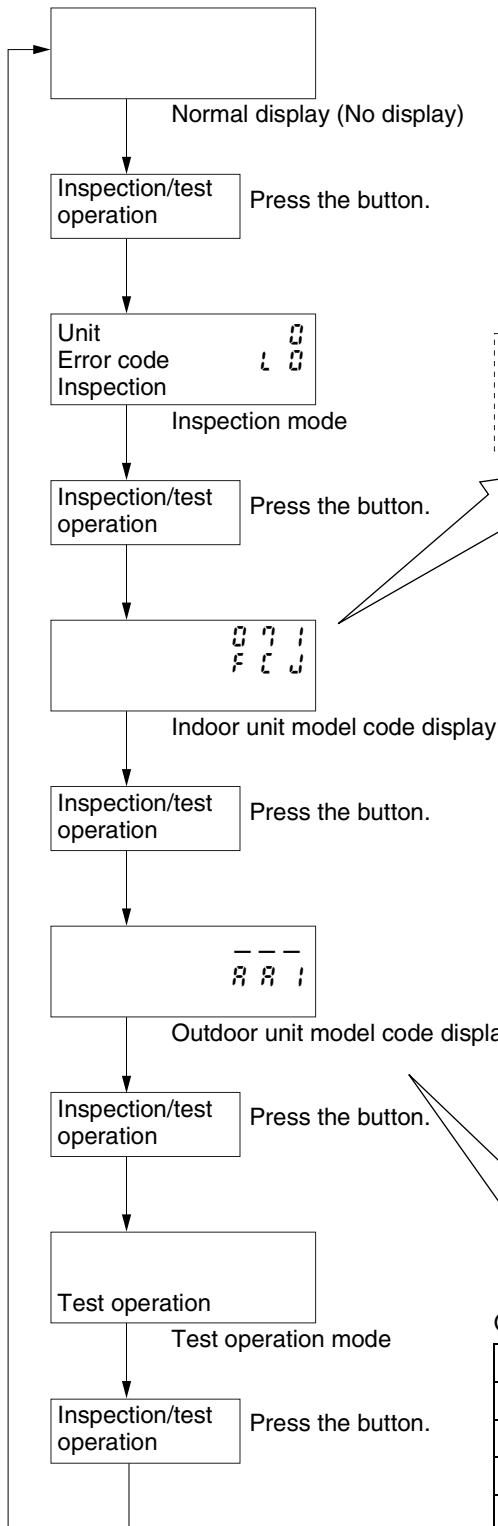
1. **Select the mode No.**
Select the desired item from the Service menu, and then press Menu/Enter button.
2. **Select the Item 2.**
Select the desired Unit No. using the ▲/▼ (Up/Down) buttons. The corresponding data will be displayed.

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 unit fan operation	
	4. Indoor unit energized time	
	5. Outdoor operating time	
	6. Outdoor unit fan 1 operation	
	7. Outdoor unit fan 2 operation	
	8. Outdoor comp. 1 operation	
	9. Outdoor comp. 2 operation	
3. Indoor Status Display 1/2	1. Unit No.	
	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.
		VRV
	2. Th1	Suction air thermistor
	3. Th2	Heat exchanger liquid pipe thermistor
	4. Th3	Heat exchanger gas pipe thermistor
	5. Th4	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
		VRV
	6. Th1	—
	7. Th2	—
8. Th3	—	
5. 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.
6. Unit No. Transfer	1. Current Unit No.	A unit No. can be transferred to another.
	2. Transfer Unit No.	
7. Sensor Address Display	<input type="radio"/> Unit No.: 0 - 15	Select the Unit No. you want to check.
	<input type="radio"/> 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.
	<input type="radio"/> 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 error codes, indoor unit model codes, and outdoor unit model codes while in inspection mode.



Unit 0
Error code L 0
Inspection 0

Error code blinks when an error occurs.

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

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
R	Wall mounted	FXAQ
E	2-way blow	FXCQ
E	Corner	FXXQ
F	Round flow	FXFQ
H	Ceiling suspended	FXHQ
J	Concealed ceiling	FXSQ
P	Floor standing	FXLQ
U	Concealed ceiling	FXMQ
L	Concealed floor standing type	FXNQ
S	600x600 4-way blow	FXZQ
3	Slim concealed ceiling	FXDQ

Outdoor model code

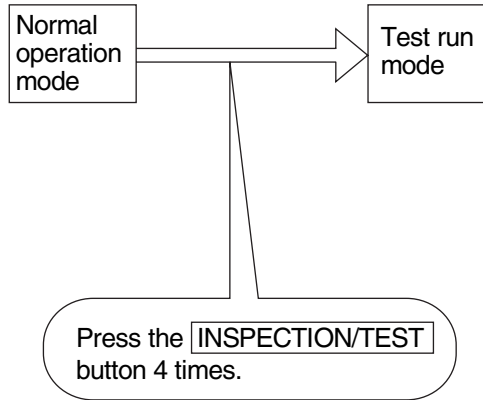
Display	Type	Model
R R 1	VRV System Inverter K Series	RSXYP
R R 3	R-407C VRV PLUS Series	RXYP
R S 2	VRV Heat Recovery Series	RSEYP
R R S	High COP type R-407C L Series	RSXYP-L
R R R	VRV II	RXYQ-M
R R E	VRV II M/C	RXYQ-MA
R R E	VRV III Heat Pump Series	RXYQ-P
R R E	VRV III Cooling Only Series	RXQ-P
R S E	VRV III Heat Recovery Series	REYQ-P
R S E	VRV III-C Heat Pump Series	RTSYQ-PA

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.

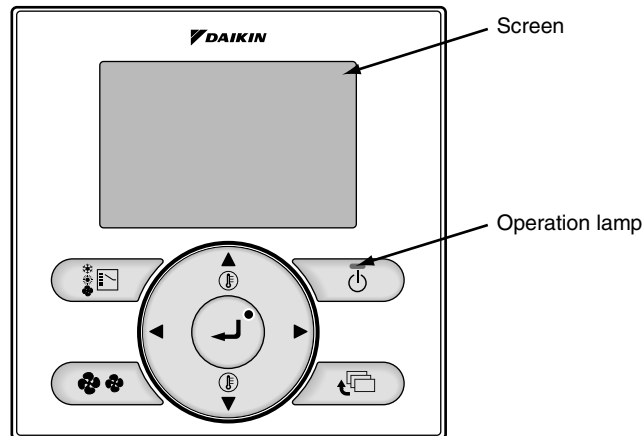


Press the **ON/OFF** button after the completion of test run mode setting, and a test run starts. (The remote controller will display "TEST RUN" on it.)

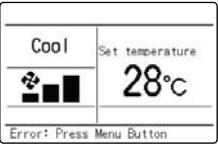
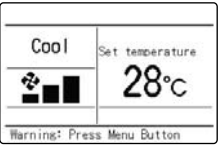
3.7 Remote Controller Self-Diagnosis Function

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

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



(1) Checking an error or warning

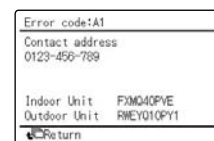
	Operation Status	Display	
Abnormal shutdown	The system stops operating.	The operation lamp (green) starts to blink. The message "Error: Press Menu button" will appear and blink at the bottom of the screen.	
Warning	The system continues its operation.	The operation lamp (green) remains on. The message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

(2) Taking corrective action

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



- Take the corrective action specific to the model.



— Error code

└ Applicable model names

3.8 List of Error Code


○: ON ●: OFF ◐: Blink

	Error code	Operation lamp	Inspection display	Unit No.	Error contents	Page Referred
Indoor Unit	A0	◐	◐	◐	Error of external protection device	208
	A1	◐	◐	◐	Indoor unit PCB defect	209
	A3	◐	◐	◐	Drain level control system abnormality	210
	A6	◐	◐	◐	Fan motor (M1F) lock, overload	212 214 215
	A7	○	●	◐	Swing flap motor abnormality	218
	A9	◐	◐	◐	Electronic expansion valve abnormality / Dust clogging	220 222
	AF	○	●	◐	Drain level about limit	223
	AH	○	●	◐	Air filter maintenance abnormality	—
	AJ	◐	◐	◐	Capacity determination device abnormality	224
	C4	◐	◐	◐	Heat exchanger thermistor abnormality (loose connection, disconnection, short circuit, failure)	225
	C5	◐	◐	◐	Gas pipes thermistor abnormality (loose connection, disconnection, short circuit, failure)	226
	C9	◐	◐	◐	Suction air thermistor abnormality (loose connection, disconnection, short circuit, failure)	227
	CA	◐	◐	◐	Discharge air thermistor abnormality (loose connection, disconnection, short circuit, failure)	228
	CJ	○	○	○	Room temperature thermistor in remote controller abnormality	229
Outdoor Unit Function Unit	E1	◐	◐	◐	PCB defect	230
	E3	◐	◐	◐	High pressure switch abnormality	231
	E4	◐	◐	◐	Low pressure sensor abnormality	233
	E5	◐	◐	◐	Inverter compressor motor lock	235
	E6	◐	◐	◐	STD compressor meter overcurrent / lock	237
	E7	◐	◐	◐	Outdoor unit fan motor abnormality	238
	E9	◐	◐	◐	Electronic expansion valve coil abnormality	241
	F3	◐	◐	◐	Discharge pipe temperature abnormality	243
	F6	◐	◐	◐	Refrigerant overcharged	245
	H7	◐	◐	◐	Abnormal outdoor unit fan motor signal	246
	H9	◐	◐	◐	Outdoor air thermistor abnormality (loose connection, disconnection, short circuit, failure)	248
	J2	◐	◐	◐	Current sensor abnormality	249
	J3	◐	◐	◐	Discharge pipe thermistor abnormality (loose connection, disconnection, short circuit, failure)	250
	J4	◐	◐	◐	Heat exchanger gas pipe temperature thermistor abnormality	251
	J5	◐	◐	◐	Suction pipe thermistor abnormality (loose connection, disconnection, short circuit, failure)	252
	J6	◐	◐	◐	Outdoor unit heat exchanger thermistor abnormality (loose connection, disconnection, short circuit, failure)	253
	J7	◐	◐	◐	Liquid pipe thermistor abnormality	254
	J8	◐	◐	◐	Liquid pipe thermistor 2 abnormality	255
	J9	◐	◐	◐	Subcooling heat exchanger gas pipe thermistor abnormality	256
	JA	◐	◐	◐	High pressure sensor abnormality	257
JC	◐	◐	◐	Low pressure sensor abnormality	259	
L1	◐	◐	◐	Defective inverter PCB	261	
L4	◐	◐	◐	Inverter radiation fin temperature rise error	263	
L5	◐	◐	◐	Momentary overcurrent of inverter compressor	264	
L8	◐	◐	◐	Overcurrent of inverter current	265	
L9	◐	◐	◐	Inverter compressor starting error	267	

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

○: ON ●: OFF ◐: Blink

	Error code	Operation lamp	Inspection display	Unit No.	Error contents	Page Referred
Outdoor Unit	LC	◐	◐	◐	Transmission error between inverter and control PCB	269
	P1	◐	◐	◐	Inverter over-ripple protection	271
	P4	◐	◐	◐	Inverter radiation fin temperature rise abnormality	273
	PJ	◐	◐	◐	Field setting abnormality after replacing main PCB or combination of PCB abnormality	274
System	U0	○	●	◐	Refrigerant shortage alert	276
	U1	◐	◐	◐	Reverse phase / open phase	278
	U2	◐	◐	◐	Power supply insufficient or instantaneous error	279
	U3	◐	◐	◐	Check operation is not executed.	281
	U4	◐	◐	◐	Transmission error between indoor units and outdoor units	282
	U5	◐	◐	◐	Transmission error between remote controller and indoor unit	284
	U7	◐	◐	◐	Transmission error (across outdoor units and function units)	285
	U8	◐	◐	●	Transmission error between main and sub remote controllers	292
	U9	◐	◐	◐	Transmission error between indoor units and outdoor units in the same system	293
	UA	◐	◐	◐	Improper combination of indoor and outdoor units, indoor units and remote controller	294
	UC	○	○	○	Centralized address duplication	297
	UE	◐	◐	◐	Transmission error between centralized control equipment and indoor unit	298
	UF	◐	◐	◐	System is not set yet	301
UH	◐	◐	◐	System abnormality, refrigerant system address undefined	302	

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

Malfunction code indication by outdoor unit PCB

<Monitor mode>

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

* Refer to P.172 for Monitor mode.

<Selection of setting item>

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

* Refer to P.172 for Monitor mode.

<Confirmation of error 1>

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

<Confirmation of error 2>

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

<Confirmation of error 3>

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

<Confirmation of error 4>

Press the **SET (BS2)** button once to display "master or slave 1 or slave 2" and "error location".

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

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

Detail description on next page.

Errors		Error 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	
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 air 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	L1
	Current sensor failure confirmation 1	
	Current sensor failure confirmation 2	
	IGBT malfunction	
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

Error code	Confirmation of error 1 (Check 1)							Confirmation of error 2 (Check 2)							Confirmation of error 3 (Check 3)							Confirmation of error 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								◐	●	○	●	●	●	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
E9								◐	●	○	●	●	●	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
F3	◐			●	◐	●	◐	◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
F6								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
H7	◐			●	◐	●	●	◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
H9								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
J2	◐			●	◐	◐	●	◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
J3								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
J4								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
J5								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
J6								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
J7								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
J8								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
J9								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
JA								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
JC								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
L1	◐			●	◐	◐	◐	◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
L4								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
L5								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
L8								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
L9								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○
LC								◐	●	○	●	●	◐	◐	◐	○	●	●	●	●	●	◐	○	○	○	○	○	○

Display of contents of error (first digit)

Display of contents of error (second digit)

Display 1 of error in detail

Display 2 of error in detail

*1: Defective system

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

<Monitor mode>

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

* Refer to P.172 for Monitor mode.

<Selection of setting item>

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

* Refer to P.172 for Monitor mode.

<Confirmation of error 1>

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

<Confirmation of error 2>

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

<Confirmation of error 3>

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

<Confirmation of error 4>

Press the **SET (BS2)** button once to display "master or slave 1 or slave 2" and "error location".

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

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

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	
Unmatched wiring/piping, no system settings	Unmatched wiring/piping	UF
	Faulty connection of former BS unit	
Faulty system line	Wrong wiring (auto address error)	UH

○: ON
 ◐: Blink
 ●: OFF

○: ON ●: OFF ◐: Blink

Error code	Confirmation of error 1 (Check 1)							Confirmation of error 2 (Check 2)							Confirmation of error 3 (Check 3)							Confirmation of error 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								◐	●	○	●	◐	●	●	◐	○	◐	●	●	●	●	◐	○	○	●	●	●	●
PJ								◐	●	○	◐	◐	●	◐	◐	○	◐	●	●	●	●	◐	○	○	●	●	●	●
U0	◐	◐	●	◐	●	●	◐	◐	●	○	●	●	●	●	◐	○	◐	●	●	●	●	◐	○	○	●	●	●	●
U1								◐	●	○	●	●	●	◐	◐	○	◐	●	●	●	●	◐	○	○	●	●	●	●
U2								◐	●	○	●	●	◐	●	◐	○	◐	●	●	●	●	◐	○	○	●	●	●	●
U3								◐	●	○	●	●	◐	◐	◐	○	◐	●	●	●	●	◐	○	○	●	●	●	◐
U4								◐	●	○	●	◐	●	●	◐	○	◐	●	●	●	●	◐	○	○	●	●	◐	◐
U7								◐	●	○	●	◐	◐	◐	◐	○	◐	●	●	●	●	◐	○	○	●	●	◐	◐
U9								◐	●	○	◐	●	●	◐	◐	○	◐	●	●	●	●	◐	○	○	●	●	◐	◐
UA								◐	●	○	◐	●	◐	●	◐	○	◐	●	●	●	●	◐	○	○	●	●	◐	◐
UF								◐	●	○	◐	◐	◐	◐	◐	○	◐	●	●	●	●	◐	○	○	●	●	◐	◐
UH								◐	●	○	◐	●	◐	◐	◐	○	◐	●	●	●	●	◐	○	○	●	●	◐	◐

Display of contents of error (first digit)

Display of contents of error (second digit)

Display 1 of error in detail

Display 2 of error in detail

*1: Defective system

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

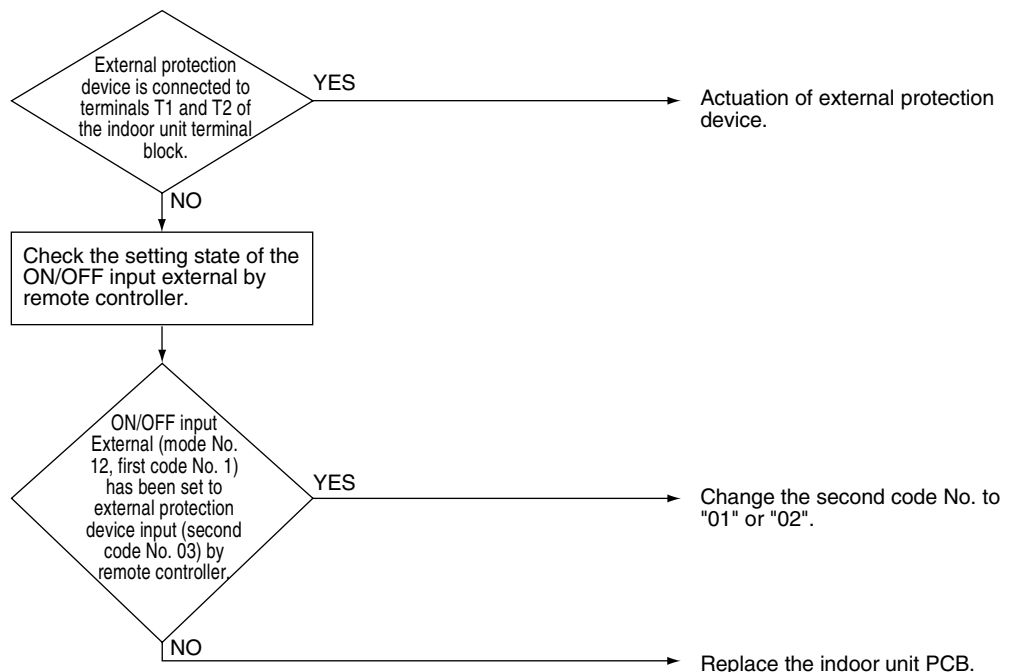
4. Troubleshooting by Indication on the Remote Controller

4.1 Error of External Protection Device


Remote Controller Display	
Applicable Models	All indoor unit models
Method of Error Detection	Detect open or short circuit between external input terminals in indoor unit.
Error Decision Conditions	When an open circuit occurs between external input terminals with the remote controller set to "external ON/OFF input"
Supposed Causes	<ul style="list-style-type: none"> ■ Actuation of external protection device ■ Improper field setting ■ Defective indoor unit PCB
Troubleshooting	


Caution


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

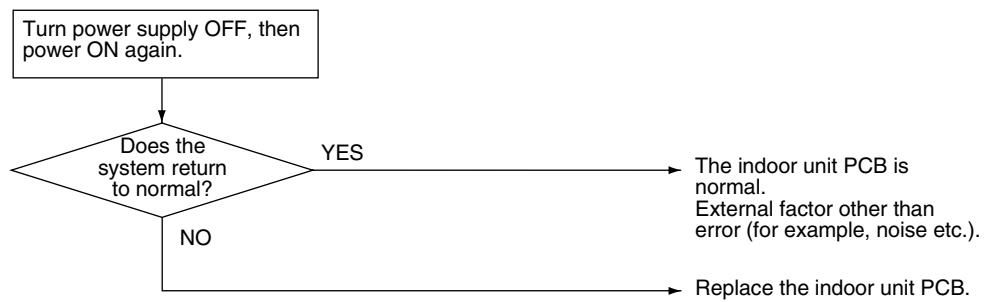


4.2 Indoor Unit PCB Defect

Remote Controller Display	
Applicable Models	All indoor unit models
Method of Error Detection	Check data from E ² PROM.
Error Decision Conditions	When data could not be correctly received from the E ² PROM E ² PROM: Type of nonvolatile memory. Maintains memory contents even when the power supply is turned OFF.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective indoor unit PCB ■ External factor (Noise, etc.)

Troubleshooting

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



4.3 Drain Level Control System (S1L) Abnormality

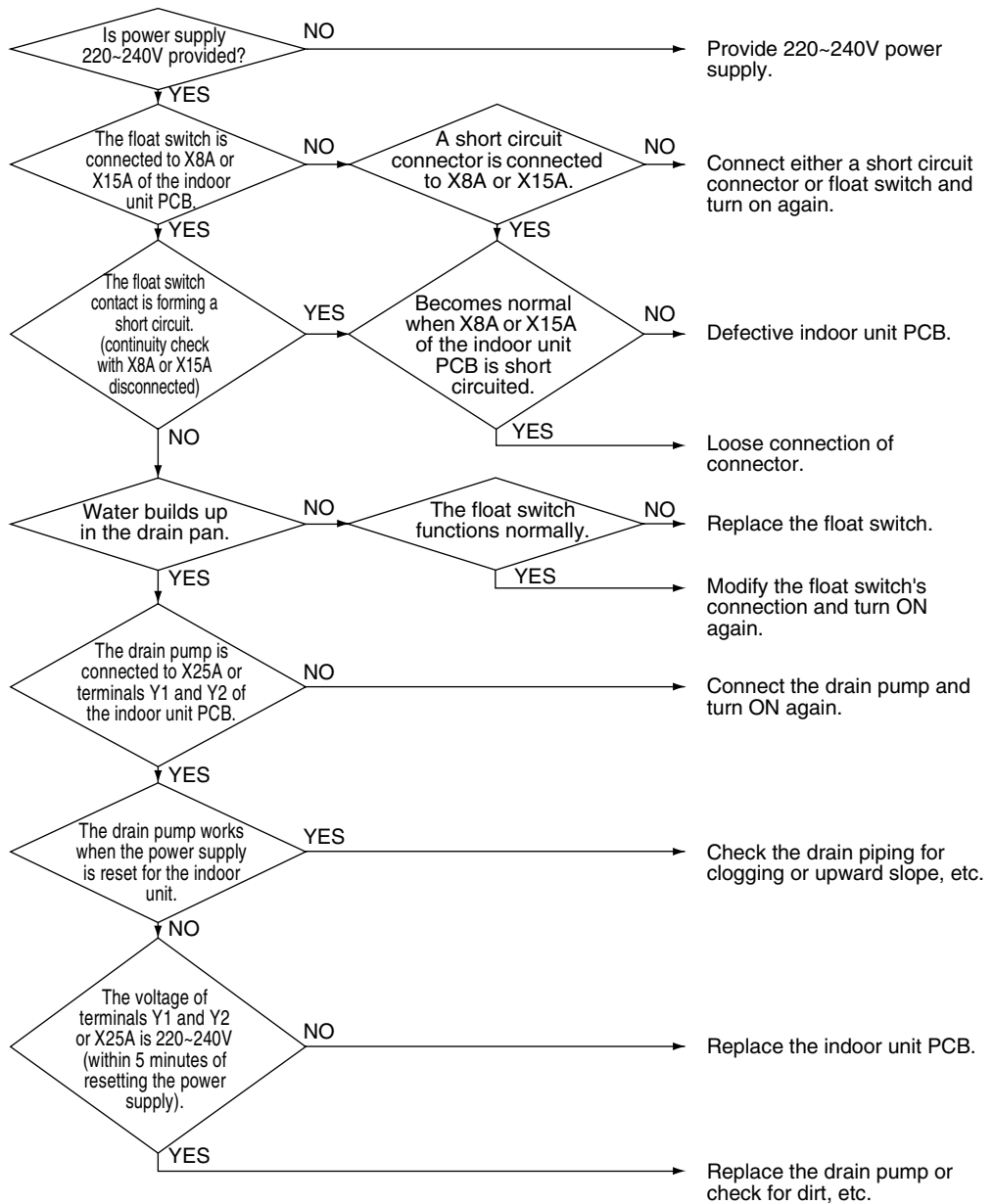
Remote Controller Display	83
Applicable Models	FXCQ, FXZQ, FXFQ, FXSQ, FXKQ, FXDQ, FXMQ, FXUQ, FXHQ (Option), FXMQ200 · 250MA (Option), FXAQ (Option)
Method of Error Detection	By float switch OFF detection
Error Decision Conditions	When rise of water level is not a condition and the float switch goes OFF
Supposed Causes	<ul style="list-style-type: none"> ■ 220~240V power supply is not provided ■ Defective float switch or short circuit connector ■ Defective drain pump ■ Drain clogging, upward slope, etc. ■ Defective indoor unit PCB ■ Loose connection of connector

Troubleshooting



Caution

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

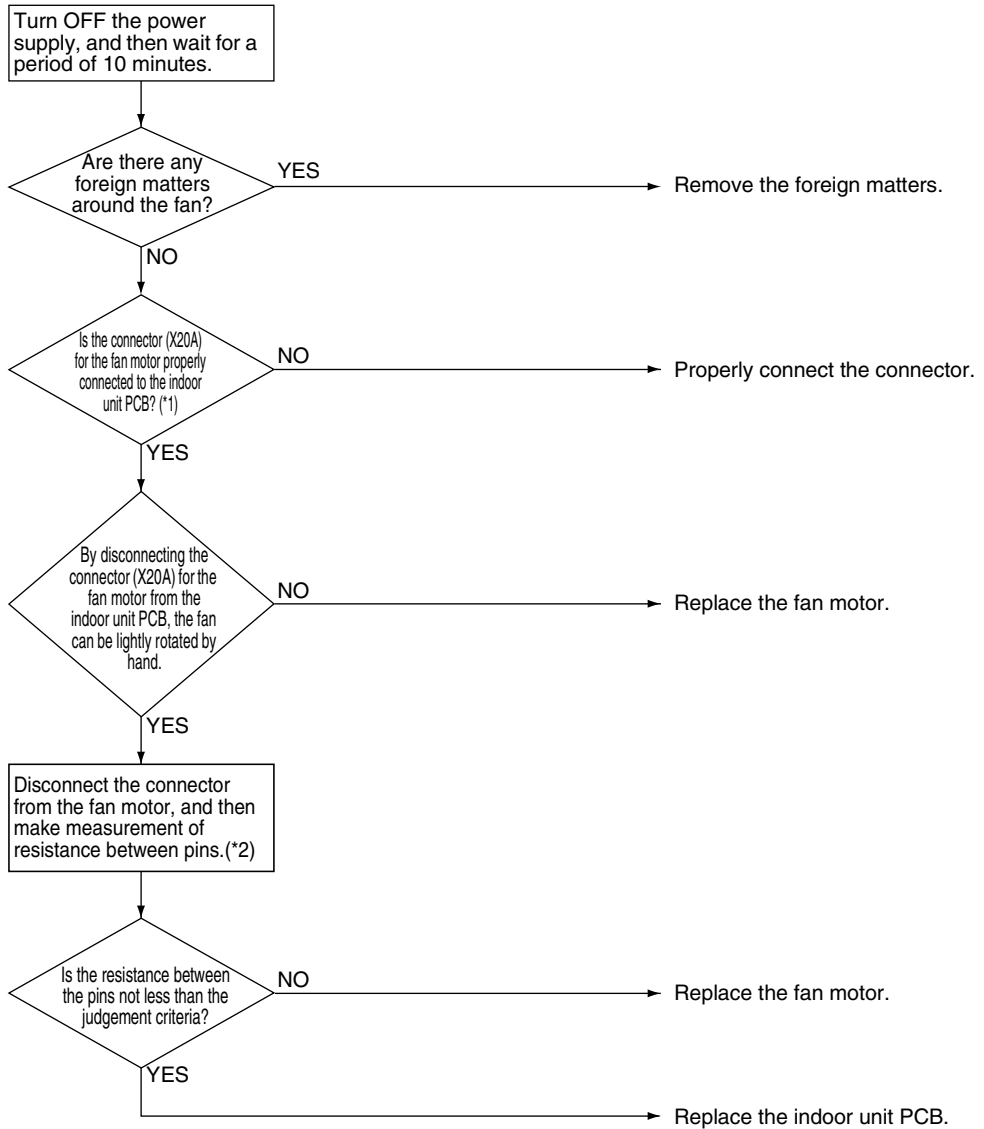


4.4 Fan Motor (M1F) Lock, Overload

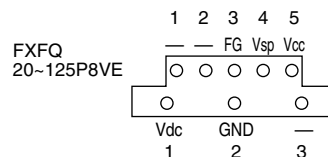
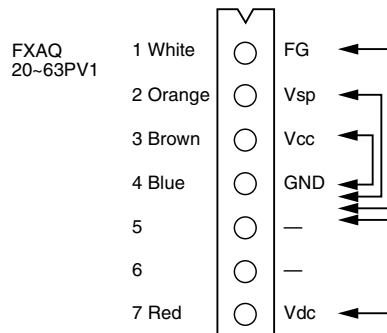
Remote Controller Display	85
Applicable Models	FXAQ20~63PV1, FXFQ20~125P8VE
Method of Error Detection	Abnormal fan revolutions are detected by a signal output from the fan motor.
Error Decision Conditions	When the fan revolutions do not increase
Supposed Causes	<ul style="list-style-type: none"> ■ Broken wires in, short circuit of, or disconnection of connectors from the fan motor harness ■ Defective fan motor (Broken wires or defective insulation) ■ Abnormal signal output from the fan motor (Defective circuit) ■ Defective PCB ■ Instantaneous disturbance in the power supply voltage ■ Fan motor lock (Due to motor or external causes) ■ The fan does not rotate due to foreign matters blocking the fan. ■ Disconnection of the connector between the high-power PCB (A1P) and the low-power PCB (A2P).

Troubleshooting

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



*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

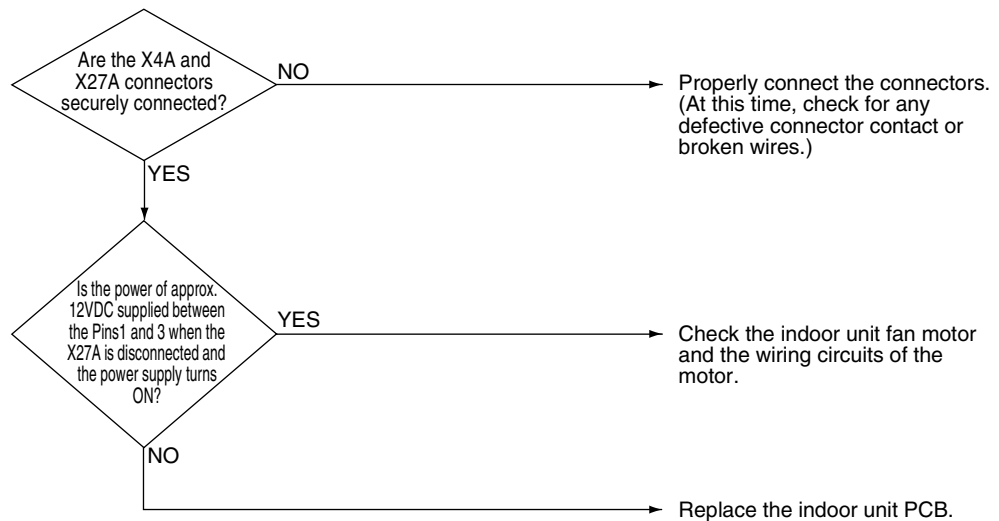
Measuring point	Criteria
FG-GND	Not less than 1MΩ
Vsp-GND	Not less than 100kΩ
Vcc-GND	Not less than 100Ω
Vdc-GND	Not less than 100kΩ


Indoor Unit Fan Motor Abnormality

Remote Controller Display	85
Applicable Models	FXHQ32~100MAVE, FXDQ20~32PB, 40~63NBVE
Method of Error Detection	This error is detected if there is no revolutions detection signal output from the fan motor.
Error Decision Conditions	When no revolutions can be detected even at the maximum output voltage to the fan
Supposed Causes	<ul style="list-style-type: none"> ■ Defective indoor unit fan motor ■ Broken wires ■ Defective contact
Troubleshooting	

**Caution**

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

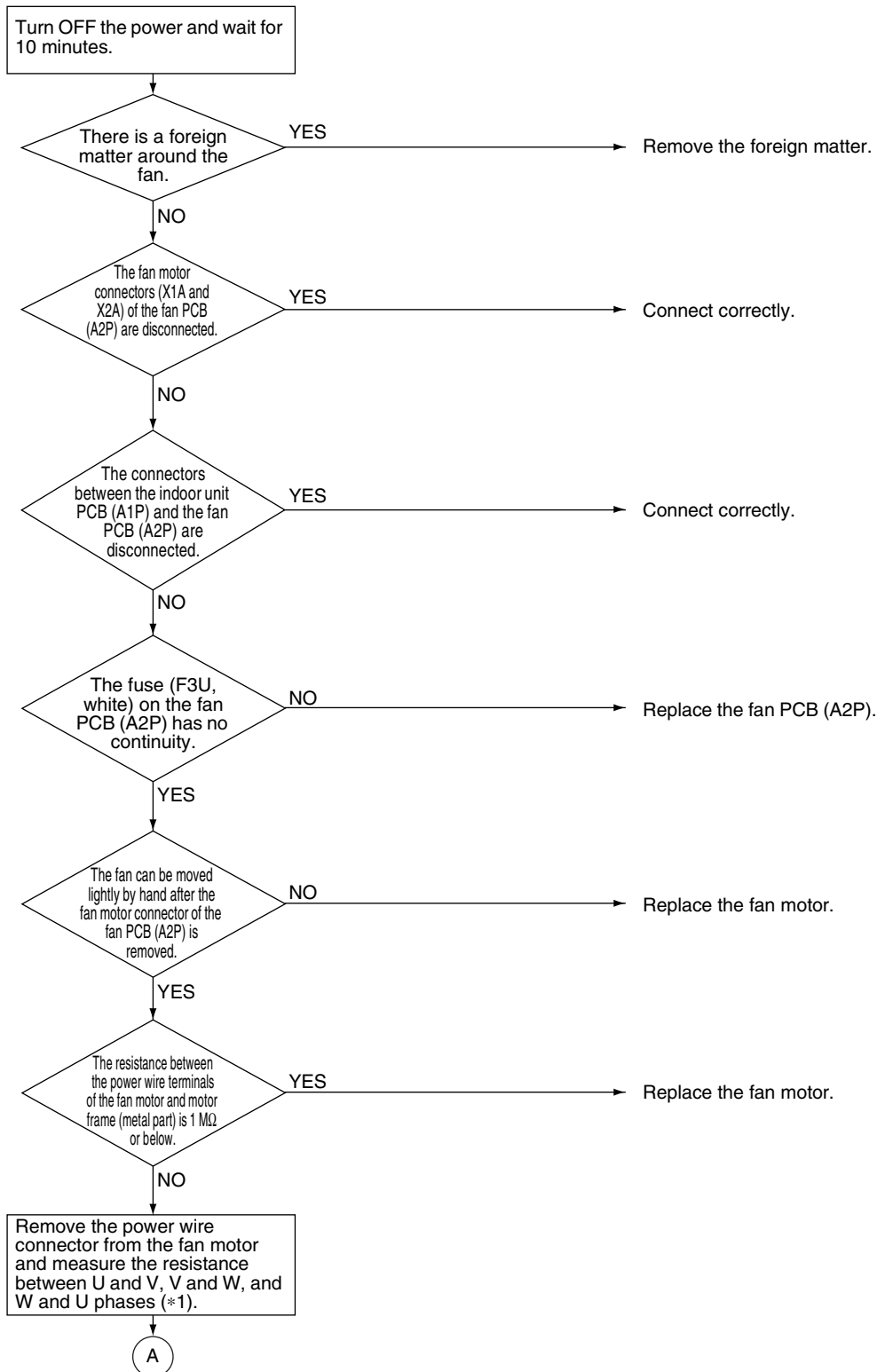


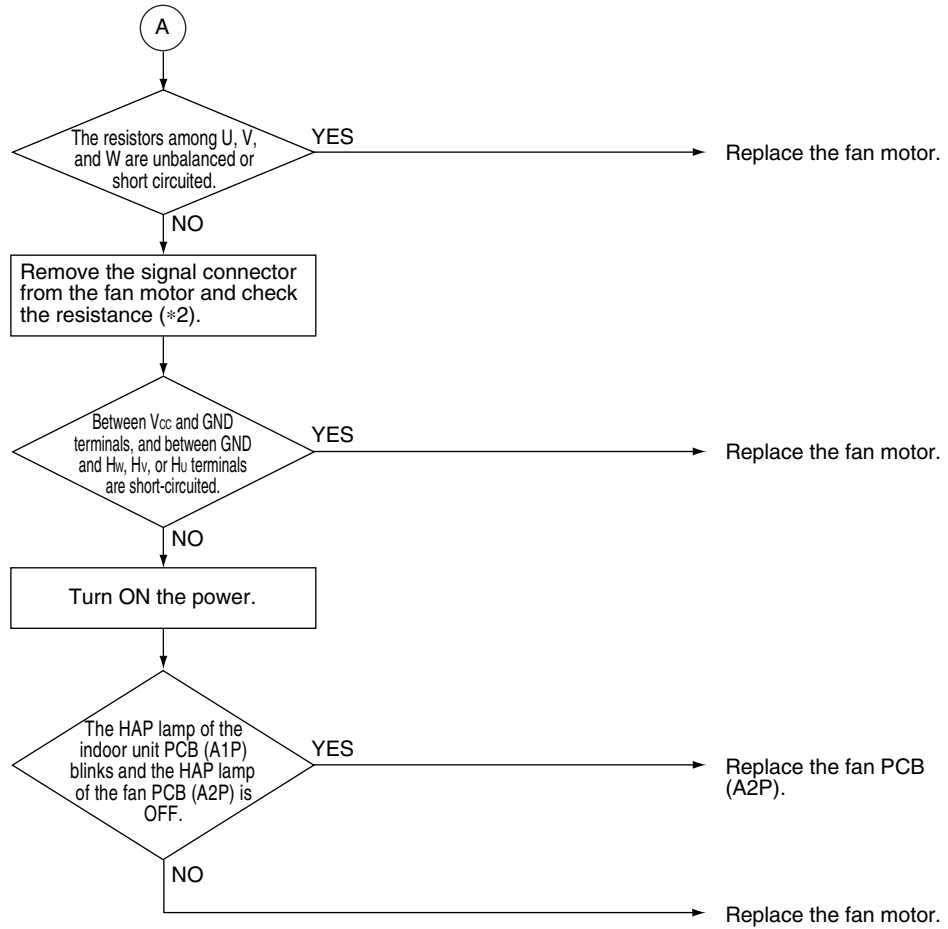
Remote Controller Display	
Applicable Models	FXMQ50~140P
Method of Error Detection	Detection from the current flow on the fan PCB Detection from the RPM of the fan motor in operation Detection from the position signal of the fan motor Detection from the current flow on the fan PCB when the fan motor starting operation
Error Decision Conditions	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ The clogging of a foreign matter ■ The disconnection of the fan motor connectors (X1A and X2A) ■ The disconnection of the connectors between the indoor unit PCB (A1P) and fan PCB (A2P) ■ A failure in fan PCB (A2P) ■ A failure in the fan motor

Troubleshooting

**Caution**

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

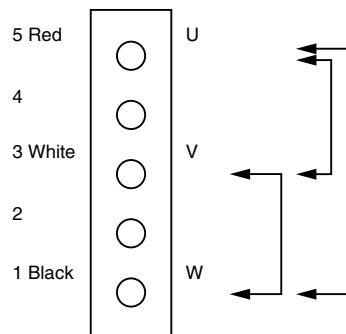




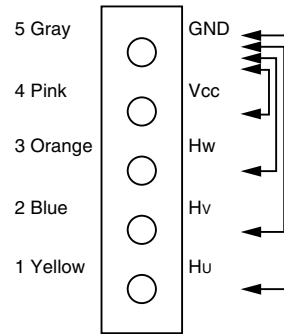
Note:

- *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 5 conductors) and check that each phase are balanced (within a permissible dispersion range of $\pm 20\%$).
- *2. Measurement of signal wire connector.
Remove the X2A connector and measure the resistance between GND and Vcc, Hw, Hv, or Hu terminals of the motor connector (with 5 conductors).

Connector power wire use (X1A)



Connector signal wire use (X2A)



4.5 Swing Flap Motor (M1S) Abnormality

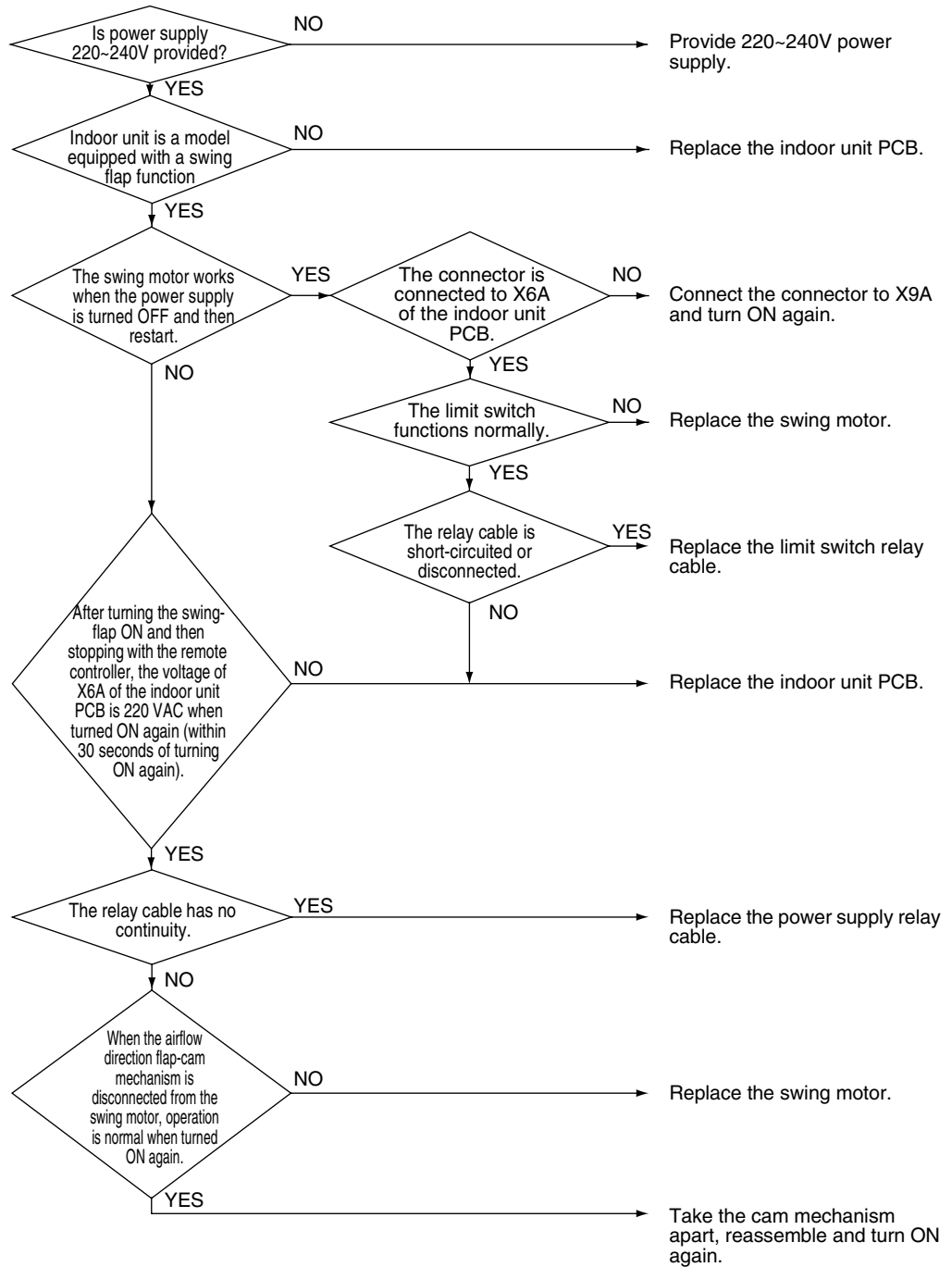
Remote Controller Display	87
Applicable Models	FXCQ, FXHQ, FXKQ
Method of Error Detection	Utilizes ON/OFF of the limit switch when the motor turns
Error Decision Conditions	When ON/OFF of the micro-switch for positioning cannot be reversed even though the swing flap motor is energized for a specified amount of time (about 30 seconds). * Error code is displayed but the system operates continuously.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective swing motor ■ Defective connection cable (power supply and limit switch) ■ Defective airflow direction adjusting flap-cam ■ Defective indoor unit PCB

Troubleshooting



Caution

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



4.6 Electronic Expansion Valve Abnormality / Dust Clogging

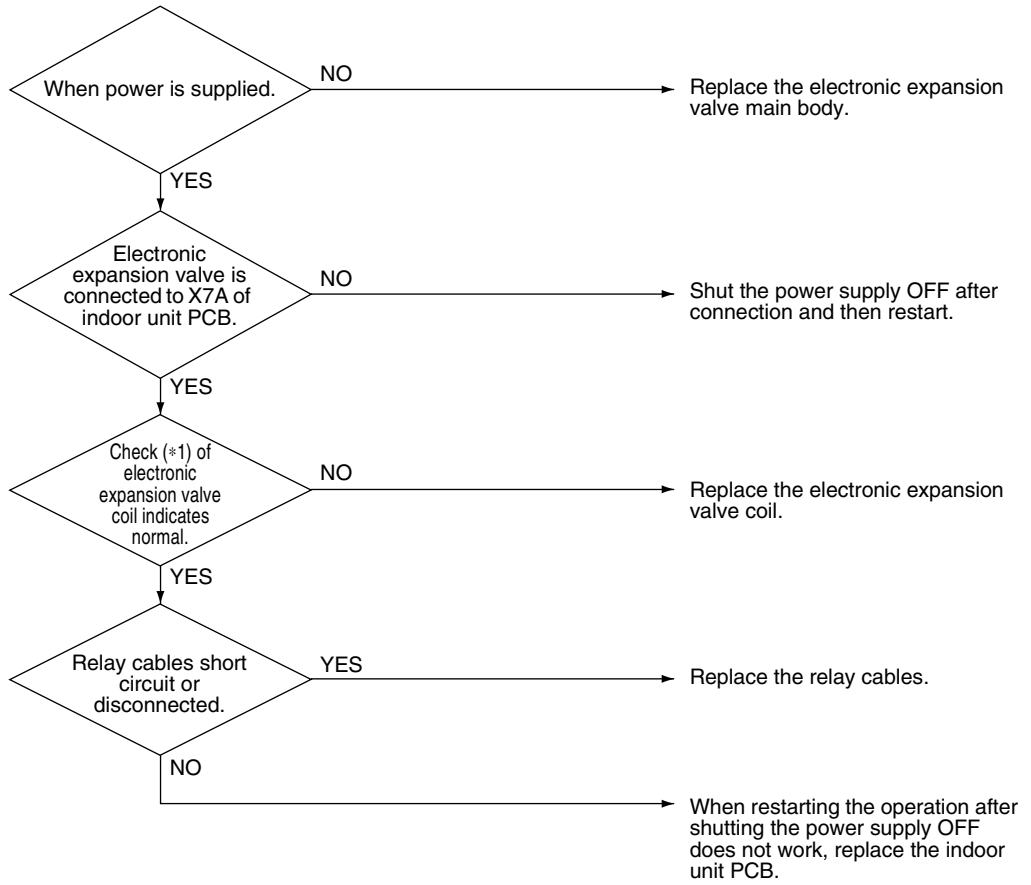
Remote Controller Display	89
Applicable Models	FXFQ25~125P
Method of Error Detection	Check coil condition of electronic expansion valve by using micro-computer. Check dust clogging condition of electronic expansion valve main body by using micro-computer.
Error Decision Conditions	Pin input for electronic expansion valve coil is abnormal when initializing micro-computer. Either of the following conditions is seen/caused/ occurs while the unit stops operation. <ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ■ Defective drive of electronic expansion valve ■ Defective indoor unit PCB ■ Defective relay cables

Troubleshooting



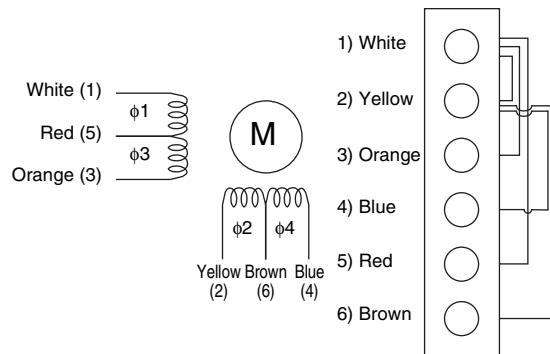
Caution

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



Note:

*1: How to check the electronic expansion valve coil
 Remove the connector for electronic expansion valve (X7A) from PCB. Measure the resistance value between pins and check the continuity to judge the condition.



The normal products will show the following conditions:

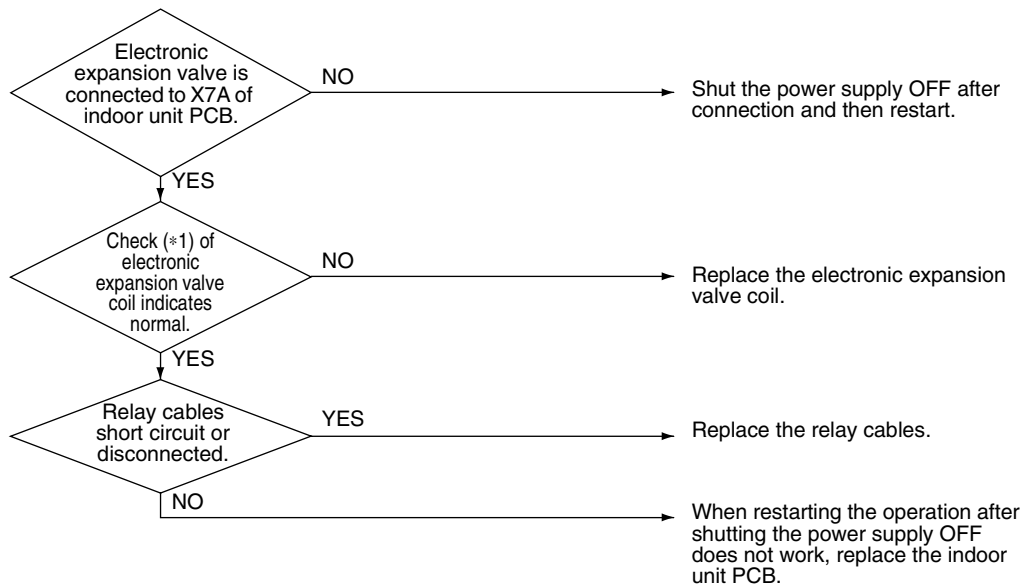
- (1) No continuity between (1) and (2)
- (2) Resistance value between (1) and (3) is approx. 300 Ω
- (3) Resistance value between (1) and (5) is approx. 150 Ω
- (4) Resistance value between (2) and (4) is approx. 300 Ω
- (5) Resistance value between (2) and (6) is approx. 150 Ω

Electronic Expansion Valve Coil Abnormality

Remote Controller Display	89
Applicable Models	Indoor units except FXFQ models
Method of Error Detection	Check coil condition of electronic expansion valve by using micro-computer.
Error Decision Conditions	Pin input for electronic expansion valve coil is abnormal when initializing micro-computer.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective drive of electronic expansion valve ■ Defective indoor unit PCB ■ Defective relay cables

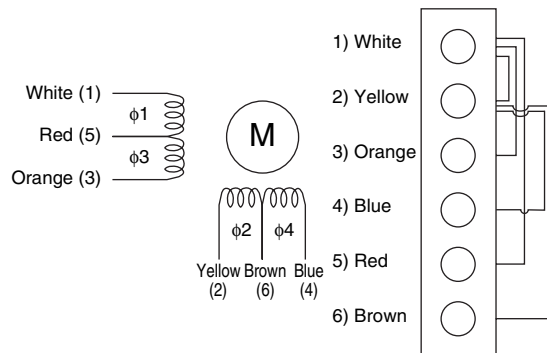
Troubleshooting

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



Note:


*1: How to check the electronic expansion valve coil
Remove the connector for electronic expansion valve (X7A) from PCB. Measure the resistance value between pins and check the continuity to judge the condition.




The normal products will show the following conditions:

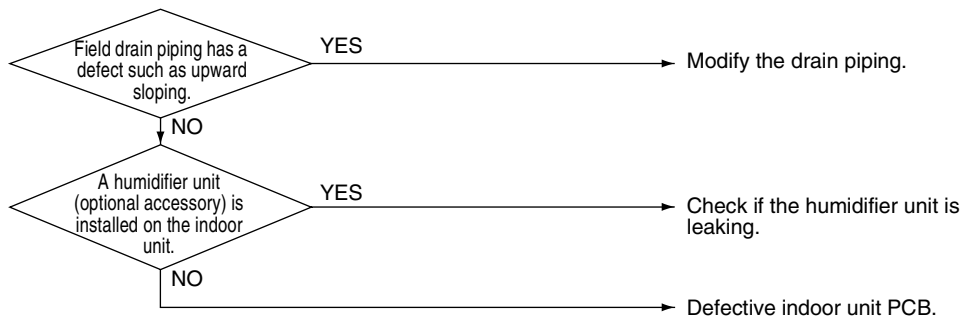
- (1) No continuity between (1) and (2)
- (2) Resistance value between (1) and (3) is approx. 300 Ω
- (3) Resistance value between (1) and (5) is approx. 150 Ω
- (4) Resistance value between (2) and (4) is approx. 300 Ω
- (5) Resistance value between (2) and (6) is approx. 150 Ω

4.7 Drain Level above Limit


Remote Controller Display	
Applicable Models	FXCQ, FXZQ, FXFQ, FXSQ, FXKQ, FXMQ, FXDQ, FXMQ-MA, FXUQ
Method of Error Detection	Water leakage is detected based on float switch ON/OFF operation while the compressor is in non-operation.
Error Decision Conditions	When the float switch changes from ON to OFF while the compressor is in non-operation * Error code is displayed but the system operates continuously.
Supposed Causes	<ul style="list-style-type: none"> ■ Humidifier unit (optional accessory) leaking ■ Defective drain pipe (upward slope, etc.) ■ Defective indoor unit PCB

Troubleshooting

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



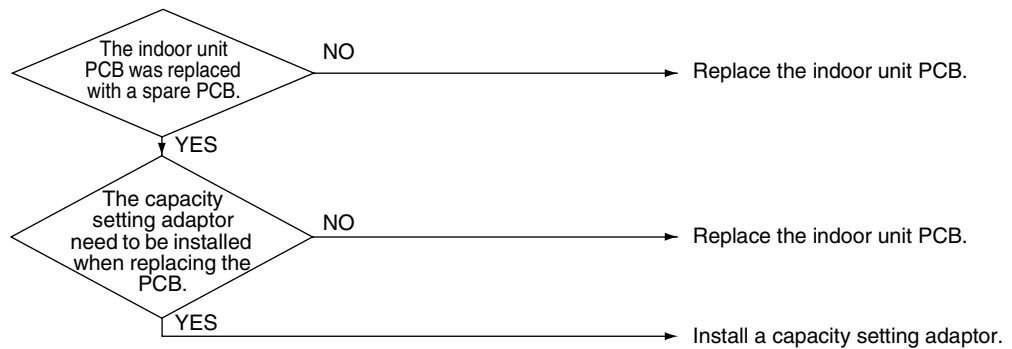
4.8 Capacity Determination Device Abnormality

Remote Controller Display	
Applicable Models	All indoor unit models
Method of Error Detection	Capacity is determined according to resistance of the capacity setting adaptor and the memory inside the IC memory on the indoor unit PCB, and whether the value is normal or abnormal is determined.
Error Decision Conditions	When the capacity code is not saved to the PCB, and the capacity setting adaptor is not connected When a capacity that does not exist for that unit is set
Supposed Causes	<ul style="list-style-type: none"> ■ The capacity setting adaptor was not installed. ■ Defective indoor unit PCB

Troubleshooting


Caution

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

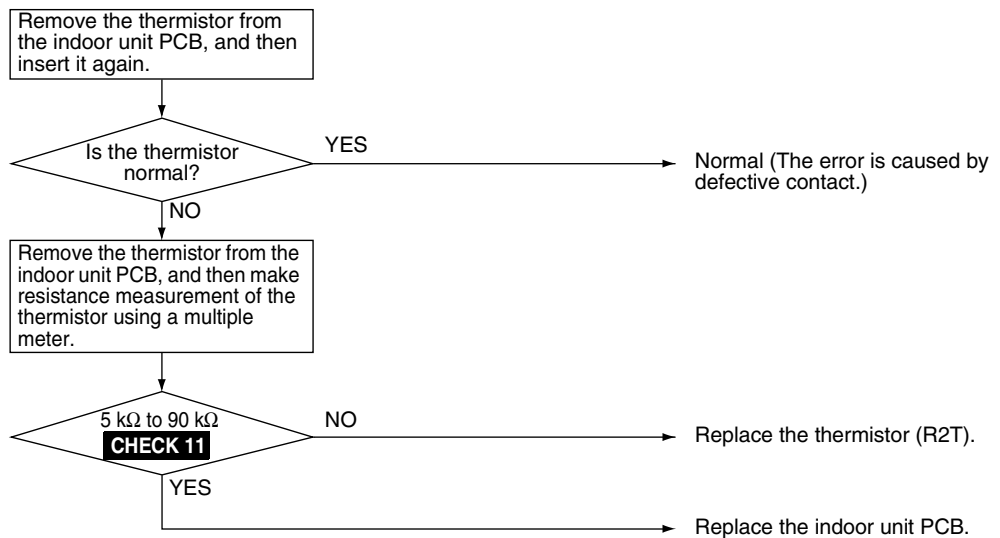


4.9 Heat Exchanger Thermistor (R2T) Abnormality

Remote Controller Display	
Applicable Models	All indoor unit models
Method of Error Detection	Error detection is carried out by temperature detected by heat exchanger thermistor.
Error Decision Conditions	When the heat exchanger thermistor becomes disconnected or shorted while the unit is running
Supposed Causes	<ul style="list-style-type: none"> ■ Defective thermistor (R2T) for liquid pipe ■ Defective indoor unit PCB

Troubleshooting

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



CHECK 11 Refer to P.314.

4.10 Gas Pipes Thermistor (R3T) Abnormality

Remote
Controller
Display

5

Applicable
Models

All indoor unit models

Method of Error
Detection

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

Error Decision
Conditions

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

Supposed
Causes

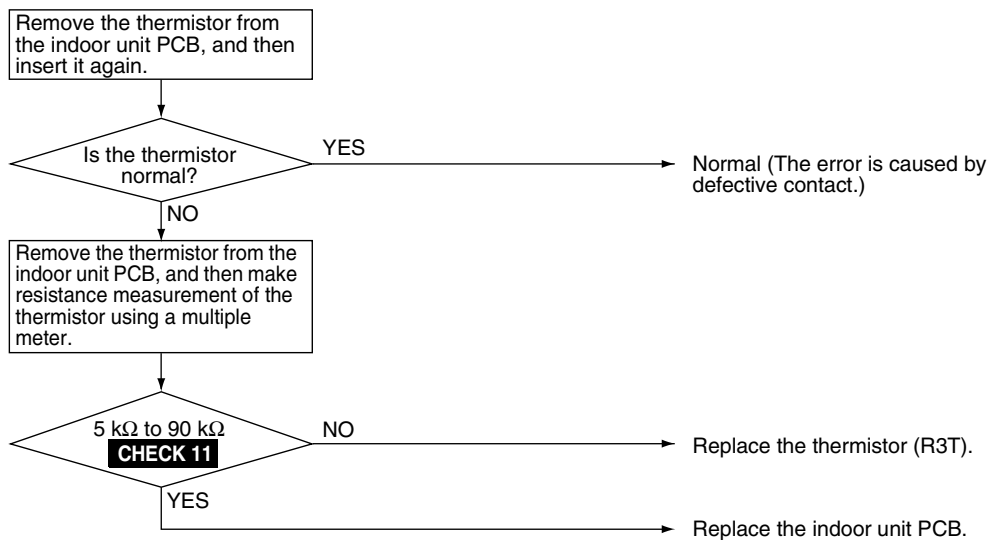
- Defective indoor unit thermistor (R3T) for gas pipe
- Defective indoor unit PCB

Troubleshooting



Caution

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



CHECK 11 Refer to P.314.

4.11 Suction Air Thermistor (R1T) Abnormality

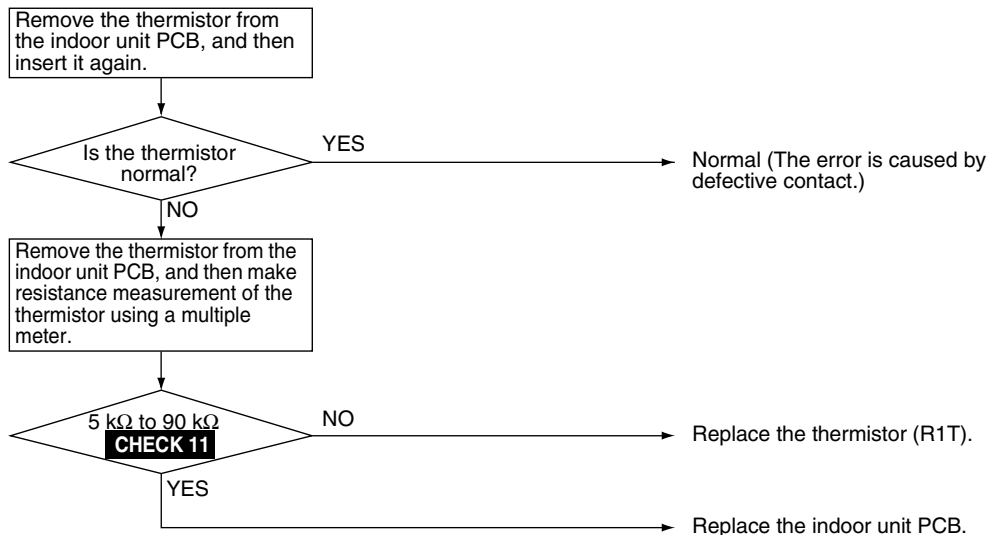


Applicable Models	All indoor unit models
Method of Error Detection	Error detection is carried out by temperature detected by suction air thermistor.
Error Decision Conditions	When the suction air thermistor becomes disconnected or shorted while the unit is running
Supposed Causes	<ul style="list-style-type: none"> ■ Defective indoor unit thermistor (R1T) for suction air ■ Defective indoor unit PCB
Troubleshooting	



Caution

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



CHECK 11 Refer to P.314.

4.12 Discharge Air Thermistor (R4T) Abnormality

Remote Controller Display	
Applicable Models	FXMQ-P
Method of Error Detection	Error detection is carried out by temperature detected by discharge air thermistor.
Error Decision Conditions	When the discharge air thermistor becomes disconnected or shorted while the unit is running
Supposed Causes	<ul style="list-style-type: none"> ■ Defective indoor unit thermistor (R4T) for discharge air ■ Defective indoor unit PCB
Troubleshooting	<p> Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.</p> <pre> graph TD A[Remove the thermistor from the indoor unit PCB, and then insert it again.] --> B{Is the thermistor normal?} B -- YES --> C[Normal (The error is caused by defective contact.)] B -- NO --> D[Remove the thermistor from the indoor unit PCB, and then make resistance measurement of the thermistor using a multiple meter.] D --> E{5 kΩ to 90 kΩ CHECK 11} E -- NO --> F[Replace the thermistor (R4T).] E -- YES --> G[Replace the indoor unit PCB.] </pre>



CHECK 11 Refer to P.314.

4.13 Room Temperature Thermistor in Remote Controller Abnormality

Remote Controller Display



Applicable Models

All indoor unit models

Method of Error Detection

Error detection is carried out by temperature detected by room temperature thermistor in remote controller. (*1)

Error Decision Conditions

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

Supposed Causes

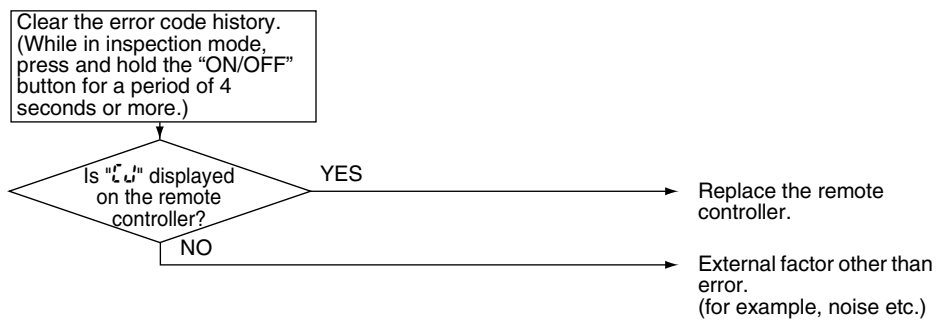
- Defective room temperature thermistor in remote controller
- Defective remote controller PCB

Troubleshooting



Caution

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



Note:

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

4.14 PCB Defect

Remote
Controller
Display

E1

Applicable
Models

Outdoor Unit: RTSQ8~16PAY1
Function Unit: BTSQ20PY1

Method of Error
Detection

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

Error 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

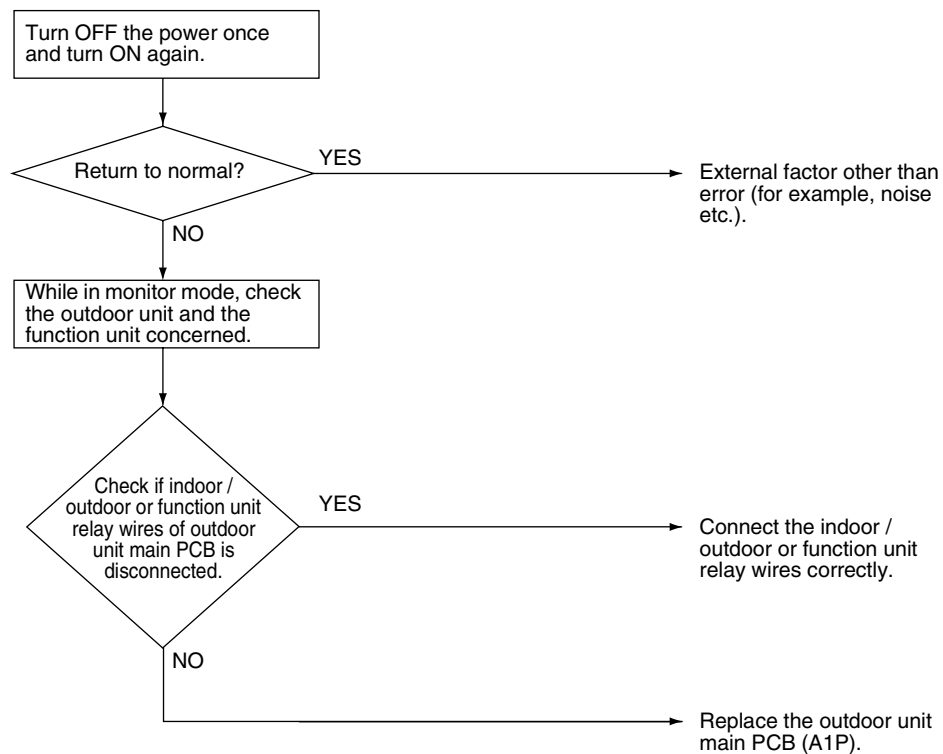
- Defective outdoor unit PCB (A1P)
- Defective function unit PCB (A1P)
- Defective connection between the indoor and outdoor unit or function unit

Troubleshooting




Caution

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



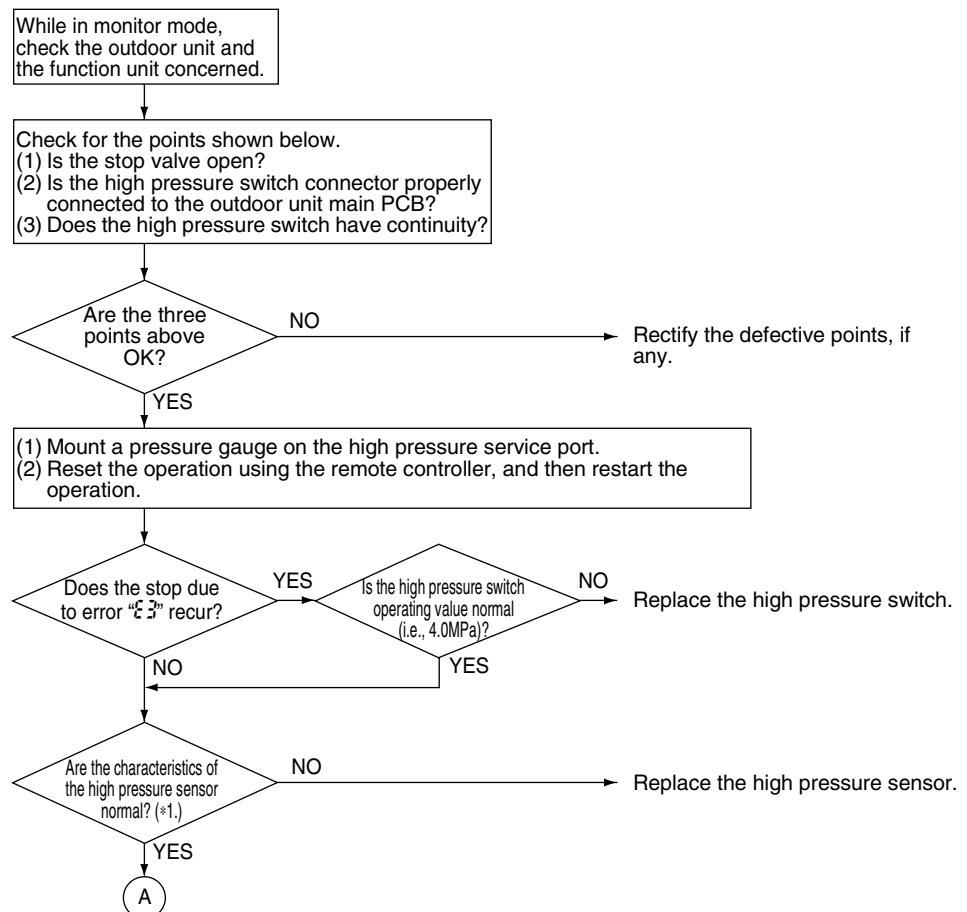
4.15 High Pressure Switch Abnormality

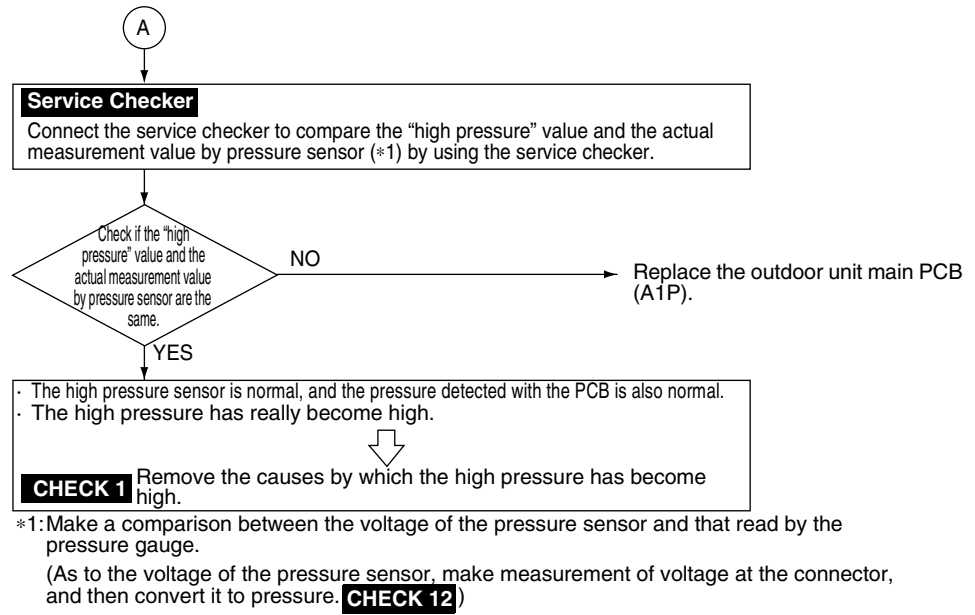
Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	Abnormality is detected when the contact of the high pressure protection switch opens.
Error Decision Conditions	Error is generated when the high pressure switch activation count 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	<ul style="list-style-type: none"> ■ Actuation of outdoor unit high pressure switch ■ Defective high pressure switch ■ Defective outdoor unit main PCB (A1P) ■ Instantaneous power failure ■ Defective high pressure sensor

Troubleshooting

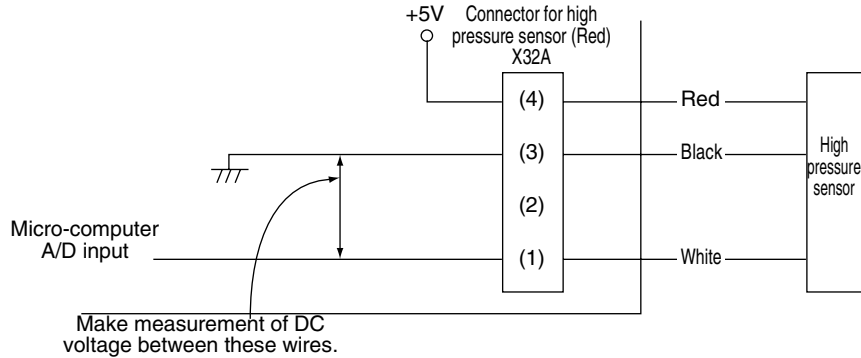


Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.





*2: Make measurement of voltage of the pressure sensor.



CHECK 1 Refer to P.304.



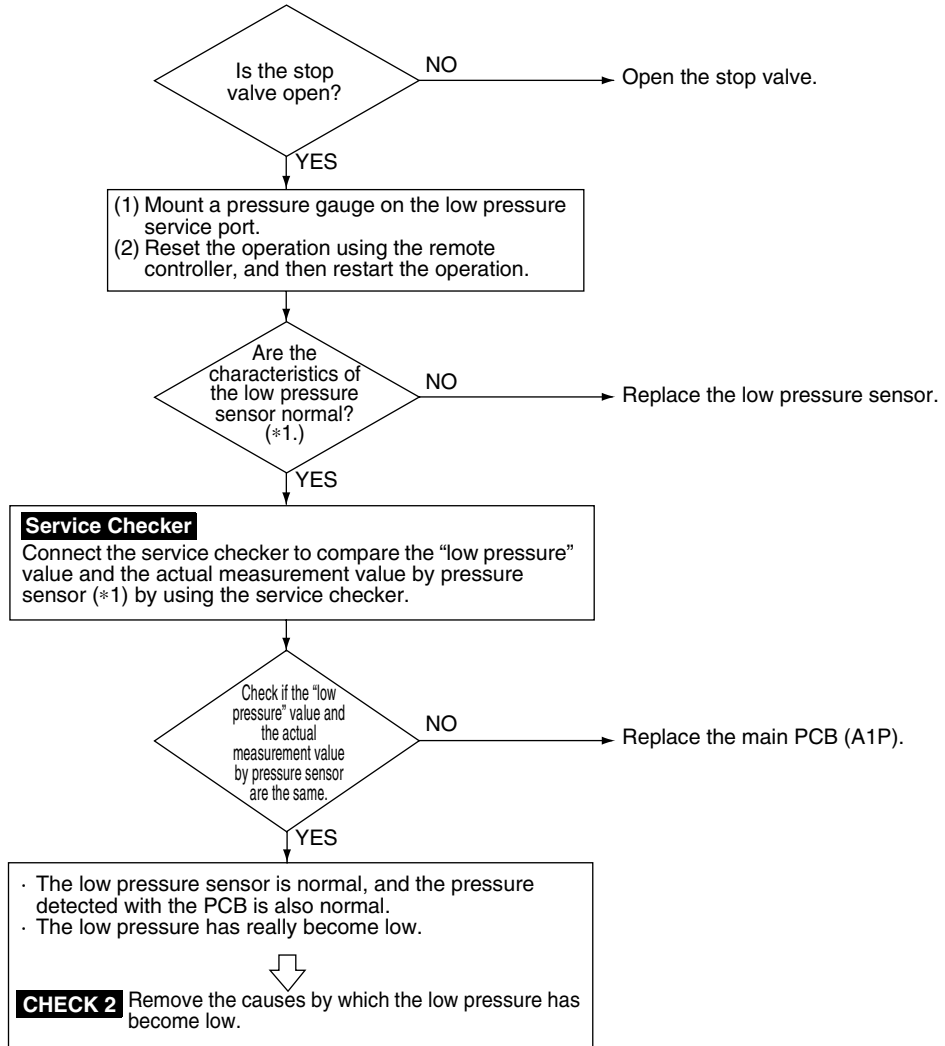
CHECK 12 Refer to P.315.

4.16 Low Pressure Sensor Abnormality

Remote Controller Display	E4
Applicable Models	Outdoor Unit: RTSQ8~16PAY1
Method of Error Detection	Abnormality is detected by the pressure value with the low pressure sensor.
Error Decision Conditions	Error is generated when the low pressure is dropped under compressor operation. Operating pressure: 0.07MPa
Supposed Causes	<ul style="list-style-type: none">■ Abnormal drop of low pressure (Lower than 0.07MPa)■ Defective low pressure sensor■ Defective outdoor unit PCB■ Stop valve is not opened

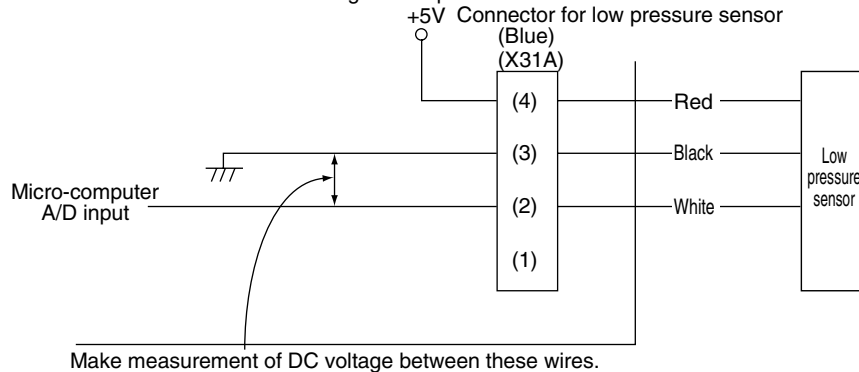
Troubleshooting

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



*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. **CHECK 12**)

*2: Make measurement of voltage of the pressure sensor.



CHECK 2 Refer to P.305.




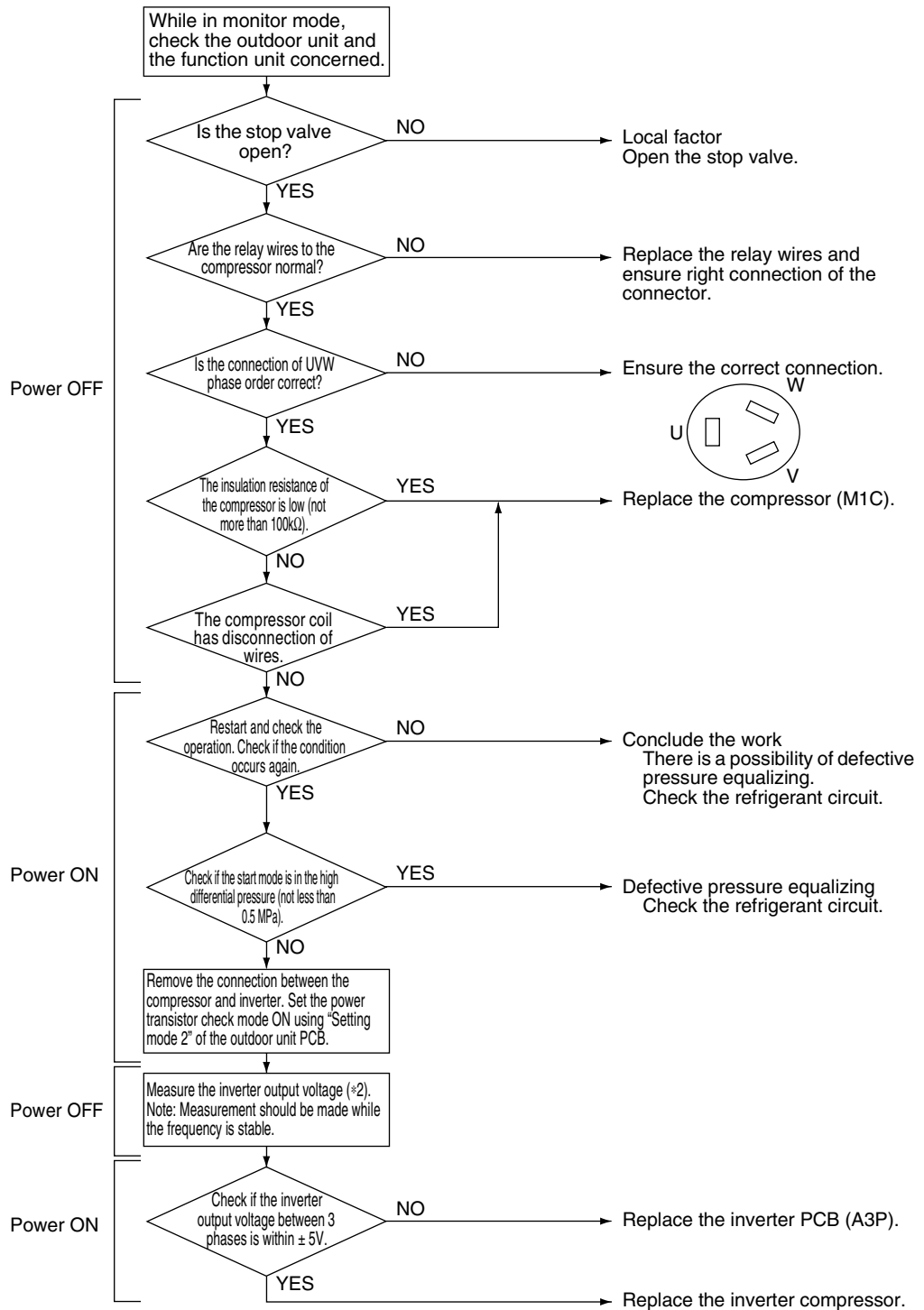
CHECK 12 Refer to P.315.


4.17 Inverter Compressor Motor Lock

Remote Controller Display	E5
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	Inverter PCB takes the position signal from UVW line connected between the inverter and compressor, and the error is detected when any abnormality is observed in the phase-current waveform.
Error Decision Conditions	This error will be output when the inverter compressor motor does not startup even in forced startup mode.
Supposed Causes	<ul style="list-style-type: none"> ■ Inverter compressor lock ■ High differential pressure (0.5MPa or more) ■ Incorrect UVW wiring ■ Defective inverter PCB ■ Stop valve is not opened

Troubleshooting

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




 **Note:** *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**.
(Check it shutting the power supply OFF.)




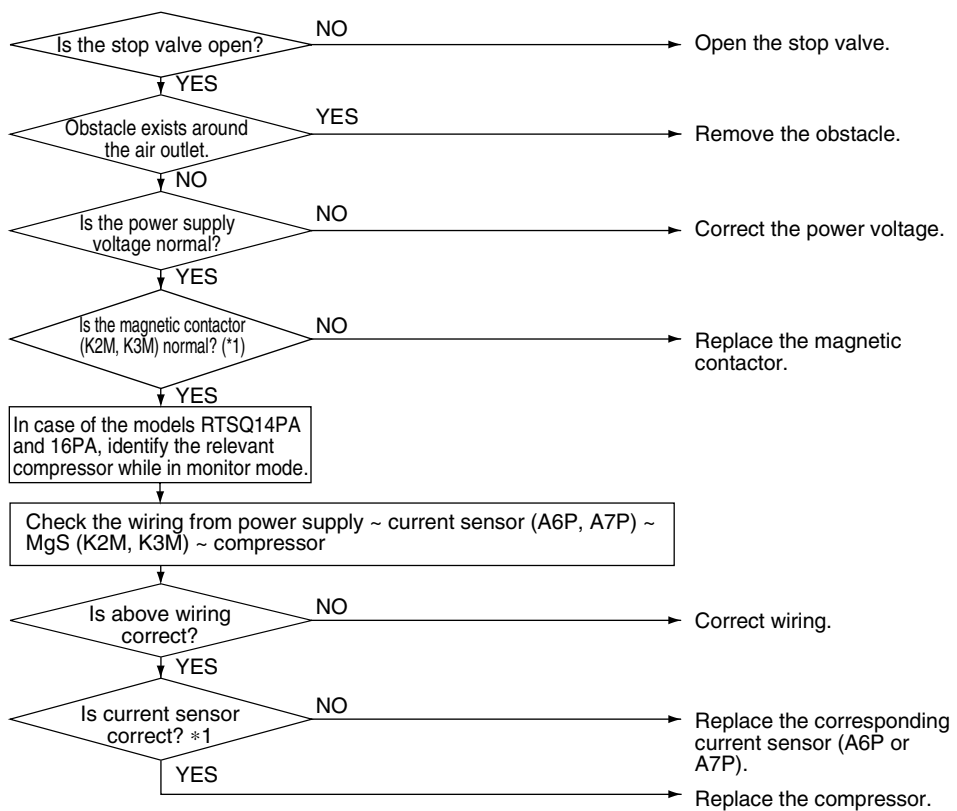
CHECK 4 Refer to P.307.

4.18 STD Compressor Motor Overcurrent/Lock

Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ10~16PAY1
Method of Error Detection	Detects the overcurrent with current sensor (CT).
Error Decision Conditions	Error is decided when the detected current value exceeds the below mentioned value for 2 seconds. <ul style="list-style-type: none"> ■ 400 V unit: 15.0 A
Supposed Causes	<ul style="list-style-type: none"> ■ Stop valve is not opened ■ Obstacles at the air outlet ■ Improper power voltage ■ Defective magnetic contactor ■ Defective compressor ■ Defective current sensor (A6P, A7P)

Troubleshooting

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



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.

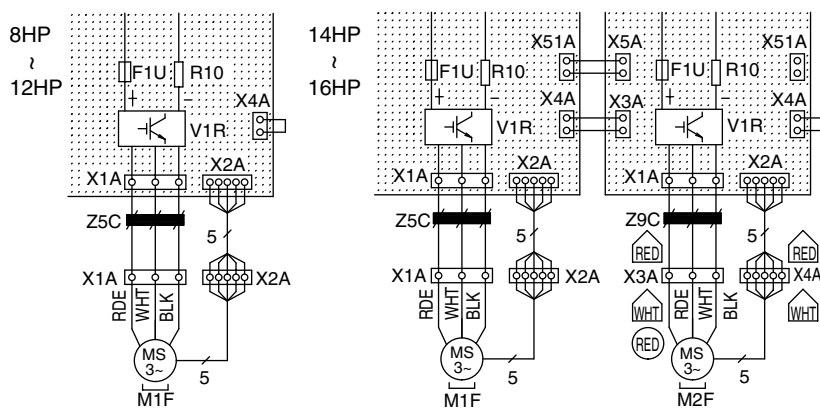
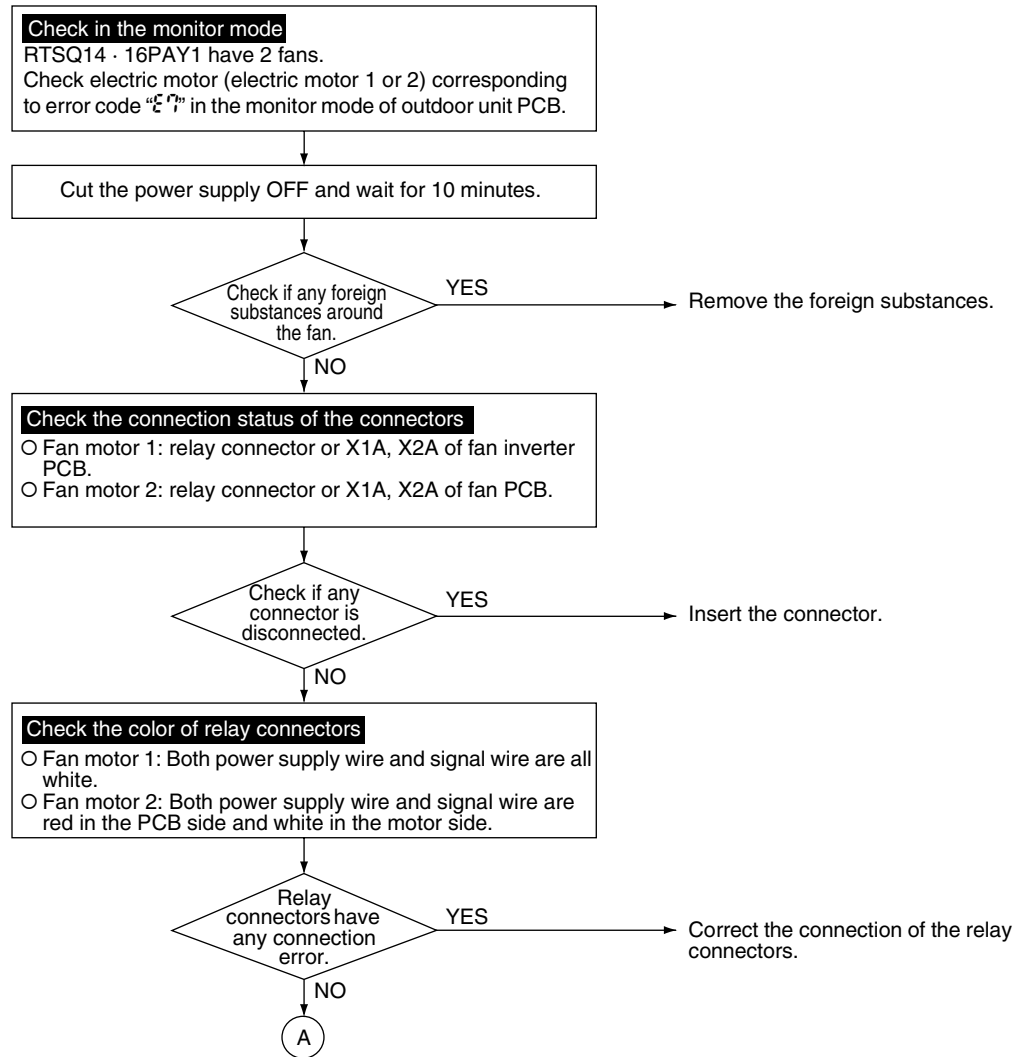
- The current sensor value is more than 15.0A during STD compressor stop.

4.19 Outdoor Unit Fan Motor Abnormality

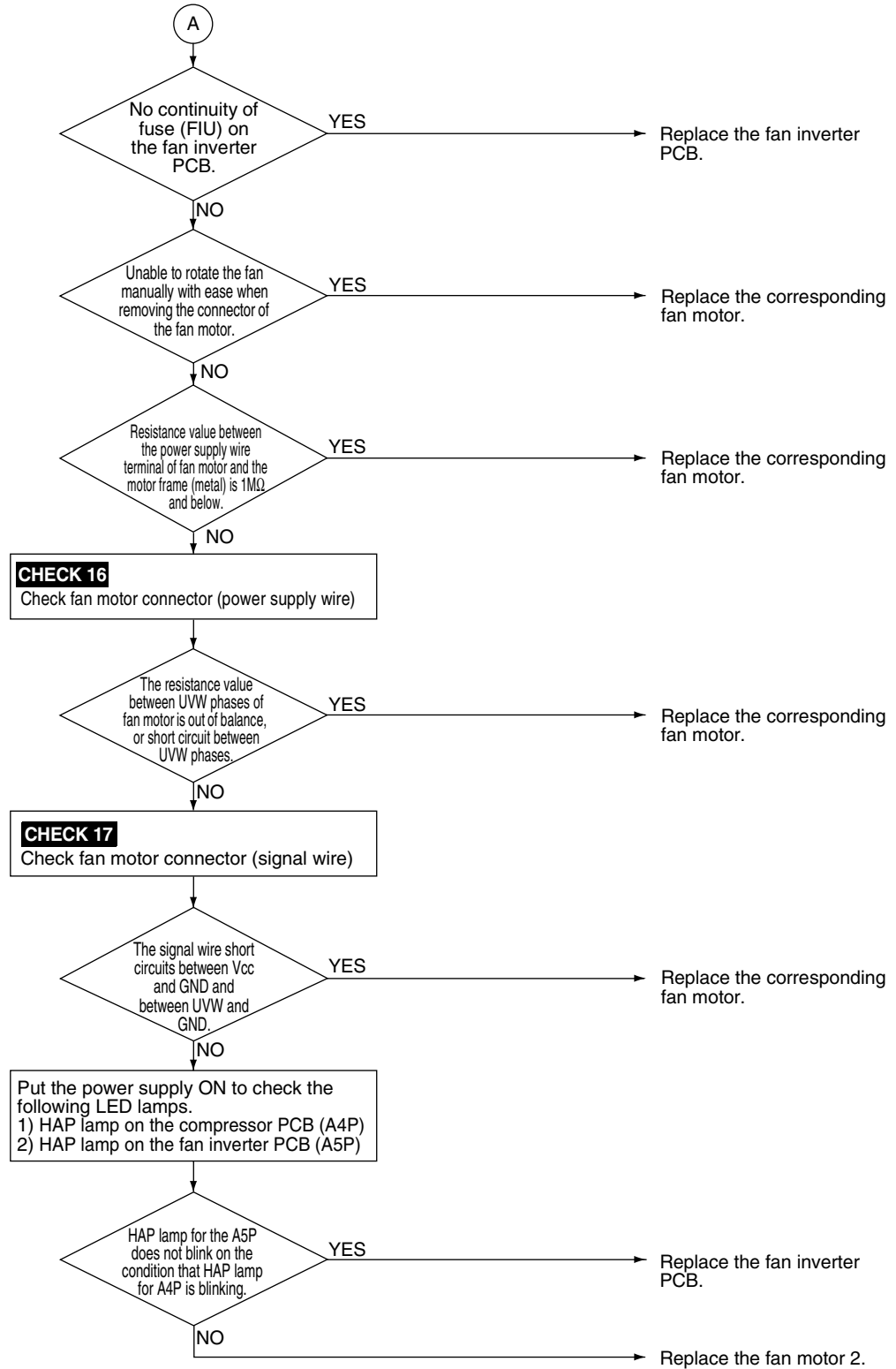
Remote Controller Display	E7
Applicable Models	Outdoor Unit: RTSQ8~16PAY1
Method of Error Detection	Detect an error based on the current value in the inverter PCB (as for motor 2, current value in the fan PCB). Detect an error for the fan motor circuit based on the number of rotation detected by hole IC during the fan motor operation.
Error Decision Conditions	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Defective fan motor ■ Defect or connection 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 the power switch before connecting or disconnecting connectors, or parts may be damaged.



Troubleshooting



CHECK 16 Refer to P.319.



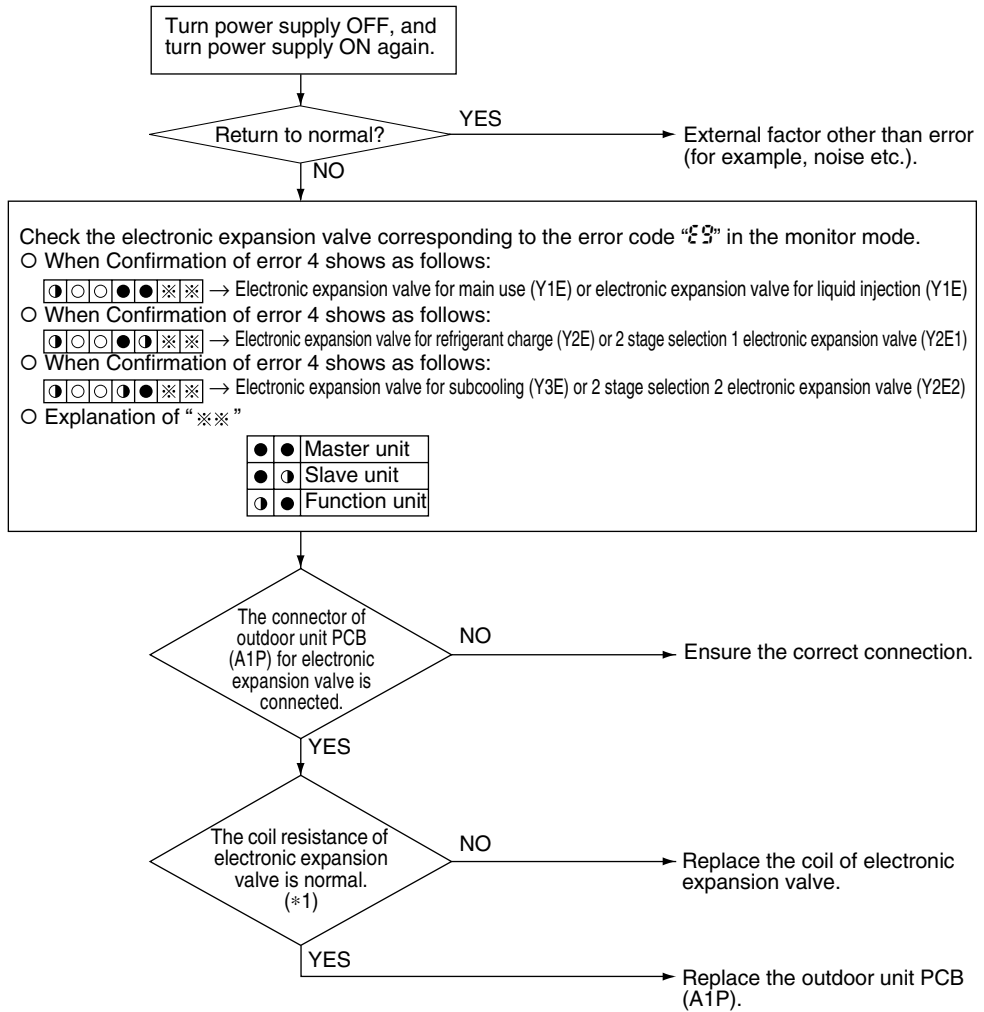
CHECK 17 Refer to P.319.

4.20 Electronic Expansion Valve Coil (Y1E~Y3E) Abnormality


<p>Remote Controller Display</p>	<p>EE</p>
<p>Applicable Models</p>	<p>Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1</p>
<p>Method of Error Detection</p>	<p>Check continuity of electronic expansion valve</p>
<p>Error Decision Conditions</p>	<p>No current is detected in the common (COM [+]) when power supply is ON.</p>
<p>Supposed Causes</p>	<ul style="list-style-type: none"> ■ Disconnection of connectors for electronic expansion valve (Y1E) ■ Defective electronic expansion valve coil ■ Defective outdoor unit main PCB (A1P)

Troubleshooting

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



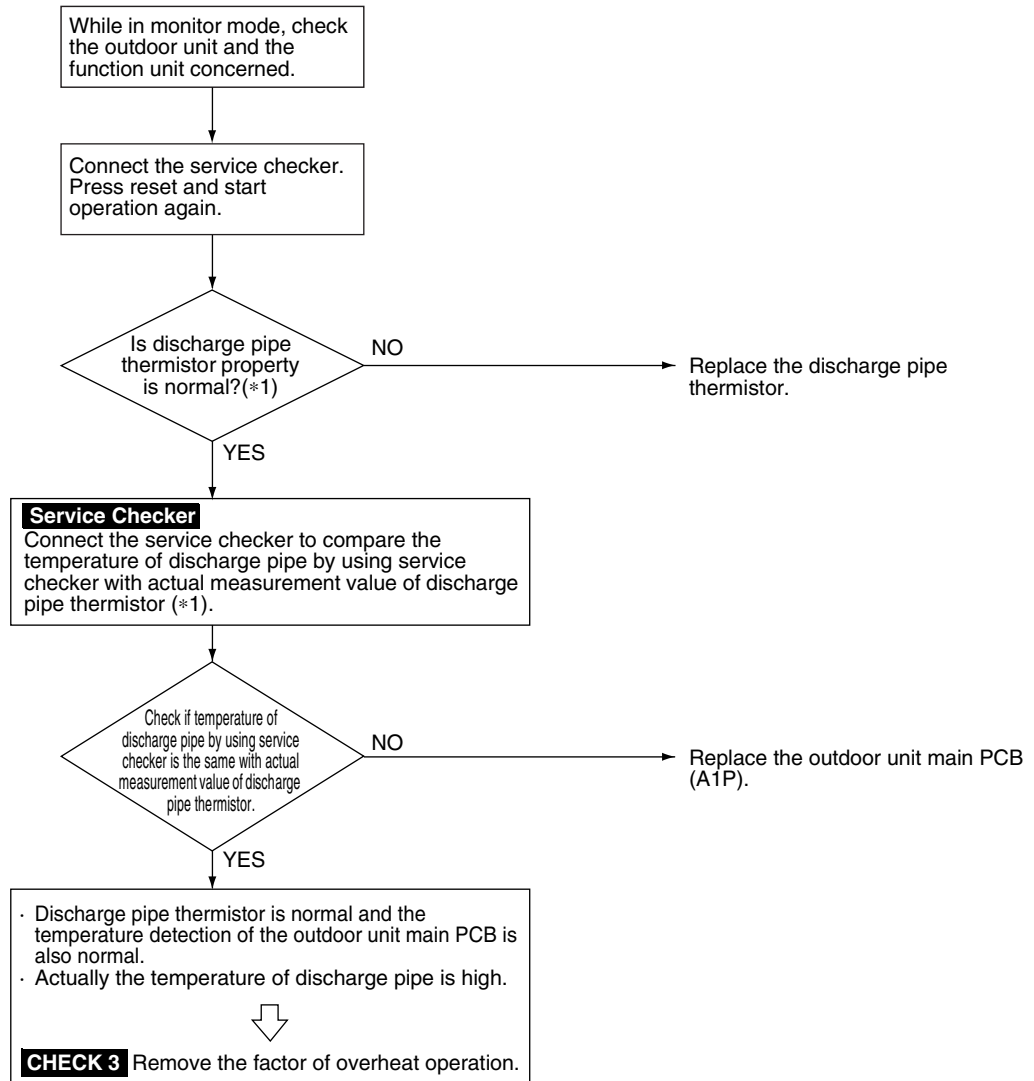
4.21 Discharge Pipe Temperature Abnormality

Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	Abnormality is detected according to the temperature detected by the discharge pipe thermistor.
Error Decision Conditions	When the discharge pipe temperature rises to an abnormally high level (135 °C or more) When the discharge pipe temperature rises suddenly (120 °C or more for 10 successive minutes)
Supposed Causes	<ul style="list-style-type: none"> ■ Defective discharge pipe temperature ■ Defective connection of discharge pipe thermistor ■ Defective outdoor unit PCB (A1P)

Troubleshooting

**Caution**

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



*1: **CHECK 11** Compare the resistance value of discharge pipe thermistor and the value based on the surface thermometer.




CHECK 3 Refer to P.306.




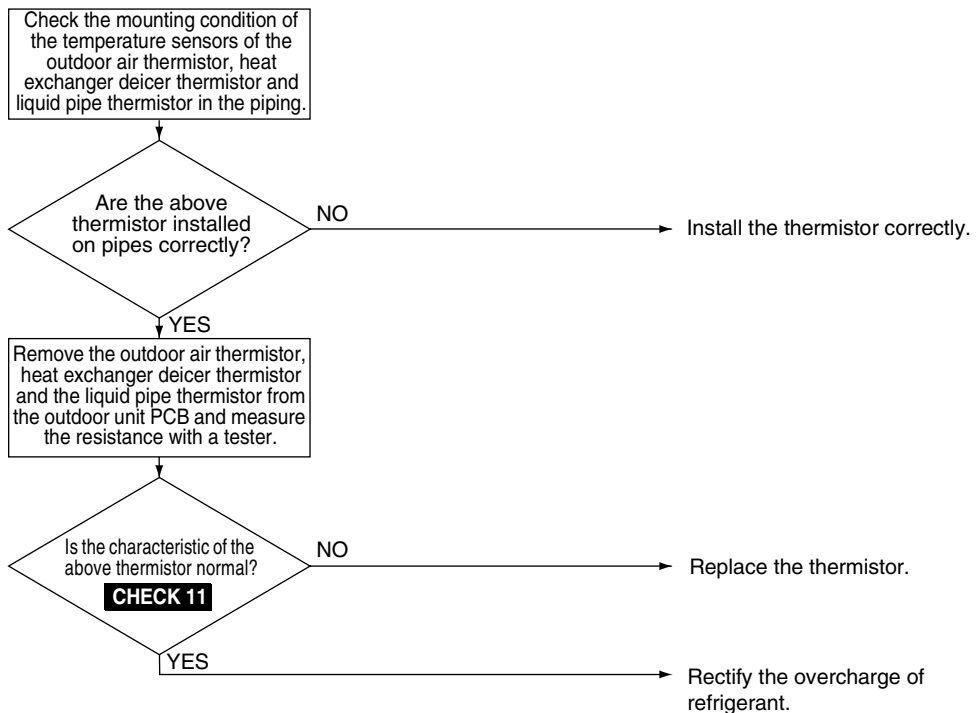
CHECK 11 Refer to P.314.

4.22 Refrigerant Overcharged

Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1
Method of Error Detection	Excessive charging of refrigerant is detected by using the outdoor air temperature, heat exchanger deicer temperature and liquid pipe temperature during a check operation.
Error Decision Conditions	When the amount of refrigerant, which is calculated by using the outdoor air temperature, heat exchanger deicer temperature and liquid pipe temperature during a check operation, exceeds the standard.
Supposed Causes	<ul style="list-style-type: none"> ■ Refrigerant overcharge ■ Disconnection of outdoor air thermistor ■ Disconnection of heat exchanger deicer thermistor ■ Disconnection of liquid pipe thermistor


Troubleshooting

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






CHECK 11 Refer to P.314.

4.23 Abnormal Outdoor Unit Fan Motor Signal

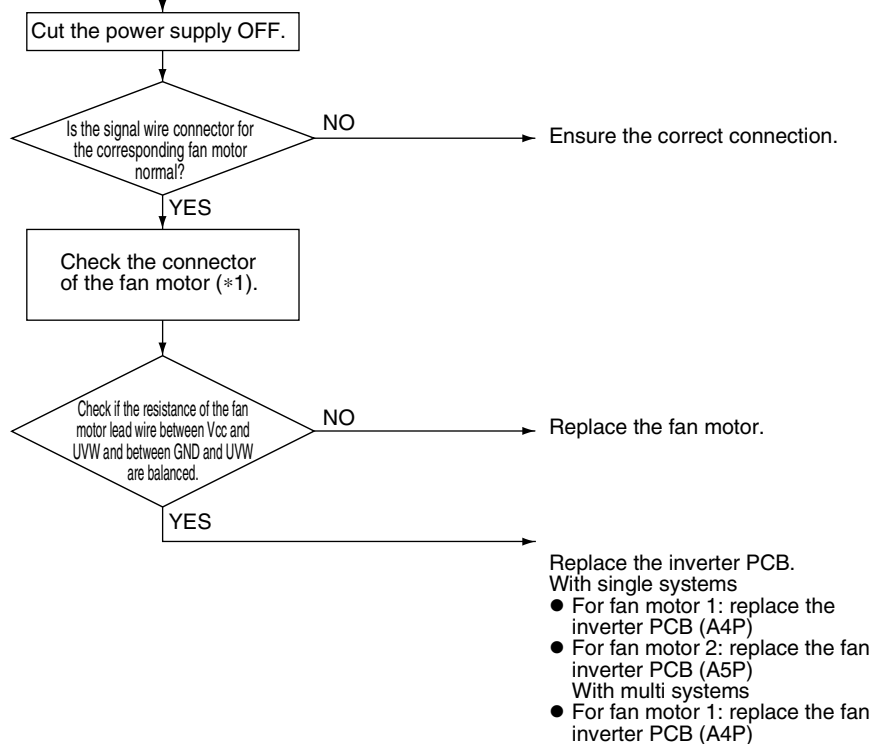
Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1
Method of Error Detection	Detection of abnormal signal from fan motor
Error Decision Conditions	In case of detection of abnormal signal at starting fan motor
Supposed Causes	<ul style="list-style-type: none">■ Abnormal fan motor signal (circuit abnormality)■ Broken, short circuited or disconnection connector of fan motor connection cable■ Defective inverter PCB (A4P)■ Defective fan Inverter PCB (A5P)

Troubleshooting

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

Check the fan motor corresponding to the error code “ H^{m} ” in the monitor mode.
 When Confirmation of error 3 shows as follows:
 → Fan motor 1 (M1F)
 When Confirmation of error 3 shows as follows:
 → Fan motor 2 (M2F)
 Identify outdoor unit based on Confirmation of error 4.

 Explanation for “ H^{m} ”

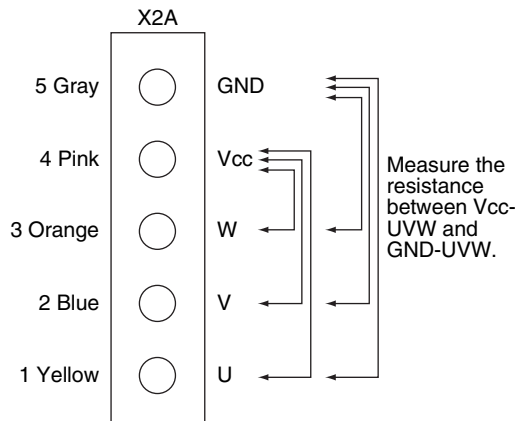
● ●	Master unit
● ○	Slave unit 1
○ ●	Slave unit 2
○ ○	System



i Note:

- *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 $\pm 20\%$

Connector for signal wires (X2A or X4A)

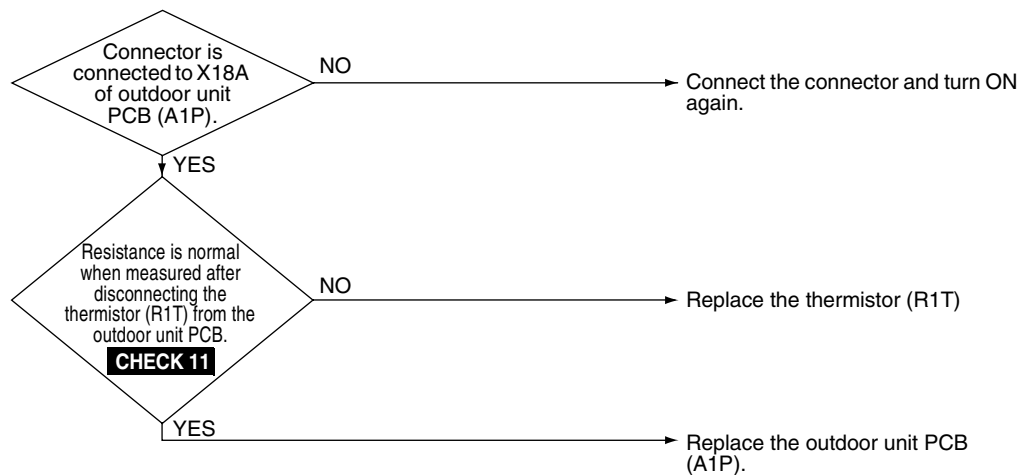


4.24 Outdoor Air Thermistor (R1T) Abnormality

Remote Controller Display	89
Applicable Models	Outdoor Unit: RTSQ8~16PAY1
Method of Error Detection	Error is detected from the temperature detected by the outdoor air thermistor.
Error Decision Conditions	When the outdoor air temperature thermistor has short circuit or open circuit
Supposed Causes	<ul style="list-style-type: none"> ■ Defective outdoor air thermistor connection ■ Defective outdoor air thermistor (R1T) ■ Defective outdoor unit PCB (A1P)
Troubleshooting	



Caution

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




CHECK 11 Refer to P.314.


4.25 Current Sensor Abnormality


Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ10~16PAY1
Method of Error Detection	Error is detected according to the current value detected by current sensor.
Error Decision Conditions	When the current value detected by current sensor becomes 5A or lower, or 40A or more during STD compressor operation
Supposed Causes	<ul style="list-style-type: none"> ■ Defective current sensor (A6P, A7P) ■ Defective outdoor unit PCB ■ Defective compressor (M2C, M3C)

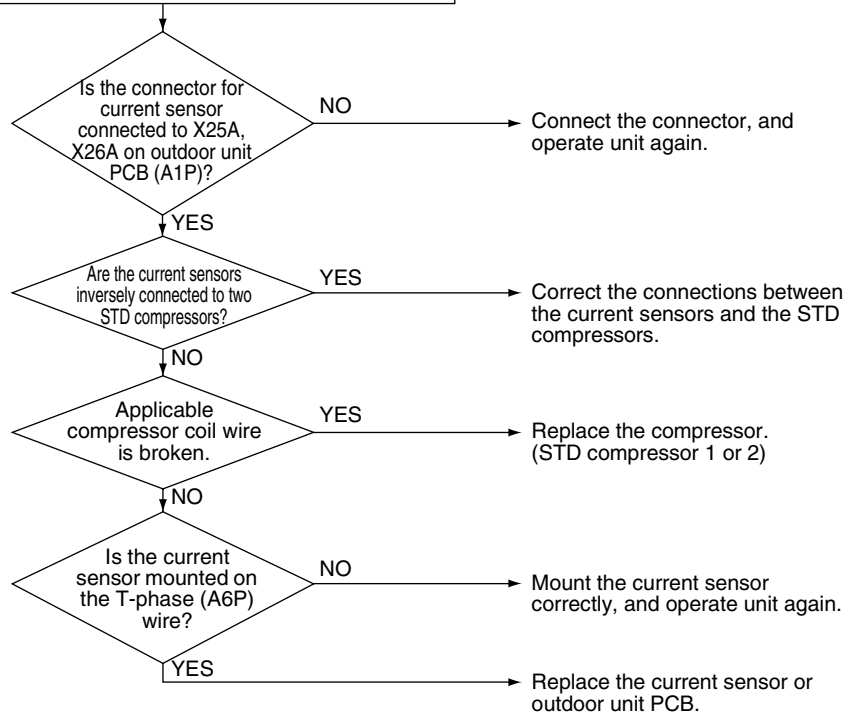
Troubleshooting

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

Check the current sensor corresponding to the error code "U₁₂" in the monitor mode.

○ Confirmation of error 4 shows as follows:
 → Current sensor for STD compressor 1

○ Confirmation of error 4 shows as follows:
 → Current sensor for STD compressor 2



4.26 Discharge Pipe Thermistor (R31T, R32T, R33T) Abnormality

Remote
Controller
Display



Applicable
Models

Outdoor Unit: RTSQ8~16PAY1
Function Unit: BTSQ20PY1

Method of Error
Detection

Error is detected from the temperature detected by discharge pipe thermistor.

Error Decision
Conditions

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

Supposed
Causes

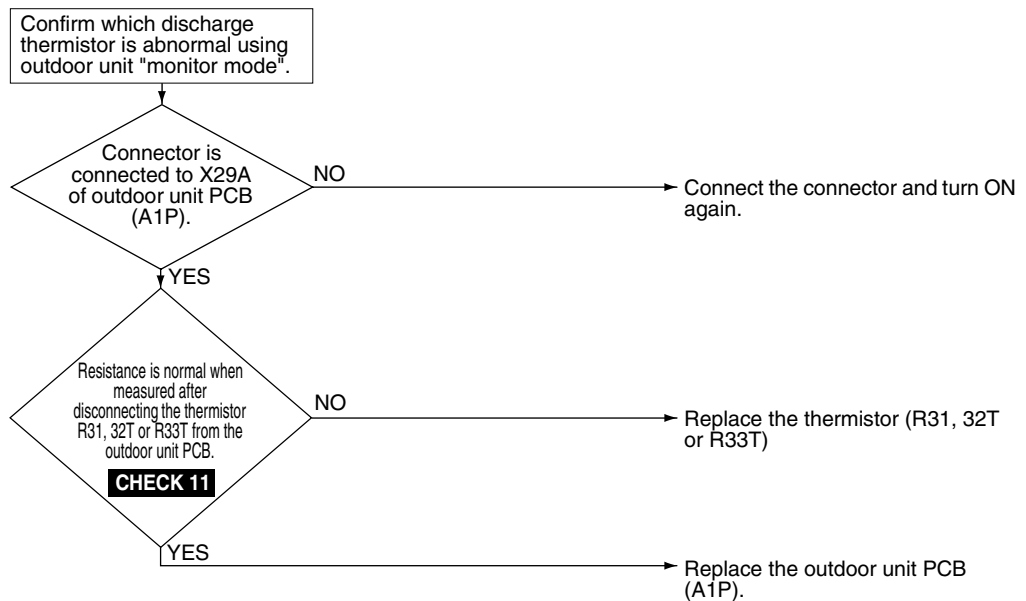
- Defective connection of thermistor
- Defective outdoor unit discharge pipe thermistor (R31T, R32T, R33T)
- Defective outdoor unit PCB (A1P)

Troubleshooting



Caution

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



The alarm indicator is displayed when the fan is being used also.



CHECK 11 Refer to P.314.

4.27 Heat Exchanger Gas Pipe Temperature Thermistor (R2T)

Remote
Controller
Display



Applicable
Models

Outdoor Unit: RTSQ8~16PAY1
Function Unit: BTSQ20PY1

Method of Error
Detection

Detect error based on the temperature detected by heat exchanger gas pipe temperature thermistor.

Error Decision
Conditions

In operation, when a thermistor is disconnected or short circuits.

Supposed
Causes

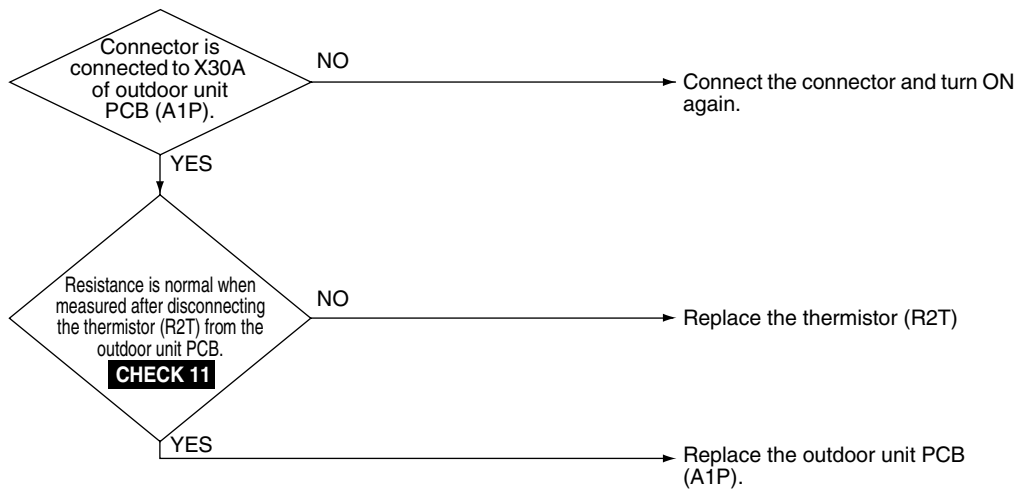
- Defective connection of thermistor
- Defective temperature heat exchanger gas pipe thermistor
- Defective outdoor unit PCB

Troubleshooting




Caution

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



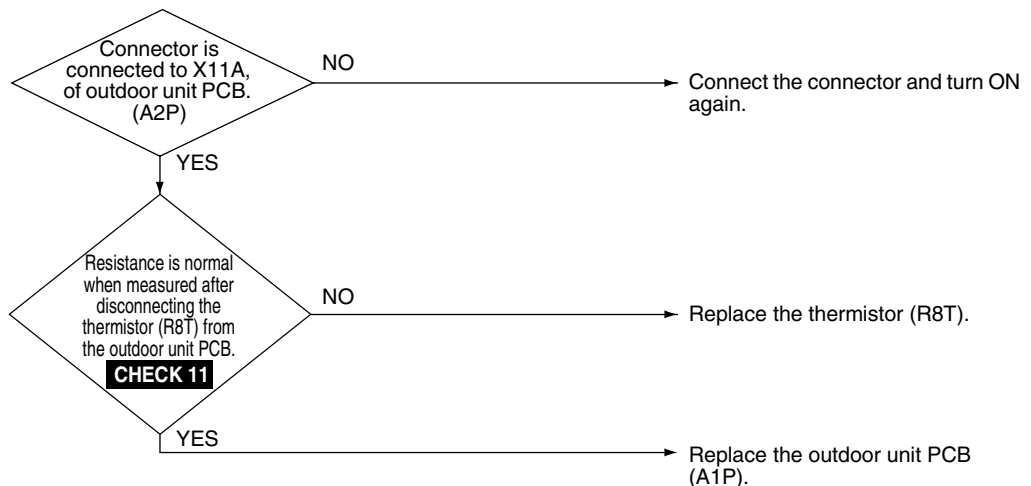
CHECK 11 Refer to P.314.

4.28 Suction Pipe Thermistor (R8T) Abnormality

Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	Error is detected from the temperature detected by the suction pipe thermistor.
Error Decision Conditions	When a short circuit or an open circuit in the suction pipe thermistor is detected
Supposed Causes	<ul style="list-style-type: none"> ■ Defective connection of thermistor ■ Defective outdoor unit suction pipe thermistor (R8T) ■ Defective outdoor unit PCB (A2P)
Troubleshooting	



Caution

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




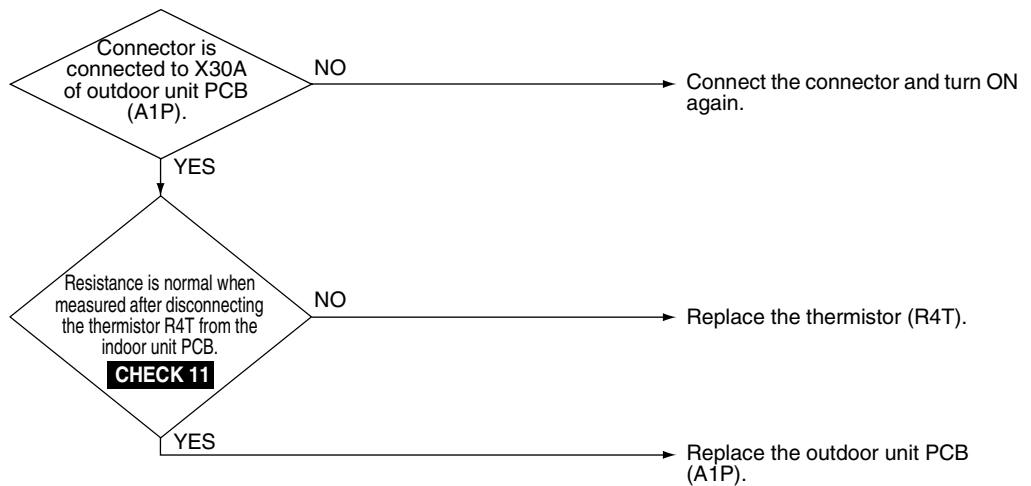
CHECK 11 Refer to P.314.

4.29 Outdoor Unit Heat Exchanger Thermistor (R4T)

Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	Error is detected from the temperature detected by the heat exchanger thermistor.
Error Decision Conditions	When a short circuit or an open circuit in the heat exchanger thermistor is detected
Supposed Causes	<ul style="list-style-type: none"> ■ Defective outdoor unit heat exchanger thermistor (R4T) ■ Defective outdoor unit PCB (A1P) ■ Defective connection of thermistor

Troubleshooting

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



CHECK 11 Refer to P.314.

4.30 Liquid Pipe Thermistor 1 (R6T or R9T) Abnormality

Remote
Controller
Display



Applicable
Models

Outdoor Unit: RTSQ8~16PAY1
Function Unit: BTSQ20PY1

Method of Error
Detection

Error is detected according to the temperature detected by liquid pipe thermistor.

Error Decision
Conditions

When the liquid pipe thermistor is short circuited or open circuited

Supposed
Causes

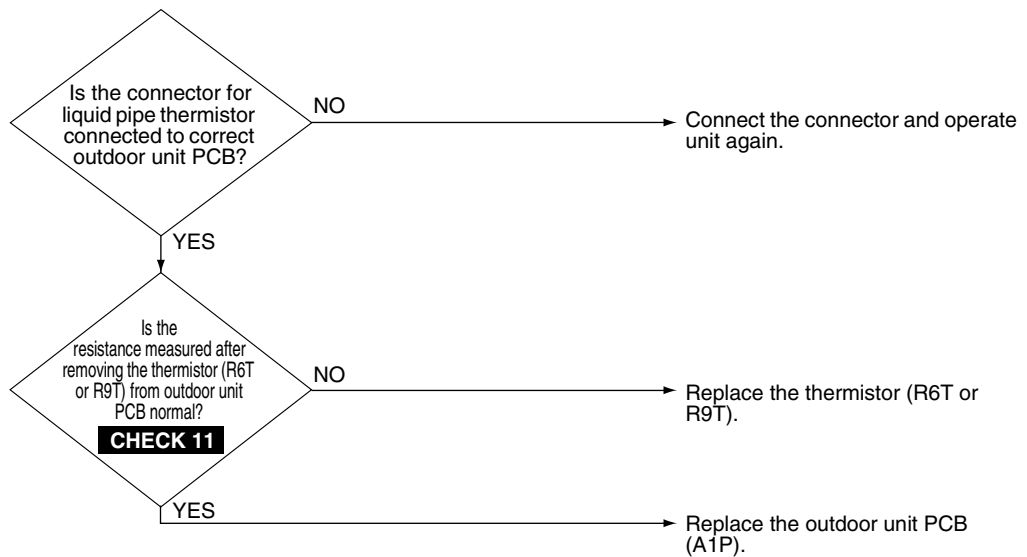
- Defective connection of thermistor
- Defective liquid pipe thermistor 1 (R6T or R9T)
- Defective outdoor unit PCB

Troubleshooting




Caution

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




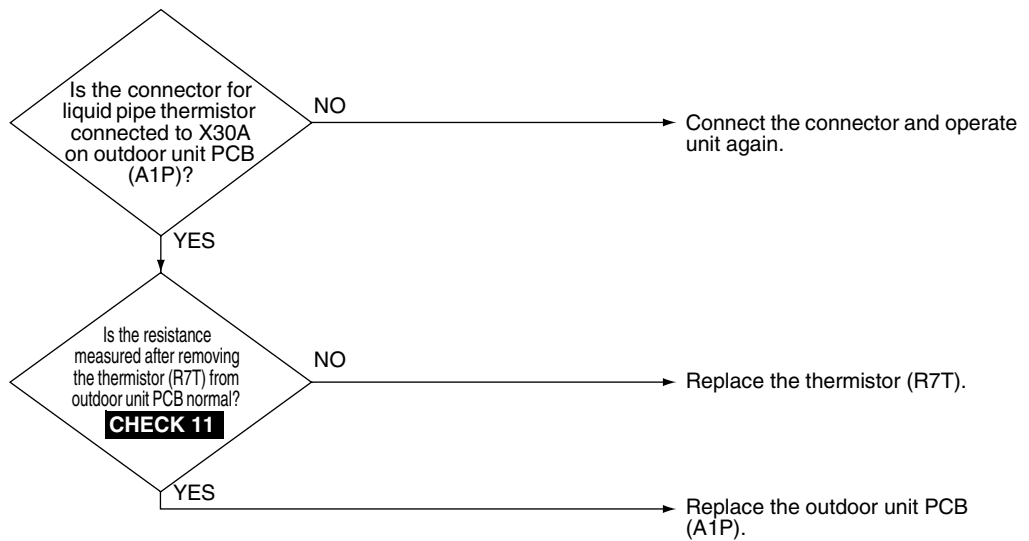
CHECK 11 Refer to P.314.

4.31 Liquid Pipe Thermistor 2 (R7T) Abnormality

Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	Error is detected according to the temperature detected by liquid pipe thermistor.
Error Decision Conditions	When the liquid pipe thermistor is short circuited or open circuited
Supposed Causes	<ul style="list-style-type: none"> ■ Defective liquid pipe thermistor 2 (R7T) ■ Defective outdoor unit PCB ■ Defective connection of thermistor

Troubleshooting

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



CHECK 11 Refer to P.314.

4.32 Subcooling Heat Exchanger Gas Pipe Thermistor (R5T) Abnormality

Remote
Controller
Display

49

Applicable
Models

Outdoor Unit: RTSQ8~16PAY1
Function Unit: BTSQ20PY1

Method of Error
Detection

Error is detected according to the temperature detected by subcooling heat exchanger gas pipe thermistor.

Error Decision
Conditions

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

Supposed
Causes

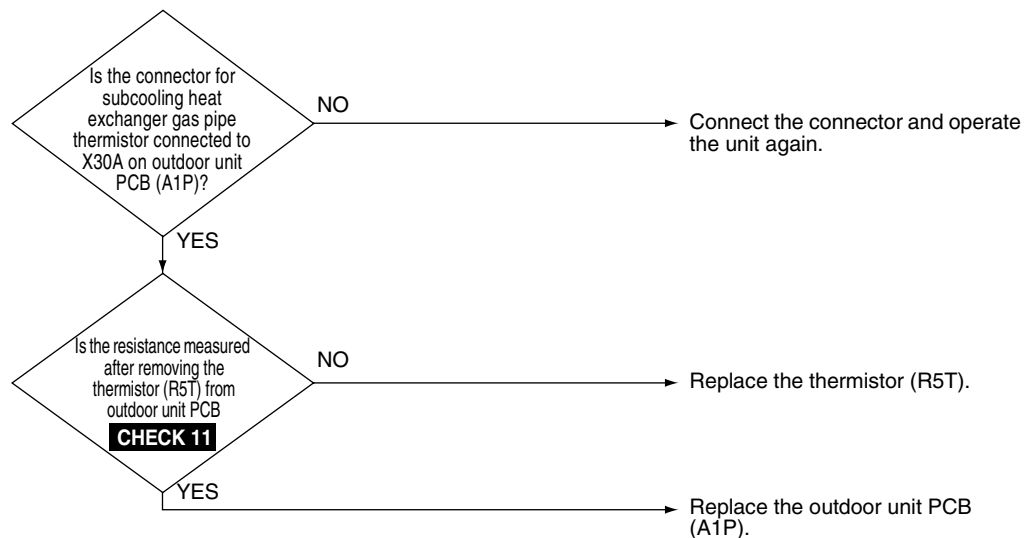
- Defective subcooling heat exchanger gas pipe thermistor (R5T)
- Defective outdoor unit PCB

Troubleshooting




Caution

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



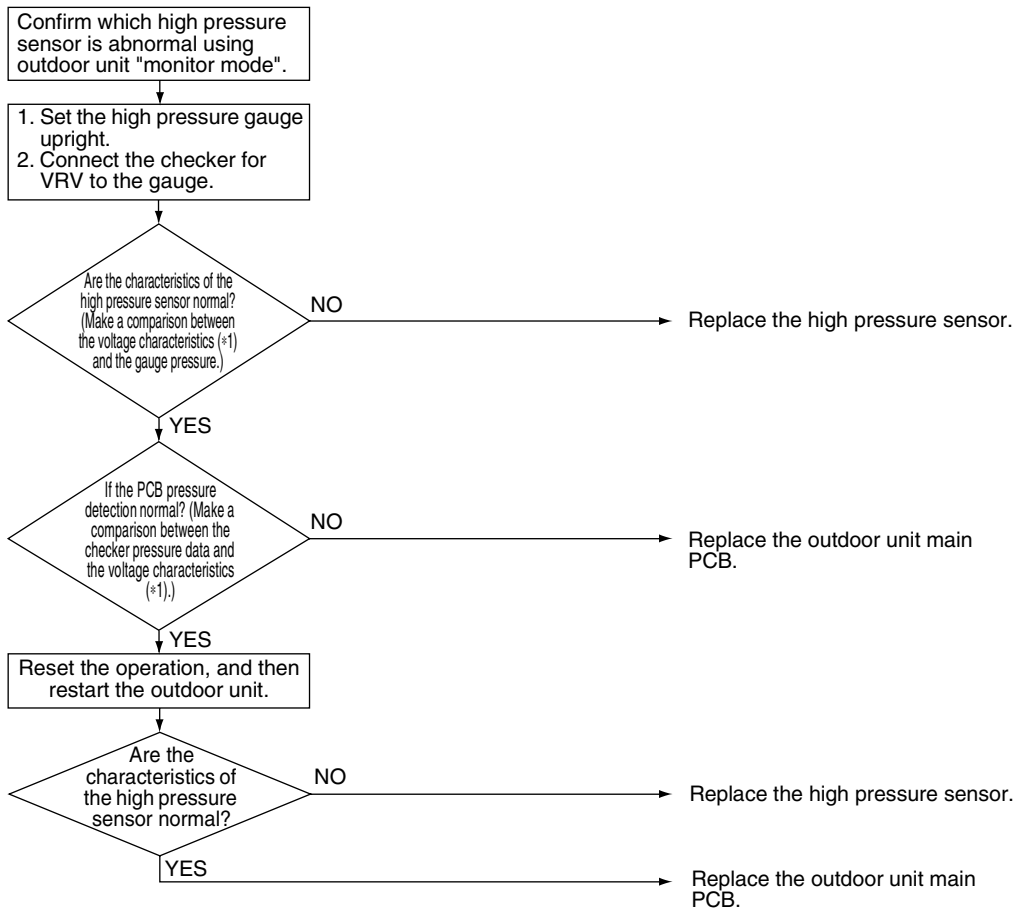
CHECK 11 Refer to P.314.

4.33 High Pressure Sensor Abnormality

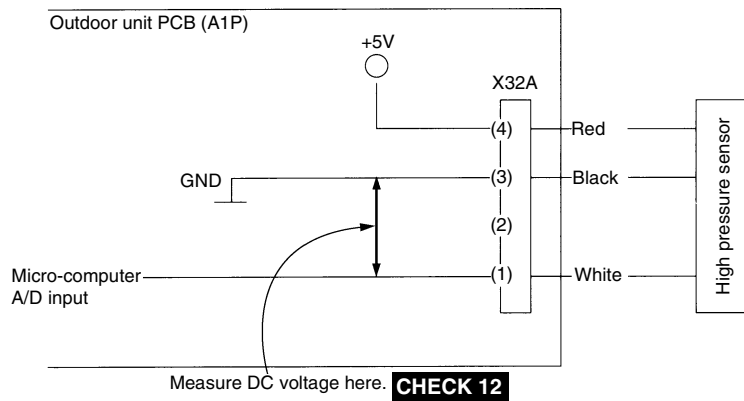
Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	Error is detected from the pressure detected by the high pressure sensor.
Error Decision Conditions	When the high pressure sensor is short circuit or open circuit (Not less than 4.22MPa, or 0.01MPa and below)
Supposed Causes	<ul style="list-style-type: none"> ■ Defective high pressure sensor system ■ Connection of low pressure sensor with wrong connection ■ Defective outdoor unit PCB (A1P) ■ Defective connection of high pressure sensor

Troubleshooting

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




i Note: *1: Voltage measurement point




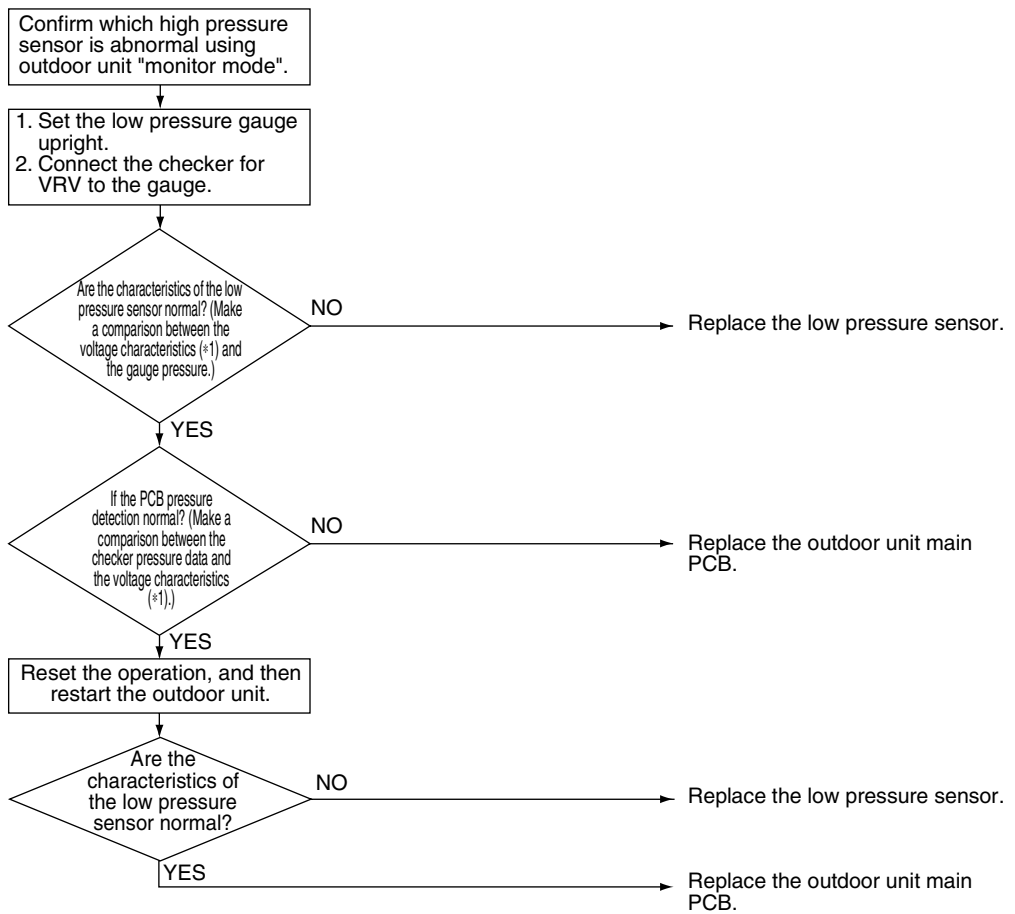
CHECK 12 Refer to P.315.

4.34 Low Pressure Sensor Abnormality

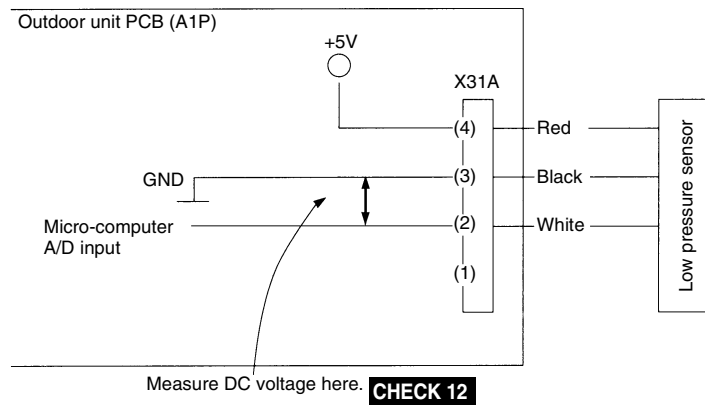
Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1
Method of Error Detection	Error is detected from the pressure detected by the low pressure sensor.
Error Decision Conditions	When the low pressure sensor is short circuit or open circuit (Not less than 1.77MPa, or -0.01MPa and below)
Supposed Causes	<ul style="list-style-type: none"> ■ Defective low pressure sensor system ■ Connection of high pressure sensor with wrong connection. ■ Defective outdoor unit PCB. ■ Defective connection of low pressure sensor

Troubleshooting

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




i Note: *1: Voltage measurement point




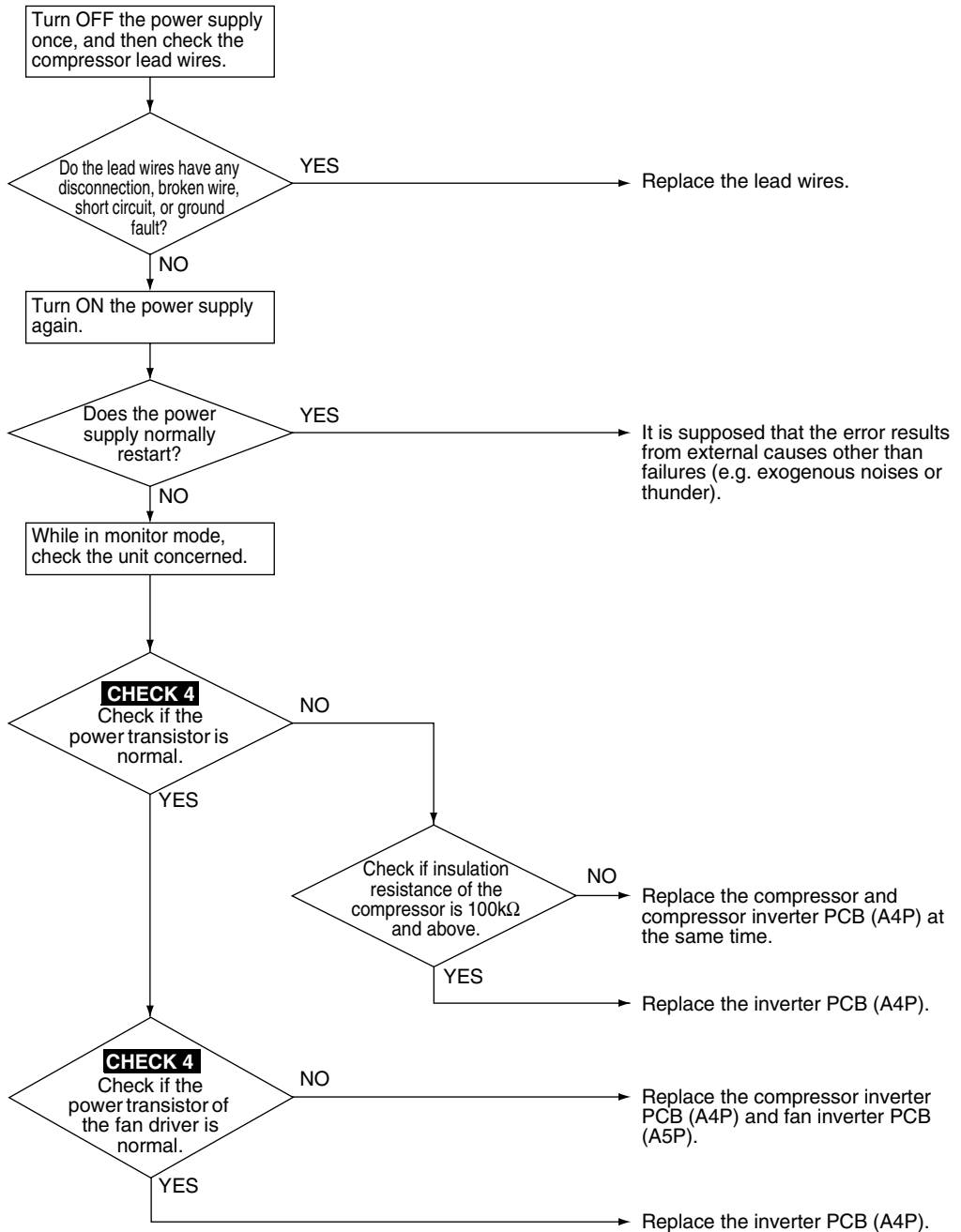
CHECK 12 Refer to P.315.

4.35 Defective Inverter PCB

Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	Error is detected based on the current value during waveform output before starting compressor. Error is detected based on the value from current sensor during synchronous operation when starting the unit.
Error Decision Conditions	Overcurrent (OCP) flows during waveform output. Defective current sensor during synchronous operation. IPM failure.
Supposed Causes	<ul style="list-style-type: none"> ■ Inverter PCB (A4P) <ul style="list-style-type: none"> ● IPM failure ● Current sensor failure ● Drive circuit failure

Troubleshooting

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




CHECK 4 Refer to P.307.

*1. List of Inverter PCBs

Model	Name	Electric symbol
RTSQ 8, 10, 12PA	Compressor inverter PCB	A4P
	Fan inverter PCB	A5P
RTSQ 14, 16PA	Compressor inverter PCB	A4P
	Fan inverter PCB	A5P, A8P
BTSQ20P	Compressor inverter PCB	A3P

4.36 Inverter Radiation Fin Temperature Rise Error

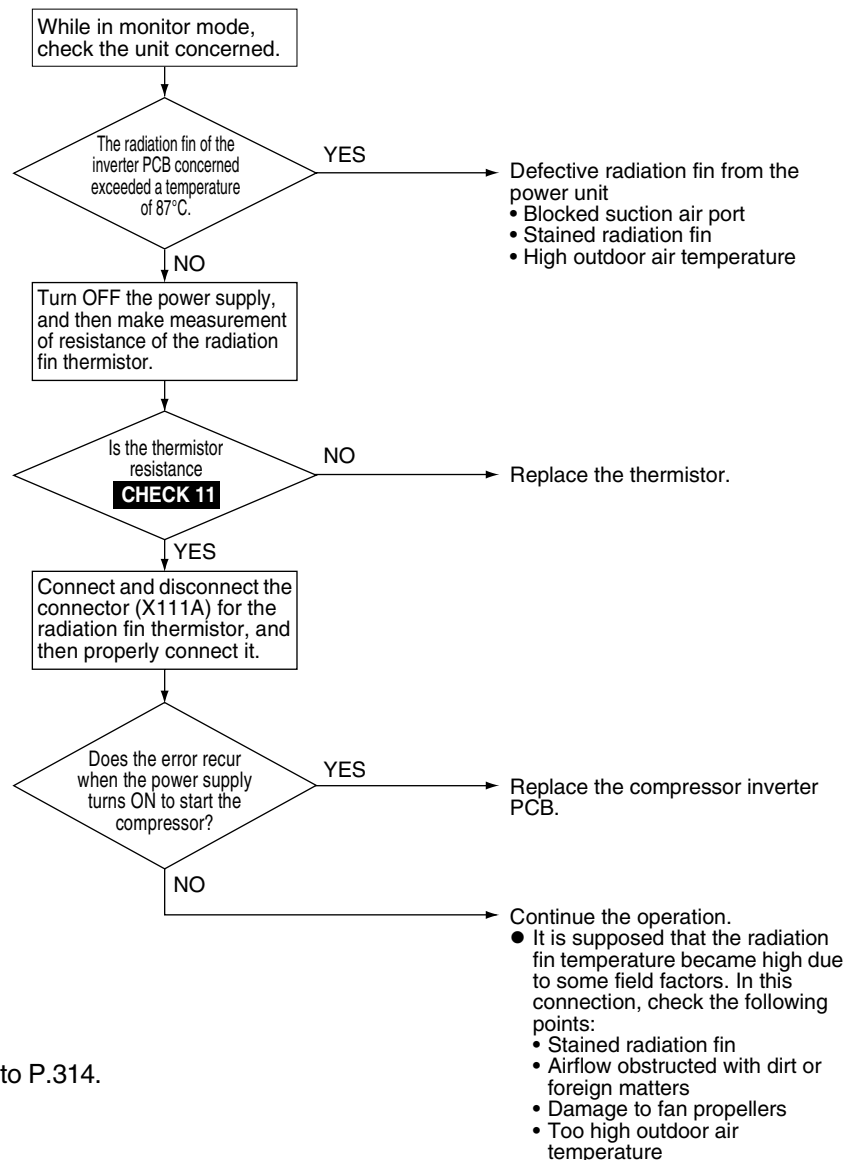
Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	Fin temperature is detected by the thermistor of the radiation fin.
Error Decision Conditions	When the temperature of the inverter radiation fin increases 87°C or more.
Supposed Causes	<ul style="list-style-type: none"> ■ Actuation of radiation fin thermal (Actuates above 87°C) ■ Defective inverter PCB ■ Defective radiation fin thermistor

Troubleshooting



Caution

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

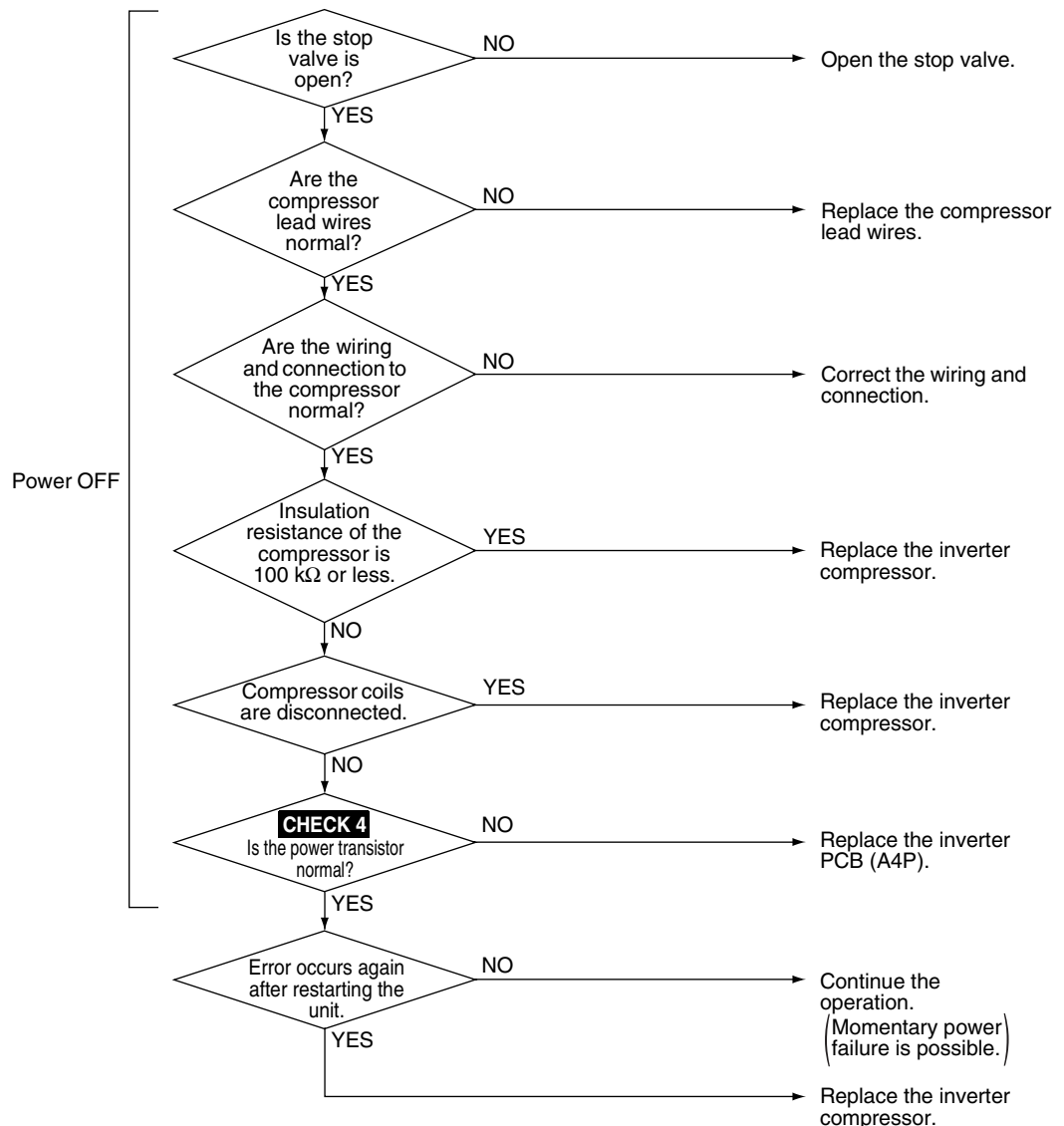


CHECK 11 Refer to P.314.

4.37 Momentary Overcurrent of Inverter Compressor


Remote Controller Display	E5
Applicable Models	Outdoor Unit: RTSQ8~16PAY1
Method of Error Detection	Error is detected from current flowing in the power transistor.
Error Decision Conditions	When an excessive current flows in the power transistor (Instantaneous overcurrent also causes activation)
Supposed Causes	<ul style="list-style-type: none"> ■ Defective compressor coil (disconnected, defective insulation) ■ Compressor startup error (mechanical lock) ■ Defective inverter PCB
Troubleshooting	Compressor inspection

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



CHECK 4 Refer to P.307.

4.38 Overcurrent of Inverter Compressor

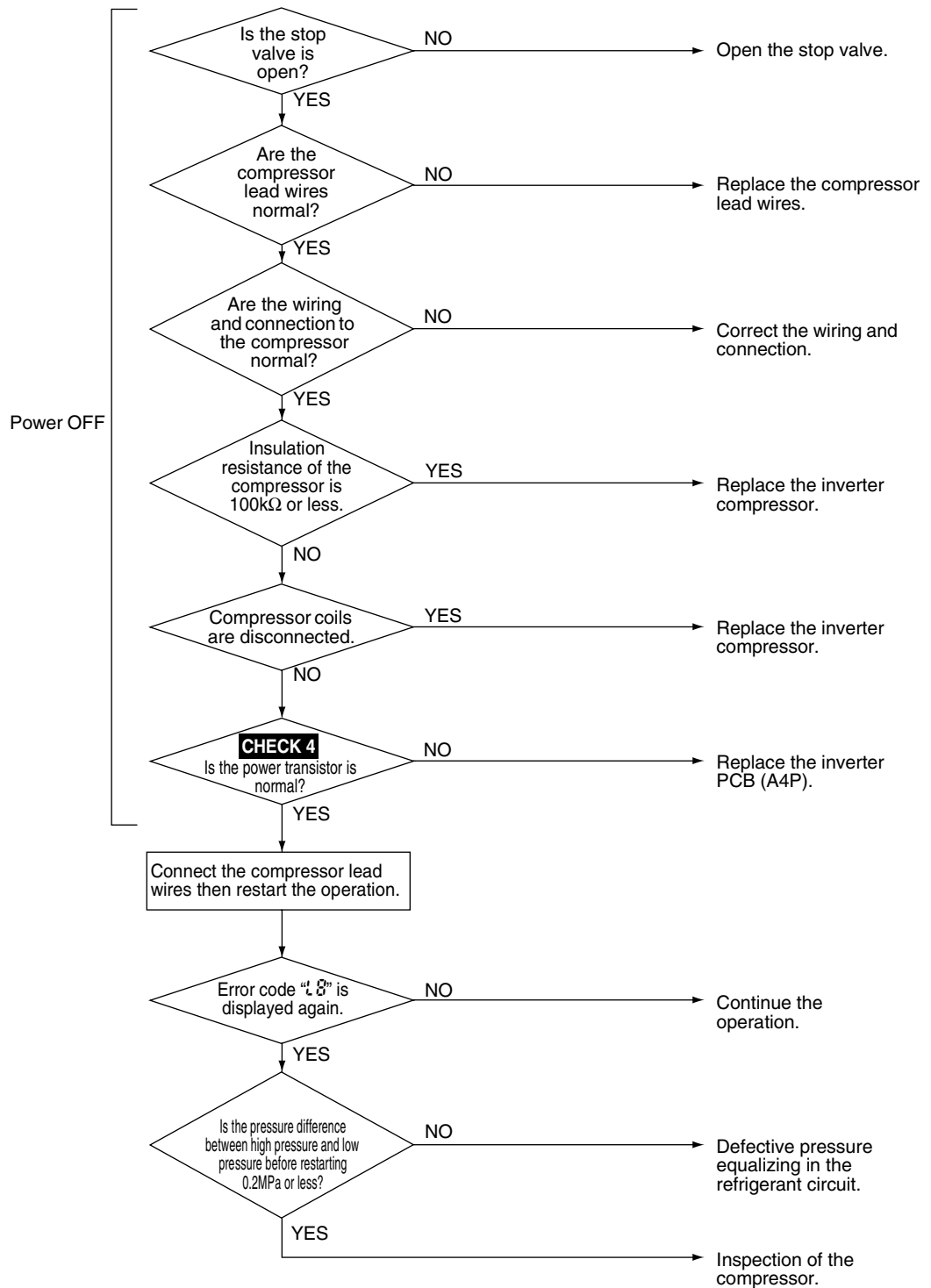
Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1
Method of Error Detection	Error is detected by current flowing in the power transistor.
Error Decision Conditions	When overload in the compressor is detected (Inverter secondary current 16.1A) (1) 19.0A and over continues for 5 seconds (2) 16.1A and over continues for 260 seconds
Supposed Causes	<ul style="list-style-type: none"> ■ Compressor overload ■ Compressor coil disconnected ■ Disconnection of compressor ■ Defective inverter PCB

Troubleshooting

Output current check



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



CHECK 4 Refer to P.307.

4.39 Inverter Compressor Starting Error

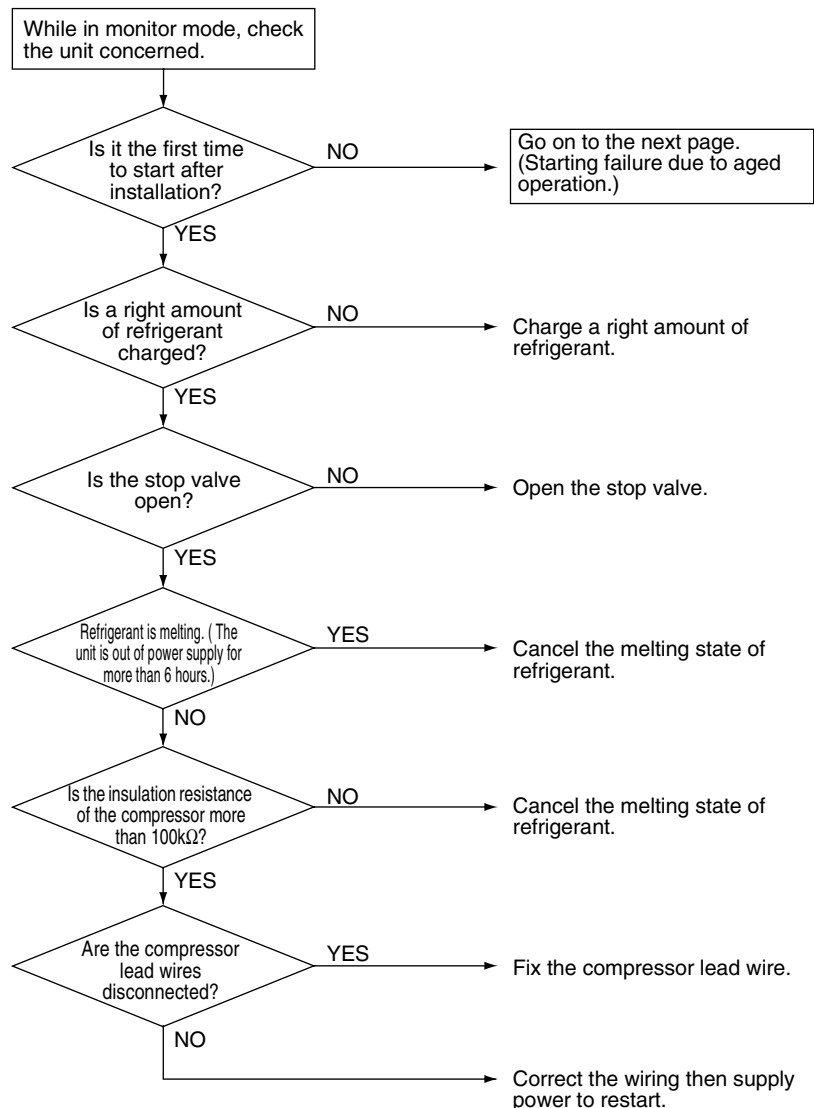
Remote Controller Display	L9
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	Detect the error based on the signal waveform of the compressor.
Error Decision Conditions	Starting the compressor does not complete.
Supposed Causes	<ul style="list-style-type: none"> ■ Stop valve is not opened ■ Defective compressor ■ Wiring connection error to the compressor ■ Large pressure difference before starting the compressor ■ Defective inverter PCB

Troubleshooting

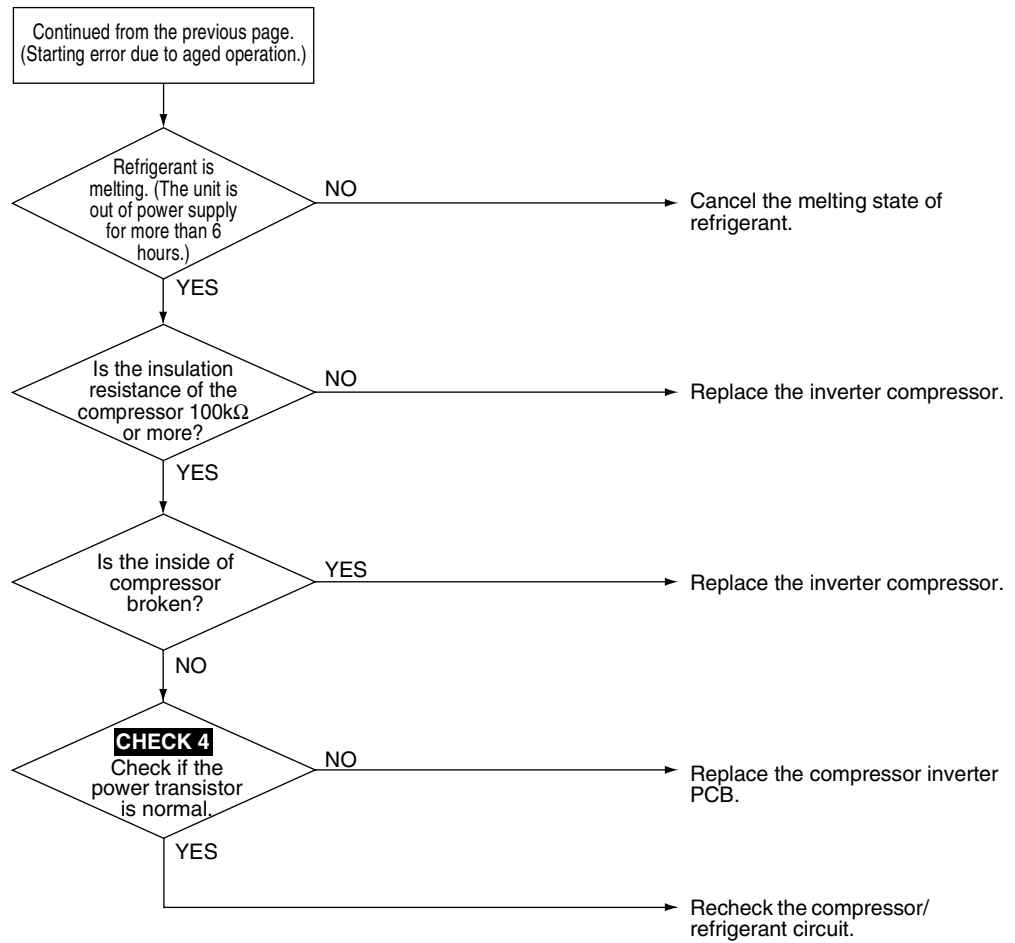


Caution

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




Troubleshooting




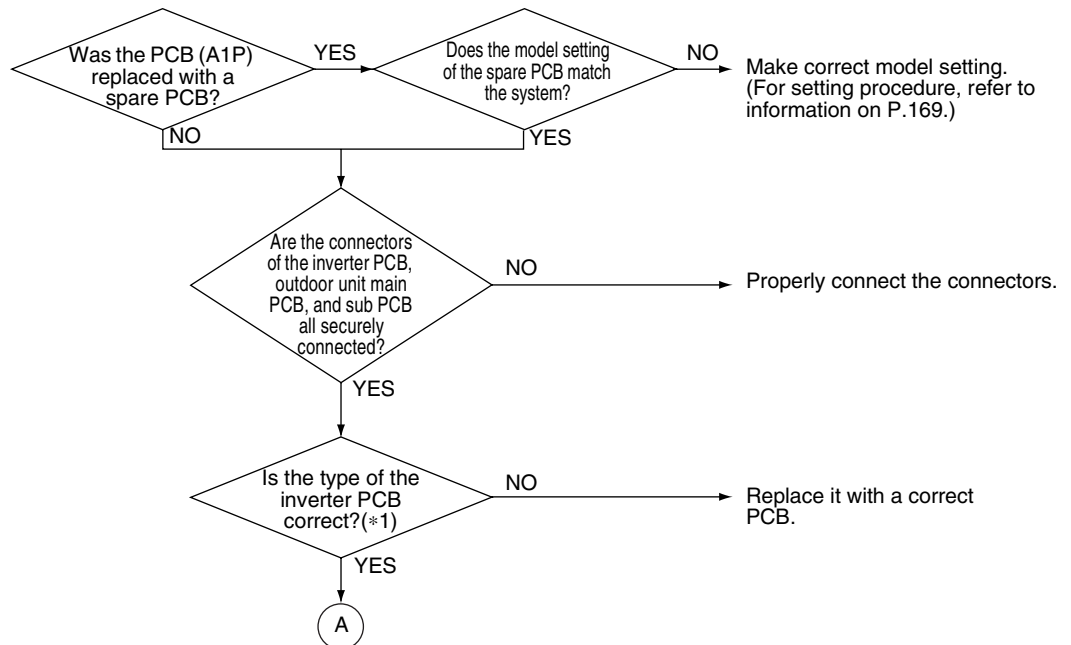
CHECK 4 Refer to P.307.

4.40 Transmission Error between Inverter and Control PCB

Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	Check the communication state between inverter PCB and control PCB by micro-computer.
Error Decision Conditions	When the correct communication is not conducted in certain period
Supposed Causes	<ul style="list-style-type: none"> ■ Defective connection between the inverter PCB and outdoor unit main PCB ■ Defective outdoor unit main PCB (transmission section) ■ Defective inverter PCB ■ Defective noise filter ■ Defective fan inverter ■ Incorrect type of inverter PCB ■ Defective inverter compressor ■ Defective fan motor ■ External factor (noise etc.)

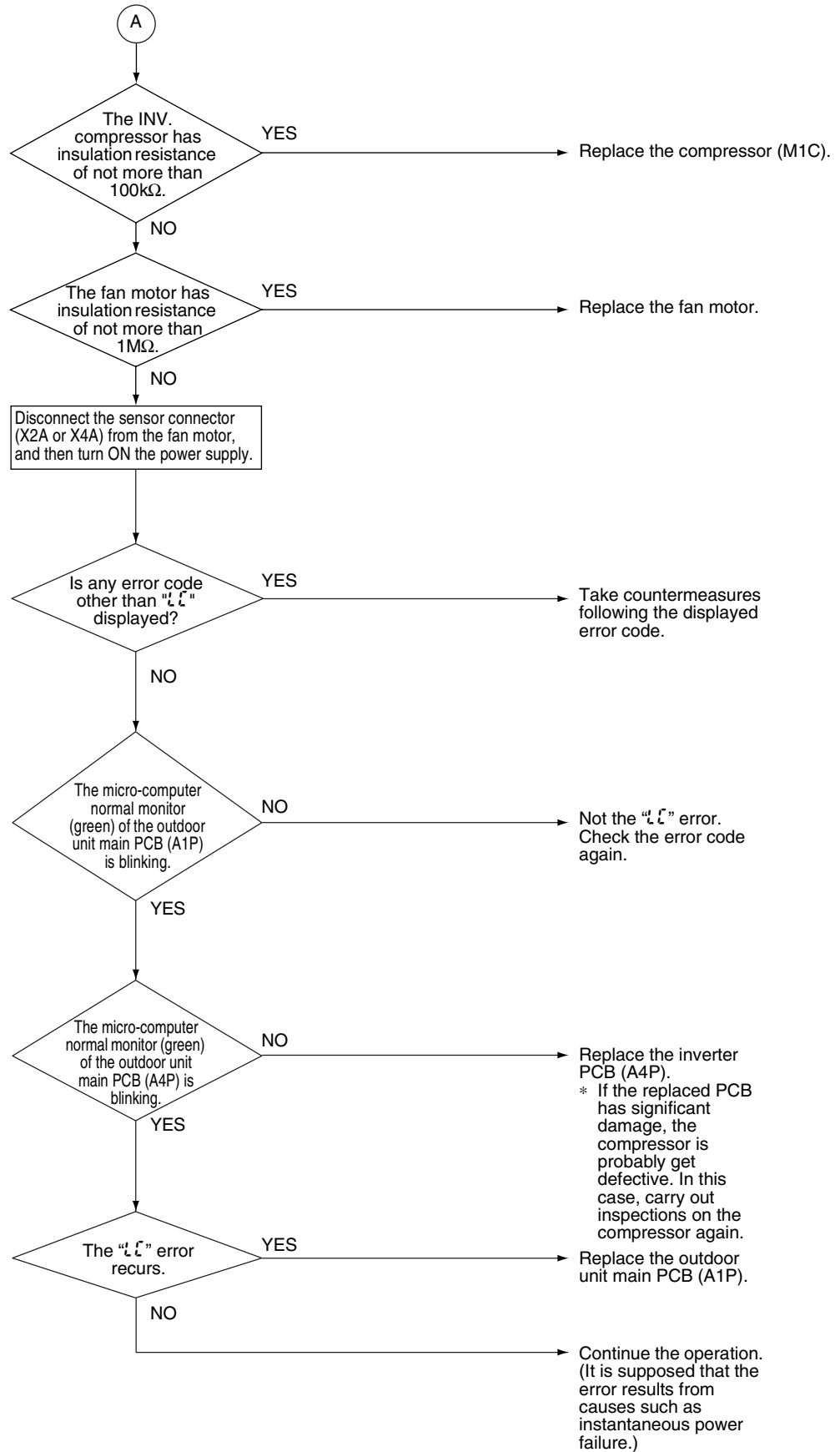
Troubleshooting

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



*1. List of Inverter PCB

	Applicable Models
PC0509-1	RTSQ8 ~ 16PA
	BTSQ20P



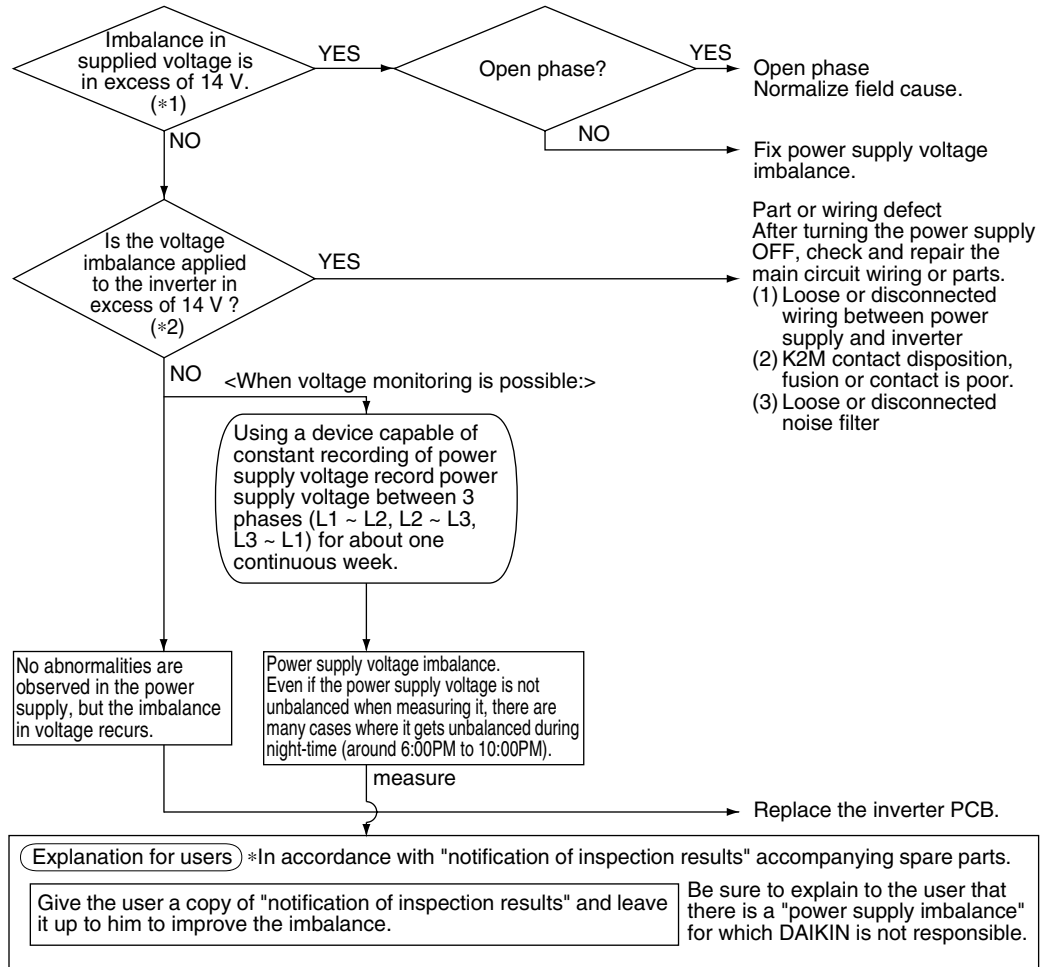
4.41 Inverter Over-Ripple Protection

Remote Controller Display	P1
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	Imbalance in supply voltage is detected in PCB.
Error Decision Conditions	When imbalance in supply voltage is in excess of 14V. * Error is not decided while the unit operation is continued. "P1" will be displayed by pressing the inspection button.
Supposed Causes	<ul style="list-style-type: none"> ■ Open phase ■ Voltage imbalance between phases ■ Defective main circuit capacitor ■ Defective inverter PCB ■ Defect of K2M relay in inverter PCB ■ Improper main circuit wiring

Troubleshooting

**Caution**

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

**Note:**

- *1. Measure voltage at the X1M power supply terminal block.
- *2. Measure voltage at connector R · S · T pins of the diode module inside the inverter PCB while the compressor is running.

4.42 Inverter Radiation Fin Temperature Rise Abnormality

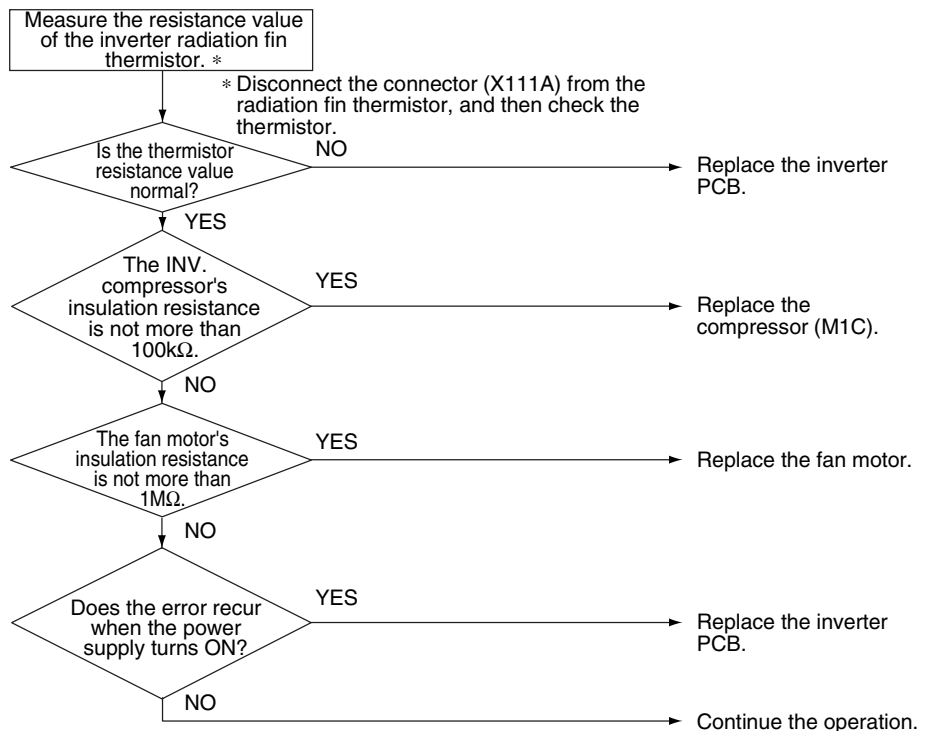
Remote Controller Display	P4
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	Resistance of radiation fin thermistor is detected when the compressor is not operating.
Error Decision Conditions	When the resistance value of thermistor becomes a value equivalent to open or short circuited status * Error is not decided while the unit operation is continued. "P4" will be displayed by pressing the inspection button.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective inverter radiation fin thermistor ■ Defective inverter PCB ■ Defective inverter compressor ■ Defective fan motor

Troubleshooting



Caution

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



4.43 Field Setting Abnormality after Replacing Main PCB or Combination of PCB Abnormality

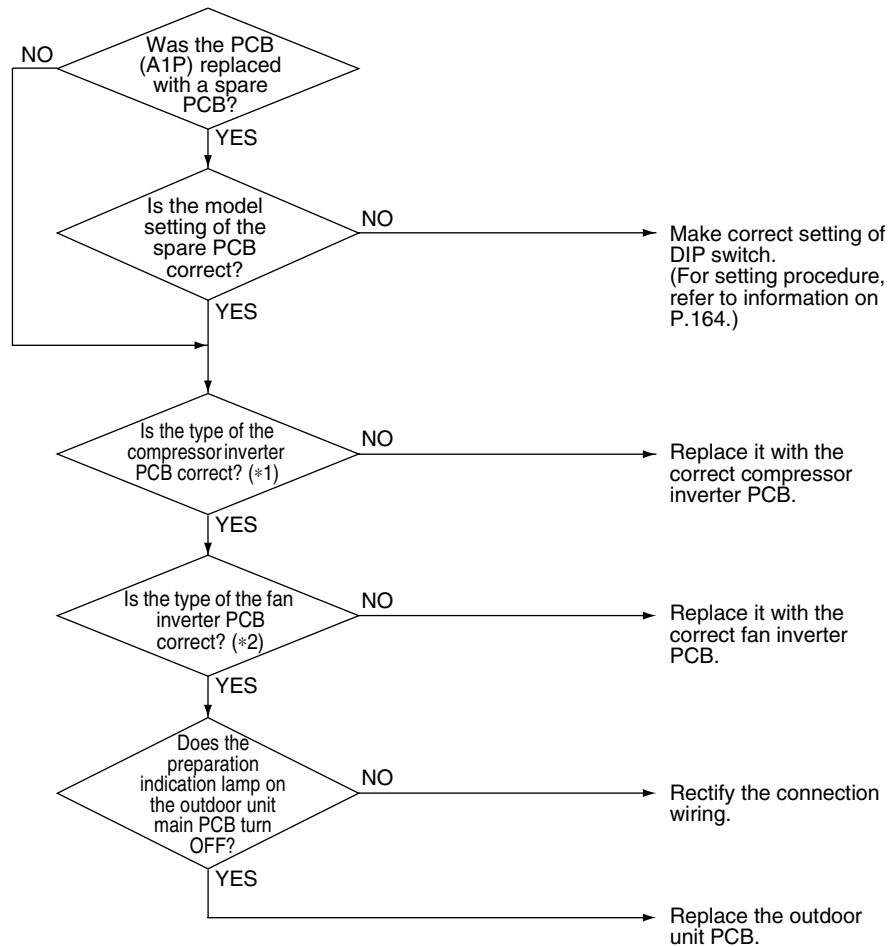
Remote Controller Display	PU
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	This error is detected according to communications with the inverter.
Error Decision Conditions	Make judgement according to communication data on whether or not the type of the inverter PCB is correct.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective (or no) field setting after replacing outdoor unit main PCB ■ Mismatching of type of PCB

Troubleshooting



Caution

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



Note:


*1. List of Compressor Inverter PCBs

Model	Applicable Models
PC0509-1	RTSQ8 ~ 16PA
	BTSQ20P


*2. List of fan Inverter PCBs

Model	Applicable Models
PC0511-1	RTSQ8 · 10 · 12PA
PC0511-3 PC0511-4	RTSQ14PA
PC0511-1 PC0511-12	RTSQ16PA

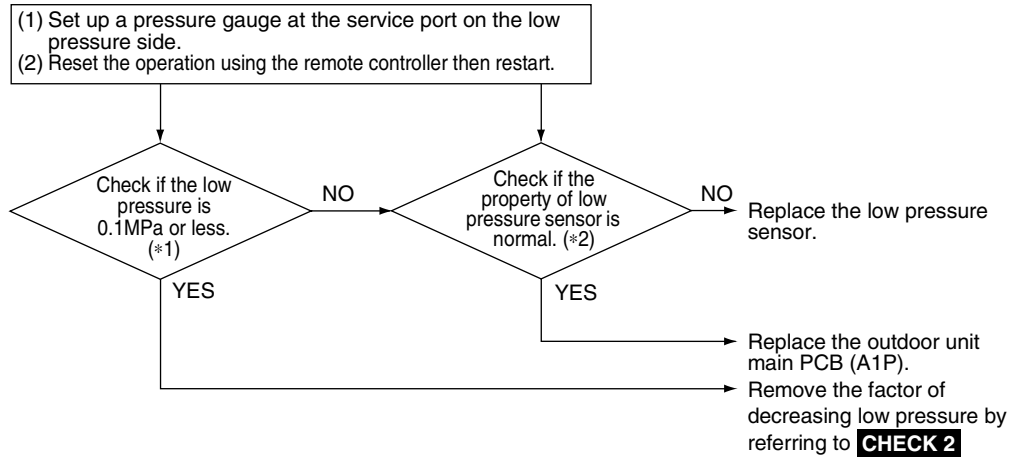
4.44 Refrigerant Shortage Alert

Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1
Method of Error Detection	Detect refrigerant shortage based on the temperature difference between low pressure or suction pipe and heat exchanger.
Error Decision Conditions	<p>[In cooling mode] Low pressure becomes 0.1MPa or less.</p> <p>[In heating mode] The superheated degree of suction gas becomes 20°C or more. $SH = T_s - T_e$ Ts: Suction pipe temperature detected by thermistor Te: Saturated temperature corresponding to low pressure *Error is not determined. The unit continues the operation.</p>
Supposed Causes	<ul style="list-style-type: none"> ■ 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 the power switch before connecting or disconnecting connectors, or parts may be damaged.

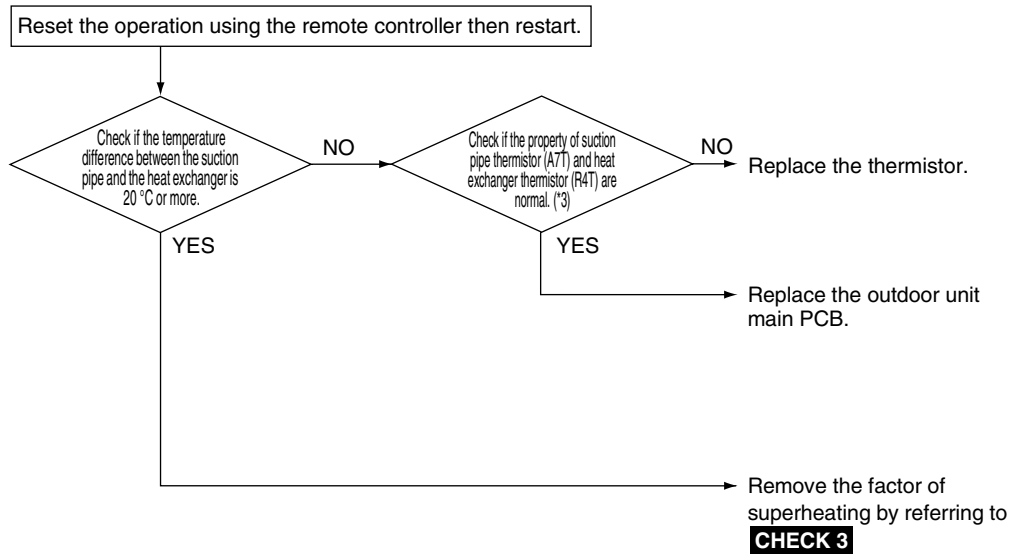
In cooling mode



 **Note:**

- *1: Check the low pressure value by using pressure gauge in operation.
- *2: Compare the actual measurement value by pressure sensor with the value by the pressure gauge.
(To gain actual measurement value by pressure sensor, measure the voltage at the connector [between (2)-(3)] and then convert the value into pressure **CHECK 12** .)

In heating mode



 **Note:**

- *3: Compare the thermistor resistance value with the value on the surface thermometer.



CHECK 2 Refer to P.305.



CHECK 3 Refer to P.306.



CHECK 12 Refer to P.315.

4.45 Reverse Phase, Open Phase

Remote
Controller
Display



Applicable
Models

Outdoor Unit: RTSQ8~16PAY1

Method of Error
Detection

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

Error Decision
Conditions

When a significant phase difference is made between phases.

Supposed
Causes

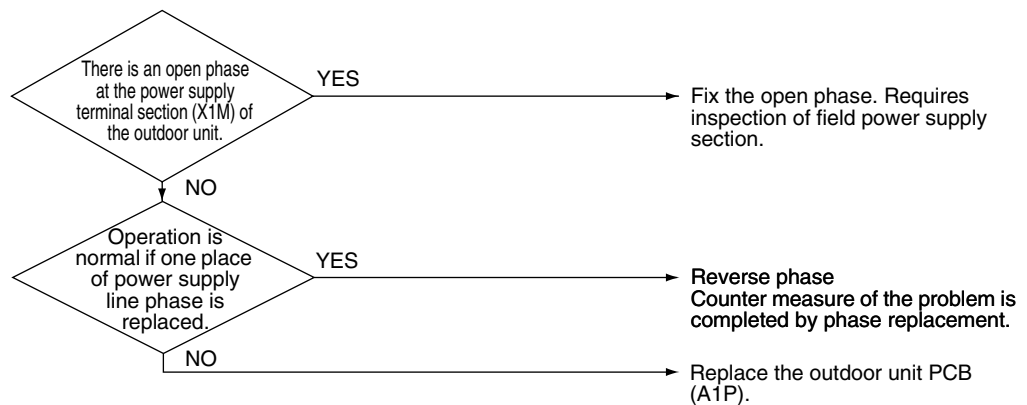
- Power supply reverse phase
- Power supply open phase
- Defective outdoor unit PCB (A1P)

Troubleshooting




Caution


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

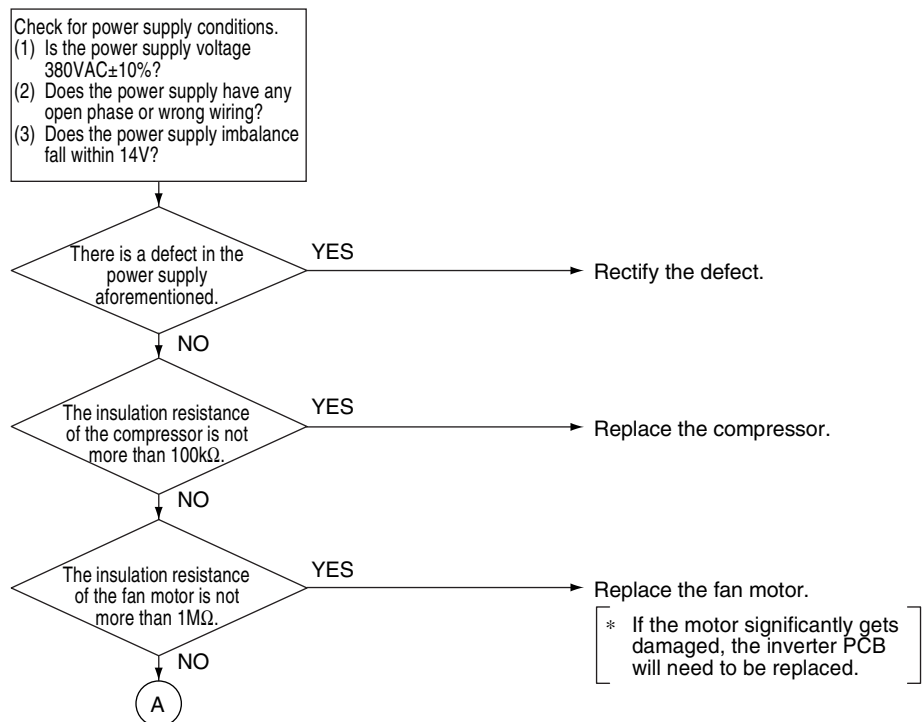


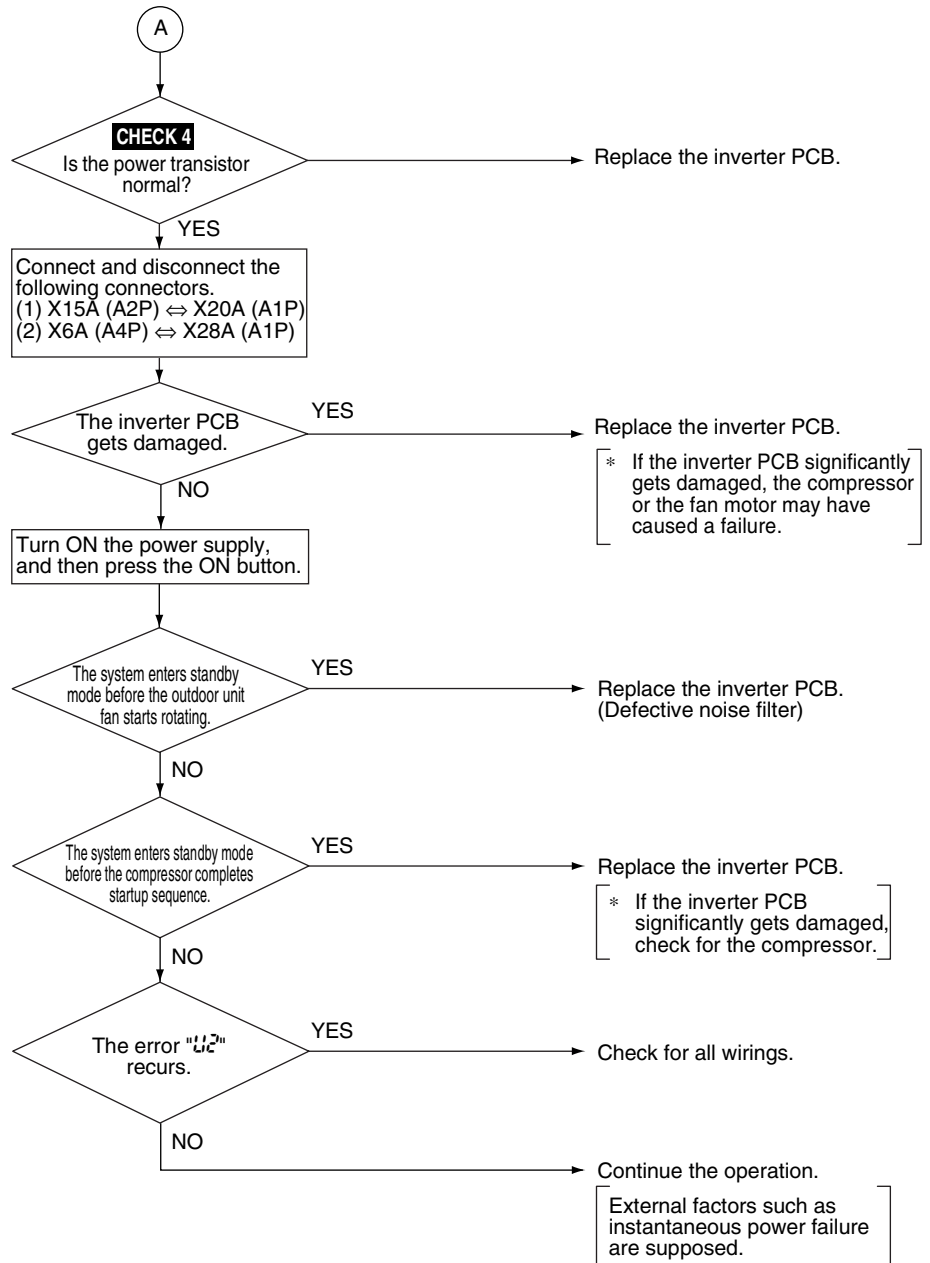
4.46 Power Supply Insufficient or Instantaneous Error

Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	Detection of voltage of main circuit capacitor built in the inverter and power supply voltage.
Error Decision Conditions	When the voltage aforementioned is not less than 780V or not more than 320V, or when the current-limiting voltage does not reach 200V or more or exceeds 740V.
Supposed Causes	<ul style="list-style-type: none"> ■ Power supply insufficient ■ Instantaneous power failure ■ Open phase ■ Defective inverter PCB ■ Defective outdoor unit control PCB ■ Defective compressor ■ Main circuit wiring defect ■ Defective fan motor ■ Defective connection of signal cable

Troubleshooting

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





CHECK 4 Refer to P.307.

4.47 Check Operation is not Executed

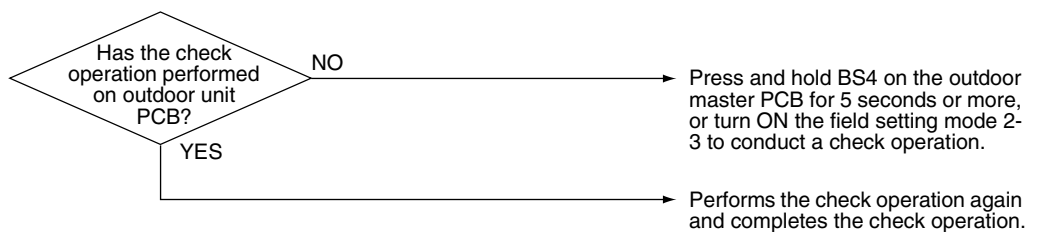
Remote Controller Display	U3
Applicable Models	Outdoor Unit: RTSQ8~16PAY1
Method of Error Detection	Check operation is executed or not executed
Error Decision Conditions	Error is decided when the unit starts operation without check operation.
Supposed Causes	<ul style="list-style-type: none"> ■ Check operation is not executed.

Troubleshooting



Caution

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



4.48 Transmission Error between Indoor Units and Outdoor Units

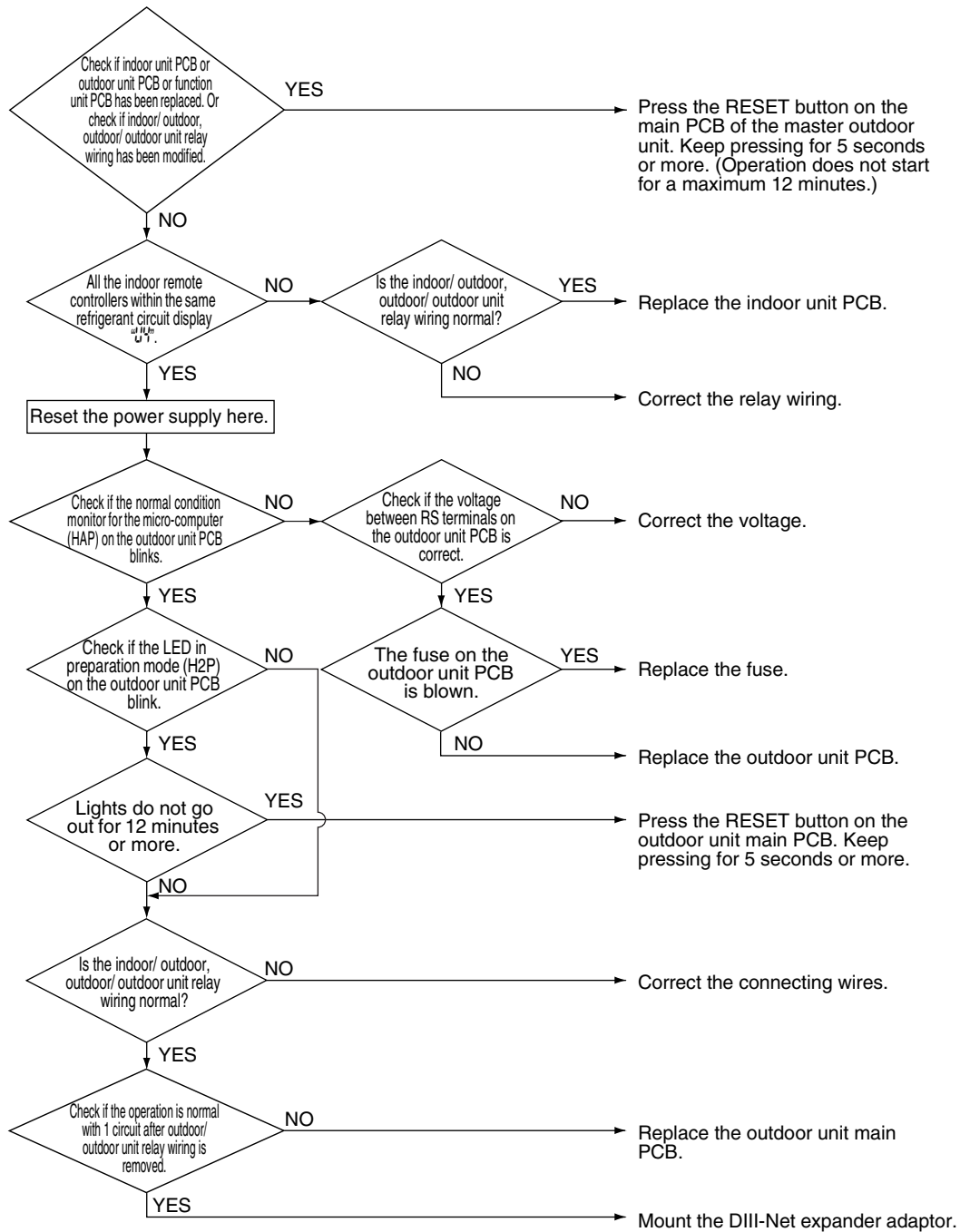
Remote Controller Display	04
Applicable Models	All indoor unit models Outdoor Unit: RTSQ8~16PAY1
Method of Error Detection	Check if the transmission between indoor unit, outdoor unit and function unit is correctly executed using micro-computer.
Error Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	<ul style="list-style-type: none"> ■ Indoor to outdoor, outdoor to outdoor relay wiring F1, F2 disconnection, short circuit or wrong wiring ■ Outdoor unit power supply is OFF ■ System address does not match ■ Defective outdoor unit PCB ■ Defective indoor unit PCB

Troubleshooting



Caution


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

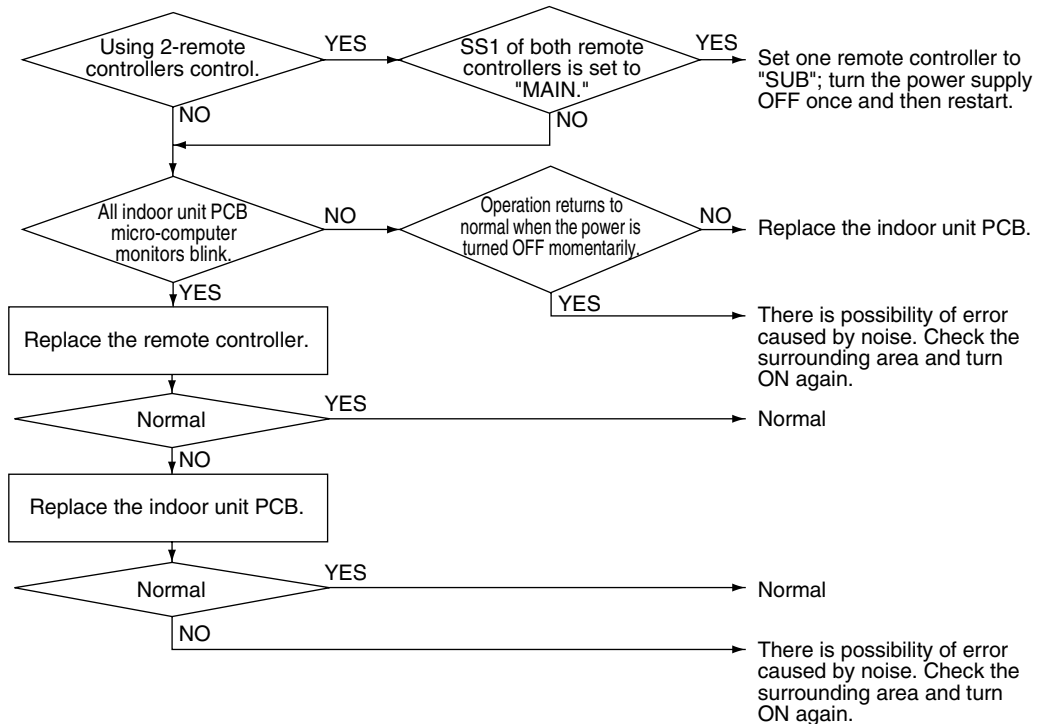


4.49 Transmission Error between Remote Controller and Indoor Unit


Remote Controller Display	05
Applicable Models	All indoor unit models
Method of Error Detection	Micro-computer checks transmission between indoor unit and remote controller is normal.
Error Decision Conditions	Normal transmission does not continue for specified period.
Supposed Causes	<ul style="list-style-type: none"> ■ Error of indoor unit remote controller transmission ■ Connection of 2 main remote controllers (when using 2 remote controllers) ■ Defective indoor unit PCB ■ Defective remote controller PCB ■ Transmission error caused by noise

Troubleshooting

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



4.50 Transmission Error (Across Outdoor Units and Function Units)

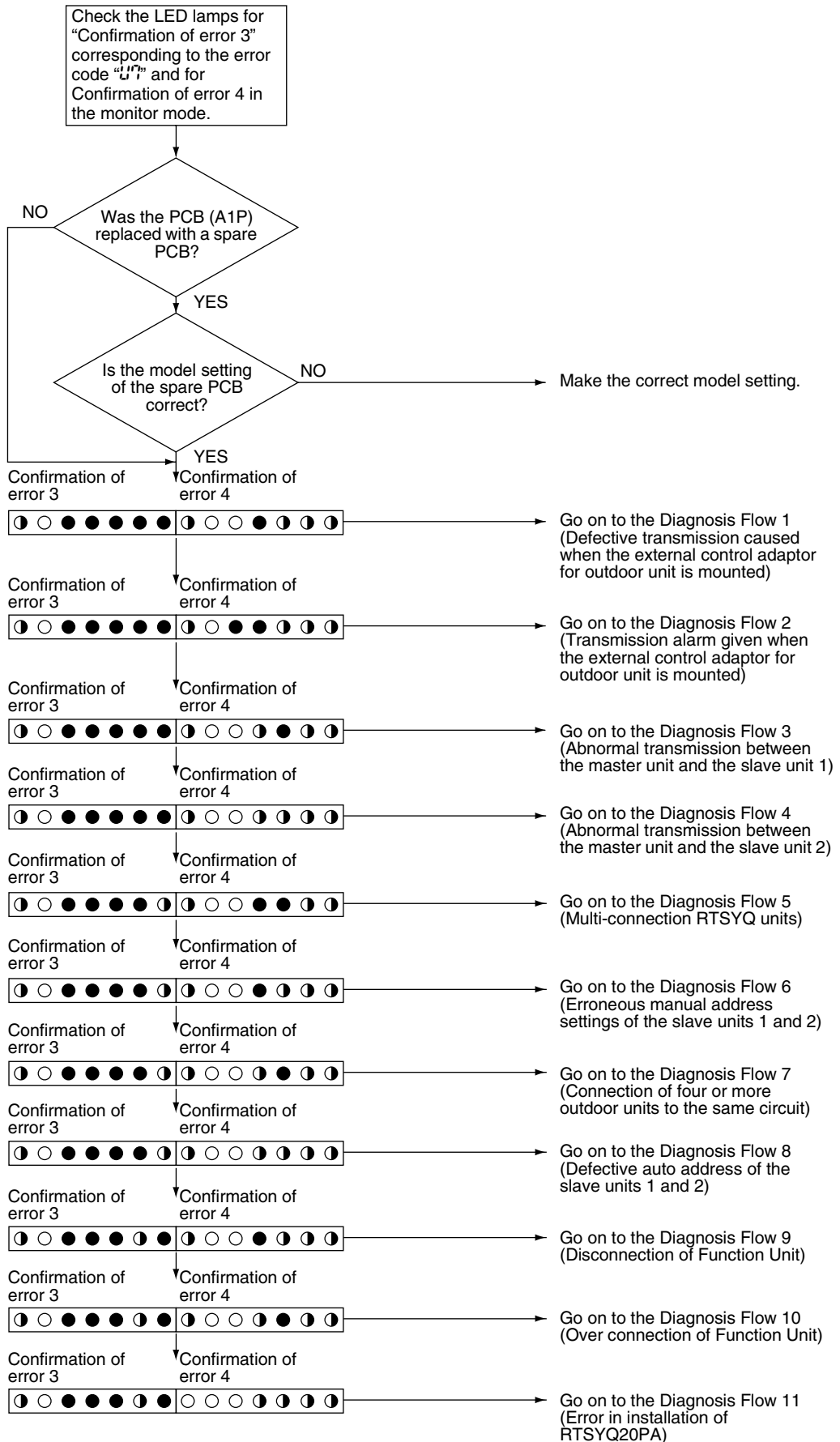
Remote Controller Display	
Applicable Models	Outdoor Unit: RTSQ8~16PAY1 Function Unit: BTSQ20PY1
Method of Error Detection	Micro-computer checks if transmission across outdoor units and between outdoor units and function units.
Error Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	<ul style="list-style-type: none"> ■ Connection error in transmission wires between outdoor unit and external control adaptor for outdoor unit ■ Connection error in transmission wires across outdoor units and between outdoor units and function units ■ Setting error in switching cooling/ heating ■ Unified 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 the power switch before connecting or disconnecting connectors, or parts may be damaged.

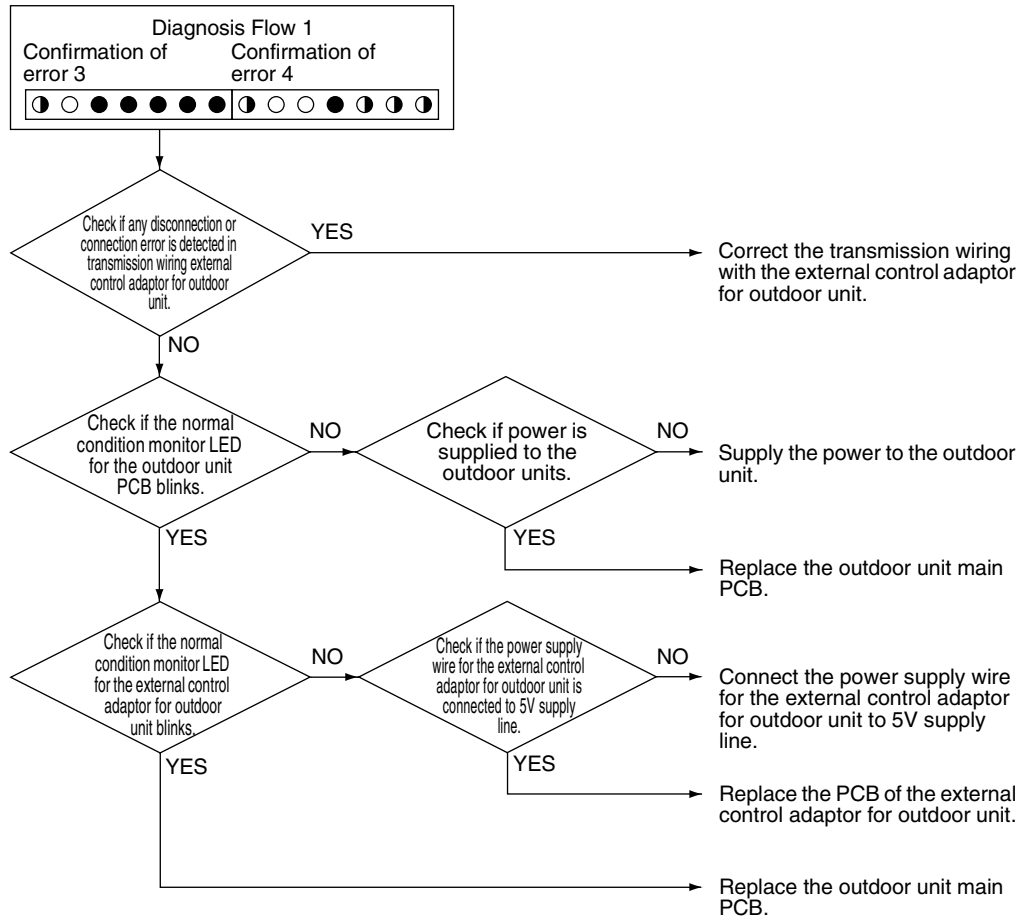


Troubleshooting




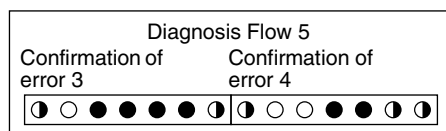
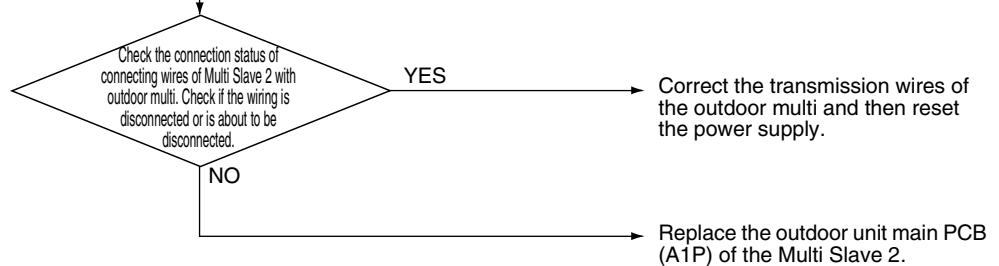
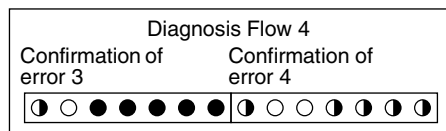
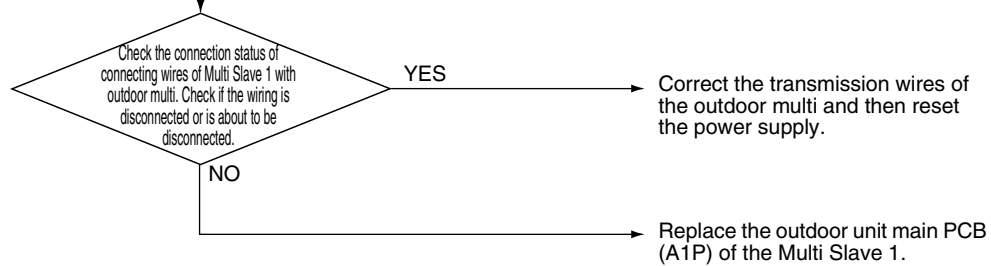
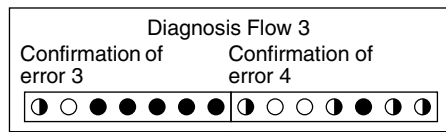
Caution

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




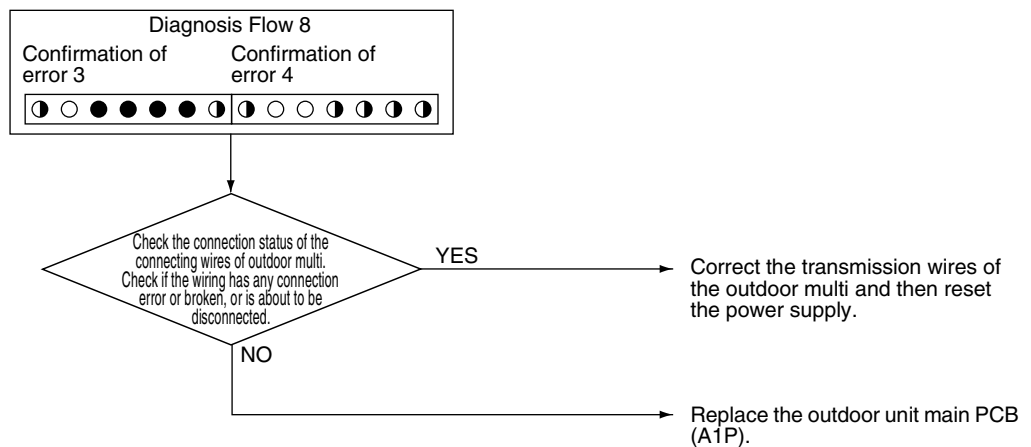
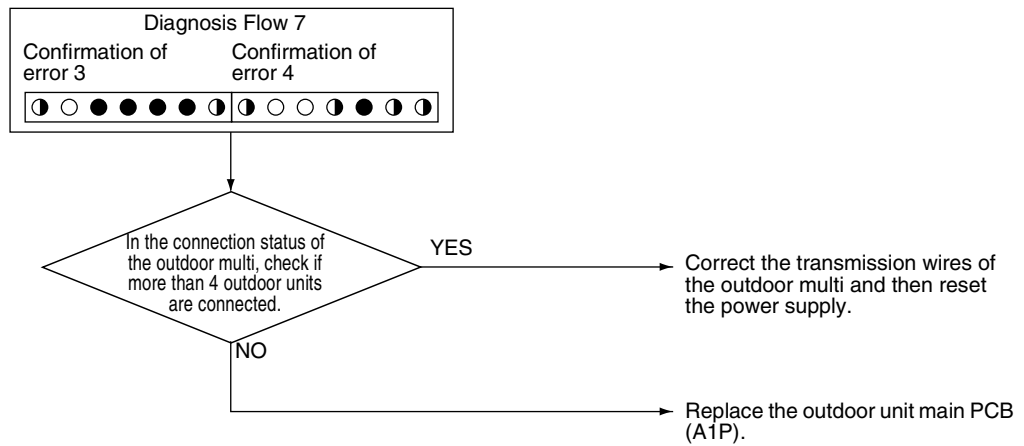
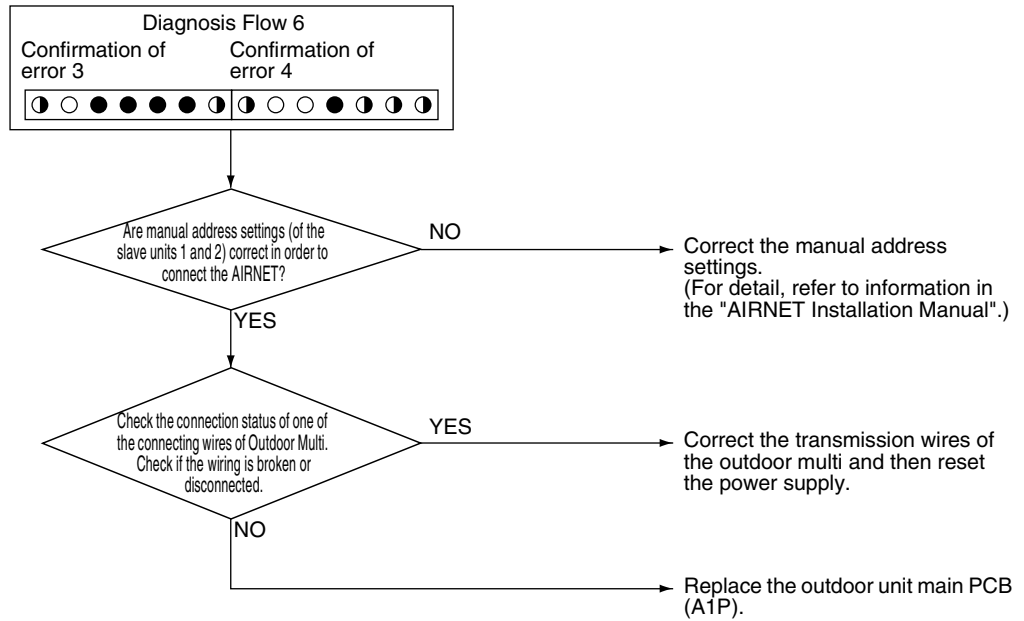
Troubleshooting

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




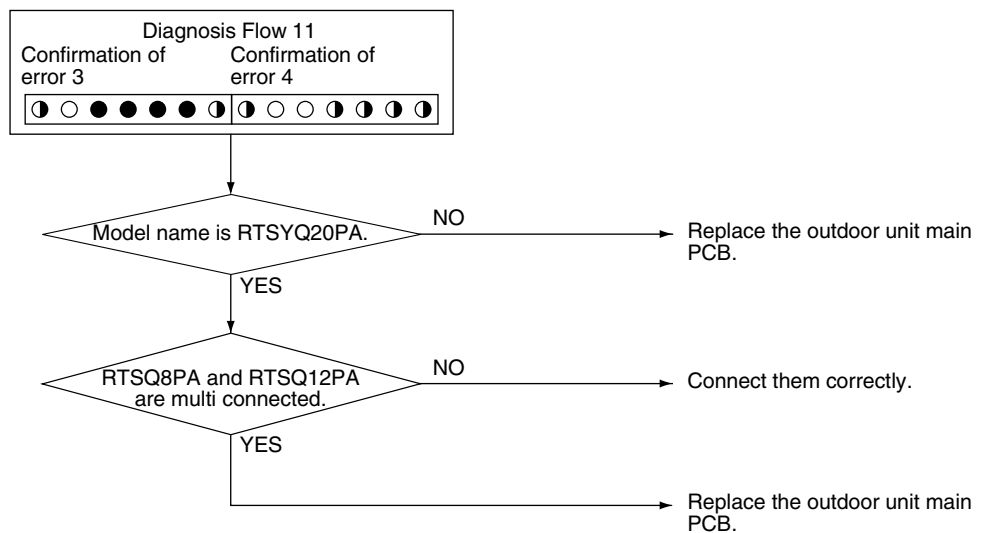
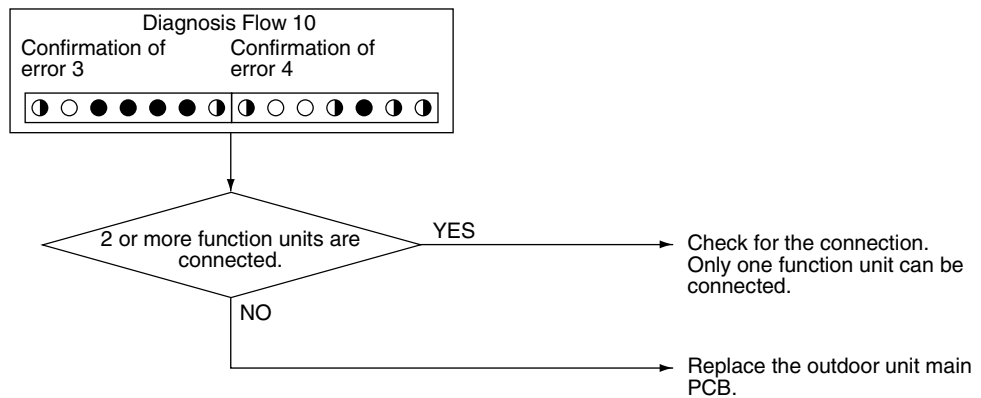
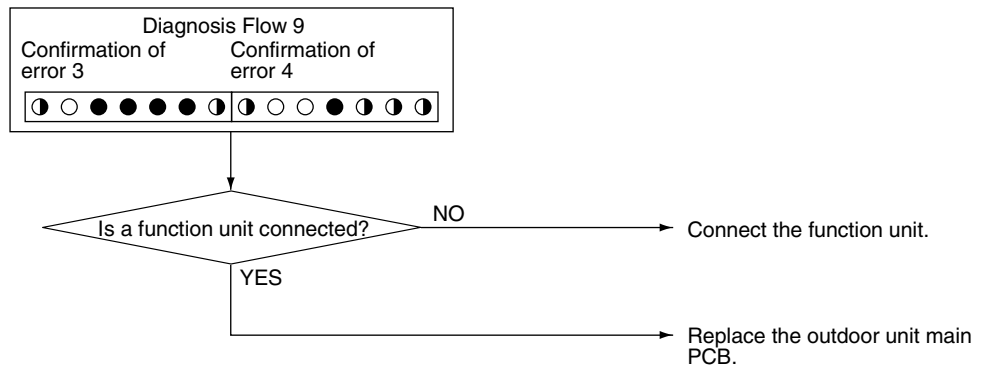
Troubleshooting

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



Troubleshooting

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



4.51 Transmission Error between Main and Sub Remote Controllers

Remote Controller Display



Applicable Models

All indoor unit models

Method of Error Detection

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

Error Decision Conditions

Normal transmission does not continue for specified period.

Supposed Causes

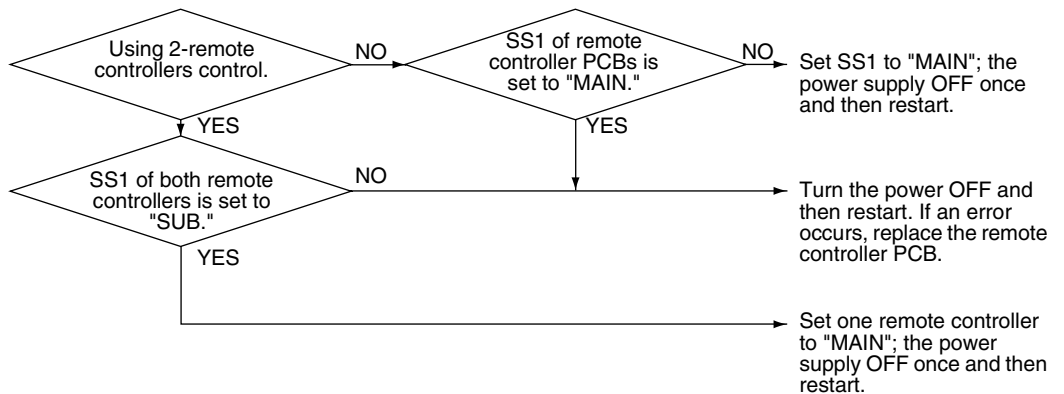
- Transmission error between main and sub remote controller
- Connection between sub remote controllers
- Defective remote controller PCB

Troubleshooting



Caution

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



4.52 Transmission Error between Indoor Units and Outdoor Units in the Same System

Remote Controller Display

U9

Applicable Models

All indoor unit models
Outdoor Unit: RTSQ8~16PAY1

Method of Error Detection

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

Error Decision Conditions

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

Supposed Causes

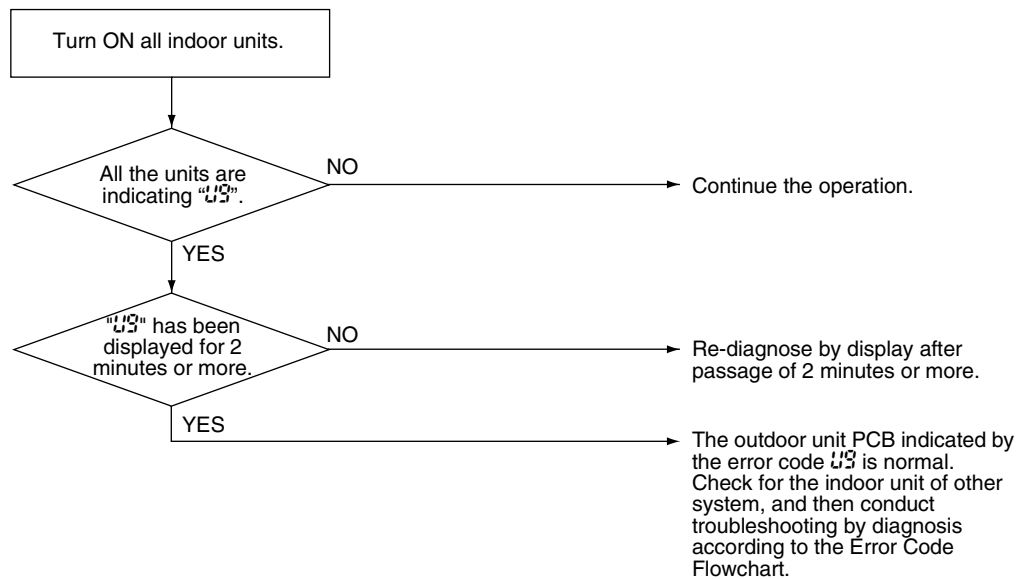
- Transmission error within or outside of other system
- Electronic expansion valve abnormality in indoor unit of other system
- Defective PCB of indoor unit in other system
- Improper connection of transmission wiring between indoor and outdoor unit

Troubleshooting



Caution

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



4.53 Improper Combination of Indoor and Outdoor Units, Indoor Units and Remote Controller

Remote Controller Display



Applicable Models

All indoor unit models
Outdoor Unit: RTSQ8~16PAY1
Function Unit: BTSQ20PY1

Method of Error 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

Error Decision Conditions

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

Supposed Causes

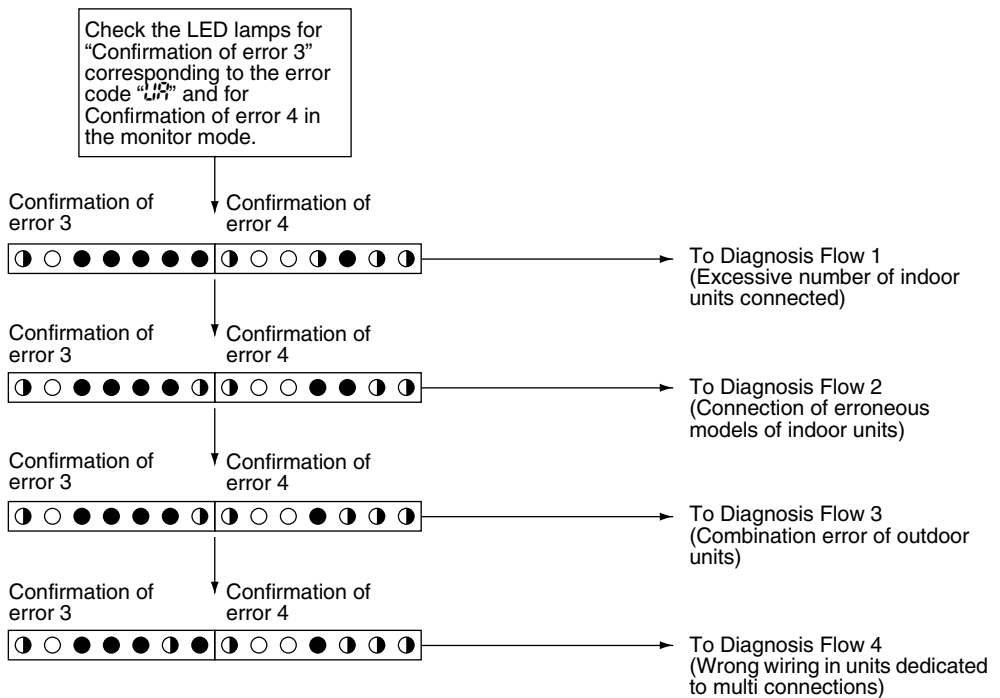
- Excess of connected indoor units
- Defective outdoor unit PCB (A1P)
- Mismatching of the refrigerant type of indoor and outdoor unit.
- Setting of outdoor unit PCB was not conducted after replacing to spare PCB.

Troubleshooting



Caution

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

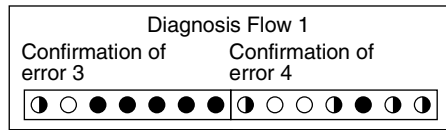


Troubleshooting



Caution

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



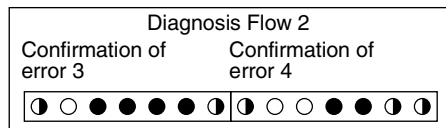
The number of indoor units connected to the same refrigerant circuit system should not be more than 64 units.

YES

Replace the outdoor unit main PCB.

NO

The number of indoor units exceeds the standard. Check the connection to correct.



Check if the refrigerant type of the outdoor unit corresponds to that of the indoor unit.

YES

Replace the outdoor unit main PCB.

- With single systems, replace the control PCB 1 (A1P).
- With multi systems, replace the outdoor unit main PCB (A1P).

NO

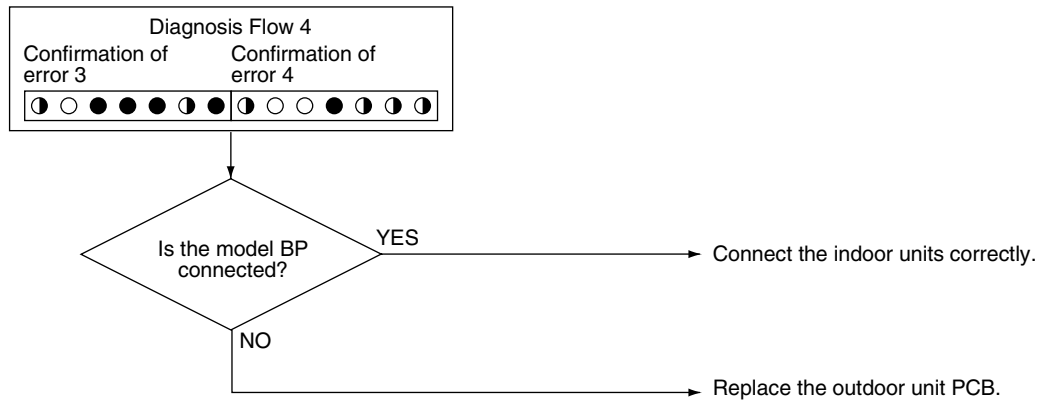
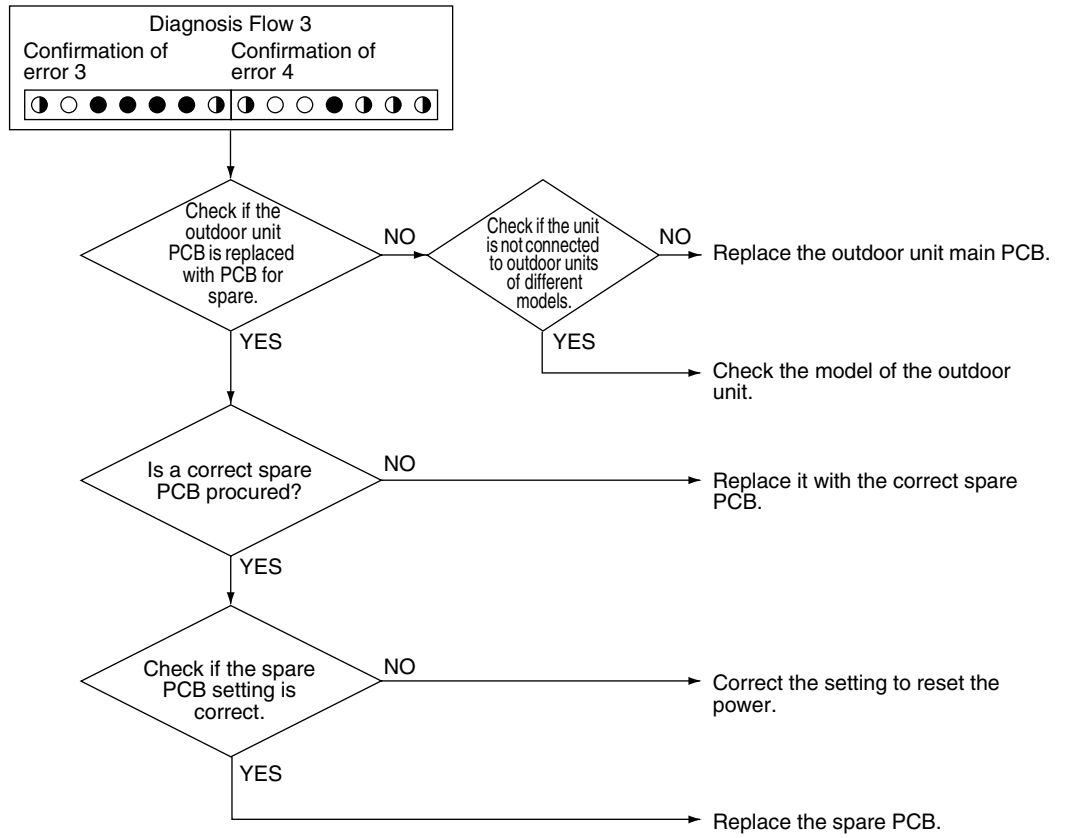
Match the refrigerant types of the outdoor unit and the indoor unit.

Troubleshooting




Caution

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



4.54 Centralized Address Duplication

Remote Controller Display	
Applicable Models	All indoor unit models
Method of Error Detection	The principal indoor unit detects the same address as that of its own on any other indoor unit.
Error Decision Conditions	The error decision is made as soon as the abnormality aforementioned is detected.
Supposed Causes	<ul style="list-style-type: none"> ■ Address duplication of centralized controller ■ Defective indoor unit PCB
Troubleshooting	



Caution

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

The centralized address is duplicated.



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

4.55 Transmission Error between Centralized Control Equipment and Indoor Unit

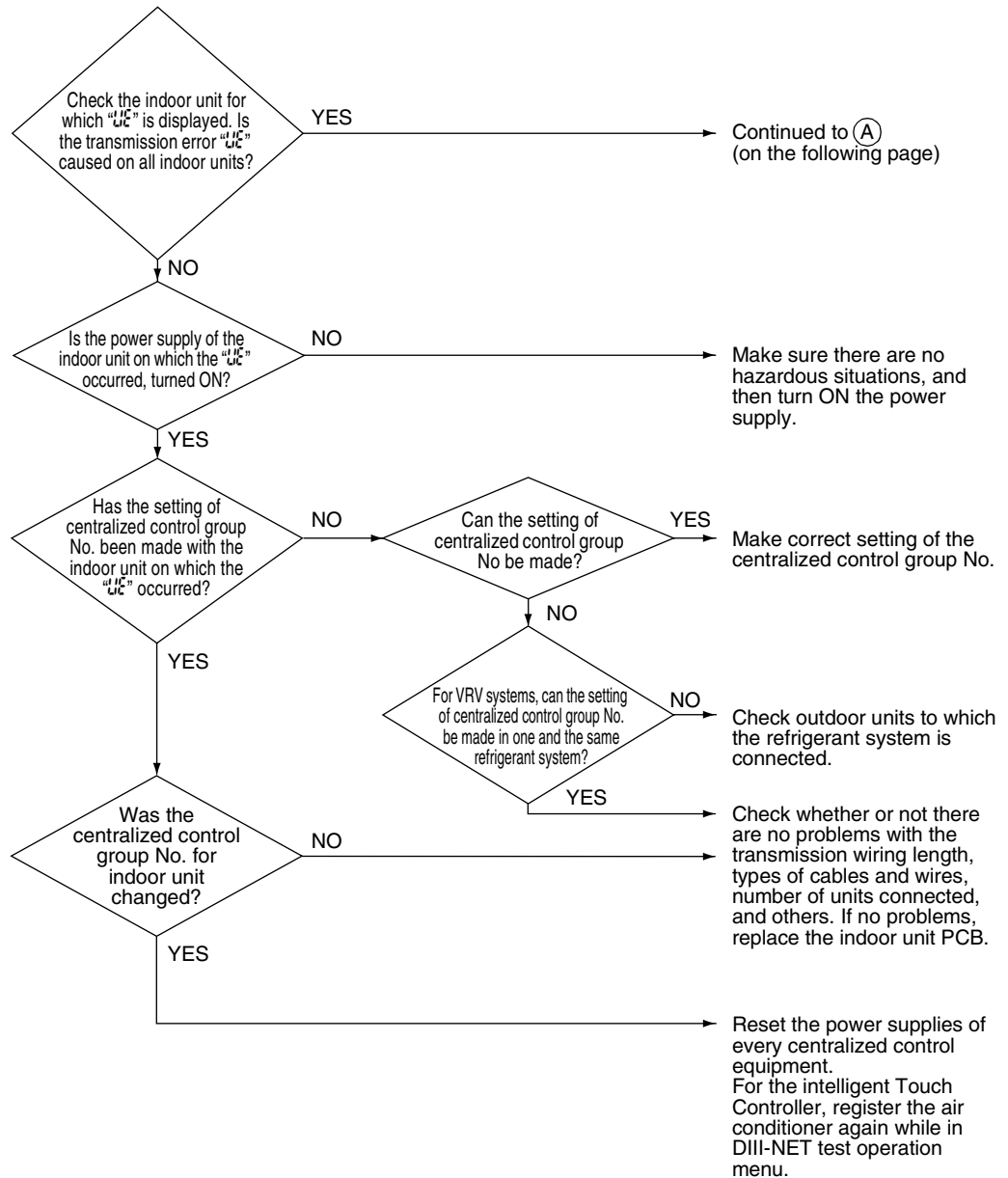
Remote Controller Display	UE
Applicable Models	All indoor unit models intelligent Touch Controller Centralized control equipment Schedule timer
Method of Error Detection	Micro-computer checks if transmission between indoor unit and centralized control equipment is normal.
Error Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	<ul style="list-style-type: none"> ■ Transmission error between centralized control equipment and indoor unit ■ Connector for setting master controller is disconnected. (or disconnection of connector for independent / combined use changeover switch.) ■ Defective PCB for centralized control equipment ■ Defective indoor unit PCB

Troubleshooting

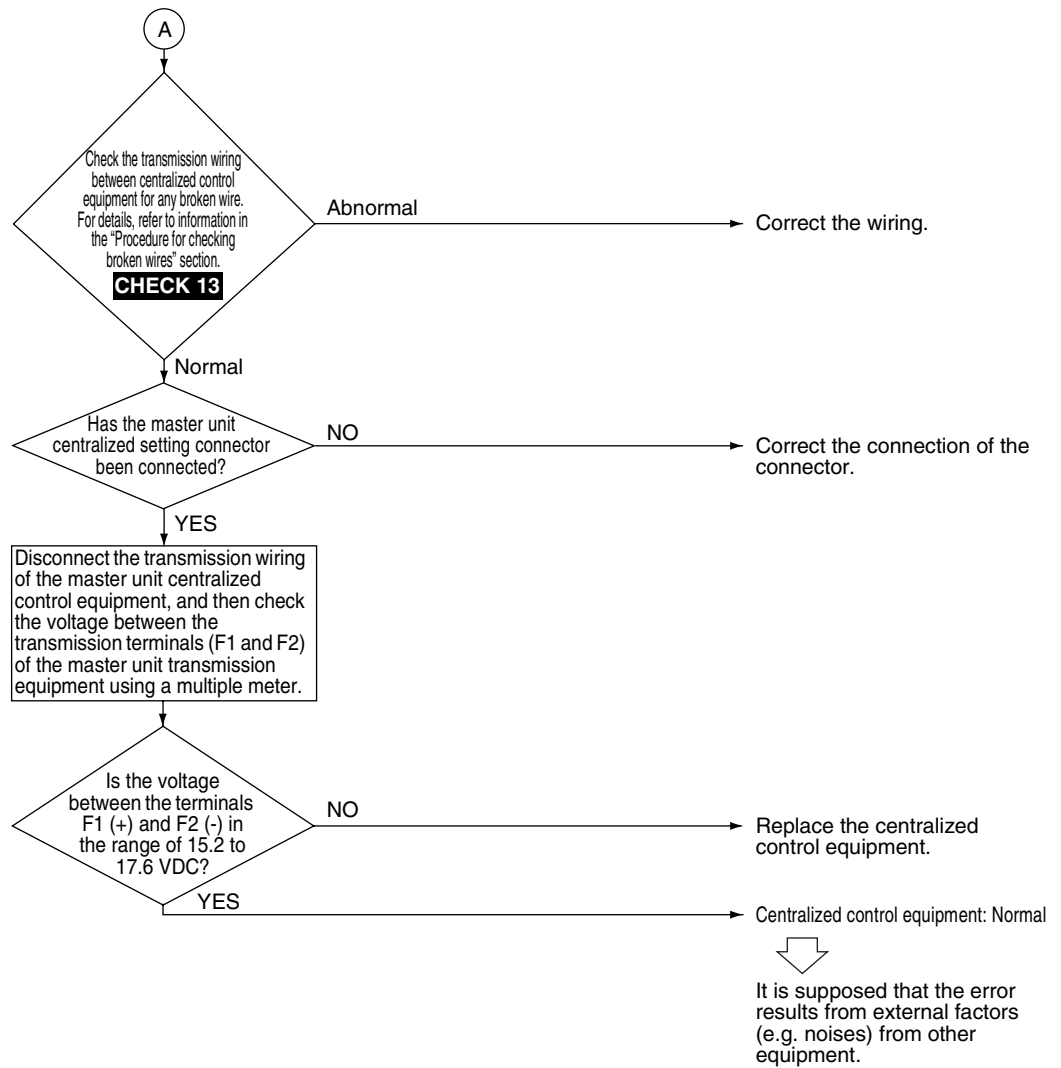


Caution

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




Troubleshooting

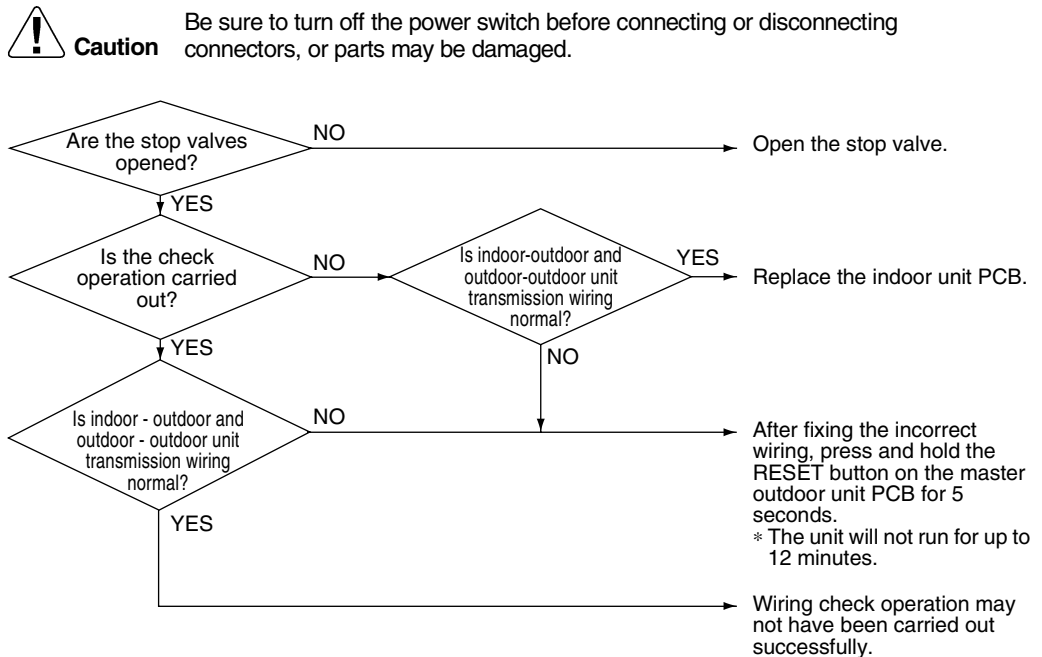


CHECK 13 Refer to P.316.


4.56 System is not Set yet

Remote Controller Display	
Applicable Models	All indoor unit models Outdoor Unit: RTSQ8~16PAY1
Method of Error Detection	On check operation, the number of indoor units in terms of transmission is not corresponding to that of indoor units that have made changes in temperature.
Error Decision Conditions	The error is determined as soon as the abnormality aforementioned is detected through checking the system for any wrong connection of units on the check operation.
Supposed Causes	<ul style="list-style-type: none"> ■ Improper connection of transmission wiring between indoor-outdoor units and outdoor-outdoor units ■ Failure to execute check operation ■ Defective indoor unit PCB ■ Stop valve is not opened

Troubleshooting



4.57 System Abnormality, Refrigerant System Address Undefined

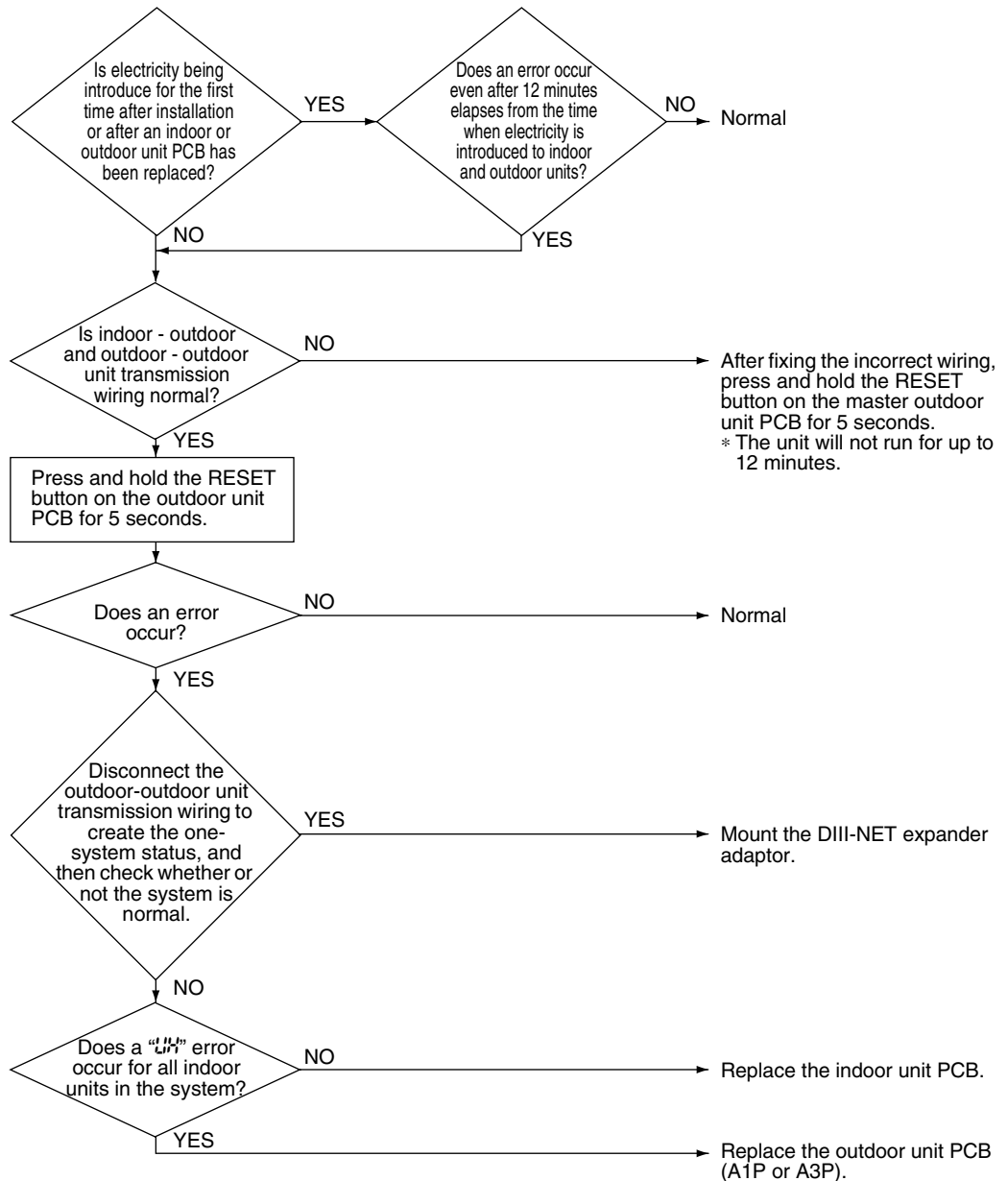
Remote Controller Display	
Applicable Models	All indoor unit models Outdoor Unit: RTSQ8~16PAY1
Method of Error Detection	Detect an indoor unit with no address setting.
Error Decision Conditions	The error decision is made as soon as the abnormality aforementioned is detected.
Supposed Causes	<ul style="list-style-type: none"> ■ Improper connection of transmission wiring between indoor-outdoor units and outdoor-outdoor units ■ Defective indoor unit PCB ■ Defective outdoor unit main PCB (A1P or A3P)

Troubleshooting



Caution

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



Note

*1: Check the correct wiring “indoor-outdoor” and “outdoor-outdoor” by Installation manual.

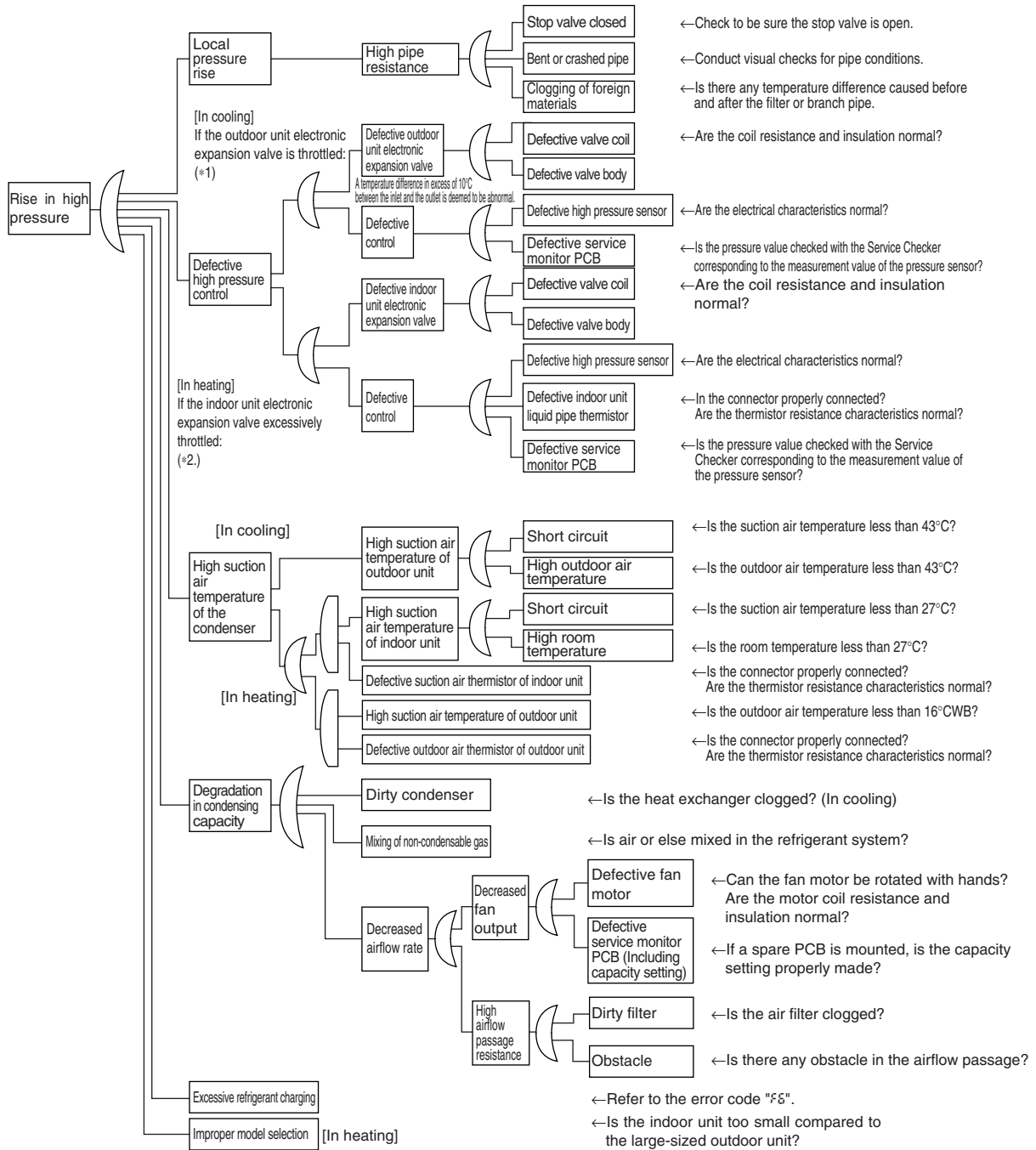
*2: What is Auto Address?

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).

4.58 Check

CHECK 1 Check for Causes of Rise in High Pressure

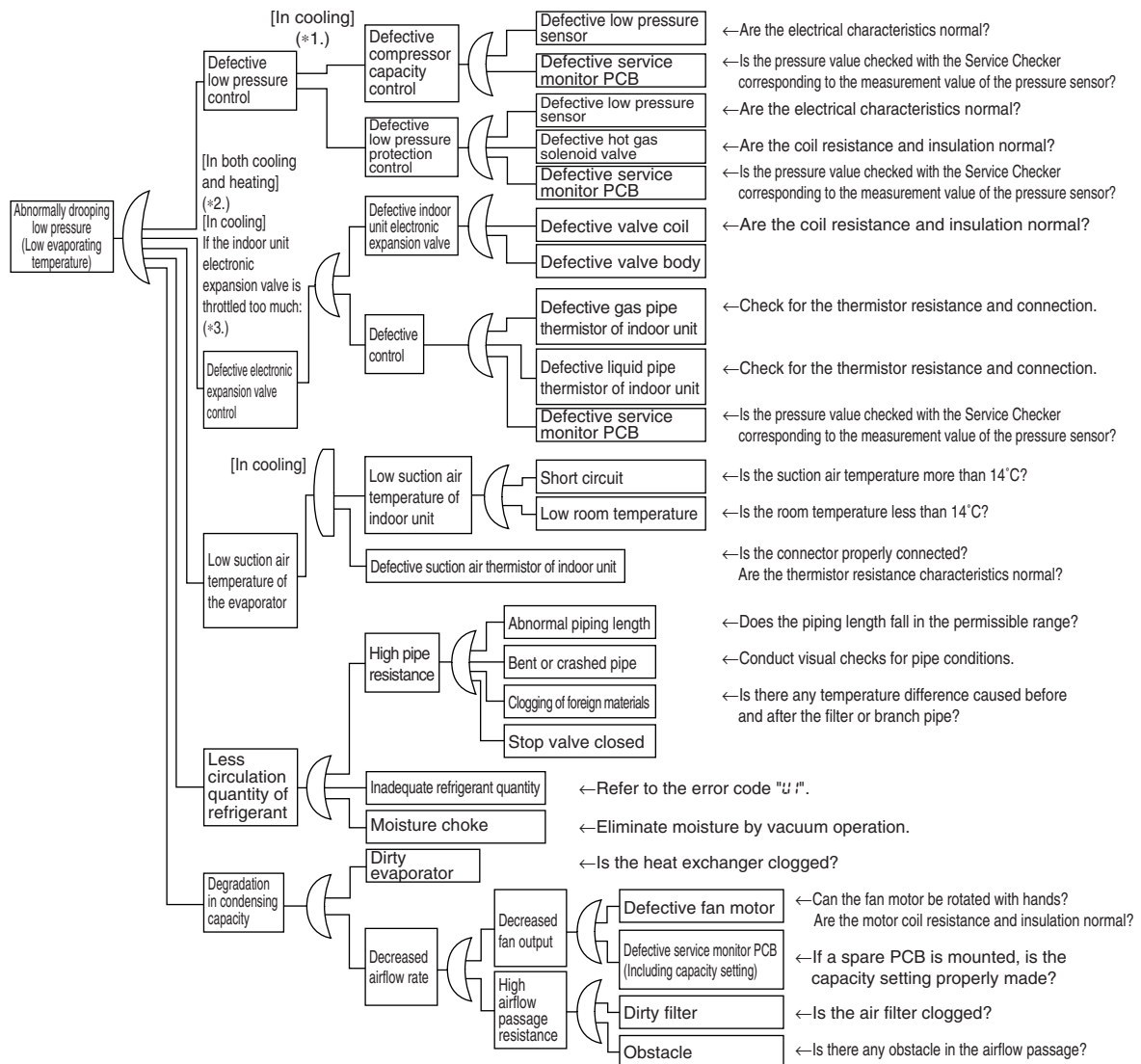
Referring to the Fault Tree Analysis (FTA) shown below, probe the defective points.



Note: *1. In cooling, it is normal if the outdoor unit electronic expansion valve (EVM) is fully open.
 *2. In heating, the indoor unit electronic expansion valve is used for "subcooling degree control".

CHECK 2 Check for Causes of Drop in Low Pressure

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

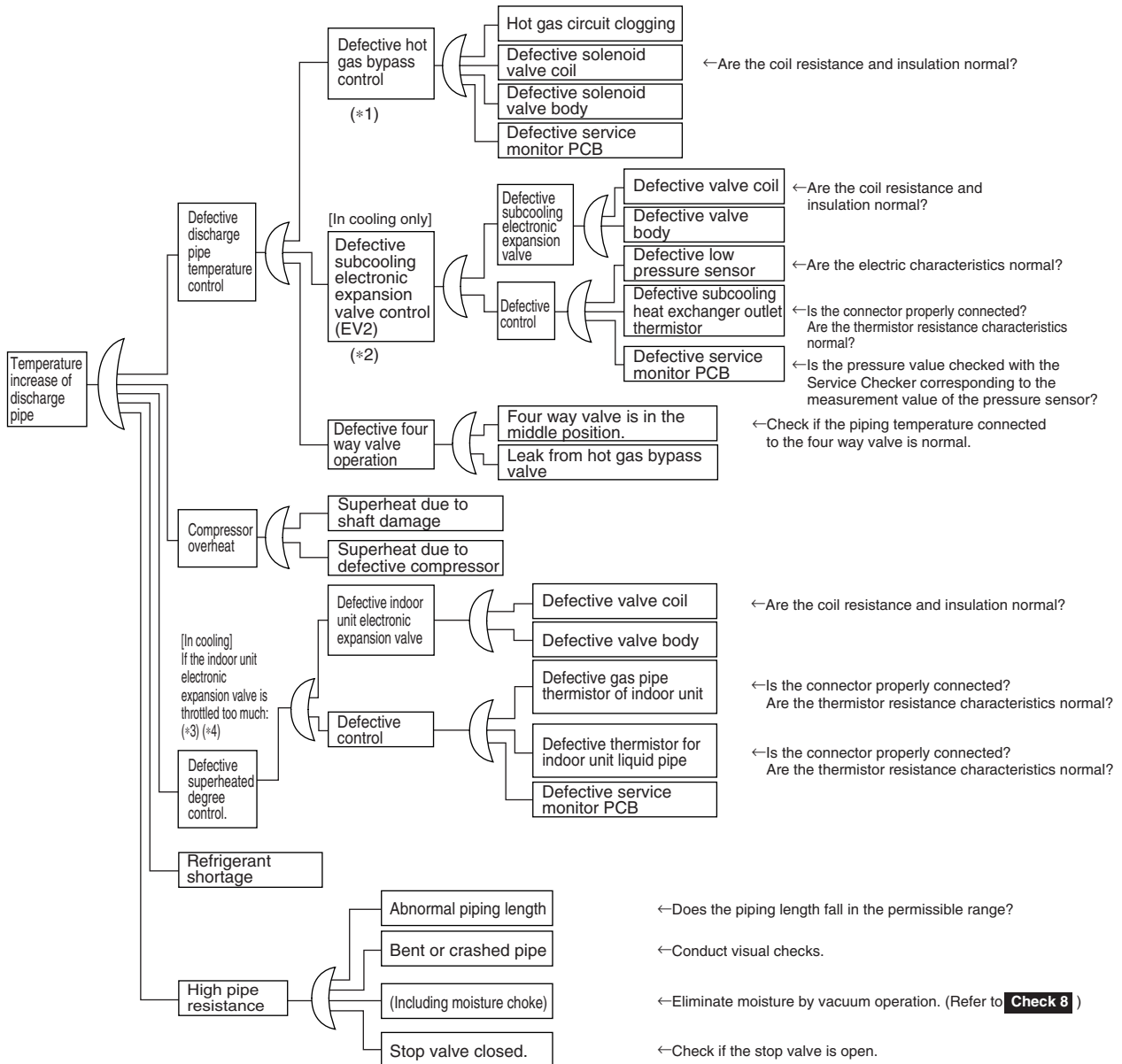


Note:

- *1. For details of compressor capacity control while in cooling, refer to "Compressor PI control".
- *2. The "low pressure protection control" includes low pressure protection control and hot gas bypass control.
- *3. In cooling, the indoor unit electronic expansion valve is used for "superheated degree control".

CHECK 3 Check the Factors of Overheat Operation

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



Note:

- *1. Refer to “Low pressure protection control” for hot gas bypass control.
- *2. Refer to “Subcooling electronic expansion valve control”.
- *3. “Superheating temperature control” in cooling is conducted by indoor unit electronic expansion valve.
- *4. Judgement criteria of superheat operation:
 - ① Suction gas superheated degree: 10°C and over.
 - ② Discharge gas superheated degree: 45°C and over, except immediately after compressor starts up or is running under drooping control.
 (Use the above values as a guide. Depending on the other conditions, the unit may be normal despite the values within the above range.)

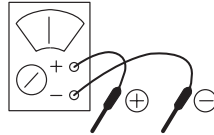
CHECK 4 Power Transistor Check

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]

- 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.

[Point of Measurement and Judgement Criteria]

- Turn OFF the power supply. Then, after a lapse of 10 minutes or more, make measurement of resistance.

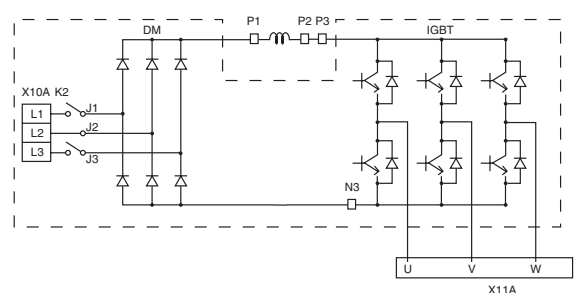
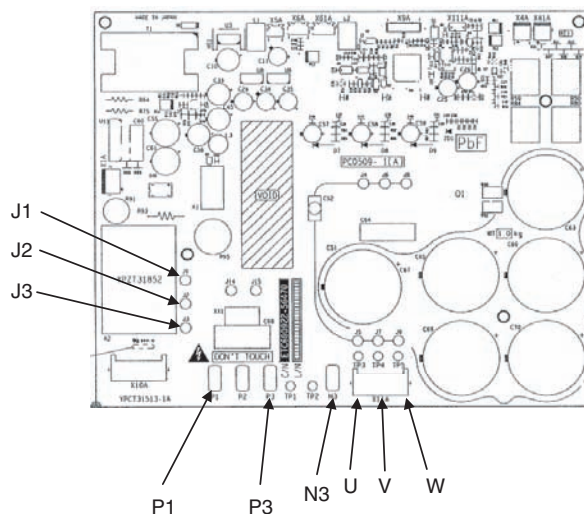
When using the analog type of multiple tester, make measurement in resistance measurement mode in the x1kΩ range.

No.	Measuring point		Judgement Criteria	Remarks
	+	-		
1	P2	U	2 ~ 15kΩ	Due to condenser charge and so on, resistance measurement may require some time.
2	P2	V		
3	P2	W		
4	U	P2	15kΩ and more (including ∞)	
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		

When using the digital type of multiple tester, make measurement in diode check mode (→|←).

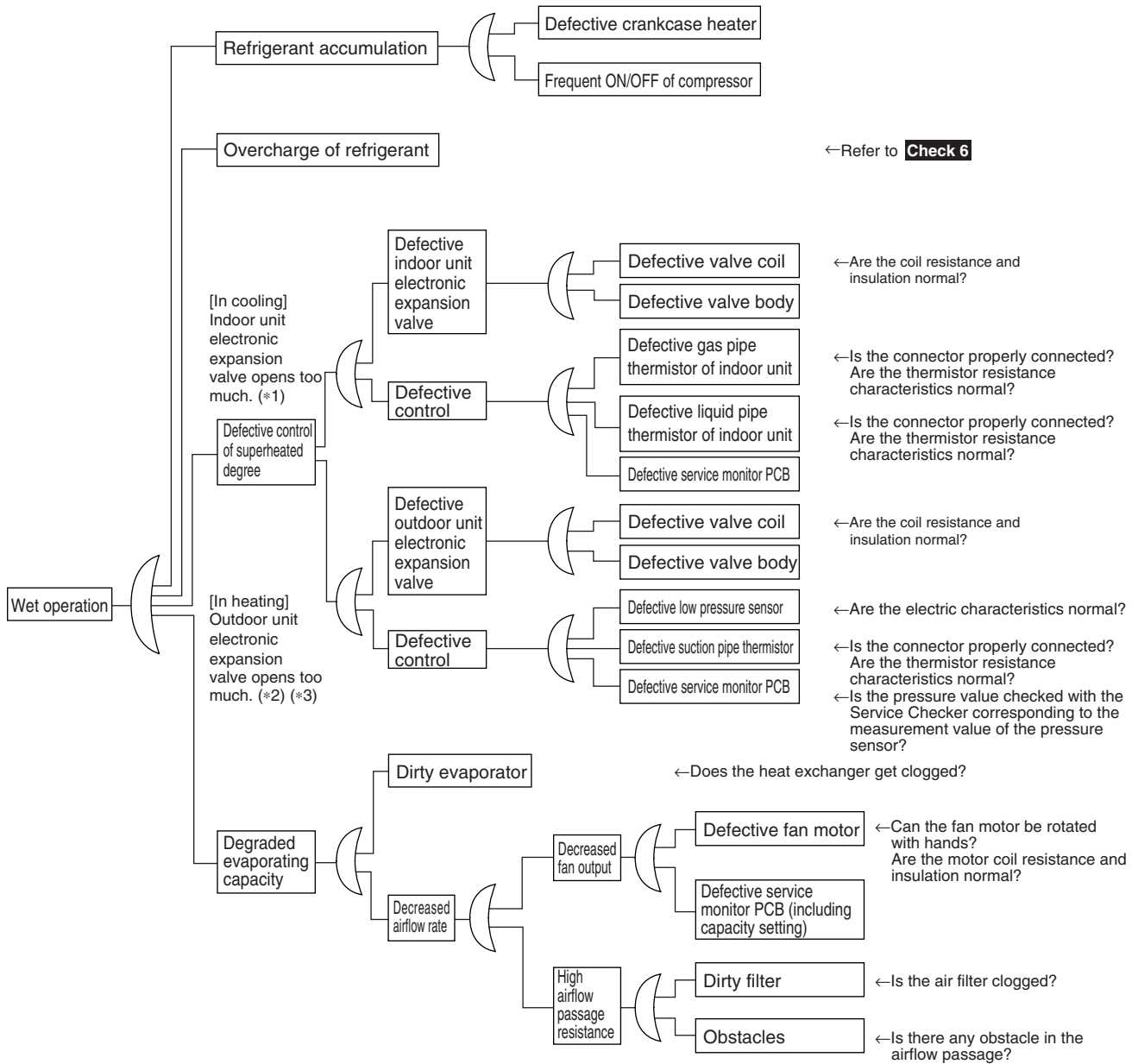
No.	Measuring point		Judgement Criteria	Remarks
	+	-		
1	P2	U	1.2V and more	Due to condenser charge and so on, resistance measurement may require some time.
2	P2	V		
3	P2	W		
4	U	P2	0.3 ~ 0.7V	
5	V	P2		
6	W	P2		
7	N3	U		
8	N3	V		
9	N3	W		
10	U	N3	1.2V and more	
11	V	N3		
12	W	N3		

[PCB and Circuit Diagram]



CHECK 5 Check for Causes of Wet Operation.

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



Note:

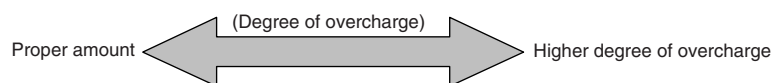
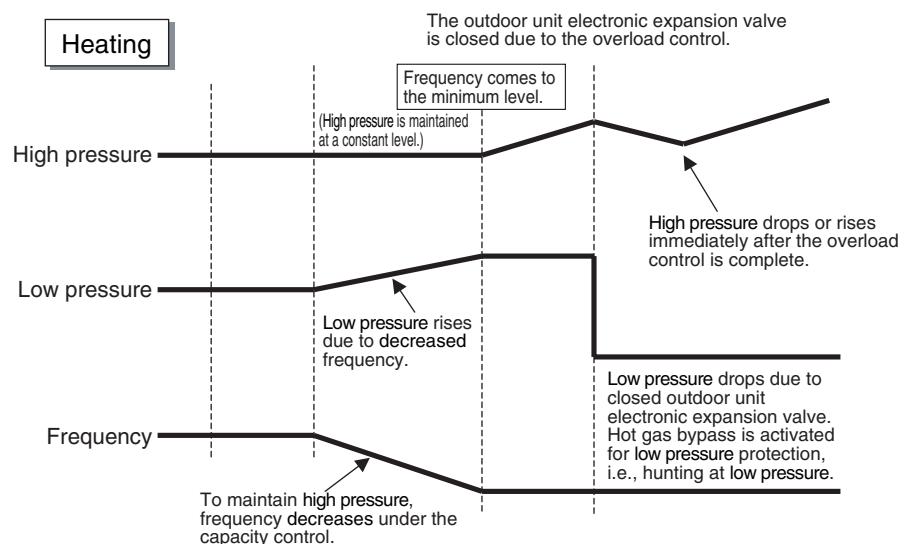
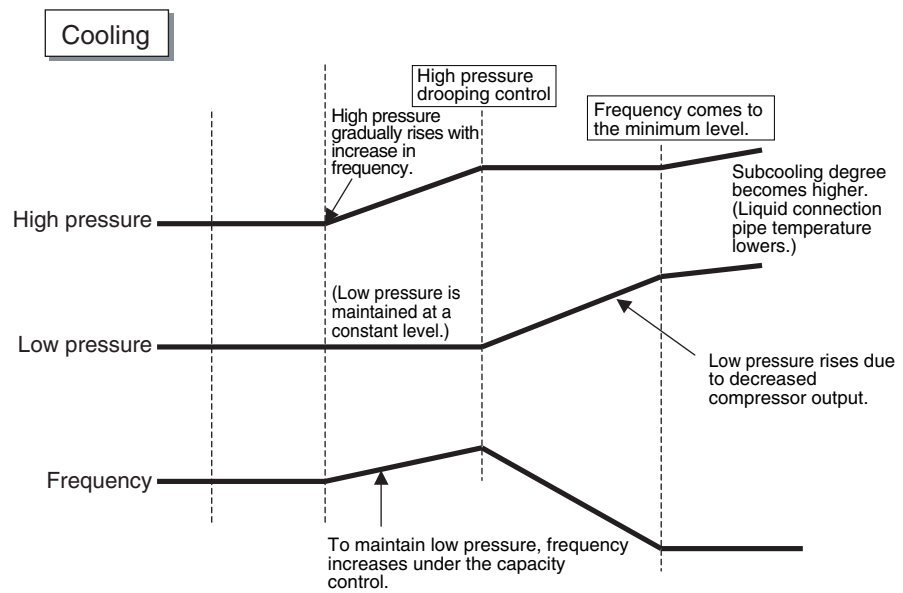
- *1. "Superheating temperature control" in cooling is conducted by indoor unit electronic expansion valve.
- *2. Superheating temperature control in heating is conducted by outdoor unit electronic expansion valve (EVM).
- *3. Guideline of superheated degree to judge as wet operation
 - ① Suction gas 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 as a guide. Depending on the other conditions, the unit may be normal despite the values within the above range.)

CHECK 6 Check for Overcharge of Refrigerant.

In case of VRV Systems, the only way to judge as the overcharge of refrigerant is with operating conditions due to the relationship to pressure control and electronic expansion valve control. As information for making a judgement, refer to the information below.

Diagnosis of overcharge of refrigerant

1. High pressure rises. Consequently, overload control is conducted to cause insufficient 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, the temperature of discharge air through the subcooling section becomes lower.

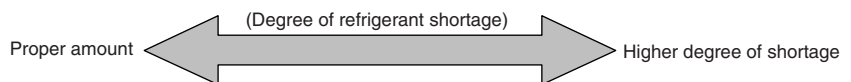
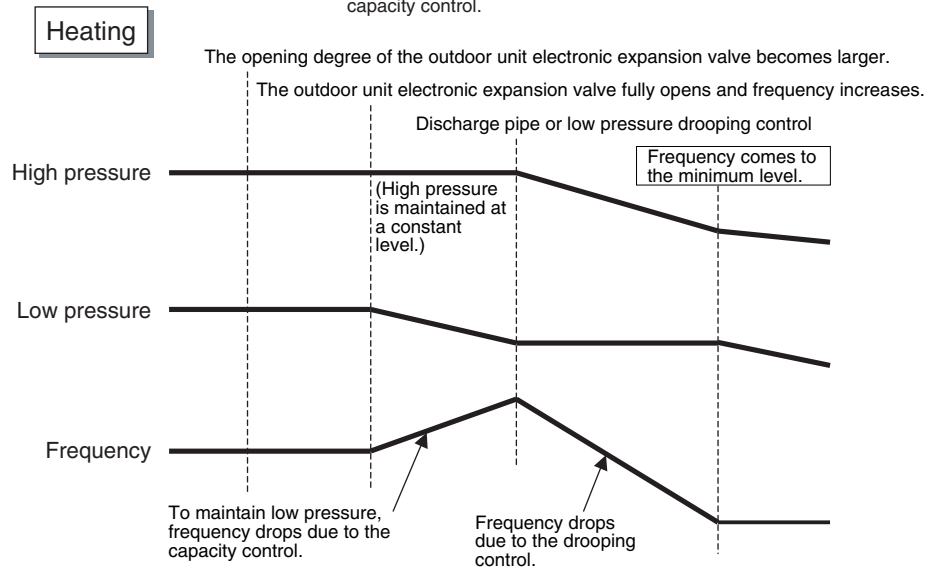
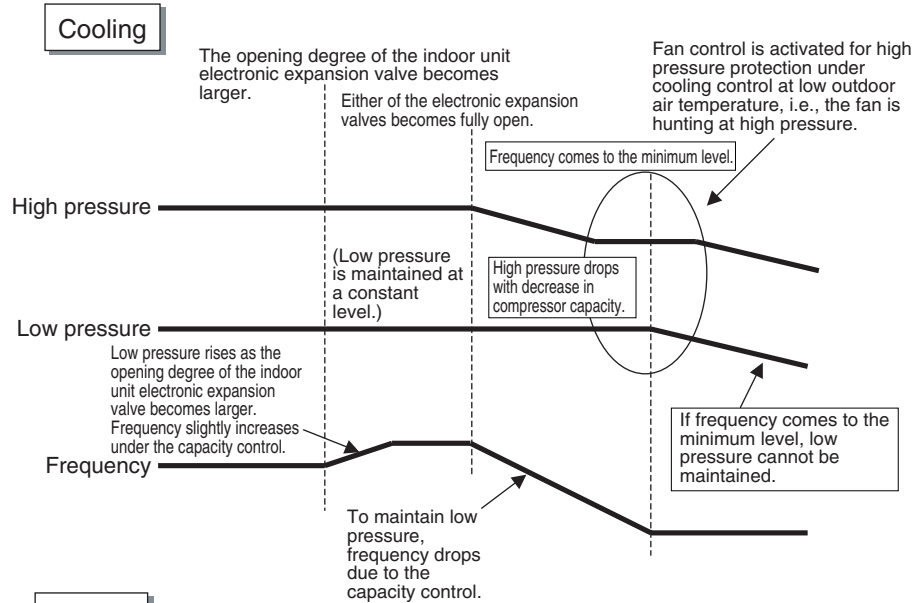


CHECK 7 Check for Shortage of Refrigerant.

In case of VRV Systems, the only way to judge as the shortage of refrigerant is with operating conditions due to the relationship to pressure control and electronic expansion valve control. As information for making a judgement, refer to the information below.

Diagnosis of shortage of refrigerant

1. The superheated degree of suction gas rises. Consequently, the compressor discharge gas temperature becomes higher.
2. The superheated degree of suction gas rises. Consequently, the electronic expansion valve turns open.
3. Low pressure drops to cause the unit not to demonstrate cooling capacity (heating capacity).



CHECK 8 **Vacuumping and Dehydration Procedure**

Conduct vacuumping and dehydration in the piping system following the procedure for <Normal vacuumping and dehydration> described below.

Furthermore, if moisture may get mixed in the piping system, follow the procedure for <Special vacuumping and dehydration> described below.

<Normal vacuumping and dehydration>**(1) Vacuumping and dehydration**

- Use a vacuum pump that enables vacuumping up to -100.7kPa (5 torr, -755 mmHg).
- Connect manifold gauges to the service ports of liquid pipe and gas pipe and run the vacuum pump for a period of 2 or more hours to conduct evacuation to -100.7kPa or less.
- If the degree of vacuum does not reach -100.7kPa or less even though evacuation is conducted for a period of 2 hours, moisture will have entered the system or refrigerant leakage will have been caused. In this case, conduct evacuation for a period of another 1 hour.
- If the degree of vacuum does not reach -100.7kPa or less even though evacuation is conducted for a period of 3 hours, conduct the leak tests.

(2) Leaving in vacuum state

- Leave the compressor at the degree of vacuum of -100.7kPa or less for a period of 1 hour or more, and then check to be sure that the vacuum gauge reading does not rise. (If the reading rises, moisture may have remained in the system or refrigerant leakage may have been caused.)

(3) Additional refrigerant charge

- Purge air from the manifold gauge connection hoses, and then charge a necessary amount of refrigerant.

<Special vacuumping and dehydration> - In case of moisture may get mixed in the piping***(1) Vacuumping and dehydration**

- Follow the same procedure as that for 1) Normal vacuumping and dehydration described above.

(2) Vacuum break

- Pressurize with nitrogen gas up to 0.05MPa.

(3) Vacuumping and dehydration

- Conduct vacuumping and dehydration for a period of 1 hour or more. If the degree of vacuum does not reach -100.7kPa or less even though evacuation is conducted for a period of 2 hours or more, repeat vacuum break - vacuumping and dehydration.

(4) Leaving in vacuum state

- Leave the compressor at the degree of vacuum of -100.7kPa or less for a period of 1 hour or more, and then check to be sure that the vacuum gauge reading does not rise.

(5) Additional refrigerant charge

- Purge air from the manifold gauge connection hoses, and then charge a necessary amount of refrigerant.

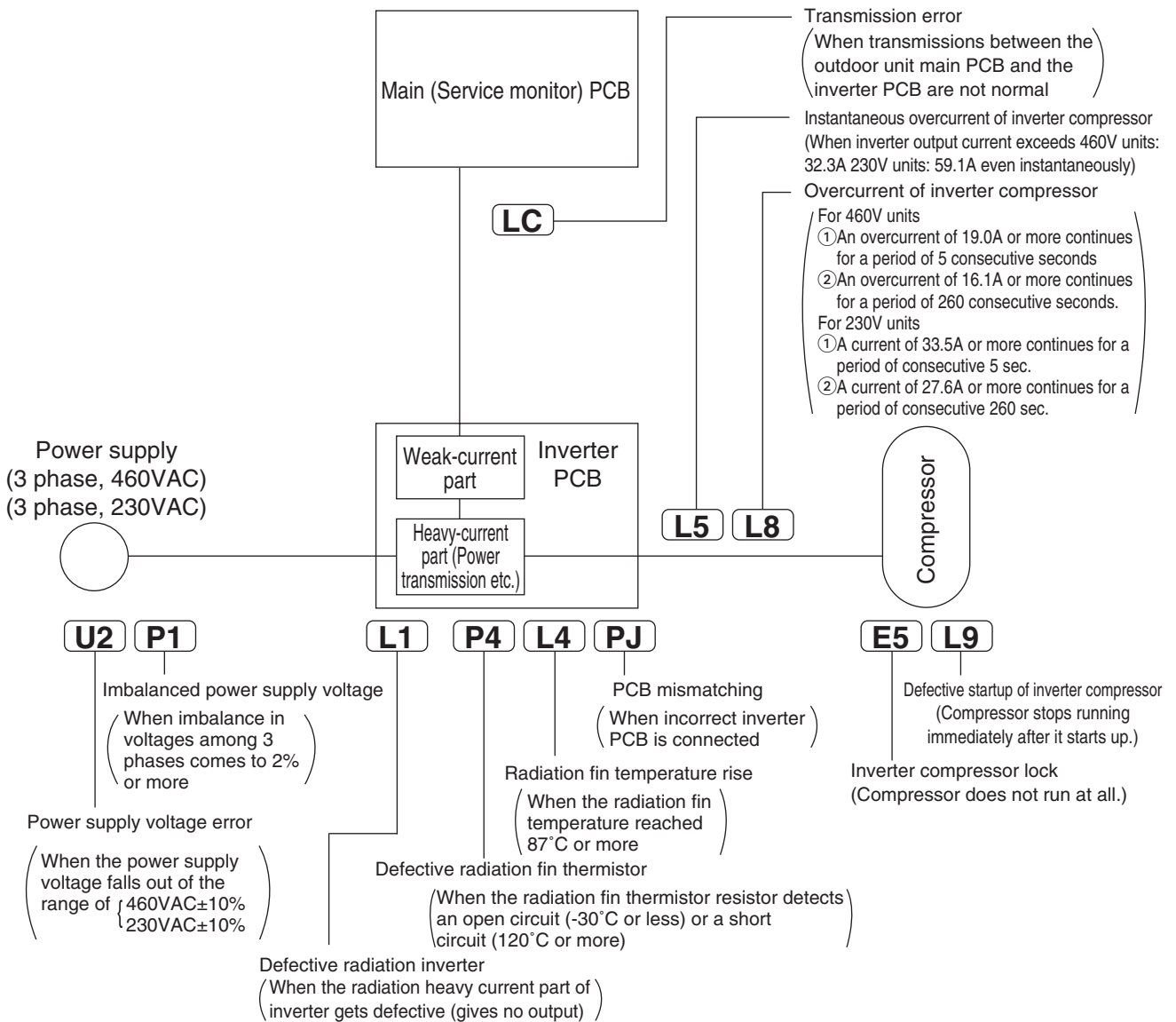
**Note:**

- * In case of construction during rainy reason, if dew condensation occurs in the piping due to extended construction period, or rainwater or else may enter the piping during construction work:

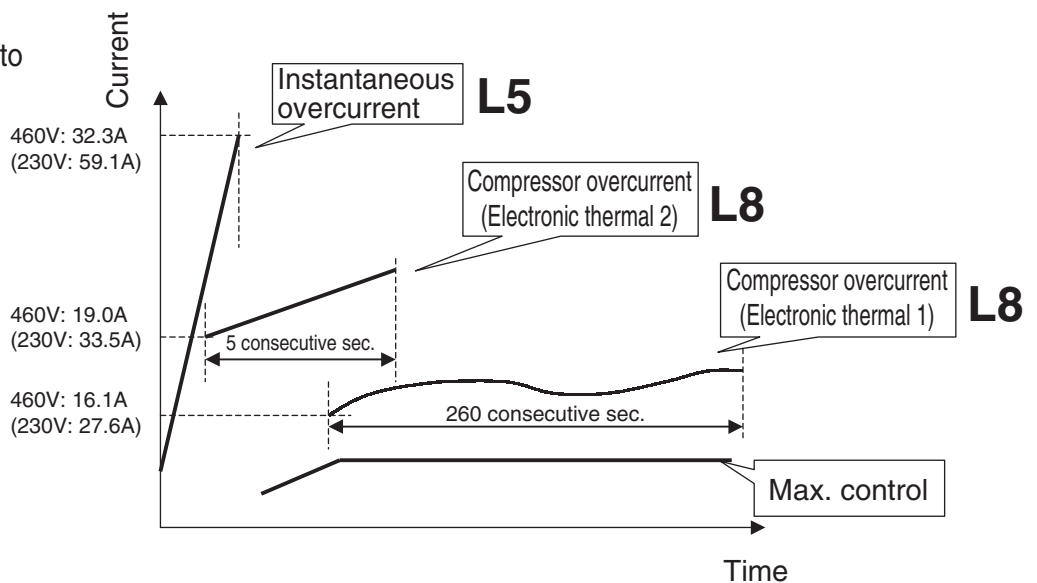
CHECK 9 List of Inverter-related Error Codes

	Code	Name	Condition for determining error	Major cause
Compressor current	U5	Instantaneous overcurrent of inverter compressor	<ul style="list-style-type: none"> Inverter output current exceeds 32.3A even instantaneously. 	<ul style="list-style-type: none"> Liquid sealing Defective compressor Defective inverter PCB
	U8	Overcurrent of inverter compressor (Electronic thermal)	<ul style="list-style-type: none"> 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. For 230V units: A current of 33.5A or more continues for a period of consecutive 5 sec. or that of 27.6A or more continues for a period of consecutive 260 sec. The inverter loses synchronization. 	<ul style="list-style-type: none"> Back-flow of compressor liquid Sudden changes in loads Disconnected compressor wiring Defective inverter PCB
Protection device and others	U1	Defective inverter PCB	<ul style="list-style-type: none"> No output is given. 	<ul style="list-style-type: none"> Defective heavy current part of compressor
	U9	Defective startup of inverter compressor	<ul style="list-style-type: none"> The compressor motor fails to startup. 	<ul style="list-style-type: none"> Liquid sealing or defective compressor Excessive oil or refrigerant Defective inverter PCB
	E5	Inverter compressor lock	<ul style="list-style-type: none"> The compressor is in the locked status (does not rotate). 	<ul style="list-style-type: none"> Defective compressor
	U4	Radiation fin temperature rise	<ul style="list-style-type: none"> The radiation fin temperature reaches 87°C or more (while in operation). 	<ul style="list-style-type: none"> Defective fan Running in overload for an extended period of time Defective inverter PCB
	U2	Power supply voltage error	<ul style="list-style-type: none"> The inverter power supply voltage is high or low. 	<ul style="list-style-type: none"> Power supply error Defective inverter PCB
	P1	Imbalanced power supply	<ul style="list-style-type: none"> Power supply voltages get significantly imbalanced among 3 phases. 	<ul style="list-style-type: none"> Power supply error (imbalanced voltages of 2% or more) Defective inverter PCB Dead inverter PCB
	U7	Transmission error (between inverter PCB and service monitor PCB)	<ul style="list-style-type: none"> With the outdoor unit PCB, no communications are carried out across service monitor PCB - inverter PCB - fan PCB. 	<ul style="list-style-type: none"> Broken wire in communication line Defective service monitor PCB Defective inverter PCB Defective fan PCB
	P4	PCB mismatching	<ul style="list-style-type: none"> Any PCB of specification different from that of the product is connected. 	<ul style="list-style-type: none"> PCB of different specification mounted
P4	Defective radiation fin thermistor	<ul style="list-style-type: none"> The radiation fin thermistor gets short circuited or open. 	<ul style="list-style-type: none"> Defective radiation fin thermistor 	

CHECK 10 Concept of Inverter-related Error Codes



Error codes related to compressor current



CHECK 11 Thermistor Resistance / Temperature Characteristics

		Indoor unit			
		For suction air	R1T	For discharge air	R4T
		For liquid pipe	R2T	(only FXMQ-P)	
Outdoor unit		For gas pipe	R3T		
For radiation fin	R1T	For PTC (only FXFQ)	R4T		
		For NTC (only FXMQ-P)	R5T		

		Outdoor unit		Outdoor unit	
		For outdoor air	R1T	For discharge pipe	R3T, R31T ~ R33T
		For suction pipe	R2T		
		For heat exchanger deicer	R4T		
		For accumulator	R7T		
		For heat exchanger gas pipe	R5T		
		For liquid pipe	R6T		

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

3PA61998L (AD92A057)

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

3SA48001 (AD87A001J)

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

3SA48006 (AD87A001J)

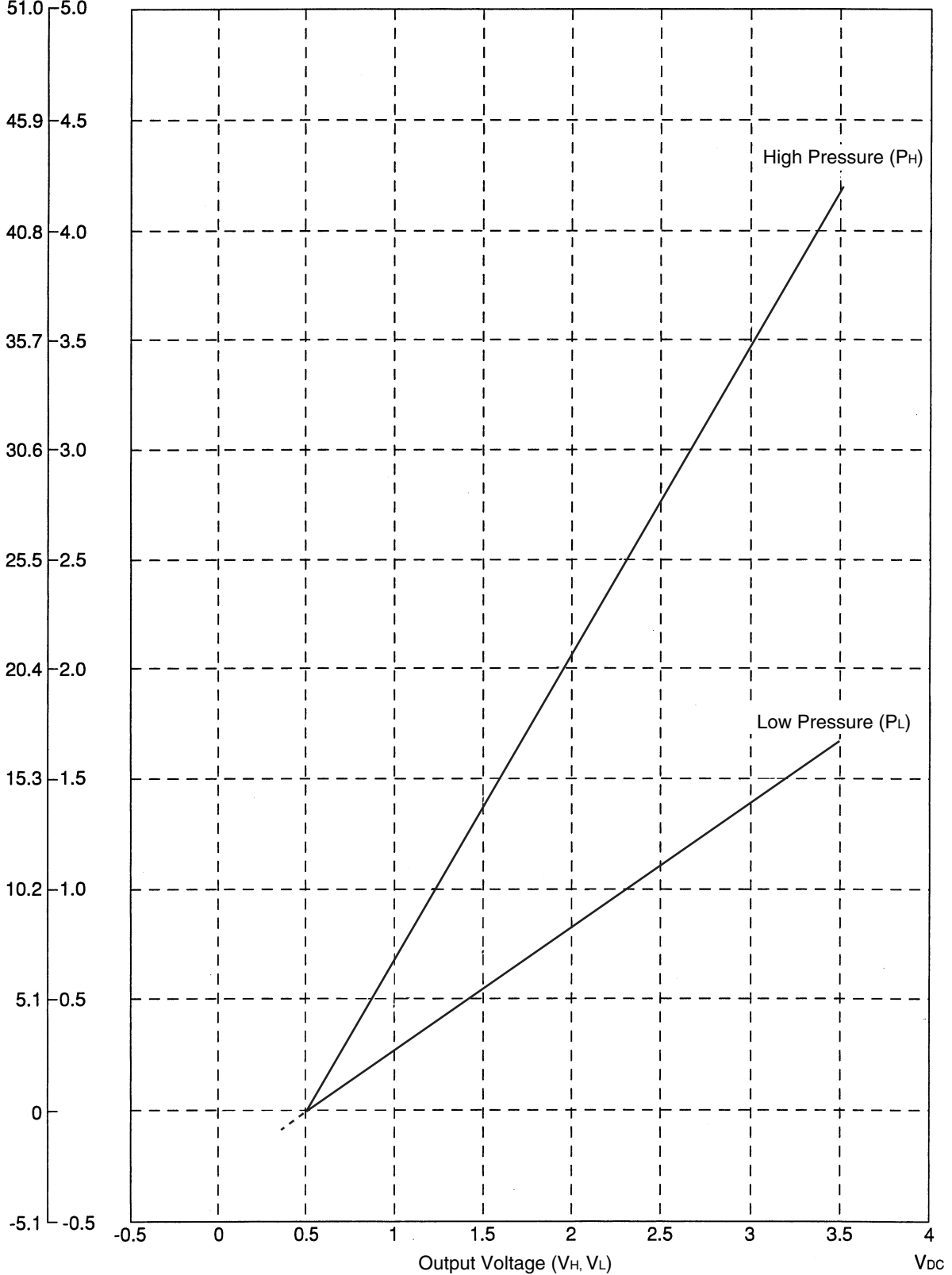
CHECK 12 Pressure Sensor

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

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

Detected Pressure

P_H, P_L
 (kg/cm²) MPa



CHECK 13 Broken Wire Check of the Relay 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 F1 and F2 in the "Outdoor Unit A" that is farthest from the central remote controller, and then conduct continuity checks between the transmission wiring terminal blocks F1 and F2 of the central 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 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 of the "Outdoor Unit E", between the outdoor-outdoor unit terminal of the "Outdoor Unit D", between the outdoor-outdoor unit terminal of the "Outdoor Unit C", ... in the order described, thus identifying the place with continuity.

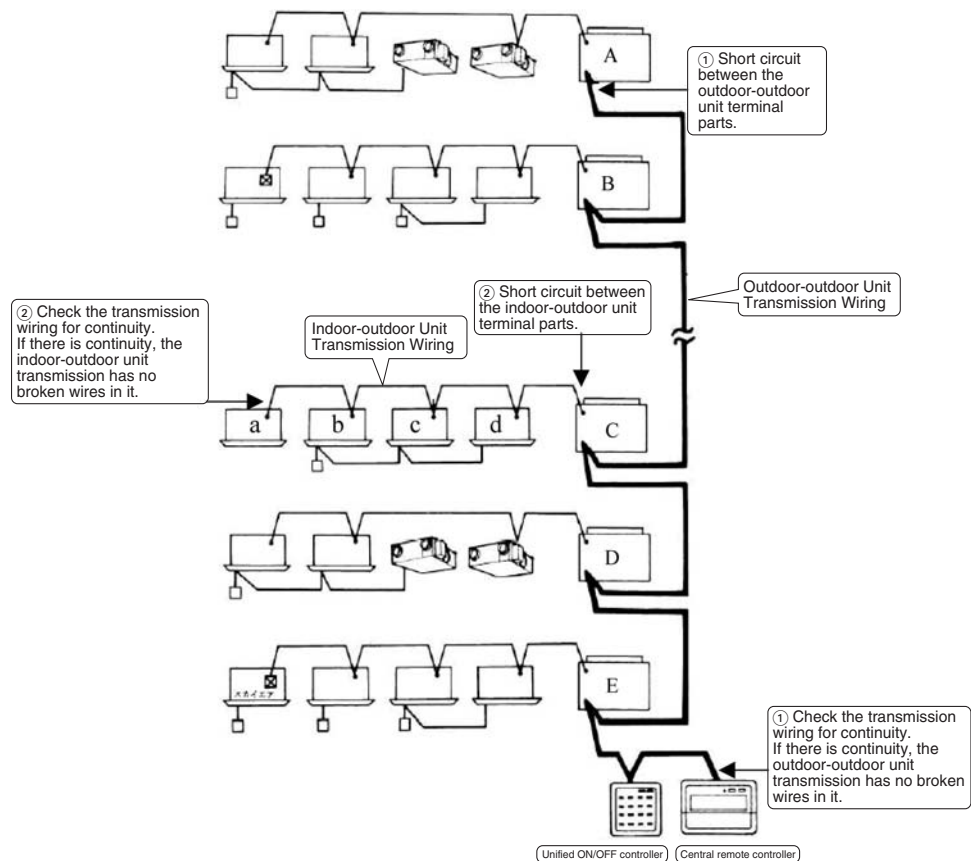
If the place with continuity can be identified, there may be broken wires in places before the said place with continuity.

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 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 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 14 Master Unit Centralized Connector Setting Table

The master unit centralized 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 central remote controller, do not dismount the master unit centralized 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 master unit, in the PCB (CN1/X1A). (Independent-use connector = Master unit centralized setting connector)
- To use two or more centralized controller in combination, make settings according to the table shown below.

Pattern	Centralized controller connection pattern				Setting of master unit centralized setting connector (*2)				
	intelligent Touch Controller	Central remote controller	Unified ON/OFF controller	Schedule timer	intelligent Touch Controller	Central remote controller	Unified ON/OFF controller	Schedule timer	
(1)	1 to 2 units	/	/	x (*1)	Only a single unit: "Provided", Others: "Not provided"	/	/	/	
(2)	1 unit	1 unit	/	x (*1)	Provided	Not provided	/	/	
(3)			/	x (*1)			/	/	
(4)	1 to 2 units	/	1 to 8 units	x (*1)	Only a single unit: "Provided", Others: "Not provided"	/	All "Not provided"	/	
(5)	/	1 to 4 units	/	/	Only a single unit: "Provided", Others: "Not provided"	Only a single unit: "Provided", Others: "Not provided"	/	/	
(6)	/		1 to 16 units	1 unit			/	All "Not provided"	Not provided
(7)	/		/	/			/	/	/
(8)	/		/	1 to 16 units			1 unit	/	/
(9)	/	/	/	/	/	/	/		
(10)	/	/	1 to 16 units	1 unit	/	/	Only a single unit: "Provided", Others: "Not provided"	Not provided	
(11)	/	/	/	1 unit	/	/	/	Provided	



Note:

- *1. The intelligent Touch Controller and the schedule timer are not available for combined use.
- *2. The intelligent Touch Controller, central remote controller, and the unified ON/OFF controller have been set to "Provided with the master unit centralized setting connector" at the factory. The schedule timer has been set to "Not provided with the master unit centralized setting connector" at the factory, which is attached to the casing of the master unit.

CHECK 15 Master-Slave Unit Setting Table

Combination of intelligent Touch Controller and central remote controller



*	#1		#2		#3		#4	
Pattern	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	—	—	—	—	—	—



Note:

CRC: Central remote controller <DCS302CA61>

intelligent Touch Controller: <DCS601C51>

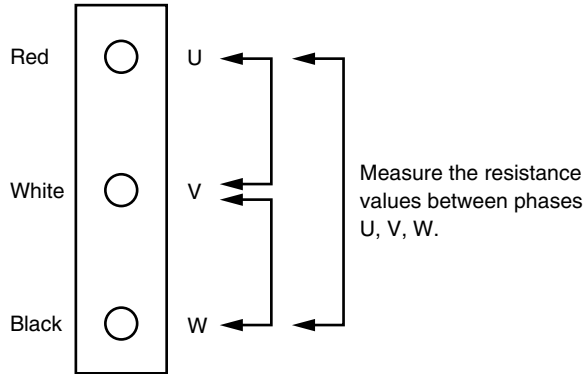
The patterns marked with “” have nothing to do with those described in the list of setting of master unit centralized setting connector.

CHECK 16

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 (3-core wire) to check that the values are balanced and there is no short circuit, while connector or relay connector is disconnected.

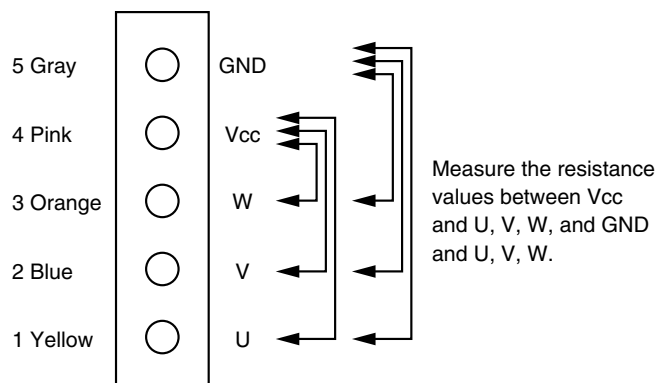


CHECK 17

(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 (5-core wire) to check that the values are balanced within the range of $\pm 20\%$, 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.



Part 7

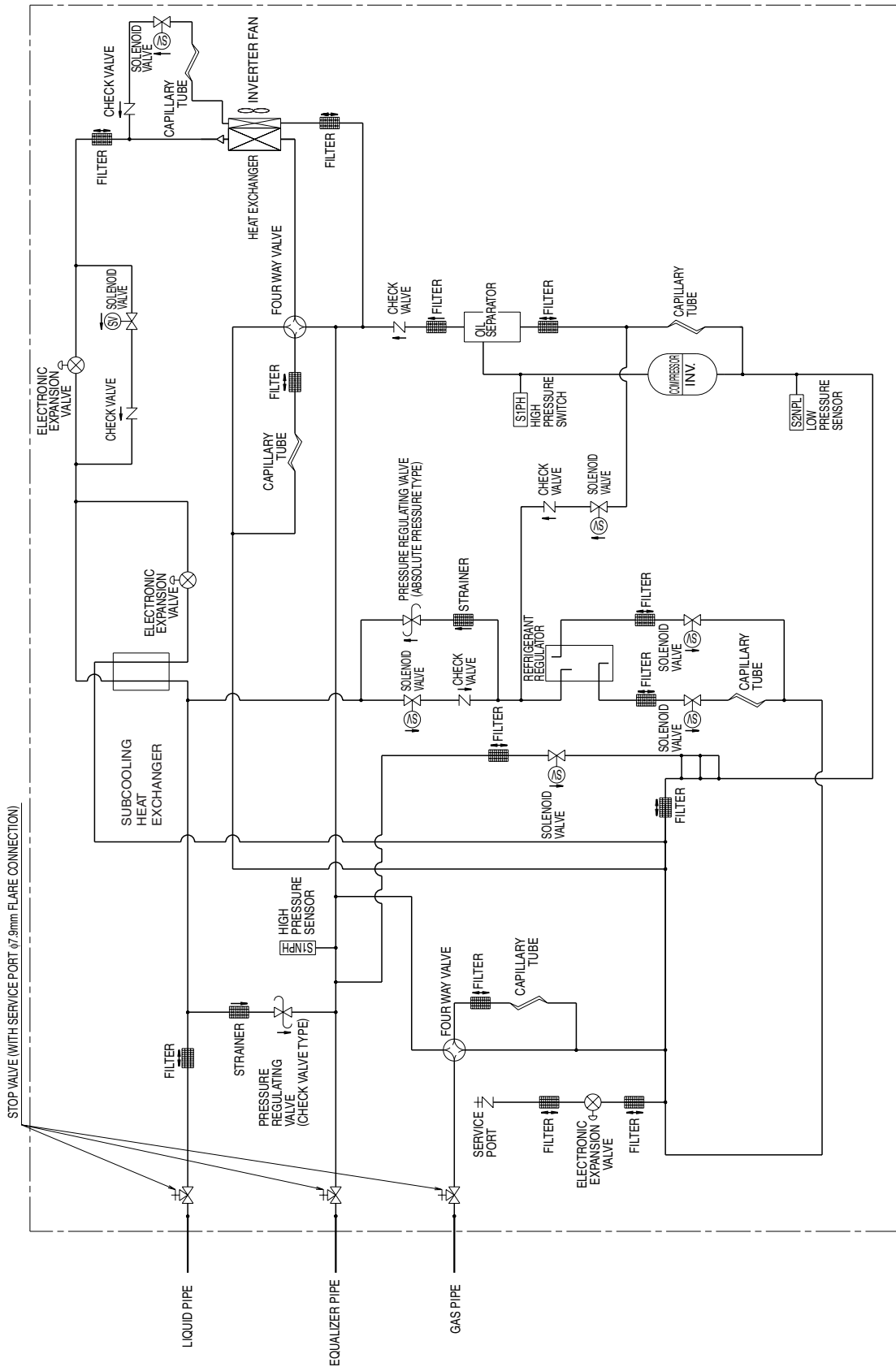
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1. Piping Diagrams

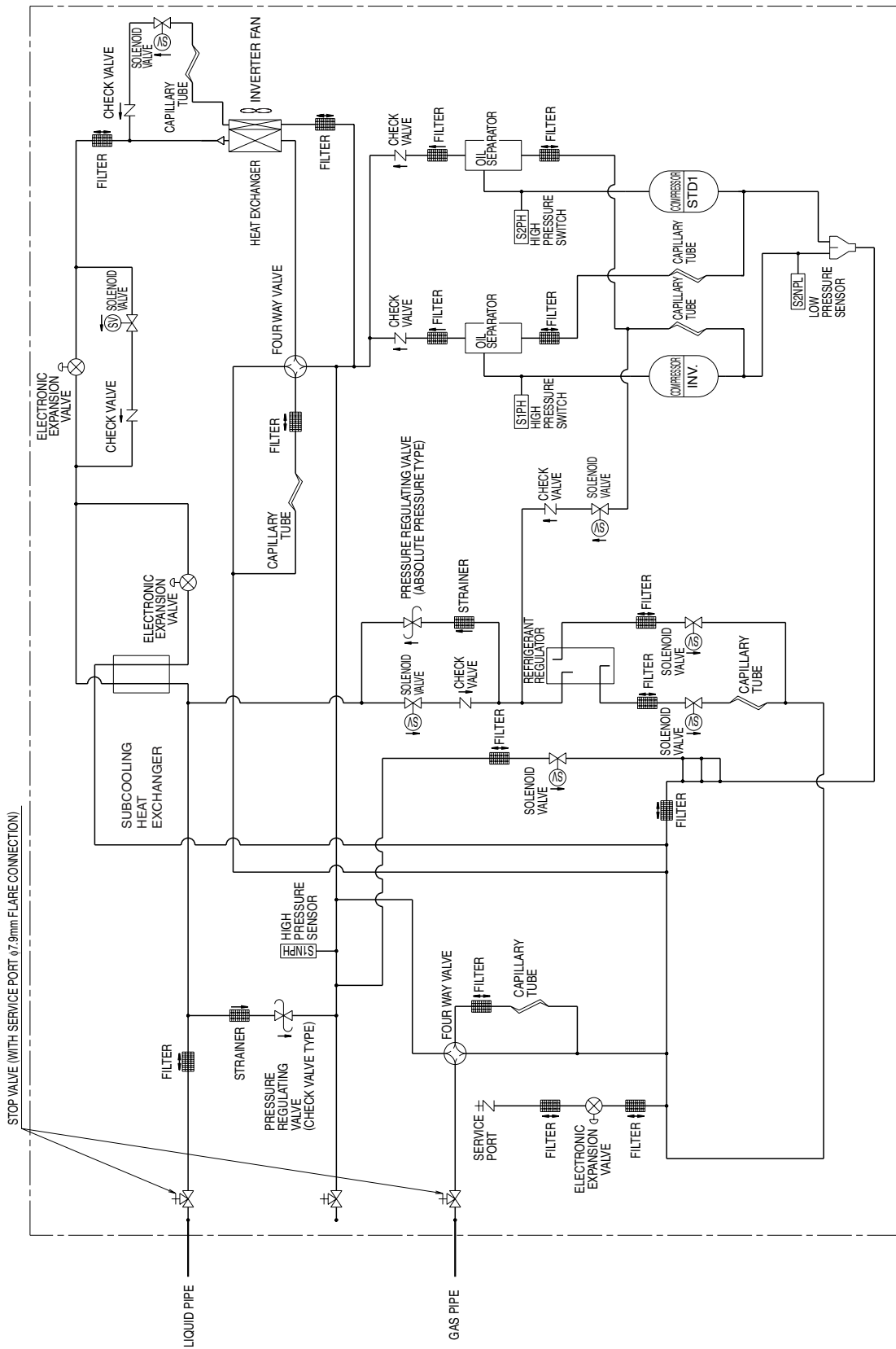
1.1 Outdoor Unit

RTSQ8PAY1



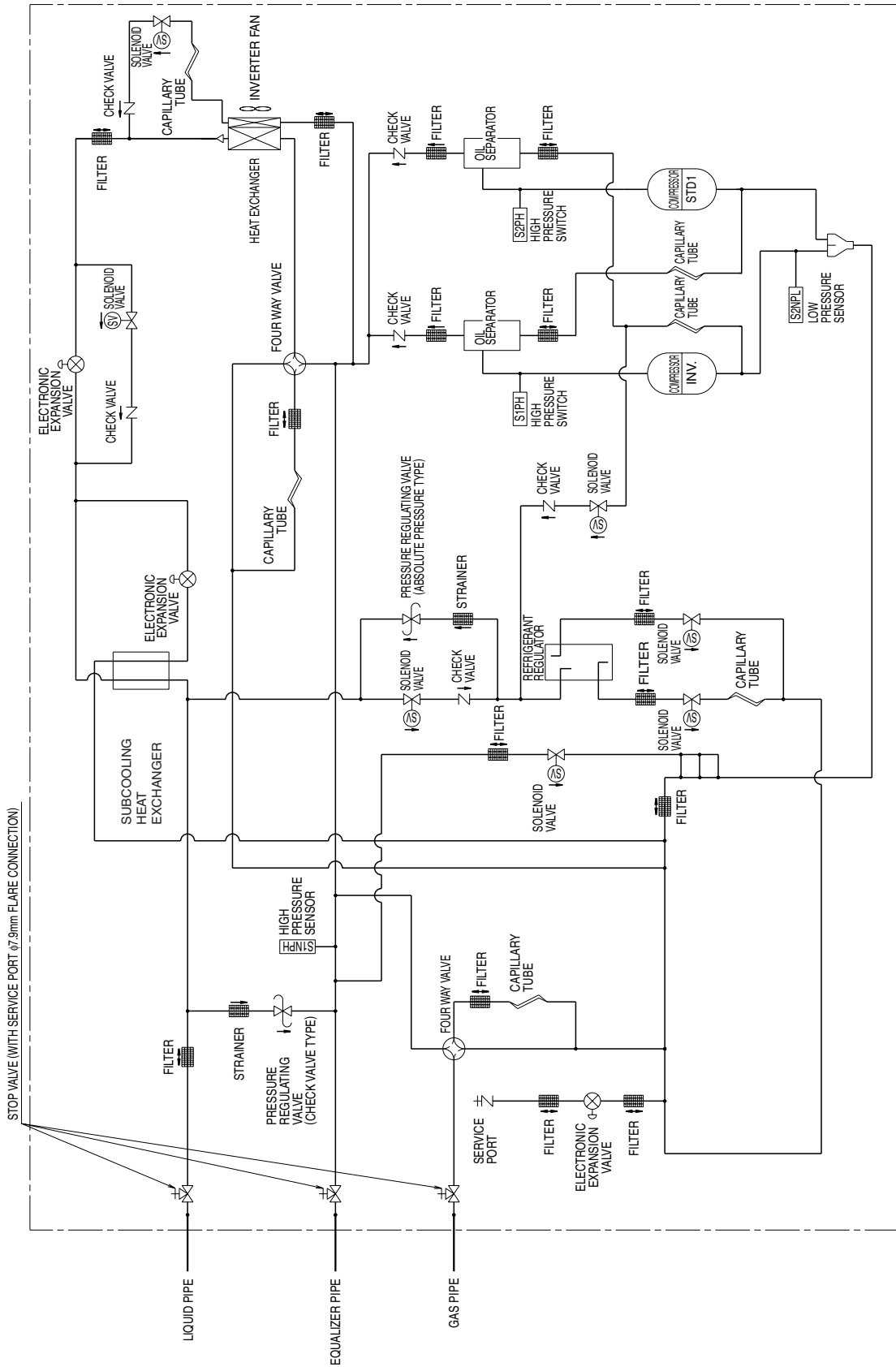
3D076297

RTSQ10PAY1



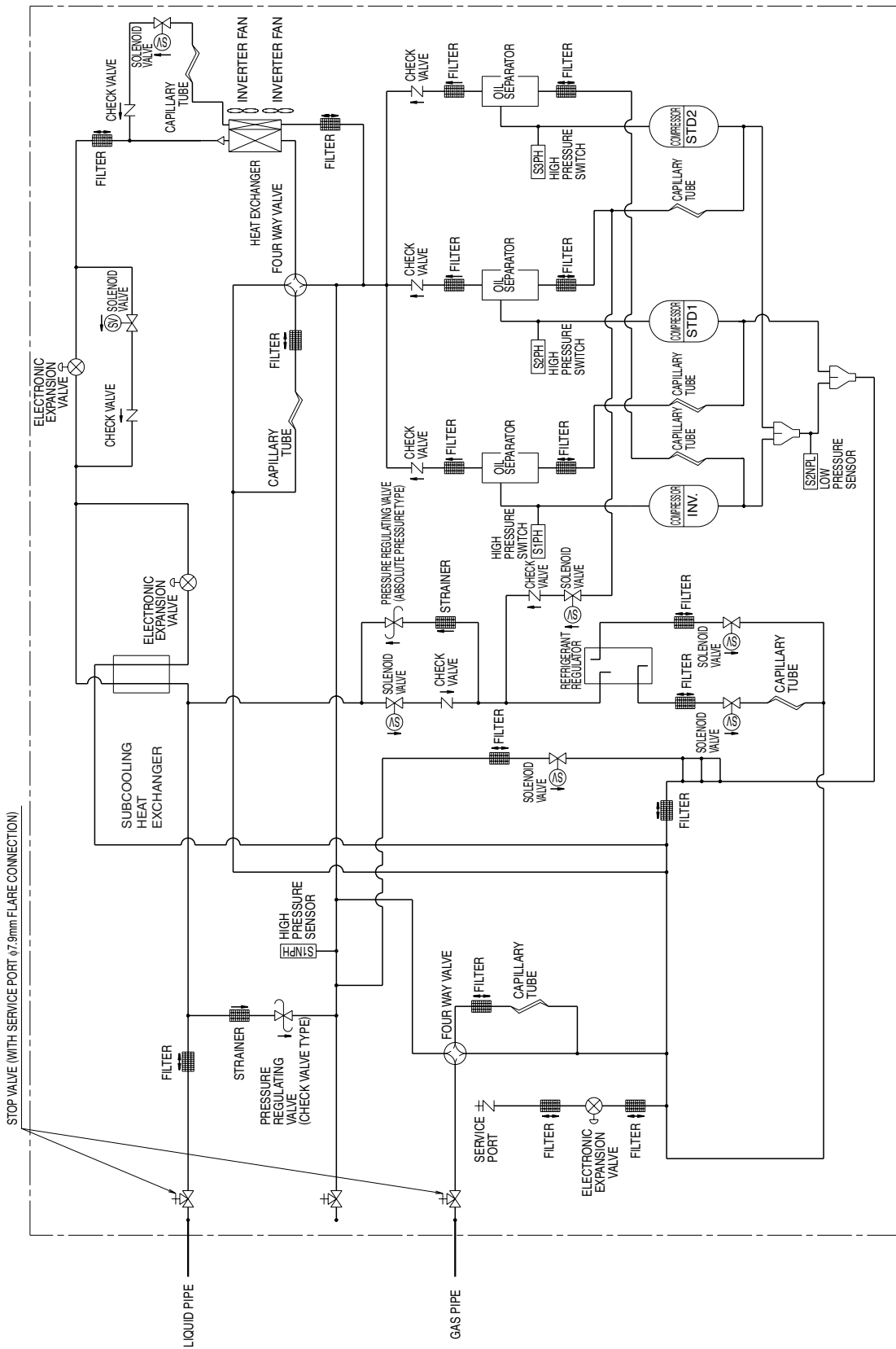
3D076295

RTSQ12PAY1



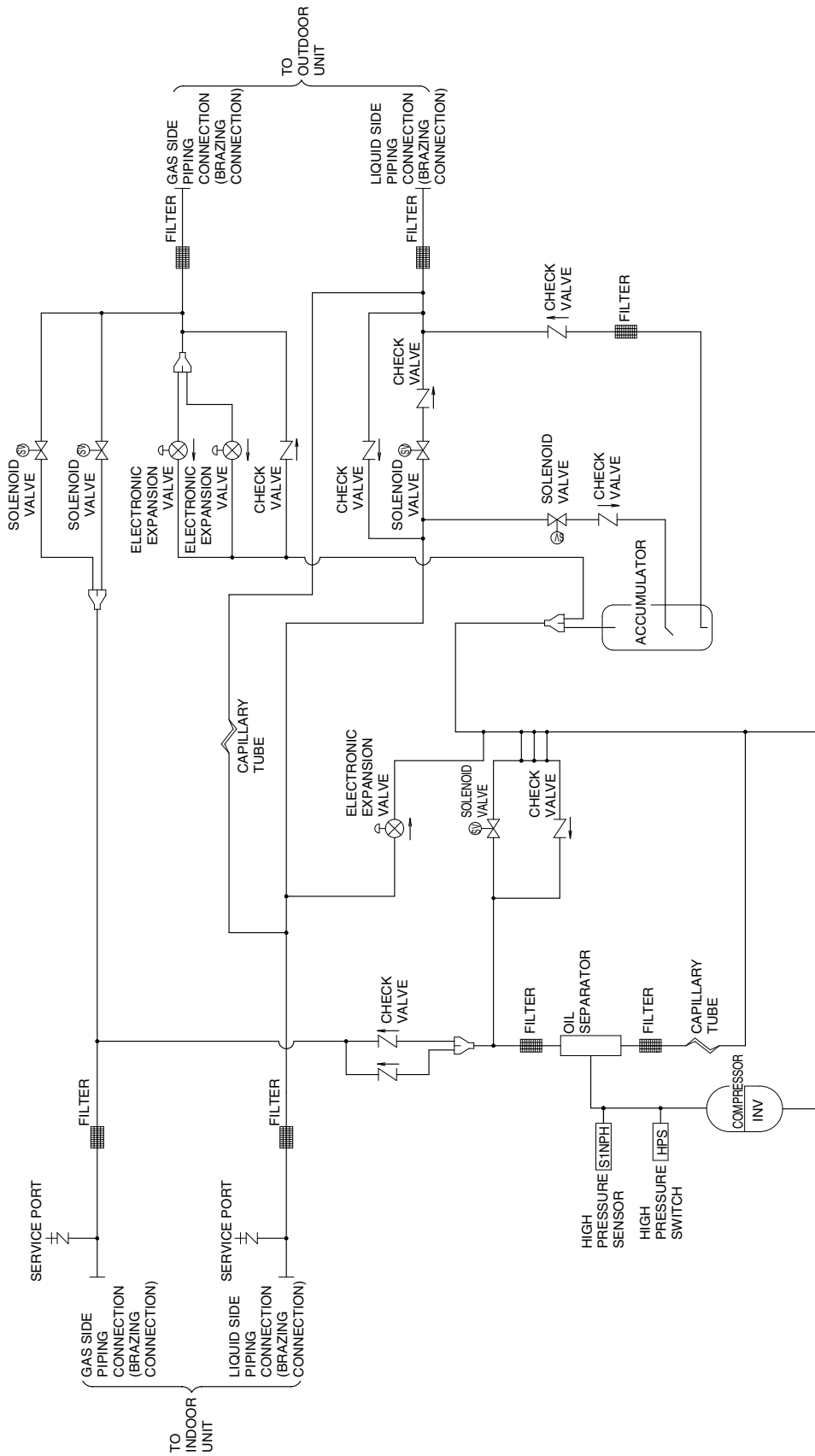
3D076298

RTSQ14PAY1, 16PAY1



3D076296

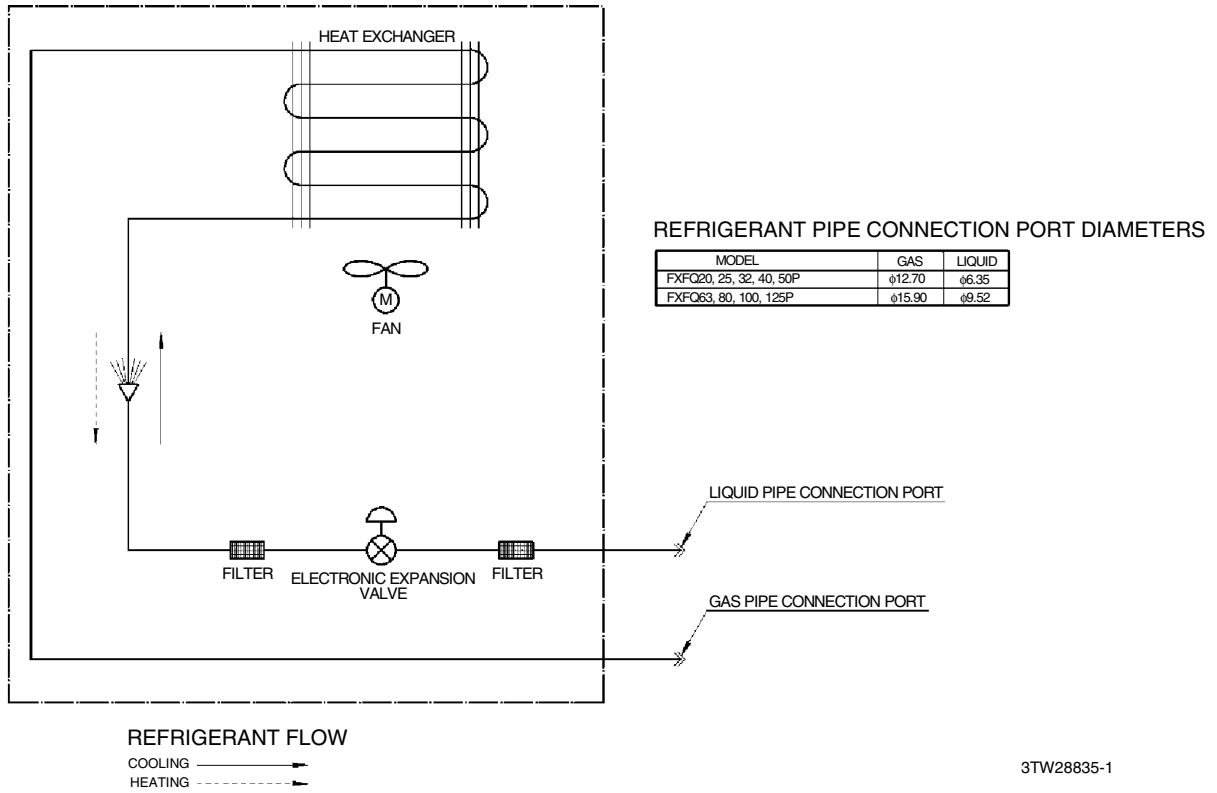
BTSQ20PY1



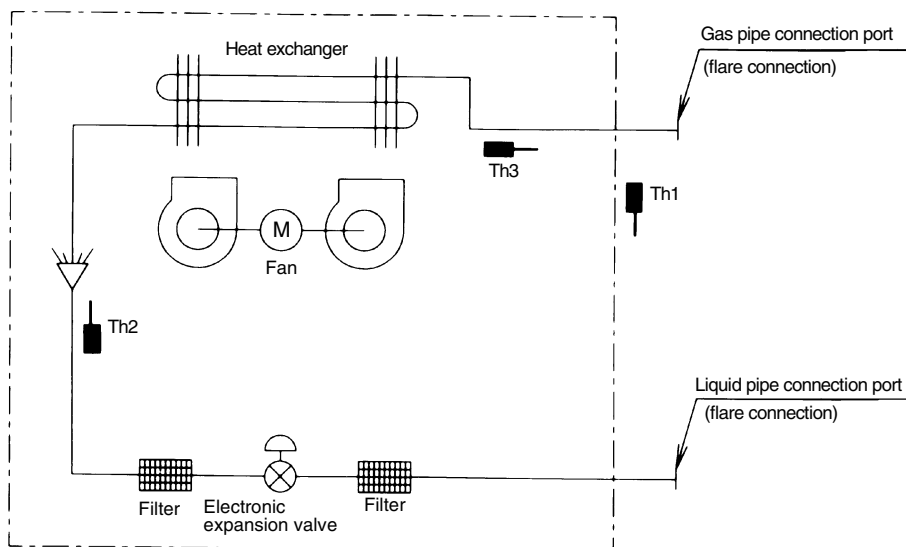
3D060823

1.2 Indoor Unit

FXFQ-P



FXZQ



Th1: Thermistor for suction air temp.
 Th2: Thermistor for liquid line temp.
 Th3: Thermistor for gas line temp.

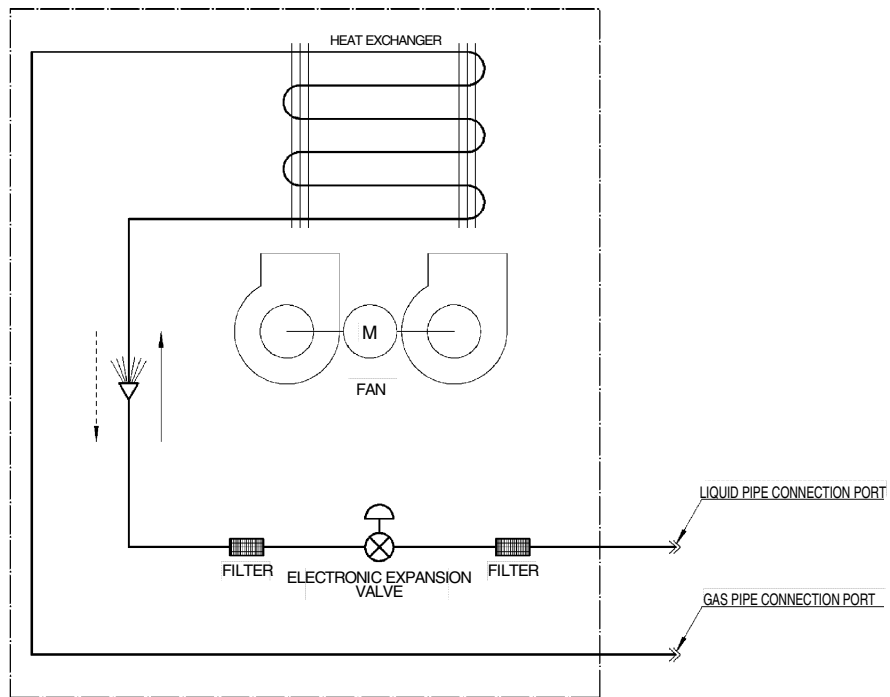
4D040157A

■ Refrigerant pipe connection port diameters

Model	Gas	Liquid
FXZQ20M / 25M / 32M / 40M / 50M	φ12.7	φ6.4

(mm)

FXCQ, FXDQ25/25-M, FXSQ



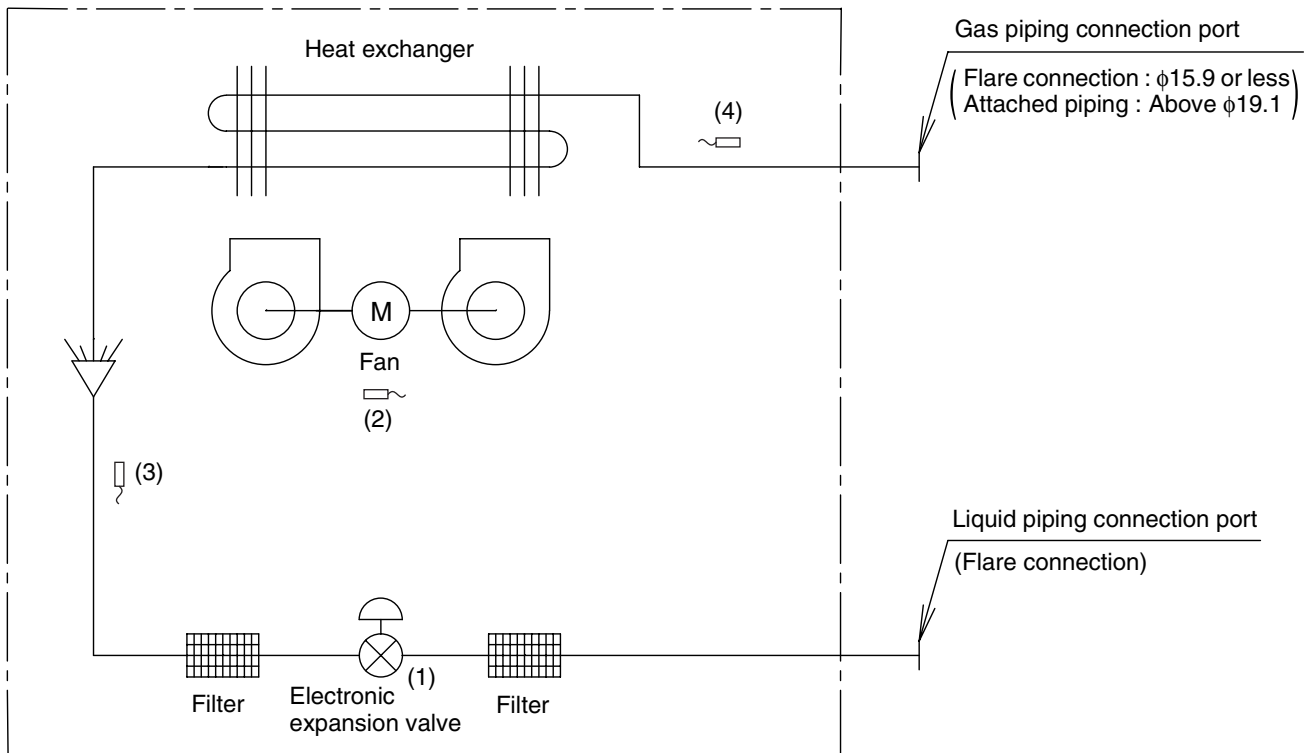
REFRIGERANT FLOW
 COOLING —————>
 HEATING - - - - ->

■ 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



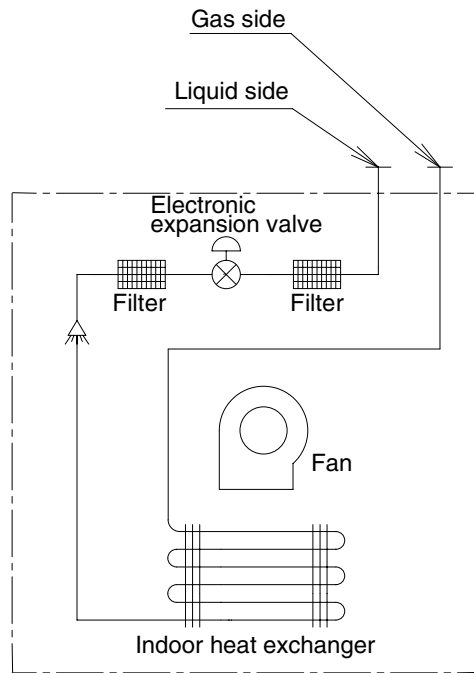
Code	Name	Code	Main function
(1)	Electronic expansion valve	Y1E	Used for gas superheated degree control while in cooling operation or subcooled degree control while in heating operation.
(2)	Suction air temperature thermistor	R1T	Used for thermostat control.
(3)	Liquid pipe thermistor	R2T	Used for gas 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	$\phi 12.7$	$\phi 6.4$
63 / 80 / 100 / 115MA	$\phi 15.9$	$\phi 9.5$
200MA	$\phi 19.1$	$\phi 9.5$
250MA	$\phi 22.2$	$\phi 9.5$

4D034245G

FXDQ-NB, PB



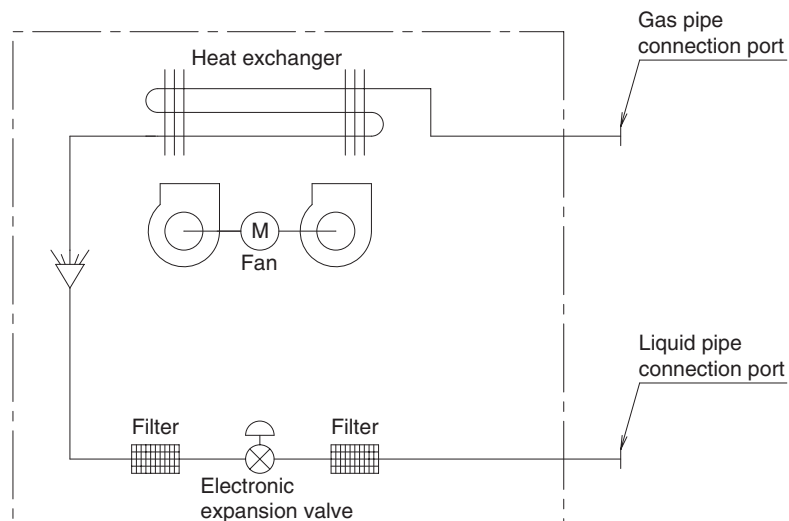
4D060927A

■ 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
FXAQ15PA / 20PA / 25PA / 32PA / 40PA / 50PA / 63PAV1**



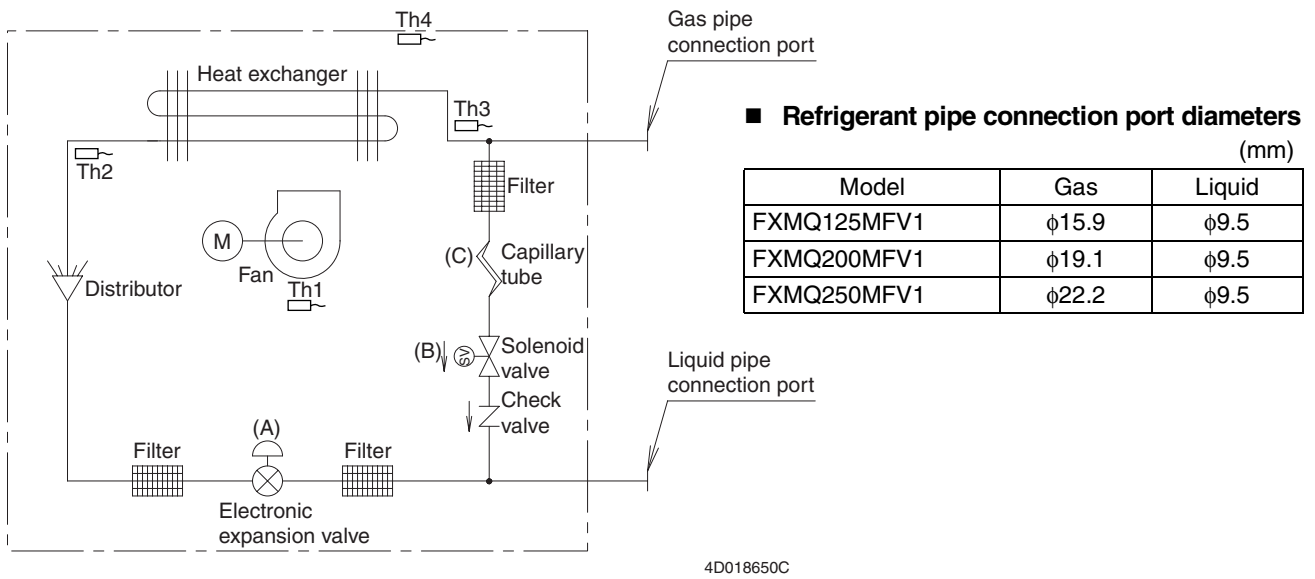
4D034245E

■ Refrigerant pipe connection port diameters

(mm)

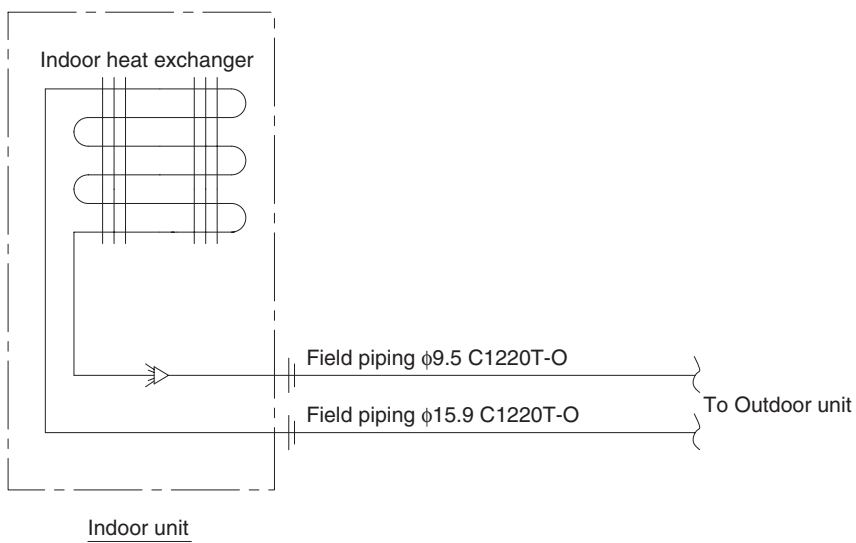
Model	Gas	Liquid
FXMQ20P / 25P / 32P / 40P / 50PVE FXAQ15PA / 20PA / 25PA / 32PA / 40PA / 50PAV1	φ12.7	φ6.4
FXMQ63P / 80P / 100P / 125P / 140PVE FXAQ63PAV1	φ15.9	φ9.5

FXMQ125MF / 200MF / 250MFV1

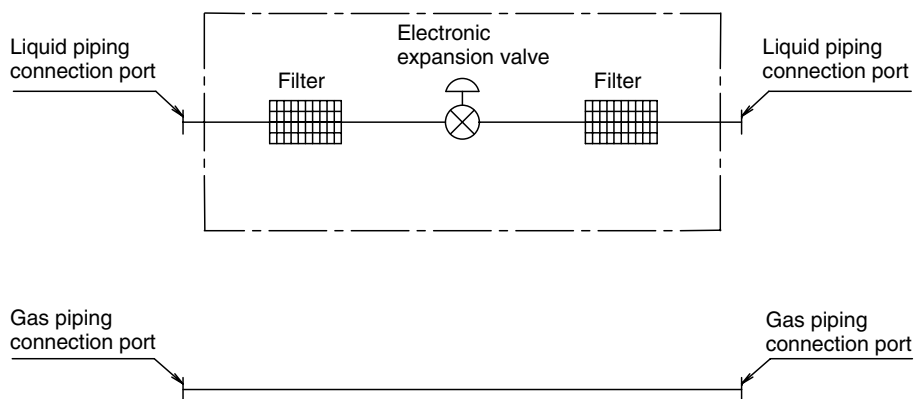


FXUQ + BEVQ

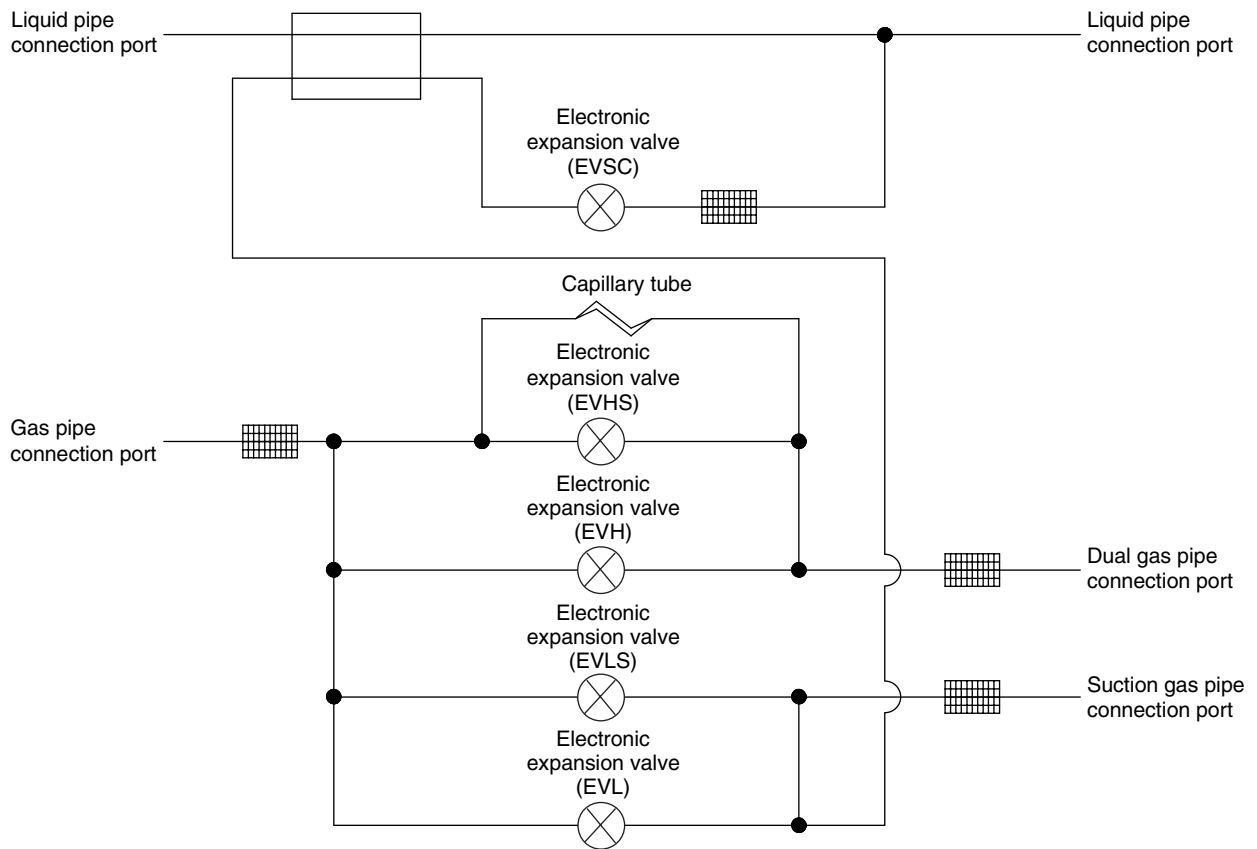
Indoor Unit



Connection Unit



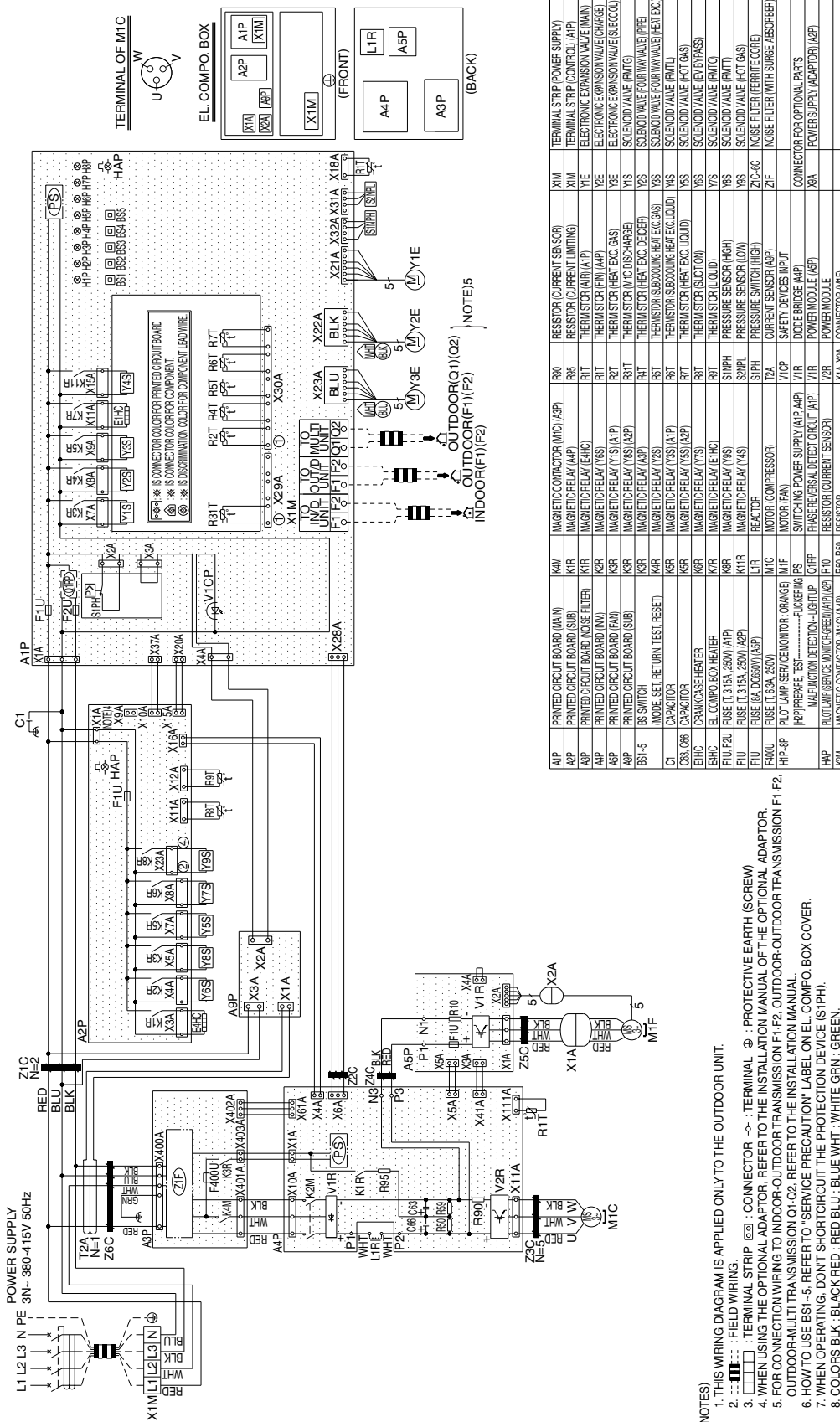
1.3 BS Unit



2. Wiring Diagrams for Reference

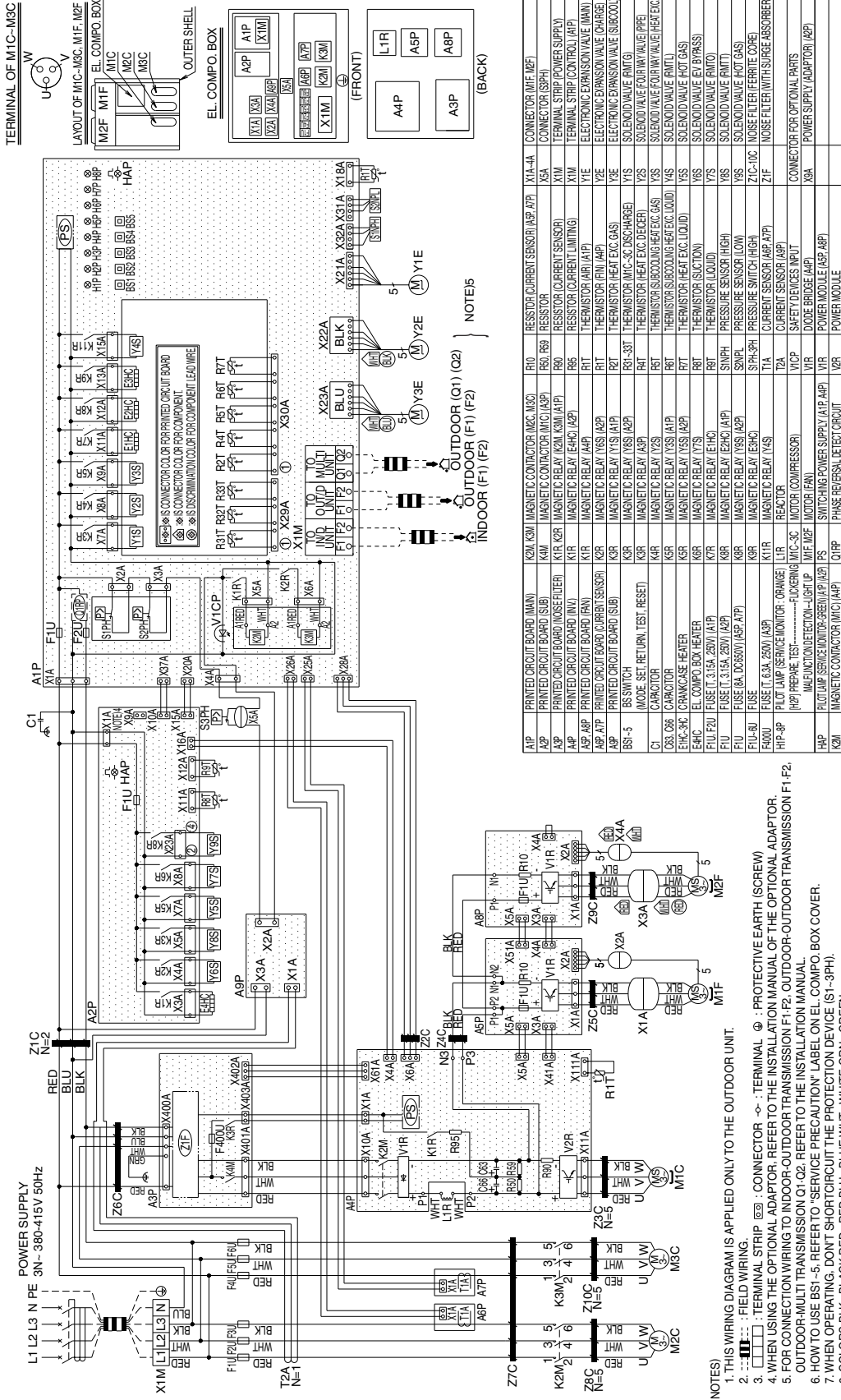
2.1 Outdoor Unit

RTSQ8PAY1



30075731B

RTSQ14PAY1, 16PAY1

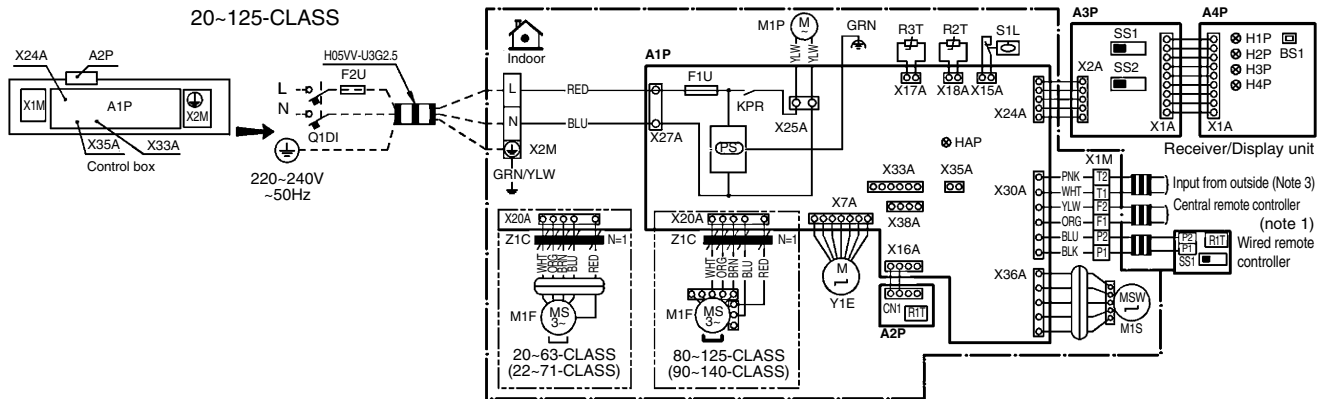


- NOTES**
1. THIS WIRING DIAGRAM IS APPLIED ONLY TO THE OUTDOOR UNIT.
 2. : : : : : FIELD WIRING.
 3. : : : : : TERMINAL STRIP
 4. WHEN USING THE OPTIONAL ADAPTOR, REFER TO THE INSTALLATION MANUAL OF THE OPTIONAL ADAPTOR.
 5. FOR CONNECTION WIRING TO INDOOR-OUTDOOR TRANSMISSION F1-F2, OUTDOOR-OUTDOOR TRANSMISSION F1-F2, OUTDOOR-MULTI TRANSMISSION O1-O2, 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 SHORTCIRCUIT THE PROTECTION DEVICE (S1-3PH).
 8. COLORS BLK : BLACK RED : RED BLU : BLUE WHT : WHITE GRN : GREEN.

3D075739B

2.2 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 | Colors: RED: Red | PRP: Purple | ORG: Orange |
| □□, D- : Connector | BLK: Black | GRY: Gray | GRN: Green |
| □□ : Connector | WHT: White | BLU: Blue | |
| -□□- : Field wiring | YLW: Yellow | PNK: Pink | |

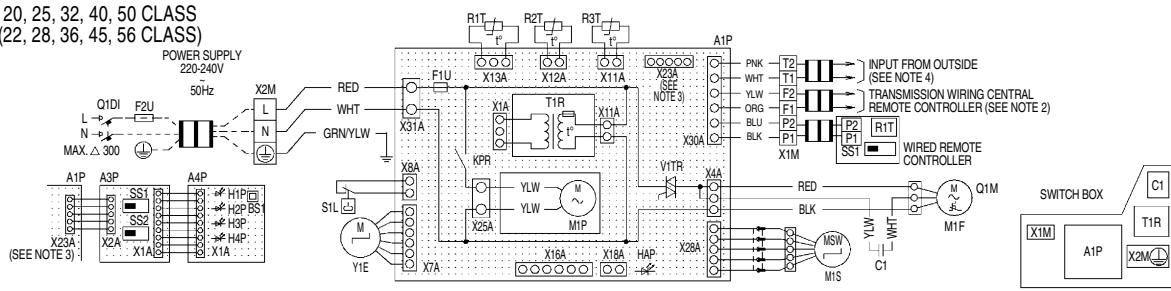
NOTES

- In case of using central remote control, connect it to the unit in accordance with the attached installation manual.
- X24A, X33A, X35A en X38A are connected when the optional accessories are being used.
- When connecting the input wires from outside, forced on/off control operation can be selected by the remote controller. see installation manual for more details.
- Confirm the method of setting the selector switch (SS1, SS2) by installation manual and engineering data, etc.

3TW31056-1

FXZQ20M / 25M / 32M / 40M / 50M9V1B

20, 25, 32, 40, 50 CLASS
(22, 28, 36, 45, 56 CLASS)



A1P	PRINTED CIRCUIT BOARD	T1R	TRANSFORMER (220-240V/22V)	H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
C1	CAPACITOR (M1F)	V1TR	TRIAC	H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
F1U	FUSE ((B), 5A, 250V)	X1M	TERMINAL STRIP	SS1	SELECTOR SWITCH (MAIN/SUB)
F2U	FIELD FUSE	X2M	TERMINAL STRIP	SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR GREEN)	Y1E	ELECTRONIC EXPANSION VALVE	CONNECTOR FOR OPTIONAL PARTS	
KPR	MAGNETIC RELAY (M1P)	WIRELESS REMOTE CONTROLLER (RECEIVER/DISPLAY UNIT)		X16A	CONNECTOR (ADAPTOR FOR WIRE)
M1F	MOTOR (INDOOR FAN)	R1T	THERMISTOR (AIR)	X18A	CONNECTOR (ON/OFF) (WIRING ADAPTOR FOR ELECTRICAL APPENDICES)
M1P	MOTOR (DRAIN PUMP)	SS1	SELECTOR SWITCH (MAIN/SUB)		
M1S	MOTOR (SWING FLAP)				
Q1DI	FIELD EARTH LEAK DETECTOR (MAX. 300mA)	A3P	PRINTED CIRCUIT BOARD		
Q1M	THERMAL PROTECTOR (M1F EMBEDDED)	A4P	PRINTED CIRCUIT BOARD		
R1T	THERMISTOR (AIR)	BS1	PUSH BUTTON (ON/OFF)		
R2T	THERMISTOR (COIL-LIQUID)	H1P	LIGHT EMITTING DIODE (ON-RED)		
R3T	THERMISTOR (COIL-GAS)	H2P	LIGHT EMITTING DIODE (TIMER-GREEN)		
S1L	FLOAT SWITCH				

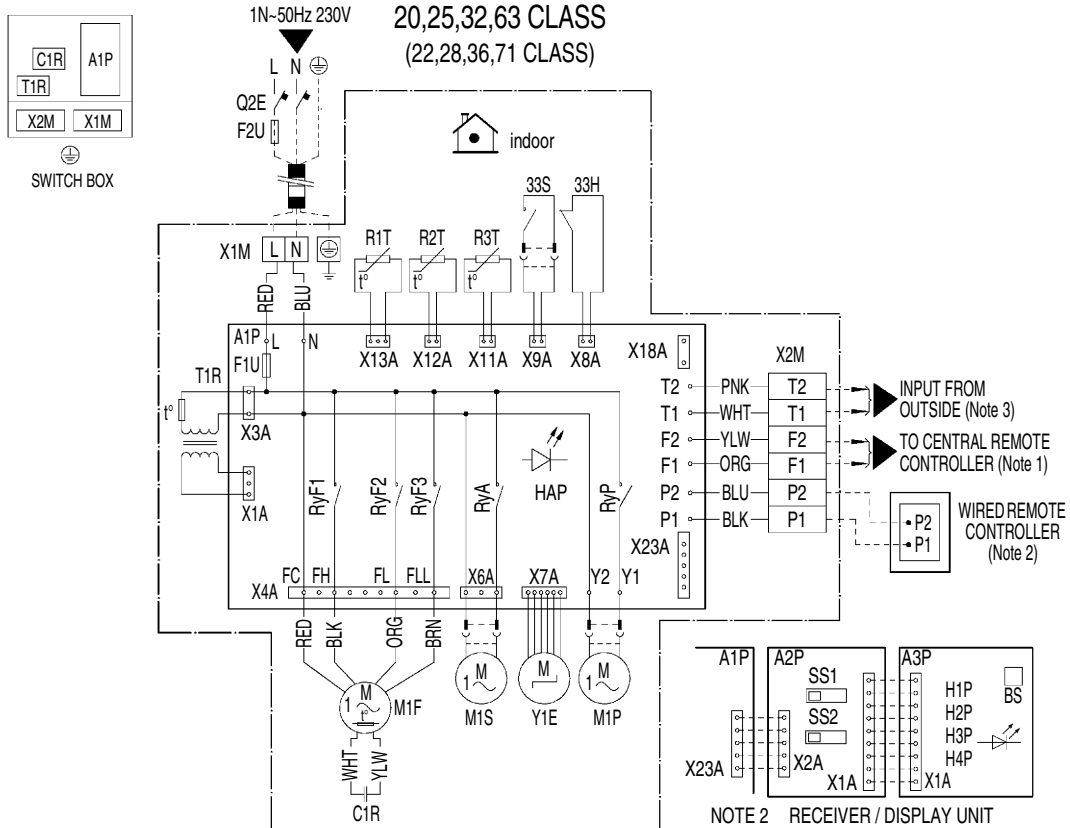
- □ □ : TERMINAL
- ⊗ : CONNECTOR
- : WIRE CLAMP
- ≡ || ≡ : FIELD WIRING

NOTES:

- IN CASE OF USING A REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE TO THE ATTACHED INSTALLATION MANUAL.
- X23A IS CONNECTED WHEN THE WIRELESS REMOTE CONTROLLER KIT IS BEING USED.
- 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.
- REMOTE CONTROLLER MODEL VARIES ACCORDING TO THE COMBINATION SYSTEM. SEE TECHNICAL DATA AND CATALOGS, ETC. BEFORE CONNECTION.

3TW26426-1C

FXCQ20M / 25M / 32M / 63M8V3B



--- FIELD WIRING

L : LIVE
 N : NEUTRAL
 --- CONNECTOR
 ○ : WIRE CLAMP
 ⊕ : PROTECTIVE EARTH (SCREW)

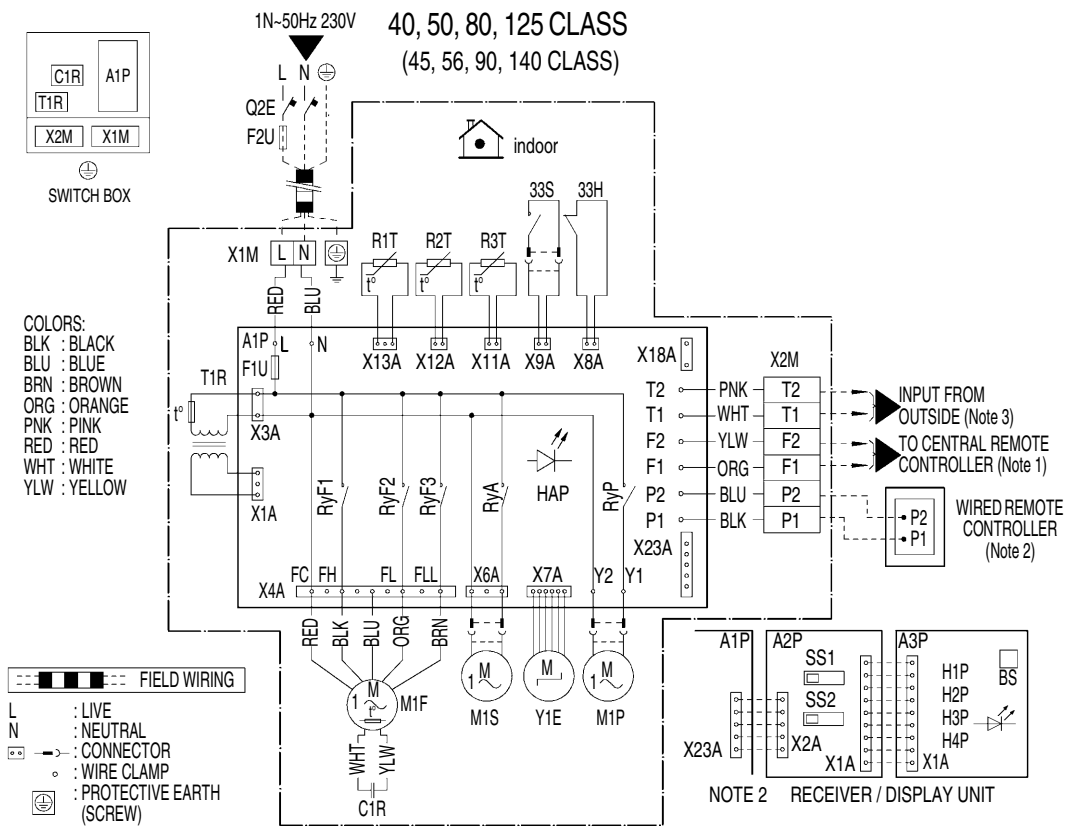
COLORS:
 BLK : BLACK
 BLU : BLUE
 BRN : BROWN
 ORG : ORANGE
 PNK : PINK
 RED : RED
 WHT : WHITE
 YLW : YELLOW

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)
M1F	MOTOR (INDOOR FAN)	Y1E	ELECTRONIC EXPANSION VALVE	X23A	CONNECTOR (WIRELESS REMOTE CONTROLLER)
M1S	MOTOR (SWING FLAP)	RECEIVER/DISPLAY UNIT (ATTACHED TO WIRELESS REMOTE CONTROLLER)			
M1P	MOTOR (DRAIN PUMP)	A2P, A3P	PRINTED CIRCUIT BOARD		
R1T	THERMISTOR (AIR)	BS	ON/OFF BUTTON		

- NOTES:
1. WHEN USING A CENTRAL 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



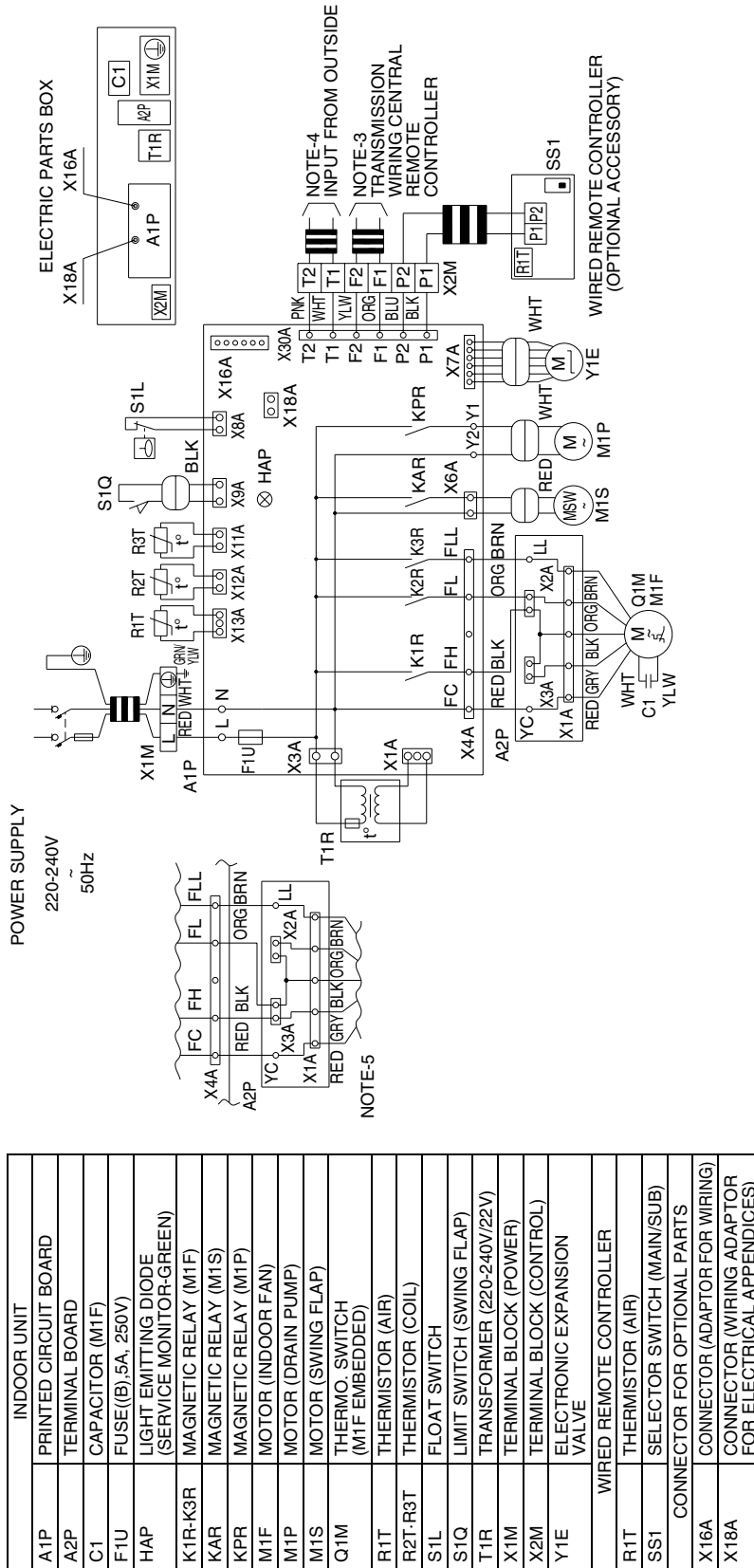
33H	FLOAT SWITCH	R2T, R3T	THERMISTOR (COIL)	H1P	LIGHT EMITTING DIODE (ON-RED)
33S	LIMIT SWITCH (SWING FLAP)	Q2E	EARTH LEAK DETECTOR	H2P	LIGHT EMITTING DIODE (TIMER-GREEN)
A1P	PRINTED CIRCUIT BOARD	RyA	MAGNETIC RELAY (M1S)	H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
C1R	CAPACITOR (M1F)	RyF1-3	MAGNETIC 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)
M1F	MOTOR (INDOOR FAN)	Y1E	ELECTRONIC EXPANSION VALVE	X23A	CONNECTOR (WIRELESS REMOTE CONTROLLER)
M1S	MOTOR (SWING FLAP)		RECEIVER/DISPLAY UNIT (ATTACHED TO WIRELESS REMOTE CONTROLLER)		
M1P	MOTOR (DRAIN PUMP)	A2P, A3P	PRINTED CIRCUIT BOARD		
R1T	THERMISTOR (AIR)	BS	ON/OFF BUTTON		

NOTES:

1. WHEN USING A CENTRAL 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.

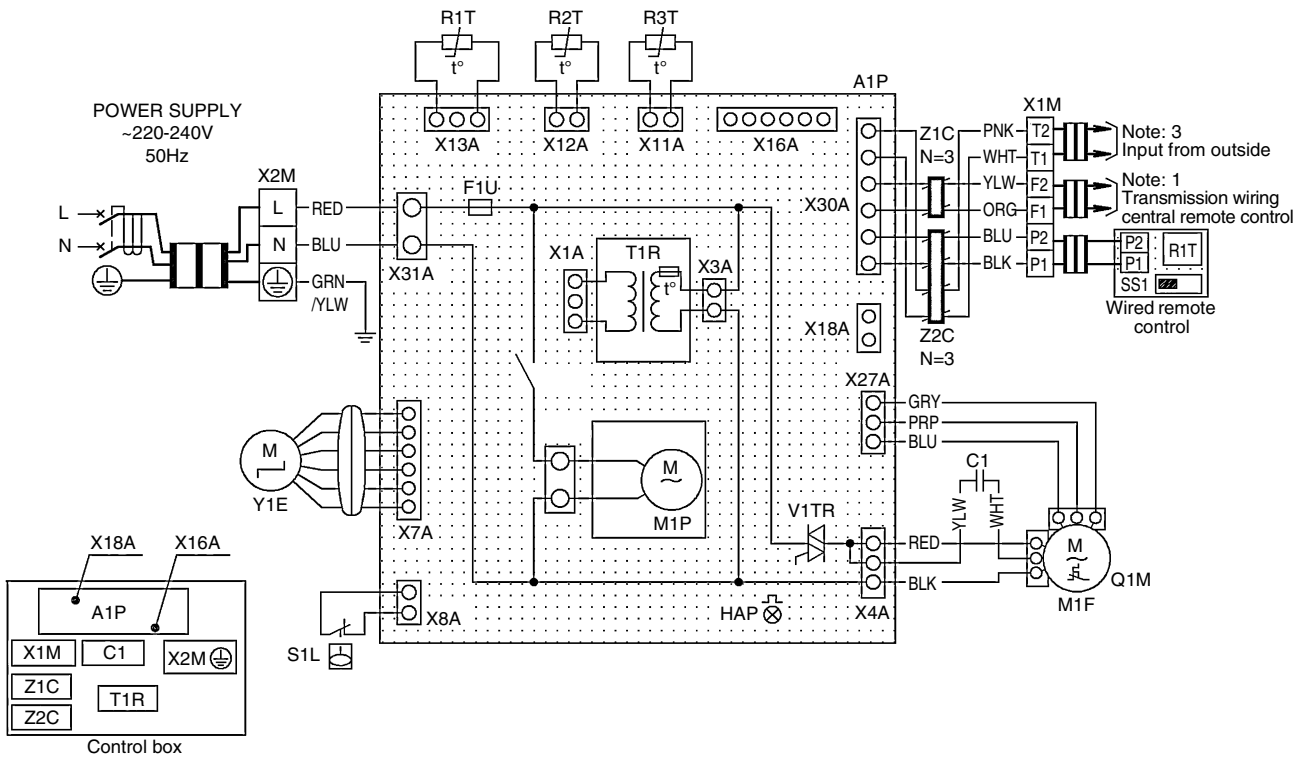
2TW23806-1D

FXKQ25MA / 32MA / 40MA / 63MAVE



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)
KPR	Magnetic relay (M1P)	T1R	Transformer (220V/22V)	Connector for optional parts	
M1F	Motor (indoor fan)	V1TR	Phase control circuit	X16A	Connector (adaptor for wiring)
M1P	Motor (drain pump)	X1M	Terminal block	X18A	Connector (wiring adaptor for electrical appendices)
Q1M	Thermal protector (M1F embedded)	X2M	Terminal block		
		Y1E	Electronic expansion valve		

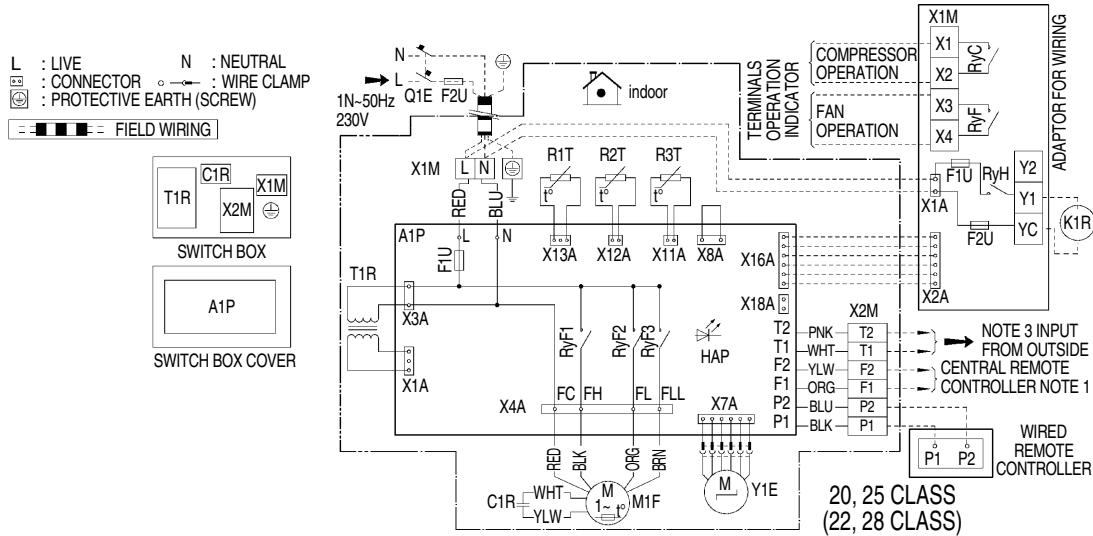
- : Terminal
 : Connector
 : Field wiring
- Colors: BLK: Black ORG: Orange WHT: White
 BUL: Blue PNK: Pink YLW: Yellow
 GRY: Gray PRP: Purple
 GRN: Green RED: Red

NOTES

- 1 In case of using central 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.

3D060547B

FXDQ20M / 25M9V3B



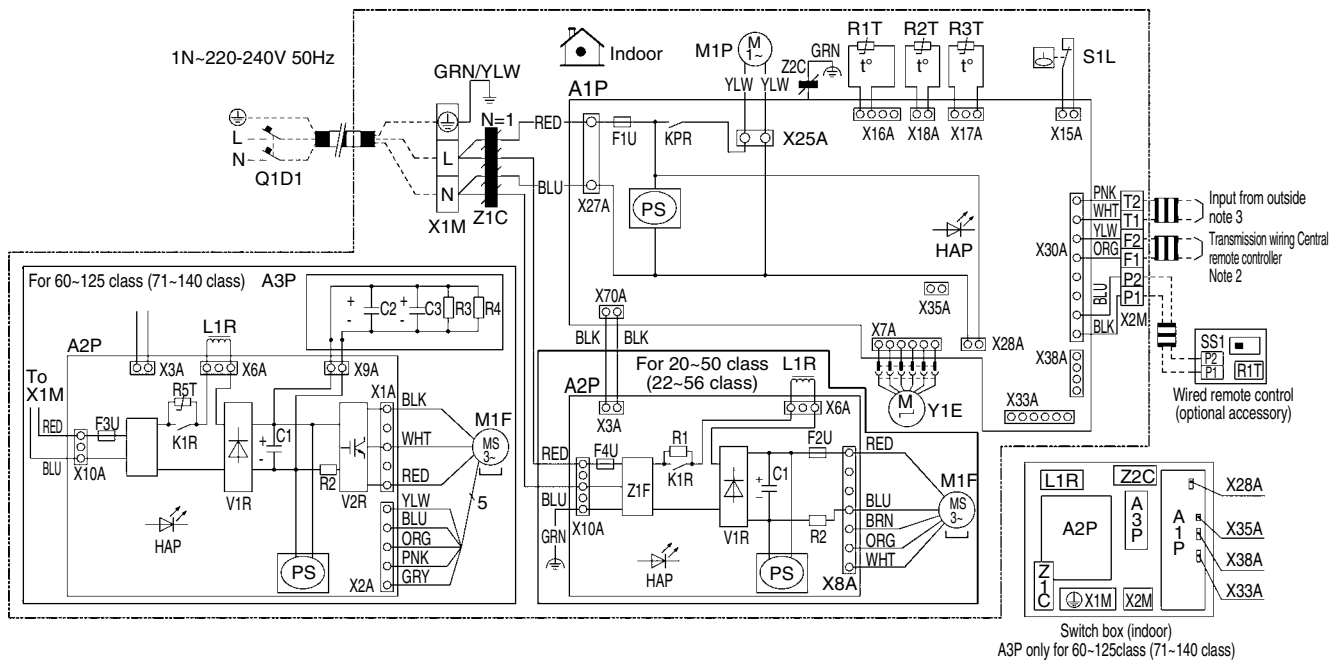
A1P	PRINTED CIRCUIT BOARD	RyF1-3	MAGNETIC RELAY (FAN)		ADAPTOR FOR WIRING	X1M	TERMINAL STRIP
C1R	CAPACITOR (FAN)	T1R	TRANSFORMER (220-240V/22V)	RyC, RyF	MAGNETIC RELAY		CONNECTOR FOR OPTIONAL PARTS
F1U	FUSE (250V, 10A)			RyH	MAGNETIC RELAY (J1EH)	X16A	CONNECTOR (WIRING ADAPTOR)
F2U	FIELD FUSE	X1M	TERMINAL STRIP (POWER)	F1U, F2U	FUSE (250V, 5A)	X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRICAL APPENDICES)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	X2M	TERMINAL STRIP (CONTROL)	X1A, X2A	CONNECTOR (WIRING ADAPTOR)		
M1F	MOTOR (FAN)	Y1E	ELECTRONIC EXPANSION VALVE				
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 CENTRAL 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

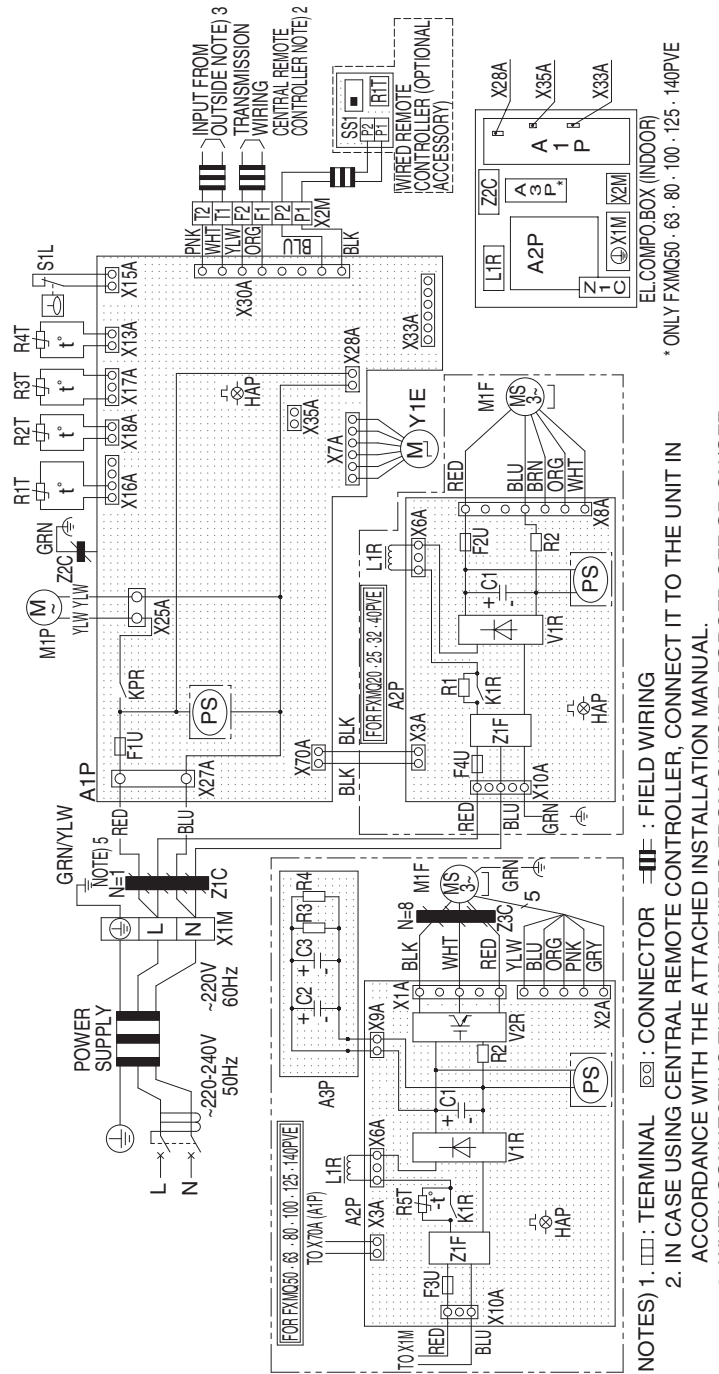
- L: Live
N: Neutral
- Colors: RED: Red
BLK: Black
WHT: White
YLW: Yellow
ORG: Orange
- BRN: Brown
GRY: Gray
BLU: Blue
PNK: Pink
GRN: Green

NOTES

- Use copper conductors only.
- When using the central remote control, see manual for connection to the unit.
- 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



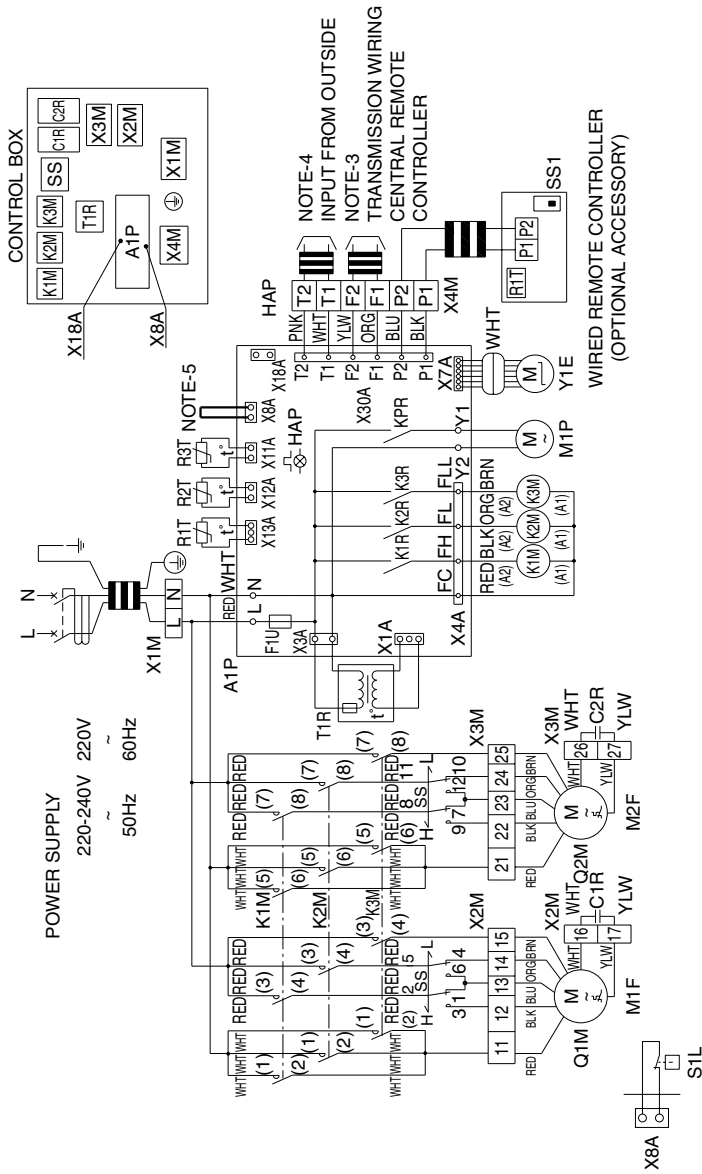
* ONLY FXMQ50 · 63 · 80 · 100 · 125 · 140PVE

- NOTES) 1. [Terminal symbol] : TERMINAL [Terminal symbol] : CONNECTOR [Terminal symbol] : FIELD WIRING
2. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
3. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
4. COLORS BLK : BLACK RED : RED BLU : BLUE WHT : WHITE PNK : PINK YLW : YELLOW BRN : BROWN GRY : GRAY GRN : GREEN ORG : ORANGE.
5. FOR FXMQ50 · 63 · 80 · 100 · 125 · 140PVE, N=2.

INDOOR UNIT	R1T	THERMISTOR (SECTION AIR)
A1P PRINTED CIRCUIT BOARD	R2T	THERMISTOR (LIQUID)
A2P PRINTED CIRCUIT BOARD (FAN)	R3T	THERMISTOR (GAS)
A3P PRINTED CIRCUIT BOARD (CAPACITOR)	R4T	THERMISTOR (DISCHARGE AIR)
[Capacitor symbol]	R5T	THERMISTOR NTC (CURRENT LIMITING)
[Capacitor symbol]	S1L	FLOAT SWITCH
F1U FUSE (T. 3.15A, 250V)	V1R	DIODE BRIDGE
F2U FUSE (T. 5A, 250V)	V2R	POWER MODULE
F3U FUSE (T. 6.3A, 250V)	X1M	TERMINAL STRIP (POWER SUPPLY)
F4U FUSE (T. 6.3A, 250V)	X2M	TERMINAL STRIP (SERVICE MONITOR-GREEN) (A1P, A2P)
HAP	Y1E	ELECTRONIC EXPANSION VALVE
KPR	Z1C	MAGNETIC RELAY
K1R	Z2C	NOISE FILTER (FERRITE CORE)
L1R	Z3C	NOISE FILTER (FERRITE CORE)
M1P	Z1F	NOISE FILTER (MOTOR DRAIN PUMP)
PS	X28A	CONNECTOR (OPTIONAL ACCESSORY)
R1	X28A	CONNECTOR (POWER SUPPLY FOR WIRING)
R2	X33A	CONNECTOR (FOR WIRING)
R3, R4	X35A	CONNECTOR (ADAPTER)
		WIRED REMOTE CONTROLLER (ACCESSORY)
	R1T	THERMISTOR (AIR)
	SS1	SELECTOR SWITCH (MAIN/SUB)

3D058783E

FXMQ200MA / 250MAVE



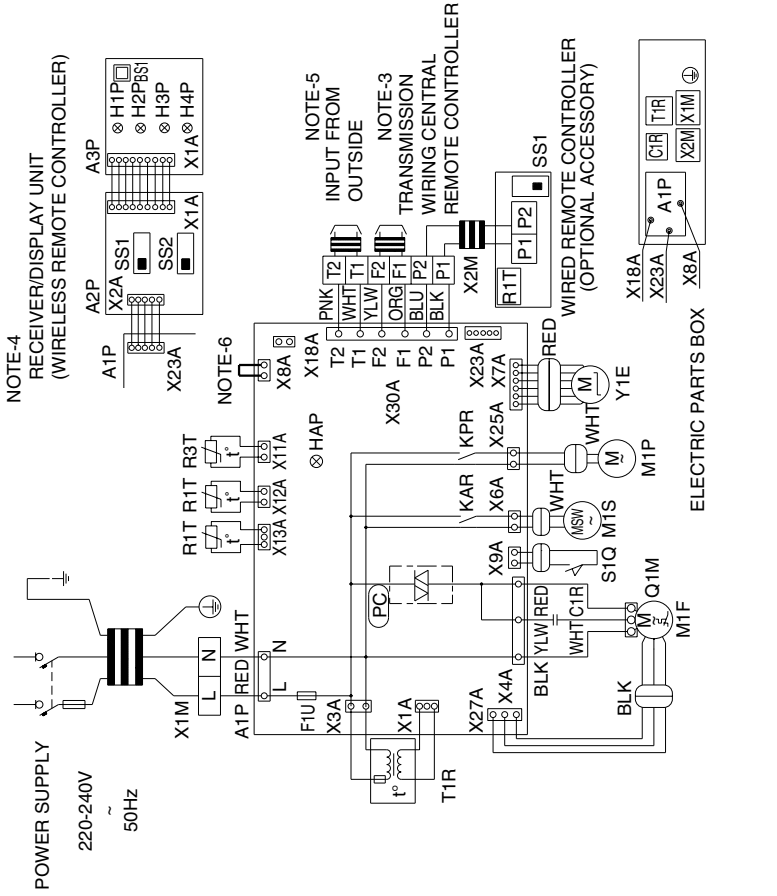
INDOOR UNIT	
A1P	PRINTED CIRCUIT BOARD
C1R/C2R	CAPACITOR (M1F-2F)
FIU	FUSE (⑤:5A, 250V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)
K1M	MAGNETIC CONTACTOR (M1F-2F)
K2M	MAGNETIC CONTACTOR (M1F-2F)
K3M	MAGNETIC CONTACTOR (M1F-2F)
K1R-K3R	MAGNETIC RELAY (M1F-2F)
KPR	MAGNETIC RELAY (M1P)
M1F-M2F	MOTOR (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
- ②, ③, ④ : CONNECTOR
- ⑤ : SHORT CIRCUIT CONNECTOR
- ⑥ : TERMINAL
- ⑦ : FIELD WIRING

- IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
- 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.
- IN CASE INSTALLING THE DRAIN PUMP, REMOVE THE SHORT CIRCUIT CONNECTOR OF X8A AND EXECUTE THE ADDITIONAL WIRING FOR FLOAT SWITCH AND DRAIN PUMP.
- SYMBOLS SHOW AS FOLLOWS: (PNK : PINK WHT : WHITE YLW : YELLOW ORG : ORANGE BLU : BLUE BLK : BLACK RED : BROWN)
- USE COPPER CONDUCTORS ONLY.
- IN CASE HIGH E.S.P. OPERATION, CHANGE THE SWITCH (SS) FOR "H".

FXHQ32MA / 63MA / 100MAVE



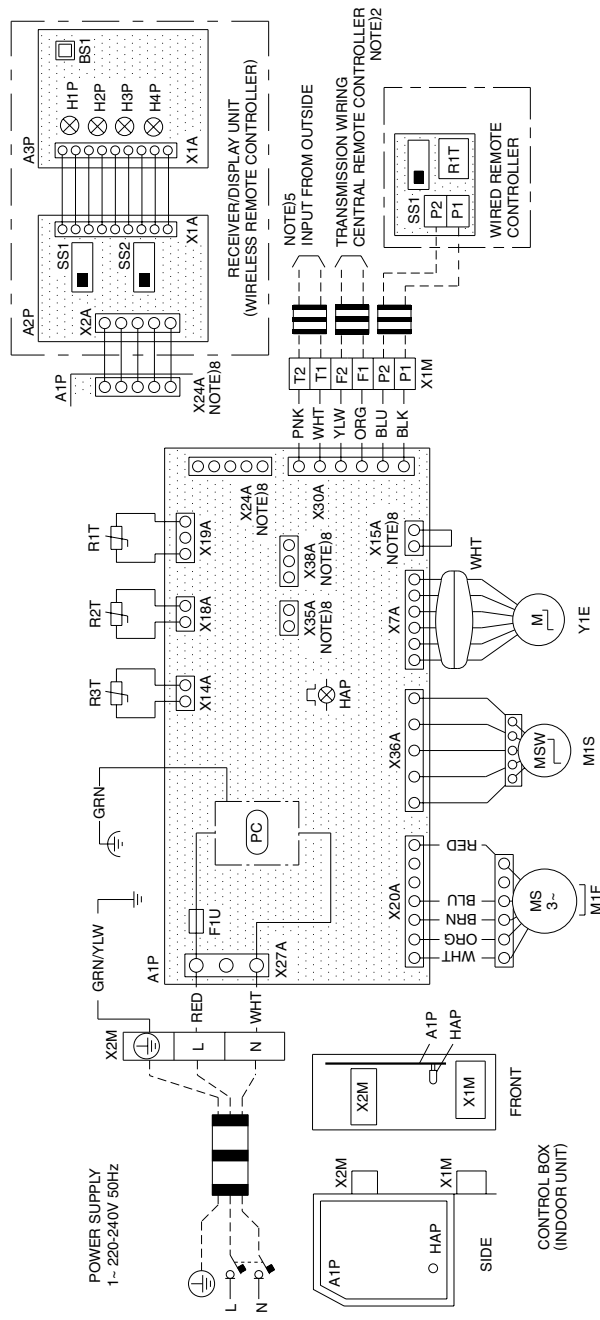
INDOOR UNIT	H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
A1P	PRINTED CIRCUIT BOARD	H4P
C1R	CAPACITOR (M1F)	SS1
F1U	FUSE (B), 5A, 250V	SS2
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	CONNECTOR FOR OPTIONAL PARTS
KAR	MAGNETIC RELAY (M1S)	X8A
KPR	MAGNETIC RELAY (M1F)	X18A
M1F	MOTOR (INDOOR FAN)	X23A
M1S	MOTOR (SWING FLAP)	CONNECTOR (WIRELESS REMOTE CONTROLLER)
Q1M	THERMO SWITCH (MIF 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)	
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)	

NOTES

1. [Symbol] : TERMINAL BLOCK [Symbol] : [Symbol] : CONNECTOR [Symbol] : SHORT CIRCUIT CONNECTOR
2. [Symbol] : FIELD WIRING
3. IN CASE USING CENTRAL 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 TO 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

FXAQ15PA / 20PA / 25PA / 32PA / 40PA / 50PA / 63PAV1



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)

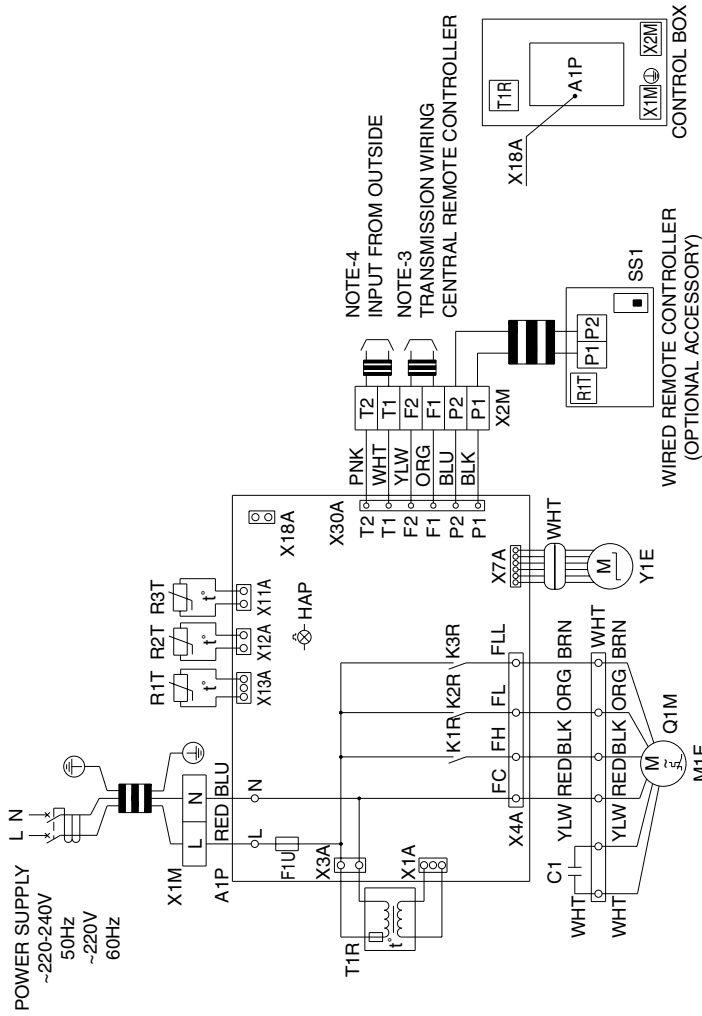
- NOTES
1. : TERMINAL : FIELD WIRING
 2. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
 3. SYMBOLS SHOW AS FOLLOWS : RED : RED WHT : WHITE GRN : GREEN
PNK : PINK YLW : YELLOW BLK : BLACK ORG : ORANGE BLU : BLUE BRN : BROWN
 4. SHOWS 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 TO 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 WIRELESS 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 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)

WIRELESS REMOTE CONTROLLER	
R1T	THERMISTOR (AIR)
SS1	SELECTOR SWITCH (MAIN/SUB)

3D078497

FXLQ20MA / 25MA / 32MA / 40MA / 50MA / 63MAVE
FXNQ20MA / 25MA / 32MA / 40MA / 50MA / 63MAVE



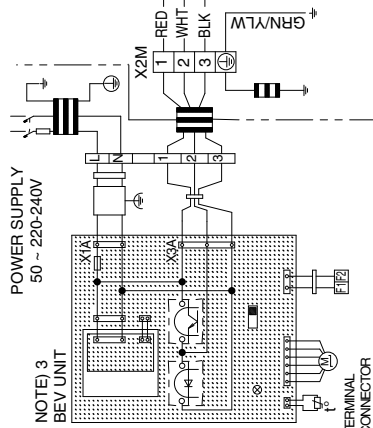
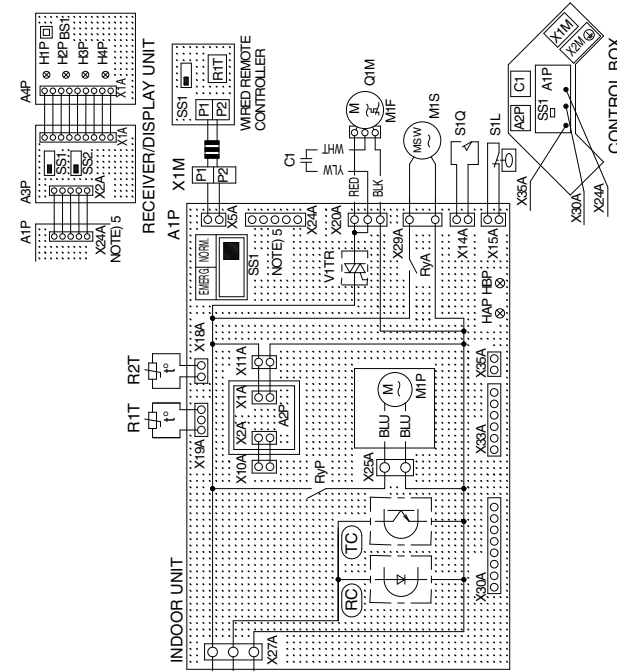
NOTES

1. □□□□ : TERMINAL BLOCK, □□□□ : CONNECTOR, ○-○ : TERMINAL
2. ┌──┐ : FIELD WIRING
3. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
5. 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	Y1E	ELECTRONIC EXPANSION VALVE
C1	W1R	WIRED REMOTE CONTROLLER
F1U	R1T	THERMISTOR (AIR)
HAP	SS1	SELECTOR SWITCH (MAIN/SUB)
K1R-K3R	CON	CONNECTOR FOR OPTIONAL PARTS
M1F	X18A	CONNECTOR WIRING ADAPTOR FOR ELECTRICAL APPENDICES
Q1M		MOTOR (INDOOR FAN)
R1T		THERMO SWITCH (M1F EMBEDDED)
R2T-R3T		THERMISTOR (AIR)
T1R		THERMISTOR (COIL)
X1M		TRANSFORMER (220-240V/22V)
		TERMINAL BLOCK (POWER)

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FXUQ71MA / 100MA / 125MAV1



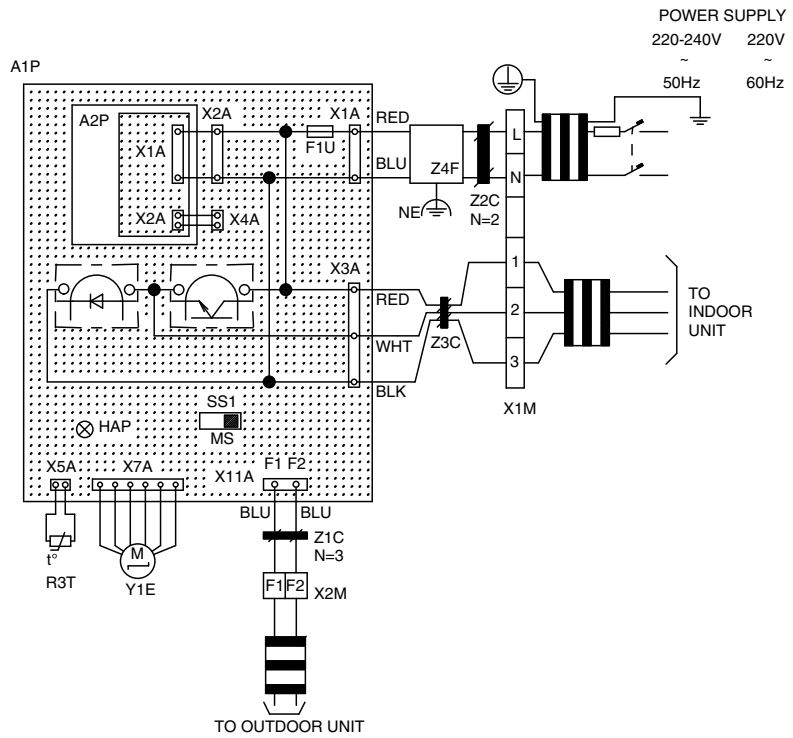
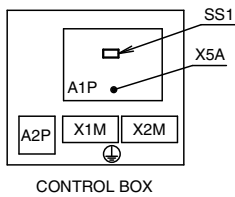
- NOTES
1. : TERMINAL
 2. : CONNECTOR
 3. THE BEV UNIT SHOWS AN OUTLINE. PLEASE REFER TO A WIRING DIAGRAM OF BEV UNIT PASTING IN DETAIL.
 4. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
 5. X24A IS CONNECTED WHEN THE WIRELESS REMOTE CONTROLLER KIT IS BEING USED.
 6. REMOTE CONTROLLER MODEL VARIES ACCORDING TO THE COMBINATION SYSTEM. CONFIRM ENGINEERING MATERIALS AND CATALOGS, ETC. BEFORE CONNECTING.
 7. CONFIRM THE METHOD OF SETTING THE SELECTOR SWITCH (SS1, SS2) OF WIRELESS REMOTE CONTROLLER AND WIRELESS REMOTE CONTROLLER BY INSTALLATION MANUAL AND ENGINEERING DATA, ETC.
 8. SYMBOLS SHOW AS FOLLOWS:
 RED : RED BLK : BLACK WHT : WHITE YLW : YELLOW GRN : GREEN BLU : BLUE

INDOOR UNIT		WIRED REMOTE CONTROLLER	
A1P	PRINTED CIRCUIT BOARD	R1T	THERMISTOR (AIR)
A3P	PRINTED CIRCUIT BOARD (TRANSFORMER 220-240V/16V)	SS1	SELECTOR SWITCH (MAINSUB)
C1	CAPACITOR (MIF)	RECEIVER/DISPLAY UNIT (ATTACHED TO WIRELESS REMOTE CONTROLLER)	
H4P	LIGHT EMITTING DIODE (SERVICE MONITOR GREEN)	A4P	PRINTED CIRCUIT BOARD
H8P	LIGHT EMITTING DIODE (SERVICE MONITOR GREEN)	B5T	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)	H3P	LIGHT EMITTING DIODE (FILTER SIGNED)
R1T	THERMISTOR (AIR)	H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
R2T	THERMISTOR (COIL)	SS1	SELECTOR SWITCH (MAINSUB)
RVA	MAGNETIC RELAY (M1A)	SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
RYP	MAGNETIC RELAY (M1P)	CONNECTOR FOR OPTIONAL PARTS	
STQ	LIMIT SWITCH (SWING FLAP)	X24A	CONNECTOR (WIRELESS REMOTE CONTROLLER)
SS1	SELECTOR SWITCH (EMERGENCY)	X30A	CONNECTOR (INTERFACE ADAPTOR FOR SKY AIR SERIES)
SS2	SELECTOR SWITCH (EMERGENCY)	X35A	CONNECTOR (GROUP CONTROL ADAPTOR)
X1M	PHASE CONTROL CIRCUIT		
X2M	TERMINAL STRIP		
FC	SIGNAL RECEIVER		
TC	SIGNAL TRANSMISSION CIRCUIT		

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BEVQ71MA / 100MA / 125MAVE

BEV UNIT	
A1P	PRINTED CIRCUIT BOARD ASSY
A2P	POWER SUPPLY PRINTED CIRCUIT BOARD ASSY (220-240V/16V)
F1U	FUSE (B), 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

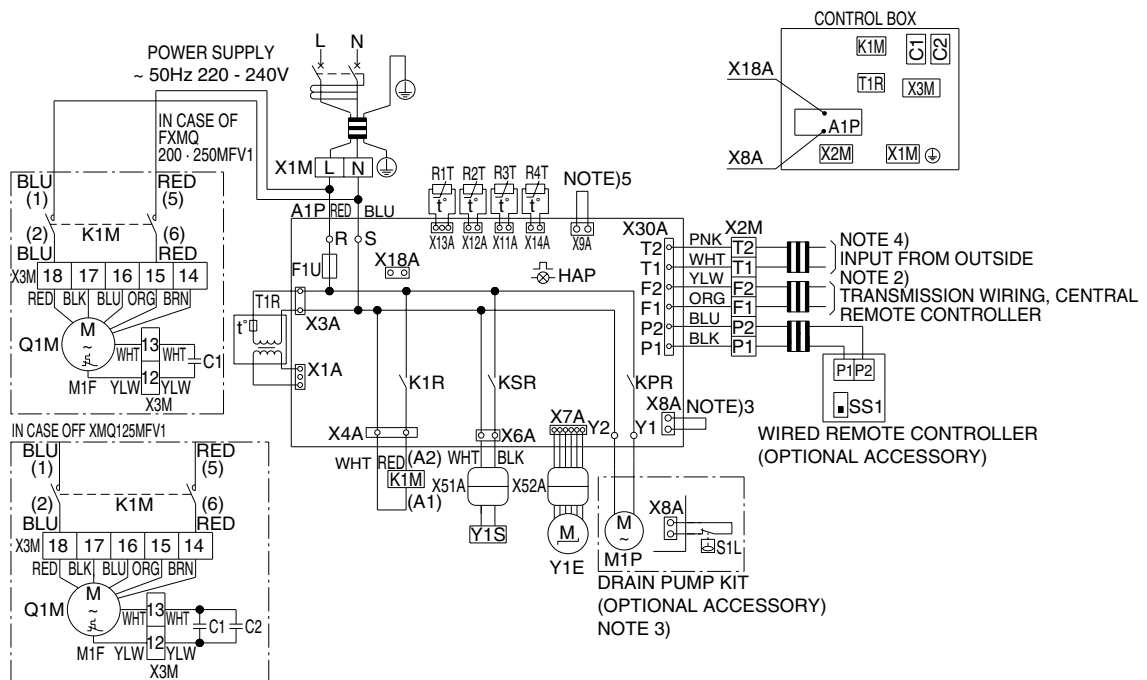


NOTES)

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 (⑤.5A,250V) (A1P)	X51A, X52A	CONNECTOR
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	Y1E	ELECTRIC EXPANSION VALVE
		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 (M1F EMBEDDED 135° C)		WIRED REMOTE CONTROLLER
		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 FOR ELECTRICAL APPENDICES)
R4T	THERMISTOR (DISCHARGE AIR)		
T1R	TRANSFORMER (220-240V/22V)		

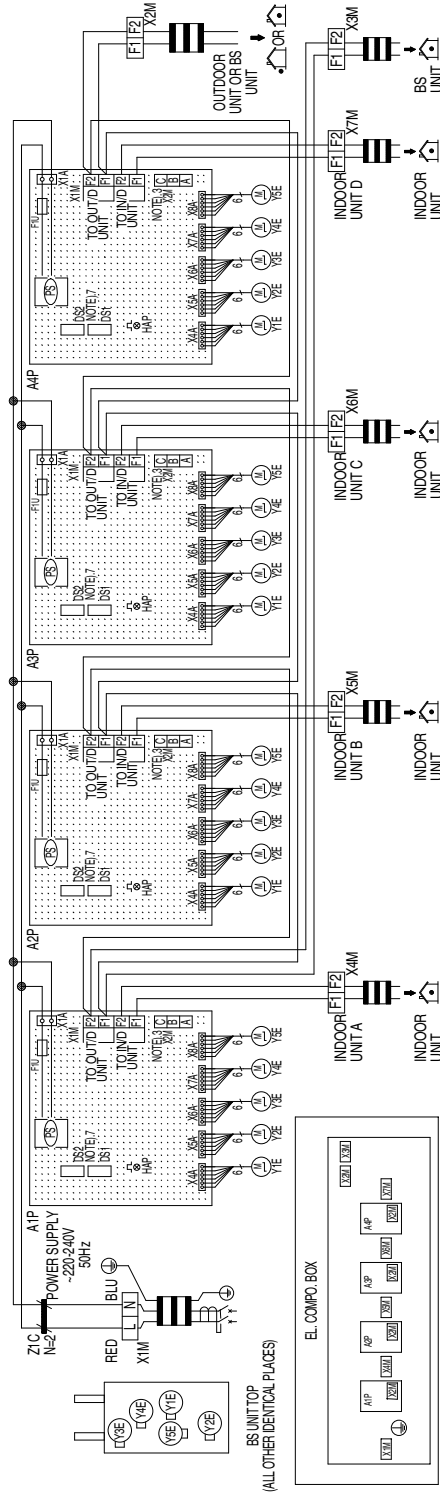
NOTES)

- : TERMINAL BLOCK, ⊞, ⊞, ⊞: CONNECTOR, —○—: TERMINAL.
 ⊞: SHORT CIRCUIT CONNECTOR, ⊞: FIELD WIRING.
- IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
- 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.
- 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.
- DO NOT REMOVE SHORT CIRCUIT CONNECTOR OF X9A.
- SYMBOLS SHOW AS FOLLOWS. (PNK : PINK WHT : WHITE YLW : YELLOW ORG : ORANGE BLU : BLUE BLK : BLACK RED : RED BRN : BROWN)

C: 3D044996D

2.3 BS Unit

BSV4Q100PV1

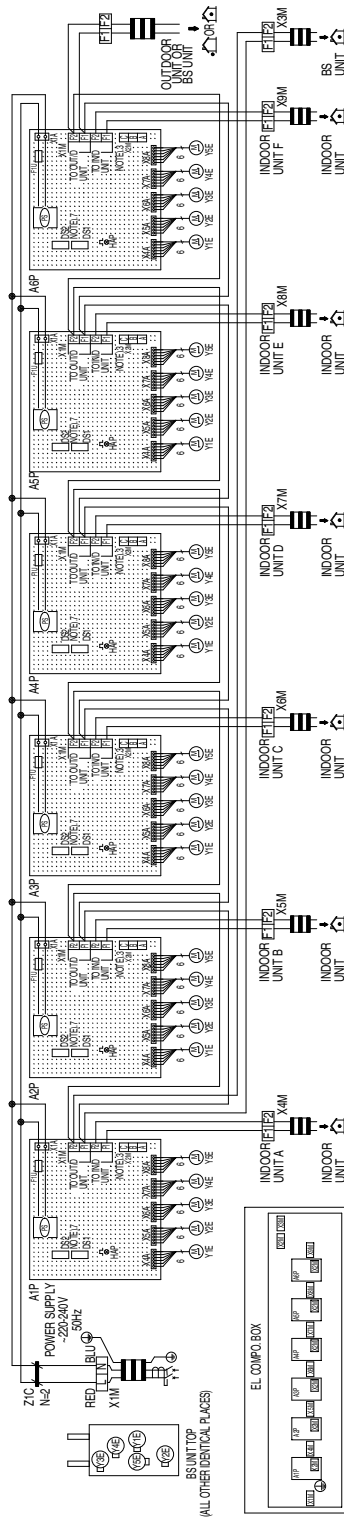


A1P (UNIT A)	PRINTED CIRCUIT BOARD (INDOOR UNIT A)	X2M (A1P-A4P)	TERMINAL STRIP (C/H SELECTOR)
A2P (UNIT B)	PRINTED CIRCUIT BOARD (INDOOR UNIT B)	X1M	TERMINAL STRIP (POWER)
A3P (UNIT C)	PRINTED CIRCUIT BOARD (INDOOR UNIT C)	X2M-X7M	TERMINAL STRIP (CONTROL)
A4P (UNIT D)	PRINTED CIRCUIT BOARD (INDOOR UNIT 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 DISCHARGE)
HAP	FLASHING LAMP (SERVICE MONITOR-GREEN)	Y4E	ELECTRONIC EXPANSION VALVE (MAIN SUCTION)
PS	SWITCHING POWER SUPPLY (A1P-A4P)	Y5E	ELECTRONIC EXPANSION VALVE (MAIN SUCTION)
X1M (A1P-A4P)	TERMINAL STRIP (CONTROL)	Z1C	NOISE FILTER (FERITE CORE)

- NOTES) 1. THIS WIRING DIAGRAM APPLIES TO THE BS UNIT ONLY. 6. USE COPPER CONDUCTORS ONLY.
2. : TERMINAL STRIP, : 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)
7. DIP SWITCH (DS1:2) INITIAL SETTINGS ARE AS FOLLOWS.
- ON
 OFF
 BS1 - BS2
- FOR USING DIP SWITCH (DS1:2), REFER TO INSTALLATION MANUAL OR "SERVICE PRECAUTION" LABEL ON EL. COMPO. BOX COVER.

3D063928B

BSV6Q100PV1



- NOTES) 1. THIS WIRING DIAGRAM APPLIES TO THE BS UNIT ONLY.
 2. : TERMINAL STRIP, : 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 (CH 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 SECTION)
DS1, DS2	DIP SWITCH	Y3E	ELECTRONIC EXPANSION VALVE (SUB DISCHARGE)
F1U	FUSE (T. 3.15A, 250V)	Y4E	ELECTRONIC EXPANSION VALVE (MAIN DISCHARGE)
HAP	FLASHING LAMP (SERVICE MONITOR-GREEN)	Y5E	ELECTRONIC EXPANSION VALVE (MAIN SECTION)
PS	SWITCHING POWER SUPPLY (A1P-A6P)	Z1C	NOISE FILTER (FERITE CORE)

3D063929B

3. Option List

3.1 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)		*KRP4A53	*KRP4A536	*KRP4A51	KRP4A51	*KRP4A54	KRP4A51	*KRP4A53	KRP4A51	*KRP4A51	*KRP4A52	*KRP4A51	KRP4A51		
7	Remote sensor		KRCS01-4B	KRCS01-1	KRCS01-1	KRCS01-1									KRCS01-4B	KRCS01-1
8	Installation box for adaptor PCB		Note 2, 3 KRP1H96	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	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 R-410A	*DTA102A52 *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.

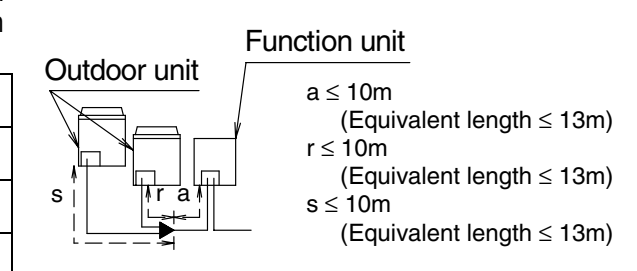
3.2 Option Lists (Outdoor Unit)

RTSYQ10 ~ 20PAY1

Optional Accessories		Models	RTSYQ10PAY1	RTSYQ14PAY1 RTSYQ16PAY1	RTSYQ20PAY1
Distributive piping	REFNET joint		KHRP26A22T	KHRP26A22T	KHRP26A22T
			KHRP26A33T	KHRP26A33T	KHRP26A33T
			—	KHRP26A72T	KHRP26A72T
			—	—	KHRP26A73T
Outdoor unit multi connection piping kit			—	—	BHFP30A56

4. Example of Connection (R-410A Type)

Example of connection (Connection of 8 indoor units)		Branch with REFNET joint			Branch with REFNET joint and header			Branch with REFNET header						
		Single outdoor system			Multi outdoor system			Single outdoor system			Multi outdoor system			
(*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.														
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											
Allowable height difference	Between outdoor unit and function unit	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											
	Between outdoor unit and outdoor unit multi connection piping kit		Equivalent pipe length from outdoor unit to function unit, that from first outdoor unit multi connection piping kit to outdoor unit 13m											
Allowable length after the branch	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											
	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			



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
$200 \leq x < 290$	KHRP26A33T
$290 \leq x < 640$	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
$200 \leq x < 290$	KHRP26M33H
$290 \leq x < 640$	KHRP26M72H
$640 \leq x$	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]

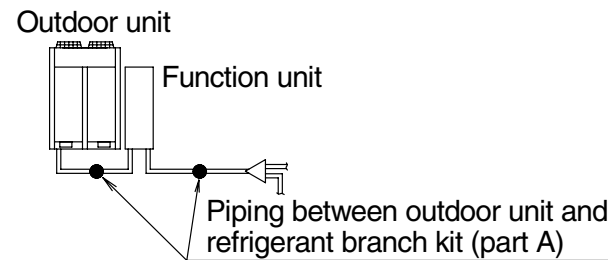
Example REFNET joint B : Indoor units [7] + [8]
Example REFNET header : Indoor units [1]+[2]+[3]+[4]+[5]+[6]

Example REFNET header : Indoor units [1] + [2] + [3] + [4] + [5] + [6] + [7] + [8]

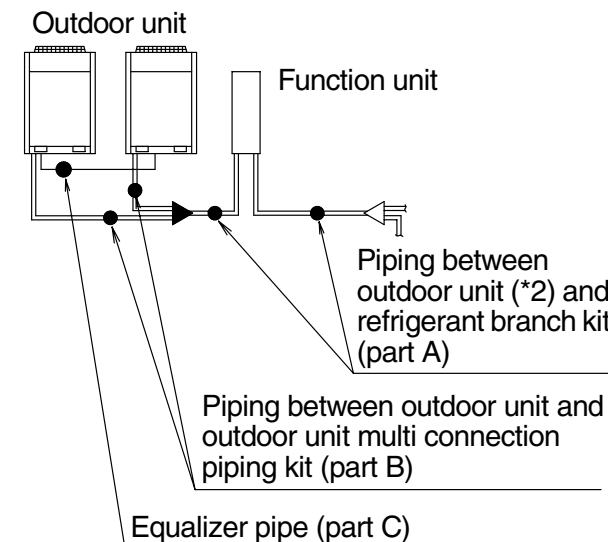
Pipe size selection

- ⚠ The thickness of the pipes in the table shows the requirements of Japanese High Pressure Gas Control law. (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.

Indoor capacity index	Piping size (O. D.)	
	Gas pipe	Liquid pipe
$x < 150$	φ15.9	φ9.5
$150 \leq x < 200$	φ19.1	
$200 \leq x < 290$	φ22.2	φ12.7
$290 \leq x < 420$	φ28.6	
$420 \leq x < 640$		

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	
200 type	φ19.1	φ9.5
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.)

$$R = \left[\begin{aligned} &\left(\frac{\text{Total length(m) of liquid piping size at } \phi 22.2}{\text{Total length(m) of liquid piping size at } \phi 19.1} \right) \times 0.37 + \left(\frac{\text{Total length(m) of liquid piping size at } \phi 19.1}{\text{Total length(m) of liquid piping size at } \phi 15.9} \right) \times 0.26 \\ &+ \left(\frac{\text{Total length(m) of liquid piping size at } \phi 15.9}{\text{Total length(m) of liquid piping size at } \phi 12.7} \right) \times 0.18 + \left(\frac{\text{Total length(m) of liquid piping size at } \phi 12.7}{\text{Total length(m) of liquid piping size at } \phi 9.5} \right) \times 0.12 \\ &+ \left(\frac{\text{Total length(m) of liquid piping size at } \phi 9.5}{\text{Total length(m) of liquid piping size at } \phi 6.4} \right) \times 0.059 + \left(\frac{\text{Total length(m) of liquid piping size at } \phi 6.4}{\text{Total length(m) of liquid piping size at } \phi 6.4} \right) \times 0.022 \end{aligned} \right] + \text{FOR THE SYSTEM}$$

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	

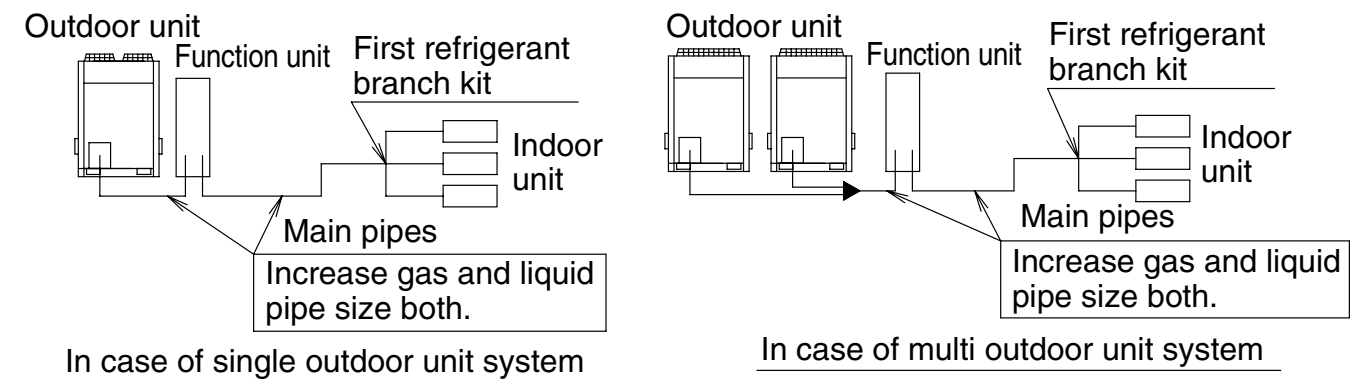
$$R = \underbrace{40}_{a, b} \times 0.18 + \underbrace{25}_{c, r} \times 0.12 + \underbrace{50}_{j, k, l, s} \times 0.059 + \underbrace{80}_{d \sim i} \times 0.022 = 14.91 \rightarrow \boxed{14.9\text{kg}}$$

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 (*)	φ15.9 → φ19.1
RTSYQ20 type	φ28.6 → φ31.8 (*)	φ15.9 → φ19.1

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



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.	$\boxed{8} c + d + e + f + g + h + q \leq 90 \text{ m}$ 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)	$a + b + c \times 2 + d \times 2 + e \times 2 + f \times 2 + g \times 2 + h \times 2 + i + j + k + l + m + n + p + q \leq 500 \text{ m}$	
3. Indoor unit to the nearest branch kit ≤ 40 m	$i, j, \dots, p, q \leq 40 \text{ m}$	
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 $\boxed{8}$ The nearest indoor unit $\boxed{1}$ $(a + b + c + d + e + f + g + h + q) - (a + b + i) \leq 40 \text{ m}$	

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

Revision History

Month / Year	Version	Revised contents
09 / 2012	SiBE311209	First edition

Warning



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

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

Cautions on product corrosion

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



JMI-0107

Organization:
DAIKIN INDUSTRIES, LTD.
AIR CONDITIONING MANUFACTURING DIVISION

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



JQA-1452

Organization:
DAIKIN INDUSTRIES
(THAILAND) LTD.

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



EC99J2044

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

Dealer

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