DAIKIN

Si341009

R-410A

Service Manual

VRV III-Q

Heat Pump R-410A 50Hz
RQYQ8-48PY1

VRV III-Q R-410A Heat Pump / Heat Recovery 50Hz

1. Introduction

1.1 Safety Cautions

Cautions and Warnings

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

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

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

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

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

1.1.1 Caution in Repair

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

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

1.1.2 Cautions Regarding Products after Repair

Warning	
Be sure to use parts listed in the service parts list of the applicable model and appropriate tools to conduct repair work. Never attempt to modify the equipment. The use of inappropriate parts or tools can cause an electrical shock, excessive heat generation or fire.	
When relocating the equipment, make sure that the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength and if the installation work is not conducted securely, the equipment can fall and cause injury.	
Be sure to install the product correctly by using the provided standard installation frame. Incorrect use of the installation frame and improper installation can cause the equipment to fall, resulting in injury.	For integral units only
Be sure to install the product securely in the installation frame mounted on a window frame. If the unit is not securely mounted, it can fall and cause injury.	For integral units only
Be sure to use an exclusive power circuit for the equipment, and follow the technical standards related to the electrical equipment, the internal wiring regulations and the instruction manual for installation when conducting electrical work. Insufficient power circuit capacity and improper electrical work can cause an electrical shock or fire.	

Warning	
Be sure to use the specified cable to connect between the indoor and outdoor units. Make the connections securely and route the cable properly so that there is no force pulling the cable at the connection terminals. Improper connections can cause excessive heat generation or fire.	
When connecting the cable between the indoor and outdoor units, make sure that the terminal cover does not lift off or dismount because of the cable. If the cover is not mounted properly, the terminal connection section can cause an electrical shock, excessive heat generation or fire.	
Do not damage or modify the power cable. Damaged or modified power cable can cause an electrical shock or fire. Placing heavy items on the power cable, and heating or pulling the power cable can damage the cable.	
Do not mix air or gas other than the specified refrigerant (R-410A) in the refrigerant system. If air enters the refrigerating system, an excessively high pressure results, causing equipment damage and injury.	
If the refrigerant gas leaks, be sure to locate the leak and repair it before charging the refrigerant. After charging refrigerant, make sure that there is no refrigerant leak. If the leak cannot be located and the repair work must be stopped, be sure to perform pump down and close the service valve, to prevent the refrigerant gas from leaking into the room. The refrigerant gas itself is harmless, but it can generate toxic gases when it contacts flames, such as fan and other heaters, stoves and ranges.	
When replacing the coin battery in the remote controller, be sure to disposed of the old battery to prevent children from swallowing it. If a child swallows the coin battery, see a doctor immediately.	

Caution	
Installation of a leakage breaker is necessary in some cases depending on the conditions of the installation site, to prevent electrical shocks.	
Do not install the equipment in a place where there is a possibility of combustible gas leaks. If a combustible gas leaks and remains around the unit, it can cause a fire.	
Be sure to install the packing and seal on the installation frame properly. If the packing and seal are not installed properly, water can enter the room and wet the furniture and floor.	For integral units only

1.1.3 Inspection after Repair

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

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

1.1.4 Using Icons

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

1.1.5 Using Icons List

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

1.2 PREFACE

Thank you for your continued patronage of Daikin products.

This is the new service manual for Daikin's Year 2010 VRVIII-Q series Heat Pump System. Daikin offers a wide range of models to respond to building and office air conditioning needs. We are confident that customers will be able to find the models that best suit their needs.

This service manual contains information regarding the servicing of VRVIII-Q series R-410A Heat Pump, Heat Recovery System.

Oct., 2010

After Sales Service Division

Part 1
General Information

1. Model Names of Indoor / Outdoor Units

1.1 Indoor Units

Capacity range		0.8HP	1HP	1.25HP	1.6HP	2HP	2.5HP	3.2HP	4HP	5HP	6HP	8HP	10HP	Power Supply
Capacity index		20	25	31.25	40	50	62.5	80	100	125	140	200	250	
Ceiling Mounted Cassette Type (Round Flow)	FXFQ	—	25P	32P	40P	50P	63P	80P	100P	125P	—	—	—	VE
Ceiling Mounted Cassette (Compact Multi Flow) Type	FXZQ	20M	25M	32M	40M	50M	—	—	—	—	—	—	—	
Ceiling Mounted Cassette Type (Double Flow)	FXCQ	20M	25M	32M	40M	50M	63M	80M	—	125M	—	—	—	
Ceiling Mounted Cassette Corner Type	FXKQ	—	25MA	32MA	40MA	—	63MA	—	—	—	—	—	—	
Slim Ceiling Mounted Duct Type	FXDQ-PBVE	20PB	25PB	32PB	—	—	—	—	—	—	—	—	—	
	FXDQ-PBVET	20PB	25PB	32PB	—	—	—	—	—	—	—	—	—	
	FXDQ-NBVE	—	—	—	40NB	50NB	63NB	—	—	—	—	—	—	
	FXDQ-NBVET	—	—	—	40NB	50NB	63NB	—	—	—	—	—	—	
Ceiling Mounted Duct Type (Middle and high static pressure)	FXMQ	20P	25P	32P	40P	50P	63P	80P	100P	125P	140P	—	—	
Ceiling Mounted Duct Type	FXMQ	—	—	—	—	—	—	—	—	—	—	200MA	250MA	
Ceiling Suspended Type	FXHQ	—	—	32MA	—	—	63MA	—	100MA	—	—	—	—	
Wall Mounted Type	FXAQ	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—	
Floor Standing Type	FXLQ	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—	
Concealed Floor Standing Type	FXNQ	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—	

Note: FXDQ has following 2 series, as shown below.
FXDQ-PBVET, NBVET: without Drain Pump (For General, Asia: except for EU, China and Australia)
FXDQ-PBVE, NBVE: with Drain Pump

* It is possible to keep R-22 indoor units from K-series and later version. Field setting to R-22 on the PCB is necessary. For details, refer to the installation manual of RQYQ-P. It is not possible to combine old R-22 and new R-410A indoor units in one system due to incompatibility of communication.
RQYQ-P is not compatible to R-407C indoor units.

Connection unit series indoor units

Capacity range		3HP	4HP	5HP	Power Supply
Capacity index		71	100	125	
Ceiling Suspended Cassette Type	FXUQ	71MA	100MA	125MA	V1
Connection Unit for FXUQ	BEVQ	71MA	100MA	125MA	VE

Note: BEV unit is required for FXUQ only.
MA: RoHS Directive models; Specifications, dimensions and other functions are not changed compared with M type.

1.2 Outdoor Units

Series	Model Name									Power Supply
Heat Pump	RQYQ	8P	10P	12P	14P	16P	18P	20P	22P	24P	Y1
		26P	28P	30P	32P	34P	36P	38P	40P	42P	
		44P	46P	48P							

Y1: 3 phase, 380-415V, 50Hz

1.3 Air Treatment Equipment

Outdoor-air processing unit

Series	Model name			Power supply
FXMQ	125MF	200MF	250MF	V1

HRV units (VKM series)

Series		Model name			Power supply
HRV units with DX coil	VKM	50GA	80GA	100GA	V1
HRV units with DX coil and humidifier		50GAM	80GAM	100GAM	

Note: For details, refer to Engineering Data ED71-613.

HRV units (VAM series)

Series		Model name								Power supply
HRV units	VAM	150GJ	250GJ	350GJ	500GJ	650GJ	800GJ	1000GJ	1500GJ	2000GJ	VE

VE: 1 phase, 220-240/220V, 50/60Hz
V1: 1 phase, 220-240V, 50Hz

2. External Appearance

2.1 Indoor Units

Ceiling mounted cassette (Round flow) type

FXFQ25PVE
FXFQ32PVE
FXFQ40PVE
FXFQ50PVE
FXFQ63PVE
FXFQ80PVE
FXFQ100PVE
FXFQ125PVE

Ceiling mounted duct type

FXMQ200MAVE
FXMQ250MAVE

Ceiling mounted cassette (Compact multi flow) type

FXZQ20MVE
FXZQ25MVE
FXZQ32MVE
FXZQ40MVE
FXZQ50MVE

Ceiling suspended type

FXHQ32MAVE
FXHQ63MAVE
FXHQ100MAVE

Ceiling mounted cassette (Double flow) type

FXCQ20MVE
FXCQ25MVE
FXCQ32MVE
FXCQ40MVE
FXCQ50MVE
FXCQ63MVE
FXCQ80MVE
FXCQ125MVE

Wall mounted type

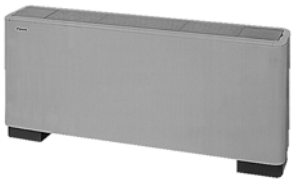
FXAQ20MAVE
FXAQ25MAVE
FXAQ32MAVE
FXAQ40MAVE
FXAQ50MAVE
FXAQ63MAVE

Ceiling mounted cassette corner type

FXKQ25MAVE
FXKQ32MAVE
FXKQ40MAVE
FXKQ63MAVE

Floor standing type

FXLQ20MAVE
FXLQ25MAVE
FXLQ32MAVE
FXLQ40MAVE
FXLQ50MAVE
FXLQ63MAVE



Slim ceiling mounted duct type

FXDQ20PBVE/FXDQ20PBVET
FXDQ25PBVE/FXDQ25PBVET
FXDQ32PBVE/FXDQ32PBVET
FXDQ40NBVE/FXDQ40NBVET
FXDQ50NBVE/FXDQ50NBVET
FXDQ63NBVE/FXDQ63NBVET
with a Drain Pump (VE)
without a Drain Pump (VET)

Concealed floor standing type

FXNQ20MAVE
FXNQ25MAVE
FXNQ32MAVE
FXNQ40MAVE
FXNQ50MAVE
FXNQ63MAVE

Ceiling mounted duct type
(Middle and high static pressure)

FXMQ20PVE FXMQ63PVE
FXMQ25PVE FXMQ80PVE
FXMQ32PVE FXMQ100PVE
FXMQ40PVE FXMQ125PVE
FXMQ50PVE FXMQ140PVE

Ceiling suspended cassette type

50Hz
FXUQ71MAV1 + BEVQ71MAVE
FXUQ100MAV1 + BEVQ100MAVE
FXUQ125MAV1 + BEVQ125MAVE

Connection unit

2.2 Outdoor Units

8, 10, 12HP	14, 16HP	18, 20, 22, 24HP
 RQYQ8PY1 RQYQ10PY1 RQYQ12PY1	 RQYQ14PY1 RQYQ16PY1	 RQYQ18PY1 RQYQ20PY1 RQYQ22PY1 RQYQ24PY1
26, 28HP	**30, 32HP**	**34, 36, 38, 40HP**
 RQYQ26PY1 RQYQ28PY1	 RQYQ30PY1 RQYQ32PY1	 RQYQ34PY1 RQYQ36PY1 RQYQ38PY1 RQYQ40PY1
42, 44HP	**46, 48HP**	
 RQYQ42PY1 RQYQ44PY1	 RQYQ46PY1 RQYQ48PY1	

2.3 Air Treatment Equipment

Outdoor-air processing unit	HRV units (VKM series)	HRV units (VAM series)
FXMQ125MFV1 FXMQ200MFV1 FXMQ250MFV1 	VKM50GAV1 / VKM50GAMV1 VKM80GAV1 / VKM80GAMV1 VKM100GAV1 / VKM100GAMV1  with DX coil (GA) with DX coil and humidifier (GAM)	VAM150GJVE VAM250GJVE VAM350GJVE VAM500GJVE VAM650GJVE VAM800GJVE VAM1000GJVE VAM1500GJVE VAM2000GJVE 

3. Combination of Outdoor Units

System Capacity	Number of units	Module					Outdoor Unit Multi Connection Piping Kit (Option)
		8	10	12	14	16	
8HP	1	●					—
10HP	1		●				
12HP	1			●			
14HP	1				●		
16HP	1					●	
18HP	1	●	●				Heat Pump: BHFP22P100
20HP	2	●		●			
22HP	2		●	●			
24HP	2			●●			
26HP	2		●			●	
28HP	2			●		●	
30HP	2				●	●	
32HP	2					●●	
34HP	2		●●		●		Heat Pump: BHFP22P151
36HP	2		●●			●	
38HP	3		●	●		●	
40HP	3			●●		●	
42HP	3		●			●●	
44HP	3			●		●●	
46HP	3				●	●●	
48HP	3					●●●	

Note: For multiple connection of 18HP system or more, an optional Daikin Outdoor Unit Multi Connection Piping Kit is required.

4. Capacity Range

Combination ratio

Connection capacity: 50% - 130%

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

Type	Min. combination ratio	Max. combination ratio				
		Types of connected indoor units	Type of connected Air Treatment Equipments			
			VKM		FXMQ-MF	
		Standard indoor units	When VKM is only connected	When VKM and indoor units are connected	When FXMQ-MF is only connected	When FXMQ-MF and indoor units are connected
Single outdoor units	50%	130%	130%	130%	100%	100%*
Double outdoor units						
Triple outdoor units						

Note: * When outdoor-air processing units (FXMQ-MF) and standard indoor units are connected, the total connection capacity of the outdoor-air processing units (FXMQ-MF) must not exceed 30% of the capacity index of the outdoor units.

Outdoor unit combinations

HP	Capacity index	Model name	Combination	Outdoor unit multi connection piping kit *1	Total capacity index of connectable indoor units *2 *3 Combination (%)			Maximum number of connectable indoor units
					50%	100%	130%	
8 HP	200	RQYQ8PY1	RQYQ8PY1	—	100	200	260	13
10 HP	250	RQYQ10PY1	RQYQ10PY1	—	125	250	325	16
12 HP	300	RQYQ12PY1	RQYQ12PY1	—	150	300	390	19
14 HP	350	RQYQ14PY1	RQYQ14PY1	—	175	350	455	22
16 HP	400	RQYQ16PY1	RQYQ16PY1	—	200	400	520	26
18 HP	450	RQYQ18PY1	RQYQ8PY1 + RQYQ10PY1	BHFP22P100	225	450	585	29
20 HP	500	RQYQ20PY1	RQYQ8PY1 + RQYQ12PY1		250	500	650	32
22 HP	550	RQYQ22PY1	RQYQ10PY1 + RQYQ12PY1		275	550	715	35
24 HP	600	RQYQ24PY1	RQYQ12PY1 + RQYQ12PY1		300	600	780	39
26 HP	650	RQYQ26PY1	RQYQ10PY1 + RQYQ16PY1		325	650	845	42
28 HP	700	RQYQ28PY1	RQYQ12PY1 + RQYQ16PY1		350	700	910	45
30 HP	750	RQYQ30PY1	RQYQ14PY1 + RQYQ16PY1		375	750	975	48
32 HP	800	RQYQ32PY1	RQYQ16PY1 + RQYQ16PY1		400	800	1,040	52
34 HP	850	RQYQ34PY1	RQYQ10PY1 + RQYQ10PY1 + RQYQ14PY1	BHFP22P151	425	850	1,105	55
36 HP	900	RQYQ36PY1	RQYQ10PY1 + RQYQ10PY1 + RQYQ16PY1		450	900	1,170	58
38 HP	950	RQYQ38PY1	RQYQ10PY1 + RQYQ12PY1 + RQYQ16PY1		475	950	1,235	61
40 HP	1,000	RQYQ40PY1	RQYQ12PY1 + RQYQ12PY1 + RQYQ16PY1		500	1,000	1,300	64
42 HP	1,050	RQYQ42PY1	RQYQ10PY1 + RQYQ16PY1 + RQYQ16PY1		525	1,050	1,365	
44 HP	1,100	RQYQ44PY1	RQYQ12PY1 + RQYQ16PY1 + RQYQ16PY1		550	1,100	1,430	
46 HP	1,150	RQYQ46PY1	RQYQ14PY1 + RQYQ16PY1 + RQYQ16PY1		575	1,150	1,495	
48 HP	1,200	RQYQ48PY1	RQYQ16PY1 + RQYQ16PY1 + RQYQ16PY1		600	1,200	1,560	

*1. For multiple connections of 18 HP systems and above, the outdoor unit multi connection piping kit (separately sold) is required.

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

*3. When outdoor-air processing units (FXMQ-MF) and standard indoor units are connected, the total connection capacity of the outdoor-air processing units (FXMQ-MF) must not exceed 30% of the capacity index of the outdoor units.

Indoor unit connection capacity

Type	HP	Capacity index	Model name	Types of connected indoor units		
				Min. combination ratio	Standard indoor units	
					Max. combination ratio	Max. number of connectable indoor units
Single outdoor units	8	200	RQYQ8PY1	50%	130%	13
	10	250	RQYQ10PY1			16
	12	300	RQYQ12PY1			19
	14	350	RQYQ14PY1			22
	16	400	RQYQ16PY1			26
Double outdoor units	18	450	RQYQ18PY1			29
	20	500	RQYQ20PY1			32
	22	550	RQYQ22PY1			35
	24	600	RQYQ24PY1			39
	26	650	RQYQ26PY1			42
	28	700	RQYQ28PY1			45
	30	750	RQYQ30PY1			48
	32	800	RQYQ32PY1			52
Triple outdoor units	34	850	RQYQ34PY1			55
	36	900	RQYQ36PY1			58
	38	950	RQYQ38PY1			61
	40	1,000	RQYQ40PY1			64
	42	1,050	RQYQ42PY1			
	44	1,100	RQYQ44PY1			
	46	1,150	RQYQ46PY1			
	48	1,200	RQYQ48PY1			

Part 2
Specifications

1. Specifications

1.1 Outdoor Units

Model Name			RQYQ8PY1	RQYQ10PY1
★1 Cooling Capacity (19.5°CWB)		kcal / h	19,400	24,300
		Btu / h	76,800	96,200
		kW	22.5	28.2
★2 Cooling Capacity (19.0°CWB)		kW	22.4	28.0
★3 Heating Capacity		kcal / h	21,500	27,100
		Btu / h	85,300	107,000
		kW	25.0	31.5
Casing Colour			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (H×W×D)		mm	1680×930×765	1680×930×765
Heat Exchanger			Cross Fin Coil	Cross Fin Coil
Comp.	Type		Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type
	Compressor Displacement Volume	m^3/h	16.90	13.34+10.53
	Number of Revolutions	r.p.m	7980	6300, 2900
	Motor Output×Number of Units	kW	4.5×1	(1.4+4.5)×1
	Starting Method		Soft Start	Soft Start
Fan	Type		Propeller Fan	Propeller Fan
	Motor Output	kW	0.75×1	0.75×1
	Airflow Rate	m^3/min	180	185
	Drive		Direct Drive	Direct Drive
Connecting Pipes	Liquid Pipe	mm	ϕ9.5 (Brazing Connection)	ϕ9.5 (Brazing Connection)
	Gas Pipe	mm	ϕ19.1 (Brazing Connection)	ϕ22.2 (Brazing Connection)
Product Mass (Machine weight)		kg	230	284
Safety Devices			High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector	High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method			Deicer	Deicer
Capacity Control		%	20~100	14~100
Refrigerant	Refrigerant Name		R-410A	R-410A
	Charge	kg	10.8	11.7
	Control		Electronic Expansion Valve	Electronic Expansion Valve
Refrigerator Oil			Refer to the nameplate of compressor	Refer to the nameplate of compressor
Standard Accessories			Installation Manual, Operation Manual, Connection Pipes, Clamps	Installation Manual, Operation Manual, Connection Pipes, Clamps
Drawing No.			C: 4D069102A	C: 4D069103A

Note:

★1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5m, level difference : 0m.

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

Model Name			RQYQ12PY1	RQYQ14PY1
★1 Cooling Capacity (19.5°CWB)		kcal / h	29,000	34,600
		Btu / h	115,000	137,000
		kW	33.7	40.2
★2 Cooling Capacity (19.0°CWB)		kW	33.5	40.0
★3 Heating Capacity		kcal / h	32,300	38,700
		Btu / h	128,000	154,000
		kW	37.5	45.0
Casing Colour			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (H×W×D)		mm	1680×930×765	1680×1240×765
Heat Exchanger			Cross Fin Coil	Cross Fin Coil
Comp.	Type		Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type
	Compressor Displacement Volume	m^3/h	13.34+10.53	13.34+10.53+10.53
	Number of Revolutions	r.p.m	6300, 2900	6300, 2900, 2900
	Motor Output×Number of Units	kW	(3.3+4.5)×1	(1.6+4.5+4.5)×1
	Starting Method		Soft Start	Soft Start
Fan	Type		Propeller Fan	Propeller Fan
	Motor Output	kW	0.75×1	0.35×2
	Airflow Rate	m^3/min	200	233
	Drive		Direct Drive	Direct Drive
Connecting Pipes	Liquid Pipe	mm	ϕ12.7 (Brazing Connection)	ϕ12.7 (Brazing Connection)
	Gas Pipe	mm	ϕ28.6 (Brazing Connection)	ϕ28.6 (Brazing Connection)
Product Mass (Machine Weight)		kg	284	381
Safety Devices			High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector	High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method			Deicer	Deicer
Capacity Control		%	14~100	10~100
Refrigerant	Refrigerant Name		R-410A	R-410A
	Charge	kg	11.7	11.7
	Control		Electronic Expansion Valve	Electronic Expansion Valve
Refrigerator Oil			Refer to the nameplate of compressor	Refer to the nameplate of compressor
Standard Accessories			Installation Manual, Operation Manual, Connection Pipes, Clamps	Installation Manual, Operation Manual, Connection Pipes, Clamps
Drawing No.			C: 4D069104A	C: 4D069105A

Note:

★1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5m, level difference : 0m.

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

Model Name			RQYQ16PY1
★1 Cooling Capacity (19.5°CWB)		kcal / h	39,000
		Btu / h	155,000
		kW	45.3
★2 Cooling Capacity (19.0°CWB)		kW	45.0
★3 Heating Capacity		kcal / h	43,000
		Btu / h	171,000
		kW	50.0
Casing Colour			Ivory White (5Y7.5/1)
Dimensions: (H×W×D)		mm	1680×1240×765
Heat Exchanger			Cross Fin Coil
Comp.	Type		Hermetically Sealed Scroll Type
	Compressor Displacement Volume	m^3/h	13.34+10.53+10.53
	Number of Revolutions	r.p.m	6300, 2900, 2900
	Motor Output×Number of Units	kW	(2.7+4.5+4.5)×1
	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 (Brazing Connection)
	Gas Pipe	mm	ϕ28.6 (Brazing Connection)
Product Mass (Machine Weight)		kg	381
Safety Devices			High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method			Deicer
Capacity Control		%	10~100
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: 4D069106A

Note:

★1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5m, level difference : 0m.

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

Model Name (Combination Unit)			**RQYQ18PY1**	**RQYQ20PY1**
Model Name (Independent Unit)			**RQYQ8PY1+RQYQ10PY1**	**RQYQ8PY1+RQYQ12PY1**
★1 Cooling Capacity (19.5°CWB)		kcal / h	43,600	48,300
		Btu / h	173,000	192,000
		kW	50.7	56.2
★2 Cooling Capacity (19.0°CWB)		kW	50.4	55.9
★3 Heating Capacity		kcal / h	48,600	53,800
		Btu / h	193,000	213,000
		kW	56.5	62.5
Casing Colour			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (H×W×D)		mm	(1680×930×765)+(1680×930×765)	(1680×930×765)+(1680×930×765)
Heat Exchanger			Cross Fin Coil	Cross Fin Coil
Comp.	Type		Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type
	Compressor Displacement Volume	m^3/h	(16.90)+(13.34+10.53)	(16.90)+(13.34+10.53)
	Number of Revolutions	r.p.m	(7980)+(6300, 2900)	(7980)+(6300, 2900)
	Motor Output×Number of Units	kW	(4.5×1)+((1.4+4.5)×1)	(4.5×1)+((3.3+4.5)×1)
	Starting Method		Soft Start	Soft Start
Fan	Type		Propeller Fan	Propeller Fan
	Motor Output	kW	(0.75×1)+(0.75×1)	(0.75×1)+(0.75×1)
	Airflow Rate	m^3/min	180+185	180+200
	Drive		Direct Drive	Direct Drive
Connecting Pipes	Liquid Pipe	mm	ϕ15.9 (Brazing Connection)	ϕ15.9 (Brazing Connection)
	Gas Pipe	mm	ϕ28.6 (Brazing Connection)	ϕ28.6 (Brazing Connection)
Product Mass (Machine Weight)		kg	230+284	230+284
Safety Devices			High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector	High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method			Deicer	Deicer
Capacity Control		%	9~100	8~100
Refrigerant	Refrigerant Name		R-410A	R-410A
	Charge	kg	10.8+11.7	10.8+11.7
	Control		Electronic Expansion Valve	Electronic Expansion Valve
Refrigerator Oil			Refer to the nameplate of compressor	Refer to the nameplate of compressor
Standard Accessories			Installation Manual, Operation Manual, Connection Pipes, Clamps	Installation Manual, Operation Manual, Connection Pipes, Clamps
Drawing No.				

Note:

★1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5m, level difference : 0m.

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

Model Name (Combination Unit)			RQYQ22PY1	RQYQ24PY1
Model Name (Independent Unit)			RQYQ10PY1+RQYQ12PY1	RQYQ12PY1+RQYQ12PY1
★1 Cooling Capacity (19.5°CWB)		kcal / h	53,200	58,000
		Btu / h	211,000	230,000
		kW	61.9	67.4
★2 Cooling Capacity (19.0°CWB)		kW	61.5	67.0
★3 Heating Capacity		kcal / h	59,300	64,500
		Btu / h	235,000	256,000
		kW	69.0	75.0
Casing Colour			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (H×W×D)		mm	(1680×930×765)+(1680×930×765)	(1680×930×765)+(1680×930×765)
Heat Exchanger			Cross Fin Coil	Cross Fin Coil
Comp.	Type		Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type
	Compressor Displacement Volume	m^3/h	(13.34+10.53)+(13.34+10.53)	(13.34+10.53)+(13.34+10.53)
	Number of Revolutions	r.p.m	(6300, 2900)+(6300, 2900)	(6300, 2900)+(6300, 2900)
	Motor Output×Number of Units	kW	((1.4+4.5)×1)+((3.3+4.5)×1)	((3.3+4.5)×1)+((3.3+4.5)×1)
	Starting Method		Soft Start	Soft Start
Fan	Type		Propeller Fan	Propeller Fan
	Motor Output	kW	(0.75×1)+(0.75×1)	(0.75×1)+(0.75×1)
	Airflow Rate	m^3/min	185+200	200+200
	Drive		Direct Drive	Direct Drive
Connecting Pipes	Liquid Pipe	mm	ϕ15.9 (Brazing Connection)	ϕ15.9 (Brazing Connection)
	Gas Pipe	mm	ϕ28.6 (Brazing Connection)	ϕ34.9 (Brazing Connection)
Product Mass (Machine Weight)		kg	284+284	284+284
Safety Devices			High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector	High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method			Deicer	Deicer
Capacity Control		%	7~100	6~100
Refrigerant	Refrigerant Name		R-410A	R-410A
	Charge	kg	11.7+11.7	11.7+11.7
	Control		Electronic Expansion Valve	Electronic Expansion Valve
Refrigerator Oil			Refer to the nameplate of compressor	Refer to the nameplate of compressor
Standard Accessories			Installation Manual, Operation Manual, Connection Pipes, Clamps	Installation Manual, Operation Manual, Connection Pipes, Clamps
Drawing No.				

Note:

★1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5m, level difference : 0m.

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

Model Name (Combination Unit)			**RQYQ26PY1**	**RQYQ28PY1**
Model Name (Independent Unit)			**RQYQ10PY1+RQYQ16PY1**	**RQYQ12PY1+RQYQ16PY1**
★1 Cooling Capacity (19.5°CWB)		kcal / h	63,300	67,900
		Btu / h	251,000	270,000
		kW	73.5	79.0
★2 Cooling Capacity (19.0°CWB)		kW	73.0	78.5
★3 Heating Capacity		kcal / h	70,100	75,300
		Btu / h	278,000	299,000
		kW	81.5	87.5
Casing Colour			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (H×W×D)		mm	(1680×930×765)+(1680×1240×765)	(1680×930×765)+(1680×1240×765)
Heat Exchanger			Cross Fin Coil	Cross Fin Coil
Comp.	Type		Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type
	Compressor Displacement Volume	m^3/h	(13.34+10.53)+(13.34+10.53+10.53)	(13.34+10.53)+(13.34+10.53+10.53)
	Number of Revolutions	r.p.m	(6300, 2900)+(6300, 2900, 2900)	(6300, 2900)+(6300, 2900, 2900)
	Motor Output×Number of Units	kW	((1.4+4.5)×1)+((2.7+4.5+4.5)×1)	((3.3+4.5)×1)+((2.7+4.5+4.5)×1)
	Starting Method		Soft Start	Soft Start
Fan	Type		Propeller Fan	Propeller Fan
	Motor Output	kW	(0.75×1)+(0.35×2)	(0.75×1)+(0.35×2)
	Airflow Rate	m^3/min	185+233	200+233
	Drive		Direct Drive	Direct Drive
Connecting Pipes	Liquid Pipe	mm	ϕ19.1 (Brazing Connection)	ϕ19.1 (Brazing Connection)
	Gas Pipe	mm	ϕ34.9 (Brazing Connection)	ϕ34.9 (Brazing Connection)
Product Mass (Machine Weight)		kg	284+381	284+381
Safety Devices			High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector	High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method			Deicer	Deicer
Capacity Control		%	6~100	5~100
Refrigerant	Refrigerant Name		R-410A	R-410A
	Charge	kg	11.7+11.7	11.7+11.7
	Control		Electronic Expansion Valve	Electronic Expansion Valve
Refrigerator Oil			Refer to the nameplate of compressor	Refer to the nameplate of compressor
Standard Accessories			Installation Manual, Operation Manual, Connection Pipes, Clamps	Installation Manual, Operation Manual, Connection Pipes, Clamps
Drawing No.				

Note:

★1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5m, level difference : 0m.

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

Model Name (Combination Unit)			RQYQ30PY1	RQYQ32PY1
Model Name (Independent Unit)			RQYQ14PY1+RQYQ16PY1	RQYQ16PY1+RQYQ16PY1
★1 Cooling Capacity (19.5°CWB)		kcal / h	73,500	78,000
		Btu / h	292,000	310,000
		kW	85.5	90.6
★2 Cooling Capacity (19.0°CWB)		kW	85.0	90.0
★3 Heating Capacity		kcal / h	81,700	86,000
		Btu / h	324,000	341,000
		kW	95.0	100
Casing Colour			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (H×W×D)		mm	(1680×1240×765)+(1680×1240×765)	(1680×1240×765)+(1680×1240×765)
Heat Exchanger			Cross Fin Coil	Cross Fin Coil
Comp.	Type		Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type
	Compressor Displacement Volume	m^3/h	(13.34+10.53+10.53)+(13.34+10.53+10.53)	(13.34+10.53+10.53)+(13.34+10.53+10.53)
	Number of Revolutions	r.p.m	(6300, 2900, 2900)+(6300, 2900, 2900)	(6300, 2900, 2900)+(6300, 2900, 2900)
	Motor Output×Number of Units	kW	((1.6+4.5+4.5)×1)+((2.7+4.5+4.5)×1)	((2.7+4.5+4.5)×1)+((2.7+4.5+4.5)×1)
	Starting Method		Soft Start	Soft Start
Fan	Type		Propeller Fan	Propeller Fan
	Motor Output	kW	(0.35×2)+(0.35×2)	(0.35×2)+(0.35×2)
	Airflow Rate	m^3/min	233+233	233+233
	Drive		Direct Drive	Direct Drive
Connecting Pipes	Liquid Pipe	mm	ϕ19.1 (Brazing Connection)	ϕ19.1 (Brazing Connection)
	Gas Pipe	mm	ϕ34.9 (Brazing Connection)	ϕ34.9 (Brazing Connection)
Product Mass (Machine Weight)		kg	381+381	381+381
Safety Devices			High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector	High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method			Deicer	Deicer
Capacity Control		%	5~100	5~100
Refrigerant	Refrigerant Name		R-410A	R-410A
	Charge	kg	11.7+11.7	11.7+11.7
	Control		Electronic Expansion Valve	Electronic Expansion Valve
Refrigerator Oil			Refer to the nameplate of compressor	Refer to the nameplate of compressor
Standard Accessories			Installation Manual, Operation Manual, Connection Pipes, Clamps	Installation Manual, Operation Manual, Connection Pipes, Clamps
Drawing No.				

Note:

★1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5m, level difference : 0m.

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

Model Name (Combination Unit)			**RQYQ34PY1**	**RQYQ36PY1**
Model Name (Independent Unit)			**RQYQ10PY1+RQYQ10PY1+RQYQ14PY1**	**RQYQ10PY1+RQYQ10PY1+RQYQ16PY1**
★1 Cooling Capacity (19.5°CWB)		kcal / h	83,200	87,700
		Btu / h	329,000	348,000
		kW	96.6	102
★2 Cooling Capacity (19.0°CWB)		kW	96.0	101
★3 Heating Capacity		kcal / h	92,700	97,200
		Btu / h	368,000	386,000
		kW	108	113
Casing Colour			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (H×W×D)		mm	(1680+930+765)+(1680×930×765)+(1680×1240×765)	(1680×930×765)+(1680×930×765)+(1680×1240×765)
Heat Exchanger			Cross Fin Coil	Cross Fin Coil
Comp.	Type		Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type
	Compressor Displacement Volume	m^3/h	(13.34+10.53)+(13.34+10.53)+(13.34+10.53+10.53)	(13.34+10.53)+(13.34+10.53)+(13.34+10.53+10.53)
	Number of Revolutions	r.p.m	(6300, 2900)+(6300, 2900)+(6300, 2900, 2900)	(6300, 2900)+(6300, 2900)+(6300, 2900, 2900)
	Motor Output×Number of Units	kW	((1.4+4.5)×1)+((1.4+4.5)×1)+((1.6+4.5+4.5)×1)	((1.4+4.5)×1)+((1.4+4.5)×1)+((2.7+4.5+4.5)×1)
	Starting Method		Soft Start	Soft Start
Fan	Type		Propeller Fan	Propeller Fan
	Motor Output	kW	(0.75×1)+(0.75×1)+(0.35×2)	(0.75×1)+(0.75×1)+(0.35×2)
	Airflow Rate	m^3/min	185+185+233	185+185+233
	Drive		Direct Drive	Direct Drive
Connecting Pipes	Liquid Pipe	mm	ϕ19.1 (Brazing Connection)	ϕ19.1 (Brazing Connection)
	Gas Pipe	mm	ϕ34.9 (Brazing Connection)	ϕ41.3 (Brazing Connection)
Product Mass (Machine Weight)		kg	284+284+381	284+284+381
Safety Devices			High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector	High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method			Deicer	Deicer
Capacity Control		%	5~100	4~100
Refrigerant	Refrigerant Name		R-410A	R-410A
	Charge	kg	11.7+11.7+11.7	11.7+11.7+11.7
	Control		Electronic Expansion Valve	Electronic Expansion Valve
Refrigerator Oil			Refer to the nameplate of compressor	Refer to the nameplate of compressor
Standard Accessories			Installation Manual, Operation Manual, Connection Pipes, Clamps	Installation Manual, Operation Manual, Connection Pipes, Clamps
Drawing No.				

Note:

★1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5m, level difference : 0m.

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

Model Name (Combination Unit)			RQYQ38PY1	RQYQ40PY1
Model Name (Independent Unit)			RQYQ10PY1+RQYQ12PY1+RQYQ16PY1	RQYQ12PY1+RQYQ12PY1+RQYQ16PY1
★1 Cooling Capacity (19.5°CWB)		kcal / h	92,900	97,200
		Btu / h	368,000	386,000
		kW	108	113
★2 Cooling Capacity (19.0°CWB)		kW	107	112
★3 Heating Capacity		kcal / h	102,000	108,000
		Btu / h	406,000	427,000
		kW	119	125
Casing Colour			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (H×W×D)		mm	(1680×930×765)+(1680×930×765)+(1680×1240×765)	(1680×930×765)+(1680×930×765)+(1680×1240×765)
Heat Exchanger			Cross Fin Coil	Cross Fin Coil
Comp.	Type		Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type
	Compressor Displacement Volume	m^3/h	(13.34+10.53)+(13.34+10.53)+(13.34+10.53+10.53)	(13.34+10.53)+(13.34+10.53)+(13.34+10.53+10.53)
	Number of Revolutions	r.p.m	(6300, 2900)+(6300, 2900)+(6300, 2900, 2900)	(6300, 2900)+(6300, 2900)+(6300, 2900, 2900)
	Motor Output×Number of Units	kW	((1.4+4.5)×1)+((3.3+4.5)×1)+((2.7+4.5+4.5)×1)	((3.3+4.5)×1)+((3.3+4.5)×1)+((2.7+4.5+4.5)×1)
	Starting Method		Soft Start	Soft Start
Fan	Type		Propeller Fan	Propeller Fan
	Motor Output	kW	(0.75×1)+(0.75×1)+(0.35×2)	(0.75×1)+(0.75×1)+(0.35×2)
	Airflow Rate	m^3/min	185+200+233	200+200+233
	Drive		Direct Drive	Direct Drive
Connecting Pipes	Liquid Pipe	mm	ϕ19.1 (Brazing Connection)	ϕ19.1 (Brazing Connection)
	Gas Pipe	mm	ϕ41.3 (Brazing Connection)	ϕ41.3 (Brazing Connection)
Product Mass (Machine Weight)		kg	284+284+381	284+284+381
Safety Devices			High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector	High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method			Deicer	Deicer
Capacity Control		%	4~100	4~100
Refrigerant	Refrigerant Name		R-410A	R-410A
	Charge	kg	11.7+11.7+11.7	11.7+11.7+11.7
	Control		Electronic Expansion Valve	Electronic Expansion Valve
Refrigerator Oil			Refer to the nameplate of compressor	Refer to the nameplate of compressor
Standard Accessories			Installation Manual, Operation Manual, Connection Pipes, Clamps	Installation Manual, Operation Manual, Connection Pipes, Clamps
Drawing No.				

Note:

★1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5m, level difference : 0m.

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

Model Name (Combination Unit)			**RQYQ42PY1**	**RQYQ44PY1**
Model Name (Independent Unit)			**RQYQ10PY1+RQYQ16PY1+RQYQ16PY1**	**RQYQ12PY1+RQYQ16PY1+RQYQ16PY1**
★1 Cooling Capacity (19.5°CWB)		kcal / h	102,000	108,000
		Btu / h	406,000	427,000
		kW	119	125
★2 Cooling Capacity (19.0°CWB)		kW	118	124
★3 Heating Capacity		kcal / h	114,000	119,000
		Btu / h	450,000	471,000
		kW	132	138
Casing Colour			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (H×W×D)		mm	(1680×930×765)+(1680×1240×765)+(1680×1240×765)	(1680×930×765)+(1680×1240×765)+(1680×1240×765)
Heat Exchanger			Cross Fin Coil	Cross Fin Coil
Comp.	Type		Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type
	Compressor Displacement Volume	m^3/h	(13.34+10.53)+(13.34+10.53+10.53)+(13.34+10.53+10.53)	(13.34+10.53)+(13.34+10.53+10.53)+(13.34+10.53+10.53)
	Number of Revolutions	r.p.m	(6300, 2900)+(6300, 2900, 2900)+(6300, 2900, 2900)	(6300, 2900)+(6300, 2900, 2900)+(6300, 2900, 2900)
	Motor Output×Number of Units	kW	((1.4+4.5)×1)+((2.7+4.5+4.5)×1)+((2.7+4.5+4.5)×1)	((3.3+4.5)×1)+((2.7+4.5+4.5)×1)+((2.7+4.5+4.5)×1)
	Starting Method		Soft Start	Soft Start
Fan	Type		Propeller Fan	Propeller Fan
	Motor Output	kW	(0.75×1)+(0.35×2)+(0.35×2)	(0.75×1)+(0.35×2)+(0.35×2)
	Airflow Rate	m^3/min	185+233+233	200+233+233
	Drive		Direct Drive	Direct Drive
Connecting Pipes	Liquid Pipe	mm	ϕ19.1 (Brazing Connection)	ϕ19.1 (Brazing Connection)
	Gas Pipe	mm	ϕ41.3 (Brazing Connection)	ϕ41.3 (Brazing Connection)
Product Mass (Machine Weight)		kg	284+381+381	284+381+381
Safety Devices			High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector	High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method			Deicer	Deicer
Capacity Control		%	4~100	4~100
Refrigerant	Refrigerant Name		R-410A	R-410A
	Charge	kg	11.7+11.7+11.7	11.7+11.7+11.7
	Control		Electronic Expansion Valve	Electronic Expansion Valve
Refrigerator Oil			Refer to the nameplate of compressor	Refer to the nameplate of compressor
Standard Accessories			Installation Manual, Operation Manual, Connection Pipes, Clamps	Installation Manual, Operation Manual, Connection Pipes, Clamps
Drawing No.				

Note:

★1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5m, level difference : 0m.

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

Model Name (Combination Unit)			RQYQ46PY1	RQYQ48PY1
Model Name (Independent Unit)			RQYQ14PY1+RQYQ16PY1+RQYQ16PY1	RQYQ16PY1+RQYQ16PY1+RQYQ16PY1
★1 Cooling Capacity (19.5°CWB)		kcal / h	113,000	117,000
		Btu / h	447,000	464,000
		kW	131	136
★2 Cooling Capacity (19.0°CWB)		kW	130	135
★3 Heating Capacity		kcal / h	125,000	129,000
		Btu / h	495,000	521,000
		kW	145	150
Casing Colour			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (H×W×D)		mm	(1680×1240×765)+(1680×1240×765)+(1680×1240×765)	(1680×1240×765)+(1680×1240×765)+(1680×1240×765)
Heat Exchanger			Cross Fin Coil	Cross Fin Coil
Comp.	Type		Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type
	Compressor Displacement Volume	m³/h	(13.34+10.53+10.53)+(13.34+10.53+10.53)+(13.34+10.53+10.53)	(13.34+10.53+10.53)+(13.34+10.53+10.53)+(13.34+10.53+10.53)
	Number of Revolutions	r.p.m	(6300, 2900, 2900)+(6300, 2900, 2900)+(6300, 2900, 2900)	(6300, 2900, 2900)+(6300, 2900, 2900)+(6300, 2900, 2900)
	Motor Output×Number of Units	kW	((1.6+4.5+4.5)×1)+((2.7+4.5+4.5)×1)+((2.7+4.5+4.5)×1)	((2.7+4.5+4.5)×1)+((2.7+4.5+4.5)×1)+((2.7+4.5+4.5)×1)
	Starting Method		Soft Start	Soft Start
Fan	Type		Propeller Fan	Propeller Fan
	Motor Output	kW	(0.35×2)+(0.35×2)+(0.35×2)	(0.35×2)+(0.35×2)+(0.35×2)
	Airflow Rate	m³/min	233+233+233	233+233+233
	Drive		Direct Drive	Direct Drive
Connecting Pipes	Liquid Pipe	mm	ϕ19.1 (Brazing Connection)	ϕ19.1 (Brazing Connection)
	Gas Pipe	mm	ϕ41.3 (Brazing Connection)	ϕ41.3 (Brazing Connection)
Product Mass (Machine Weight)		kg	381+381+381	381+381+381
Safety Devices			High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector	High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method			Deicer	Deicer
Capacity Control		%	3~100	3~100
Refrigerant	Refrigerant Name		R-410A	R-410A
	Charge	kg	11.7+11.7+11.7	11.7+11.7+11.7
	Control		Electronic Expansion Valve	Electronic Expansion Valve
Refrigerator Oil			Refer to the nameplate of compressor	Refer to the nameplate of compressor
Standard Accessories			Installation Manual, Operation Manual, Connection Pipes, Clamps	Installation Manual, Operation Manual, Connection Pipes, Clamps
Drawing No.				

Note:

★1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.

★3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5m, level difference : 0m.

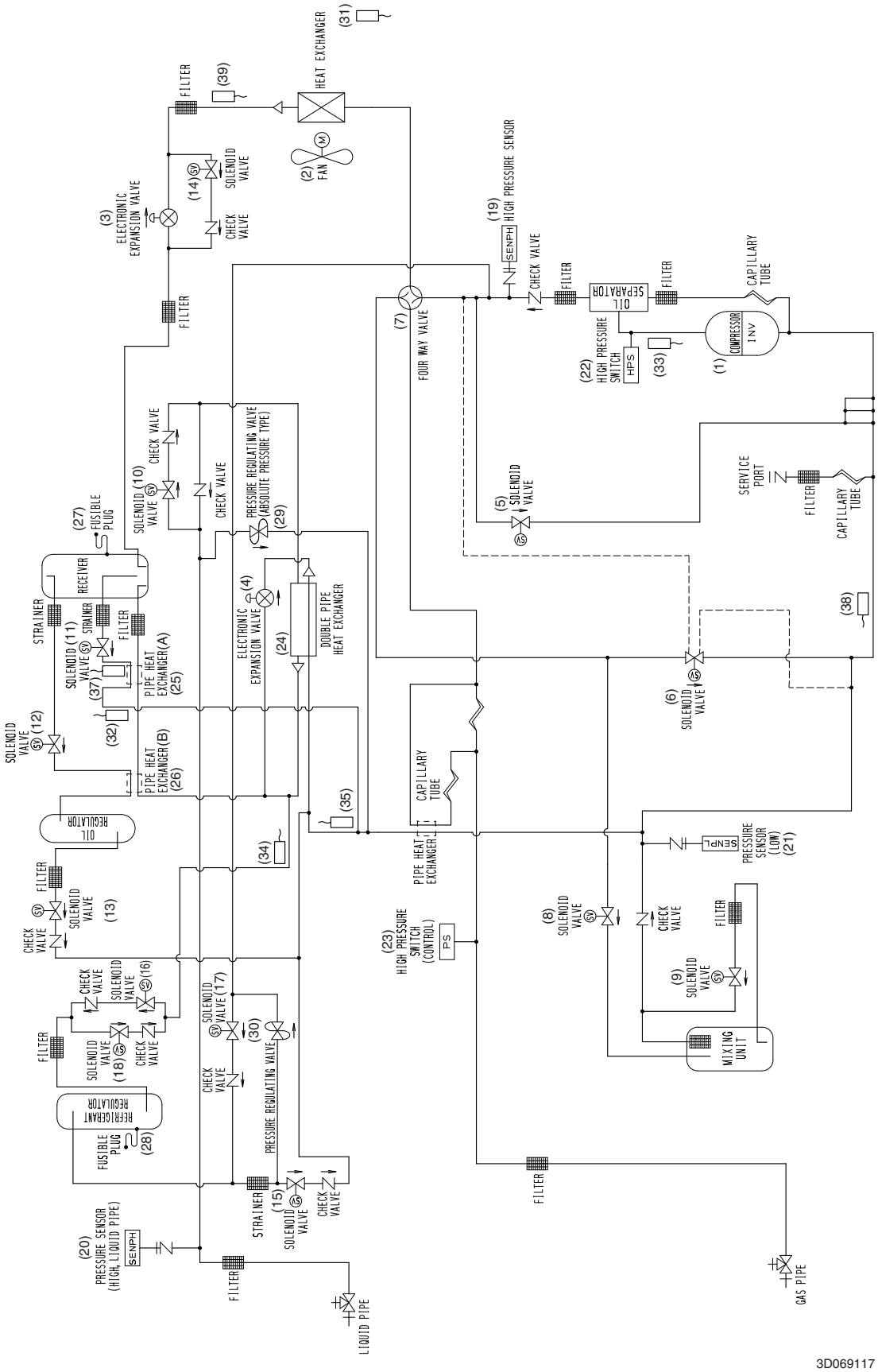
Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3412 cfm=m³/min×35.3

Part 3
Refrigerant Circuit

1. Refrigerant Circuit

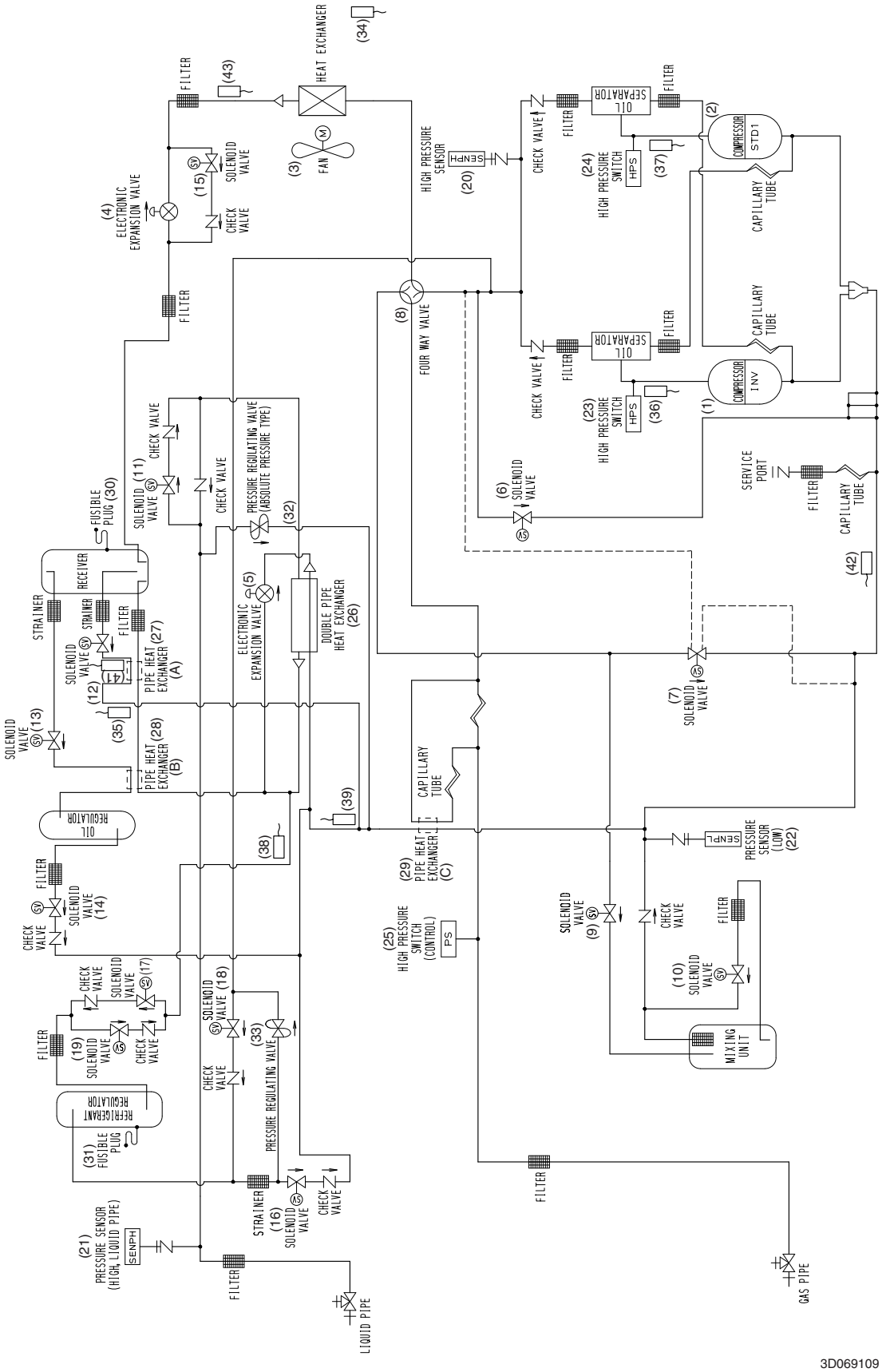
1.1 RQYQ8PY1

No. in refrigerant system diagram	Symbol	Name	Major Function
(1)	M1C	Inverter compressor (INV.)	Inverter compressor is operated on frequencies 52Hz to 266Hz by using the inverter. The number of operating steps is 24.
(2)	M1F	Inverter fan	Because the system is an air heat exchange type, the fan is operated 8-step rotation speed by using the inverter.
(3)	Y1E	Electronic expansion valve (Main)	While in heating operation, PI control is applied to keep the outlet superheated degree of air heat exchanger constant.
(4)	Y2E	Electronic expansion valve (Subcooling)	PI control is applied to keep the outlet superheated degree of subcooling heat exchanger constant.
(5)	Y1S	Solenoid valve (Hot gas)	Used to prevent the low pressure from transient falling.
(6)	Y2S	Solenoid valve (Bypass)	Used to bypass the mixing unit during the normal operation.
(7)	Y3S	Four way valve (Heat exchanger)	Used to switch the operation mode between cooling and heating.
(8)	Y4S	Solenoid valve (Mixing unit inlet)	Use to adjust the amount of refrigeration oil and clean pipes during check operation. Use to prevent refrigerant from flowing into the mixing unit during normal operation.
(9)	Y5S	Solenoid valve (Circuit of oil return)	Used to adjust the amount of oil in the mixing unit.
(10)	Y6S	Solenoid valve (Close liquid pipe for stopped outdoor unit)	Used to prevent the accumulation of refrigerant in the non-operating outdoor units in a multi-outdoor-unit system.
(11)	Y7S	Solenoid valve (Receiver liquid level)	Used to detect the amount of refrigerant.
(12)	Y8S	Solenoid valve (Receiver gas vent)	Used to collect refrigerant to the receiver.
(13)	Y9S	Solenoid valve (Oil regulator outlet)	Used to adjust the refrigeration oil during the check operation.
(14)	Y10S	Solenoid valve (Main electronic expansion valve bypass)	Used to prevent an increase in the liquid pipe pressure during cooling operation.
(15)	Y11S	Solenoid valve (Refrigerant regulator gas vent pipe)	Used to collect refrigerant to the refrigerant regulator.
(16)	Y12S	Solenoid valve (Refrigerant regulator liquid pipe)	Used to collect refrigerant to the refrigerant regulator.
(17)	Y13S	Solenoid valve (Refrigerant regulator gas pipe)	Used to discharge refrigerant from the refrigerant regulator.
(18)	Y14S	Solenoid valve (Refrigerant regulator liquid outlet)	Used to discharge refrigerant from the refrigerant regulator.
(19)	S1NPH	High pressure sensor	Used to detect high pressure.
(20)	S2NPH	High pressure sensor (Liquid pipe outlet)	Used to detect pressure of liquid pipe.
(21)	S1NPL	Low pressure sensor	Used to detect low pressure.
(22)	S1PH	High pressure switch (For INV.)	In order to prevent the increase of high pressure when a malfunction occurs, this switch is activated at high pressure of 4.0 MPa or more to stop the compressor operation.
(23)	S2PH	High pressure switch (for control)	In order to prevent the increase of field piping pressure when a malfunction occurs, this switch is activated at pressure of 3.3 MPa or more to stop the compressor operation.
(24)	–	Subcooling heat exchanger	Apply subcooling to liquid refrigerant.
(25)	–	Pipe heat exchanger (A)	Heats the refrigerant that flows out of the receiver.
(26)	–	Pipe heat exchanger (B)	
(27)	–	Fusible plug	The fusible part fuses at a temperature of 70 to 75°C, allow pressure to escape to the atomosphere. This is in order to prevent the pressure rise in case of a fire or other abnormal heating.
(28)	–		
(29)	–	Pressure regulating valve 1 (Liquid pipe - Suction pipe)	Open at 4.0 MPa or more to avoid pressure increase to prevent damage to functional parts by the pressure increase and to protect the field piping during transportation and storage.
(30)	–	Pressure regulating valve 2 (Refrigerant regulator - Discharge pipe)	Open at 2 to 2.7 MPa or more to avoid pressure increase to prevent damage to functional parts by the pressure increase and to protect the field piping during transportation and storage.
(31)	R1T	Thermistor (Outdoor air)	Used to detect outdoor temperature, correct discharge pipe temperature and others.
(32)	R2T	Thermistor (Receiver liquid level)	Used to detect the refrigerant temperature at the liquid level detection point of the receiver.
(33)	R3T	Thermistor (M1C discharge pipe)	Used to detect discharge pipe temperature. Used for compressor temperature protection control.
(34)	R4T	Thermistor (Refrigerant regulator liquid pipe)	Detects the liquid pipe temperature of the refrigerant regulator. Used during adjustment of refrigerant amount.
(35)	R5T	Thermistor (Subcooling heat exchanger outlet)	Used to detect the gas pipe temperature on evaporation side of the subcooling heat exchanger, keep the superheated degree at the subcooling heat exchanger constant, and others.
(36)	R6T	Thermistor (Liquid pipe)	Used to detect liquid pipe temperature. Used for purpose such as drift prevention control between heating indoor and outdoor units in multi-outdoor unit systems.
(37)	R7T	Thermistor (Receiver gas vent outlet)	Used to detect the refrigerant temperature at the liquid level detection point of the receiver.
(38)	R8T	Thermistor (Suction pipe)	Used to detect suction pipe temperature. Used for purpose such as control for constant degree of suction superheat during heating.
(39)	R9T	Thermistor (Heat exchanger deicer)	Used to detect liquid pipe temperature of air heat exchanger. Used to make judgements on defrosting operation.


(31) HEAT EXCHANGER
(39) FILTER
(2) FAN
(14) SOLENOID VALVE
CHECK VALVE
(3) ELECTRONIC EXPANSION VALVE
FILTER
(19) HIGH PRESSURE SENSOR
SENPH
CHECK VALVE
FILTER
OIL SEPARATOR
FILTER
CAPILLARY TUBE
(7) FOUR WAY VALVE
(22) HIGH PRESSURE SWITCH
HPS
(33)
(1) COMPRESSOR INV
(5) SOLENOID VALVE
SERVICE PORT
FILTER
CAPILLARY TUBE
(38)
(6) SOLENOID VALVE
(10) SOLENOID VALVE
CHECK VALVE
CHECK VALVE
PRESSURE REGULATING VALVE (ABSOLUTE PRESSURE TYPE)
(29)
(27) FUSIBLE PLUG
RECEIVER
STRAINER
SOLENOID VALVE (11)
STRAINER
FILTER
(37)
PIPE HEAT EXCHANGER(A) (25)
(4) ELECTRONIC EXPANSION VALVE
(24)
DOUBLE PIPE HEAT EXCHANGER
SOLENOID VALVE (12)
(32)
PIPE HEAT EXCHANGER(B) (26)
(35)
CAPILLARY TUBE
PIPE HEAT EXCHANGER
OIL REGULATOR
(34)
SENPL
PRESSURE SENSOR (LOW) (21)
FILTER
SOLENOID VALVE (13)
CHECK VALVE
(23) HIGH PRESSURE SWITCH (CONTROL)
PS
(8) SOLENOID VALVE
CHECK VALVE
FILTER
(9) SOLENOID VALVE
CHECK VALVE
SOLENOID VALVE (16)
SOLENOID VALVE (17)
FILTER
SOLENOID VALVE (18)
CHECK VALVE
(30)
PRESSURE REGULATING VALVE
MIXING UNIT
REFRIGERANT REGULATOR
FUSIBLE PLUG
(28)
CHECK VALVE
STRAINER
(15) SOLENOID VALVE
CHECK VALVE
FILTER
(20) PRESSURE SENSOR (HIGH, LIQUID PIPE)
SENPH
LIQUID PIPE
GAS PIPE
3D069117

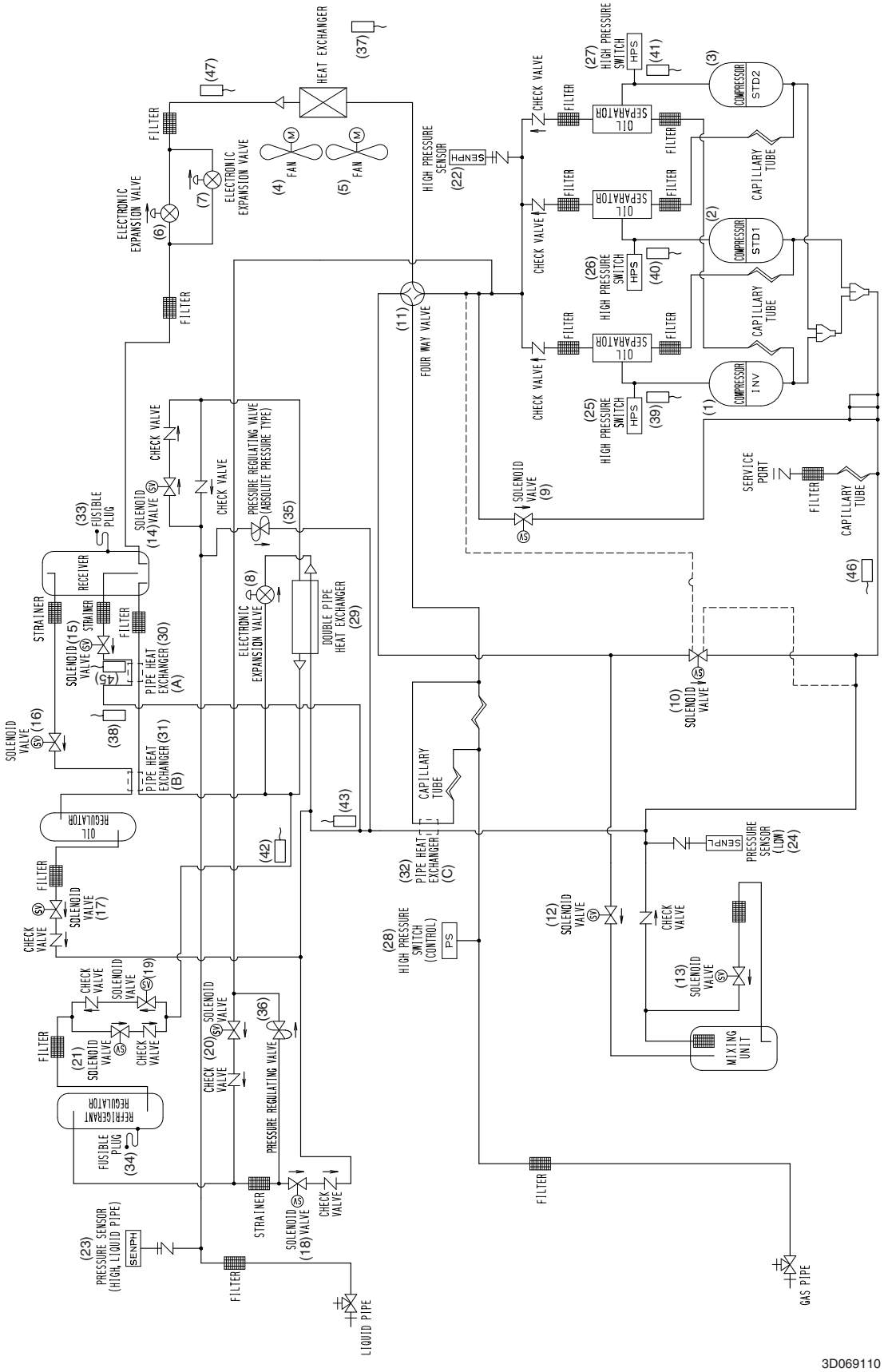
1.2 RQYQ10·12PY1

No. in refrigerant system diagram	Symbol	Name	Major Function
(1)	M1C	Inverter compressor (INV.)	Inverter compressor is operated on frequencies 52Hz to 210Hz by using the inverter. Standard compressor is operated with commercial power supply only. The number of operating steps is 37 when inverter compressor is operated in combination with standard compressor.
(2)	M2C	Standard compressor 1 (STD1)	
(3)	M1F	Inverter fan	Because the system is an air heat exchange type, the fan is operated 8-step rotation speed by using the inverter.
(4)	Y1E	Electronic expansion valve (Main)	While in heating operation, PI control is applied to keep the outlet superheated degree of air heat exchanger constant.
(5)	Y2E	Electronic expansion valve (Subcooling)	PI control is applied to keep the outlet superheated degree of subcooling heat exchanger constant.
(6)	Y1S	Solenoid valve (Hot gas)	Used to prevent the low pressure from transient falling.
(7)	Y2S	Solenoid valve (Bypass)	Used to bypass the mixing unit during the normal operation.
(8)	Y3S	Four way valve (Heat exchanger)	Used to switch the operation mode between cooling and heating.
(9)	Y4S	Solenoid valve (Mixing unit inlet)	Use to adjust the amount of refrigeration oil and clean pipes during check operation. Use to prevent refrigerant from flowing into the mixing unit during normal operation.
(10)	Y5S	Solenoid valve (Circuit of oil return)	Used to adjust the amount of oil in the mixing unit.
(11)	Y6S	Solenoid valve (Close liquid pipe for stopped outdoor unit)	Used to prevent the accumulation of refrigerant in the non-operating outdoor units in a multi-outdoor-unit system.
(12)	Y7S	Solenoid valve (Receiver liquid level)	Used to detect the amount of refrigerant.
(13)	Y8S	Solenoid valve (Receiver gas vent)	Used to collect refrigerant to the receiver.
(14)	Y9S	Solenoid valve (Oil regulator outlet)	Used to adjust the refrigeration oil during the check operation.
(15)	Y10S	Solenoid valve (Main electronic expansion valve bypass)	Used to prevent the increase of the liquid pipe pressure during cooling operation
(16)	Y11S	Solenoid valve (Refrigerant regulator gas vent pipe)	Used to collect refrigerant to the refrigerant regulator.
(17)	Y12S	Solenoid valve (Refrigerant regulator liquid pipe)	Used to collect refrigerant to the refrigerant regulator.
(18)	Y13S	Solenoid valve (Refrigerant regulator gas pipe)	Used to discharge refrigerant from the refrigerant regulator.
(19)	Y14S	Solenoid valve (Refrigerant regulator liquid outlet)	Used to discharge refrigerant from the refrigerant regulator.
(20)	S1NPH	High pressure sensor	Used to detect high pressure.
(21)	S2NPH	High pressure sensor (Liquid pipe outlet)	Used to detect pressure of liquid pipe.
(22)	S1NPL	Low pressure sensor	Used to detect low pressure.
(23)	S1PH	High pressure switch (For INV.)	In order to prevent the increase of high pressure when a malfunction occurs, this switch is activated at high pressure of 4.0 MPa or more to stop the compressor operation.
(24)	S2PH	High pressure switch (For STD 1.)	
(25)	S3PH	High pressure switch (for control)	In order to prevent the increase of field piping pressure when a malfunction occurs, this switch is activated at pressure of 3.3 MPa or more to stop the compressor operation.
(26)	–	Subcooling heat exchanger	Apply subcooling to liquid refrigerant.
(27)	–	Pipe heat exchanger (A)	Heats the refrigerant that flows out of the receiver.
(28)	–	Pipe heat exchanger (B)	
(29)	–	Pipe heat exchanger (C)	
(30)	–	Fusible plug	The fusible part fuses at a temperature of 70 to 75°C, allow pressure to escape to the atomosphere. This is in order to prevent the pressure rise in case of a fire or other abnormal heating.
(31)	–		
(32)	–	Pressure regulating valve 1 (Liquid pipe - Suction pipe)	Open at 4.0 MPa or more to avoid pressure increase to prevent damage to functional parts by the pressure increase and to protect the field piping during transportation and storage.
(33)	–	Pressure regulating valve 2 (Refrigerant regulator - Discharge pipe)	Open at 2 to 2.7 MPa or more to avoid pressure increase to prevent damage to functional parts by the pressure increase and to protect the field piping during transportation and storage.
(34)	R1T	Thermistor (Outdoor air)	Used to detect outdoor temperature, correct discharge pipe temperature and others.
(35)	R2T	Thermistor (Receiver liquid level)	Used to detect the refrigerant temperature at the liquid level detection point of the receiver.
(36)	R31T	Thermistor (M1C discharge pipe)	Used to detect discharge pipe temperature. Used for compressor temperature protection control.
(37)	R32T	Thermistor (M2C discharge pipe)	
(38)	R4T	Thermistor (Refrigerant regulator liquid pipe)	Detects the liquid pipe temperature of the refrigerant regulator. Used during adjustment of refrigerant amount.
(39)	R5T	Thermistor (Subcooling heat exchanger outlet)	Used to detect the gas pipe temperature on evaporation side of the subcooling heat exchanger, keep the superheated degree at the subcooling heat exchanger constant, and others.
(40)	R6T	Thermistor (Liquid pipe)	Used to detect liquid pipe temperature. Used for purpose such as drift prevention control between heating indoor and outdoor units in multi-outdoor unit systems.
(41)	R7T	Thermistor (Receiver gas vent outlet)	Used to detect the refrigerant temperature at the liquid level detection point of the receiver.
(42)	R8T	Thermistor (Suction pipe)	Used to detect suction pipe temperature. Used for purpose such as control for constant degree of suction superheat during heating.
(43)	R9T	Thermistor (Heat exchanger deicer)	Used to detect liquid pipe temperature of air heat exchanger. Used to make judgements on defrosting operation.


(1) COMPRESSOR INV
(2) COMPRESSOR STD1
(3) FAN
(4) ELECTRONIC EXPANSION VALVE
(5) ELECTRONIC EXPANSION VALVE
(6) SOLENOID VALVE
(7) SOLENOID VALVE
(8) FOUR WAY VALVE
(9) SOLENOID VALVE
(10) SOLENOID VALVE
(11) SOLENOID VALVE
(12) SOLENOID VALVE
(13) SOLENOID VALVE
(14) SOLENOID VALVE
(15) SOLENOID VALVE
(16) SOLENOID VALVE
(17) SOLENOID VALVE
(18) SOLENOID VALVE
(19) SOLENOID VALVE
(20) HIGH PRESSURE SENSOR
(21) PRESSURE SENSOR (HIGH, LIQUID PIPE)
(22) PRESSURE SENSOR (LOW)
(23) HIGH PRESSURE SWITCH
(24) HIGH PRESSURE SWITCH
(25) HIGH PRESSURE SWITCH (CONTROL)
(26) DOUBLE PIPE HEAT EXCHANGER
(27) PIPE HEAT EXCHANGER (A)
(28) PIPE HEAT EXCHANGER (B)
(29) PIPE HEAT EXCHANGER (C)
(30) FUSIBLE PLUG
(31) FUSIBLE PLUG
(32) PRESSURE REGULATING VALVE (ABSOLUTE PRESSURE TYPE)
(33) PRESSURE REGULATING VALVE
(34) HEAT EXCHANGER
(35) (36) (37) (38) (39) (42) (43)
CHECK VALVE
FILTER
STRAINER
RECEIVER
OIL REGULATOR
OIL SEPARATOR
REFRIGERANT REGULATOR
CAPILLARY TUBE
SERVICE PORT
MIXING UNIT
LIQUID PIPE
GAS PIPE
SENPH
SENPL
HPS
PS
3D069109

1.3 RQYQ14·16PY1

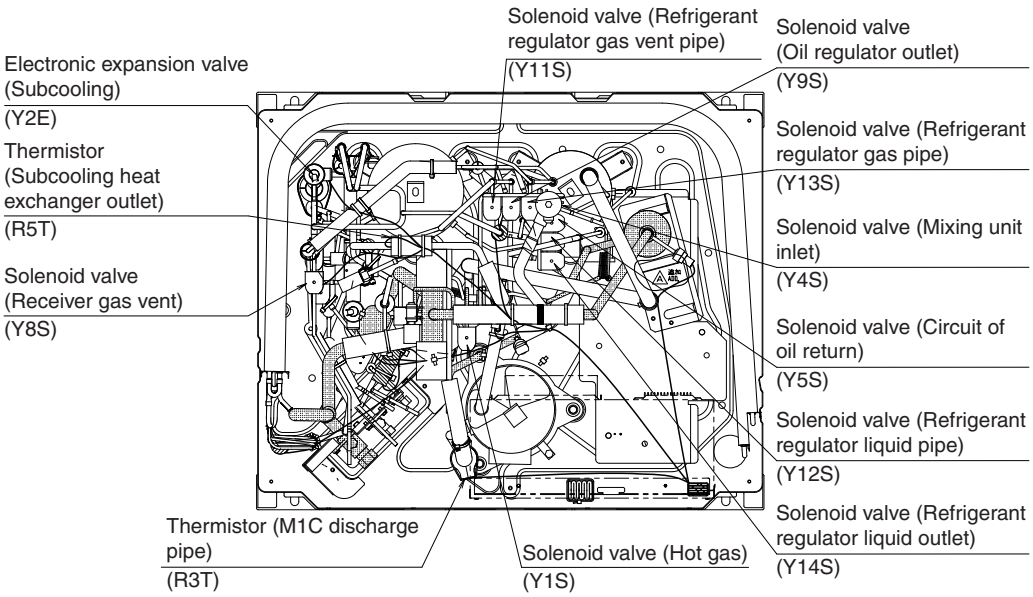
No. in refrigerant system diagram	Symbol	Name	Major Function
(1)	M1C	Inverter compressor (INV.)	Inverter compressor is operated on frequencies 52Hz to 210Hz by using the inverter. Standard compressor is operated with commercial power supply only. The number of operating steps is 49 when inverter compressor is operated in combination with standard co
(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 8-step rotation speed by using the inverter.
(5)	M2F		
(6)	Y1E	Electronic expansion valve (Main)	While in heating operation, PI control is applied to keep the outlet superheated degree of air heat exchanger constant.
(7)	Y2E	Electronic expansion valve (Main 2)	
(8)	Y3E	Electronic expansion valve (Subcooling)	PI control is applied to keep the outlet superheated degree of subcooling heat exchanger constant.
(9)	Y1S	Solenoid valve (Hot gas)	Used to prevent the low pressure from transient falling.
(10)	Y2S	Solenoid valve (Bypass)	Used to bypass the mixing unit during the normal operation.
(11)	Y3S	Four way valve (Heat exchanger)	Used to switch the operation mode between cooling and heating.
(12)	Y4S	Solenoid valve (Mixing unit inlet)	Use to adjust the amount of refrigeration oil and clean pipes during check operation. Use to prevent refrigerant from flowing into the mixing unit during normal operation.
(13)	Y5S	Solenoid valve (Circuit of oil return)	Used to adjust the amount of oil in the mixing unit.
(14)	Y6S	Solenoid valve (Close liquid pipe for stopped outdoor unit)	Used to prevent the accumulation of refrigerant in the non-operating outdoor units in a multi-outdoor-unit system.
(15)	Y7S	Solenoid valve (Receiver liquid level)	Used to detect the amount of refrigerant.
(16)	Y8S	Solenoid valve (Receiver gas vent)	Used to collect refrigerant to the receiver.
(17)	Y9S	Solenoid valve (Oil regulator outlet)	Used to adjust the refrigeration oil during the check operation.
(18)	Y10S	Solenoid valve (Refrigerant regulator gas vent pipe)	Used to collect refrigerant to the refrigerant regulator.
(19)	Y11S	Solenoid valve (Refrigerant regulator liquid pipe)	Used to collect refrigerant to the refrigerant regulator.
(20)	Y12S	Solenoid valve (Refrigerant regulator gas pipe)	Used to discharge refrigerant from the refrigerant regulator.
(21)	Y13S	Solenoid valve (Refrigerant regulator liquid outlet)	Used to discharge refrigerant from the refrigerant regulator.
(22)	S1NPH	High pressure sensor	Used to detect high pressure.
(23)	S2NPH	High pressure sensor (Liquid pipe outlet)	Used to detect pressure of liquid pipe.
(24)	S1NPL	Low pressure sensor	Used to detect low pressure.
(25)	S1PH	High pressure switch (For INV.)	In order to prevent the increase of high pressure when a malfunction occurs, this switch is activated at high pressure of 4.0 MPa or more to stop the compressor operation.
(26)	S2PH	High pressure switch (For STD 1.)	
(27)	S3PH	High pressure switch (For STD 2.)	
(28)	S4PH	High pressure switch (for control)	In order to prevent the increase of field piping pressure when a malfunction occurs, this switch is activated at pressure of 3.3 MPa or more to stop the compressor operation.
(29)	–	Subcooling heat exchanger	Apply subcooling to liquid refrigerant.
(30)	–	Pipe heat exchanger (A)	Heats the refrigerant that flows out of the receiver.
(31)	–	Pipe heat exchanger (B)	
(32)	–	Pipe heat exchanger (C)	
(33)	–	Fusible plug	The fusible part fuses at a temperature of 70 to 75°C, allow pressure to escape to the atomosphere. This is in order to prevent the pressure rise in case of a fire or other abnormal heating.
(34)	–		
(35)	–	Pressure regulating valve 1 (Receiver - Discharge pipe)	Open at 4.0 MPa or more to avoid pressure increase to prevent damage to functional parts by the pressure increase and to protect the field piping during transportation and storage.
(36)	–	Pressure regulating valve 2 (Liquid pipe - Receiver)	Open at 2 to 2.7 MPa or more to avoid pressure increase to prevent damage to functional parts by the pressure increase and to protect the field piping during transportation and storage.
(37)	R1T	Thermistor (Outdoor air)	Used to detect outdoor temperature, correct discharge pipe temperature and others.
(38)	R2T	Thermistor (Receiver liquid level)	Used to detect the refrigerant temperature at the liquid level detection point of the receiver.
(39)	R31T	Thermistor (M1C discharge pipe)	Used to detect discharge pipe temperature. Used for compressor temperature protection control.
(40)	R32T	Thermistor (M2C discharge pipe)	
(41)	R33T	Thermistor (M3C discharge pipe)	
(42)	R4T	Thermistor (Refrigerant regulator liquid pipe)	Detects the liquid pipe temperature of the refrigerant regulator. Used during adjustment of refrigerant amount.
(43)	R5T	Thermistor (Subcooling heat exchanger outlet)	Used to detect the gas pipe temperature on evaporation side of the subcooling heat exchanger, keep the superheated degree at the subcooling heat exchanger constant, and others.
(44)	R6T	Thermistor (Liquid pipe)	Used to detect liquid pipe temperature. Used for purpose such as drift prevention control between heating indoor and outdoor units in multi-outdoor unit systems.
(45)	R7T	Thermistor (Receiver gas vent outlet)	Used to detect the refrigerant temperature at the liquid level detection point of the receiver.
(46)	R8T	Thermistor (Suction pipe)	Used to detect suction pipe temperature. Used for purpose such as control for constant degree of suction superheat during heating.
(47)	R9T	Thermistor (Heat exchanger deicer)	Used to detect liquid pipe temperature of air heat exchanger. Used to make judgements on defrosting operation.


HEAT EXCHANGER
(37)
(47)
FILTER
ELECTRONIC EXPANSION VALVE
(6)
(7)
(4) FAN
(5) FAN
HIGH PRESSURE SENSOR
(22) SENPH
CHECK VALVE
OIL SEPARATOR
(27) HIGH PRESSURE SWITCH
HPS
(41)
(3) COMPRESSOR STD2
CAPILLARY TUBE
(2) COMPRESSOR STD1
(26) HIGH PRESSURE SWITCH
(40)
(11) FOUR WAY VALVE
(1) COMPRESSOR INV
(25) HIGH PRESSURE SWITCH
(39)
SOLENOID VALVE (9)
SERVICE PORT
(46)
(10) SOLENOID VALVE
(33) FUSIBLE PLUG
RECEIVER
SOLENOID VALVE (14)
PRESSURE REGULATING VALVE (ABSOLUTE PRESSURE TYPE)
(35)
(8) ELECTRONIC EXPANSION VALVE
DOUBLE PIPE HEAT EXCHANGER (29)
STRAINER
SOLENOID VALVE (15)
PIPE HEAT EXCHANGER (A) (30)
(45)
(38)
SOLENOID VALVE (16)
PIPE HEAT EXCHANGER (B) (31)
OIL REGULATOR
(42)
(43)
CAPILLARY TUBE
(32) PIPE HEAT EXCHANGER (C)
PRESSURE SENSOR (LOW) (24) SENPL
(28) HIGH PRESSURE SWITCH (CONTROL) PS
(12) SOLENOID VALVE
(13) SOLENOID VALVE
MIXING UNIT
SOLENOID VALVE (17)
(21) SOLENOID VALVE
SOLENOID VALVE (19)
SOLENOID VALVE (20)
(36) PRESSURE REGULATING VALVE
REFRIGERANT REGULATOR
FUSIBLE PLUG (34)
(23) PRESSURE SENSOR (HIGH, LIQUID PIPE) SENPH
SOLENOID VALVE (18)
LIQUID PIPE
GAS PIPE
3D069110

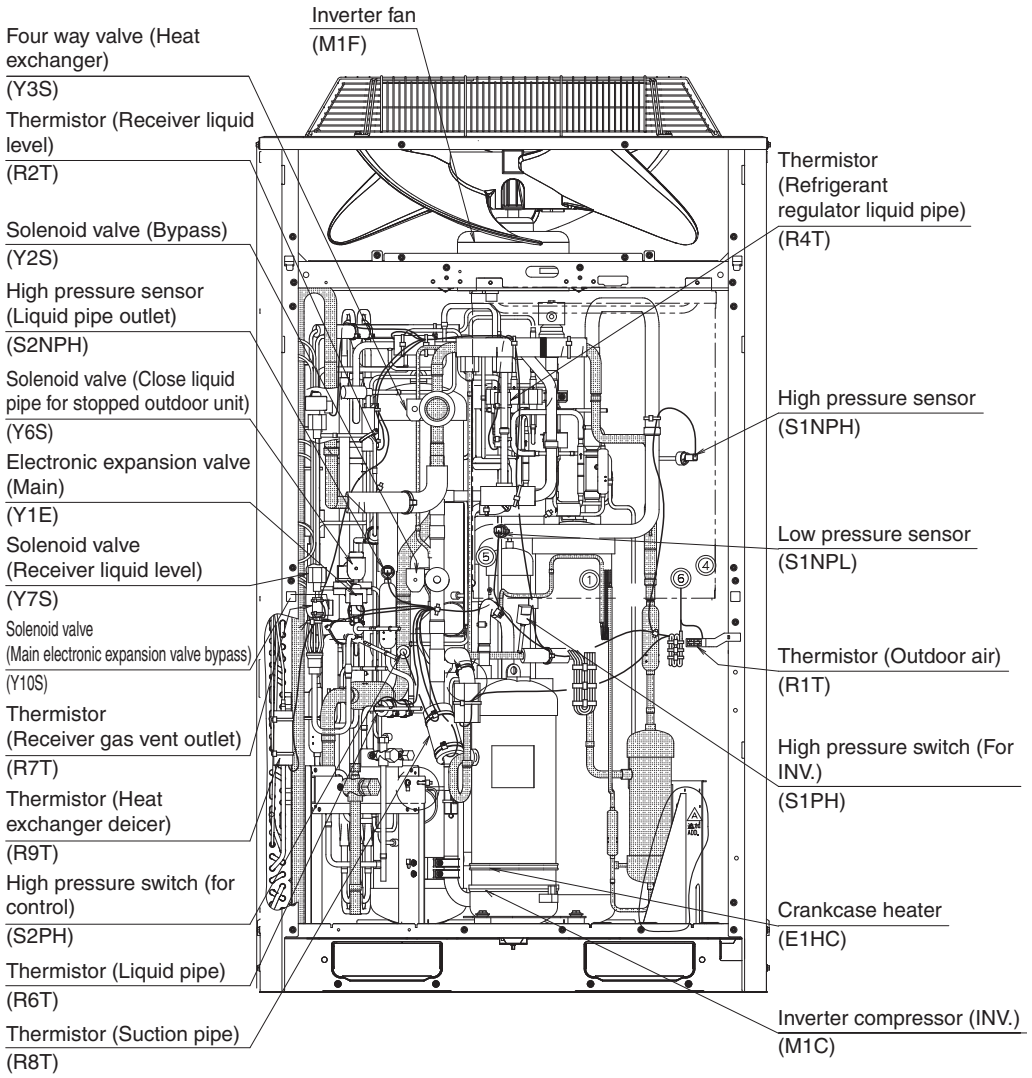
2. Functional Parts Layout

2.1 RQYQ8PY1

Plan

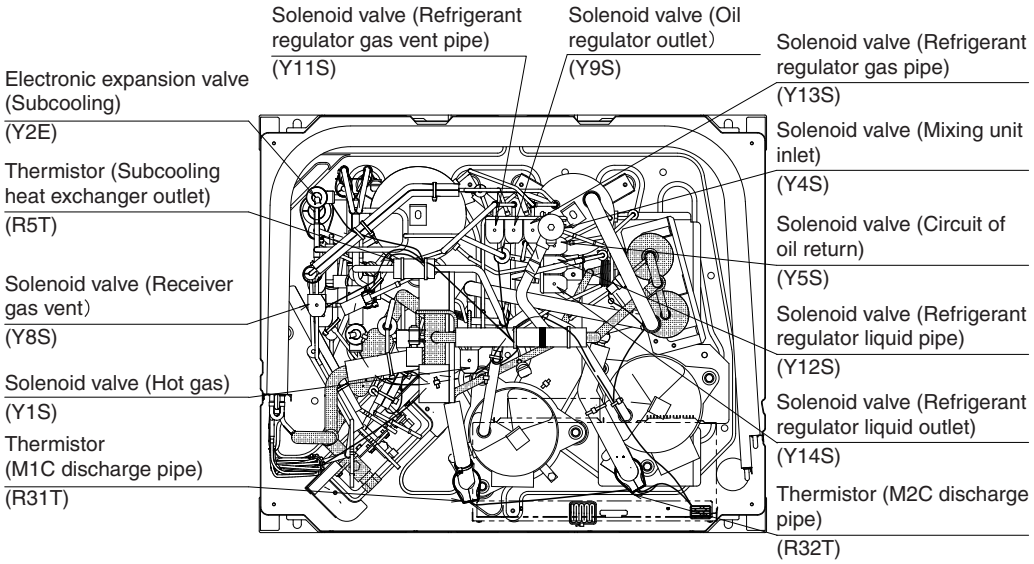


Front View

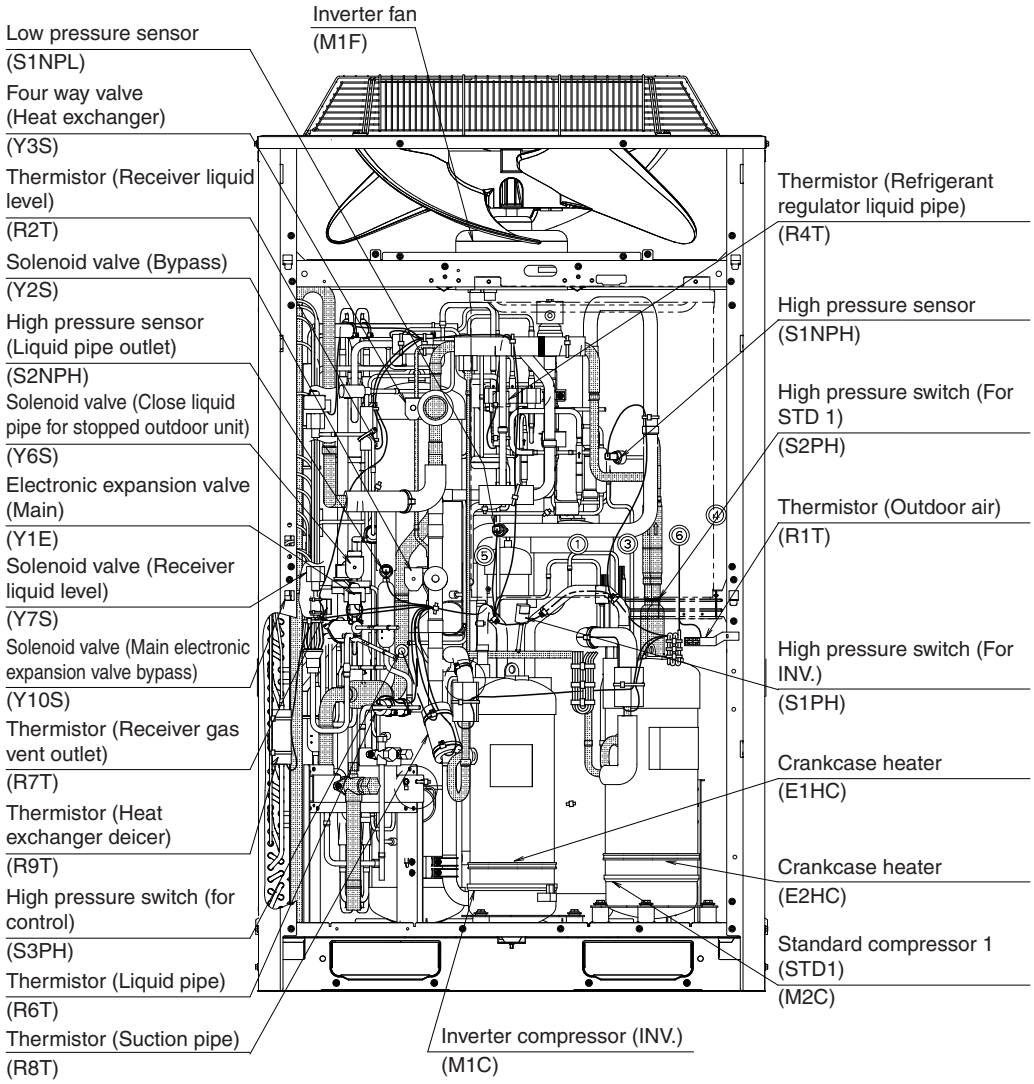


2.2 RQYQ10·12PY1

Plan

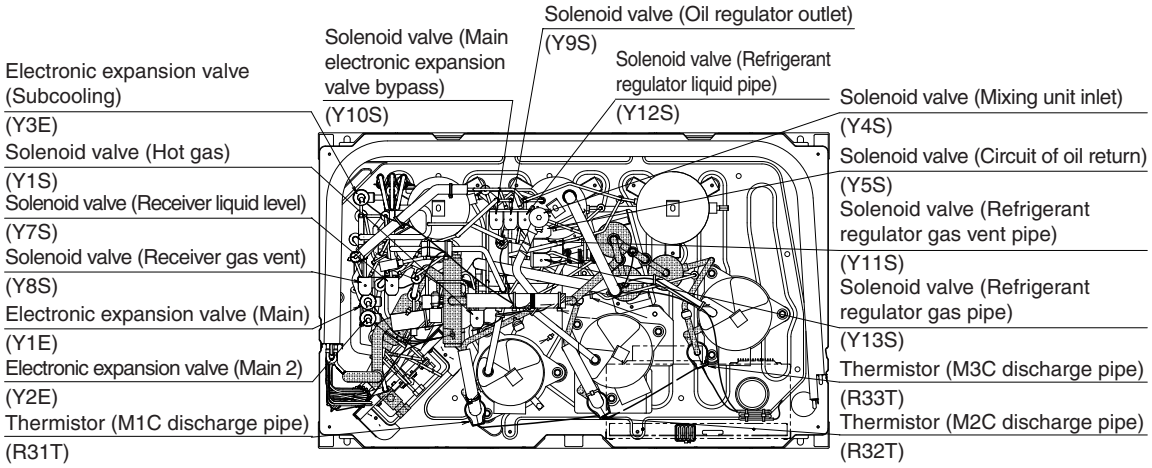


Front View

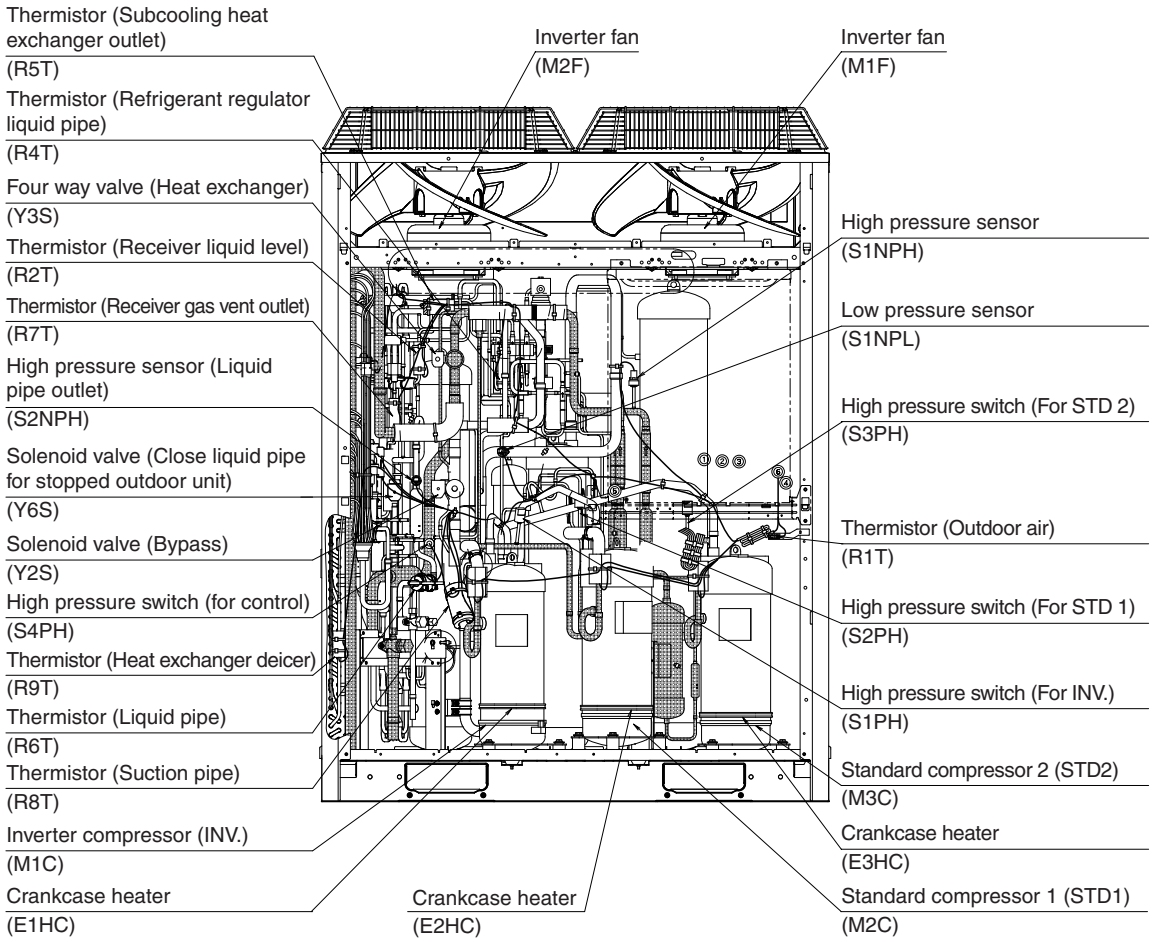


2.3 RQYQ14·16PY1

Plan



Front View

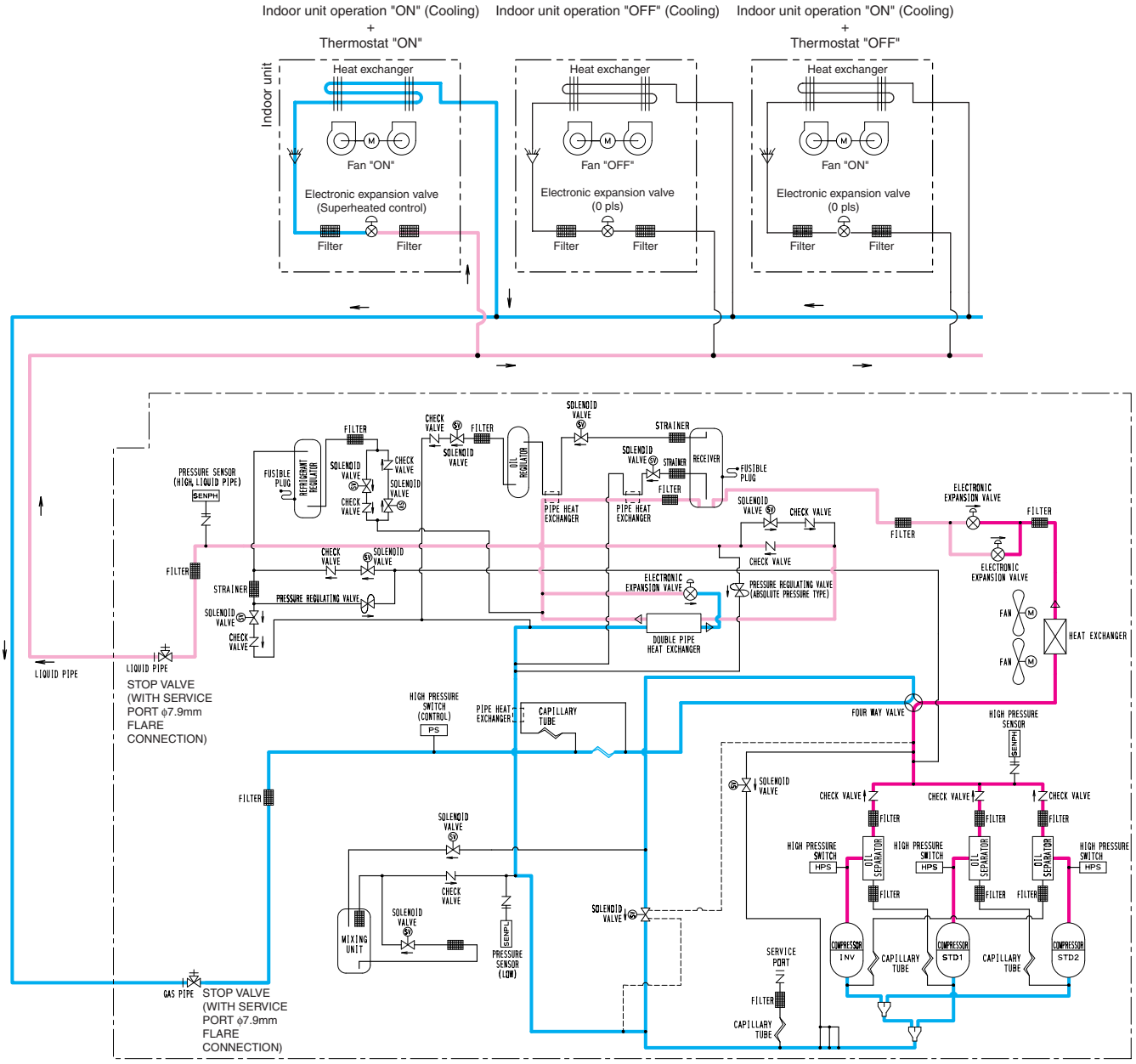


3. Refrigerant Flow for Each Operation Mode

3.1 RQYQ8~16PY1

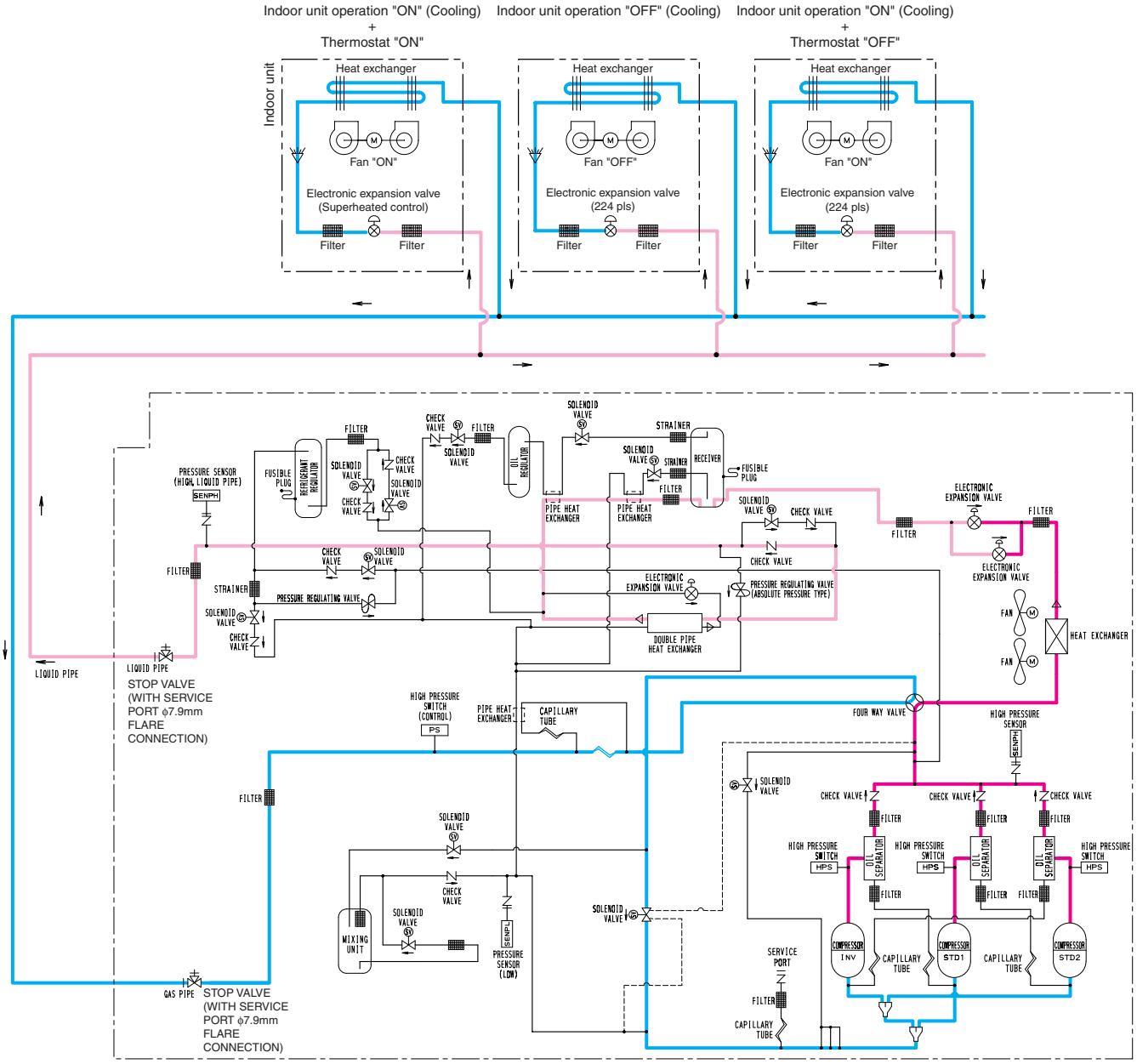
Cooling operation

- "High temperature, high pressure gas"
- "High temperature, high pressure liquid"
- "Low temperature, low pressure"



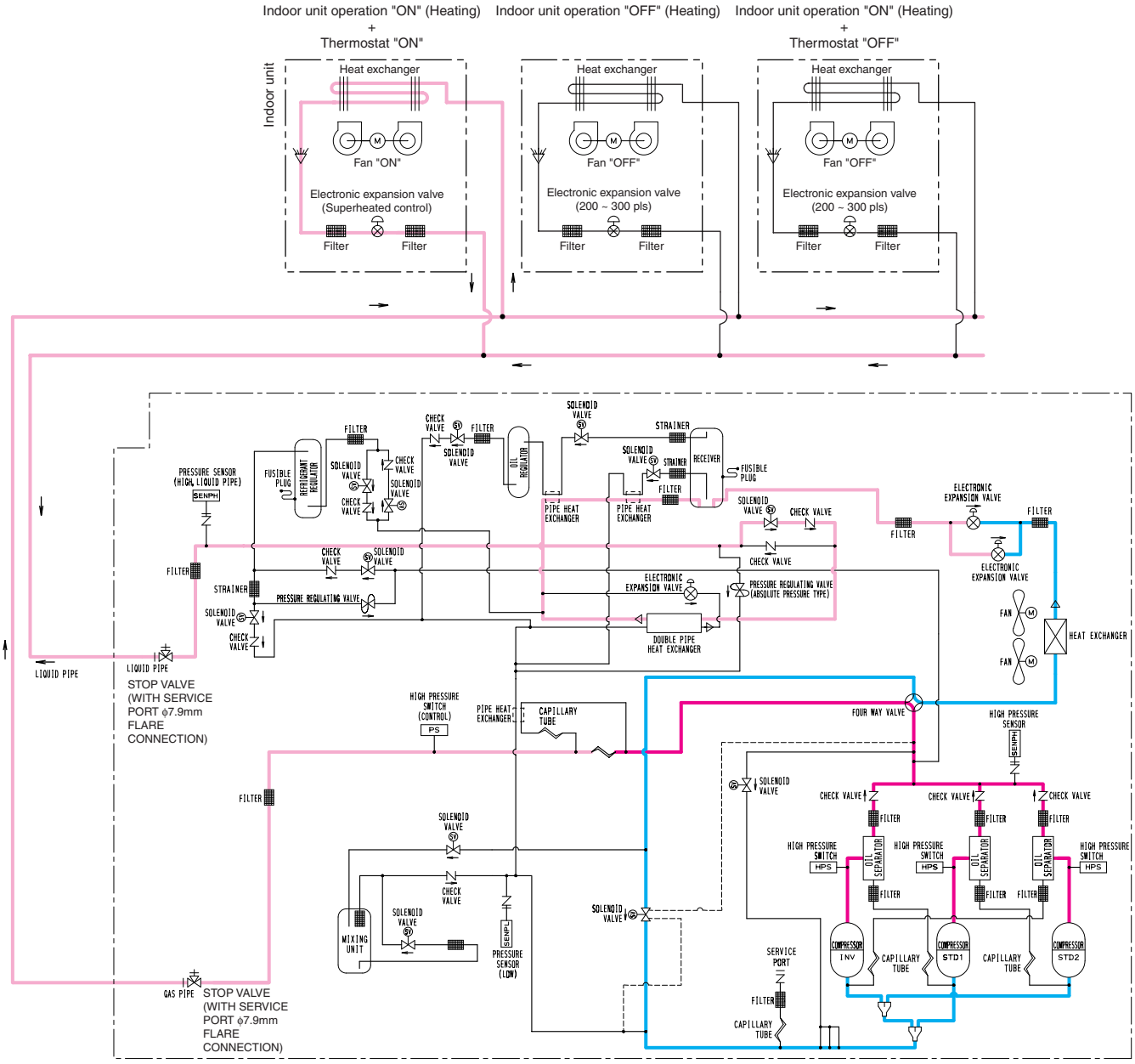
Cooling oil return / Heating oil return / Defrost operation

"High temperature, high pressure gas"
"High temperature, high pressure liquid"
"Low temperature, low pressure"



Heating operation

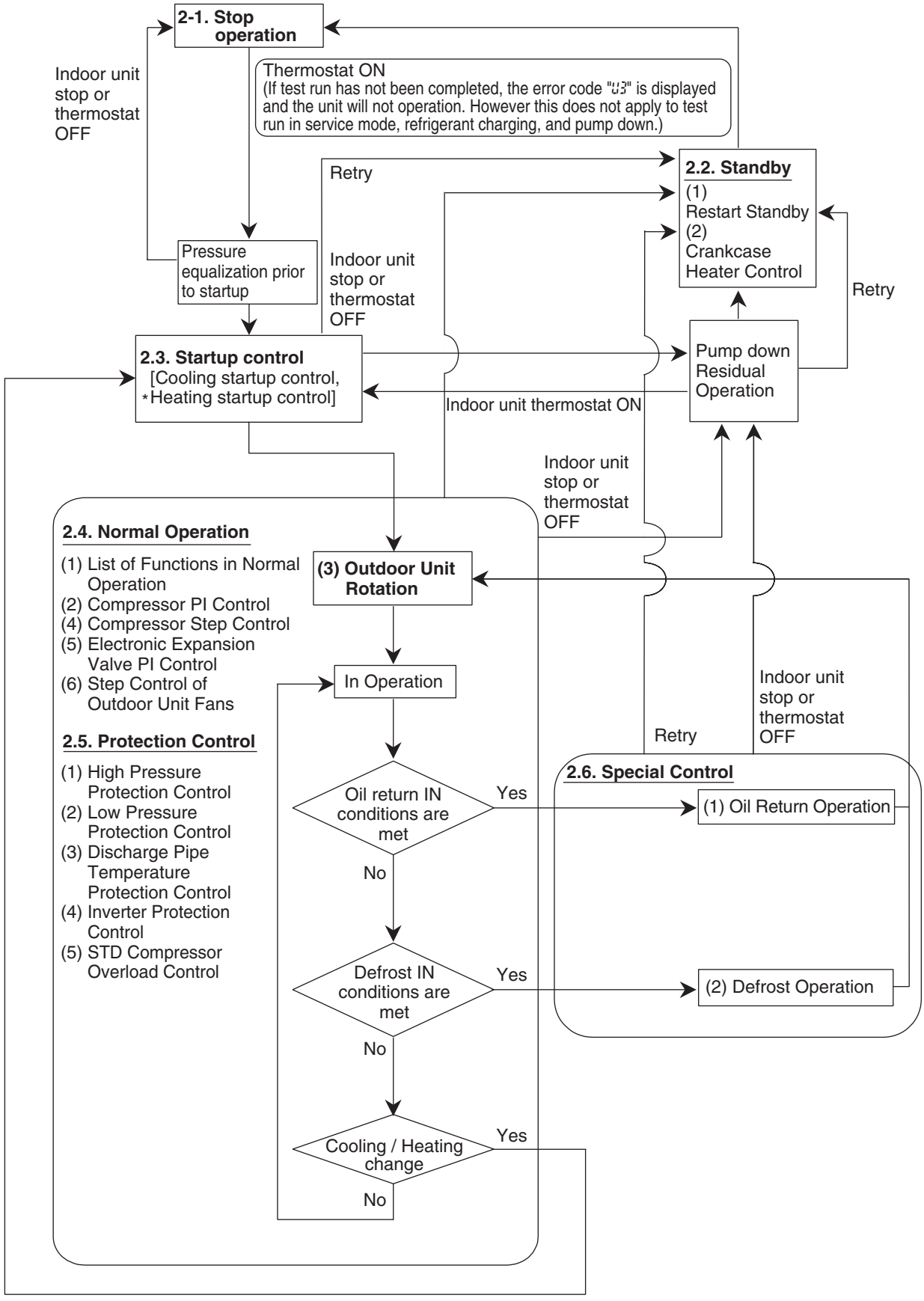
- "High temperature, high pressure gas"
- "High temperature, high pressure liquid"
- "Low temperature, low pressure"



Part 4
Function

1. Function General

1.1 Operation Mode



2. Detailed Control Functions

2.1 Stop Operation

2.1.1 Stop due to Malfunction

In order to protect compressors, if any of the abnormal state occurs, the system will make "stop with thermostat OFF" and the malfunction will be determined according to the number of retry times.
(Refer to "Error code and description" (P.95~) of the troubleshooting for the items to determine the malfunction.)

2.1.2 When System is in Stop Mode

Both the master and slave units stop.
The four way valves both for heat exchanger switch and piping switch retain the condition before they were stopped.

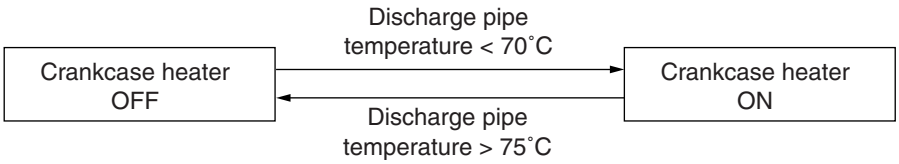
2.2 Standby

2.2.1 Restart Standby

Used to forcedly stop the compressor for a period of 5 minutes, in order to prevent the frequent ON/OFF of the compressor and equalize the pressure within the refrigerant system.
In addition, the outdoor fan carry out the residual operation for a while to suppress the acceleration of the pressure equalizing and melting of the refrigerant to the evaporator.

2.2.2 Crankcase Heater Control

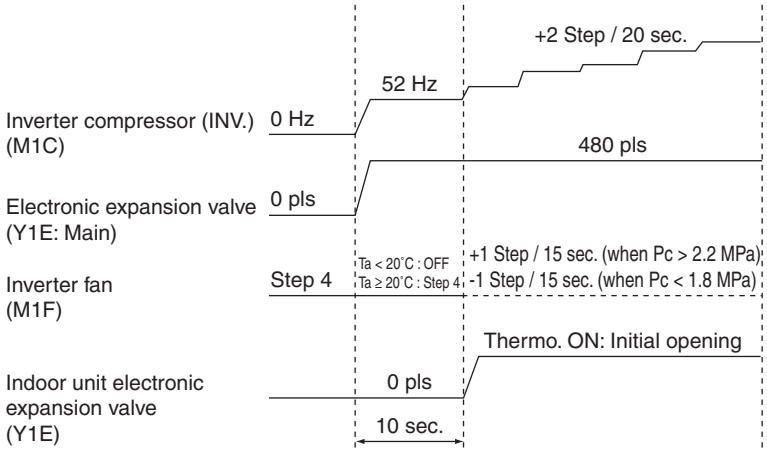
In order to prevent the refrigerant from melting in the compressor oil in the stopped mode, this mode is used to control the crankcase heater.



2.3 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.
To avoid stresses to the compressor due to oil return or else after the startup, the following control is made and the position of the four way valve is also determined. Start both the master and the slave units simultaneously to position the four way valve.

(1) Startup Control in Cooling Operation

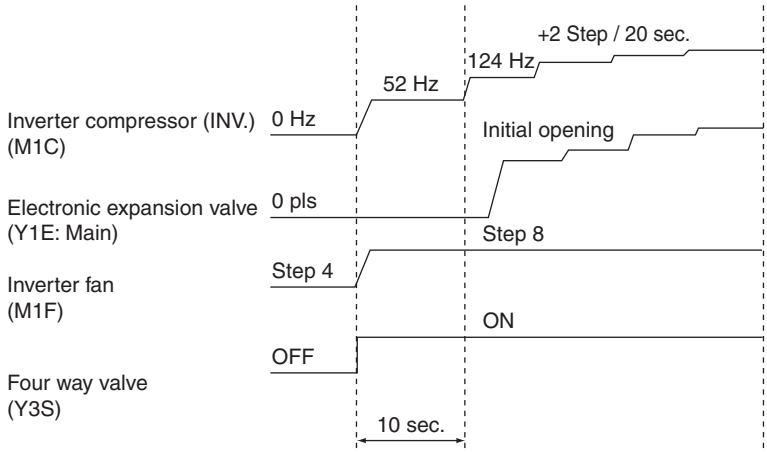


[Ending conditions]

OR
- A lapse of 130 sec.
- Tc > 48˚C
- Pe < 0.54Pa
- Pc-Pe > 0.4MPa.

Ta: Outdoor air temperature
Tc: High pressure equivalent saturation temperature
Pc: Value detected by high pressure sensor
Pe: Value detected by low pressure sensor

(2) Startup Control in Heating Operation



[Ending conditions]

OR
- A lapse of 130 sec.
- Pc > 2.65MPa
- Pc-Pe > 0.4MPa.

2.4 Normal Operation

2.4.1 List of Functions in Normal Operation

Part Name	Electric Symbol			Normal Cooling	Normal Heating
	RQYQ8P	PQYQ10·12P	PQYQ14·16P		
Compressor	M1C	M1C	M1C	PI Control	PI Control
	–	M2C	M2C		
	–	–	M3C		
Outdoor unit fan	M1F	M1F	M1F, M2F	Depends on the mode of the cooling heat exchanger	Depends on the mode of the cooling heat exchanger
Four way valve	Y3S	Y3S	Y3S	OFF	ON
Electronic expansion valve (Main)	Y1E	Y1E	Y1E	2000 pls	Depends on the control of the electronic expansion valve
Electronic expansion valve (Main 2)	–	–	Y2E		
Electronic expansion valve (Subcooling)	Y2E	Y2E	Y3E	Depends on the control of the electronic expansion valve	0 pls
Solenoid valve (Hot gas)	Y1S	Y1S	Y1S	OFF	OFF
Solenoid valve (Receiver gas vent)	Y8S	Y8S	Y8S	OFF	OFF
Solenoid valve (Circuit of oil return)	Y5S	Y5S	Y5S	ON	ON
Solenoid valve (Close liquid pipe for stopped outdoor unit)	Y6S	Y6S	Y6S	OFF	ON
Solenoid valve (Main electronic expansion valve bypass)	Y10S	Y10S	–	ON	OFF
Solenoid valve (Refrigerant regulator gas vent pipe)	Y11S	Y11S	Y10S	OFF	OFF
Solenoid valve (Refrigerant regulator liquid pipe)	Y12S	Y12S	Y11S	OFF	OFF
Solenoid valve (Refrigerant regulator gas pipe)	Y13S	Y13S	Y12S	OFF	OFF
Solenoid valve (Refrigerant regulator liquid outlet)	Y14S	Y14S	Y13S	OFF	OFF
Solenoid valve (Receiver liquid level)	Y7S	Y7S	Y7S	OFF	OFF
Solenoid valve (Mixing unit inlet)	Y4S	Y4S	Y4S	OFF	OFF
Solenoid valve (Bypass)	Y2S	Y2S	Y2S	OFF	OFF
Solenoid valve (Oil regulator outlet)	Y9S	Y9S	Y9S	ON	ON
Indoor unit fan	M1F	M1F	M1F	Depends on the indoor unit	Depends on the indoor unit
Indoor unit electronic expansion valve	Y1E	Y1E	Y1E	Depends on the indoor unit	Depends on the indoor unit

2.4.2 Compressor PI Control

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

[Cooling operation]

Controls compressor capacity to adjust Te to achieve target value (TeS).
Te set value (Make this setting while in Setting mode 2.)

Te setting

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

Te : Low pressure equivalent saturation temperature (°C)
TeS : Target temperature of Te (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

L	M (Normal) (factory setting)	H
43ºC	46ºC	47ºC

Tc : High pressure equivalent saturation temperature (°C)
TcS : Target temperature of Tc (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.

2.4.3 Outdoor Unit Rotation

In the case of multi-outdoor-unit system, this outdoor unit rotation is used to prevent the compressor from burning out due to unbalanced oil level between outdoor units.

[Timing of outdoor unit rotation]

· At the beginning of startup control

<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

<System with three outdoor units>

	Outdoor Unit 1	Outdoor Unit 2	Outdoor Unit 3
Previous time	Priority 1	Priority 2	Priority 3
This time	Priority 3	Priority 1	Priority 2
Next time	Priority 2	Priority 3	Priority 1
One time after the next	Priority 1	Priority 2	Priority 3

2.4.4 Compressor Step Control

Compressor operations vary with the following steps according to information in “2.4.2 Compressor PI Control”.

RQYQ8PY1

STEP No.	INV.
1	52Hz
2	57Hz
3	62Hz
4	68Hz
5	74Hz
6	81Hz
7	88Hz
8	96Hz
9	104Hz
10	110Hz
11	116Hz
12	124Hz
13	133Hz
14	143Hz
15	158Hz
16	165Hz
17	177Hz
18	189Hz
19	202Hz
20	210Hz
21	218Hz
22	232Hz
23	248Hz
24	266Hz

RQYQ10 ·12PY1

STEP No.	INV.	STD1
1	52Hz	OFF
2	57Hz	OFF
3	62Hz	OFF
4	68Hz	OFF
5	74Hz	OFF
6	81Hz	OFF
7	88Hz	OFF
8	96Hz	OFF
9	104Hz	OFF
10	110Hz	OFF
11	116Hz	OFF
12	124Hz	OFF
13	133Hz	OFF
14	143Hz	OFF
15	158Hz	OFF
16	165Hz	OFF
17	177Hz	OFF
18	189Hz	OFF
19	202Hz	OFF
20	210Hz	OFF
21	52Hz	ON
22	62Hz	ON
23	68Hz	ON
24	74Hz	ON
25	81Hz	ON
26	88Hz	ON
27	96Hz	ON
28	104Hz	ON
29	116Hz	ON
30	124Hz	ON
31	133Hz	ON

RQYQ14 ·16PY1

STEP No.	INV.	STD1	STD2
1	52Hz	OFF	OFF
2	57Hz	OFF	OFF
3	62Hz	OFF	OFF
4	68Hz	OFF	OFF
5	74Hz	OFF	OFF
6	81Hz	OFF	OFF
7	88Hz	OFF	OFF
8	96Hz	OFF	OFF
9	104Hz	OFF	OFF
10	110Hz	OFF	OFF
11	116Hz	OFF	OFF
12	124Hz	OFF	OFF
13	133Hz	OFF	OFF
14	143Hz	OFF	OFF
15	158Hz	OFF	OFF
16	165Hz	OFF	OFF
17	177Hz	OFF	OFF
18	189Hz	OFF	OFF
19	202Hz	OFF	OFF
20	210Hz	OFF	OFF
21	52Hz	ON	OFF
22	62Hz	ON	OFF
23	68Hz	ON	OFF
24	74Hz	ON	OFF
25	81Hz	ON	OFF
26	88Hz	ON	OFF
27	96Hz	ON	OFF
28	104Hz	ON	OFF
29	116Hz	ON	OFF
30	124Hz	ON	OFF
31	133Hz	ON	OFF
32	143Hz	ON	OFF
33	158Hz	ON	OFF
34	177Hz	ON	OFF
35	189Hz	ON	OFF
36	202Hz	ON	OFF
37	210Hz	ON	OFF
38	52Hz	ON	ON
39	62Hz	ON	ON
40	74Hz	ON	ON
41	88Hz	ON	ON
42	96Hz	ON	ON
43	110Hz	ON	ON
44	124Hz	ON	ON
45	143Hz	ON	ON
46	158Hz	ON	ON
47	165Hz	ON	ON
48	177Hz	ON	ON
49	189Hz	ON	ON

2.4.5 Electronic Expansion Valve PI Control

Main electronic expansion valve control

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

SH = Tg - Te

SH: Evaporator outlet superheated degree (°C)
Tg : Suction pipe temperature (°C) detected by the thermistor R8T.
Te : Low pressure equivalent saturation temperature (°C)

Subcooling electronic expansion valve control

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 (Y2E or Y3E) so that the evaporator-side gas pipe superheated degree (SH) will become constant.

SH = Tsh - Te

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

2.4.6 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)						
	RQYQ8PY1	RQYQ10PY1	RQYQ12PY1	RQYQ14PY1		RQYQ16PY1	
				MF1	MF2	MF1	MF2
0	0	0	0	0	0	0	0
1	350	350	350	230	0	230	230
2	370	370	370	380	0	380	380
3	400	400	400	290	260	290	290
4	450	460	460	375	345	375	375
5	540	560	560	570	540	570	570
6	610	710	710	720	690	720	720
7	760	Cooling: 821 Heating: 800	870	1091	1061	1091	980
8	Cooling: 796 Heating: 780	Cooling: 821 Heating: 800	870	1136	1106	1136	980

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

[Control at a low outdoor temperature during cooling]

Secure the liquid pressure and circulating rate in the indoor unit through high pressure control with the outdoor fan when the outdoor temperature is low during cooling. Control the fan with the target Tc (high pressure equivalent saturation temperature) = 34°C

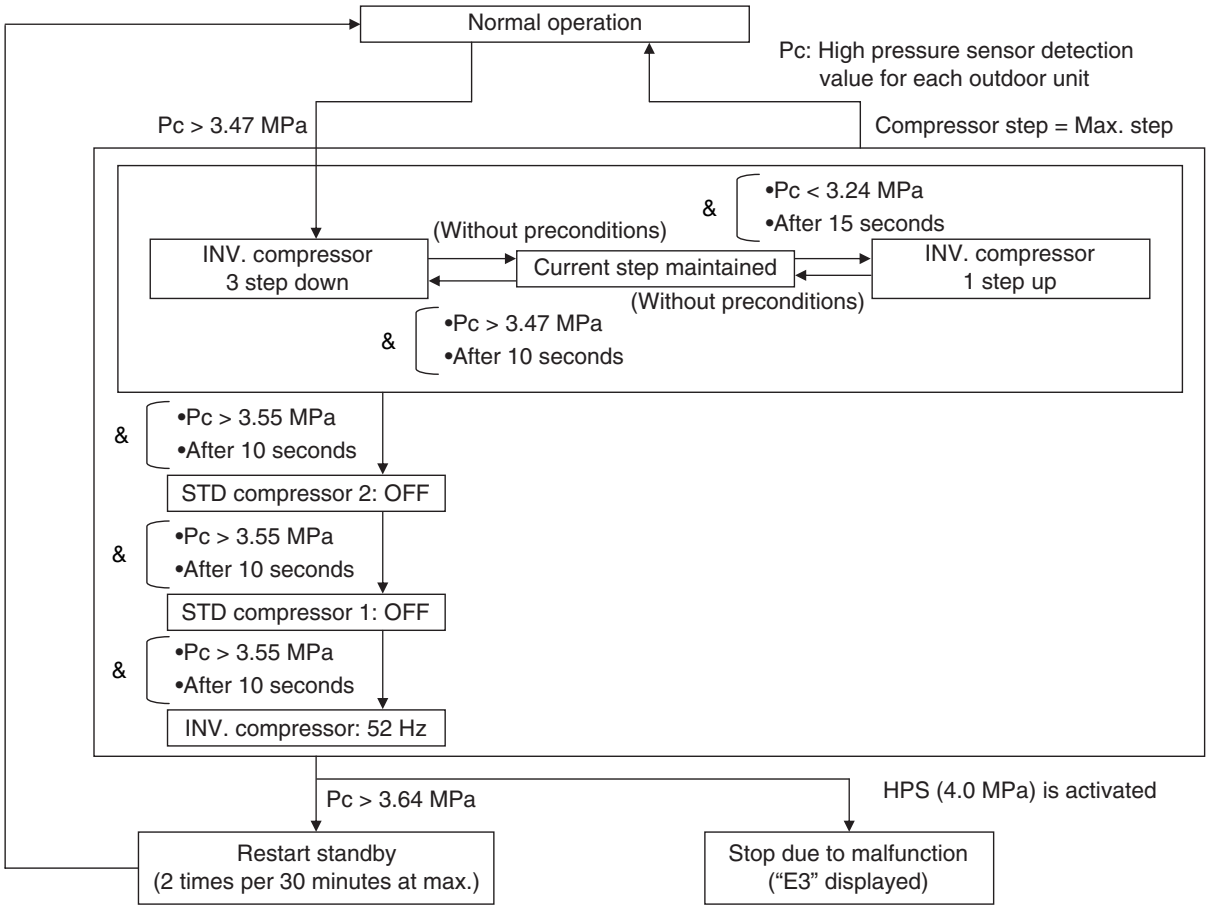
2.5 Protection Control

2.5.1 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.

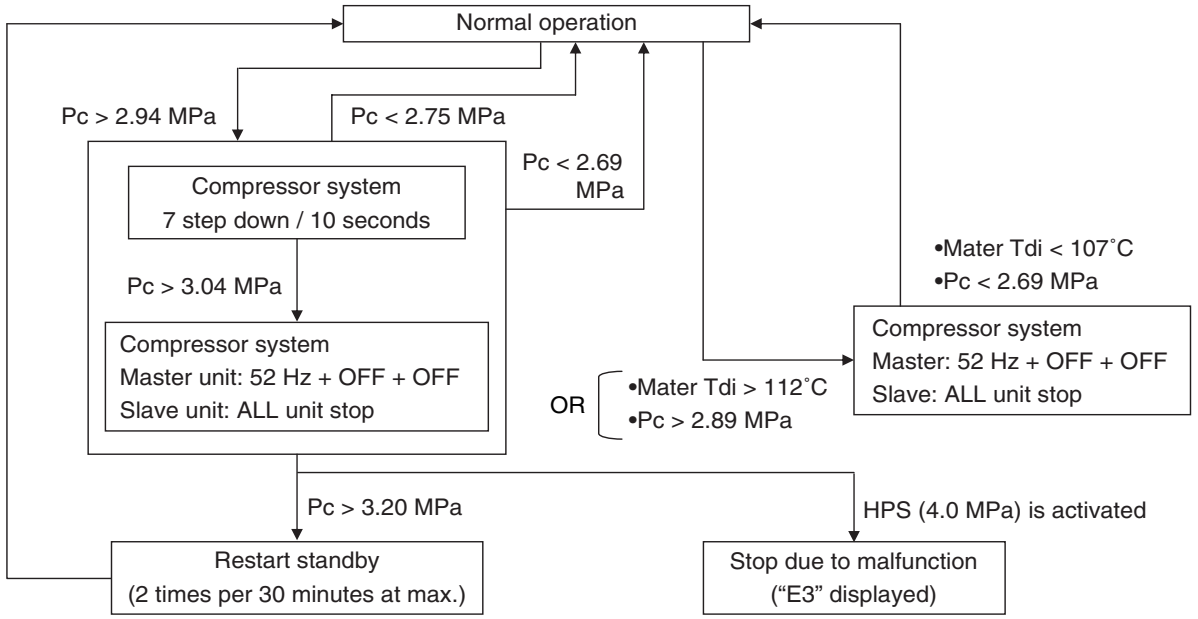
[In cooling]

★ In case of multi-outdoor-unit system, each outdoor unit performs this control individually in the following sequence.



[In heating]

★ In case of multi-outdoor-unit system, the following control is performed in the entire system.



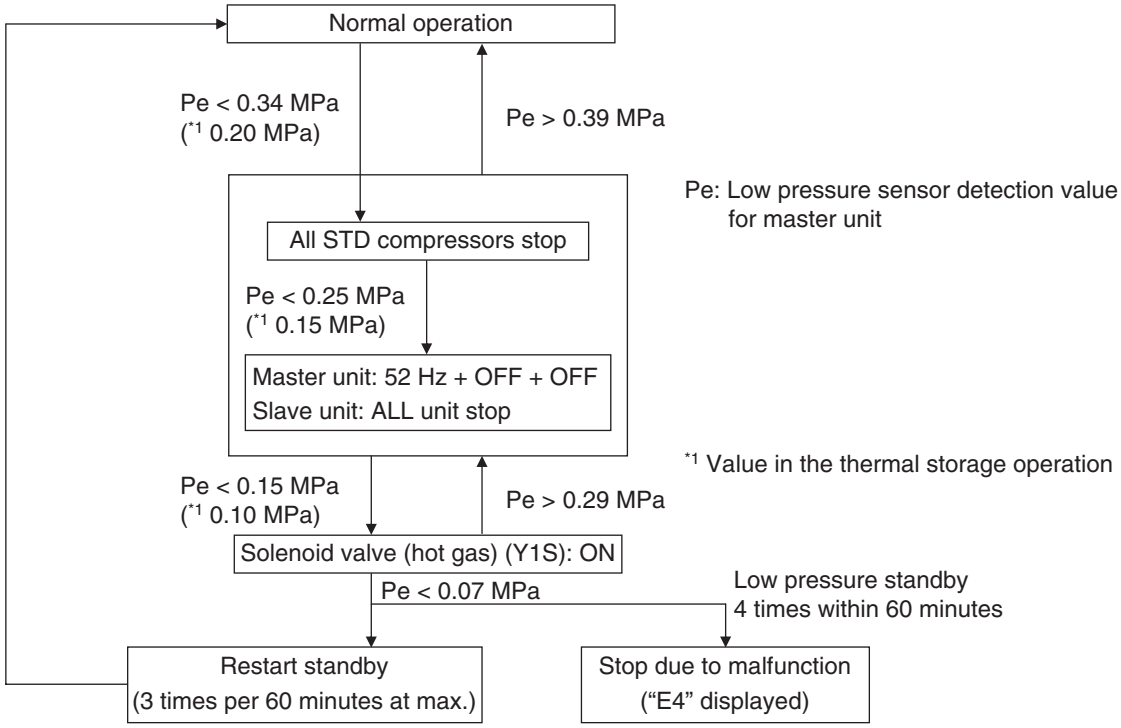
Pc: High pressure sensor detection value for master unit
Tdi: Value of INV. compressor discharge pipe temperature

2.5.2 Low Pressure Protection Control

This low pressure protection control is used to protect compressors against the transient decrease of low pressure.

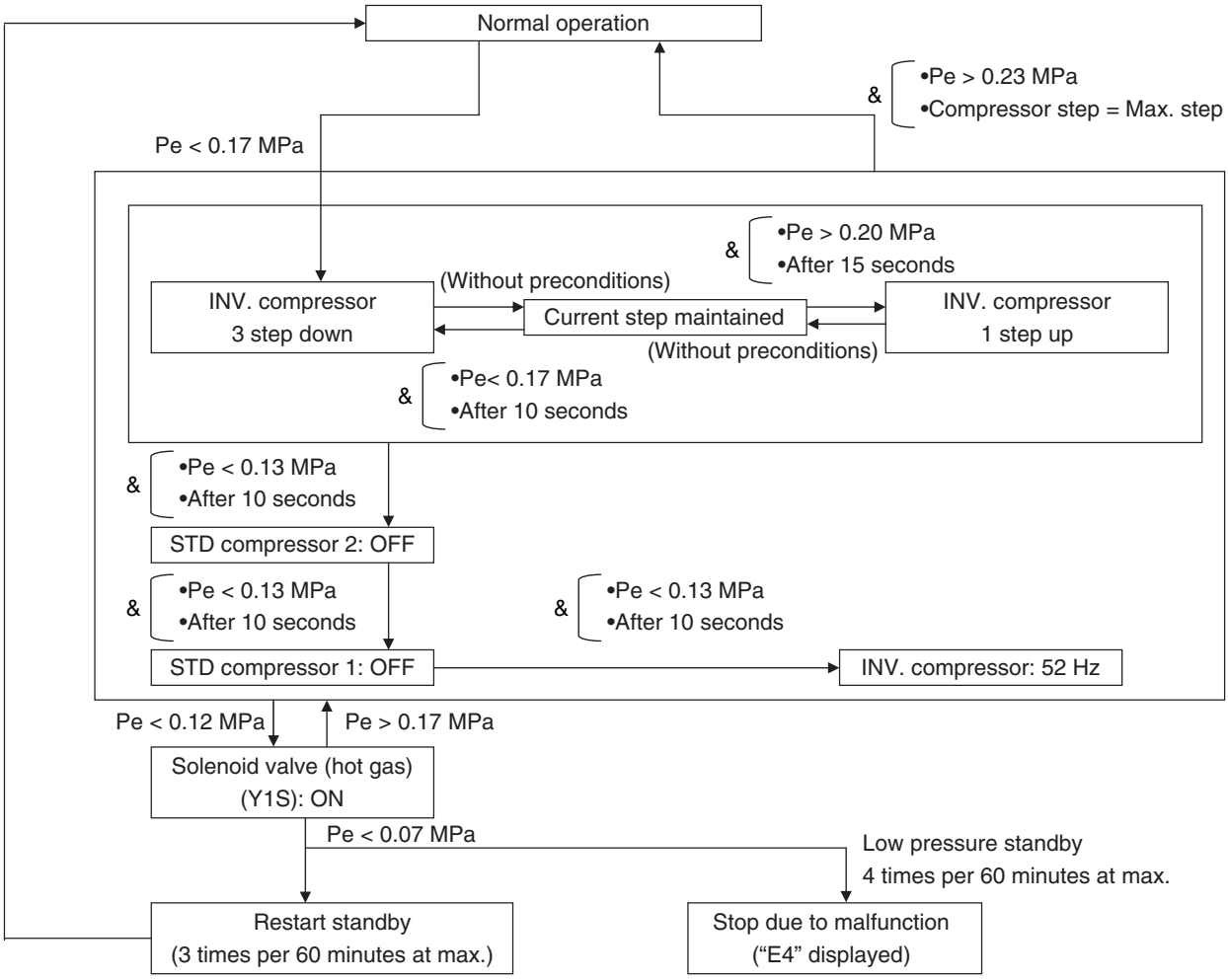
[In cooling]

★ In case of multi-outdoor-unit system, the following control is performed in the entire system.



[In heating]

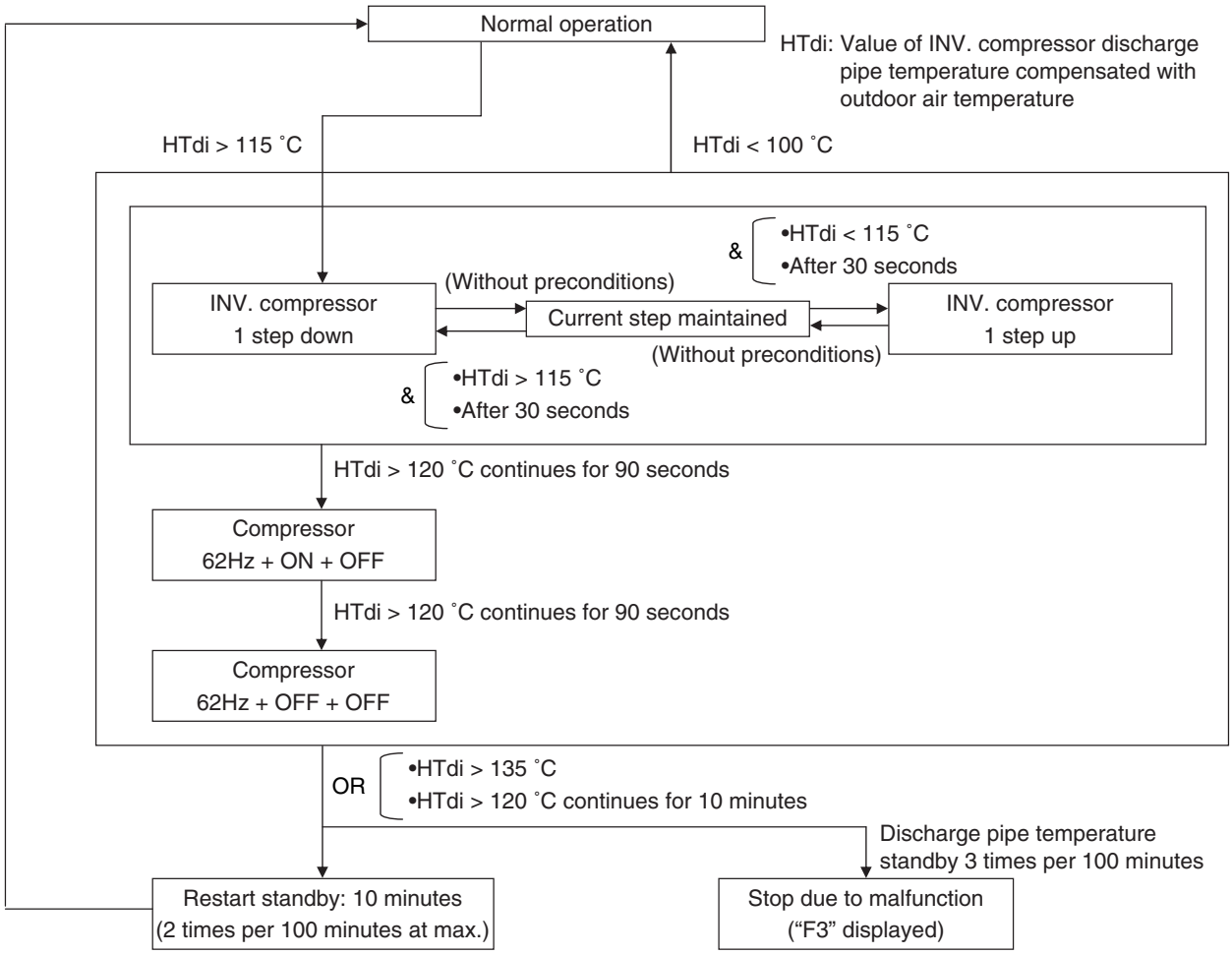
★ In case of multi-outdoor-unit system, each outdoor unit performs this control individually in the following sequence.



2.5.3 Discharge Pipe Protection Control

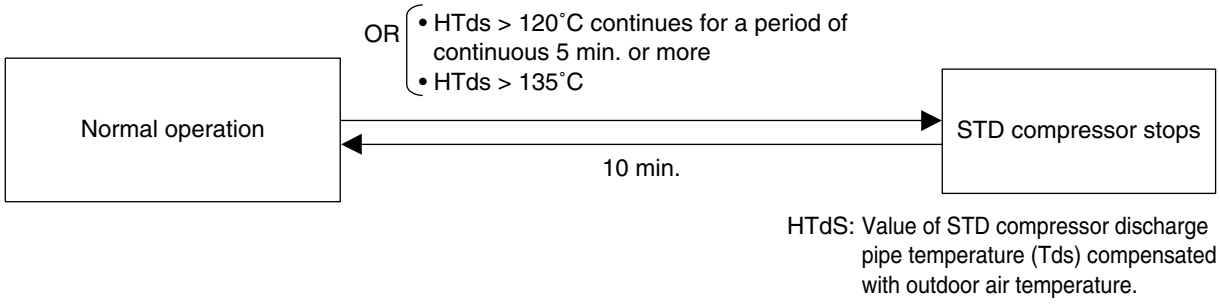
This discharge pipe protection control is used to protect the compressor internal temperature against a malfunction or transient increase of discharge pipe temperature.
In case of multi-outdoor-unit system, each outdoor unit performs this control individually in the following sequence.

[INV. compressor]



[STD. compressor]

In case of multi-outdoor-unit system, each outdoor unit performs this control individually in the following sequence.



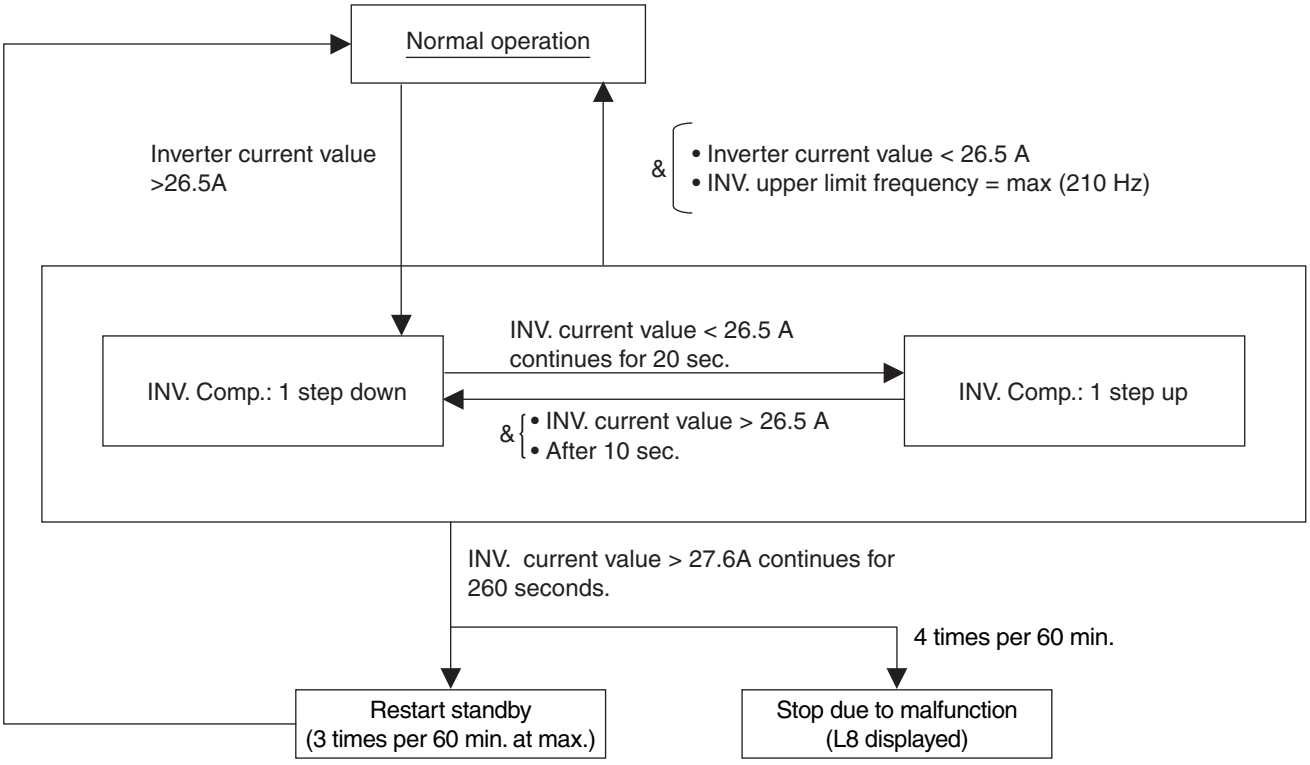
HTdS: Value of STD compressor discharge pipe temperature (Tds) compensated with outdoor air temperature.

2.5.4 Inverter Protection Control

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

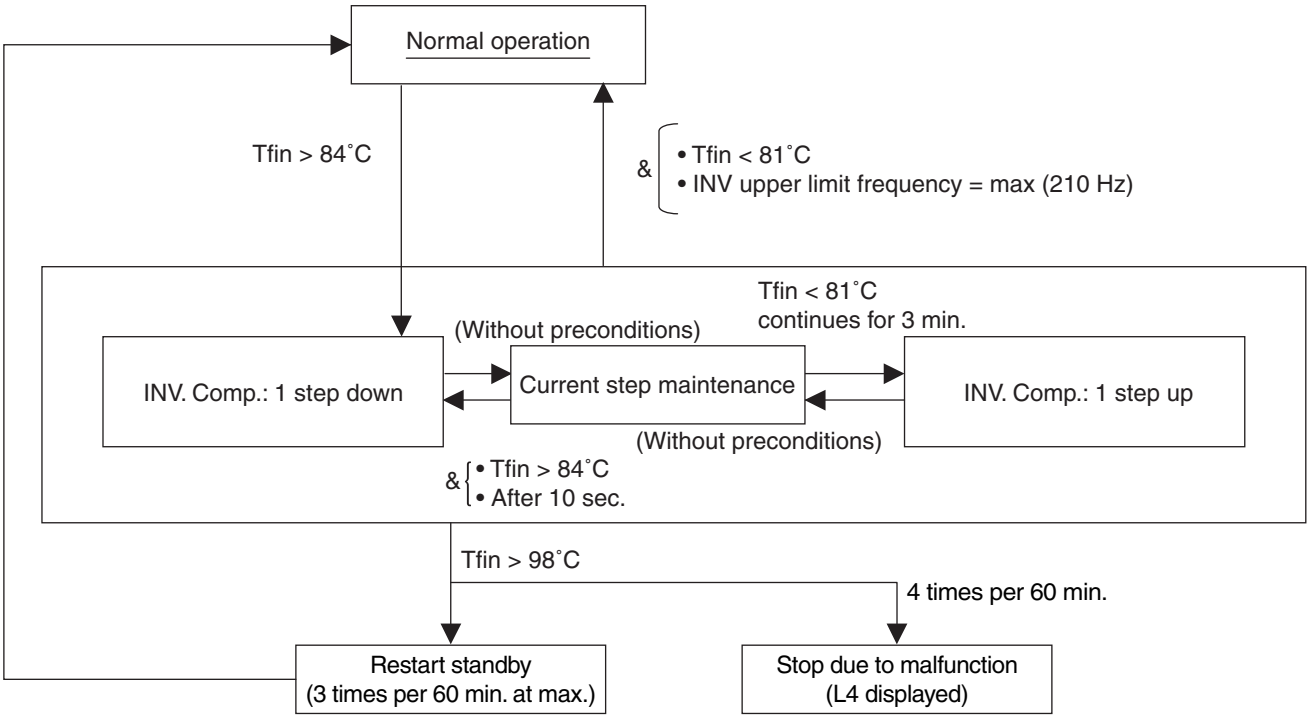
[Inverter overcurrent protection control]

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



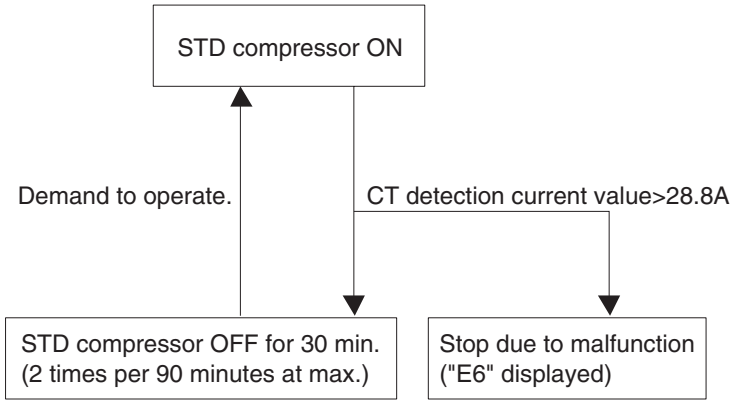
[Inverter fin temperature control]

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



2.5.5 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.



2.6 Special Control

2.6.1 Oil Return Operation

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

(1) Oil Return Operation in Cooling

[Start conditions]

Referring to the set conditions for the following items, start the oil return operation in cooling.

- 2 hours after initial power ON
- A lapse of every 1 ~ 2 hours during low-load operation
- A lapse of every 8 hours during high-load operation

Part Name	Electric Symbol			Oil return operation
	RQYQ8P	PQYQ10·12P	PQYQ14·16P	
Compressor	M1C	M1C	M1C	177Hz
	–	M2C	M2C	No instruction → OFF
	–	–	M3C	No instruction → OFF
Outdoor unit fan	M1F	M1F	M1F, M2F	Fan control in normal cooling (Heat exchanging mode)
Four way valve	Y3S	Y3S	Y3S	OFF
Electronic expansion valve (Main)	Y1E	Y1E	Y1E	480 pls
Electronic expansion valve (Main 2)	–	–	Y2E	
Electronic expansion valve (Subcooling)	Y2E	Y2E	Y3E	0 pls
Solenoid valve (Hot gas)	Y1S	Y1S	Y1S	ON
Solenoid valve (Receiver gas vent)	Y8S	Y8S	Y8S	OFF
Solenoid valve (Circuit of oil return)	Y5S	Y5S	Y5S	OFF
Solenoid valve (Close liquid pipe for stopped outdoor unit)	Y6S	Y6S	Y6S	ON
Solenoid valve (Main electronic expansion valve bypass)	Y10S	Y10S	–	ON
Solenoid valve (Refrigerant regulator gas vent pipe)	Y11S	Y11S	Y10S	OFF
Solenoid valve (Refrigerant regulator liquid pipe)	Y12S	Y12S	Y11S	OFF
Solenoid valve (Refrigerant regulator gas pipe)	Y13S	Y13S	Y12S	OFF
Solenoid valve (Refrigerant regulator liquid outlet)	Y14S	Y14S	Y13S	OFF
Solenoid valve (Receiver liquid level)	Y7S	Y7S	Y7S	OFF
Solenoid valve (Mixing unit inlet)	Y4S	Y4S	Y4S	OFF
Solenoid valve (Bypass)	Y2S	Y2S	Y2S	OFF
Solenoid valve (Oil regulator outlet)	Y9S	Y9S	Y9S	ON

* In the case of multi-outdoor-unit system,
  Master unit: Performs the operations listed in the table above.
  Slave units: Operating units perform the operations listed in the table above.
  Non-operating units perform the operations listed in the table above from the oil return operation.
  (Non-operating unit stops during “oil return preparation operation”.)

Indoor unit actuator		Cooling oil return operation
Fan	Thermostat ON unit	Remote controller setting
	Stopping unit	OFF
	Thermostat OFF unit	OFF
Electronic expansion valve	Thermostat ON unit	Normal opening
	Stopping unit	200 pls
	Thermostat OFF unit	200 pls

(2) Oil Return Operation in Heating

[Start conditions]

Referring to the set conditions for the following items, start the oil return operation in heating.

- 2 hours after initial power ON
- A lapse of every 1 ~ 2 hours during low-load operation
- A lapse of every 8 hours during high-load operation

Part Name	Electric Symbol			Oil return operation
	RQYQ8P	PQYQ10·12P	PQYQ14·16P	
Compressor	M1C	M1C	M1C	124Hz
	–	M2C	M2C	ON
	–	–	M3C	OFF
Outdoor unit fan	M1F	M1F	M1F, M2F	OFF → High pressure control
Four way valve	Y3S	Y3S	Y3S	OFF
Electronic expansion valve (Main)	Y1E	Y1E	Y1E	480 pls
Electronic expansion valve (Main 2)	–	–	Y2E	
Electronic expansion valve (Subcooling)	Y2E	Y2E	Y3E	0 pls
Solenoid valve (Hot gas)	Y1S	Y1S	Y1S	ON
Solenoid valve (Receiver gas vent)	Y8S	Y8S	Y8S	OFF
Solenoid valve (Circuit of oil return)	Y5S	Y5S	Y5S	OFF
Solenoid valve (Close liquid pipe for stopped outdoor unit)	Y6S	Y6S	Y6S	ON
Solenoid valve (Main electronic expansion valve bypass)	Y10S	Y10S	–	ON
Solenoid valve (Refrigerant regulator gas vent pipe)	Y11S	Y11S	Y10S	OFF
Solenoid valve (Refrigerant regulator liquid pipe)	Y12S	Y12S	Y11S	OFF
Solenoid valve (Refrigerant regulator gas pipe)	Y13S	Y13S	Y12S	OFF
Solenoid valve (Refrigerant regulator liquid outlet)	Y14S	Y14S	Y13S	OFF
Solenoid valve (Receiver liquid level)	Y7S	Y7S	Y7S	OFF
Solenoid valve (Mixing unit inlet)	Y4S	Y4S	Y4S	OFF
Solenoid valve (Bypass)	Y2S	Y2S	Y2S	OFF
Solenoid valve (Oil regulator outlet)	Y9S	Y9S	Y9S	ON

* In the case of multi-outdoor-unit system,
  Master unit: Performs the operations listed in the table above.
  Slave units: Operating units perform the operations listed in the table above.
  Non-operating units perform the operations listed in the table above from the oil return operation.
  (Non-operating unit stops during “oil return preparation operation”.)

Indoor unit actuator		Heating oil return operation
Fan	Thermostat ON unit	OFF
	Stopping unit	OFF
	Thermostat OFF unit	OFF
Electronic expansion valve	Thermostat ON unit	512 pls
	Stopping unit	512 pls
	Thermostat OFF unit	512 pls

2.6.2 Defrost Operation

To defrost the outdoor unit heat exchanger while in heating operation, the defrost operation is conducted to recover the heating capacity.

[Start conditions]

Referring to the set conditions for the following items, start the defrosting operation.

- A lapse of every 1 hour during high-load operation
- A lapse of every 2 hours during low-load operation

Part Name	Electric Symbol			Defrost operation
	RQYQ8P	PQYQ10·12P	PQYQ14·16P	
Compressor	M1C	M1C	M1C	143Hz
	–	M2C	M2C	ON
	–	–	M3C	ON
Outdoor unit fan	M1F	M1F	M1F, M2F	OFF
Four way valve	Y3S	Y3S	Y3S	OFF
Electronic expansion valve (Main)	Y1E	Y1E	Y1E	480 pls
Electronic expansion valve (Main 2)	–	–	Y2E	
Electronic expansion valve (Subcooling)	Y2E	Y2E	Y3E	0 pls
Solenoid valve (Hot gas)	Y1S	Y1S	Y1S	ON
Solenoid valve (Receiver gas vent)	Y8S	Y8S	Y8S	ON
Solenoid valve (Circuit of oil return)	Y5S	Y5S	Y5S	OFF
Solenoid valve (Close liquid pipe for stopped outdoor unit)	Y6S	Y6S	Y6S	ON
Solenoid valve (Main electronic expansion valve bypass)	Y10S	Y10S	–	ON
Solenoid valve (Refrigerant regulator gas vent pipe)	Y11S	Y11S	Y10S	OFF
Solenoid valve (Refrigerant regulator liquid pipe)	Y12S	Y12S	Y11S	OFF
Solenoid valve (Refrigerant regulator gas pipe)	Y13S	Y13S	Y12S	OFF
Solenoid valve (Refrigerant regulator liquid outlet)	Y14S	Y14S	Y13S	OFF
Solenoid valve (Receiver liquid level)	Y7S	Y7S	Y7S	OFF
Solenoid valve (Mixing unit inlet)	Y4S	Y4S	Y4S	OFF
Solenoid valve (Bypass)	Y2S	Y2S	Y2S	OFF
Solenoid valve (Oil regulator outlet)	Y9S	Y9S	Y9S	ON

* In the case of multi-outdoor-unit system,
  Master unit: Performs the operations listed in the table above.
  Slave units: Operating units perform the operations listed in the table above.
  Non-operating units perform the operations listed in the table above from the oil return operation.
  (Non-operating unit stops during “oil return preparation operation”.)

Indoor unit actuator		During defrost
Fan	Thermostat ON unit	OFF
	Stopping unit	OFF
	Thermostat OFF unit	OFF
Electronic expansion valve	Thermostat ON unit	512 pls
	Stopping unit	512 pls
	Thermostat OFF unit	512 pls

2.6.3 Outdoor Unit Rotation

In the case of multi-outdoor-unit system, this outdoor unit rotation is used to prevent the compressor from burning out due to unbalanced oil level between outdoor units.

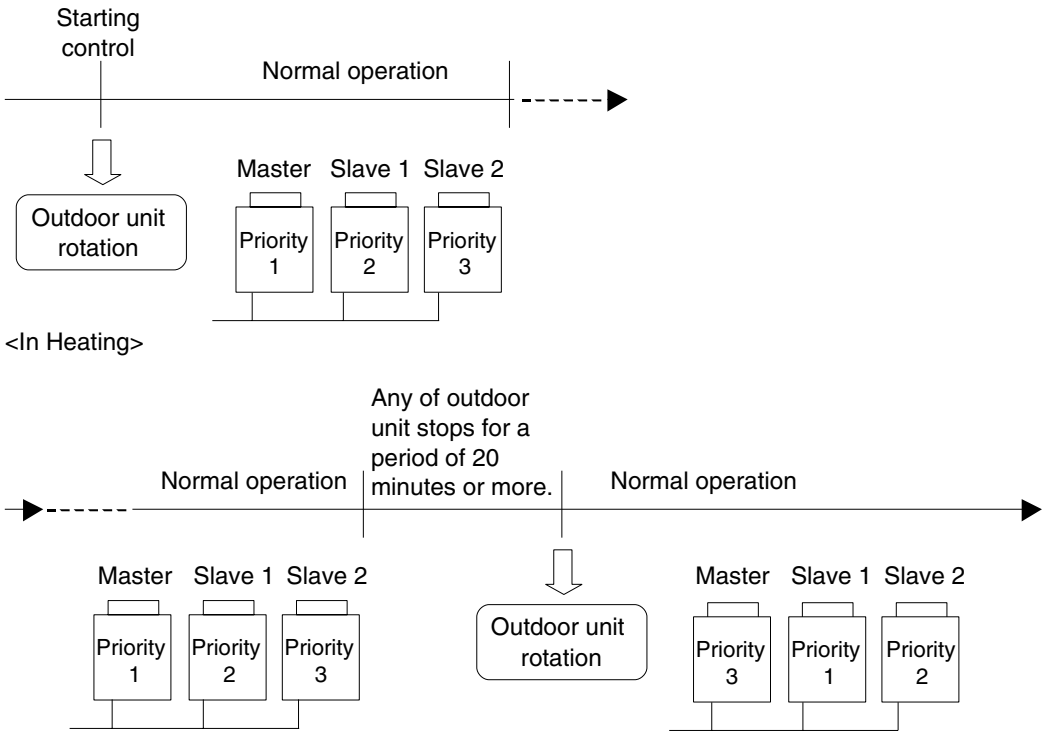
[Details of outdoor unit rotation]

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

[Timing of outdoor unit rotation]

or
- At the beginning of the starting control
- After oil return operation
- After defrost operation
- When any of outdoor unit stops for a period of 20 minutes or more (in heating)

Example) The following diagram shows outdoor unit rotation in combination of 3 outdoor units. (in heating)



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

Part 5
Test Operation

1. Test Operation

1.1 Procedure and Outline

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

1.1.1 Check work prior to turn power supply on

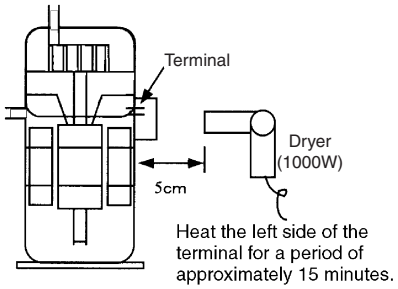
Check that the installation work for the indoor and outdoor units has been performed in accordance with the instructions in the Installation Manual.

Check the below items.
- Power wiring
- Control transmission wiring between units
- Earth wire
- Branch switch
- Earth leakage circuit breaker

⇩

○ Is the wiring performed as specified?
○ Are the branch switches and earth leakage circuit breakers wired correctly?
○ 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 400V or 200V circuit.

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



Check on refrigerant piping / insulation materials

⇩

○ Is the pipe size proper? Are the design pressures for the gas pipe and liquid pipe more than 3.3MPa?
○ Is the pipe insulation material installed securely?
Liquid and gas pipes need to be insulated. (Otherwise causes water leak.)

Check air tight test and vacuum drying.

⇩

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

Check on amount of additional refrigerant charge

⇩

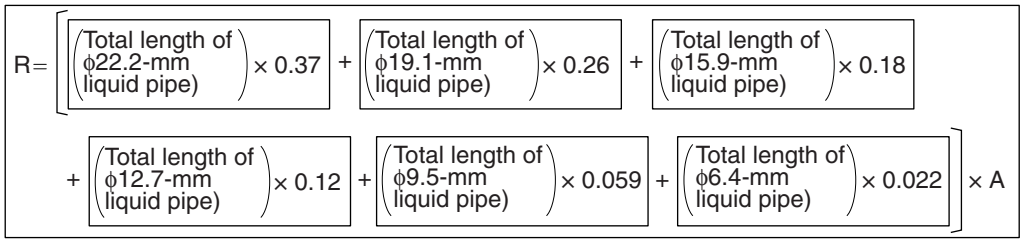
○ Is a proper quantity of refrigerant charged?
* Refer to the following page for the calculation of the amount of additionally refrigerant charge.
• When the refrigerant level is insufficient, leave the liquid and gas stop valves closed and charge with liquid refrigerant via the liquid stop valve service port. (* Do not charge via the gas stop valve service port. Doing so will result in malfunction.)
○ Is the amount of additional refrigerant charge recorded in the [Service Precaution] label?

Check the stop valves for conditions.

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

Model	Liquid side stop valve	Gas side stop valve
RQYQ8-48PY1	Open	Open

*** How to calculate additional refrigerant charging amount (Unit: 0.1 kg)**



+ B (Correction with outdoor unit capacity) + C (Correction with indoor unit capacity)

Model		A	B kg	C kg	
				≤100%	>100%
RQYQ	8PY1	1.00	-6.8kg	0.0kg	0.0kg
	10PY1		-7.9kg		
	12PY1		-9.3kg		
	14·16PY1		-14.1kg		

1.1.2 Turn power on

Turn outdoor unit and indoor unit power on.

⇩

Check the LED display of the outdoor unit PCB.

⇩

Make field settings with outdoor unit PCB.

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

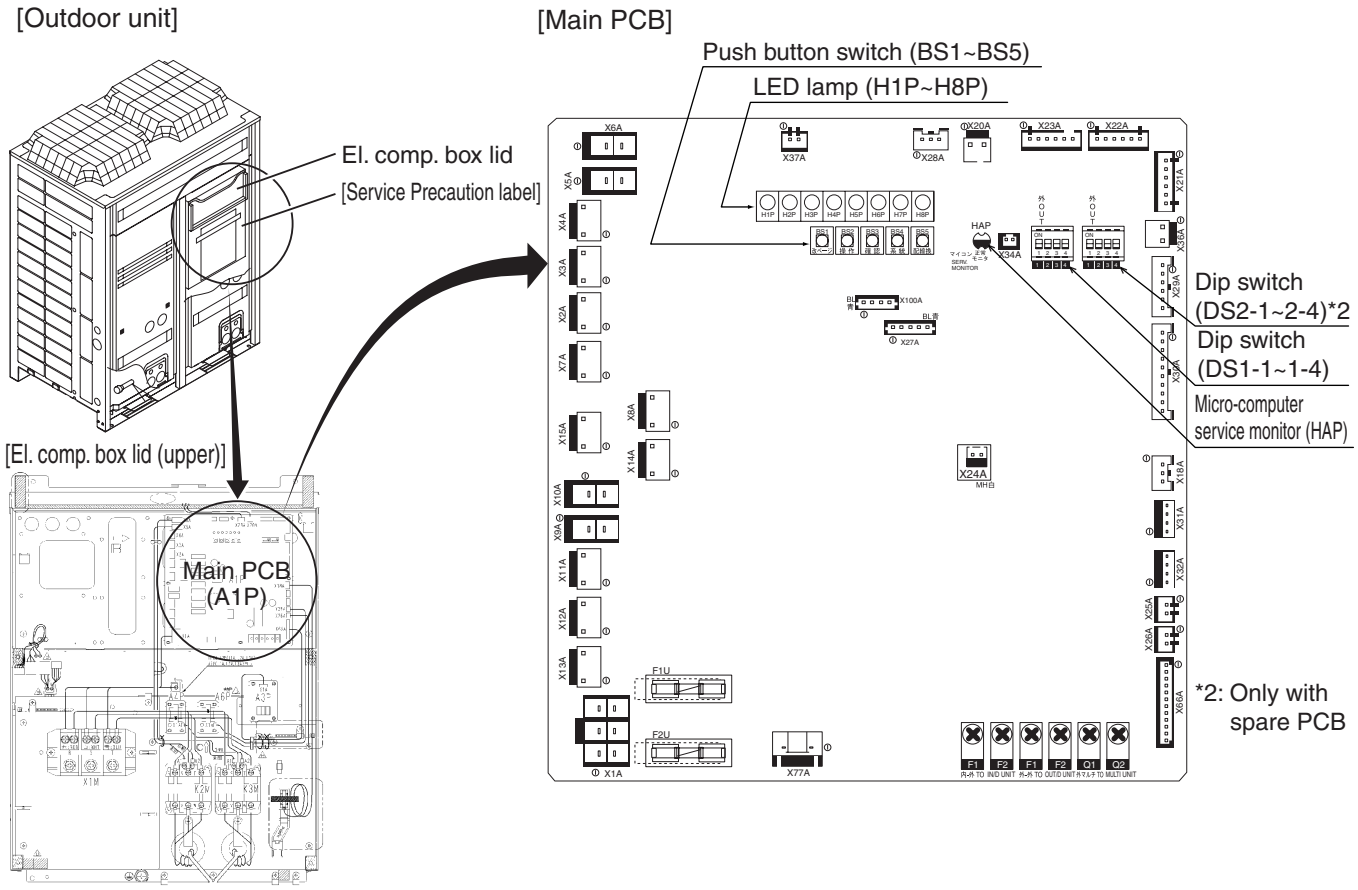
○ Check to be sure the transmission is normal.
The transmission is normal if the LEDs display conditions as shown in table below.

LED display ○ ON ● OFF ◑ Blinking

LED display (Default status before delivery)		Micro-computer operation monitor	MODE	TEST	COOL / HEAT select			Low noise	Demand	Multi
					IND	MASTER	SLAVE			
		HAP	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
One outdoor unit installed		◑	●	●	○	●	●	●	●	●
When multiple outdoor unit installed (*)	Master	◑	●	●	○	●	●	●	●	○
	Slave 1	◑	●	●	●	●	●	●	●	◑
	Slave 2	◑	●	●	●	●	●	●	●	◑
	Slave 3	◑	●	●	●	●	●	●	●	◑

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

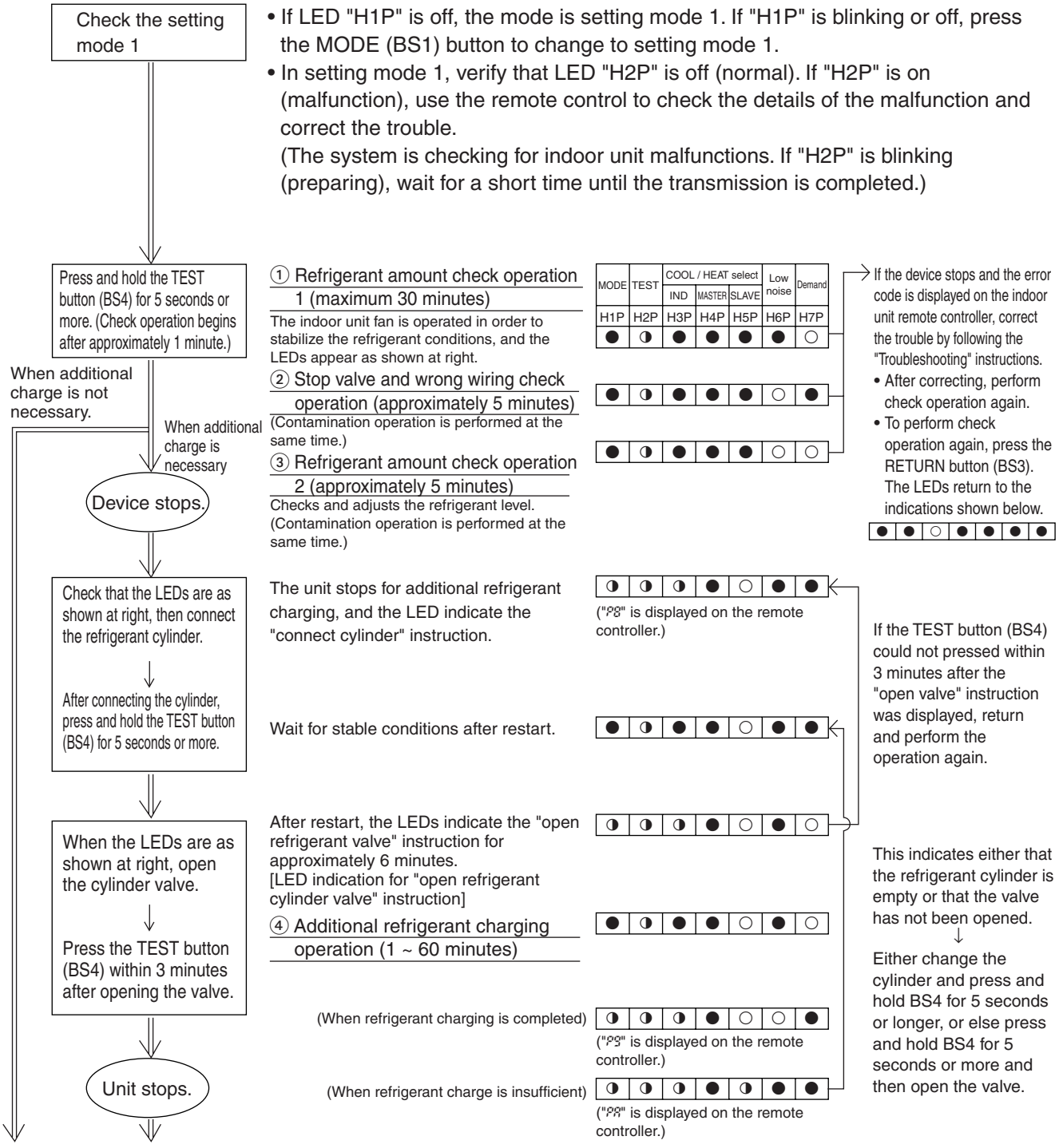
○ Make field settings if needed.
(For the setting procedure, refer to information in "Field Setting from Outdoor Unit" on P. 60 onward.)
For the outdoor-multi system, make field settings with the master unit.
(Field settings made with the slave unit will be all invalid.)



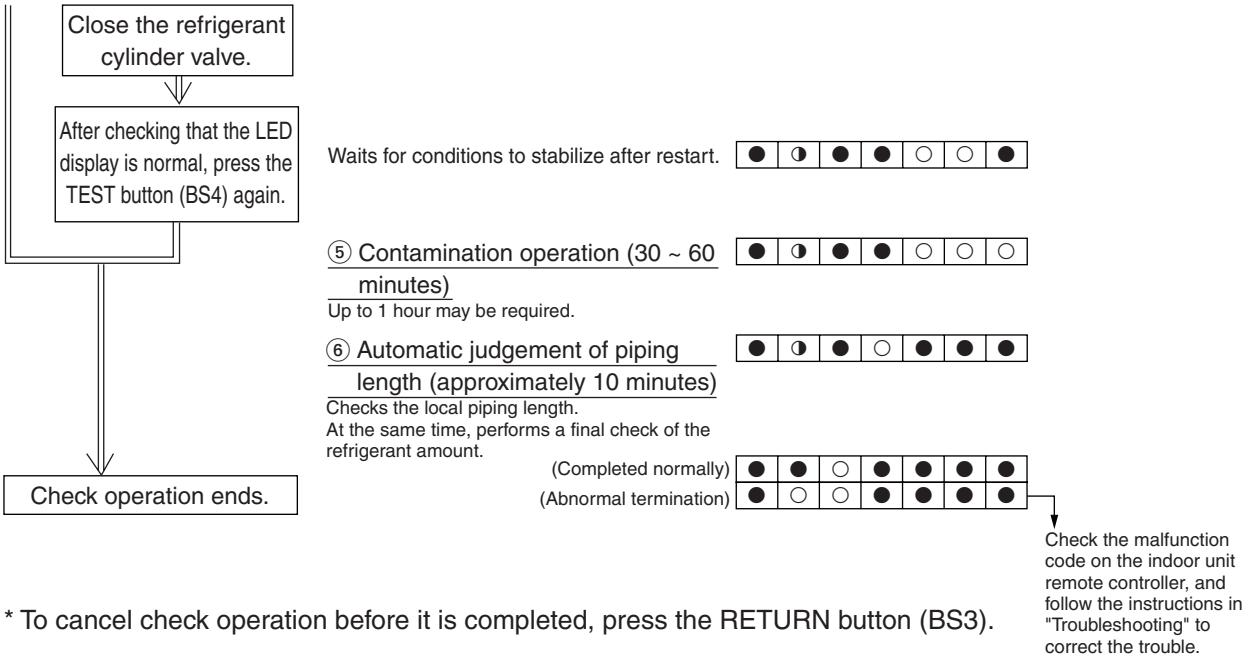
1.2 Check Operation

1.2.1 RQYQ-P

- Make sure to carry out the check operation after the initial installation. Otherwise, the malfunction code "U3" will be displayed on the remote controller and normal operation cannot be carried out.
- In the check operation, the following checks and judgement will be performed:
  (1) Check of the stop valve opening
  (2) Check for wrong wiring
  (3) Recovery of contamination
  (4) Check of the amount of refrigerant
  (5) Automatic judgement of piping length
- The automatic check operation carries out the following processes. Approximately 70 minutes (maximum 120 minutes) are required before judgement is completed. However if additional charging from the refrigerant cylinder is necessary, additional time will be required.



* To cancel check operation before it is completed, press the RETURN button (BS3).



* To cancel check operation before it is completed, press the RETURN button (BS3).

[Remote controller displays error code]

Error code	Installation trouble	Corrective action
E3 F3 E4 UF	The outdoor unit stop valve has not been opened.	Check that the gas and liquid side stop valves are open.
P8 P9 PA	Instruction to perform additional refrigerant charging during check operation (not a error)	Follow the procedure for check operation (refer to the previous page) and perform additional refrigerant charge.
PJ	DIP switch (DS1, DS2) setting is incorrect after the outdoor unit PCB (A1P) was replaced.	Follow the instructions in "Field setting from outdoor unit" (refer to P.60) and make the correct setting.
U1	Phase of outdoor unit power is reversed.	Reverse 2 of the 3 phases and connect with the correct phases.
U3	Check operation has not been completed normally.	Perform check operation again.
U4	Power is not being supplied (including cases of open phase) to an outdoor unit or indoor unit.	Supply power correctly to the outdoor units and indoor units.
U7 UA	A model which cannot be connected in a multi-outdoor-unit system has been connected in a multi-outdoor-unit system.	Change to individual piping, and disconnect the wiring from the multi-outdoor-unit terminals (Q1, Q2).
U9	There is trouble at another indoor unit within the same system.	A malfunction code is displayed on the remote controller, or else trouble has occurred at an indoor unit where a malfunction code is not displayed on the remote controller. Correct the trouble at the corresponding indoor unit. If no malfunction code is displayed on the remote controller, press the INSPECTION/TEST button on the remote controller to display the malfunction code. Check that the refrigerant piping system and interunit wiring connections match.
UF	Wrong connection in piping or wiring between units.	Complete the transmission wiring work, then perform check operation again.
	If an outdoor - outdoor transmission wire was connected or disconnected during check operation	Connect the interunit wiring (cool/heat select remote controller, inside-outside, outside-outside, multi-outside-unit).
UH	Wrong wiring between units	If voltage of 100V or higher was applied to the outdoor unit PCB (A1P), the outdoor unit PCB or indoor unit PCB may be damaged. If the malfunction display "UH" appears even after the connection was corrected, the PCB must be replaced.

1.3 Checking in Normal Operation

■ **After check operation ends, start normal operation.**
(Heating is not possible if the outdoor air temperature is 24°C or higher.)

- Check that the indoor and outdoor units are operating normally.
  (If any abnormal noise occurs due to liquid compression in the compressor or another cause, stop operation immediately. Then energize the crankcase heater for a sufficient period of time before restarting operation.)
- Start the indoor units one by one. Verify that the corresponding outdoor unit is operating.
- Verify that cool air (or warm air) is being discharged by the indoor unit.
- Press the airflow direction button and airflow rate button of the indoor unit and verify their operation.

<Important information when checking normal operation>

- If any abnormal noise occurs due to liquid compression in the compressor or another cause, stop operation immediately. Then energize the crankcase heater for a sufficient period of time before restarting operation.
- For approximately 5 minutes after the compressor is stopped, the compressor will not start even when the ON/OFF buttons at indoor units in that system are pressed.
- Pump down residual operation may occur for up to 5 minutes at the outdoor unit after operation was stopped from the remote controller.
- Outdoor unit fan low speed operation may also occur if the Night-time low noise setting or the External low-noise setting is used.
- If check operation after installation was not performed by pressing the TEST button, or if the check operation was not completed normally, error code "U3" is displayed and normal operation is not possible. Be sure to follow the instructions in "1-2. Check Operation" and complete the check operation procedure.

2. Field Setting from Outdoor Unit

2.1 Field Setting from Outdoor Unit

2.1.1 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.

(1) Function setting items

Setting item		Content and objective of setting	Overview of setting procedure
1	Setting of COOL/ HEAT selection	■ COOL/HEAT selection methods are possible to select from the following (1) Control by each outdoor unit using the indoor unit remote controller (2) Control by each outdoor unit using the COOL/HEAT selection remote controller (3) Batch control by outdoor unit group using the indoor unit remote controller (4) Batch control by outdoor unit group using the COOL/HEAT selector remote controller (5) Outdoor unit systems control using the centralized remote controller	■ In order to use the COOL/HEAT selection remote controller, set the DS1-1 on the outdoor unit PCB to OUT. ■ For outdoor unit group control, set the system to "BATCH MASTER" or "SLAVE" while in "Setting mode 1". Then, make setting of COOL/ HEAT batch address.
2	Setting of low noise operation	A. Use external input to step down the upper limit of the fan (factory set to Step 8), providing low noise level. (1) Mode 1: Step 6 or lower (2) Mode 2: Step 5 or lower (3) Mode 3: Step 4 or lower	■ Use the "External control adaptor for outdoor unit". Set to "External control adaptor for outdoor unit" with No. 12 of "Setting mode 2" and select the mode with No. 25. If necessary, set the "Capacity precedence setting" to ON with No. 29.
		B. The low noise operation aforementioned is enabled in night-time automatic low noise operation mode. Start time: Possible to select in the range of 20:00 to 24:00 hours. End time: Possible to select in the range of 06:00 to 08:00 hours. (Use the said time as a guide since the start time and the end time are estimated according to outdoor air temperatures.)	■ Make this setting while in "Setting mode 2". Select a mode with No. 22 of "Setting mode 2". Select the start time with No. 26 and the end time with No. 27. If necessary, set the "Capacity precedence setting" to ON with No. 29.
3	Setting of demand operation	■ Used to place limits on the compressor operating frequency to control the upper limit of power consumption. (1) Mode 1 of Demand 1: 60% or less of rating (2) Mode 2 of Demand 1: 70% or less of rating (3) Mode 3 of Demand 1: 80% or less of rating (4) Demand 2: 40% or less of rating (5) Demand 3: Forced thermostat OFF	■ Method of using the external control adaptor for outdoor unit. Select Demand 1 – 3 by short-circuit the terminal strip (TeS1).
			■ Setting by "Setting mode 2" only Select Demand 1 or Demand 2 using set No. 32 of "Setting mode 2". If Demand 1 is selected, then also select Level 1 – 3 using set No. 30.
4	Setting of AIRNET address	■ Used to make address setting with AIRNET connected.	■ Set the AIRNET to an intended address using binary numbers with No. 13 of "Setting mode 2".
5	Setting of hot water	■ Make this setting to conduct heating operation with hot water heater.	■ Set No. 16 of "Setting mode 2" to ON.
6	Setting of high static pressure	■ Make this setting to operate a system with discharge duct while in high static pressure mode. (Use this setting mode when concealed outdoor unit installation is required on upper floors or balconies.) * In order to mount the discharge duct, remove the cover from the outdoor unit fan.	■ Set No. 18 of "Setting mode 2" to ON.

(2) Service setting items

Setting item		Content and objective of setting	Overview of setting procedure
1	Indoor unit fan forced H operation	■ Used to operate the indoor unit in the stopped state in forced H operation mode.	■ Set No. 5 of "Setting mode 2" to indoor unit forced fan H.
2	Indoor unit forced operation	■ Used to operate the indoor unit in forced operation mode.	■ Set No. 6 of "Setting mode 2" to indoor unit forced operation mode.
3	Change of targeted evaporation temperature (in cooling)	■ In cooling operation, used to change the targeted evaporation temperature for compressor capacity control.	■ Select high side or low side with No. 8 of "Setting mode 2".
4	Change of targeted condensing temperature (in heating)	■ In heating operation, used to change the targeted condensing temperature for compressor capacity control.	■ Select high side or low side with No. 9 of "Setting mode 2".
5	Setting of defrost selection	■ Used to change a temperature at which the defrost operation is initiated, thus making the initiation easy or hard.	■ Select fast side or slow side with No. 10 of "Setting mode 2".
6	Setting of sequential startup	■ Used to start units not in sequence but simultaneously.	■ Set No. 11 of "Setting mode 2" to NONE.
7	Emergency operation	■ If the compressor has a failure, used to prohibit the operation of compressor(s) concerned or outdoor unit(s) concerned and to conduct emergency operation of the system only with operable compressor(s) or outdoor unit(s).	■ Make this setting while in "Setting mode 2". For system with a single outdoor unit: Set with No. 19 or 42. For system with multiple outdoor units: Set with No. 38 or 39.
8	Air tight test	■ Fully open the outdoor unit and indoor unit expansion valves, and turn on some of the solenoid valves.	■ Set No. 21 of "Setting mode 2" to ON.
9	Refrigerant recovery mode	■ Used to recover refrigerant onsite. With operations of indoor and outdoor units prohibited, fully open the expansion valve of the indoor and outdoor units.	■ Set No. 21 of "Setting mode 2" to ON.
10	Vacuuming mode	■ Used to conduct vacuuming onsite. Fully open the expansion valves of the indoor and outdoor units, and energize some of solenoid valves. Use a vacuum pump to conduct vacuuming.	■ Set No. 21 of "Setting mode 2" to ON.
11	Power transistor check mode	■ Used for the troubleshooting of DC compressors. Inverter waveform output makes it possible to judge whether a malfunction results from the compressor or the PCB.	■ Set No. 28 of "Setting mode 2" to ON.
12	Setting of model with spare PCB	■ In order to replace the PCB by a spare one, be sure to make model setting.	■ For this setting, set the DS2-2, -3, and-4 switches on the PCB to the model concerned.

2.1.2 Setting by dip switches

(1) Setting of factory set

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

Dipswitch		Setting item	Description
No.	Setting		
DS1-1	ON	Cool / Heat select	Used to set cool / heat select by Cool/Heat selector equipped with outdoor unit.
	OFF (Factory setting)		
DS1-2 ~DS1-4	ON	Not used	Do not change the factory settings.
	OFF (Factory setting)		

(2) Setting at replacement by spare PCB

Caution

DIP switch Setting after replacing the main PCB (A1P) to spare parts PCB

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

Initial conditions of dip switches

DS No.	Item	Contents	
DS1-1	Cool/Heat select setting	ON	COOL/HEAT select setting is made with the use of a Cool/Heat selector equipped with the outdoor unit.
		OFF (Factory setting of spare PCB)	COOL/HEAT select setting is not made with the use of a Cool/Heat selector equipped with the outdoor unit.
DS1-2	Power supply specification	ON	220V
		OFF (Factory setting of spare PCB)	380V
DS1-3	Cooling only/Heat-pump setting	ON	Cooling only setting
		OFF (Factory setting of spare PCB)	Heat pump setting
DS1-4	Check operation	ON	(1) If check operation was not performed during installation → Do not change the setting. (Leave it OFF.) (2) If check operation was completed or normal operation is in progress → Change the setting (OFF → ON).
		OFF (Factory setting of spare PCB)	
DS2-1	Unit allocation setting (Domestic / Overseas)	ON	Do not change factory setting of the spare part (OFF).
		OFF (Factory setting of spare PCB)	
DS2-2 DS2-3 DS2-4	Model setting	Make the following settings according to models of outdoor units.	

	RQYQ9PY1	RQYQ10PY1	RQYQ12PY1	RQYQ14PY1	RQYQ16PY1
DS2-2	OFF	ON	OFF	ON	OFF
DS2-3	ON	ON	OFF	OFF	ON
DS2-4	OFF	OFF	ON	ON	ON

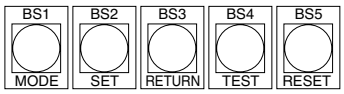
2.1.3 Setting by push button switches

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

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 1 ~ 4	●	●	●	●	●	●	●	◑

(Factory setting)



There are the following three setting modes.

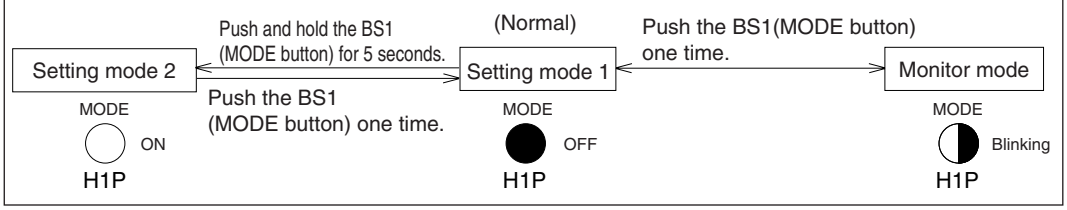
① **Setting mode 1 (H1P OFF)**
Initial status (when normal) : Used to select the cool/heat setting. Also indicates during "abnormal", "low noise control" and "demand control".

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**

Using the MODE button, the modes can be changed as follows.

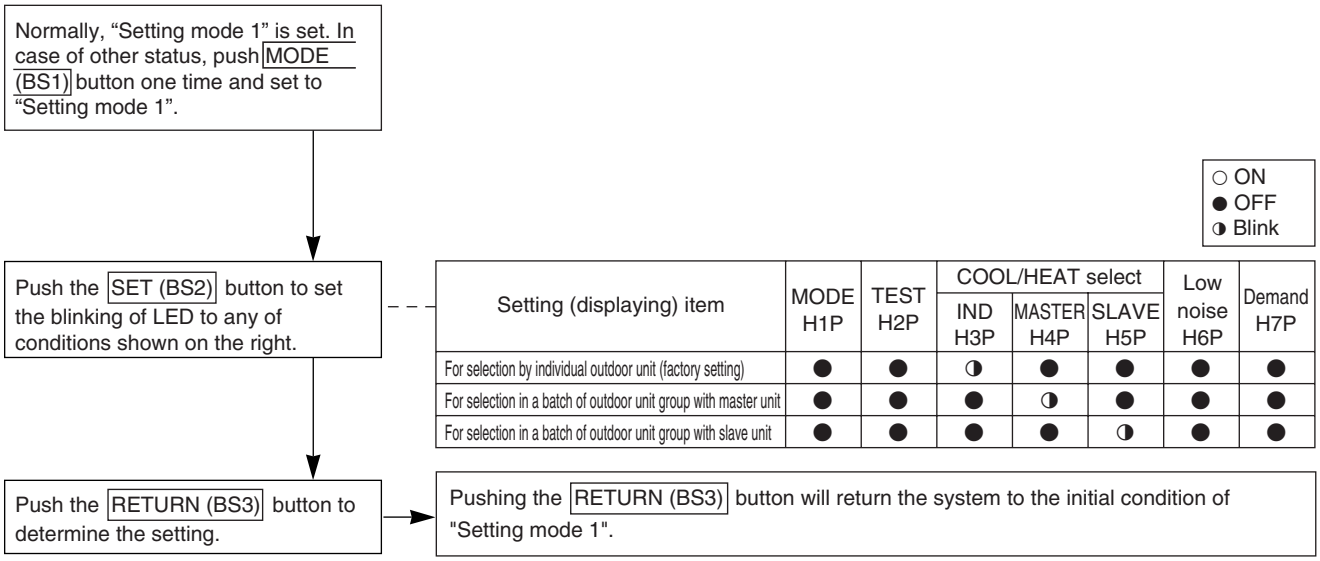


a. “Setting mode 1”

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

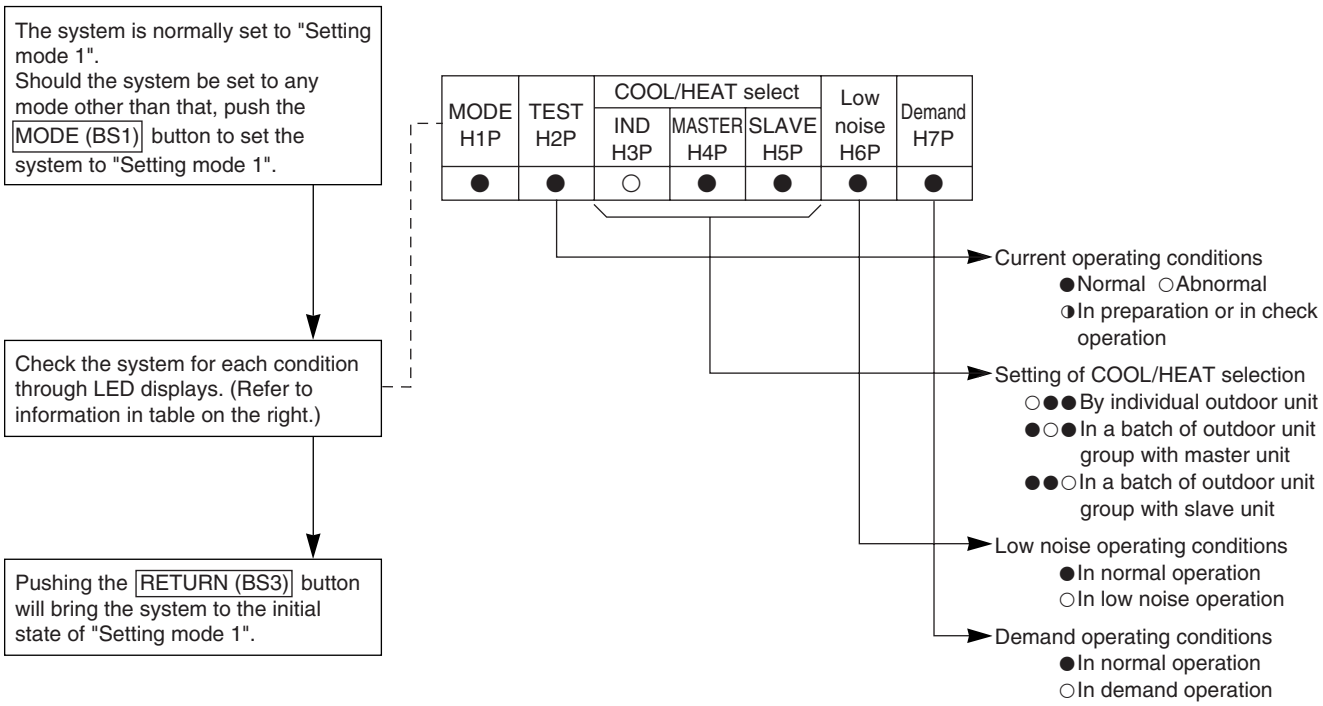
1. Set items ····· In order to make COOL/HEAT selection in a batch of outdoor unit group, change the setting.
   - COOL/HEAT selection (IND) ····· Used to select COOL or HEAT by individual outdoor unit (factory set).
   - COOL/HEAT selection (MASTER) ····· Used to select COOL or HEAT by outdoor unit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

Procedure for changing COOL/HEAT selection setting



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

Procedure for checking check items



b. “Setting mode 2”

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

<Selection of setting items>

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

<Selection of setting conditions>

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

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

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

No.	Setting item	Description
0	Digital pressure gauge kit display	Used to make setting of contents to display on the digital pressure gauges (e.g. pressure sensors and temperature sensors)
1	Cool/heat unified address	Sets address for cool/heat unified operation.
2	Low noise/demand address	Address for low noise/demand operation
3	Test operation settings	Used to conduct test operation without making changes to the PCB and replacing the refrigerant, after the completion of maintenance.
5	Indoor unit forced fan H	Allows forced operation of indoor unit fan while unit is stopped. (H tap)
6	Indoor unit forced operation	Allows forced operation of indoor unit. (Forced thermostat ON)
8	Te setting	Target evaporation temperature for cooling
9	Tc setting	Target condensation temperature for heating
10	Defrost changeover setting	Changes the temperature condition for defrost and sets to quick defrost or slow defrost.
11	Sequential operation setting	Sets sequential operation (Factory set to ON)
12	External low noise setting / Demand setting	Reception of external low noise or demand signal
13	Setting of Airnet address	Set the address for Airnet.
16	Setting of hot water	Make this setting to conduct heating operation with hot water heater.
18	High static pressure setting	Make this setting in the case of operating in high static pressure mode with diffuser duct mounted. (In order to mount the diffuser duct, remove the cover from the outdoor unit fan.)
19	Emergency operation	If the compress has a failure, used to prohibit the operation of STD compressor and to conduct emergency operation of the system with other compressor.
20	Additional refrigerant charging operation setting	Carries out additional refrigerant charging operation.
21	Refrigerant recovery/ vacuuming mode setting	Sets to refrigerant recovery or vacuuming mode.
22	Night-time low noise setting	Sets automatic night-time low noise operation in a simple way. The operating time is based on “Starting set” and “Ending set”.
25	Setting of external low noise level	Sets low noise level when the low noise signal is input from outside.
26	Night-time low noise operation start setting	Sets starting time of night-time low noise operation. (Night-time low noise setting is also required.)
27	Night-time low noise operation end setting	Sets ending time of night-time low noise operation. (Night-time low noise setting is also required.)
28	Power transistor check mode ∗Check after disconnection of compressor wires	Used for trouble diagnosis of DC compressor. Since the waveform of inverter is output without wiring to the compressor, it is convenient to probe whether the trouble comes from the compressor or PCB.
29	Capacity precedence setting	If the capacity control is required, the low noise control is automatically released by this setting during carrying out low noise operation and night-time low noise operation.
30	Demand setting 1	Changes target value of power consumption when demand control 1 is input.
32	Normal demand setting	Normally enables demand control 1 without external input. (Effective to prevent a problem that circuit breaker of small capacity is shut down due to large load.)

No.	Setting item	Description
35	Setting of difference in height for the outdoor unit	Make the setting when the outdoor unit is installed 40 m or more below the indoor unit.
38	Emergency operation (Setting for the master unit operation prohibition in multi-outdoor-unit system)	Used to temporarily prohibit the applicable outdoor unit from operating should there be any faulty part in multi-outdoor-unit system. Since the comfortable environment is extremely impaired, prompt replacement of the part is required.
39	Emergency operation (Setting for the slave unit 1 and 2 operation prohibition in multi-outdoor-unit system)	
40	Emergency operation (Setting for the slave unit 3 operation prohibition in multi-outdoor-unit system)	
55	Master-slave set-up for multi outdoor units	Set up master and slave units for multi-connection outdoor units. 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 set
				IND H3P	Master H4P	Slave H5P						
0	Digital pressure gauge kit display	○	●	●	●	●	●	●	Address Binary number (4 digits)	0 1 ~ 15	○●●●●●● ○●●●●●○ ○●●○○○○	✻
1	Cool / Heat Unified address	○	●	●	●	●	●	○	Address Binary number (6 digits)	0 1 ~ 31	○●●●●●● ○●●●●●○ ○●○○○○○	✻
2	Low noise/demand address	○	●	●	●	●	○	●	Address Binary number (6 digits)	0 1 ~ 31	○●●●●●● ○●●●●●○ ○●○○○○○	✻
3	Test operation settings	○	●	●	●	●	○	○	Test operation: OFF Test operation: ON		○●●●●●○ ○●●●●○●	✻
5	Indoor unit forced fan H	○	●	●	●	○	●	○	Normal operation Indoor unit forced fan H		○●●●●●○ ○●●●●○●	✻
6	Indoor unit forced operation	○	●	●	●	○	○	●	Normal operation Indoor unit forced operation		○●●●●●○ ○●●●●○●	✻
8	Te setting	○	●	●	○	●	●	●	Low (Level L) Normal (Level M) High① (Level H) High② High③ High④ High⑤		○●●●●●○ ○●●●●○● ○●●●●○○ ○●●●○●● ○●●●○●○ ○●●●○○● ○●●●○○○	✻
9	Tc setting	○	●	●	○	●	●	○	Low Normal High		○●●●●●○ ○●●●●○● ○●●●○●●	✻
10	Defrost changeover setting	○	●	●	○	●	○	●	Slow defrost Normal Quick defrost		○●●●●●○ ○●●●●○● ○●●●○●●	✻
11	Sequential operation setting	○	●	●	○	●	○	○	OFF ON		○●●●●●○ ○●●●●○●	✻
12	External low noise setting/demand setting	○	●	●	○	○	●	●	External low noise/demand: NO External low noise/demand: YES		○●●●●●○ ○●●●●○●	✻
13	Setting of Airnet address	○	●	●	○	○	●	○	Address Binary number (6 digits)	0 1 ~ 31	○●●●●●● ○●●●●●○ ○○○○○○○	✻
16	Setting of hot water heater	○	●	○	●	●	●	●	OFF ON		○●●●●●○ ○●●●●○●	✻
18	High static pressure setting	○	●	○	●	●	○	●	High static pressure setting: OFF High static pressure setting: ON		○●●●●●○ ○●●●●○●	✻
19	Emergency operation	○	●	○	●	●	○	○	OFF STD1, 2 compressor: Inhibited STD2 compressor: Inhibited		○●●●●●● ○●●●●●○ ○●●●●○●	✻
20	Additional refrigerant charging operation setting	○	●	○	●	○	●	●	Refrigerant charging: OFF Refrigerant charging: ON		○●●●●●○ ○●●●●○●	✻

No.	Setting item display								Setting condition display		
	Setting item	MODE H1P	TEST H2P	C/H selection IND H3P	C/H selection Master H4P	C/H selection Slave H5P	Low noise H6P	Demand H7P			✻ Factory set
21	Refrigerant recovery/vacuuming mode setting	○	●	○	●	○	●	○	Refrigerant recovery / vacuuming: OFF	○●●●●●○	✻
									Refrigerant recovery / vacuuming: ON	○●●●●○●	
22	Night-time low noise setting	○	●	○	●	○	○	●	OFF	○●●●●●●	✻
									Level 1 (outdoor fan with 6 step or lower)	○●●●●●○	
									Level 2 (outdoor fan with 5 step or lower)	○●●●●○●	
									Level 3 (outdoor fan with 4 step or lower)	○●●●●○○	
25	Setting of external low noise level	○	●	○	○	●	●	○	Level 1 (outdoor fan with 6 step or lower)	○●●●●●○	
									Level 2 (outdoor fan with 5 step or lower)	○●●●●○●	✻
									Level 3 (outdoor fan with 4 step or lower)	○●●●○●●	
26	Night-time low noise operation start setting	○	●	○	○	●	○	●	About 20:00	○●●●●●○	
									About 22:00	○●●●●○●	✻
									About 24:00	○●●●○●●	
27	Night-time low noise operation end setting	○	●	○	○	●	○	○	About 6:00	○●●●●●○	
									About 7:00	○●●●●○●	
									About 8:00	○●●●○●●	✻
28	Power transistor check mode	○	●	○	○	○	●	●	OFF	○●●●●●○	✻
									ON	○●●●●○●	
29	Capacity precedence setting	○	●	○	○	○	●	○	OFF	○●●●●●○	✻
									ON	○●●●●○●	
30	Demand setting 1	○	●	○	○	○	○	●	60 % demand	○●●●●●○	
									70 % demand	○●●●●○●	✻
									80 % demand	○●●●○●●	
32	Normal demand setting	○	○	●	●	●	●	●	OFF	○●●●●●○	✻
									ON	○●●●●○●	
35	Setting of difference in height for the outdoor unit	○	○	●	●	●	○	○	Normal	○●●●●●●	✻
									65 m or less	○●●●○●○	
38	Emergency operation (Master unit with multi-outdoor-unit system is inhibited to operate.)	○	○	●	●	○	○	●	OFF	○●●●●●○	✻
									Master unit operation: Inhibited	○●●●●○●	
39	Emergency operation (Slave unit 1 and 2 with multi-outdoor-unit system is inhibited to operate.)	○	○	●	●	○	○	○	OFF	○●●●●●○	✻
									Slave unit 1 operation: Inhibited	○●●●●○●	
40	Emergency operation (Slave unit 3 with multi-outdoor-unit system is inhibited to operate.)	○	○	●	○	●	●	●	OFF	○●●●●●○	✻
									Slave unit 2 operation: Inhibited	○●●●●○●	
55	Master-slave set-up for multi outdoor units	○	○	○	●	●	○	○	Automatic judgement	○●●●●●●	✻
									Master	○●●●●●○	
									Slave 1	○●●●●○●	
									Slave 2	○●●●●○○	
									Slave 3	○●●●○●●	

c. Monitor mode

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

<Selection of setting item>

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

<Confirmation on setting contents>

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

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

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

No.	Setting item	LED display							Data display
		H1P	H2P	H3P	H4P	H5P	H6P	H7P	
0	Various settings	◑	●	●	●	●	●	●	Lower 4 digits
1	C/H unified address	◑	●	●	●	●	●	○	Lower 6 digits
2	Low noise/demand address	◑	●	●	●	●	○	●	
4	AIRNET address	◑	●	●	●	○	●	●	
5	Number of connected indoor units *1	◑	●	●	●	○	●	○	
6	Number of connected BS units	◑	●	●	●	○	○	●	
7	Number of connected zone units (Fixed to "0")	◑	●	●	●	○	○	○	
8	Number of outdoor units *2	◑	●	●	○	●	●	●	
11	Number of zone units	◑	●	●	○	●	○	○	
12	Number of terminal units *3	◑	●	●	○	○	●	●	Lower 4 digits: upper
13	Number of terminal units *3	◑	●	●	○	○	●	○	Lower 4 digits: lower
14	Contents of error (the latest)	◑	●	●	○	○	○	●	Error code table Refer to P. 95 ~ 98
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 connection outdoor units	◑	●	○	○	●	●	○	Lower 6 digits

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

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

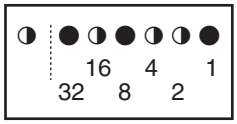
*2. Number of outdoor units
Used to make setting of the number of outdoor units connected to DIII-NET that is one of the communication lines.

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

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

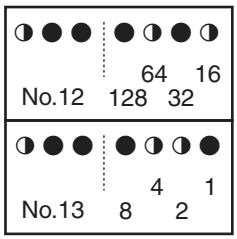
EMG operation / backup operation setting	ON	◑	●	●	○	●	●	●
	OFF	◑	●	●	●	●	●	●
Defrost select setting	Short	◑	●	●	●	○	●	●
	Medium	◑	●	●	●	◑	●	●
	Long	◑	●	●	●	●	●	●
Te setting	L	◑	●	●	●	●	●	●
	M	◑	●	●	●	●	◑	●
	H ①~⑤	◑	●	●	●	●	○	●
Tc setting	L	◑	●	●	●	●	●	●
	M	◑	●	●	●	●	●	◑
	H	◑	●	●	●	●	●	○

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



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

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



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

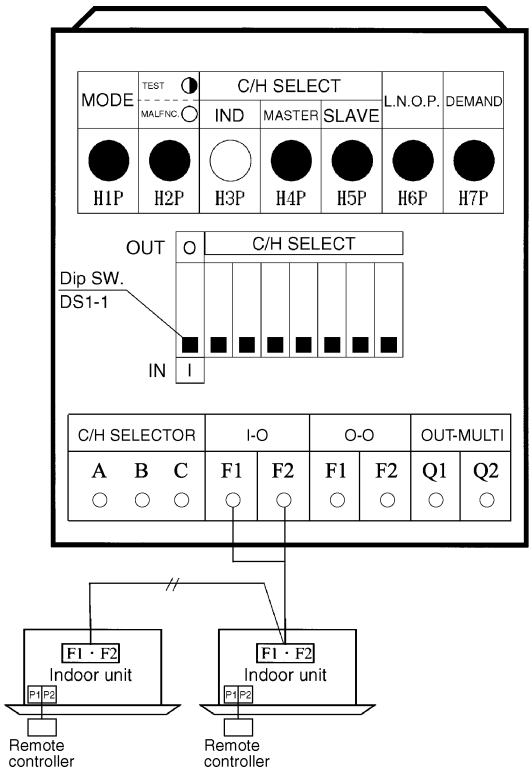
2.1.4 Cool / Heat Mode Switching

There are the following 5 cool/heat switching modes.

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

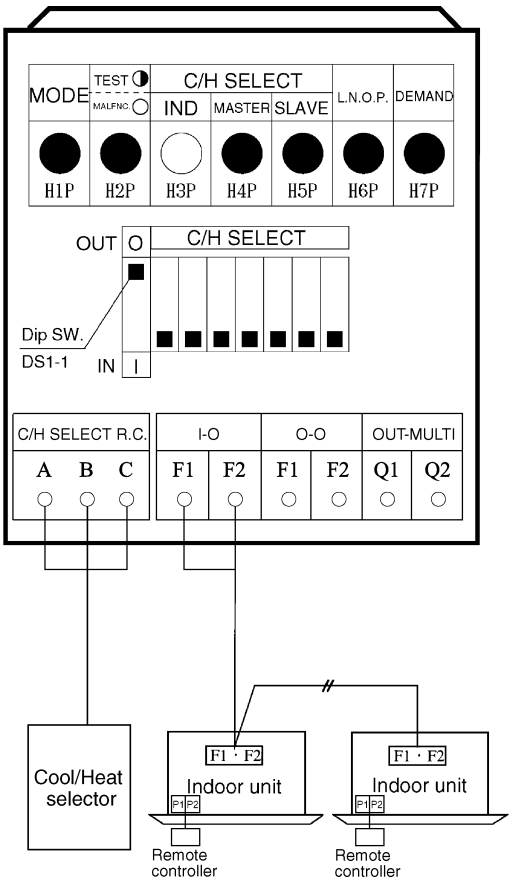
① Set Cool / Heat Separately for Each Outdoor Unit System by Indoor Unit Remote Controller

- ◆ It does not matter whether or not there is outdoor - outdoor unit wiring.
- ◆ Set outdoor unit PCB DS1-1 to IN (factory setting).
- ◆ Set C/H select to IND (individual) for “Setting mode 1” (factory setting).



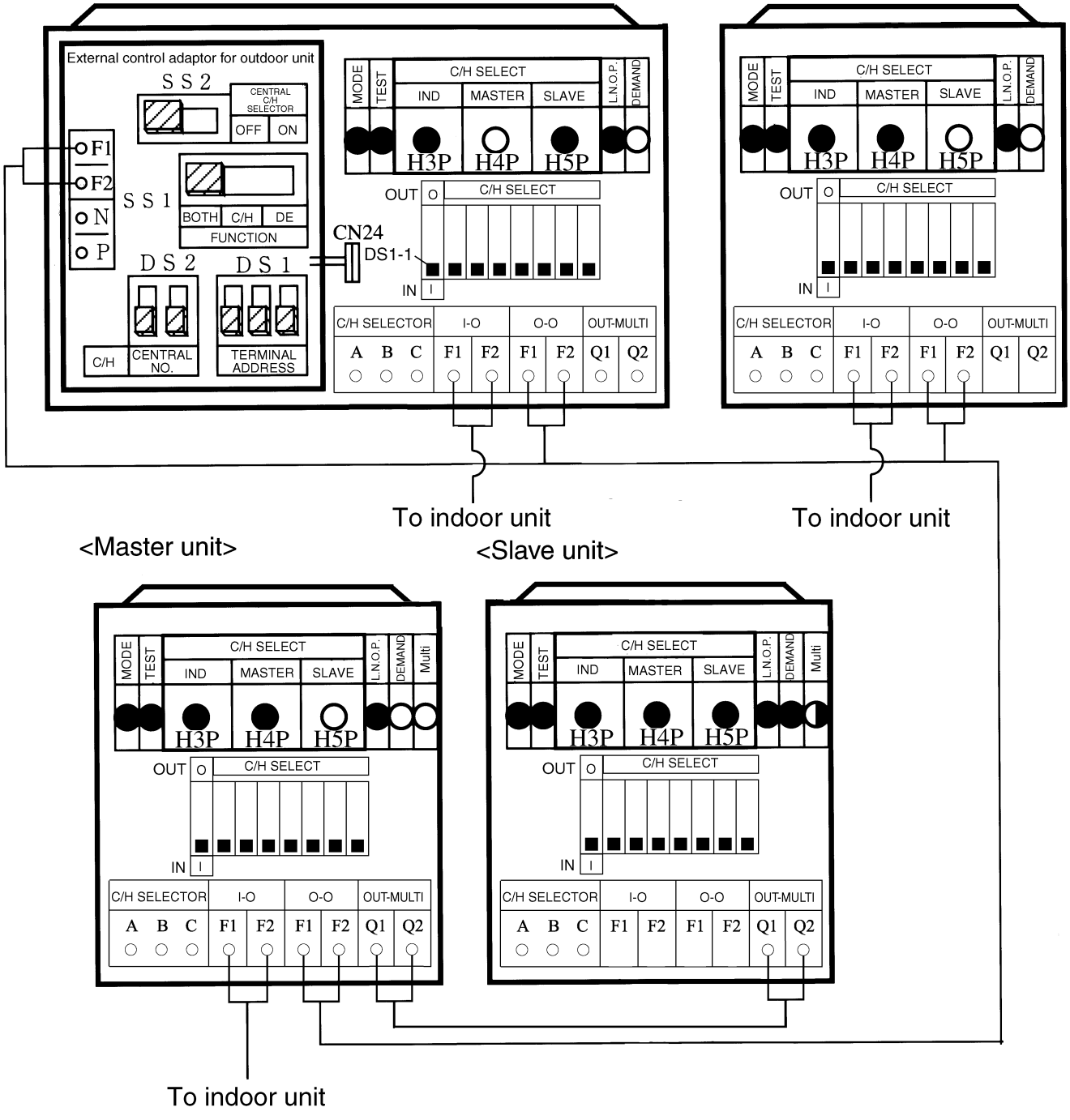
② **Set Cool / Heat Separately for Each Outdoor Unit System by Cool / Heat Selector**

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



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

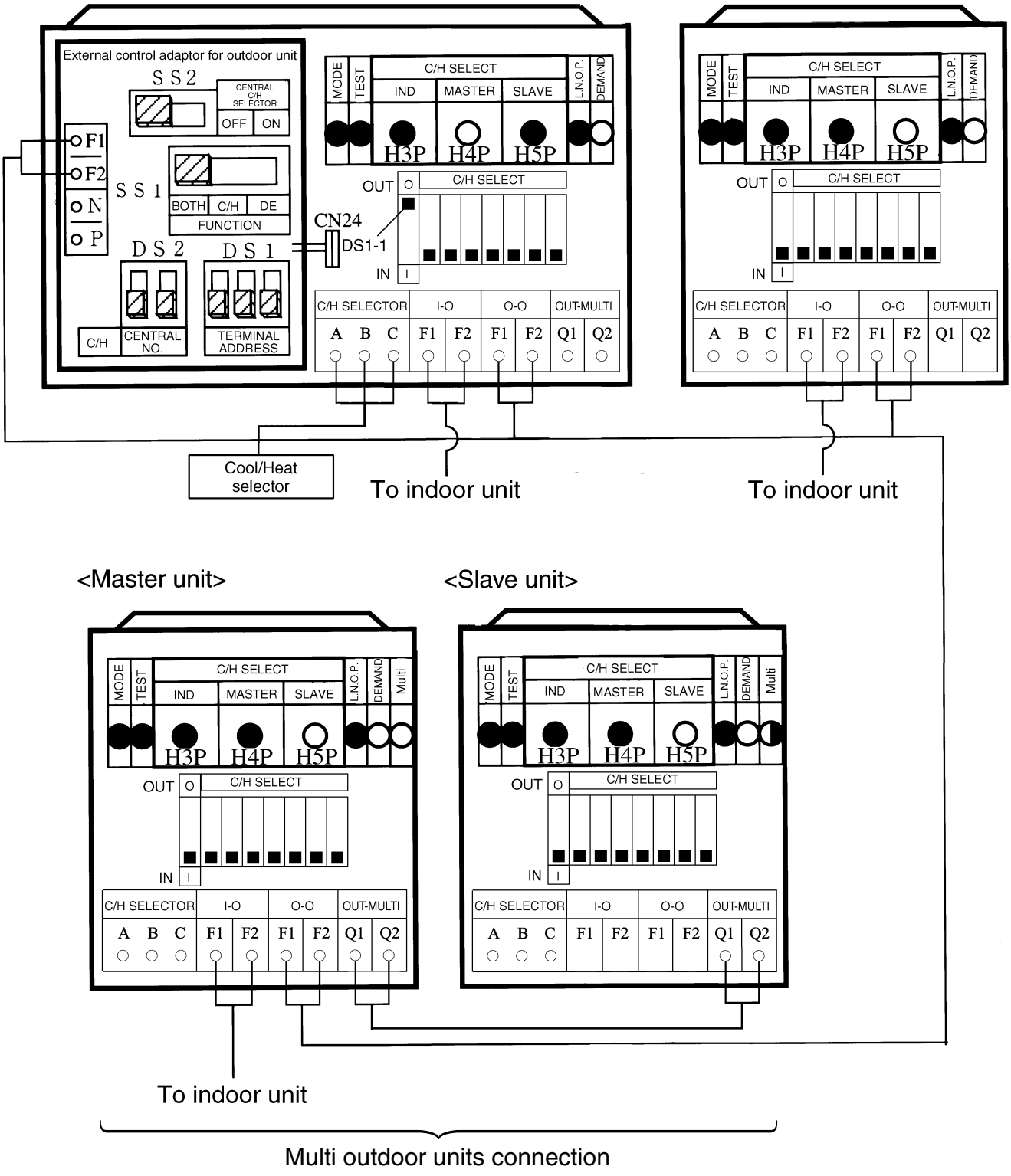
- Install the external control adaptor for outdoor unit on either the outdoor-outdoor, indoor-outdoor transmission line.
- Set outdoor unit PCB DS1-1 to IN (factory setting).
- In setting mode 1, set the outdoor unit you want to give cool/heat selection permission to as the unified master, and set the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



- When multiple external control adaptors for outdoor unit are used and cool / heat is selected for each external control adaptor for outdoor unit, use “setting mode 2” and set DS1 and DS2 on the external control adaptors for outdoor unit and the unified cool / heat address on the outdoor unit main PCB to the same address No. (For details, refer to the following page.)

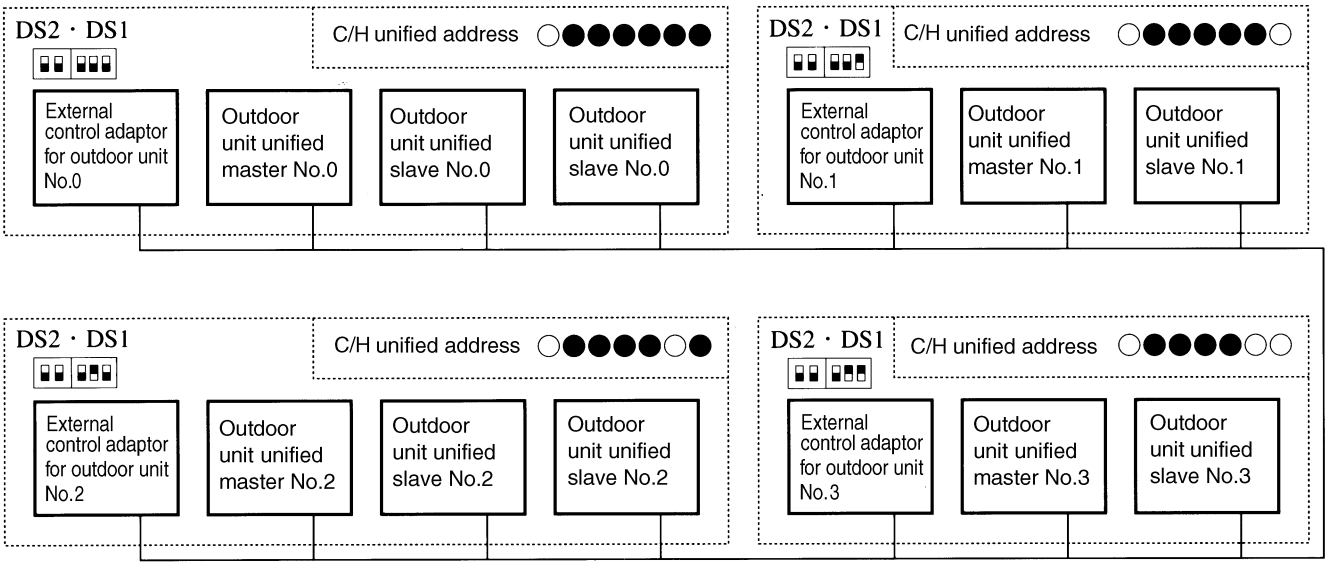
④ **Set Cool / Heat for More Than One Outdoor Unit System Simultaneously in Accordance with Unified Master Outdoor Unit by Cool / Heat Select Remote Controller**

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



Supplementation on ③ and ④.

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



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

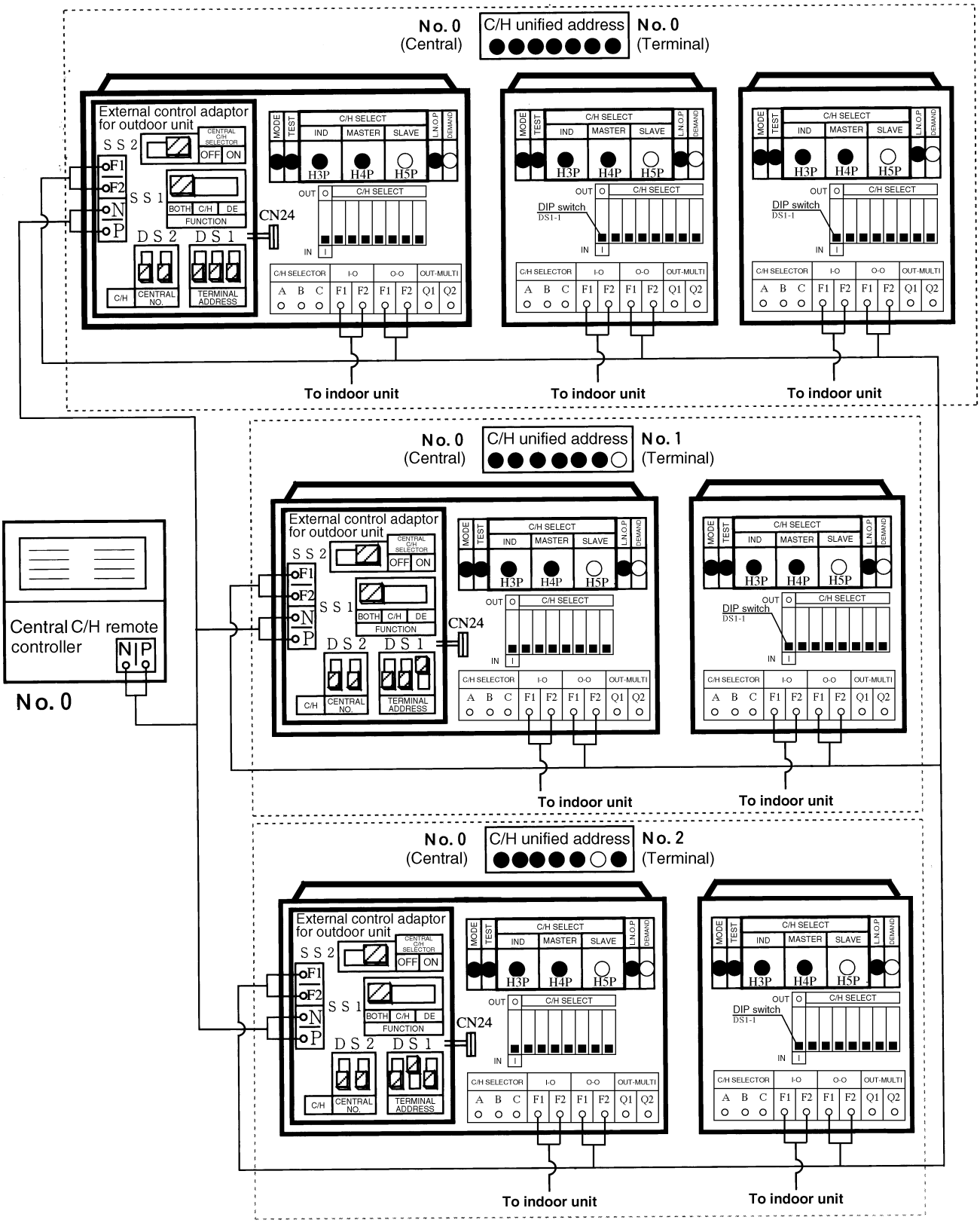
Address No.	Outdoor unit PCB LED Set with setting mode 2	External control adaptor for outdoor unit DS2 DS1
No 0	○● ●●●●● 0	0
No 1	○● ●●●●○ 1	1
No 2	○● ●●●○● 2	2
No 3	○● ●●●○○ 3	3
No 4	○● ●●○●● 4	4
≀	≀	≀
No 30	○● ●●●●○ 30	30
No 31	○● ○○○○○ 31	31

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

(The shaded part shows knob)

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

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



2.1.5 Setting of Low Noise Operation and Demand Operation

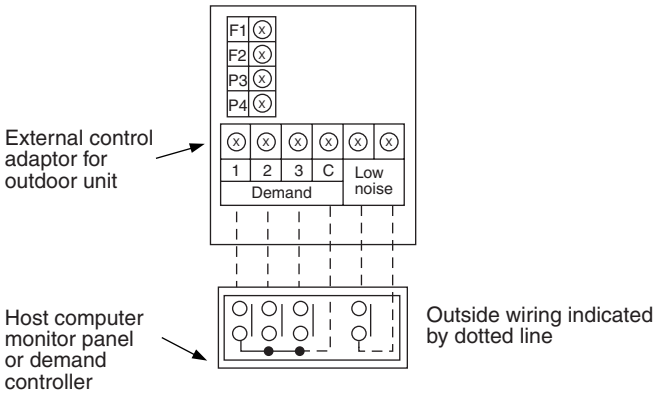
Setting of Low Noise Operation

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

Setting	Content
Mode 1	Set the outdoor unit fan to Step 6 or lower.
Mode 2	Set the outdoor unit fan to Step 5 or lower.
Mode 3	Set the outdoor unit fan to Step 4 or lower.

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

1. Connect external control adaptor for outdoor unit and short-circuit terminal of low noise (Refer below figure).
   If carrying out demand or low-noise input, connect the adaptor's terminals as shown below.



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., "Mode 1", "Mode 2", or "Mode 3") for set item No. 25 (Setting of external low noise level).
4. If necessary, while in "Setting mode 2", set the setting condition for the set item No. 29 (Setting of capacity precedence) to "ON".
   (If the condition is set to "ON", when the air-conditioning load reaches a high level, the low noise operation command will be ignored to put the system into normal operation mode.)

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

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

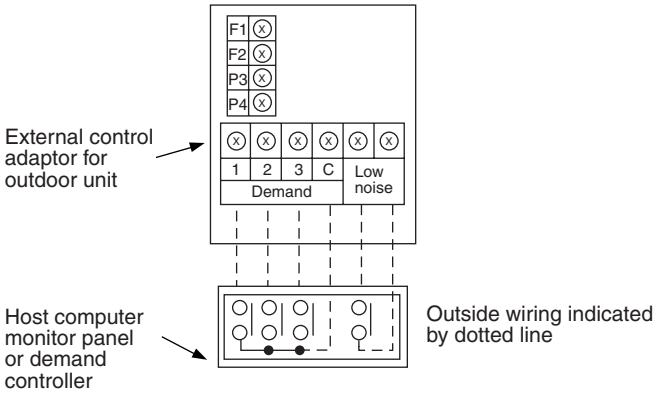
2.1.6 Setting of Demand Operation

By connecting the external contact input to the demand input of the outdoor unit 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	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".	—

*: However the demand operation does not occur in the following operation modes.
① Startup control ② Oil return operation
③ Defrosting operation ④ Pump down residual operation

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



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

1. Connect external control adaptor for outdoor unit and short-circuit terminals as required (Refer above figure).
2. While in "Setting mode 2", set the setting condition for set item No. 12 (Setting of external low noise/demand operation) to "YES".
3. If necessary, while in "Setting mode 2", select the set item No. 30 (Setting of Demand 1 level) and then set the setting condition to targeted mode.

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

1. While in "Setting mode 2", make setting of the set item No. 32 (Setting of alternate demand) to "ON".
2. While in "Setting mode 2", select the set item No. 30 (Setting of Demand 1 level) and then set the setting condition to targeted mode.

2.1.7 Air Tight Test Procedure

After internal servicing is performed onsite, perform the air tight test. Fully open the electronic expansion valves of the outdoor unit and indoor unit, and turn on some of the solenoid valves.

[Operation procedure]

① With the system stopped, use "Setting mode 2" and set (A) Refrigerant recovery / vacuuming mode (setting item No. 21) to "ON".
All of the indoor unit and outdoor unit electronic expansion valves fully open and some of the solenoid valves turn on. (H2P blinks to indicate the test operation, and the remote controller displays "TEST OPERATION" and "UNDER CENTRALIZED CONTROL", thus prohibiting operation.)

② Close the stop valves on the gas side and liquid side, and perform an air tight test at 4.0 MPa.

③ Press the MODE button (BS1) to cancel "Setting mode 2".

<Caution>

Do not turn off the outdoor unit power during the air tight test.
(The solenoid valves will close and the outdoor unit air tight test will not be possible.)

2.1.8 Setting of Refrigerant Recovery Mode

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

[Operation procedure]

① In setting mode 2 with units in stop mode, set "Refrigerant recovery / Vacuuming mode" to ON. The respective expansion valve of indoor and outdoor units are fully opened and some of solenoid valves open. (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 installation manual attached to the refrigerant recovery unit for more detail.)

③ Press Mode button "BS1" once and reset "Setting Mode 2".

2.1.9 Setting of Vacuuming Mode

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

[Operating procedure]

① With Setting Mode 2 while the unit stops, set "Refrigerant recovery / Vacuuming mode" to ON. The expansion valves of indoor and outdoor units fully open and some of solenoid valves open.
(H2P blinks to indicate the test operation, and the remote controller displays "TEST OPERATION" and "UNDER CENTRALIZED CONTROL", thus prohibiting operation.)
After setting, do not cancel "Setting Mode 2" until completion of vacuuming operation.

② Use the vacuum pump to perform vacuuming operation.

③ Press Mode button "BS1" once and reset "Setting Mode 2".

2.1.10 Emergency Operation

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

> **Caution**
> **In order to disable the compressor operation due to a failure or else, be sure to do so in emergency operation mode.**
> **NEVER attempt to disconnect power supply wires from magnetic contactors or else. (Doing so will operate compressors in combination that disables oil equalization between the compressors, thus resulting in malfunctions of other normal compressors.)**

[Restrictions for Emergency Operation]

- In the case of system with 1 outdoor unit installed, only when thermostats of indoor units having a capacity of 50% or more of the outdoor unit capacity turn ON, the emergency operation is functional. (If the total capacity of indoor units with thermostat ON is small, the outdoor unit cannot operate.)
- If the emergency operation is set while the outdoor unit is in operation, the outdoor unit stops once after pump-down residual operation (a maximum of 5 minutes elapsed).

(1) In the Case of 1-Outdoor-Unit System

[Set the system to operation prohibition mode by compressor]

- In order to set an INV compressor to operation prohibition mode, set No. 42 of Setting mode 2 to "EMERGENCY OPERATION".

(Procedure)

	LED display (○:ON ●:OFF ◑:Blink) H1P — — — —H7P	
(1) Press and hold the MODE button (BS1) for a period of 5 seconds 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 (BS1) once.	●●○●●●	

- In order to set STD1 and STD2 compressors to operation prohibition mode, set No. 19 of Setting mode 2 to "STD1, 2 OPERATION PROHIBITION".

(Procedure)

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

- In order to set the STD 2 compressor to operation prohibition mode, set No. 19 of Setting mode 2 to "STD2 OPERATION PROHIBITION".

(Procedure)

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

- For RQYQ16PY1, if the INV compressor is set to operation prohibition mode, only a single STD compressor will operate for the convenience of oil equalization.
- For RQYQ16PY1, only the STD1 compressor cannot be put into operation prohibition mode for the convenience of oil equalization.
- For the system with a single outdoor unit, automatic backup operation is not functional.

(2) In The Case of Multi-Outdoor-Unit System

[Automatic backup operation]

With multi-outdoor-unit system, if a certain outdoor unit system malfunctions (i.e., the system stops and indoor unit remote controller displays the malfunction), by resetting the system with the indoor unit remote controller, the applicable outdoor unit is inhibited from operating for 8 hours, thus making it possible to perform backup operation automatically.
However, in the event any of the following malfunctions occurs, automatic backup operation can be performed.

Malfunctions under which automatic backup operation can be performed:

- E3, E4, E5, E7
- F3
- H7, H9
- J2, J3, J5, J6, J7, J9, JA, JC
- L1, L4, L5, L8, L9, LC
- U2, UJ

Note : In order to forcedly clear the automatic backup operation, reset the power supply with the outdoor unit in the stopped state.

[Emergency operation with settings in service mode]

* "Inhibition of operation" is set with each outdoor unit.
Make the following settings with the master unit. (Setting with the slave unit becomes disabled.)
* Discriminate the operating status of the master unit / slave units through the following LED display.

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

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

- In order to set the master unit to operation prohibition mode, set No. 38 of Setting mode 2 to "MASTER OPERATION PROHIBITION".

(Procedure)

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

- In order to set the slave unit to operation prohibition mode, set No. 39 of Setting mode 2 to "SLAVE OPERATION PROHIBITION".

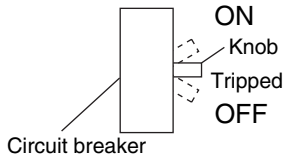
(Procedure)

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

*
- In the case of multi-outdoor-unit system, "Inhibition of operation" is not set with each compressor individually.
- In the case of multi-outdoor-unit system, when the above "Inhibition of operation" is set, outdoor unit rotation is not functional.

Part 6
Troubleshooting

1. Symptom-based Troubleshooting

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

	Symptom		Supposed Cause	Countermeasure
7	The system conducts fan operation but not cooling or heating operation.	This symptom occurs immediately after turning ON the power supply.	The system is in preparation mode of operation.	Wait for a period of approximately 10 minutes.
		"UNDER CENTRALIZED CONTROL" is displayed on the remote controller and the cooling/heating operation stops. The operation switches to the air supply operation.	Even though, the cooling or heating operation is set, the air supply operation continues during thermal storage operation. "UNDER CENTRALIZED CONTROL" is displayed on the remote controller.	Normal operation.
8	The airflow rate is not reproduced according to the setting.	Even pressing the AIRFLOW RATE SET button makes no changes in the airflow rate.	In heating operation, when the room temperature reaches the set degree, the outdoor unit will stop while the indoor unit is brought to fan LL operation so that no one gets cold air. Furthermore, if fan operation mode is selected when other indoor unit is in heating operation, the system will be brought to fan LL operation.	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 ambient temperature and humidity are low.	Hot gas (refrigerant) flown in the indoor unit results to be vapor from the unit.	Normal operation.
		<Indoor and 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.

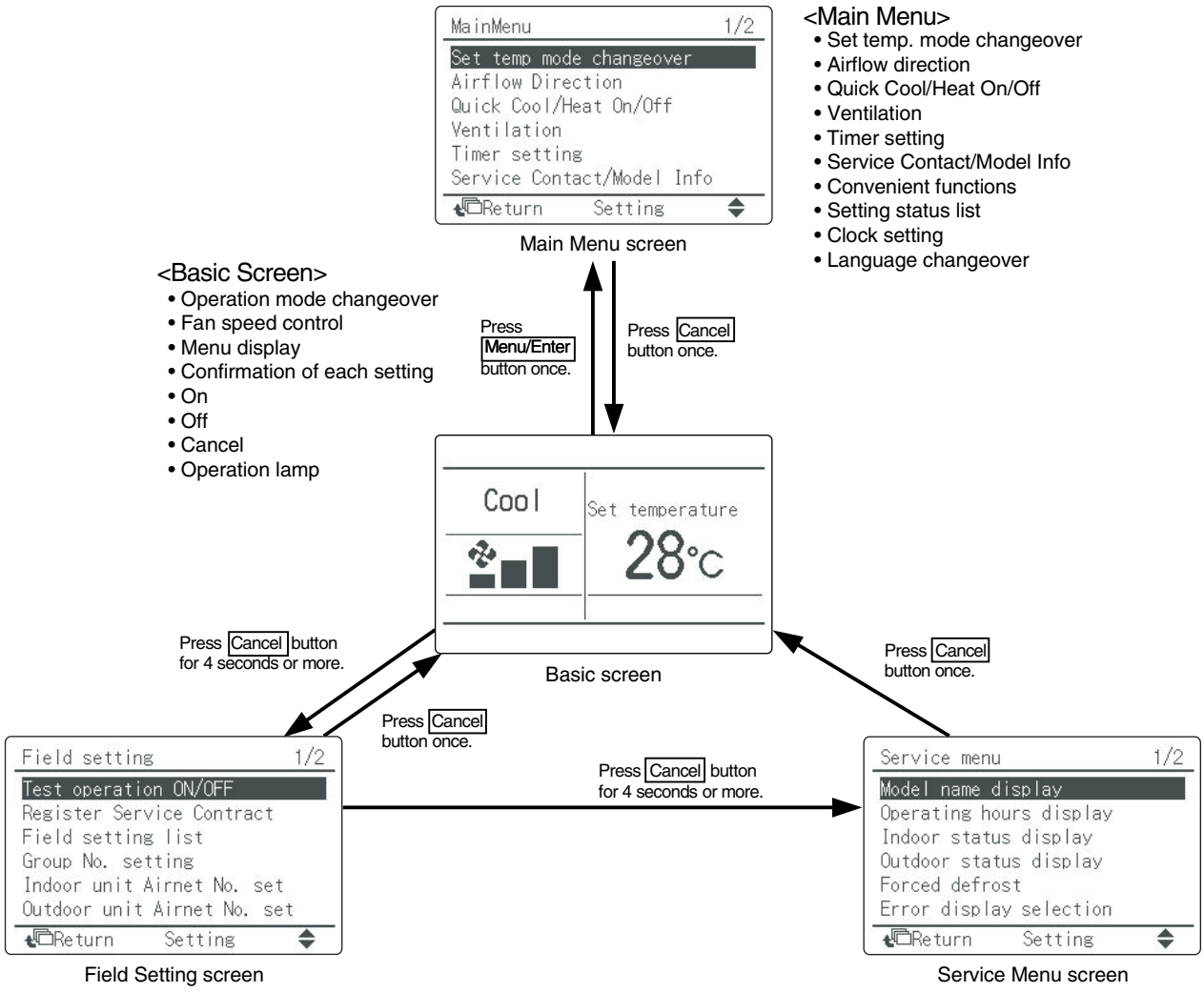
	Symptom		Supposed Cause	Countermeasure
11	The system produces sounds.	<Indoor unit> Immediately after turning ON the power supply, indoor unit produces "ringing" sounds.	These are operating sounds of the electronic expansion valve of the indoor unit.	Normal operation. This sound becomes low after a lapse of approximately one minute.
		<Indoor and outdoor units> "Hissing" sounds are continuously produced while in cooling or defrosting operation.	These sounds are produced from gas (refrigerant) flowing respectively through the indoor and outdoor units.	Normal operation.
		<Indoor and outdoor units> "Hissing" sounds are produced immediately after the startup or stop of the system, or the startup or stop of defrosting operation.	These sounds are produced when the gas (refrigerant) stops or changes flowing.	Normal operation.
		<Indoor unit> Faint sounds are continuously produced while in cooling operation or after stopping the operation.	These sounds are produced from the drain discharge device in operation.	Normal operation.
		<Indoor unit> "Creaking" sounds are produced while in heating operation or after stopping the operation.	These sounds are produced from resin parts expanding and contracting with temperature changes.	Normal operation.
		<Indoor unit> Sounds like "trickling" or the like are produced from indoor units in the stopped state.	On VRV systems, these sounds are produced when other indoor units in operation. The reason is that the system runs in order to prevent oil or refrigerant from dwelling.	Normal operation.
		<Outdoor unit> Pitch of operating sounds changes.	The reason is that the compressor changes the operating frequency.	Normal operation.
12	Dust comes out from the system.	Dust comes out from the system when it restarts after the stop for an extended period of time.	Dust, which has deposited on the inside of indoor unit, is blown out from the system.	Normal operation.
13	Odors come out from the system.	In operation	Odors of room, cigarettes or else adsorbed to the inside of indoor unit are blown out.	The inside of the indoor unit should be cleaned.
14	Outdoor unit fan does not rotate.	In operation	The reason is that fan revolutions are controlled to put the operation to the optimum state.	Normal operation.
15	LCD display "88" appears on the remote controller.	Immediately after turning ON the power supply	The reason is that the system is checking to be sure the remote controller is normal.	Normal operation. This code is displayed for a period of approximately one minute at maximum.
16	The outdoor unit compressor or the outdoor unit fan does not stop.	After stopping operation	It stops in order to prevent oil or refrigerant from dwelling.	Normal operation. It stops after a lapse of approximately 5 to 10 minutes.
17	The outdoor gets hot.	While stopping operation	The reason is that the compressor is warmed up to provide smooth startup of the system.	Normal operation.
18	Hot air comes out from the system even though it stops.	Hot air is felt while the system stops.	On VRV systems, small quantity of refrigerant is fed to indoor units in the stopped state when other indoor units are in operation.	Normal operation.
19	The system does not cool air well.	The system is in dry operation.	The reason is that the dry operation serves not to reduce the room temperature where possible.	Change the system to cooling operation.

2. Troubleshooting by Remote Controller

2.1 The INSPECTION / TEST Button

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

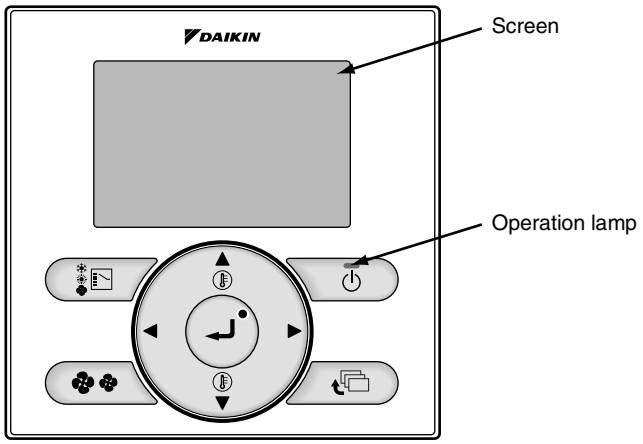
On power-up, the message "Connection under check. Please wait for a moment" will be displayed on the remote controller screen. Then that message will disappear and the basic screen will be displayed. To access a mode from the basic screen, refer to the figure below. When any of the operation buttons 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.)



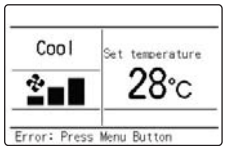
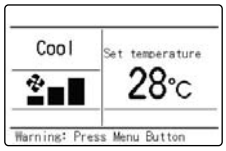
2.2 Self-diagnosis by Wired Remote Controller

Explanation

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



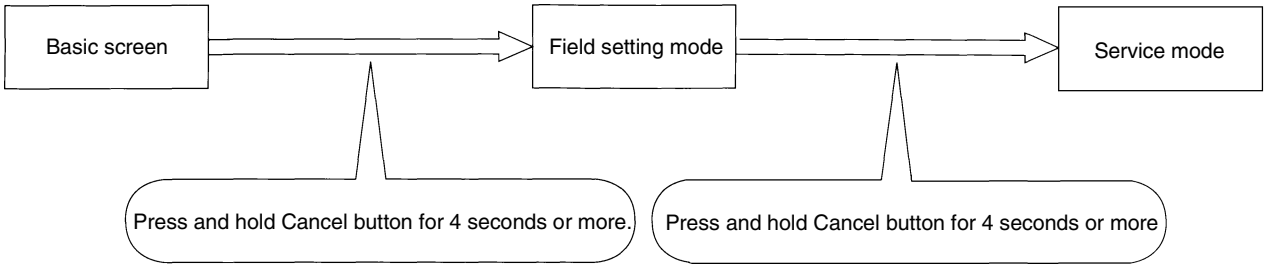
(1) Checking a malfunction or warning

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

2.3 Remote Controller Service Mode

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

How to Enter the Service Mode



Service Mode Operation Method

1. Select the mode No.
Select the desired item from the Service menu, and then press Menu/Enter button.

2. Select the Item 2.
Select the desired Unit No. using the ▲/▼ (Up/Down) buttons. The corresponding data will be displayed.

For details, refer to the table in next page.

Service Menu	Item 2	Remarks	
1. Model Name Display	1. Unit No.	Select the Unit No. you want to check.	
	2. Indoor unit		
	3. Outdoor unit		
2. Operating Hours Display	1. Unit No.	Select the Unit No. you want to check.	
	2. Indoor unit operating time	All of these are displayed in hours.	
	3. Indoor fan operation		
	4. Indoor unit energized time		
	5. Outdoor operating time		
	6. Outdoor fan 1 operation		
	7. Outdoor fan 2 operation		
	8. Outdoor comp. 1 operation		
	9. Outdoor comp. 2 operation		
3. Indoor Status Display 1/2	1. Unit No.	Select the Unit No. you want to check.	
	2. FAN	Tap, speed (rpm)	
	3. FLAP	Swing, fixed	
	4. Speed	Fan speed (rpm)	
	5. EV	Degree that electronic expansion valve is open (pls)	
	6. MP	Drain pump ON/OFF	
	7. 52H	Electric heater ON/OFF	
	8. Hu	Humidifier ON/OFF	
	9. Anti-freezing	Anti-freezing control ON/OFF	
3. Indoor Status Display 2/2	1. Unit No.	Select the Unit No. you want to check.	
		SkyAir	VRV
	2. Th1	Suction air thermistor	Suction air thermistor
	3. Th2	Heat exchanger thermistor	Heat exchanger liquid pipe thermistor
	4. Th3	—	Heat exchanger gas pipe thermistor
	5. Th4	Discharge air thermistor	Discharge air thermistor
	6. Th5	—	—
	7. Th6	—	—
4. Outdoor Status Display	1. Unit No.	Select the Unit No. you want to check.	
	2. FAN Tap 1	Fan tap	
	3. COMP	Compressor power supply frequency (Hz)	
	4. EV1	Degree that electronic expansion valve is open (pls)	
	5. SV1	Solenoid valve ON/OFF	
		SkyAir	VRV
	6. Th1	Outdoor air thermistor	—
	7. Th2	Heat exchanger thermistor	—
	8. Th3	Discharge pipe thermistor	—
5. Forced Defrost (SkyAir only)	1. Forced defrost ON	Enables the forced defrost operation.	
	2. Forced defrost OFF	Disables the forced defrost operation.	

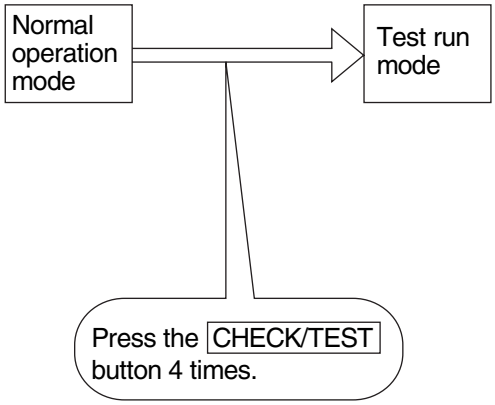
Service Menu	Item 2	Remarks
6. Error Display Selection	1. Warning display ON	Displays a warning on the screen if an error occurs.
	2. Warning display OFF	No warning is displayed.
	3. Error display ON	Displays the error on the screen.
	4. Error display OFF	Displays neither errors nor warnings.
7. Unit No. Transfer	1. Current Unit No.	A unit No. can be transferred to another.
	2. Transfer Unit No.	
8. Sensor Address Display	○ Unit No.: 0 - 15	Select the Unit No. you want to check.
	○ Code 0: 1: 2: 3: 4: 5: 6: 7: 8: 9:	 Remote controller thermistor (°C) Suction air thermistor (°C) Heat exchanger liquid pipe thermistor (°C) Heat exchanger gas thermistor (°C) Indoor unit address No. Outdoor unit address No. BS unit address No. Zone control address No. Cooling/Heating batch address No. Demand/low-noise address No.
	○ Data	The corresponding data will be displayed, based on the Unit No. and Code selected.

2.4 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

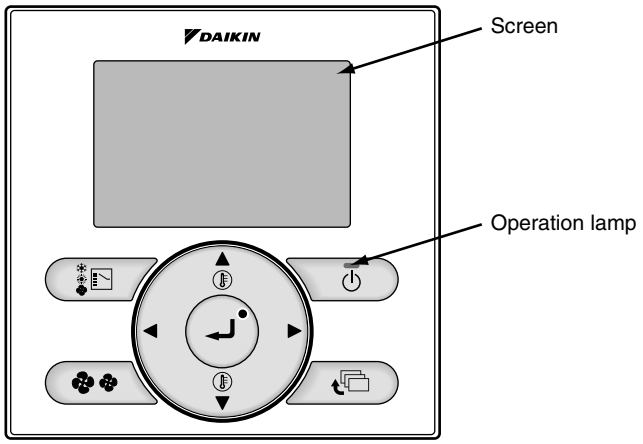
The test run mode setting can be made by conducting the following operation.



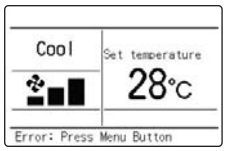
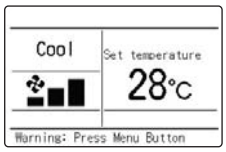
Press the RUN/STOP button after the completion of test run mode setting, and a test run starts.
(The remote controller will display "TEST RUN" on it.)

2.5 Remote Controller Self-Diagnosis Function

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



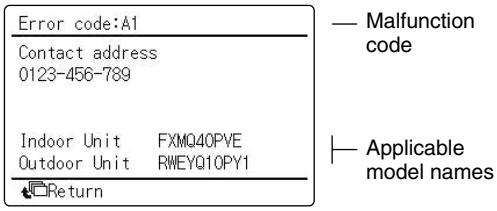
(1) Checking a malfunction or warning

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

(2) Taking corrective action

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

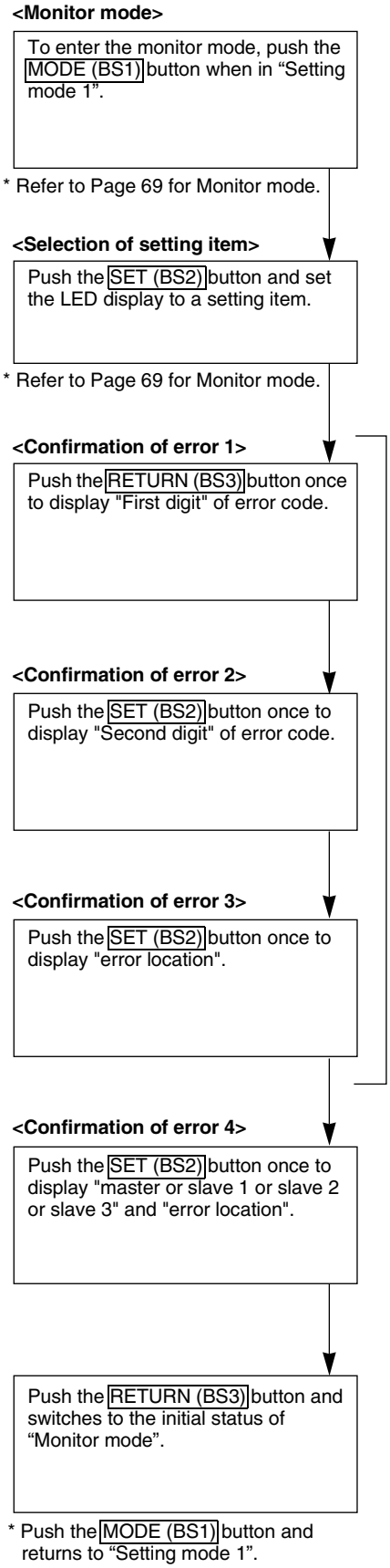
· Take the corrective action specific to the model.



○: ON ●: OFF ◑: Blink

	Error code	Operation lamp	Error contents	Page Referred
Outdoor Unit	E1	◑	PCB abnormality	99
	E3	◑	High pressure abnormality	100
	E4	◑	Actuation of low pressure sensor	102
	E5	◑	Inverter compressor motor lock	104
	E6	◑	STD compressor motor overcurrent/Lock	106
	E7	◑	Outdoor unit fan motor abnormality	107
	E9	◑	Electronic expansion valve coil Abnormality (Y1E ~ Y3E)	110
	F3	◑	Abnormal discharge pipe temperature	112
	F6	◑	Refrigerant overcharged	114
	H3	◑	High pressure switch system abnormality	115
	H7	◑	Abnormal outdoor fan motor signal	116
	H9	◑	Abnormal outdoor air thermistor	118
	J1	◑	High pressure sensor abnormality	119
	J2	◑	Currents sensor abnormality	121
	J3	◑	Abnormal discharge pipe thermistor	118
	J5	◑	Abnormal suction pipe thermistor	118
	J6	◑	Abnormal heat exchanger thermistor	118
	J7	◑	Abnormal liquid pipe thermistor	118
	J8	◑	Abnormal receiver gas vent outlet thermistor	118
	J9	◑	Abnormal subcooling heat exchanger outlet thermistor	118
	JA	◑	High pressure sensor abnormality	122
	JC	◑	Low pressure sensor abnormality	124
	L1	◑	Inverter PCB abnormality	126
	L4	◑	Inverter radiating fin temperature rise	127
	L5	◑	Momentary overcurrent of inverter compressor	128
	L8	◑	Overcurrent abnormal of inverter compressor	130
	LA	◑	Power unit abnormality	—
	LC	◑	Transmission system abnormality (between inverter and main PCB)	134
	P1	◑	Inverter over-ripple protection	136
	P4	◑	Thermistor and replaced abnormality	138
	PJ	◑	Faulty field setting after replacing main PCB or faulty combination of PCB	139
System	U0	○	Refrigerant shortage	140
	U1	◑	Reverse phase, open phase	142
	U2	◑	Power supply insufficient or instantaneous failure	143
	U3	◑	Check operation is not executed	146
	U4	◑	Transmission error (between indoor and outdoor units)	147
	U5	◑	Transmission error (between remote controller and indoor unit)	150
	U7	◑	Transmission error (Across outdoor units)	151
	U8	◑	Transmission error (between main and sub remote controllers)	157
	U9	◑	Transmission error (between indoor and outdoor units in the same system)	158
	UA	◑	Improper combination of indoor and outdoor units, indoor units and remote controller	159
	UC	○	Address duplication of centralized controller	163
	UE	◑	Transmission error (between centralized controller and indoor unit)	164
	UF	◑	System is not set yet	167
	UH	◑	System, refrigerant system address undefined	168

Error code indication by outdoor unit PCB



Error		Error code
Description of error	Description of error (PGF)	Remote controller
PCB abnormality	Defective PCB	E1
High pressure abnormality	HPS activated	E3
Actuation of low pressure sensor	Defective Pe	E4
Inverter compressor motor lock		E5
STD compressor motor overcurrent/ Lock	STD 1	E6
	STD 2	
Outdoor unit fan motor abnormality	Defective fan motor 1	E7
	Defective fan motor 2	
Electronic expansion valve coil abnormality (Y1E-Y3E)	Y1E (Main)	E9
	Y2E (Refrigerant charging)	
	Y3E (Subcool heat exchanger)	
Abnormal discharge pipe temperature	Defective Td	F3
Refrigerant overcharge	Abnormal heat exchanger temperature	F6
High pressure switch system abnormality		H3
Abnormal outdoor fan motor signal	Fan motor 1 positioning signal	H7
	Fan motor 2 positioning signal	
Thermistor abnormality	Thermistor (Outdoor air)	
High pressure sensor abnormality		J1
Current sensor abnormality	STD 1	J2
	STD 2	
Thermistor abnormality (discharge pipe)	For INV. compressor	J3
	For STD 1 compressor	
	For STD 2 compressor	
Thermistor		J4
Thermistor abnormality (suction pipe)		J5
Thermistor abnormality (heat exchanger deicer)		J6
Thermistor abnormality (liquid pipe)		J7
Thermistor abnormality (receiver liquid level, refrigerant regulator liquid pipe, Receiver gas vent outlet)		J8
Thermistor abnormality (subcooling heat exchanger outlet)		J9
High pressure sensor abnormality	Defective S1NPH	JA
Low pressure sensor abnormality	Defective S1NPL	JC

○ : 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	◑	◑	●	●	●	◑	◑	◑	●	○	●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	*1	
								◑	●	○	●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	◑		
E3								◑	●	○	●	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
E4								◑	●	○	●	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
E5								◑	●	○	●	◑	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
E6								◑	●	○	●	◑	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
E7								◑	●	○	●	◑	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
															◑	○	●	●	●	●	●	◑	○	○	◑	●		
															◑	○	●	●	●	●	◑	◑	○	○	●	●		
															◑	○	●	●	●	●	◑	◑	○	○	●	◑		
															◑	○	●	●	●	●	◑	◑	○	○	◑	●		
E9								◑	●	○	◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
															◑	○	●	●	●	●	●	◑	○	○	◑	●		
F3	◑	◑	●	●	◑	●	◑	◑	●	○	●	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
F6								◑	●	○	●	◑	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
H3	◑	◑	●	●	◑	●	●																				*1	
H7								◑	●	○	●	◑	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	◑	◑	○	○	●	●		
H9								◑	●	○	◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
J1	◑	◑	●	●	◑	◑	●																					
J2								◑	●	○	●	●	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
J3								◑	●	○	●	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
															◑	○	●	●	●	●	●	◑	○	○	◑	●		
J4																												
J5								◑	●	○	●	◑	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
J6								◑	●	○	●	◑	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
J7								◑	●	○	●	◑	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
J8								◑	●	○	◑	●	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
J9								◑	●	○	◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
JA								◑	●	○	◑	●	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
JC								◑	●	○	◑	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		

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: Faulty system

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

<Monitor mode>

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

* Refer to Page 69 for Monitor mode.

<Selection of setting item>

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

* Refer to Page 69 for Monitor mode.

<Confirmation of error 1>

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

<Confirmation of error 2>

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

<Confirmation of error 3>

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

<Confirmation of error 4>

Push the SET (BS2) button once to display "master or slave 1 or slave 2 or slave 3" and "error location".

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

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

Detail description on next page.

Error		Error code
Description of error	Description of error (PGF)	Remote controller
Inverter PCB abnormality	Defective IPM	L1
	Current sensor error confirmation 1	
	Current sensor error confirmation 2	
	IGBT error	
Inverter radiating fin temperature rise	Overheat of INV. radiating fin temperature	L4
Momentary overcurrent of INV. compressor		L5
Overcurrent abnormal of INV. compressor	Electrin thermal and others	L8
INV. compressor starting abnormality	Stall prevention	L9
Transmission system abnormality (between INV. and main PCB)	INV. transmission data abnormality	LC
	INV. transmission abnormality	
Inverter over-ripple protection	Unbalanced INV. power supply voltage	P1
INV. radiating fin thermistor and related abnormality	INV. fin thermistor malfunction	P4
Faulty field setting after replacing main PCB or faulty combination of PCB	Defective combination of INV.	PJ
Refrigerant shortage		U0
Reverse phase, open phase	Reversed phase	U1
	Reversed phase (ON)	
Power supply insufficient or instantaneous failure	Insufficient INV. voltage	U2
	INV. open phase (single phase)	
	Abnormal charge of capacitor of INV. main circuit	
Check operation is not completed.	Test operation not carried out yet	U3
Transmission error (between indoor and outdoor units)	IN-OUT transmission error	U4
	System error	
Transmission error (between remote controller and indoor unit)		U5
Transmission error (Across outdoor units)	Error caused when mounting the external control adaptor for outdoor unit	U7
	Alarm given when mounting the external control adaptor for outdoor unit	
	Error caused between the master and the slave 1	
	Error caused between the master and the slave 2	
	Defective address setting of slaves 1 and 2	
	Erroneous address of slaves 1 and 2	
Improper combination of indoor and outdoor units, indoor units and remote controller	Excess indoor units connected	UA
	Connection of erroneous models of indoor unit	
	Faulty combination of outdoor units	
Transmission error (between centralized controller and indoor unit)		UE
System is not set yet	Unmatched wiring/piping	UF
System, refrigerant system address undefined	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
L1	◑	◑	●	●	◑	◑	◑	◑	●	○	●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
															◑	○	●	●	●	●	●	◑	○	○	◑	●		
															◑	○	●	●	●	●	●	◑	○	○	◑	◑		
L4								◑	●	○	●	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
L5								◑	●	○	●	◑	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
L8								◑	●	○	◑	●	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		∗1
L9								◑	●	○	◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
LC								◑	●	○	◑	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
																						◑	○	○	●	◑		
P1	◑	◑	●	◑	●	●	●	◑	●	○	●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
P4								◑	●	○	●	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
PJ								◑	●	○	◑	◑	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
U0	◑	◑	●	◑	●	●	●	◑	●	○	●	●	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
U1								◑	●	○	●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
															◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
U2								◑	●	○	●	●	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
															◑	○	●	●	●	●	●	◑	○	○	●	◑	◑	◑
															◑	○	●	●	●	●	◑	◑	○	○	◑	◑	◑	◑
U3								◑	●	○	●	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
U4								◑	●	○	●	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
															◑	○	●	●	●	●	●	◑	○	○	●	◑	◑	◑
U5																												
U7								◑	●	○	●	◑	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
															◑	○	●	●	●	●	●	◑	○	○	●	◑	◑	◑
															◑	○	●	●	●	●	●	◑	○	○	◑	●	◑	◑
															◑	○	●	●	●	●	●	◑	○	○	◑	◑	◑	◑
															◑	○	●	●	●	●	◑	◑	○	○	●	◑	◑	◑
															◑	○	●	●	●	●	◑	◑	○	○	◑	◑	◑	◑
UA								◑	●	○	◑	●	◑	●	◑	○	●	●	●	●	●	◑	○	○	◑	●	◑	◑
															◑	○	●	●	●	●	◑	◑	○	○	●	●	◑	◑
															◑	○	●	●	●	●	◑	◑	○	○	●	◑	◑	◑
UE																												
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: Faulty system

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

2.6 PCB Abnormality

Remote Controller Display

E1

Applicable Models

RQYQ8-48PY1

Method of Error Detection

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

Error Decision Conditions

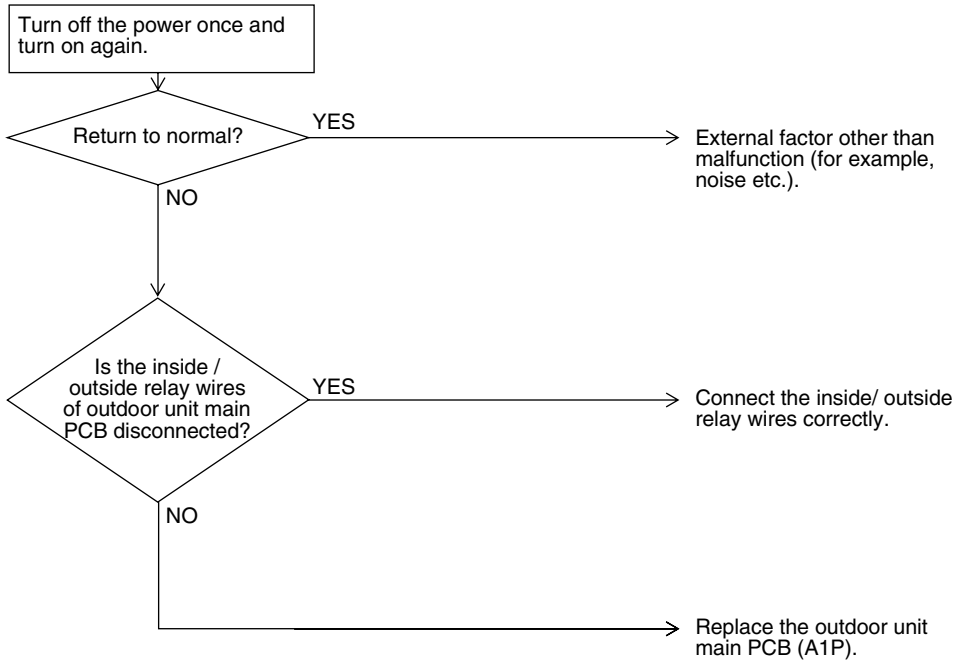
When the communication conditions in the hardware section between the indoor unit and the outdoor unit are not normal.

Supposed Causes

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

Troubleshooting

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



2.7 High Pressure Abnormality

Remote Controller Display	E3
Applicable Models	RQYQ8-48PY1
Method of Error Detection	Abnormality is detected by the protection device circuit that detects continuity at the high pressure switch.
Error Decision Conditions	When the contact of the high pressure switch opens. (Reference) Operating pressure of high pressure switch Operating pressure: 4.0MPa Reset pressure: 3.0MPa
Supposed Causes	■ 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 power switch before connect or disconnect connector, or parts damage may be occurred.

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

Are the three points above OK?
NO → Rectify defective points, if any.
YES

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

Does the stop due to error (E3) recur?
YES → Is the HPS operating value normal (i.e., 4.0MPa)?
NO → Replace the HPS.
YES
NO

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

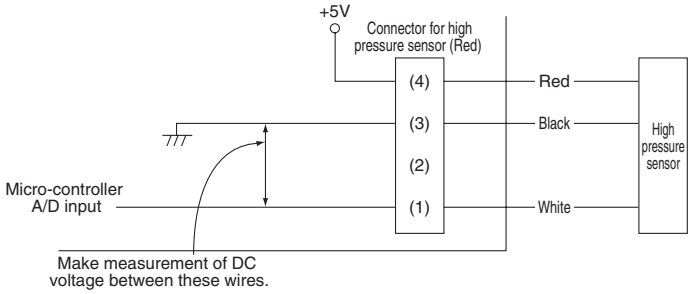
Service Checker
Connect the service checker to compare the “high pressure” value and the actual measurement value by pressure sensor (Refer to *2) by using the service checker.

Check if the “high pressure” value and the actual measurement value by pressure sensor are the same.
NO → Replace the outdoor unit main PCB (A1P).
YES

· The high pressure sensor is normal, and the pressure detected with the main PCB are also normal.
· The high pressure or field piping pressure has really become high.

CHECK 1 Remove the causes by which the high pressure or field piping pressure has become high.

*1. Make a comparison between the voltage of the pressure sensor and that read by the pressure gauge.
CHECK 12
(As to the voltage of the pressure sensor, make measurement of voltage at the connector, and then convert it to pressure.)
*2. Make measurement of voltage of the pressure sensor.



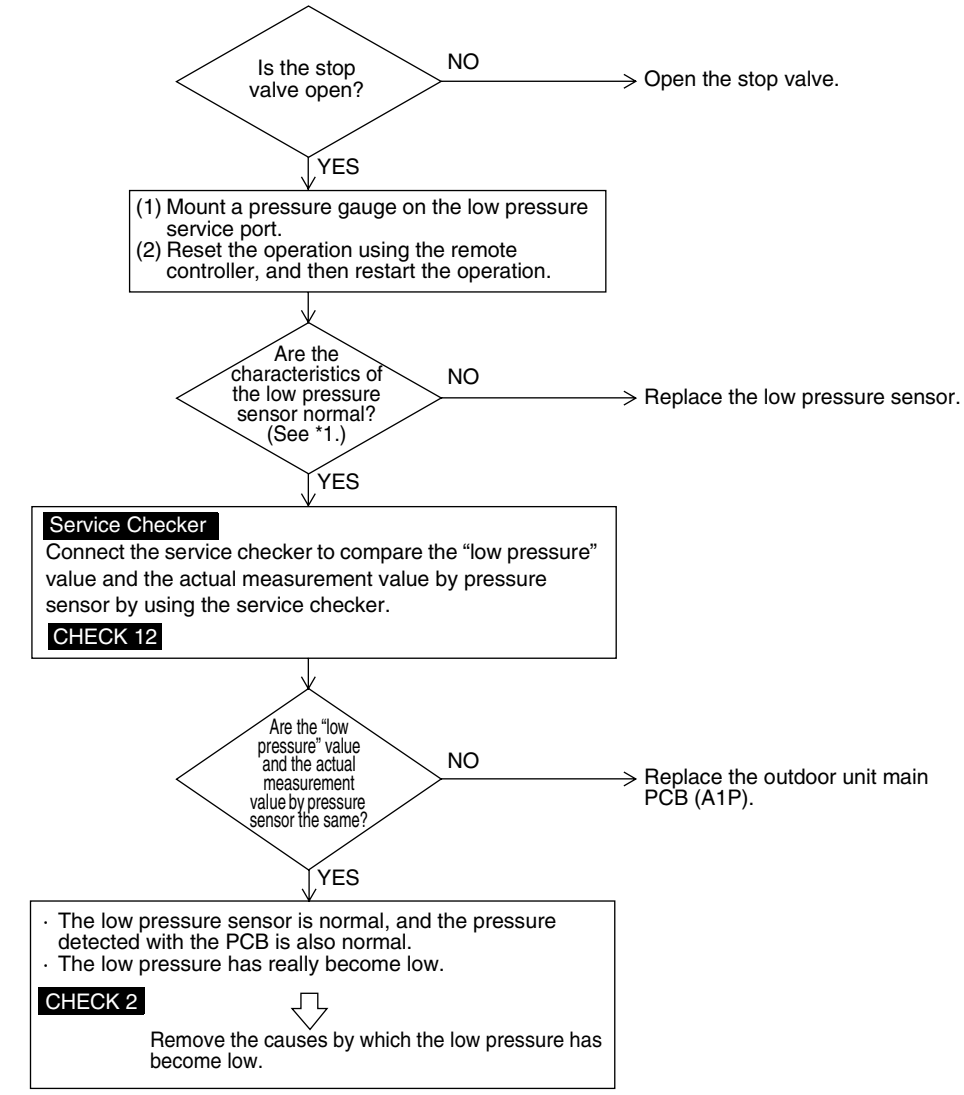
CHECK 1 Refer to P.170
CHECK 12 Refer to P.176

2.8 Actuation of Low Pressure Sensor

Remote Controller Display	E4
Applicable Models	RQYQ8-48PY1
Method of Error Detection	Abnormality is detected by the pressure value of the low pressure sensor with the outdoor unit main PCB (A1P).
Error Decision Conditions	Error is generated when the low pressure is dropped under compressor operation. Operating pressure: 0.07MPa
Supposed Causes	■ Abnormal drop of low pressure ■ Defective low pressure sensor ■ Defective outdoor unit PCB (A1P) ■ Stop valve is not opened

Troubleshooting

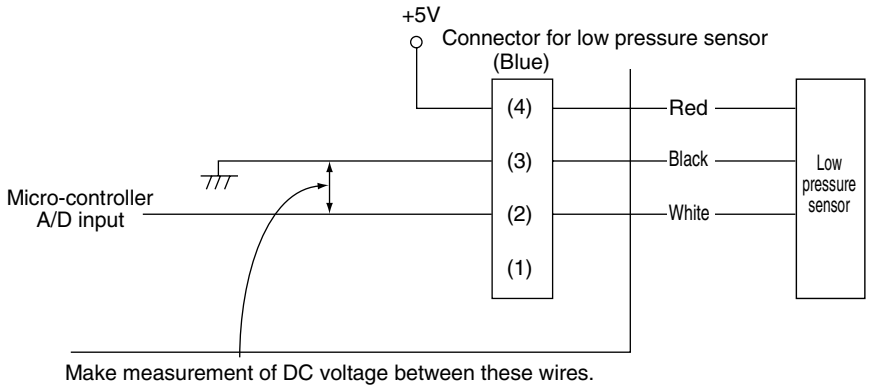
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1. Make a comparison between the voltage of the pressure sensor and that read by the pressure gauge.

CHECK 12

(As to the voltage of the pressure sensor, make measurement of voltage at the connector, and then convert it to pressure.)



CHECK 2 Refer to P.171

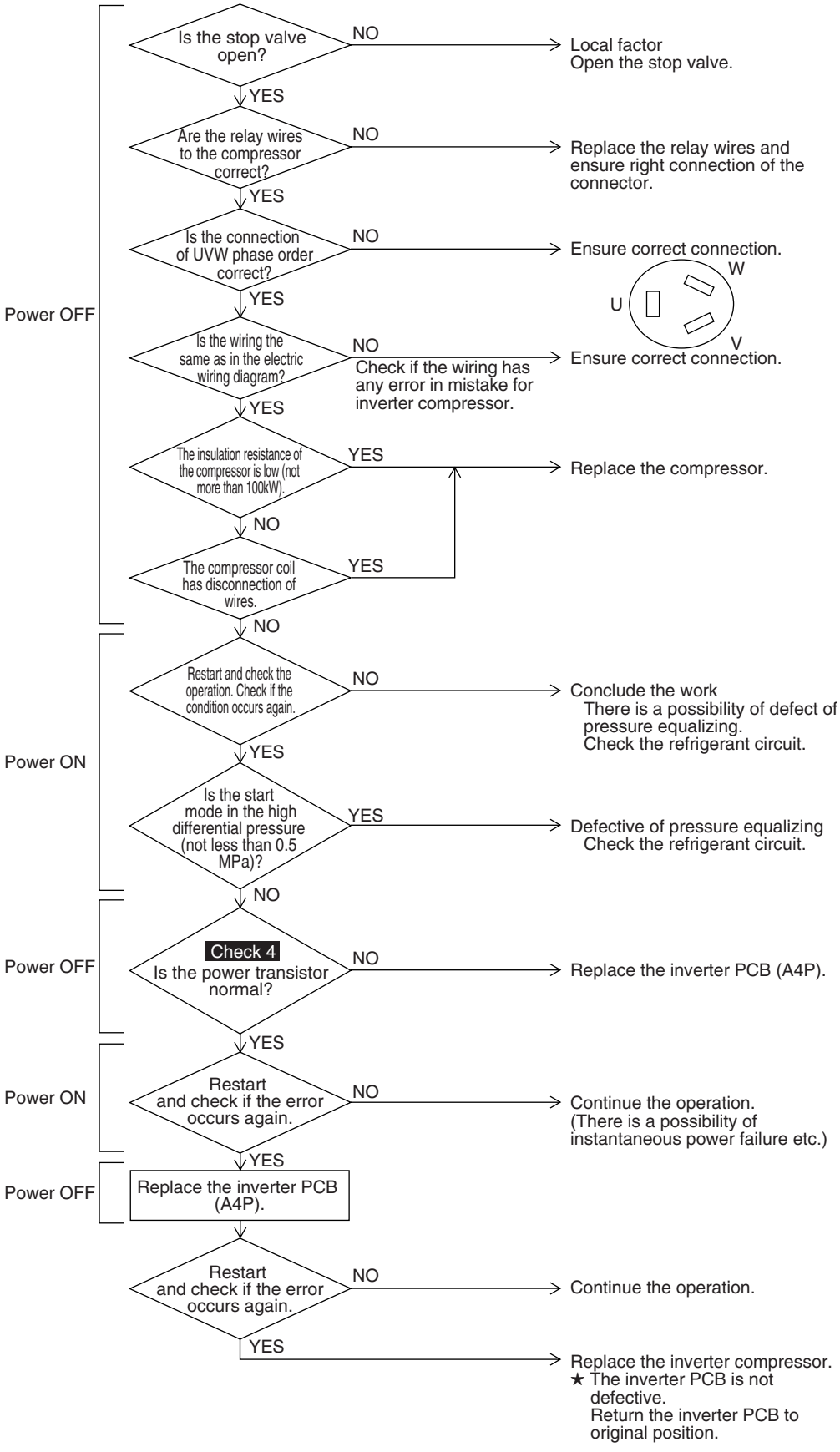
CHECK 12 Refer to P.176

2.9 Inverter Compressor Motor Lock

Remote Controller Display	E5
Applicable Models	RQYQ8-48PY1
Method of Error Detection	Inverter PCB takes the position signal from UVW line connected between the inverter and compressor, and the error is detected when any abnormality is observed in the phase-current waveform.
Error Decision Conditions	This error will be output when the inverter compressor motor does not startup even in forced startup mode.
Supposed Causes	■ Inverter compressor lock ■ High differential pressure (0.5MPa or more) ■ Incorrect UVW wiring ■ Defective inverter PCB ■ Stop valve is not opened

Troubleshooting

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



CHECK 4 Refer to P.173

2.10 STD Compressor Motor Overcurrent/Lock

Remote Controller Display

E6

Applicable Models

RQYP8-48PY1

Method of Error Detection

Detects the overcurrent with current sensor (CT).

Error Decision Conditions

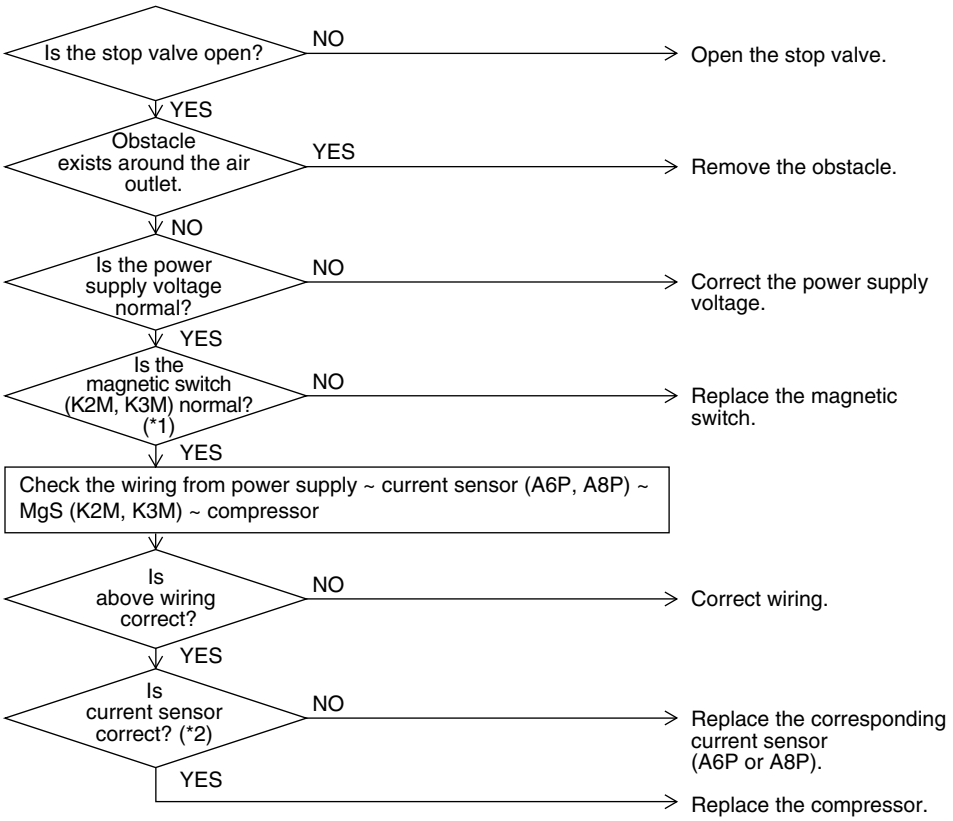
Error is decided when the detected current value exceeds 28.8 A for 2 seconds.

Supposed Causes

- Stop valve is not opened
- Obstacles at the air outlet
- Improper power supply voltage
- Defective magnetic switch
- Defective compressor
- Defective current sensor (A6P, A8P)

Troubleshooting

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



Note:

*1. One of the possible factors may be chattering due to rough MgS contact.

*2. Abnormal case

- The current sensor value is 0 during STD compressor operation.
- The current sensor value is more than 15.0A during STD compressor stop.

2.11 Outdoor Unit Fan Motor Abnormality

Remote Controller Display	E7
Applicable Models	RQYQ8-48PY1
Method of Error Detection	① Detect a malfunction based on the current value in the INV. PCB (as for motor 2, current value in the fan PCB). ② Detect a malfunction for the fan motor circuit based on the number of rotation detected by hole IC during the fan motor operation.
Error Decision Conditions	■ Overcurrent is detected for INV. PCB (A2P) or fan INV. 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	■ 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 matters entangled. ■ Clear condition: Continue normal operation for 5 minutes

Troubleshooting

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

Check in the monitor mode

Check fan motor (fan motor1, 2) corresponding to error code “E7” in the monitor mode of outdoor unit PCB.

↓

Turn OFF the power supply and wait for 10 minutes.

↓

Are any foreign matters around the fan? — YES → Remove the foreign matters.

NO ↓

Check the connection status of the connectors

- Fan motor1: relay connector X1A, X2A or X1A, X2A of compressor INV. PCB.
- Fan motor1, 2: relay connector X3A, X4A or X1A, X2A of compressor INV. PCB.

↓

Is any connector disconnected? — YES → Insert the connector.

NO ↓

Check the color of relay connectors

- Fan motor1: Both power supply wire and signal wire are all white.
- Fan motor2: Both power supply wire and signal wire are red (on PCB side) or white (on motor side).

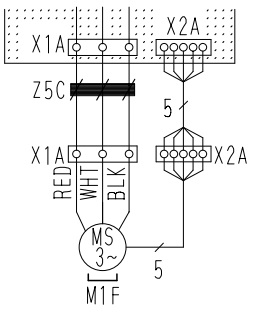
↓

Relay connectors have any connection error. — YES → Correct the connection of the relay connectors.

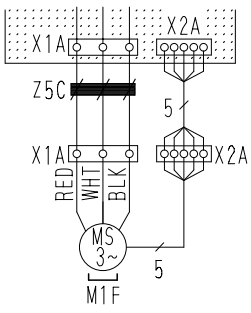
NO ↓

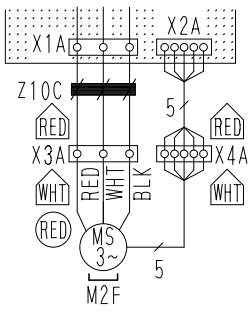
(A)

RQYQ8PY1
RQYQ10PY1
RQYQ12PY1

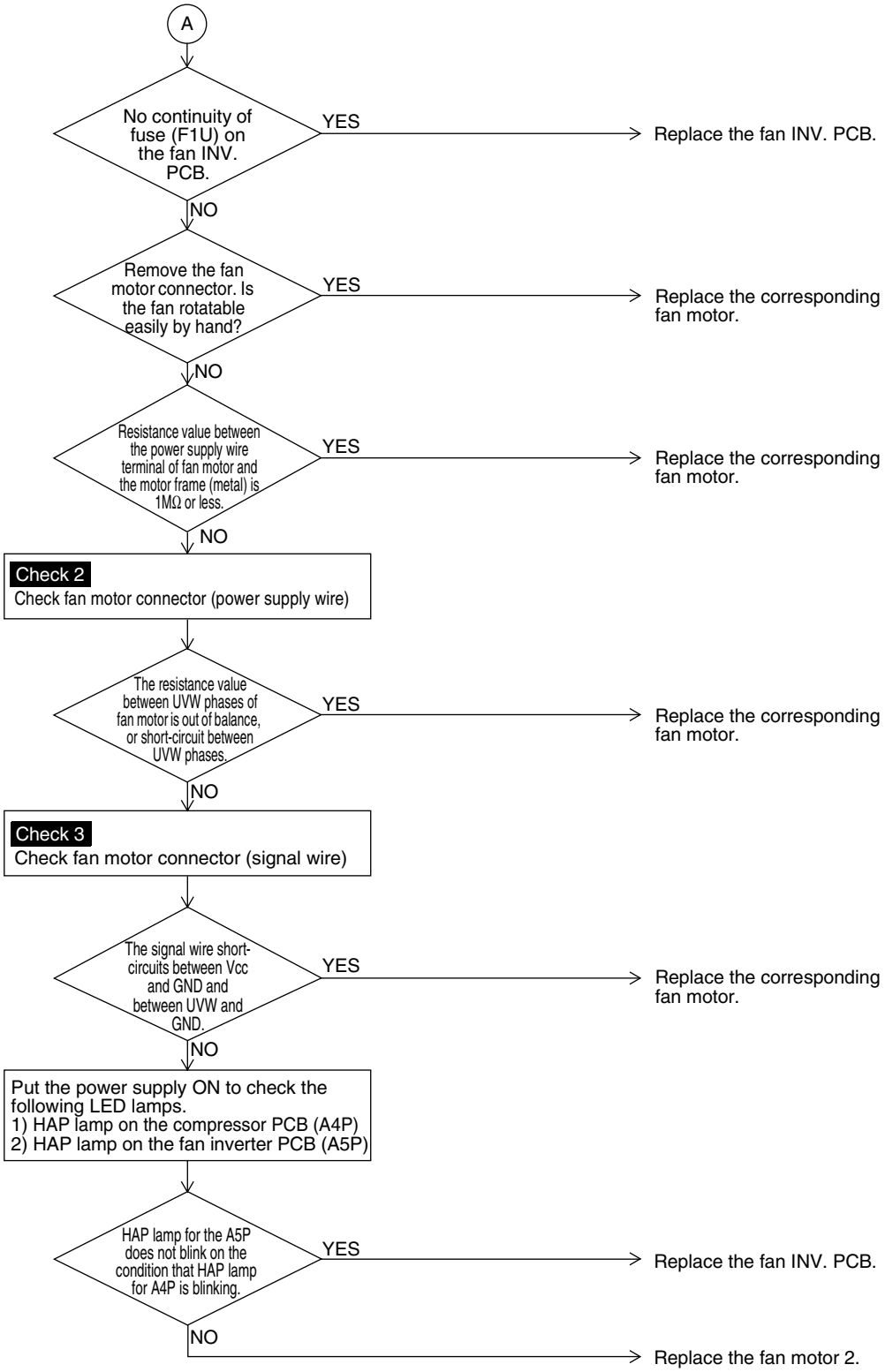


RQYQ14PY1
RQYQ16PY1





Troubleshooting



CHECK 2 Refer to P.171

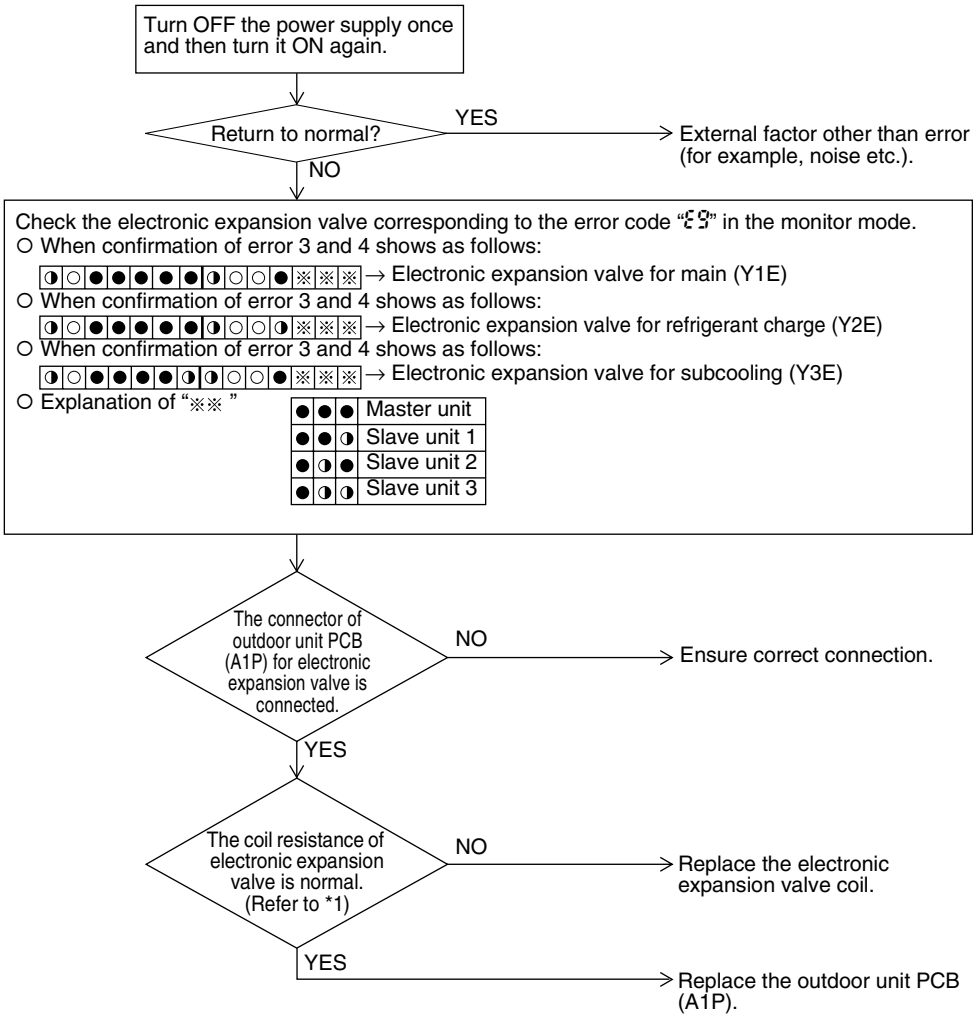
CHECK 3 Refer to P.172

2.12 Electronic Expansion Valve Coil Abnormality (Y1E~Y3E)

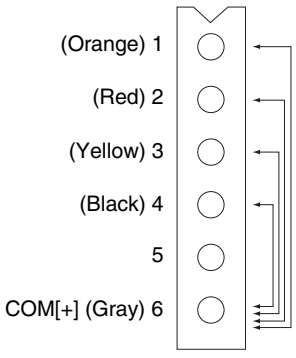
Remote Controller Display	E9
Applicable Models	RQYQ8-48PY1
Method of Error Detection	Check the continuity of electronic expansion valve coil (Y1E)
Error Decision Conditions	No current is detected in the common (COM [+]) when power supply is ON.
Supposed Causes	■ Disconnection of connectors for electronic expansion valve (Y1E) ■ Defective of electronic expansion valve coil ■ Defective of outdoor unit main PCB (A1P)

Troubleshooting

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



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



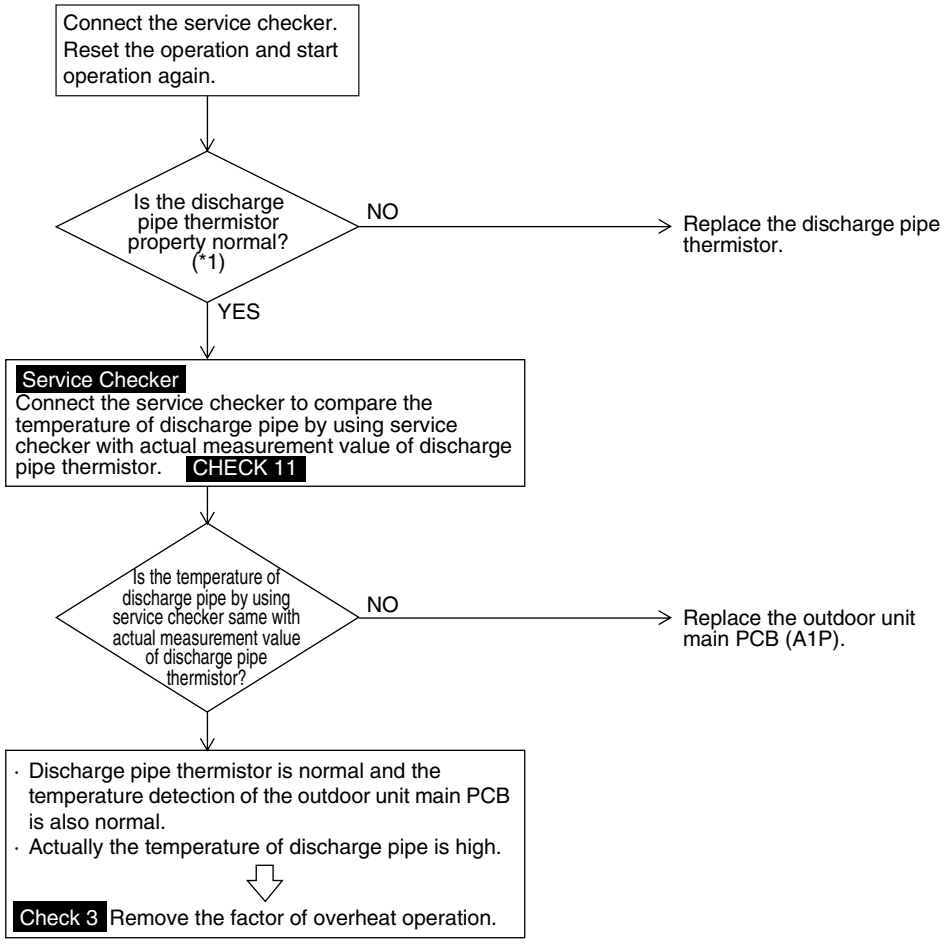
Measuring points	Judgement criteria
1 - 6	40~50Ω
2 - 6	
3 - 6	
4 - 6	

2.13 Abnormal Discharge Pipe Temperature

Remote Controller Display	F3
Applicable Models	RQYQ8-48PY1
Method of Error Detection	The error is detected according to the temperature detected by the discharge pipe temperature sensor.
Error Decision Conditions	When the discharge pipe temperature rises to an abnormally high level (135 °C or more) When the discharge pipe temperature rises suddenly (120 °C or more continues for 10 minutes)
Supposed Causes	■ Faulty discharge pipe temperature ■ Defective discharge pipe thermistor ■ Defective outdoor unit PCB (A1P)

Troubleshooting

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



CHECK 3 Refer to P.172

CHECK 11 Refer to P.174

Note:

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

2.14 Refrigerant Overcharged

Remote Controller Display

F6

Applicable Models

RQYQ8-48PY1

Method of Error Detection

Excessive charging of refrigerant is detected by using the outdoor air temperature, heat exchanging deicer temperature and liquid pipe temperature during check operation.

Error Decision Conditions

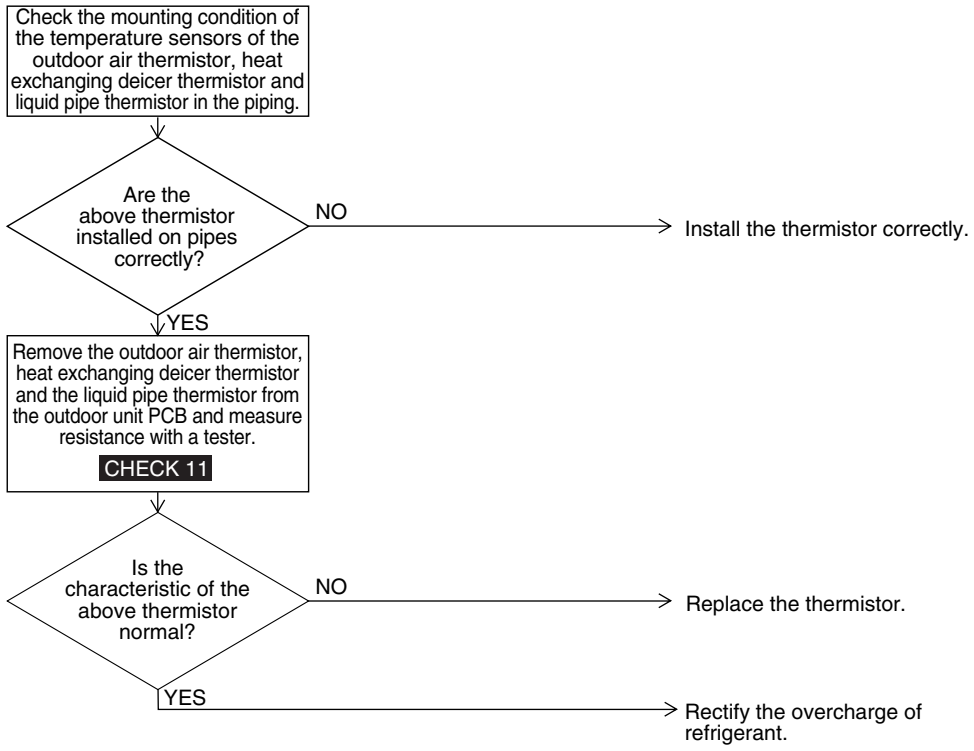
When the amount of refrigerant, which is calculated by using the outdoor air temperature, heat exchanging deicer temperature and liquid pipe temperature during check operation, exceeds the criteria.

Supposed Causes

- Refrigerant overcharge
- Disconnection of outdoor air thermistor
- Disconnection of heat exchanging deicer thermistor
- Disconnection of liquid pipe thermistor

Troubleshooting

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



CHECK 11 Refer to P.174

2.15 High Pressure Switch System Abnormality

Remote Controller Display

H3

Applicable Models

RQYQ8-48PY1

Method of Error Detection

The protection device circuit checks continuity in the high pressure switch.

Error Decision Conditions

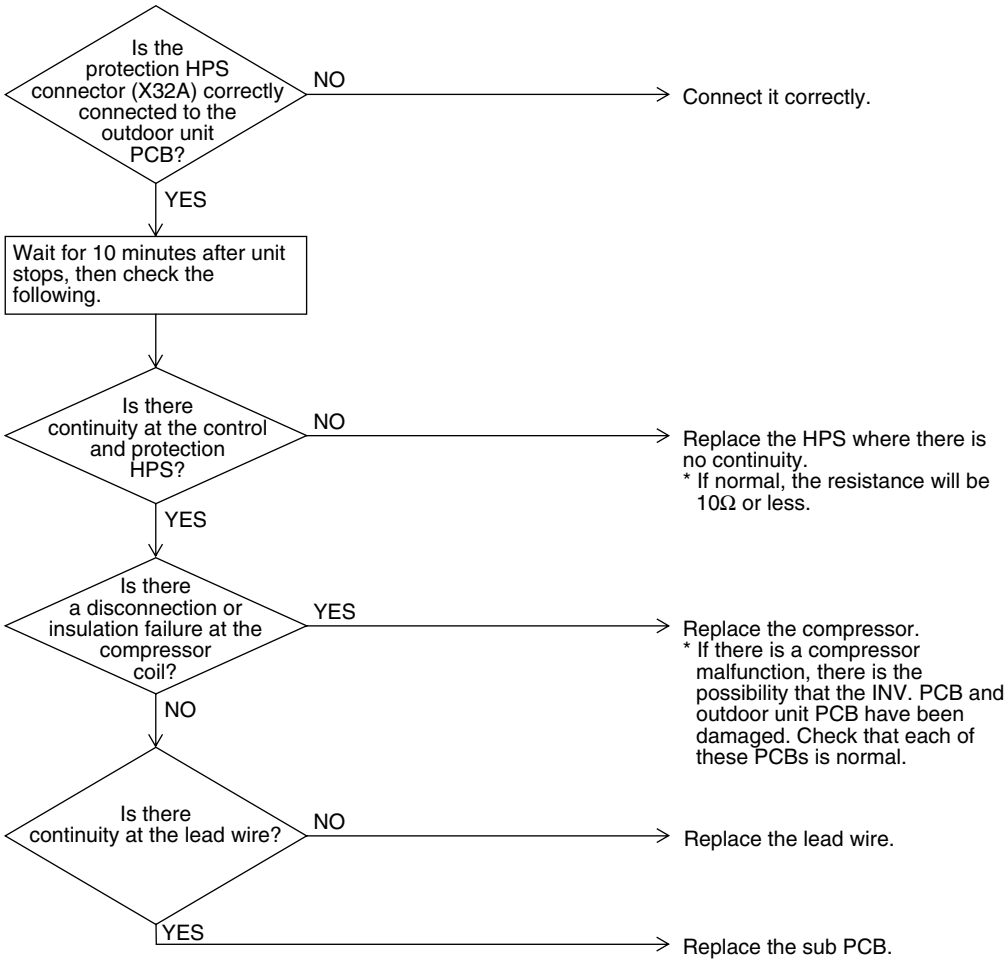
When there is no continuity in the high pressure switch during the compressor stops operating.

Supposed Causes

- Defective high pressure switch
- Broken of high pressure switch harness
- Defective connection of high pressure switch connector
- Defective compressor
- Defective outdoor unit PCB
- Broken of lead wire

Troubleshooting

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



2.16 Abnormal Outdoor Fan Motor Signal

Remote Controller Display	H07
Applicable Models	RQYQ8-48PY1
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	■ Abnormal fan motor signal (circuit error) ■ Broken, short or disconnection connector of fan motor lead wire ■ Defective fan INV. PCB

Troubleshooting

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

Check the fan motor corresponding to the error code "A7" 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 (M2F)
Explanation for "※※"

● ● ●	Master unit
● ● ◑	Slave unit 1
● ◑ ●	Slave unit 2
● ◑ ◑	Slave unit 3

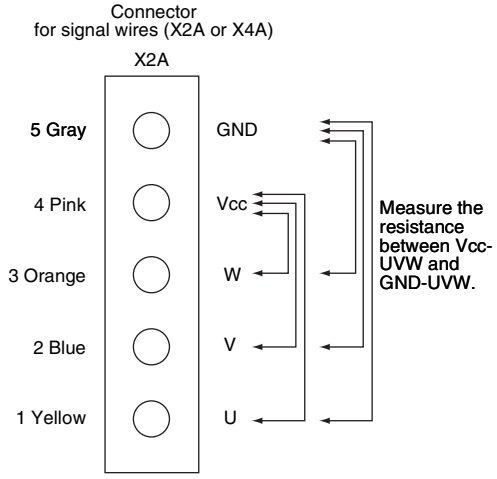
Turn OFF the power supply.

Is the signal wire connector for the corresponding fan motor normal?
NO → Ensure correct connection.
YES

Check the connector of the fan motor (*1).

Are the resistance of the fan motor lead wire between Vcc and UVW and between GND and UVW balanced?
NO → Replace the fan motor.
YES → Replace the INV. PCB.
- For fan motor 1: replace the INV. PCB (A4P)
- For fan motor 2: replace the fan INV. PCB (A5P)

*1. Check the procedure for fan motor connector
(1) Power OFF the fan motor.
(2) Remove the connector (X2A or X4A) on the PCB to measure the following resistance value.
Judgement criteria: resistance value between each phase is within ±20%



2.17 Thermistor System Abnormality

Remote Controller Display

H9, J3, J5, J6, J7, J8, J9

Applicable Models

RQYQ8-48PY1

Method of Error Detection

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

Error Decision Conditions

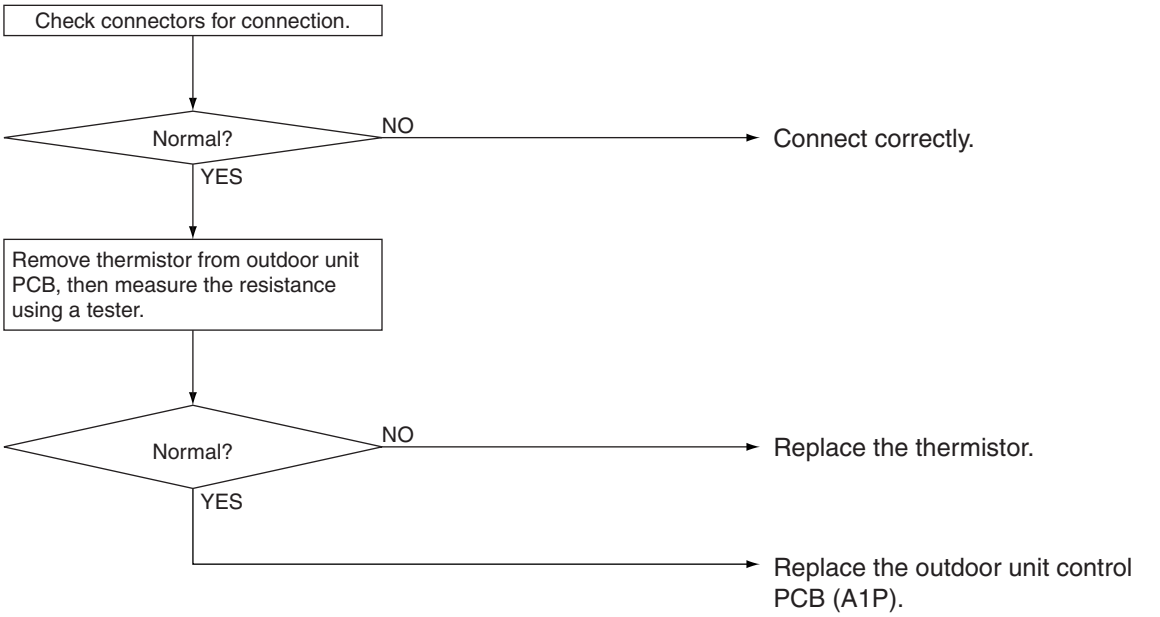
When thermistor is disconnected or short-circuited during operation

Supposed Causes

- Defective thermistor
- Defective connection of connector
- Defective outdoor unit PCB (control PCB)

Troubleshooting

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



Error code	Defective thermistor	RXYQ8PY1		RXYQ10 • 12PY1		RXYQ14 • 16PY1	
		Symbol	Connector	Symbol	Connector	Symbol	Connector
H9	Outdoor air thermistor	R1T	X18A	R1T	X18A	R1T	X18A
J3	Discharge pipe thermistor	R3T	X29A	R31T	X29A	R31T	X29A
		—	—	R32T		R32T	
		—	—	—	—	R33T	
J5	Suction pipe thermistor	R8T	X11A	R8T	X11A	R8T	X11A
J6	Heat exchanger thermister	R9T	X12A	R9T	X12A	R9T	X12A
J7	Liquid pipe thermistor	R6T	X30A	R6T	X30A	R6T	X30A
J8	Reiceiver gas vet outlet thermistor	R7T	X30A	R7T	X30A	R7T	X30A
	Reiceiver liquid level thermistor	R2T	X30A	R2T	X30A	R2T	X30A
	Refrigerant regulator liquid pipe thermistor	R4T	X30A	R4T	X30A	R4T	X30A
J9	Subcooling heat exchanger outlet thermistor	R5T	X30A	R5T	X30A	R5T	X30A

2.18 High Pressure Sensor Abnormality

Remote Controller Display

J1

Applicable Models

RQYQ8-48PY1

Method of Error Detection

Error is detected from the pressure measured with high pressure sensor.

Error Decision Conditions

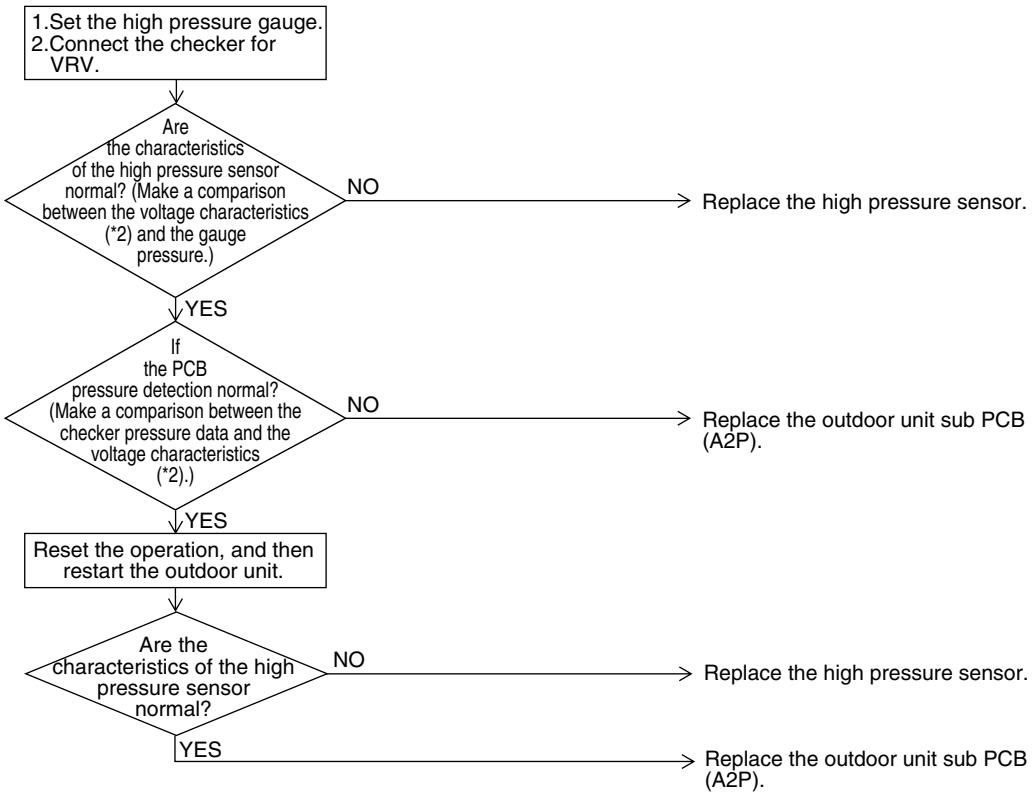
When the high pressure sensor is short-circuit or open circuit.
(Not less than 4.22MPa, or 0.01MPa or less)

Supposed Causes

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

Troubleshooting

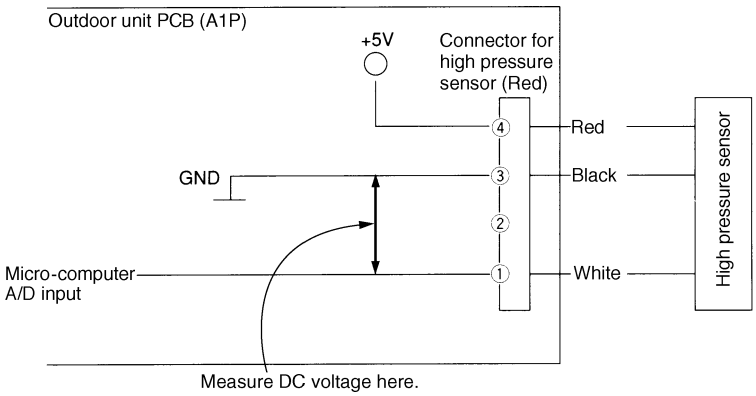
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1. Pressure sensor subject to error code

Error code	Pressure sensor subject to malfunction code	Electric symbol
J1	High pressure sensor (Liquid pipe outlet)	S2NPH

*2. Voltage measurement point



CHECK 12 Refer to P.176

2.19 Current Sensor Abnormality

Remote Controller Display

U2

Applicable Models

RQYQ8-48PY1

Method of Error Detection

Error is detected from the current value detected by current sensor.

Error Decision Conditions

When the current value detected by current sensor becomes 5A or less, or 40A or more during STD compressor operation.

Supposed Causes

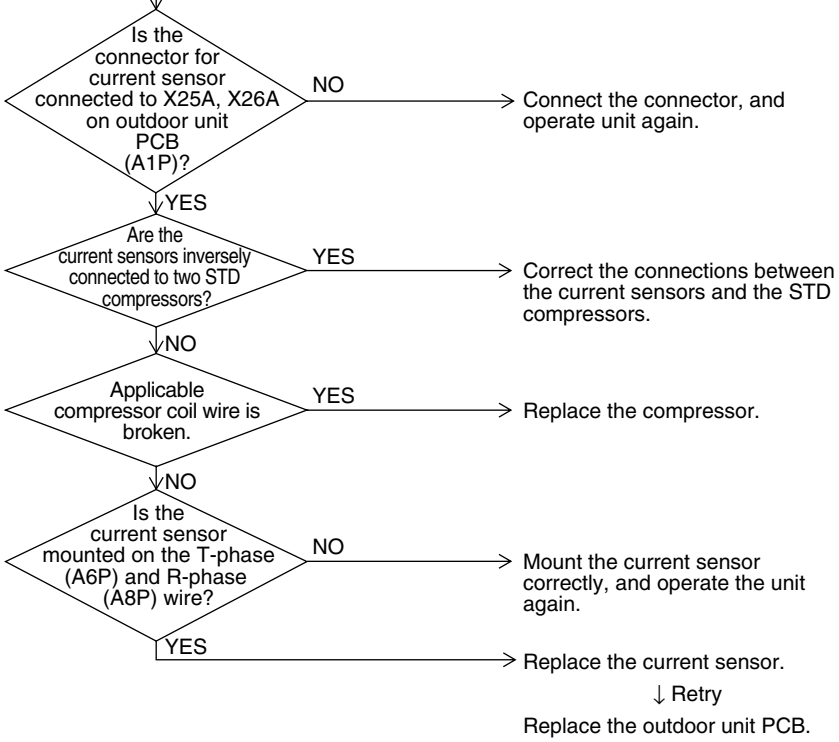
- Defective current sensor (A6P, A8P)
- Defective outdoor unit PCB
- Defective compressor

Troubleshooting

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

Check the current sensor corresponding to the error code "U2" 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
○ Explanation for "※※"

● ●	Master unit
● ◑	Slave unit 1
◑ ●	Slave unit 2
◑ ◑	System

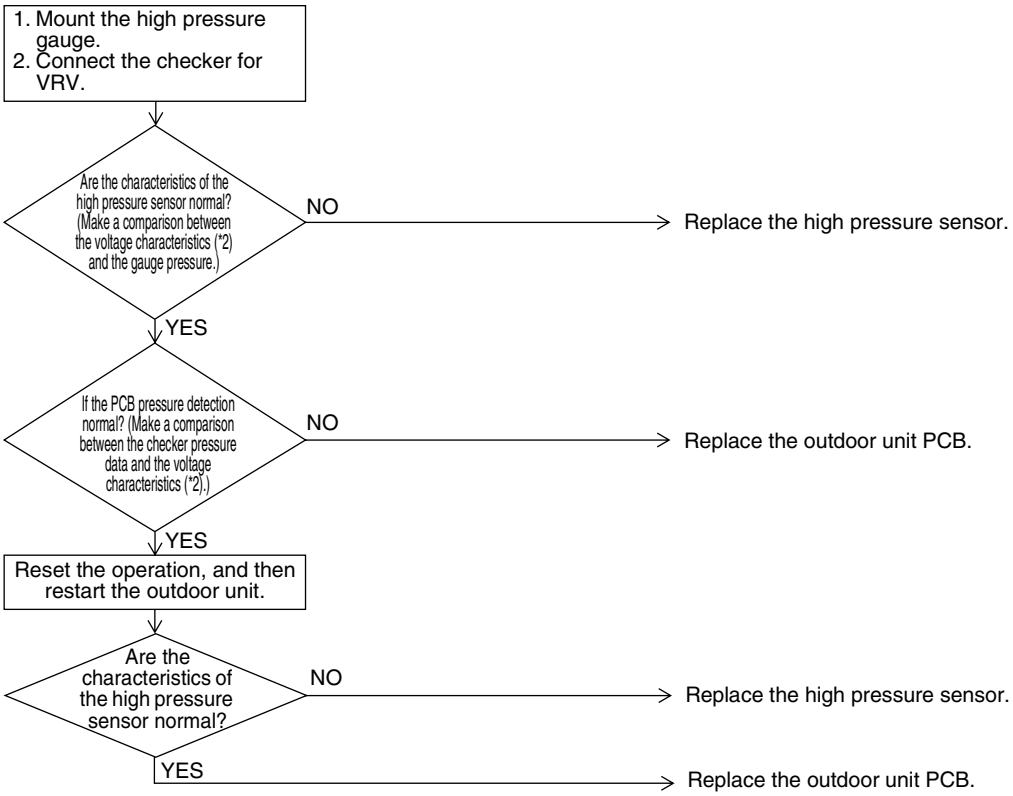


2.20 High Pressure Sensor Abnormality

Remote Controller Display	
Applicable Models	RQYQ8-48PY1
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 or less)
Supposed Causes	■ Defective high pressure sensor ■ Connection of low pressure sensor with wrong connection. ■ Defective outdoor unit PCB ■ Defective connection of high pressure sensor

Troubleshooting

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

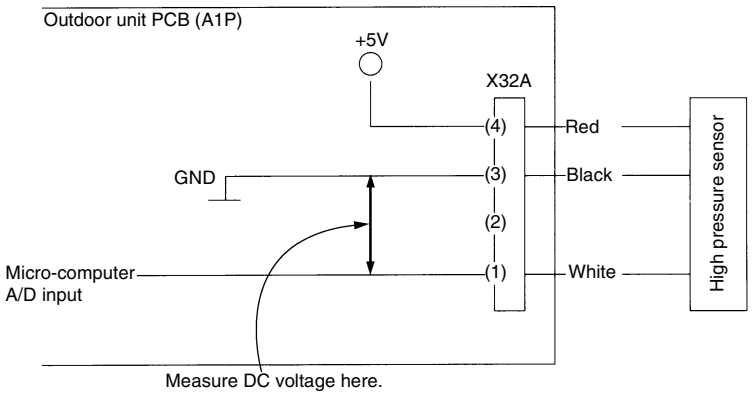


Note:

*1. Pressure sensor subject to malfunction code

Malfunction code	Pressure sensor subject to malfunction code	Electric symbol
JA	High pressure sensor	S1NPH

*2. Voltage measurement point



CHECK 12 Refer to P.176

2.21 Low Pressure Sensor Abnormality

Remote Controller Display

Applicable Models

RQYQ8-48PY1

Method of Error Detection

Malfunction is detected from the pressure detected by the low pressure sensor.

Error Decision Conditions

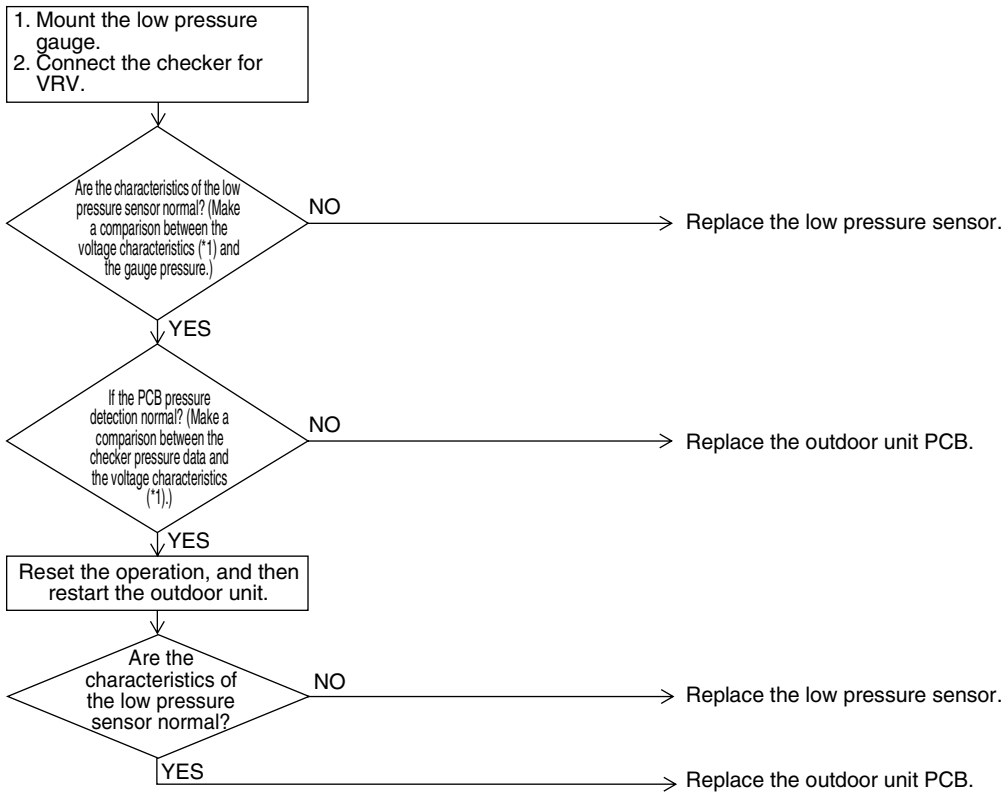
When the low pressure sensor is short circuit or open circuit.
(Not less than 1.77MPa, or -0.01MPa and below)

Supposed Causes

- Defect of low pressure sensor
- Connection of high pressure sensor with wrong connection.
- Defect of outdoor unit PCB
- Defective connection of low pressure sensor

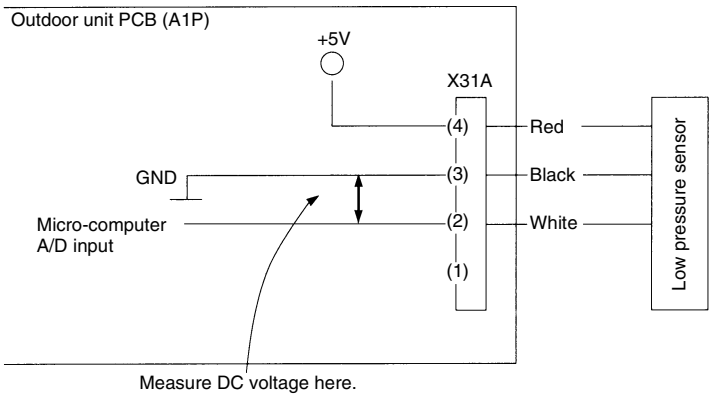
Troubleshooting

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



Note:

*1. Voltage measurement point



CHECK 12 Refer to P.176

2.22 Inverter PCB Abnormality

Remote Controller Display

L1

Applicable Models

RQYQ8-48PY1

Method of Error Detection

- Detect error by current value during waveform output before compressor startup.
- Detect error by current sensor value during synchronized operation at the time of startup.

Error Decision Conditions

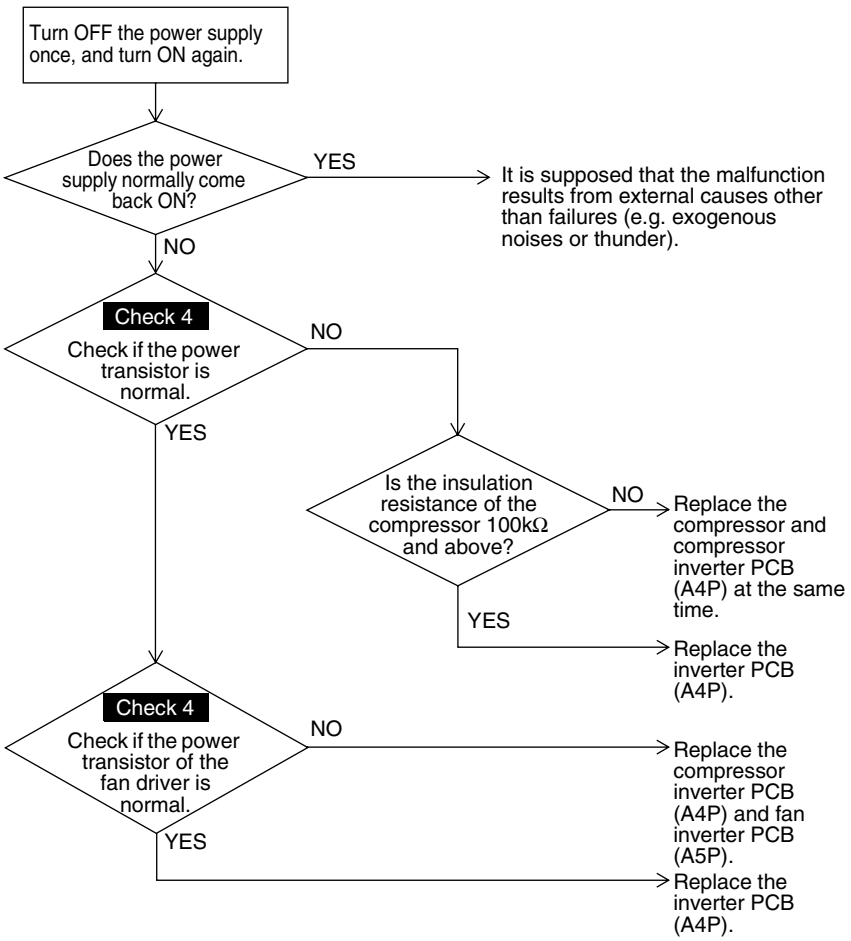
- When over-current is detected at the time of waveform output before operating the compressor
- When the current sensor error during synchronized operation
- When overvoltage occurs in IPM

Supposed Causes

- Defective outdoor unit PCB (A1P)
  - IPM failure
  - Current sensor failure
  - Defective of drive circuit

Troubleshooting

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



CHECK 4 Refer to P.173

2.23 Inverter Radiating Fin Temperature Rise

Remote Controller Display

L4

Applicable Models

RQYQ8-48PY1

Method of Error Detection

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

Error Decision Conditions

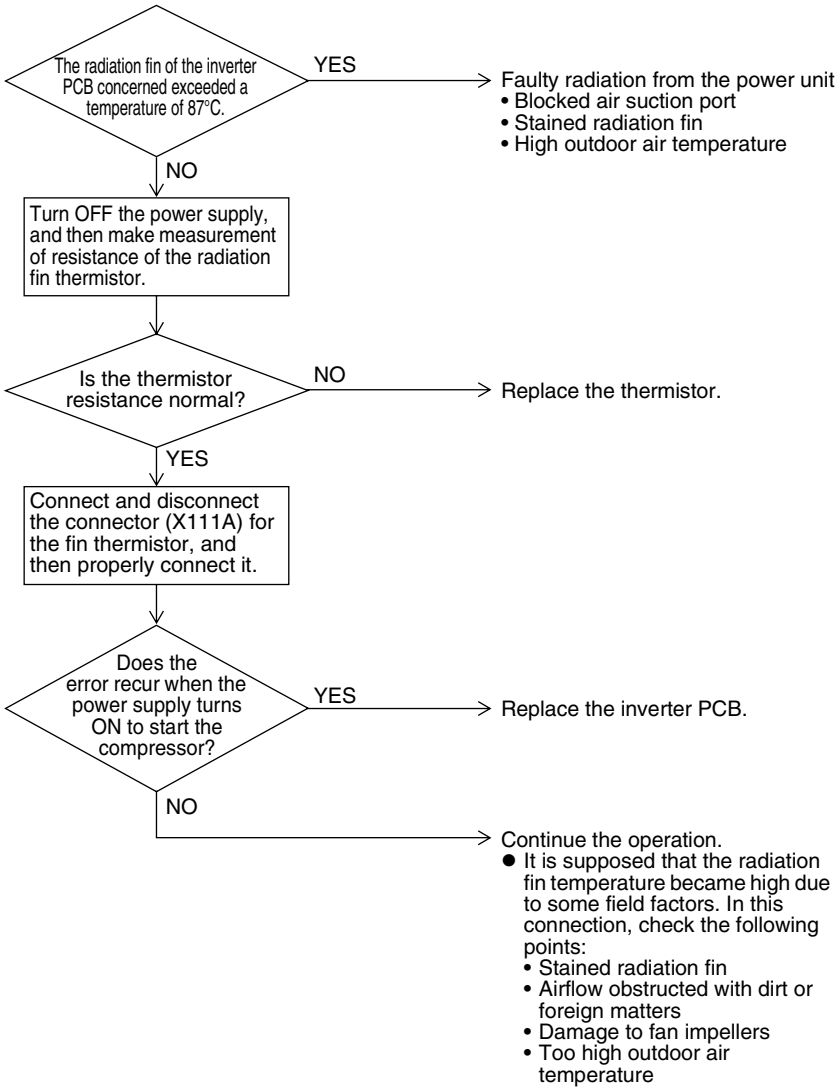
When the temperature of the inverter radiation fin increases above 87°C.

Supposed Causes

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

Troubleshooting

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

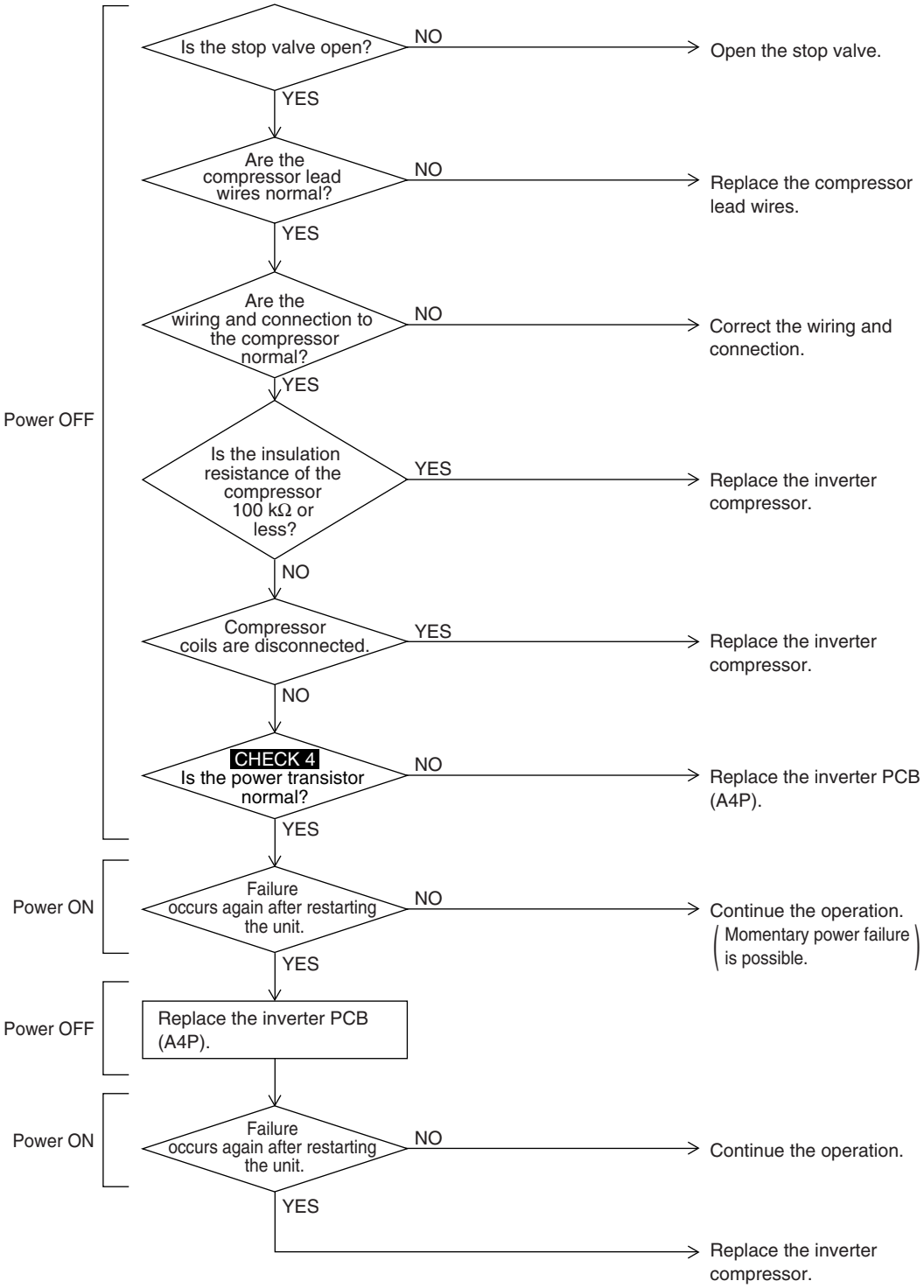


2.24 Momentary Overcurrent of Inverter Compressor

Remote Controller Display	L5
Applicable Models	RQYQ8-48PY1
Method of Error Detection	Error is detected from the current flowing in the power transistor.
Error Decision Conditions	When an excessive current (59.1A) flows in the power transistor. (Instantaneous overcurrent also causes activation.)
Supposed Causes	■ Defective compressor coil (disconnected, defective insulation) ■ Compressor startup error (mechanical lock) ■ Defective inverter PCB

Troubleshooting

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



CHECK 4 Refer to P.173

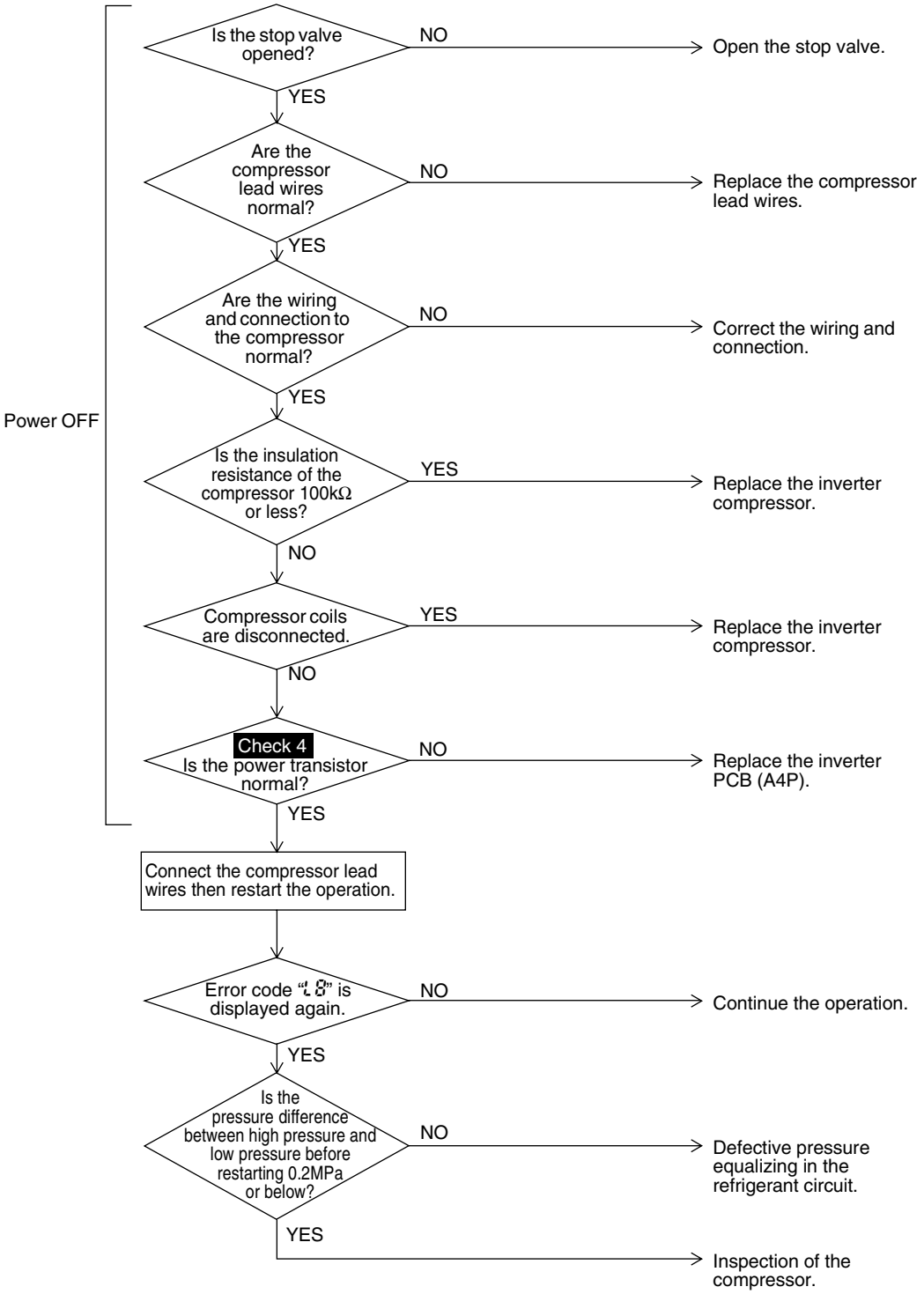
2.25 Overcurrent Abnormal of Inverter Compressor

Remote Controller Display	L8
Applicable Models	RQYQ8-48PY1
Method of Error Detection	Error is detected from the current flowing in the power transistor.
Error Decision Conditions	When the inverter secondary current value is below. (1) 33.5A and over continues for 5 seconds. (2) 27.6A and over continues for 260 seconds.
Supposed Causes	■ Compressor overload ■ Compressor coil disconnected ■ Defective wiring to the compressor ■ Defective inverter PCB

Troubleshooting

Output current check

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



CHECK 4 Refer to P.173

2.26 Inverter Compressor Starting Abnormality

Remote Controller Display

L9

Applicable Models

RQYQ8-48PY1

Method of Error Detection

Error is detected based on the signal waveform of the compressor.

Error Decision Conditions

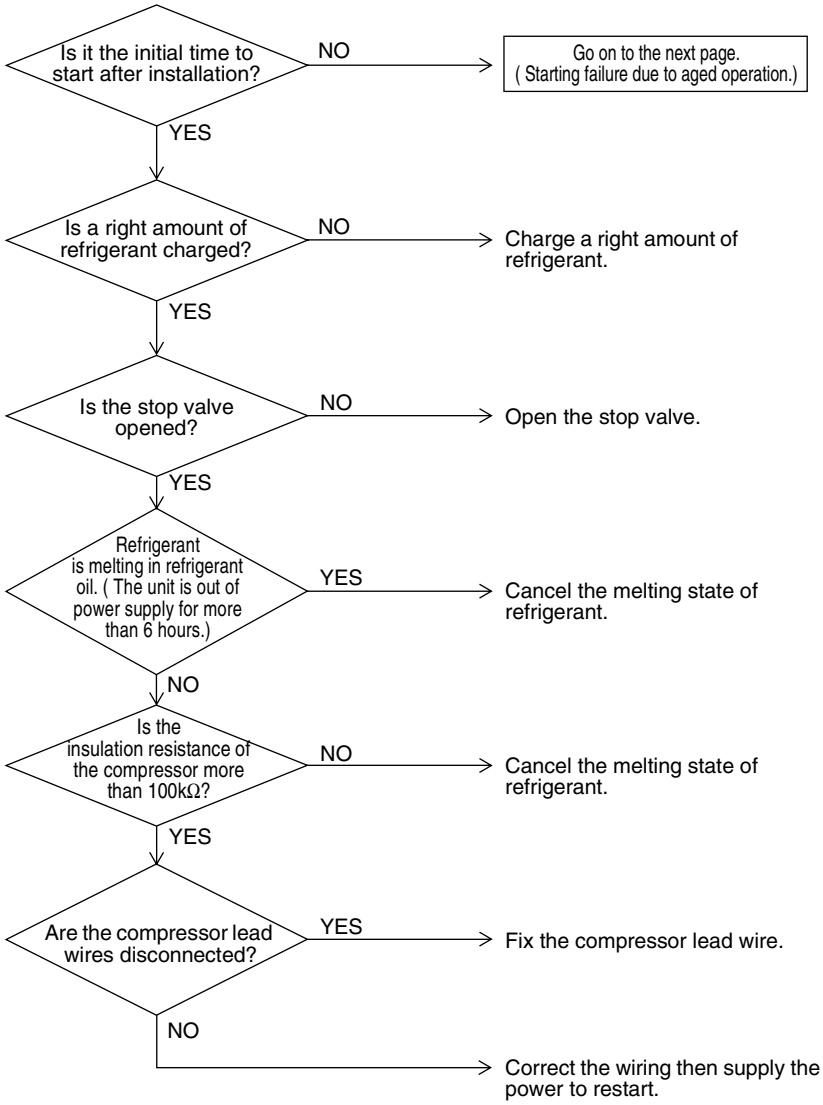
Starting the compressor does not complete.

Supposed Causes

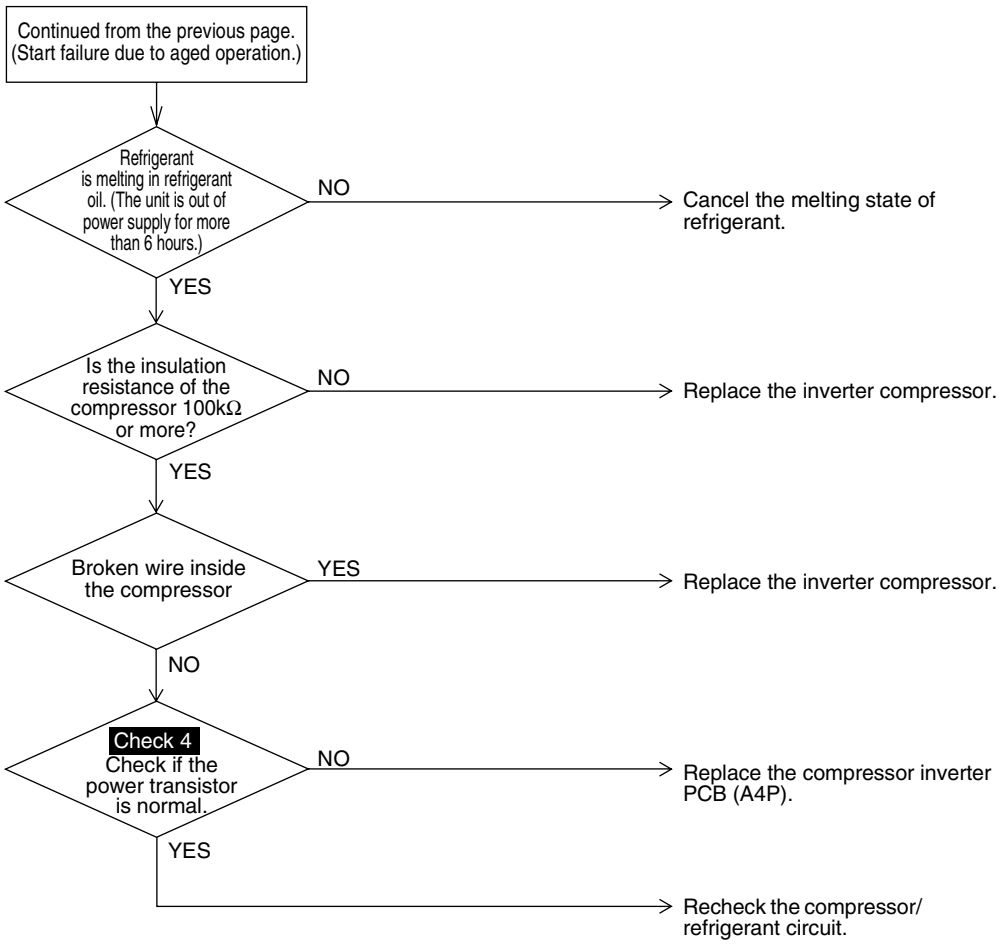
- Stop valve is not opened
- Defective compressor
- Wiring connection error to the compressor
- Large pressure difference before startup the compressor
- Defective inverter PCB

Troubleshooting

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



Troubleshooting



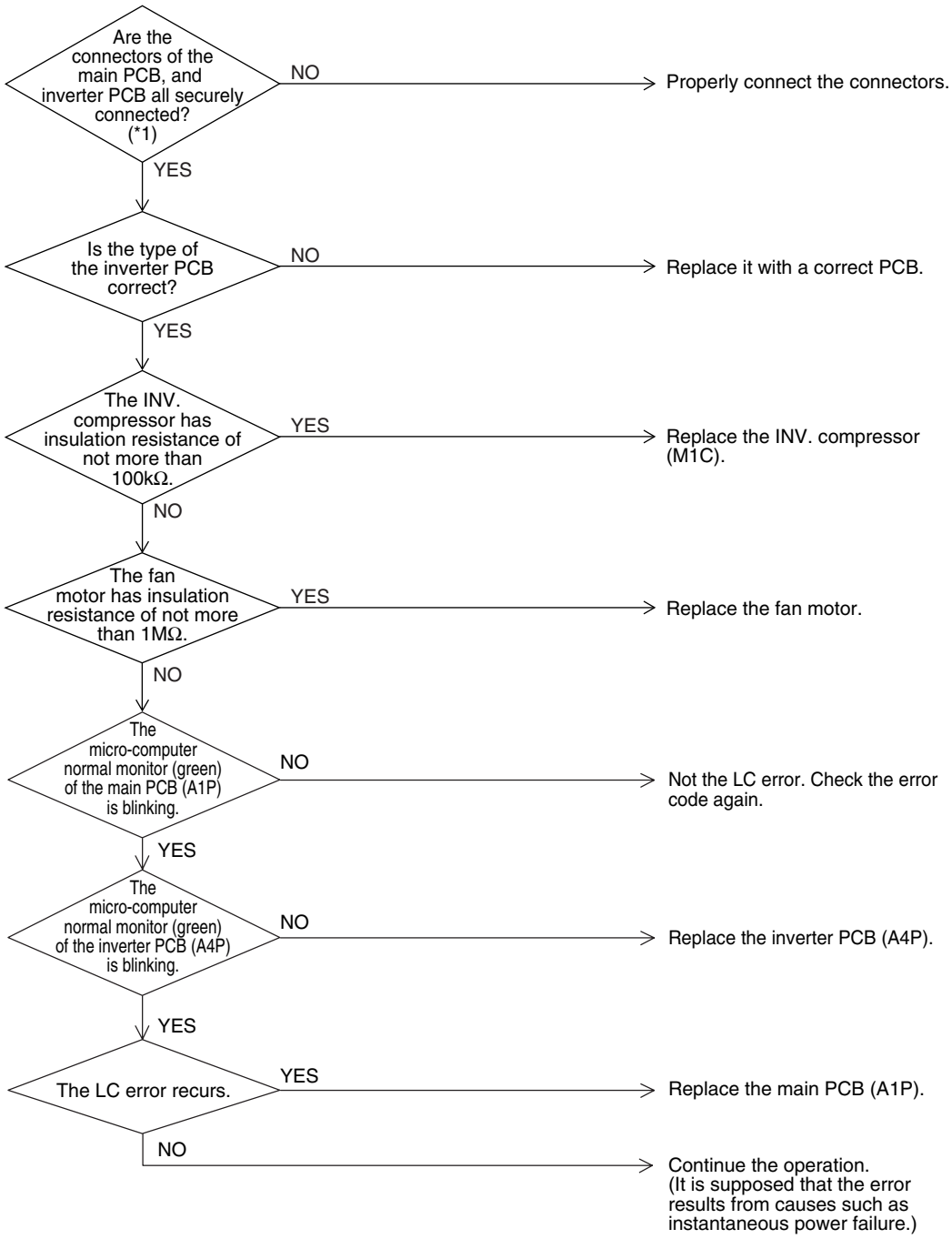
CHECK 4 Refer to P.173

2.27 Transmission System Abnormality (between Inverter and Main PCB)

Remote Controller Display	LC
Applicable Models	RQYQ8-48PY1
Method of Error Detection	Check the communication state between inverter PCB and main PCB by micro-computer.
Error Decision Conditions	When the transmission is not carried out in a specified period of time or longer.
Supposed Causes	■ Incorrect transmission wiring between the inverter PCB and outdoor main PCB ■ Defective outdoor unit main PCB (transmission section) ■ Defective inverter PCB ■ Defective noise filter ■ External factor (noise etc.) ■ Defective inverter compressor ■ Defective fan motor

Troubleshooting

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



Note:

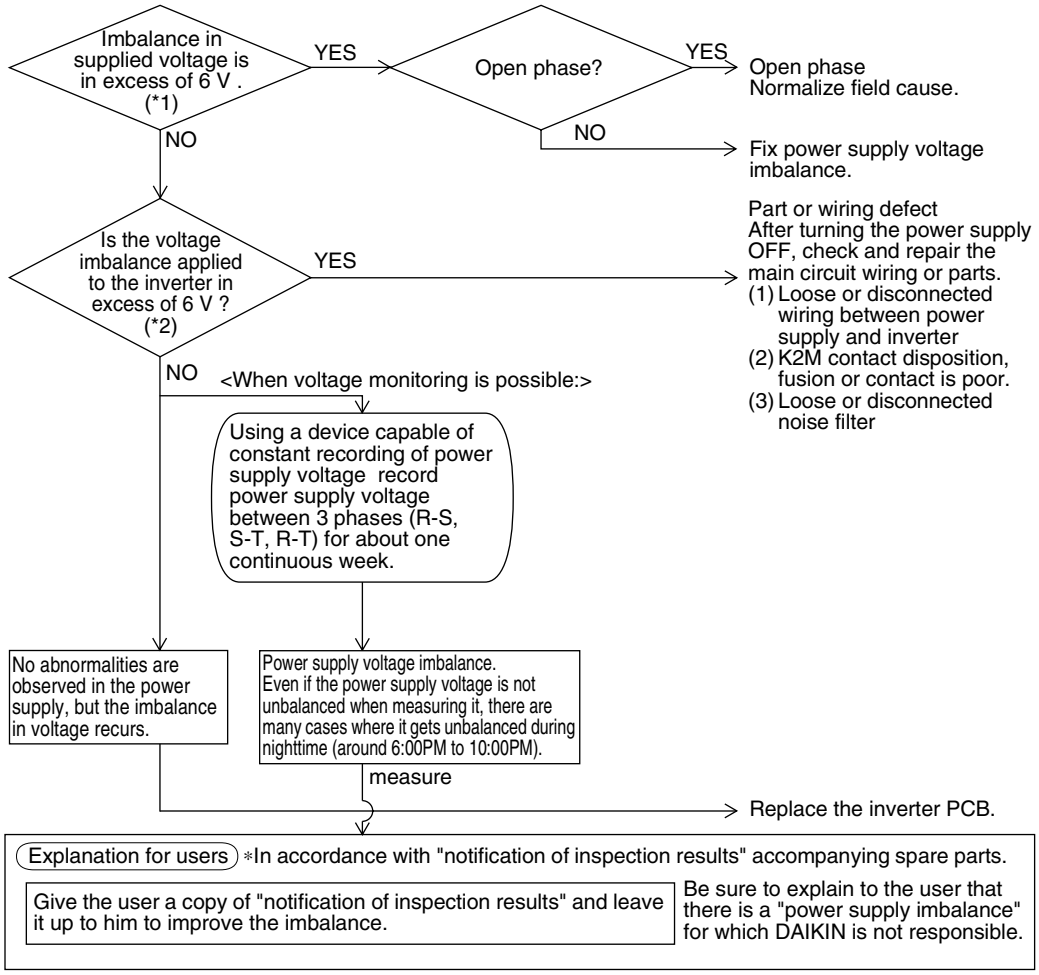
*1. Disconnect the connector once, then reconnect it and check that it is securely connected.

2.28 Inverter Over-Ripple Protection

Remote Controller Display	P1
Applicable Models	RQYQ8-48PY1
Method of Error Detection	Imbalance in supply voltage is detected in PCB.
Error Decision Conditions	When the amplitude of the ripple exceeding 6V is detected. Error is not decided while the unit operation is continued. "P1" will be displayed by pressing the inspection button.
Supposed Causes	■ Open phase ■ Voltage imbalance between phases ■ Defective main circuit capacitor ■ Defective inverter PCB ■ Defect of K2M relay in inverter PCB ■ Improper main circuit wiring

Troubleshooting

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



Note:

*1. Measure voltage at the X1M power supply terminal block.

*2. Measure voltage at terminals R, S and T of the diode module inside the inverter PCB while the compressor is running.

2.29 Thermistor or Related Abnormality

Remote Controller Display

P4

Applicable Models

RQYQ8-48PY1

Method of Error Detection

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

Error Decision Conditions

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

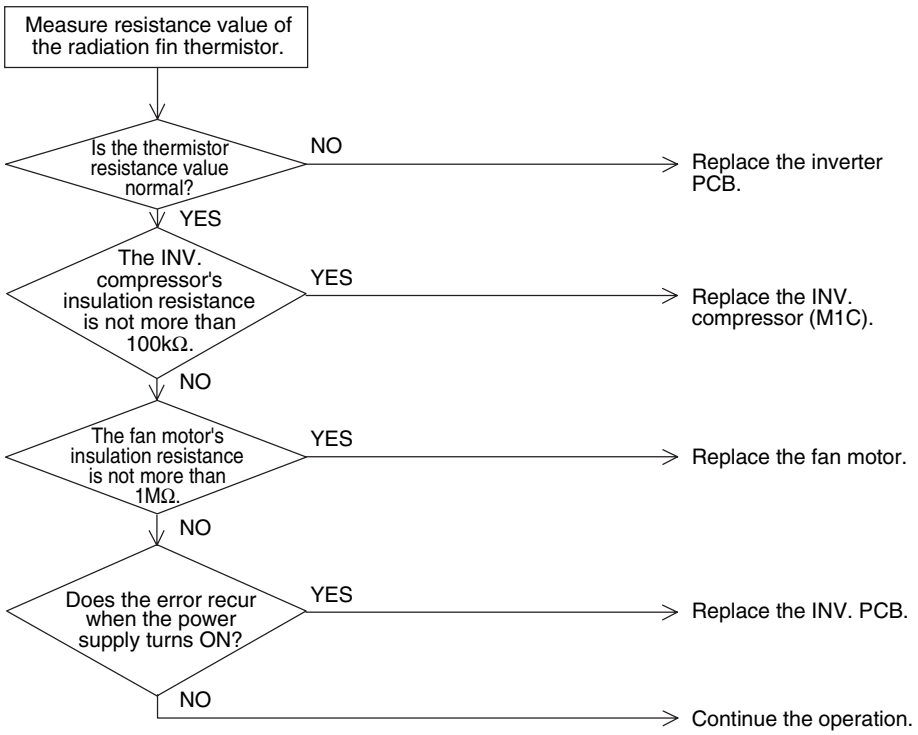
★ Error is not decided while the unit operation is continued.
"P4" will be displayed by pressing the inspection button.

Supposed Causes

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

Troubleshooting

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



2.30 Faulty Field Setting after Replacing Main PCB or Faulty Combination of PCB

Remote Controller Display

P.1

Applicable Models

RQYQ8-48PY1

Method of Error Detection

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

Error Decision Conditions

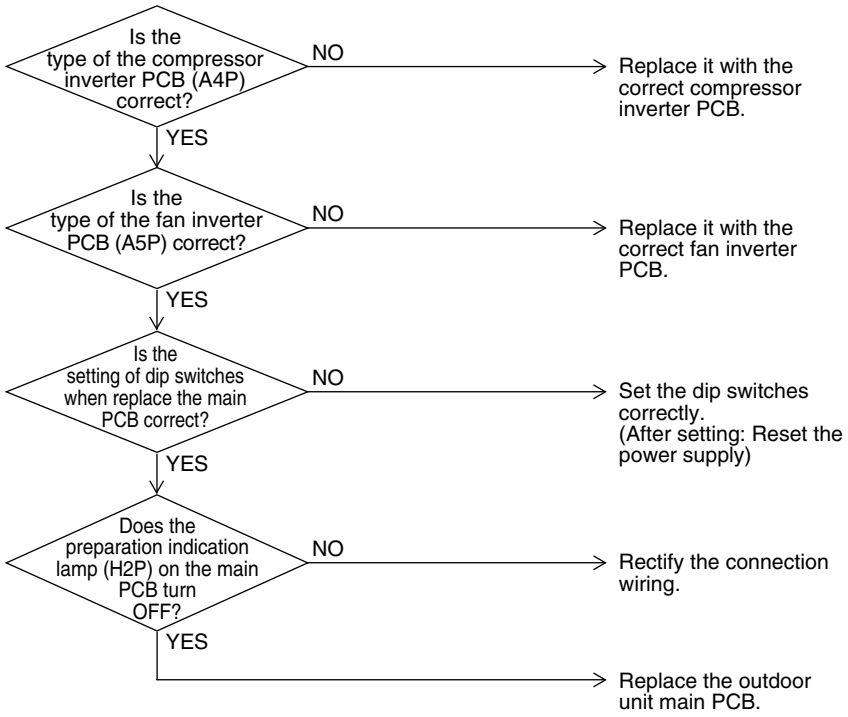
Make judgement according to communication data on whether or not the type of the INV. PCB is correct.

Supposed Causes

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

Troubleshooting

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

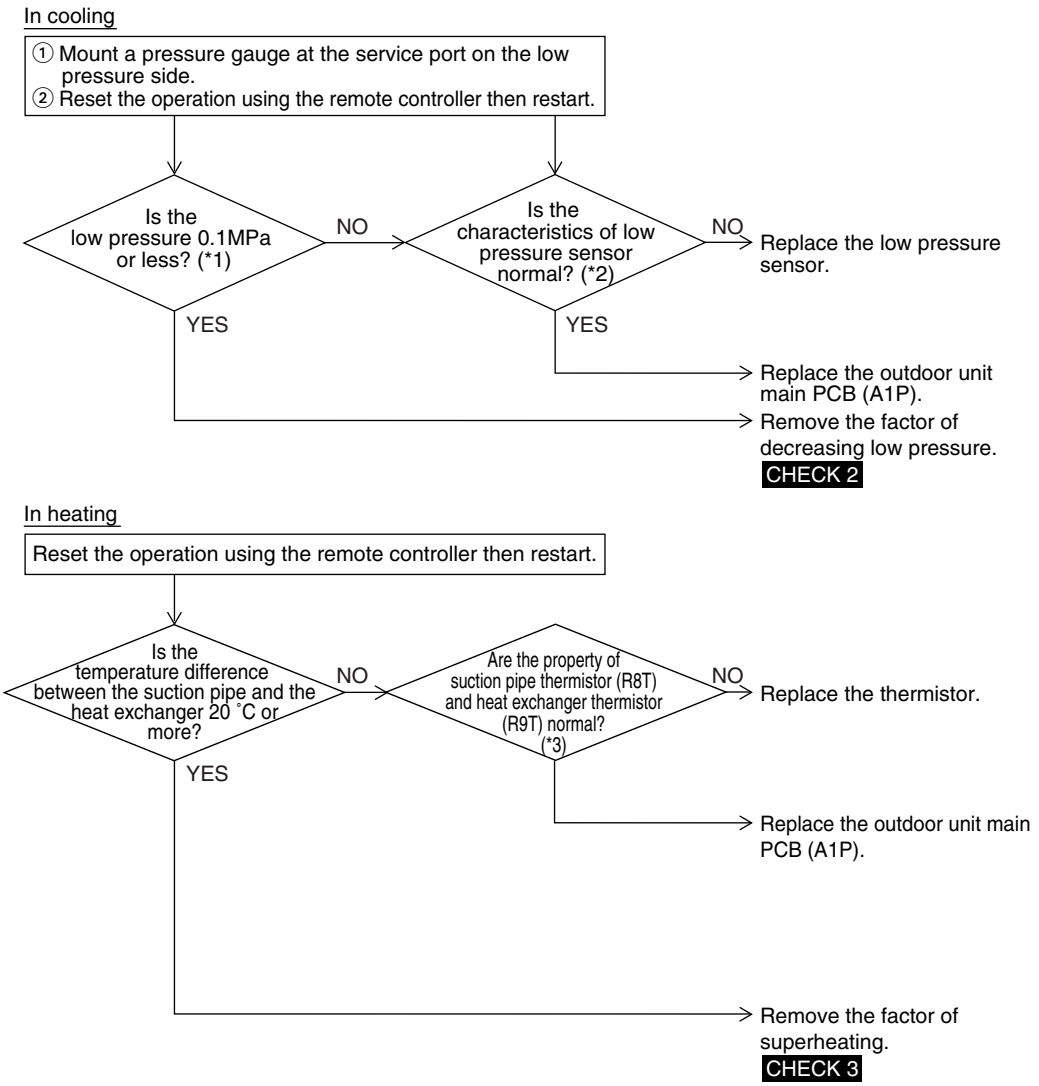


2.31 Refrigerant Shortage

Remote Controller Display	UD
Applicable Models	RQYQ8-48PY1
Method of Error Detection	Detect refrigerant shortage based on the temperature difference between low pressure or suction pipe and heat exchanger.
Error Decision Conditions	[In cooling mode] Low pressure becomes 0.1MPa or less. [In heating mode] The degree of superheat of suction gas becomes 20 degrees or more. SH= Ts1 –Te Ts1: Temperature detected by suction pipe thermistor Te : Low pressure equivalent saturation temperature ★Error is not determined. The unit continues operation.
Supposed Causes	■ Refrigerant shortage or refrigerant clogging (wrong piping) ■ Defective thermistor (R8T, R9T) ■ Defective low pressure sensor ■ Defective outdoor unit PCB (A1P)

Troubleshooting

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



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.

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

CHECK 2 Refer to P.171

CHECK 3 Refer to P.172

2.32 Reverse Phase, Open Phase

Remote Controller Display

U1

Applicable Models

RQYQ8-48PY1

Method of Error Detection

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

Error Decision Conditions

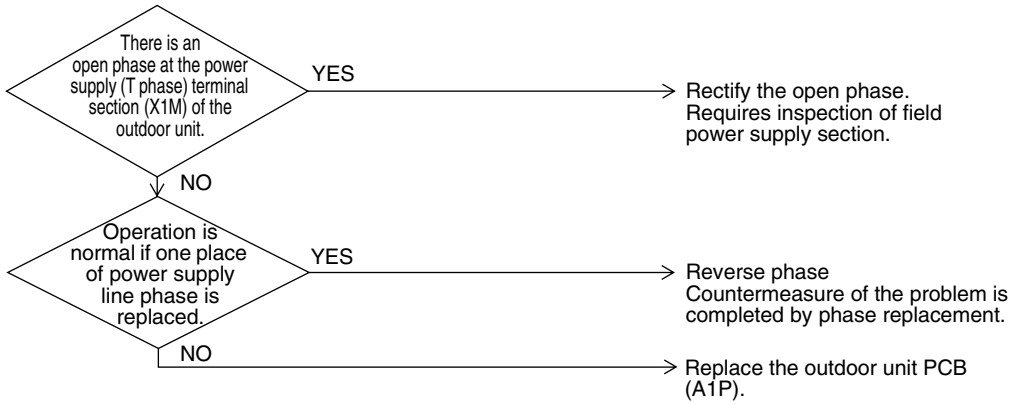
When a power supply is reverse phase, or T phase is open phase.

Supposed Causes

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

Troubleshooting

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



2.33 Power Supply Insufficient or Instantaneous Failure

Remote Controller Display

U2

Applicable Models

RQYQ8-48PY1

Method of Error Detection

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

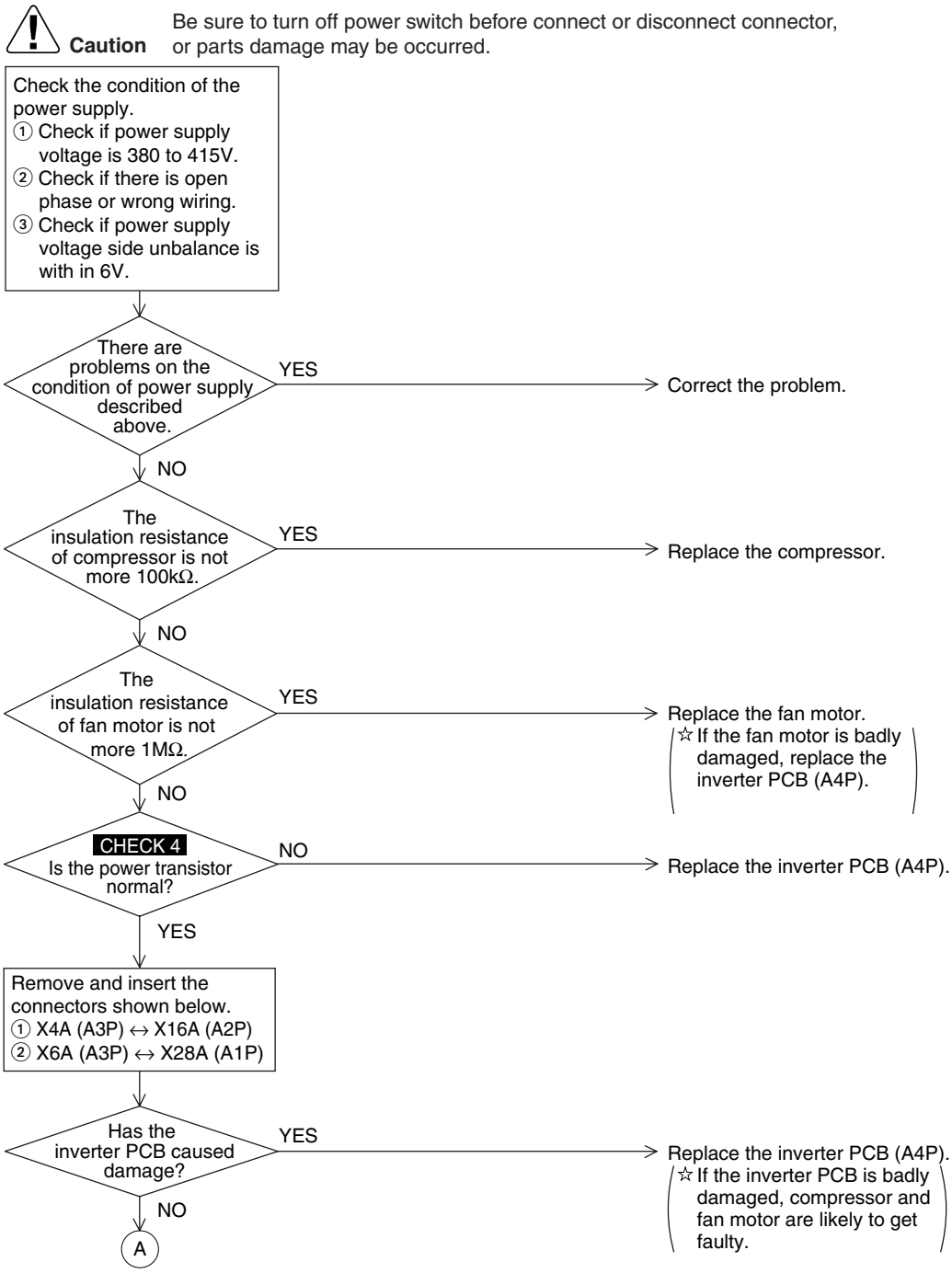
Error Decision Conditions

When the voltage aforementioned is not less than 190V.

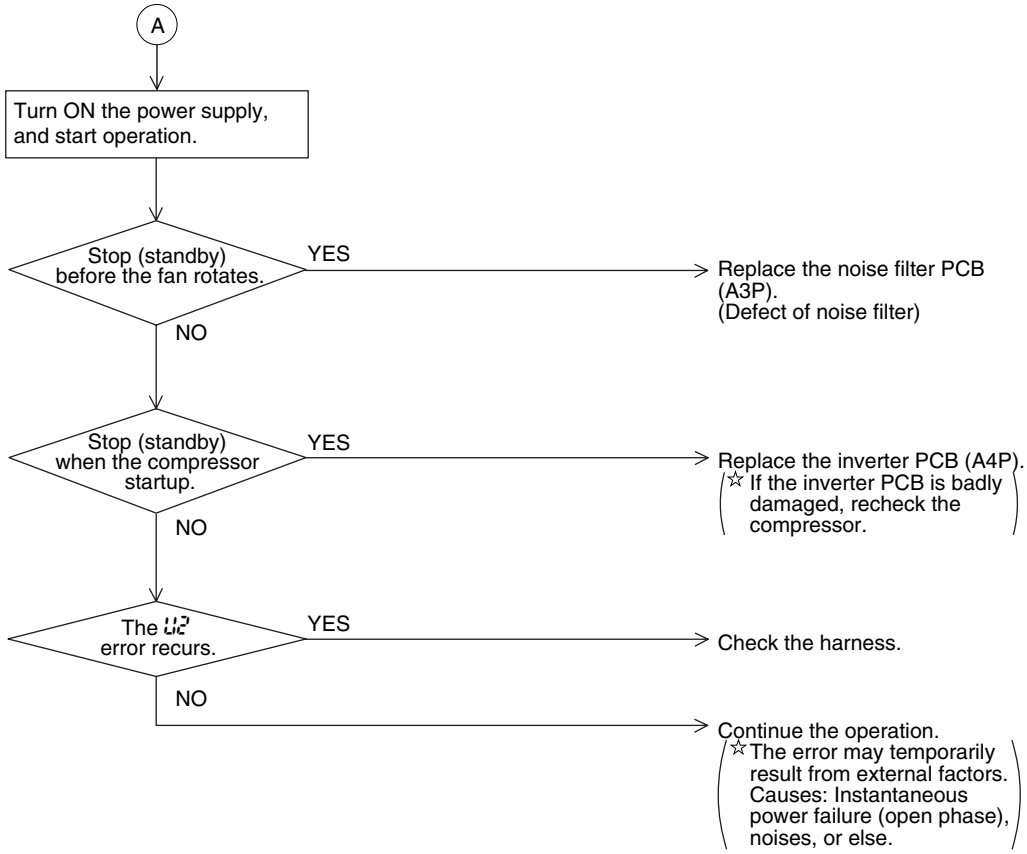
Supposed Causes

- Power supply insufficient
- Instantaneous power failure
- Open phase
- Defective inverter PCB
- Defective outdoor control PCB
- Defective compressor
- Defective main circuit wiring
- Defective fan motor
- Defective connection of signal cable

Troubleshooting



Troubleshooting



CHECK 4 Refer to P.173

2.34 Check Operation is not Executed

Remote Controller Display

U3

Applicable Models

RQYQ8-48PY1

Method of Error Detection

Check operation is executed or not

Error Decision Conditions

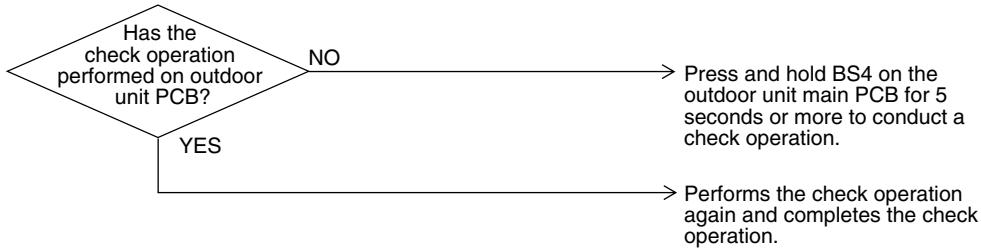
Error is decided when the unit starts operation without check operation.

Supposed Causes

- Check operation is not executed.

Troubleshooting

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



2.35 Transmission Error (between Indoor and Outdoor Units)

Remote Controller Display

U4

Applicable Models

All indoor unit models
RQYQ8-48PY1

Method of Error Detection

The error is generated when the micro-computer detects that the transmission between the indoor and outdoor unit is not normal.

Error Decision Conditions

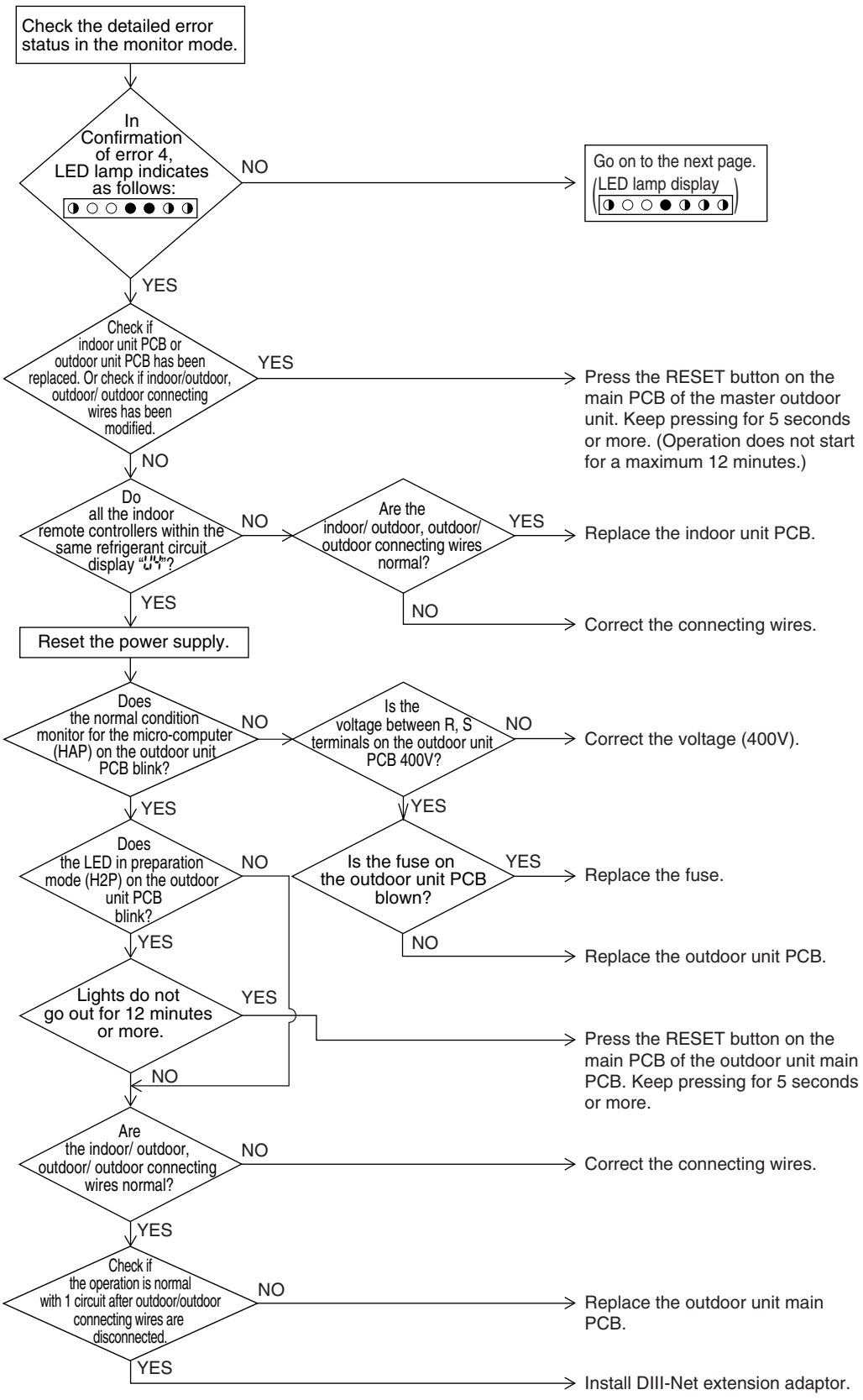
When transmission is not carried out normally for a certain amount of time

Supposed Causes

- Indoor to outdoor, outdoor to outdoor transmission wiring F1, F2 disconnection, short-circuit or wrong wiring
- Outdoor unit power supply is OFF
- System address does not match
- Defective outdoor unit main PCB (A1P)
- Defective indoor unit PCB

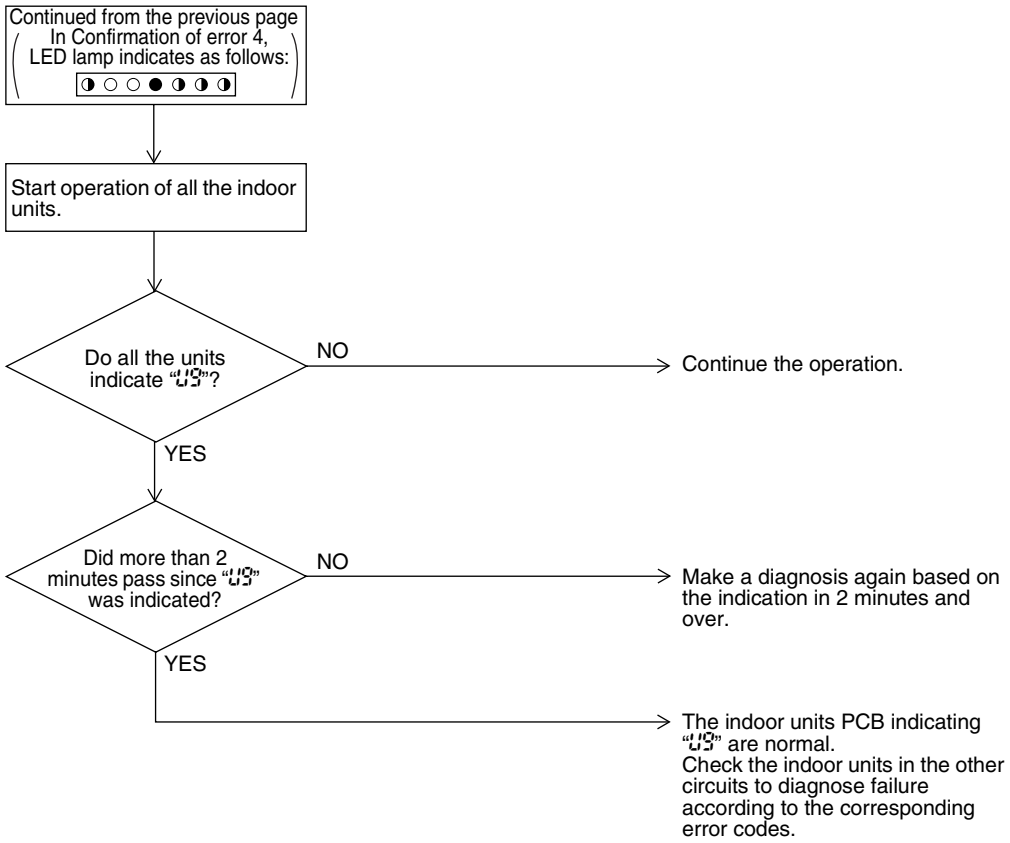
Troubleshooting

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



Troubleshooting

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



2.36 Transmission Error (between Remote Controller and Indoor Unit)

Remote Controller Display

U5

Applicable Models

All indoor unit models

Method of Error Detection

Micro-computer checks if transmission between indoor unit and remote controller is normal.

Error Decision Conditions

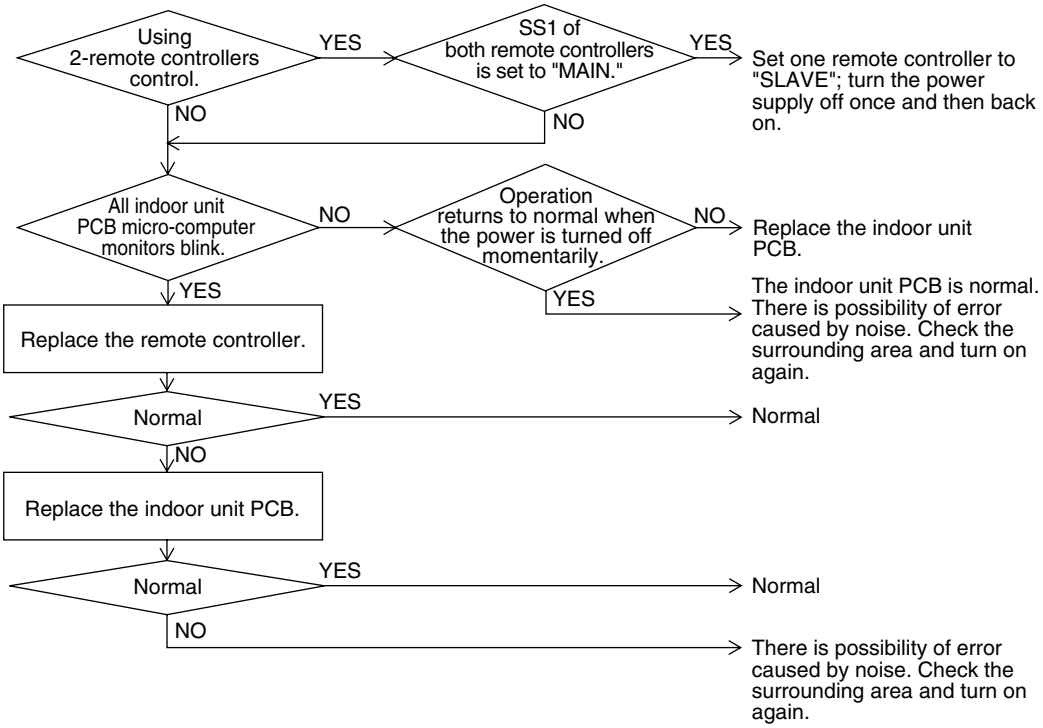
Normal transmission does not continue for specified period.

Supposed Causes

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

Troubleshooting

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



2.37 Transmission Error (Across Outdoor Units)

Remote Controller Display

U7

Applicable Models

RQYQ8-48PY1

Method of Error Detection

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

Error Decision Conditions

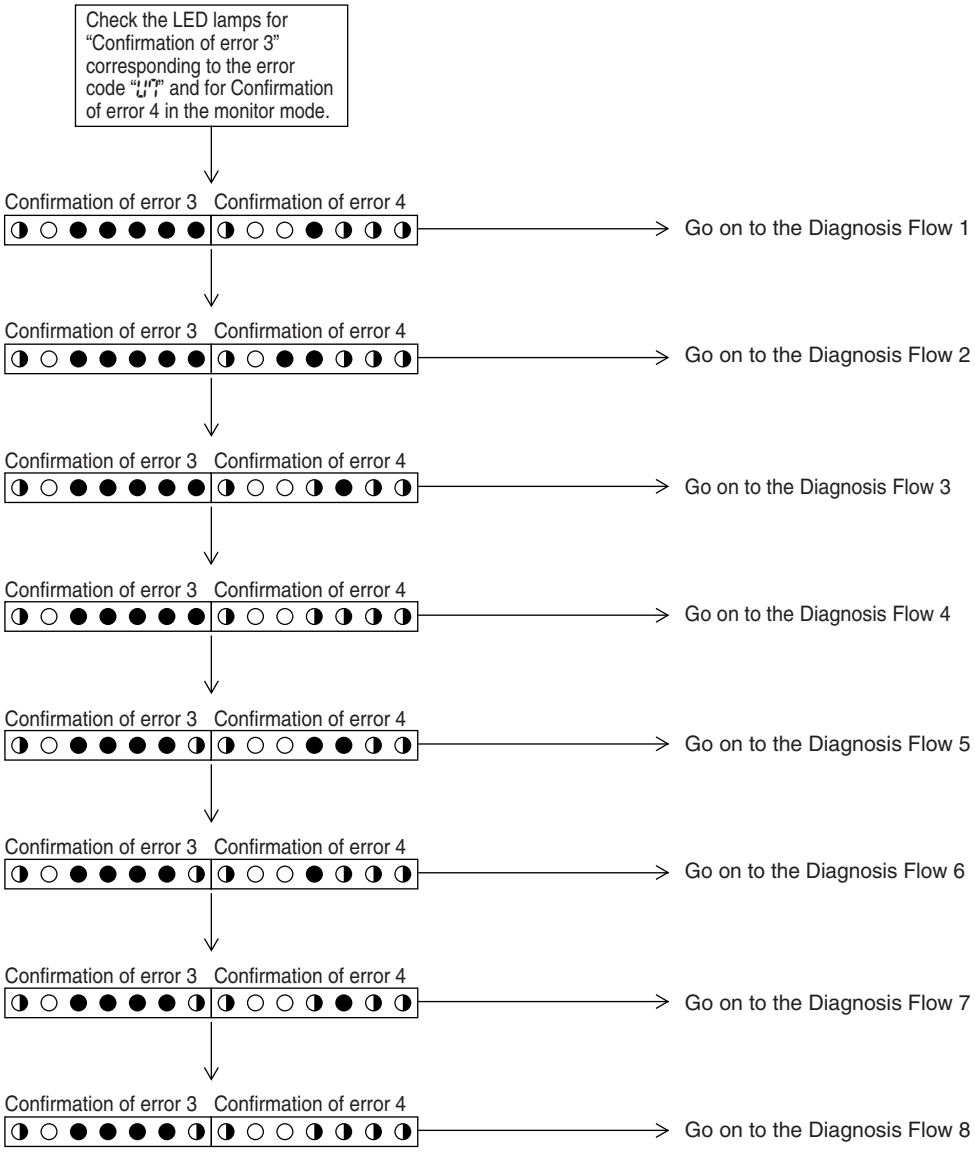
When transmission is not carried out normally for a certain amount of time

Supposed Causes

- Connection error in connecting wires between outdoor unit and external control adaptor for outdoor unit
- Connection error in connecting wires across outdoor units
- Setting error in switching cool/heat
- Unified address setting error for cool/heat (external control adaptor for outdoor unit)
- Defective outdoor unit PCB (A1P)
- Defective external control adaptor for outdoor unit

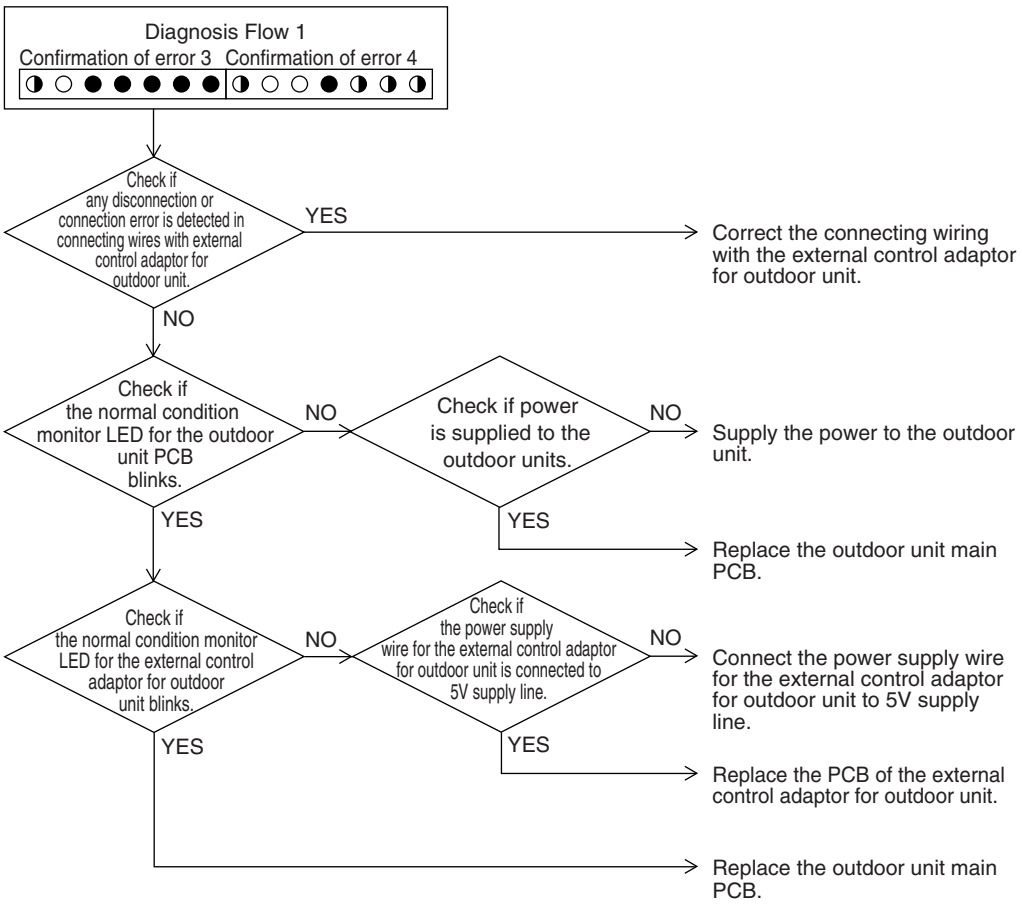
Troubleshooting

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



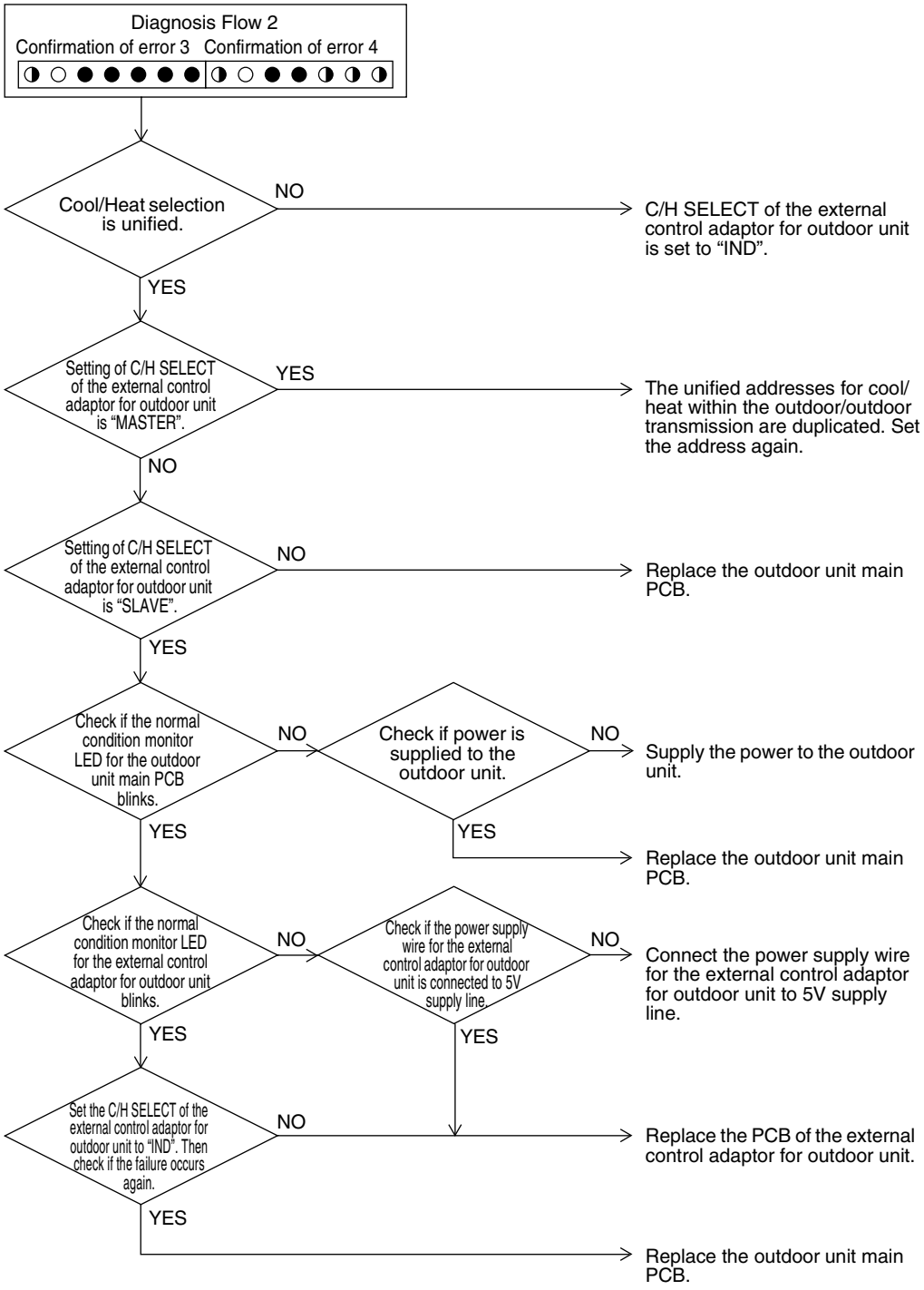
Troubleshooting

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



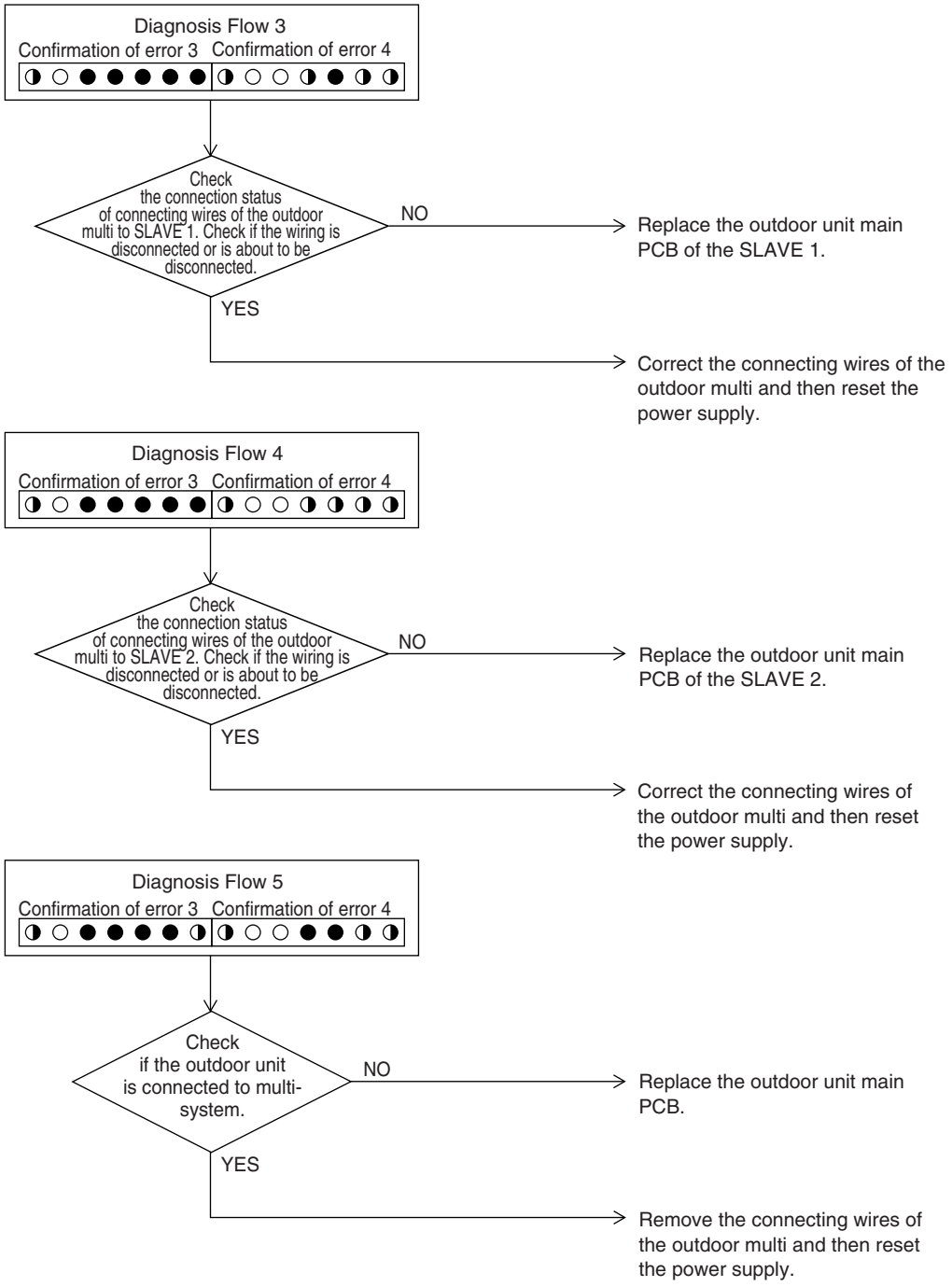
Troubleshooting

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



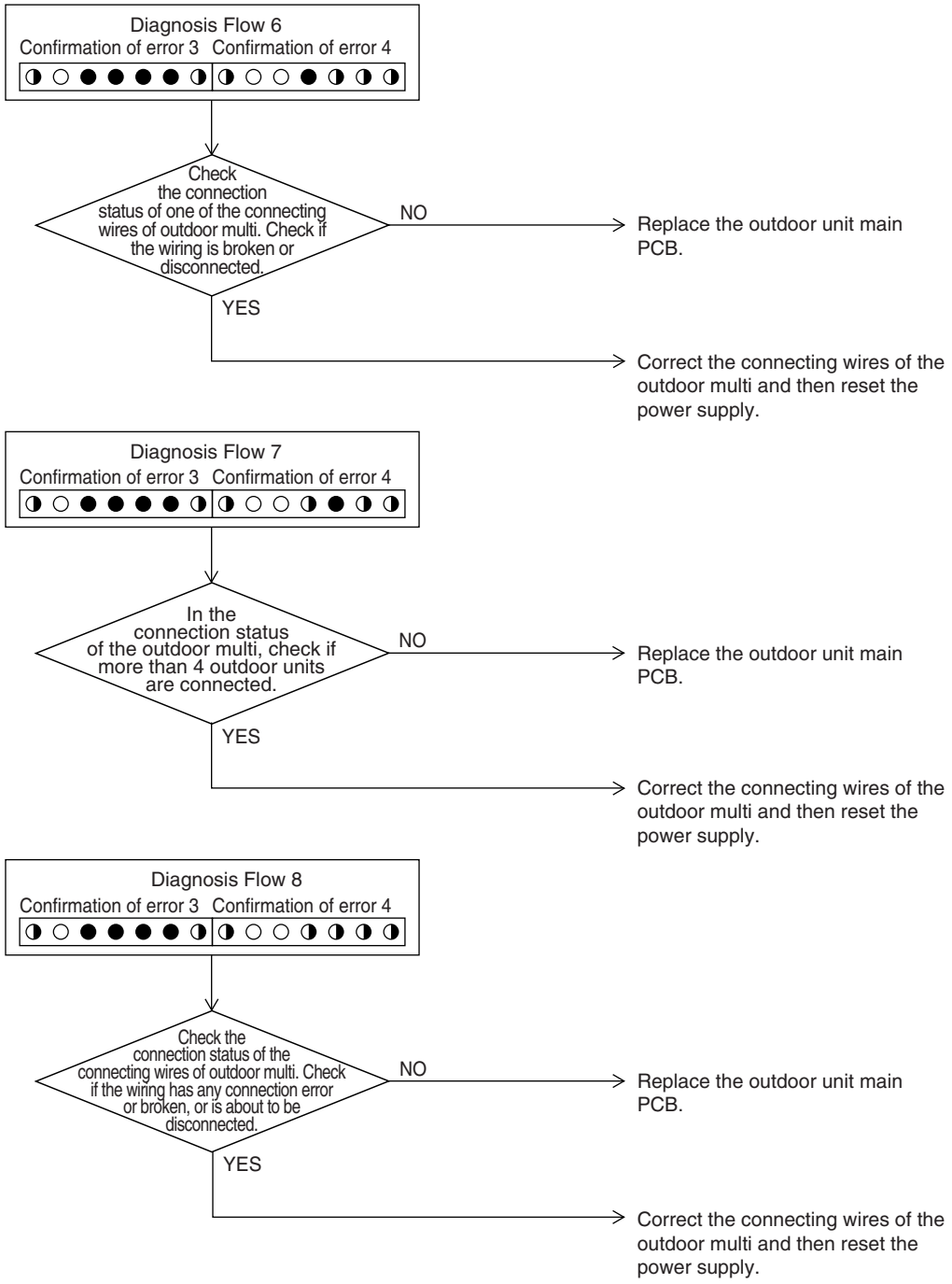
Troubleshooting

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



Troubleshooting

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



2.38 "U8" Indoor Unit: Transmission Error (between Main and Sub Remote Controllers)

Remote Controller Display

U8

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

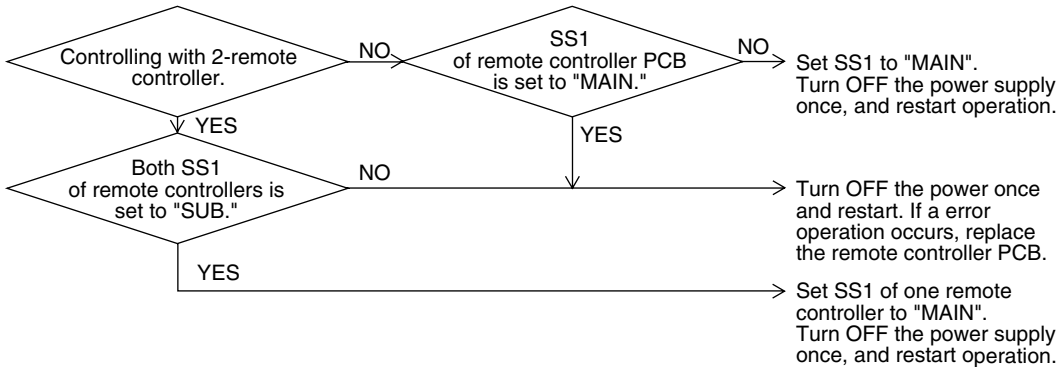
Normal transmission does not continue for a certain amount of time.

Supposed Causes

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

Troubleshooting

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

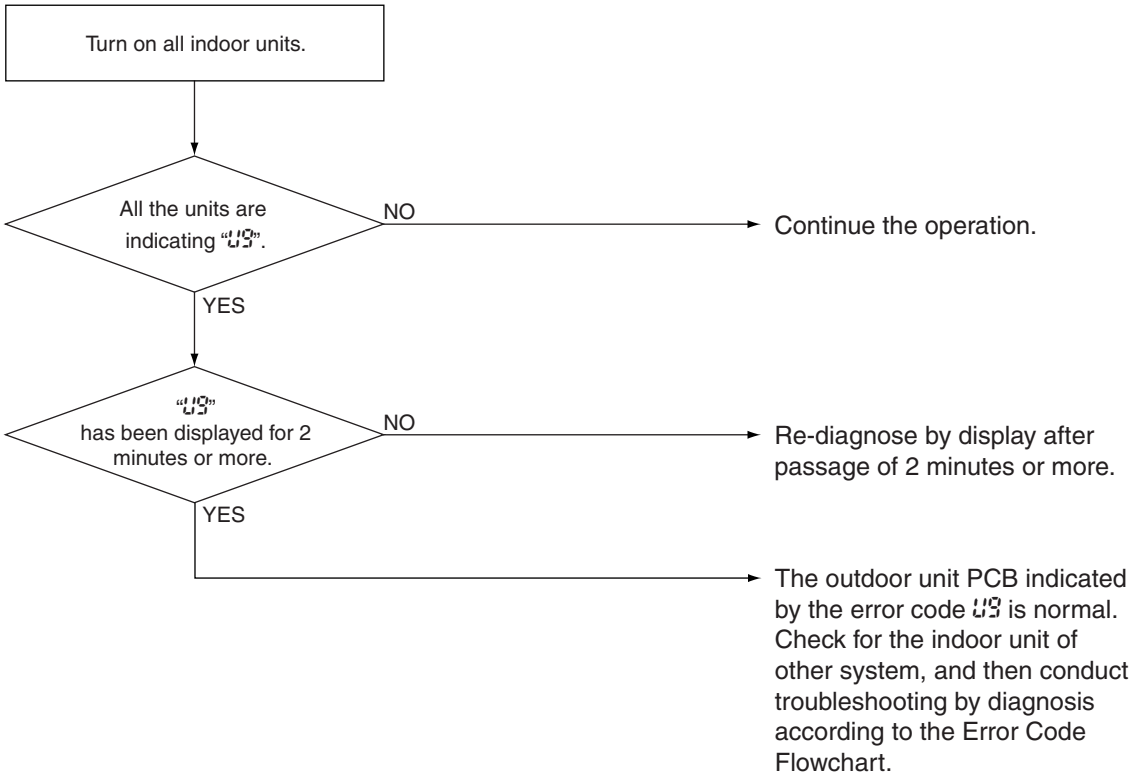


2.39 Transmission Error (between Indoor and Outdoor Units in the Same System)

Remote Controller Display	U9
Applicable Models	All models of indoor unit RQYQ8-48PY1
Method of Error Detection	Detect error signal for the other indoor units within the circuit by outside unit PCB.
Error Decision Conditions	When the error decision is made on any other indoor unit within the system concerned.
Supposed Causes	■ Transmission error within or outside of other system ■ Defective electronic expansion valve in indoor unit of other system ■ Defective PCB of indoor unit in other system ■ Improper connection of transmission wiring between indoor and outdoor unit

Troubleshooting

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

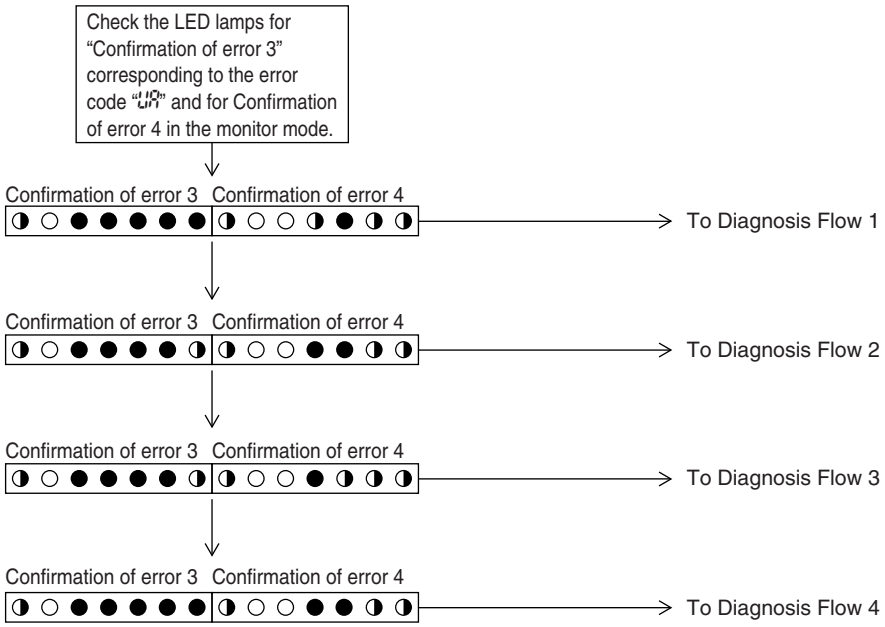


2.40 Improper Combination of Indoor and Outdoor Units, Indoor Units and Remote Controller

Remote Controller Display	U9
Applicable Models	All indoor unit models RQYQ8-48PY1
Method of Error Detection	A difference occurs in data by the refrigerant type between indoor and outdoor units. The number of indoor units is out of the allowable 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 PCB was not conducted after replacing to spare PCB.

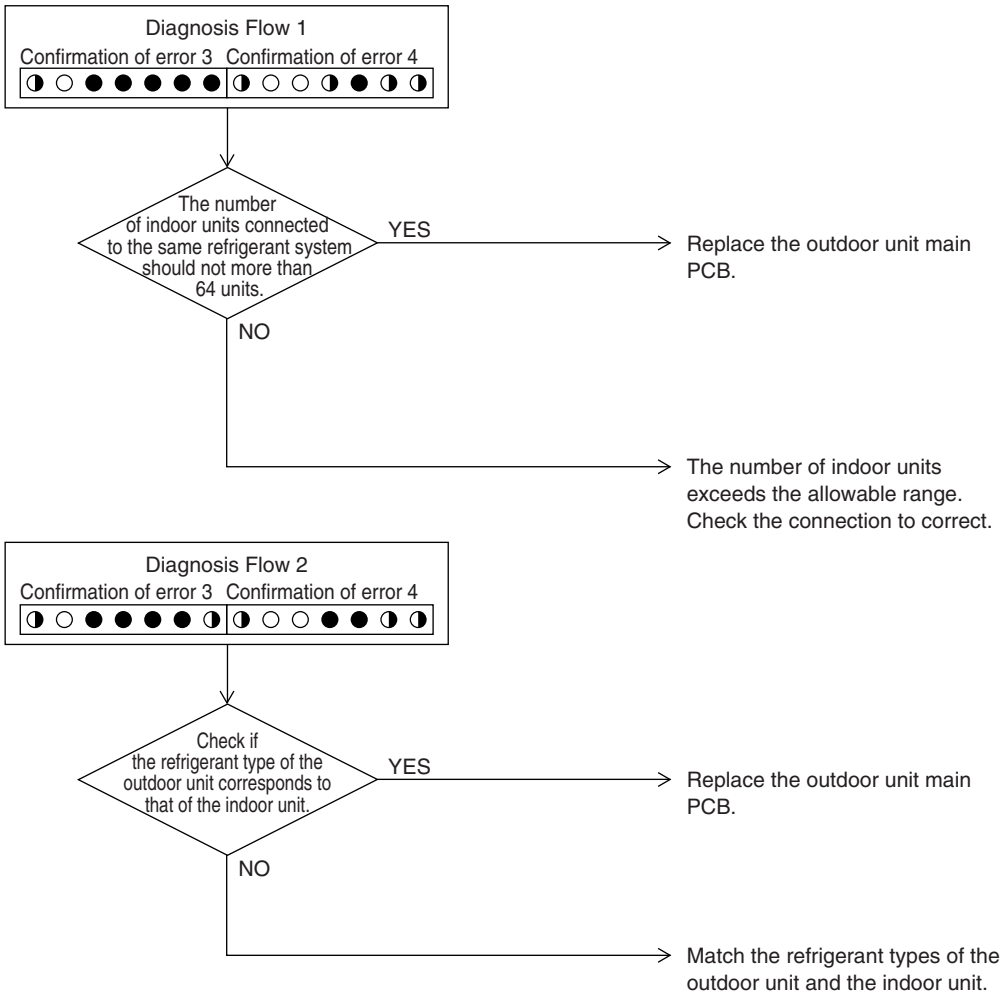
Troubleshooting

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



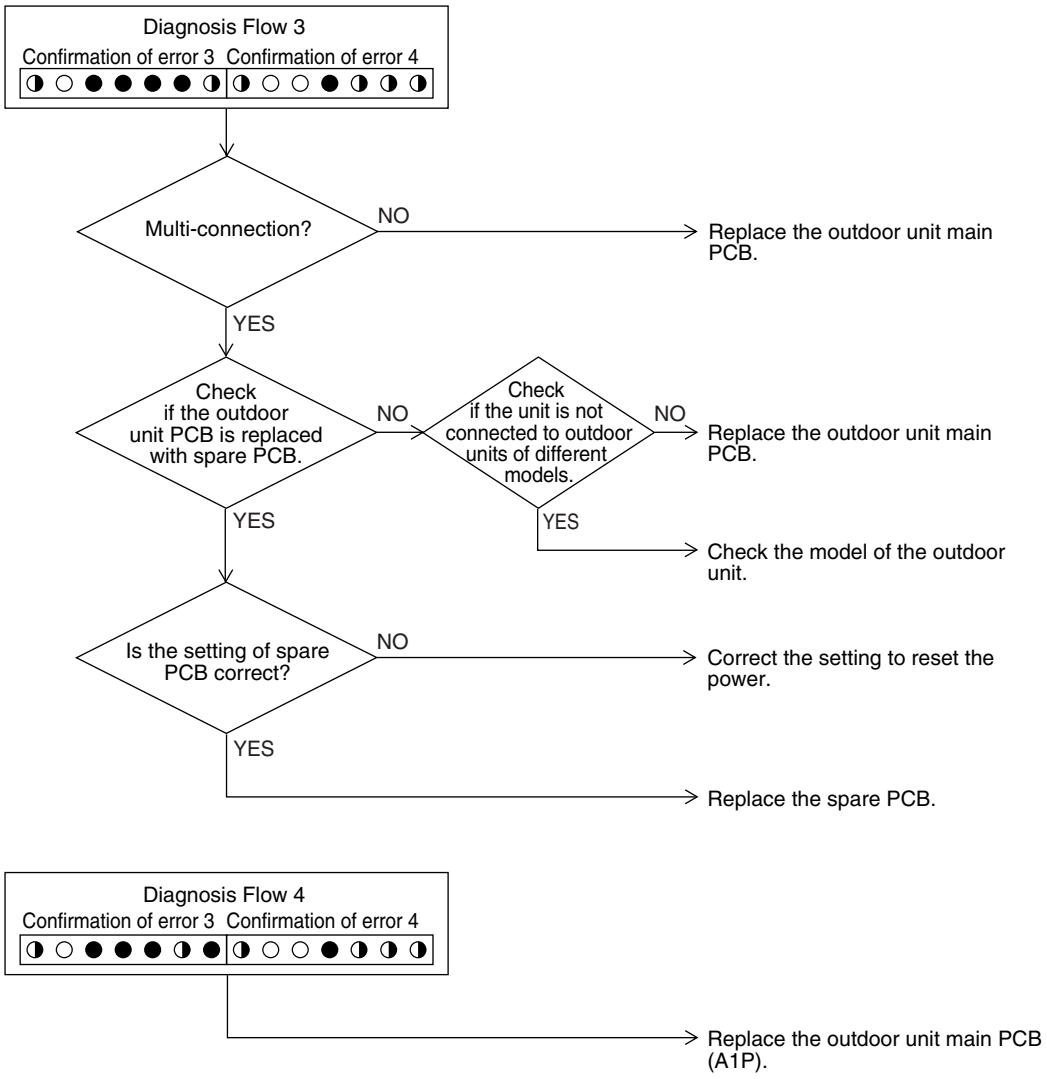
Troubleshooting

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



Troubleshooting

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



2.41 Address Duplication of Centralized Controller

Remote Controller Display

Applicable Models

All models of indoor unit
Centralized controller

Method of Error Detection

The principal indoor unit detects the same address as that of its own on any other indoor unit.

Error Decision Conditions

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

Supposed Causes

- Address duplication of centralized controller
- Defective the indoor unit PCB.

Troubleshooting

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

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

2.42 Transmission Error (between Centralized Controller and Indoor Unit)

Remote Controller Display

L1E

Applicable Models

All models of indoor unit intelligent Touch Controller
Centralized remote controller
Schedule timer

Method of Error Detection

Micro-computer checks if transmission between indoor unit and centralized controller is normal.

Error Decision Conditions

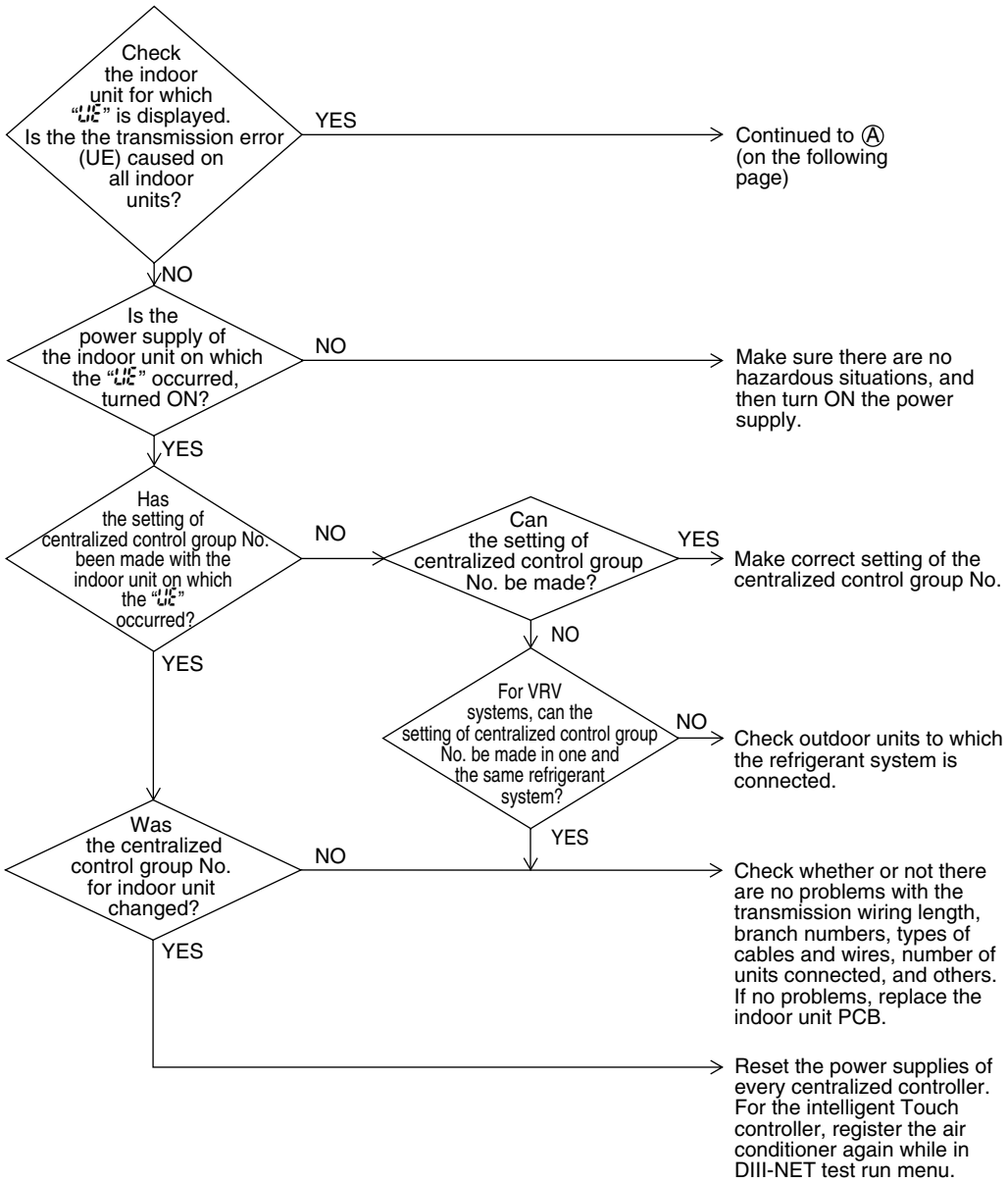
When transmission is not carried out normally for a certain amount of time

Supposed Causes

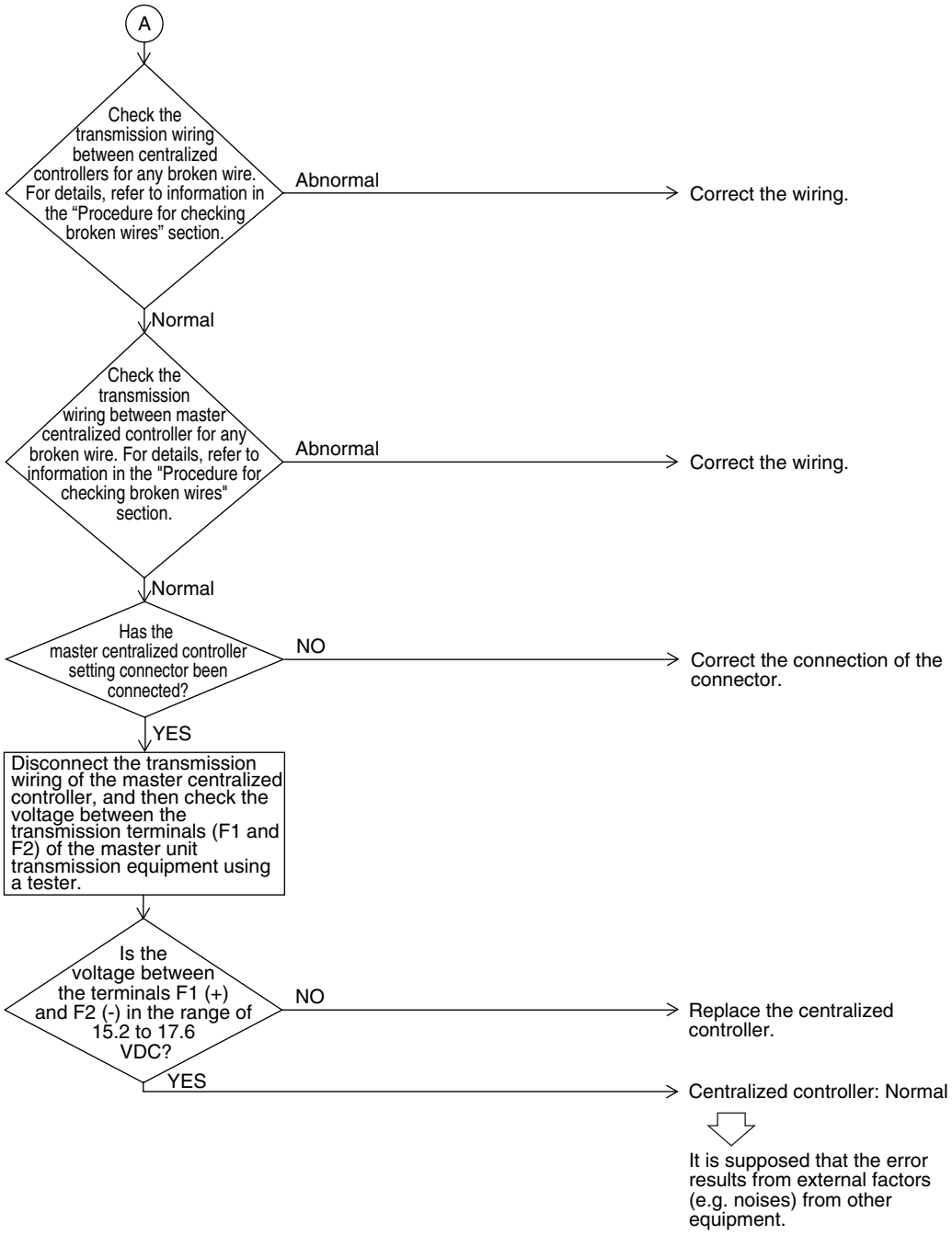
- Transmission error between optional controllers for centralized control and indoor unit
- Connector for setting master controller is disconnected.
  (or disconnection of connector for independent / combined use changeover switch.)
- Failure of PCB for centralized remote controller
- Defective indoor unit PCB

Troubleshooting

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



Troubleshooting



2.43 System is not Set yet

Remote Controller Display

UF

Applicable Models

All models of indoor unit
RQYQ8-48PY1

Method of Error Detection

On check operation, the number of indoor units in terms of transmission is not corresponding to that of indoor units that have made changes in temperature.

Error Decision Conditions

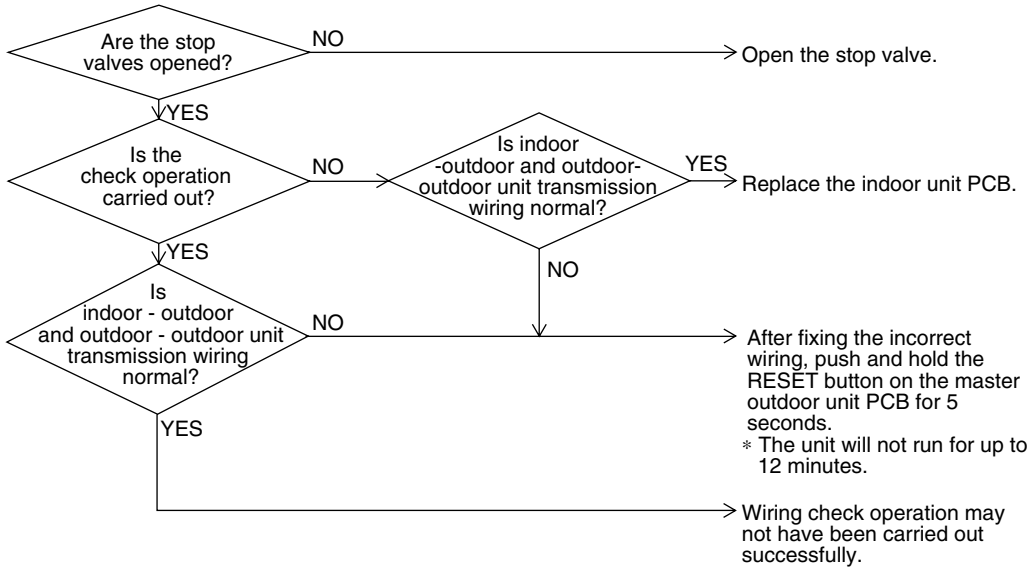
The error is determined as soon as the abnormality aforementioned is detected through checking the system for any erroneous connection of units on the check operation.

Supposed Causes

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

Troubleshooting

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

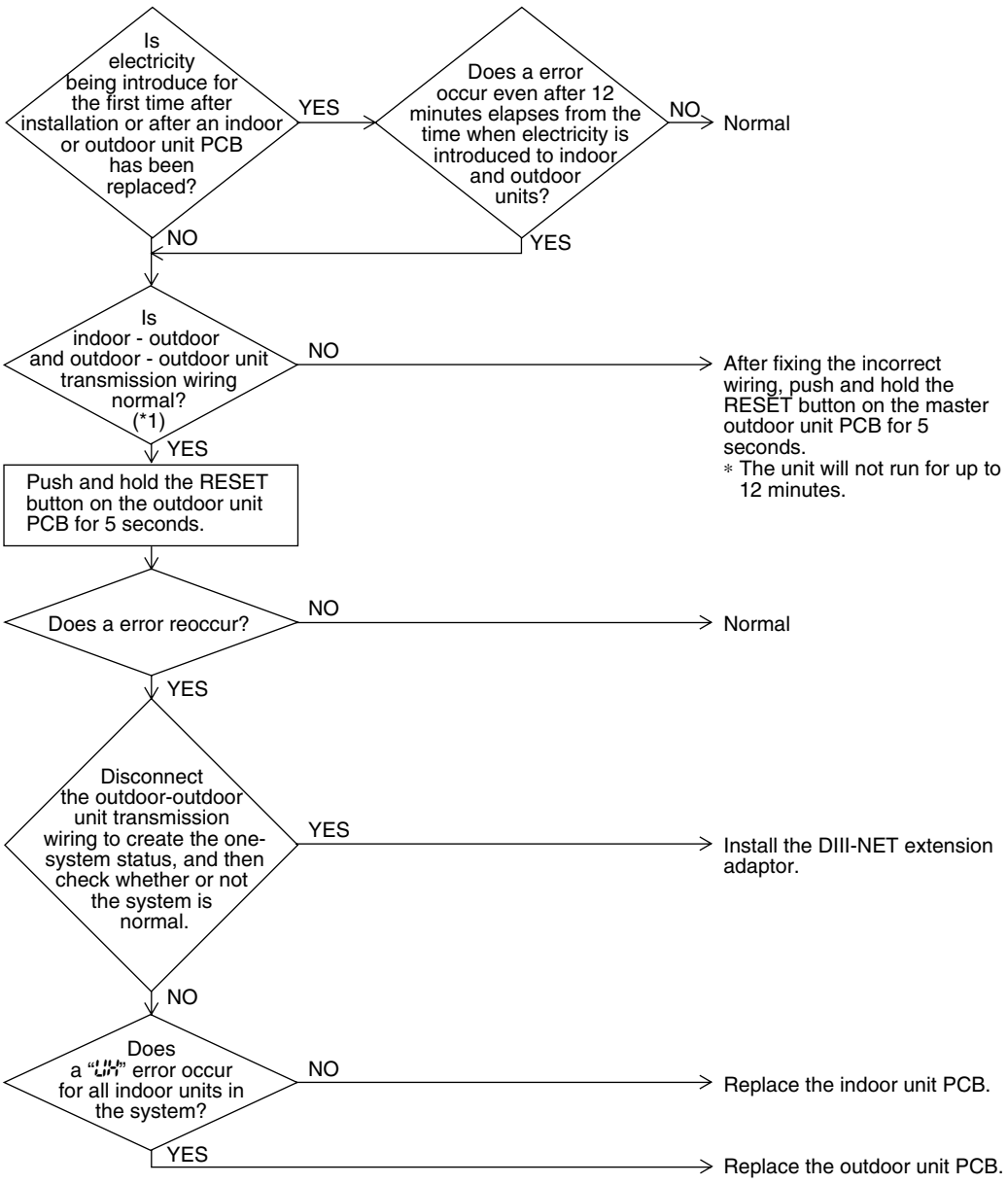


2.44 System Error, Refrigerant System Address Undefined

Remote Controller Display	UH
Applicable Models	All models of indoor unit RQYQ8-48PY1
Method of Error Detection	Detect an indoor unit with no auto address setting.
Error Decision Conditions	The error decision is made as soon as the abnormality aforementioned is detected.
Supposed Causes	■ Improper connection of transmission wiring between indoor-outdoor units and outdoor-outdoor units ■ Defective indoor unit PCB ■ Defective outdoor unit main PCB

Troubleshooting

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

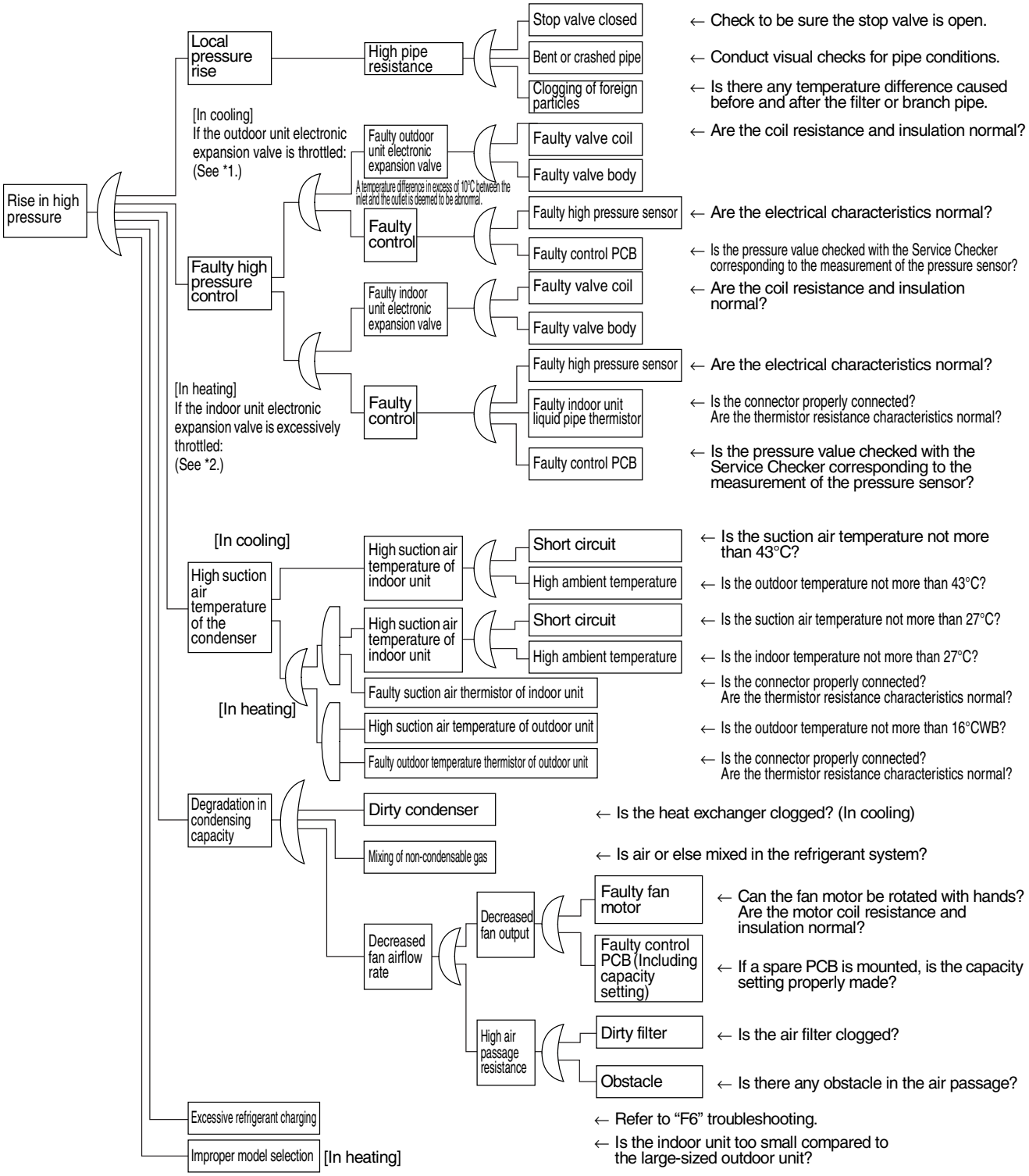


Note:
*1. Check the correct wiring "indoor-outdoor" and "outdoor-outdoor" by Installation Manual.

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).

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

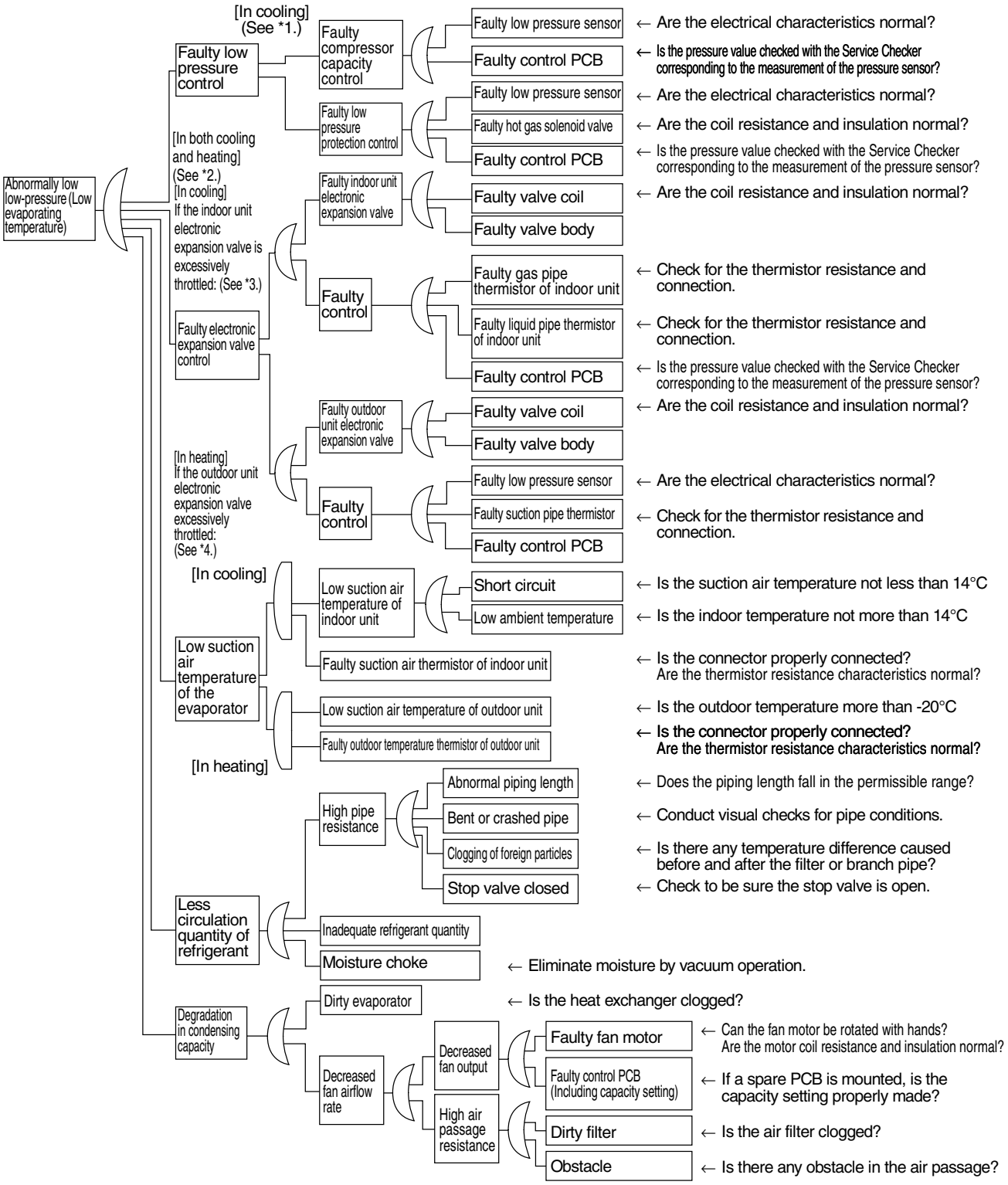
Referring to the Fault Tree Analysis (FTA) shown below, probe the faulty points.



*1. In cooling, it is normal if the outdoor unit electronic expansion valve (EVM) is fully open.
*2. In heating, the indoor unit electronic expansion valve is used for “subcooled degree control”.
(For details, refer to “Electronic Expansion Valve Control”.)

CHECK 2 Check for causes of drop in low pressure

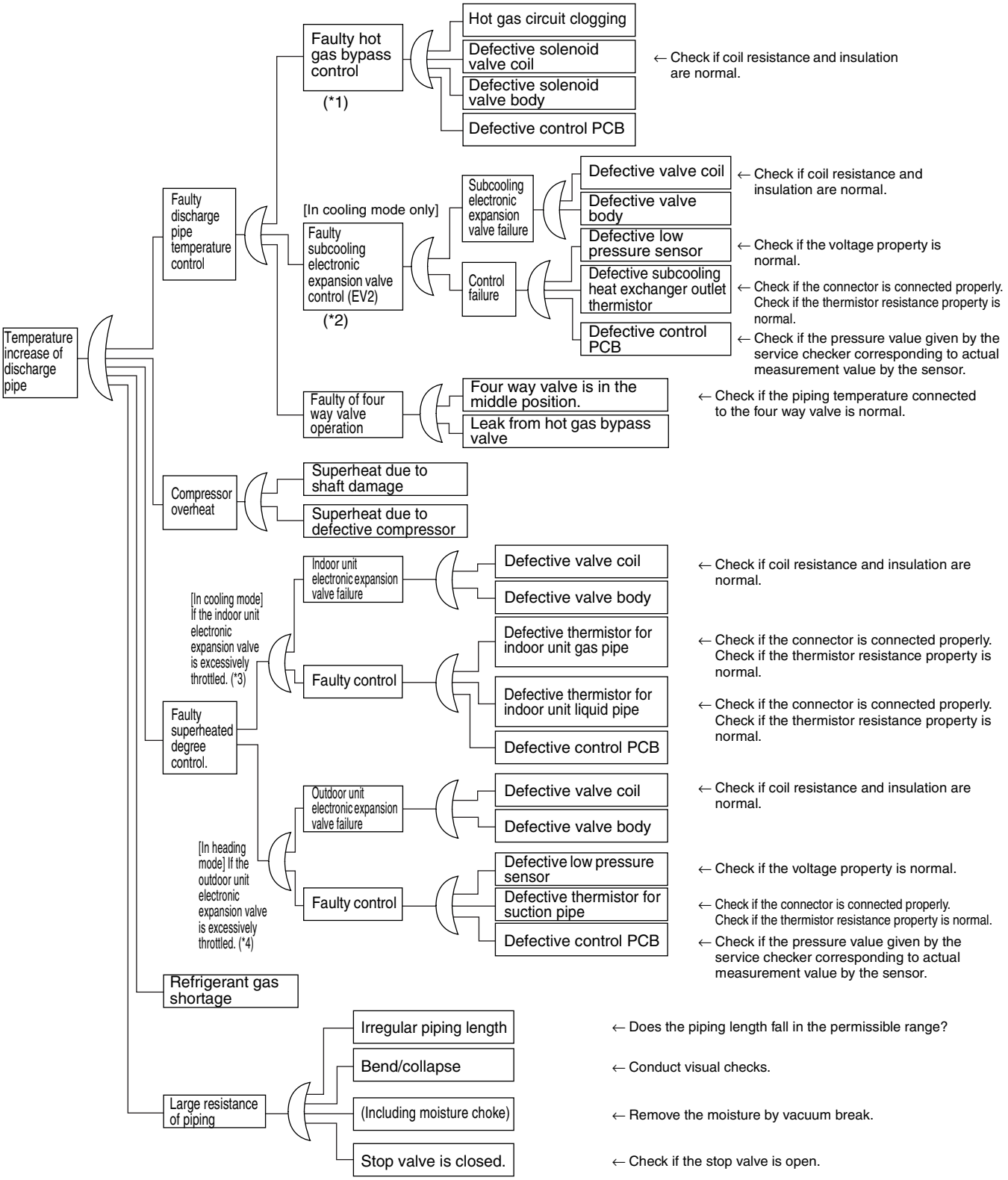
Referring to the Fault Tree Analysis (FTA) shown below, probe the faulty points.



*1. For details of the compressor capacity control while in cooling, refer to “Compressor PI Control”.
*2. The “low pressure protection control” includes low pressure protection control and hot gas bypass control.
*3. In cooling, the indoor unit electronic expansion valve is used for “superheated degree control”.
*4. In heating, the outdoor unit electronic expansion valve (EVM) is used for “superheated degree control of outdoor unit heat exchanger”.

CHECK 3 Check the Factors of Overheat Operation (*5)

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



*1. Refer to “Low pressure protection control” for hot gas bypass control.
*2. Refer to “Subcooling electronic expansion valve control”.
*3. “Superheating temperature control” in cooling mode is conducted by indoor unit electronic expansion valve.
*4. Superheating temperature control in heating mode is conducted by outdoor unit electronic expansion valve (EVM).
*5. Judgement criteria of superheat operation:
(1) Suction gas superheating temperature: 10 degrees and over. (2) Discharge gas superheating temperature: 45 degrees and over, except for immediately after starting and drooping control, etc..
(Use the above stated values as a guide. Depending on the other conditions, the unit may be normal despite the values within the above scope.)

CHECK 4 Power Transistor Check

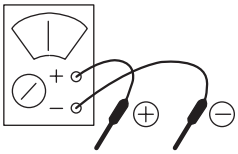
Perform the following procedures prior to check.

(1) Power Off.

(2) Remove all the wiring connected to the PCB where power transistors are mounted on.

[Preparation]

· Tester



* Preparing a tester in the analog system is recommended. A tester in the digital system with diode check function will be usable.

[Point of Measurement and Judgement Criteria]

· Measure the resistance value using a tester at each point of measurement below, 10 minutes later after power OFF.

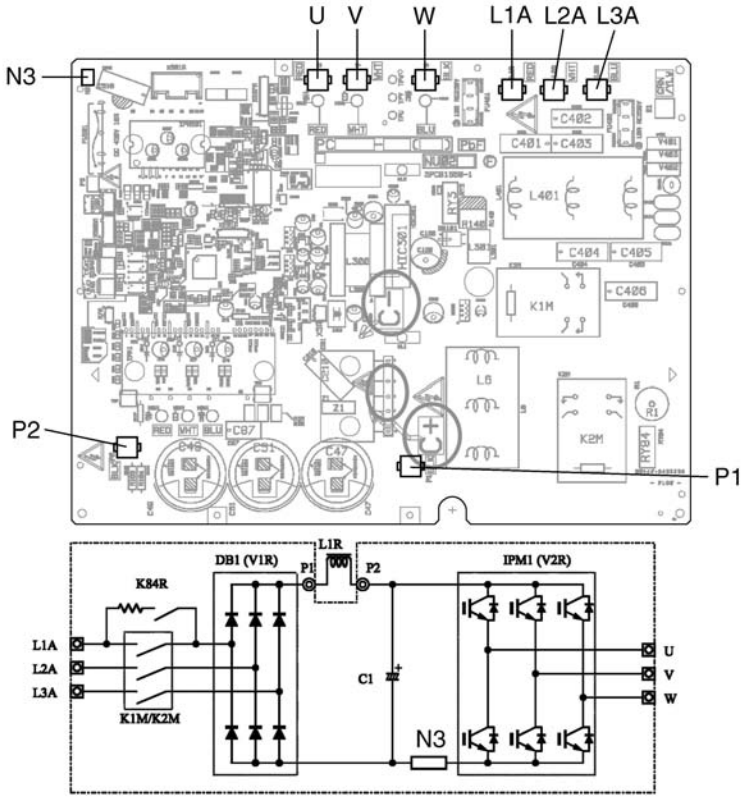
To use analog tester:
Measurement in the resistance value mode in the range of multiplying 1kΩ.

No.	Point of Measurement		Judgement Criteria	Remarks
	+	–		
1	P2	U	2 ~ 15kΩ	
2	P2	V		
3	P2	W		
4	U	P2	15kΩ and above (including ∞)	Due to condenser charge and so on, resistance measurement may require some time.
5	V	P2		
6	W	P2		
7	N3	U		
8	N3	V		
9	N3	W		
10	U	N3	2 ~ 15kΩ	
11	V	N3		
12	W	N3		

To use digital tester:
Measurement is executed in the diode check mode. (→|—)

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

[PCB and Circuit Diagram]



CHECK 11 Thermistor Resistance / Temperature Characteristics

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

Outdoor unit for fin thermistor R1T	Outdoor unit For outdoor air	R1T
	For coil	R2T
	For suction pipe	R4T
	For Receiver gas pipe	R5T
	For Receiver outlet liquid pipe	R6T

T°C	kΩ
-10	-
-8	-
-6	88.0
-4	79.1
-2	71.1
0	64.1
2	57.8
4	52.3
6	47.3
8	42.9
10	38.9
12	35.3
14	32.1
16	29.2
18	26.6
20	24.3
22	22.2
24	20.3
26	18.5
28	17.0
30	15.6
32	14.2
34	13.1
36	12.0
38	11.1
40	10.3
42	9.5
44	8.8
46	8.2
48	7.6
50	7.0
52	6.7
54	6.0
56	5.5
58	5.2
60	4.79
62	4.46
64	4.15
66	3.87
68	3.61
70	3.37
72	3.15
74	2.94
76	2.75
78	2.51
80	2.41
82	2.26
84	2.12
86	1.99
88	1.87
90	1.76
92	1.65
94	1.55
96	1.46
98	1.38

T°C	kΩ	T°C	kΩ	T°C	kΩ	T°C	kΩ
-20	197.81	-19.5	192.08	30	16.10	30.5	15.76
-19	186.53	-18.5	181.16	31	15.43	31.5	15.10
-18	175.97	-17.5	170.94	32	14.79	32.5	14.48
-17	166.07	-16.5	161.36	33	14.18	33.5	13.88
-16	156.80	-15.5	152.38	34	13.59	34.5	13.31
-15	148.10	-14.5	143.96	35	13.04	35.5	12.77
-14	139.94	-13.5	136.05	36	12.51	36.5	12.25
-13	132.28	-12.5	128.63	37	12.01	37.5	11.76
-12	125.09	-11.5	121.66	38	11.52	38.5	11.29
-11	118.34	-10.5	115.12	39	11.06	39.5	10.84
-10	111.99	-9.5	108.96	40	10.63	40.5	10.41
-9	106.03	-8.5	103.18	41	10.21	41.5	10.00
-8	100.41	-7.5	97.73	42	9.81	42.5	9.61
-7	95.14	-6.5	92.61	43	9.42	43.5	9.24
-6	90.17	-5.5	87.79	44	9.06	44.5	8.88
-5	85.49	-4.5	83.25	45	8.71	45.5	8.54
-4	81.08	-3.5	78.97	46	8.37	46.5	8.21
-3	76.93	-2.5	74.94	47	8.05	47.5	7.90
-2	73.01	-1.5	71.14	48	7.75	48.5	7.60
-1	69.32	-0.5	67.56	49	7.46	49.5	7.31
0	65.84	0.5	64.17	50	7.18	50.5	7.04
1	62.54	1.5	60.96	51	6.91	51.5	6.78
2	59.43	2.5	57.94	52	6.65	52.5	6.53
3	56.49	3.5	55.08	53	6.41	53.5	6.53
4	53.71	4.5	52.38	54	6.65	54.5	6.53
5	51.09	5.5	49.83	55	6.41	55.5	6.53
6	48.61	6.5	47.42	56	6.18	56.5	6.06
7	46.26	7.5	45.14	57	5.95	57.5	5.84
8	44.05	8.5	42.98	58	5.74	58.5	5.43
9	41.95	9.5	40.94	59	5.14	59.5	5.05
10	39.96	10.5	39.01	60	4.96	60.5	4.87
11	38.08	11.5	37.18	61	4.79	61.5	4.70
12	36.30	12.5	35.45	62	4.62	62.5	4.54
13	34.62	13.5	33.81	63	4.46	63.5	4.38
14	33.02	14.5	32.25	64	4.30	64.5	4.23
15	31.50	15.5	30.77	65	4.16	65.5	4.08
16	30.06	16.5	29.37	66	4.01	66.5	3.94
17	28.70	17.5	28.05	67	3.88	67.5	3.81
18	27.41	18.5	26.78	68	3.75	68.5	3.68
19	26.18	19.5	25.59	69	3.62	69.5	3.56
20	25.01	20.5	24.45	70	3.50	70.5	3.44
21	23.91	21.5	23.37	71	3.38	71.5	3.32
22	22.85	22.5	22.35	72	3.27	72.5	3.21
23	21.85	23.5	21.37	73	3.16	73.5	3.11
24	20.90	24.5	20.45	74	3.06	74.5	3.01
25	20.00	25.5	19.56	75	2.96	75.5	2.91
26	19.14	26.5	18.73	76	2.86	76.5	2.82
27	18.32	27.5	17.93	77	2.77	77.5	2.72
28	17.54	28.5	17.17	78	2.68	78.5	2.64
29	16.80	29.5	16.45	79	2.60	79.5	2.55
30	16.10	30.5	15.76	80	2.51	80.5	2.47

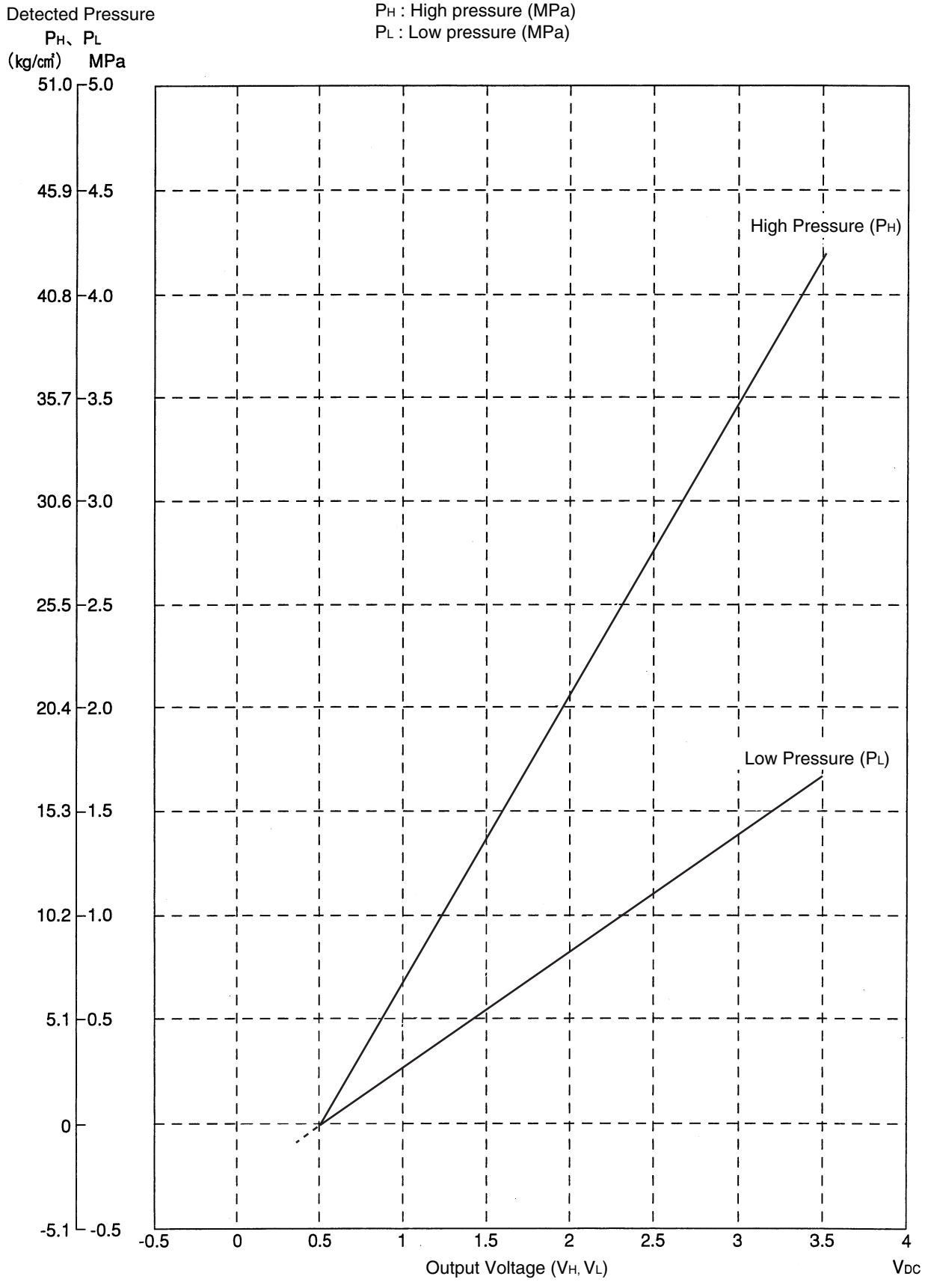
Outdoor Unit Thermistors for Discharge Pipe (R3T, R31~33T)

T°C	kΩ	T°C	kΩ	T°C	kΩ	T°C	kΩ	T°C	kΩ	T°C	kΩ
0	640.44	0.5	624.65	50	72.32	50.5	70.96	100	13.35	100.5	13.15
1	609.31	1.5	594.43	51	69.64	51.5	68.34	101	12.95	101.5	12.76
2	579.96	2.5	565.78	52	67.06	52.5	65.82	102	12.57	102.5	12.38
3	552.00	3.5	538.63	53	64.60	53.5	63.41	103	12.20	103.5	12.01
4	525.63	4.5	512.97	54	62.24	54.5	61.09	104	11.84	104.5	11.66
5	500.66	5.5	488.67	55	59.97	55.5	58.87	105	11.49	105.5	11.32
6	477.01	6.5	465.65	56	57.80	56.5	56.75	106	11.15	106.5	10.99
7	454.60	7.5	443.84	57	55.72	57.5	54.70	107	10.83	107.5	10.67
8	433.37	8.5	423.17	58	53.72	58.5	52.84	108	10.52	108.5	10.36
9	413.24	9.5	403.57	59	51.98	59.5	50.96	109	10.21	109.5	10.06
10	394.16	10.5	384.98	60	49.96	60.5	49.06	110	9.92	110.5	9.78
11	376.05	11.5	367.35	61	48.19	61.5	47.33	111	9.64	111.5	9.50
12	358.88	12.5	350.62	62	46.49	62.5	45.67	112	9.36	112.5	9.23
13	342.58	13.5	334.74	63	44.86	63.5	44.07	113	9.10	113.5	8.97
14	327.10	14.5	319.66	64	43.30	64.5	42.54	114	8.84	114.5	8.71
15	312.41	15.5	305.33	65	41.79	65.5	41.06	115	8.59	115.5	8.47
16	298.45	16.5	291.73	66	40.35	66.5	39.65	116	8.35	116.5	8.23
17	285.18	17.5	278.80	67	38.96	67.5	38.29	117	8.12	117.5	8.01
18	272.58	18.5	266.51	68	37.63	68.5	36.98	118	7.89	118.5	7.78
19	260.60	19.5	254.72	69	36.34	69.5	35.72	119	7.68	119.5	7.57
20	249.00	20.5	243.61	70	35.11	70.5	34.51	120	7.47	120.5	7.36
21	238.36	21.5	233.14	71	33.92	71.5	33.35	121	7.26	121.5	7.16
22	228.05	22.5	223.08	72	32.78	72.5	32.23	122	7.06	122.5	6.97
23	218.24	23.5	213.51	73	31.69	73.5	31.15	123	6.87	123.5	6.78
24	208.90	24.5	204.39	74	30.63	74.5	30.12	124	6.69	124.5	6.59
25	200.00	25.5	195.71	75	29.61	75.5	29.12	125	6.51	125.5	6.42
26	191.53	26.5	187.44	76	28.64	76.5	28.16	126	6.33	126.5	6.25
27	183.46	27.5	179.57	77	27.69	77.5	27.24	127	6.16	127.5	6.08
28	175.77	28.5	172.06	78	26.79	78.5	26.35	128	6.00	128.5	5.92
29	168.44	29.5	164.90	79	25.91	79.5	25.49	129	5.84	129.5	5.76
30	161.45	30.5	158.08	80	25.07	80.5	24.66	130	5.69	130.5	5.61
31	154.79	31.5	151.57	81	24.26	81.5	23.87	131	5.54	131.5	5.46
32	148.43	32.5	145.37	82	23.48	82.5	23.10	132	5.39	132.5	5.32
33	142.37	33.5	139.44	83	22.73	83.5	22.36	133	5.25	133.5	5.18
34	136.59	34.5	133.79	84	22.01	84.5	21.65	134	5.12	134.5	5.05
35	131.06	35.5	128.39	85	21.31	85.5	20.97	135	4.98	135.5	4.92
36	125.79	36.5	123.24	86	20.63	86.5	20.31	136	4.86	136.5	4.79
37	120.76	37.5	118.32	87	19.98	87.5	19.67	137	4.73	137.5	4.67
38	115.95	38.5	113.62	88	19.36	88.5	19.05	138	4.61	138.5	4.55
39	111.35	39.5	109.13	89	18.75	89.5	18.46	139	4.49	139.5	4.44
40	106.96	40.5	104.84	90	18.17	90.5	17.89	140	4.38	140.5	4.32
41	102.76	41.5	100.73	91	17.61	91.5	17.34	141	4.27	141.5	4.22
42	98.75	42.5	96.81	92	17.07	92.5	16.80	142	4.16	142.5	4.11
43	94.92	43.5	93.06	93	16.54	93.5	16.29	143	4.06	143.5	4.01
44	91.25	44.5	89.47	94	16.04	94.5	15.79	144	3.96	144.5	3.91
45	87.74	45.5	86.04	95	15.55	95.5	15.31	145	3.86	145.5	3.81
46	84.38	46.5	82.75	96	15.08	96.5	14.85	146	3.76	146.5	3.72
47	81.16	47.5	79.61	97	14.62	97.5	14.40	147	3.67	147.5	3.62
48	78.09	48.5	76.60	98	14.18	98.5	13.97	148	3.58	148.5	3.54
49	75.14	49.5	73.71	99	13.76	99.5	13.55	149	3.49	149.5	3.45
50	72.32	50.5	70.96	100	13.35	100.5	13.15	150	3.41	150.5	3.37

CHECK 12 Pressure Sensor

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

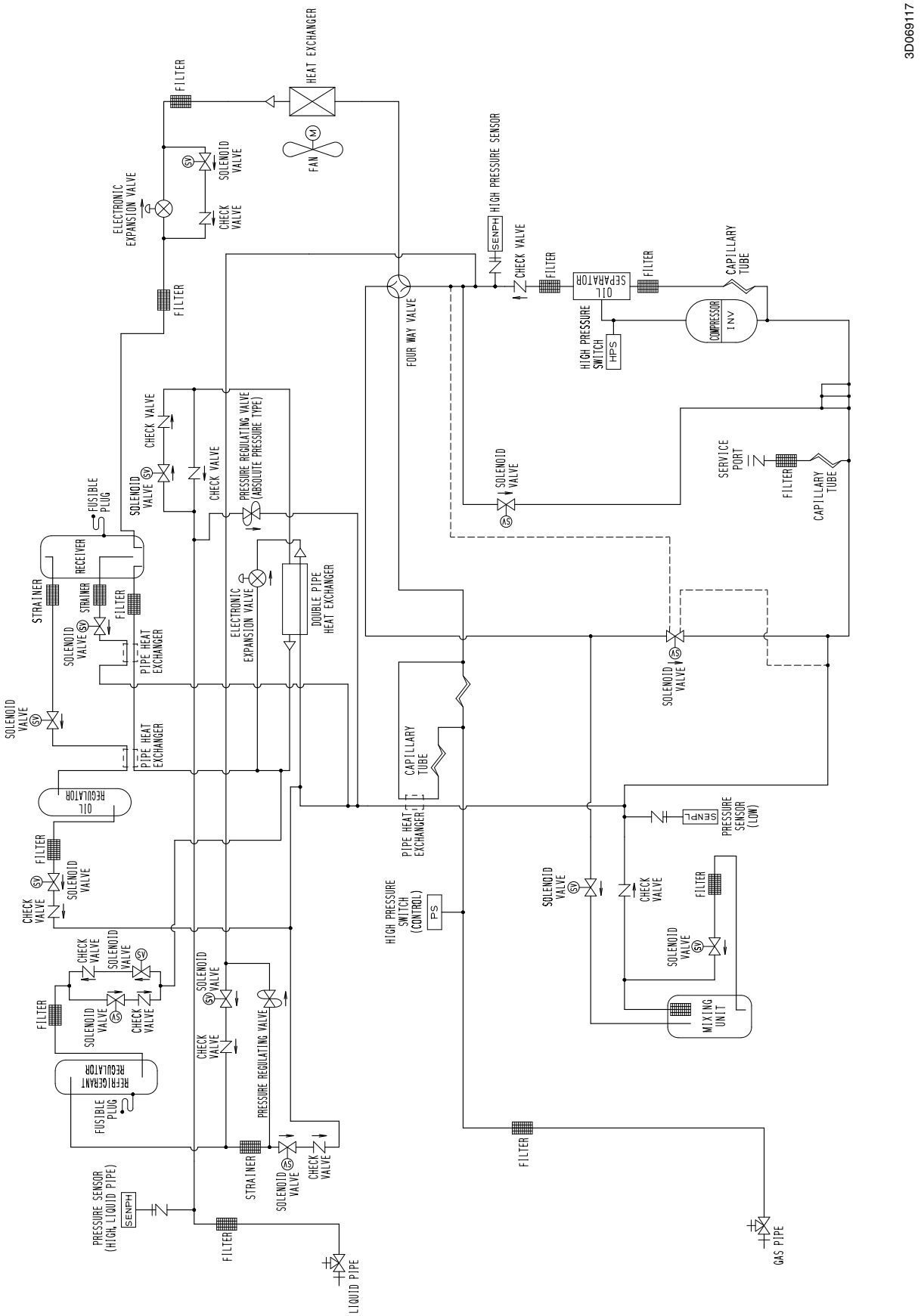
V_H : Output Voltage [High Side] V_{DC}
V_L : Output Voltage [Low Side] V_{DC}



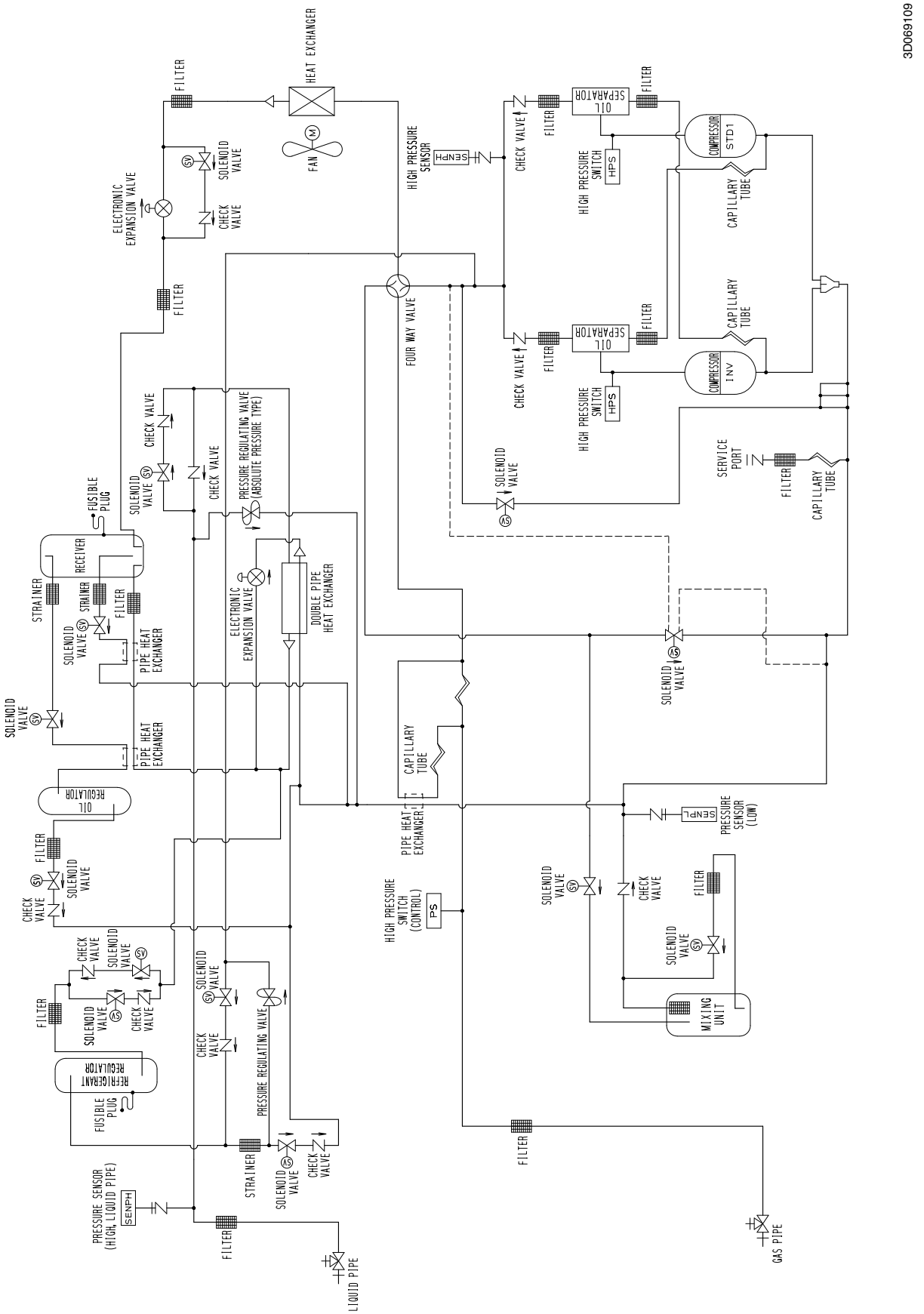
Part 7
Appendix

1. Piping Diagrams

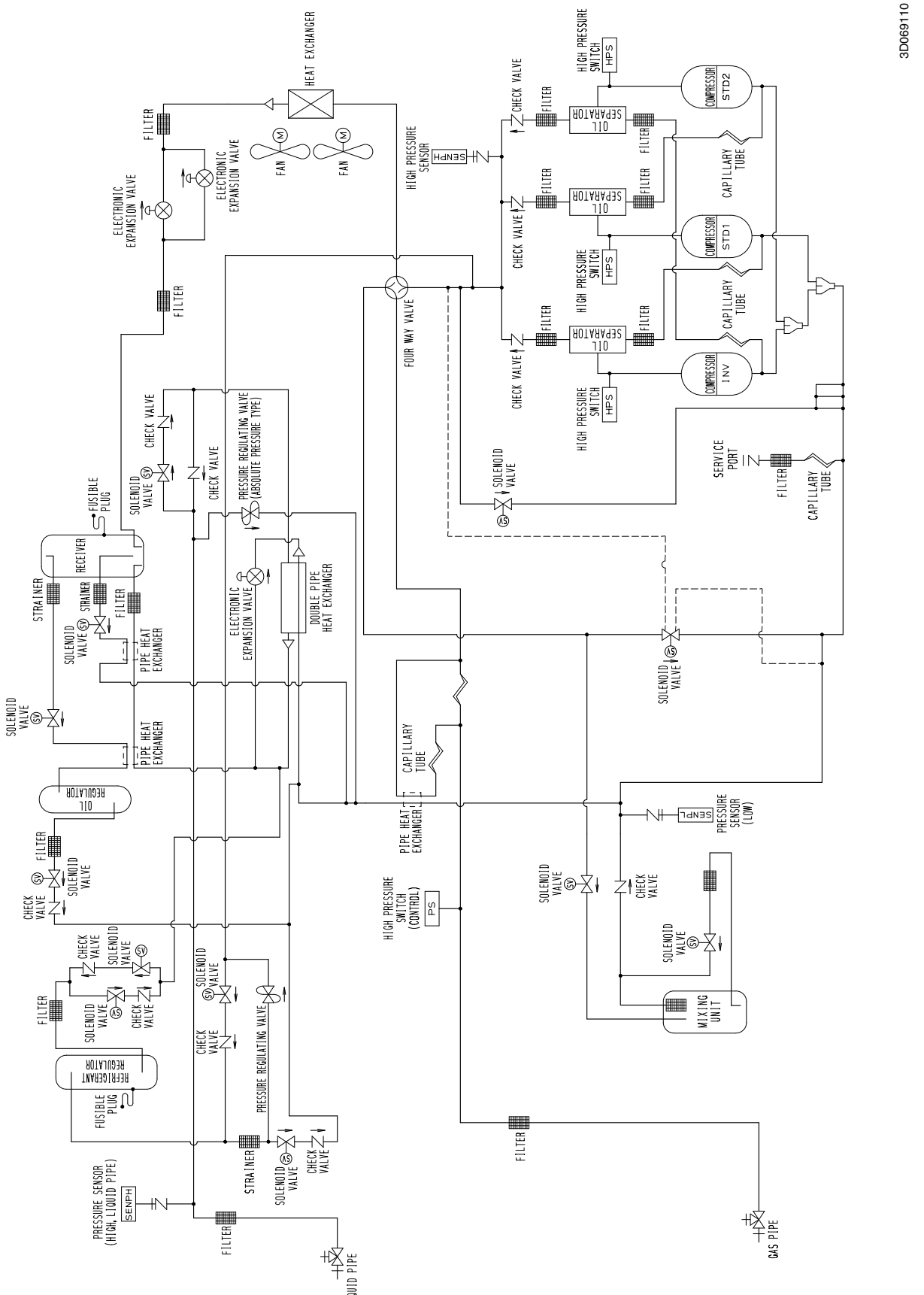
RQYQ8PY1



RQYQ10PY1 / RQYQ12PY1

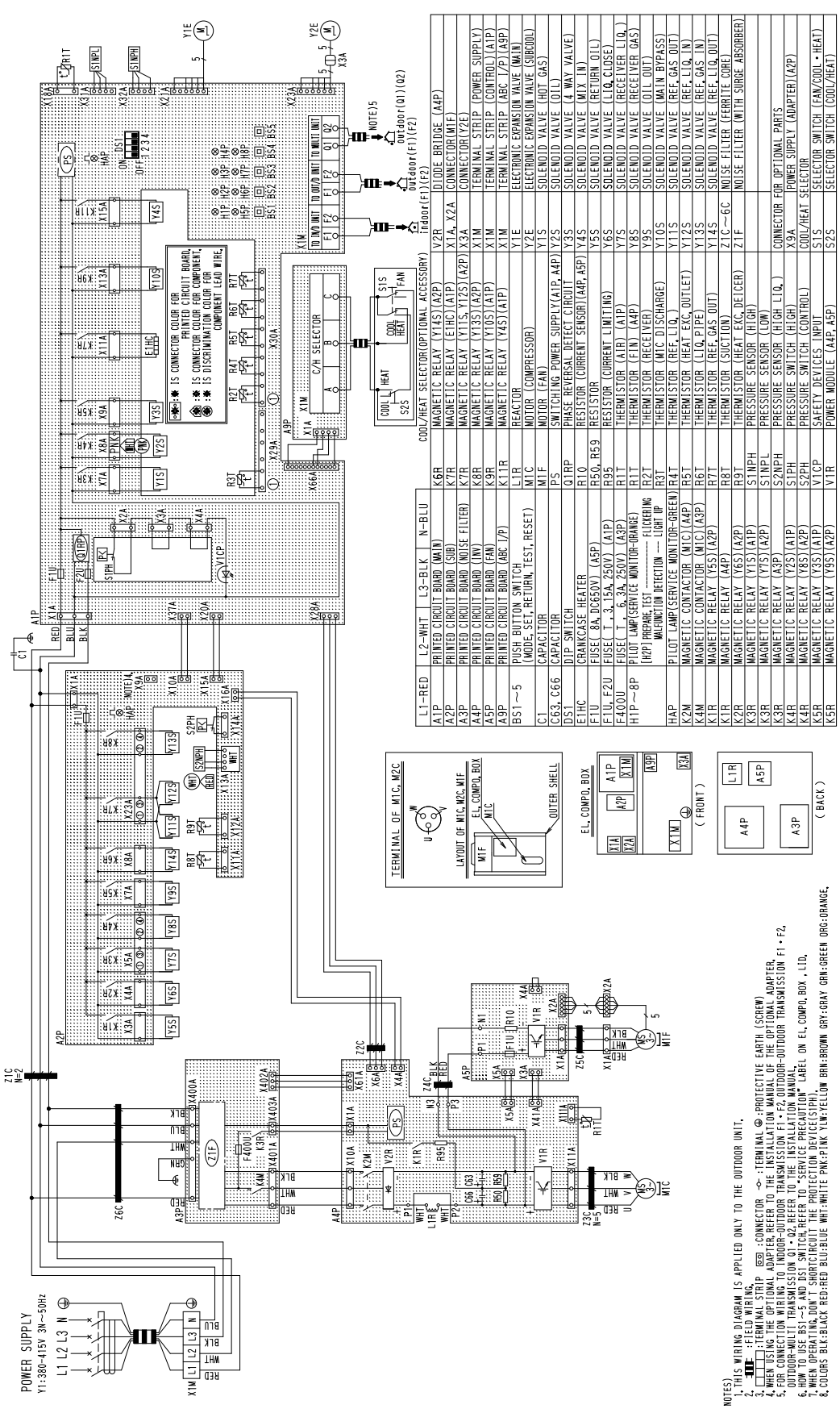


RQYQ14PY1 / RQYQ16PY1

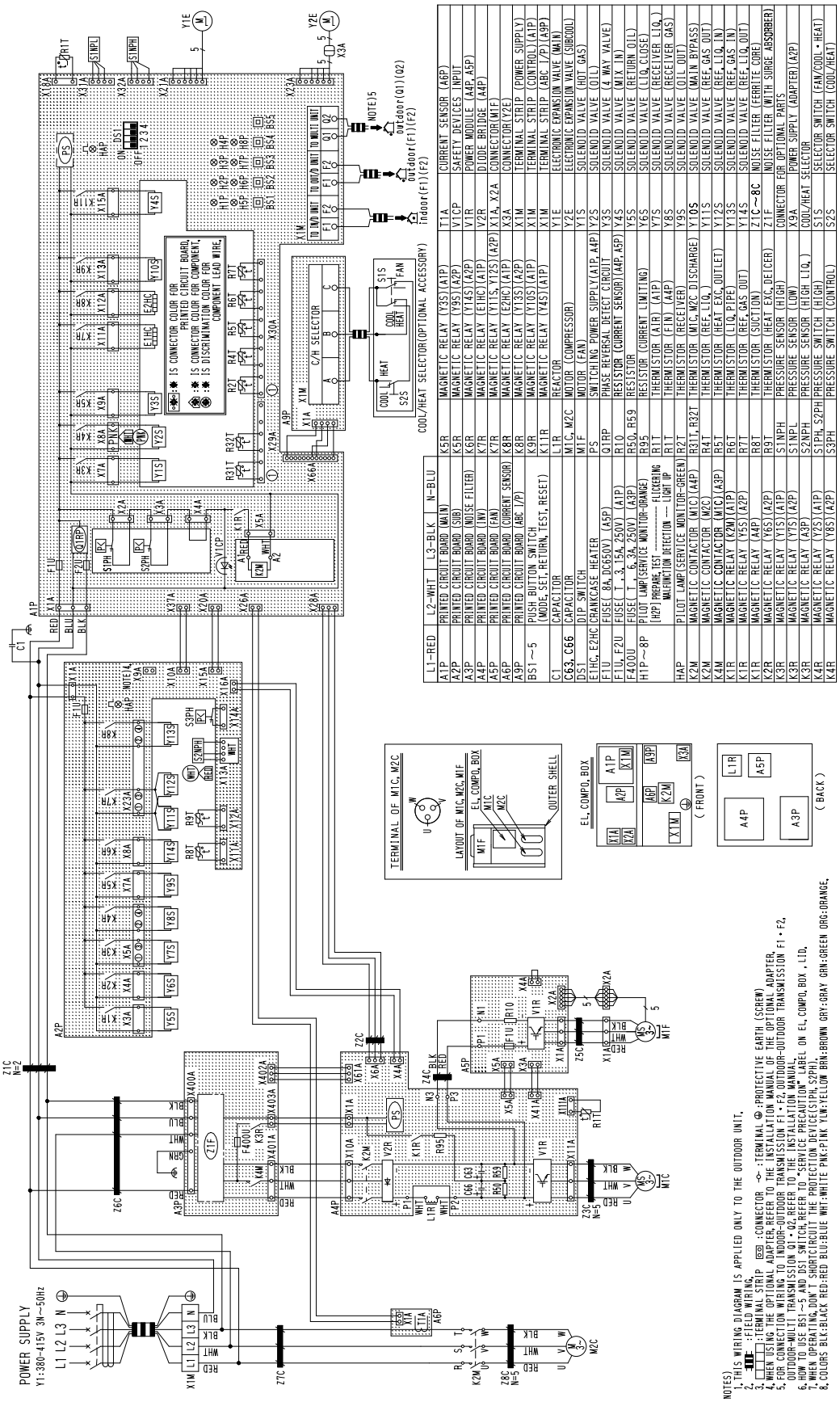


2. Wiring Diagrams

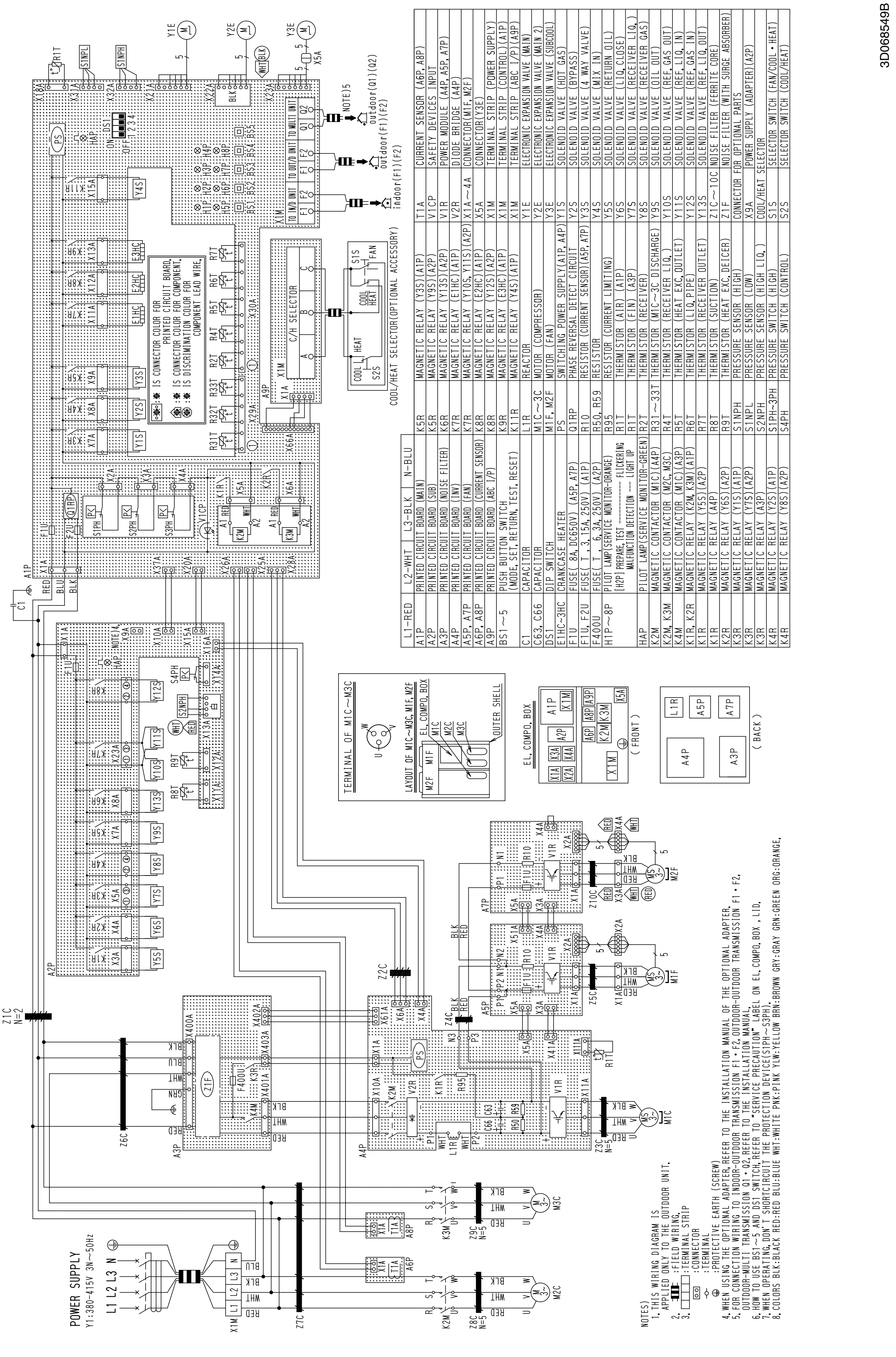
RQYQ8PY1



RQYQ10PY1 / RQYQ12PY1



RQYQ14PY1 / RQYQ16PY1



3. Accessories

3.1 Optional Accessories

Series		VRVⅢ		
Model / Option name		RQYQ8PY1 RQYQ10PY1 RQYQ12PY1	RQYQ14PY1 RQYQ16PY1	RQYQ18PY1 RQYQ20PY1 RQYQ22PY1
Cool/Heat selector		KRC19-26A		
Fixing box		KJB111A		
Distributive piping	REFNET header	KHRP26M22H(Max. 4 branch) KHRP26M33H(Max. 8 branch)	KHRP26M22H(Max. 4 branch), KHRP26M33H(Max. 8 branch) KHRP26M72H(Max. 8 branch)	
	REFNET joint	KHRP26A22T, KHRP26A33T	KHRP26A22T, KHRP26A33T, KHRP26A72T	
Pipe size reducer				
Outdoor unit multi connection piping kit				BHFP22P100
Digital pressure gauge kit		BHGP26A1		BHGP26A1×2
Central drain pan kit		KWC26C280	KWC26C450	KWC26C280×2

Series		VRVⅢ					
Model / Option name		RQYQ24PY1	RQYQ26PY1 RQYQ28PY1	RQYQ30PY1 RQYQ32PY1	RQYQ34PY1 RQYQ36PY1 RQYQ38PY1 RQYQ40PY1	RQYQ42PY1 RQYQ44PY1	RQYQ46PY1 RQYQ48PY1
Cool/Heat selector		KRC19-26A					
Fixing box		KJB111A					
Distributive piping	REFNET header	KHRP26M22H(Max. 4 branch), KHRP26M33H(Max. 8 branch) KHRP26M72H(Max. 8 branch), KHRP26M73H(Max. 8 branch)					
	REFNET joint	KHRP26A22T, KHRP26A33T, KHRP26A72T, KHRP26A73T					
Pipe size reducer		KHRP26M73TP, KHRP26M73HP					
Outdoor unit multi connection piping kit		BHFP22P100			BHFP22P151		
Digital pressure gauge kit		BHGP26A1×2			BHGP26A1×3		
Central drain pan kit		KWC26C280×2	KWC26C280 KWC26C450	KWC26C450×2	KWC26C280×2 KWC26C450	KWC26C280 KWC26C450×2	KWC26C450×3

3D069186

Warning

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

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

Cautions on product corrosion

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

JMI-0107

Organization:
DAIKIN INDUSTRIES, LTD.
AIR CONDITIONING MANUFACTURING DIVISION

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

JQA-1452

Organization:
DAIKIN INDUSTRIES (THAILAND) LTD.

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

EC99J2044

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

Dealer

DAIKIN INDUSTRIES, LTD.

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Kita-ku, Osaka, 530-8323 Japan

Tokyo Office:
JR Shinagawa East Bldg., 2-18-1, Konan,
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Si341009
Printed in Japan 10/2010 AK