

SiE-05C

VRV Inverter K Series

VRVTM PLUS Series

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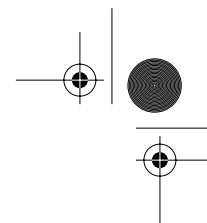


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каталоги, инструкции, сервисные мануалы, схемы.





Part3 Test Operation

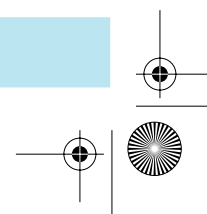
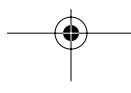
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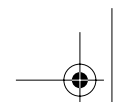
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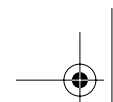
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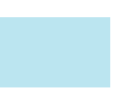
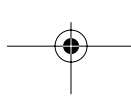
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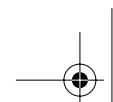
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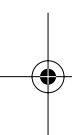
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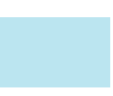
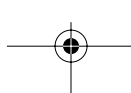
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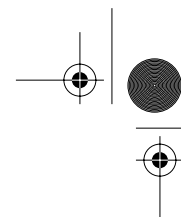


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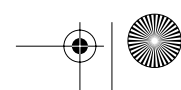
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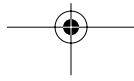
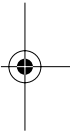
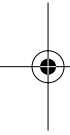
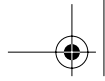
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1. Introduction

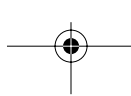
1.1 Safety Cautions

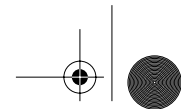
Cautions and Warnings








- Be sure to read the following safety cautions before conducting repair work.
- The caution items are classified into “ **Warning**” and “ **Caution**”. The “ **Warning**” items are especially important since they can lead to death or serious injury if they are not followed closely. The “ **Caution**” items can also lead to serious accidents under some conditions if they are not followed. Therefore, be sure to observe all the safety caution items described below.
- About the pictograms
 -  This symbol indicates an item for which caution must be exercised.
The pictogram shows the item to which attention must be paid.
 -  This symbol indicates a prohibited action.
The prohibited item or action is shown inside or near the symbol.
 -  This symbol indicates an action that must be taken, or an instruction.
The instruction is shown inside or near the symbol.
- After the repair work is complete, be sure to conduct a test operation to ensure that the equipment operates normally, and explain the cautions for operating the product to the customer

1.1.1 Caution in Repair.


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





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

1.1.2 Cautions Regarding Products after Repair




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











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Introduction

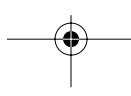
 Warning	
When connecting the cable between the indoor and outdoor units, make sure that the terminal cover does not lift off or dismount because of the cable. If the cover is not mounted properly, the terminal connection section can cause an electrical shock, excessive heat generation or fire.	
Do not 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 (R22) 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.	









 Caution	
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 Mohm 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.	

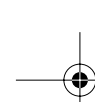
1.1.4 Using Icons

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, lose data, get an unexpected result or has to restart (part of) a procedure.
 Warning	Warning	A "warning" is used when there is danger of personal injury.
	Reference	A "reference" guides the reader to other places in this binder or in this manual, where he/she will find additional information on a specific topic.





1.2 PREFACE

The VRV System Inverter K Series is designed for easy installation and maintenance. Although it has all the features of the previous VRV System Inverter Series, the method of displaying the model name has been changed in order to conform to revision in Japanese Industrial Standards, the method of transmission between outdoor and indoor units has been changed, the equipment has been modified so the same wiring is used for transmission between indoor/outdoor units and centralized control, and can now be connected with a central remote controller.

This maintenance manual was published in order to help you get a solid understanding of these functions, and so you can provide fast and reliable after sales service. Although the contents of the manual may be insufficient in some areas, we hope that you will use it to the best of your ability.

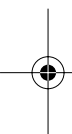
The service manual for the VRV PLUS Series (cool/heat selection system) explains the new methods (super piping and super wiring) featured by the system in four sections: Outline, Functions, Test Operation and Troubleshooting.

Compared with previous VRV Inverter System equipment, the VRV PLUS series is designed to facilitate construction and save space, and is equipped with a unique service mode. The manual is intended for use when troubleshooting or executing test operation.

If you find the manual to be insufficient in any of its explanations, please let us know so we can improve on later editions.

Oct. 1999

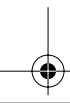
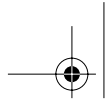
After Sales Service Division

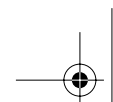




Introduction

SI-E-05C





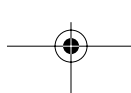
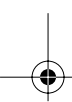
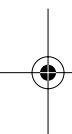
SiE-05C

Part1

General Information

Inverter K Series

1. Series Introduction	2
1.1 NOMENCLATURE	2
1.2 Indoor/Outdoor Unit Combinations	4
2. Outline of System	5
2.1 Easily Recognizable Features of the "K" Series	5
2.2 Changes in K Series Functions / Parts	6
2.3 Compatibility of Old and New VRV System Inverter	9

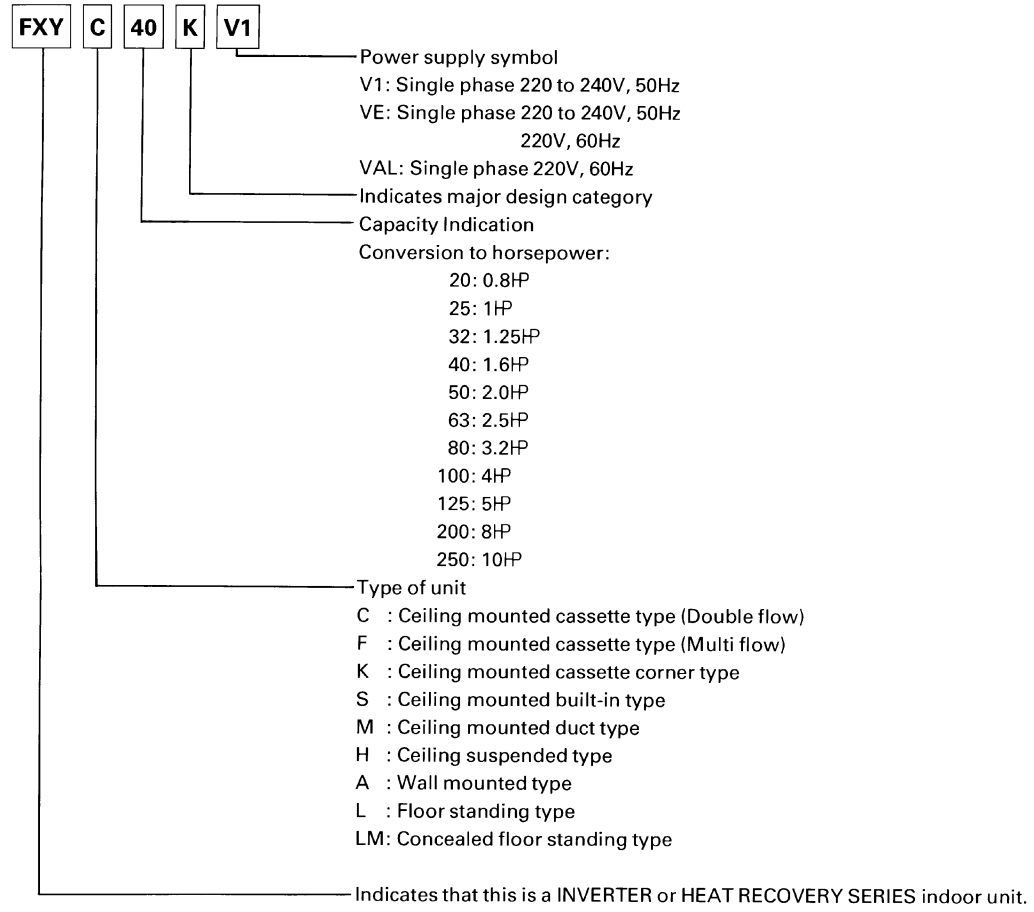




1. Series Introduction

1.1 NOMENCLATURE

1.1.1 Indoor Unit

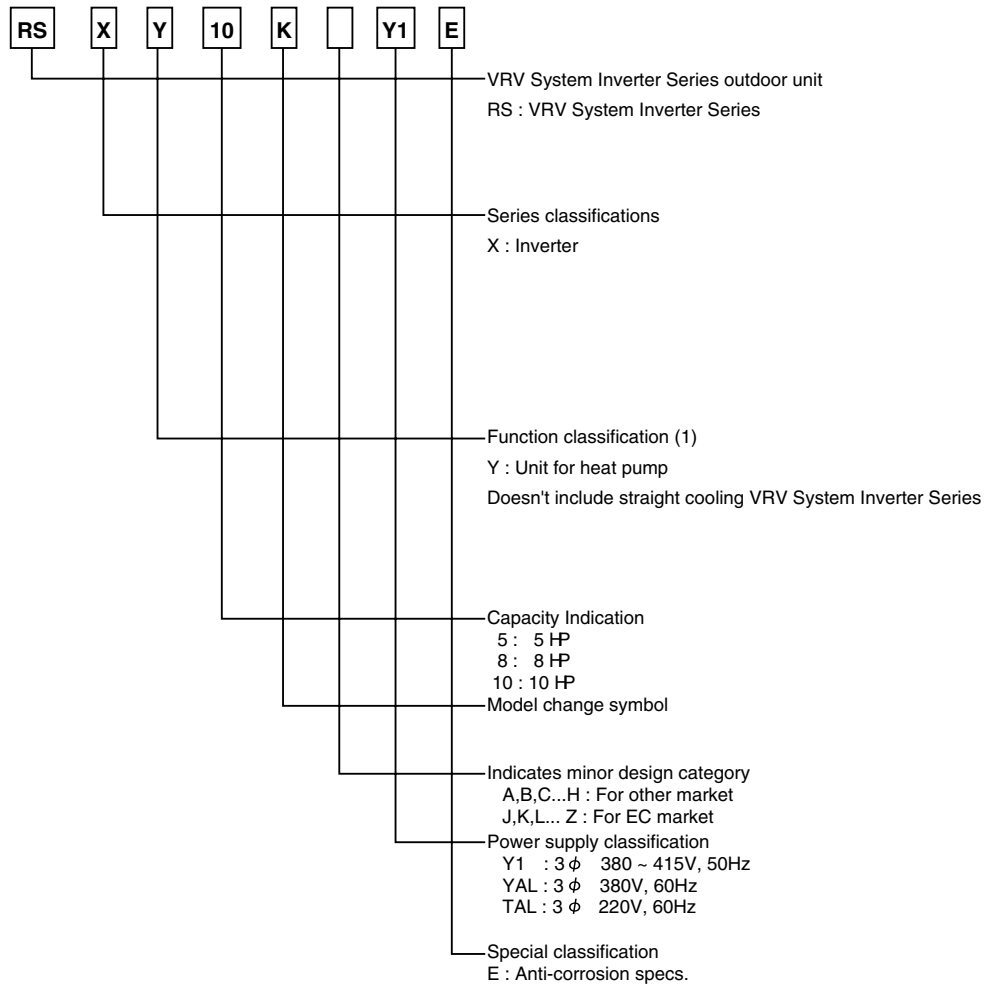


(VE001)

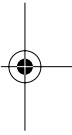
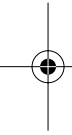




1.1.2 Outdoor Unit



(VE002)





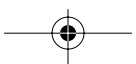
1.2 Indoor/Outdoor Unit Combinations

VRV System Inverter K Series

VRV System Inverter K Series outdoor unit model	RSXY5K	RSXY8K	RSXY10K
Total connectable indoor units	Max. 8 units	Max. 13	Max. 16

Straight Cooling VRV System Inverter

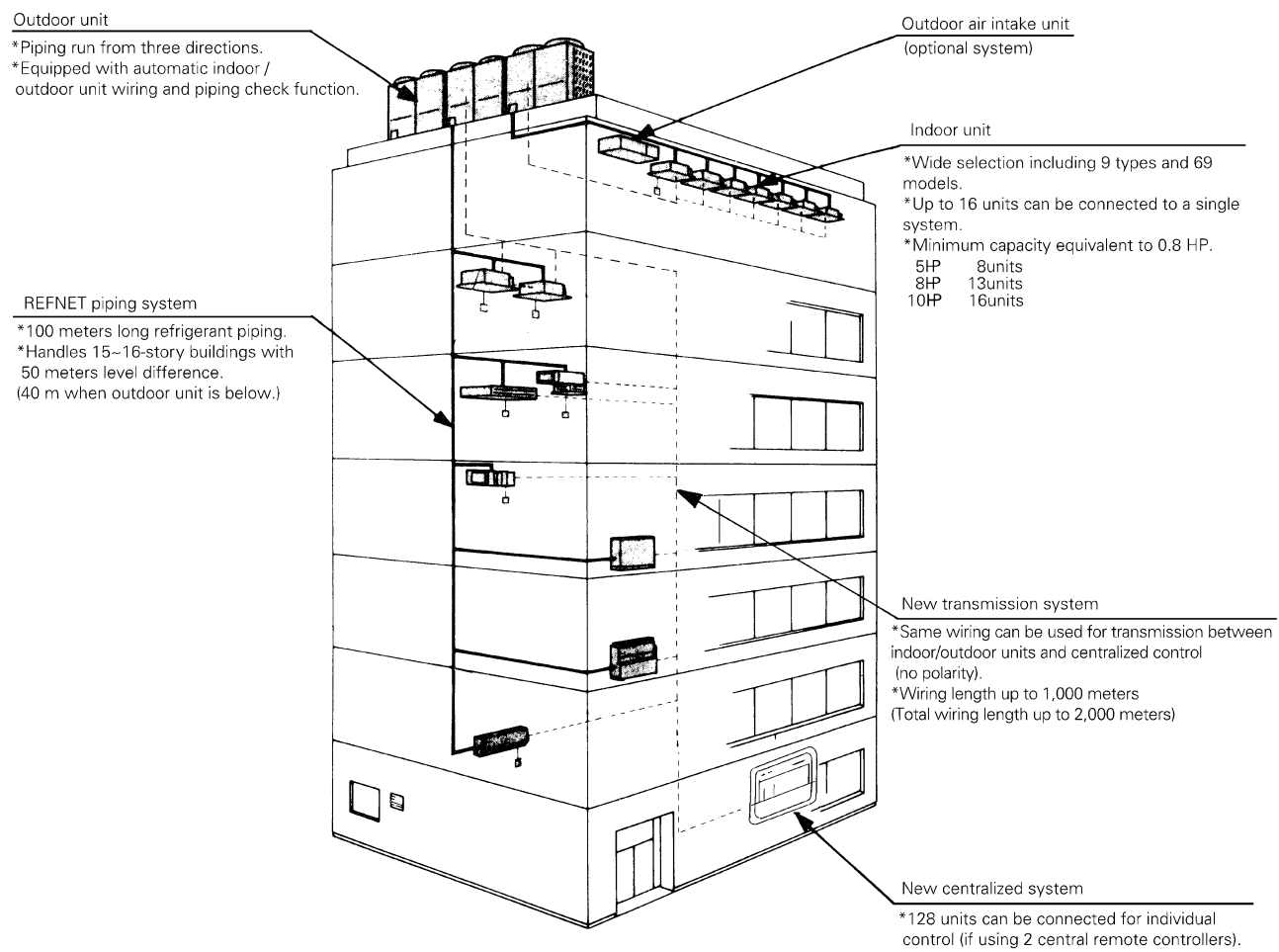
RV System Inverter EXC Series outdoor unit model	RSX5K	RSX8K	RSX10K
Total connectable indoor units	Max. 8 units	Max. 13	Max. 16



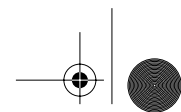
2. Outline of System

2.1 Easily Recognizable Features of the "K" Series

2.1.1 VRV System Inverter K Series System Outline



(VL001)



2.2 Changes in K Series Functions / Parts

2.2.1 Changes in the System as a Whole

More outdoor units can be connected.

A maximum of 16 indoor units can now be connected to a single system.

5HP 8 units
8HP 13 units
10HP 16 units

Same wiring can be used for transmission between indoor/outdoor units and centralized control

Up to now, separate wiring was required for centralized control and for transmission between indoor/outdoor units when installing optional controllers for centralized control, but now the same wiring can be used for both. This facilitates indoor/outdoor transmission wiring construction work as follows.

H Series

- ◆ Separate input and output terminals.
- ◆ Has polarity.
- ◆ Only serial wiring can be used.
- ◆ Wiring can be up to 1,000 meters long.

↓

K Series

- ◆ Same terminals used for input and output.
- ◆ No polarity.
- ◆ 3 wiring methods can be used (serial, bus and star wiring).
- ◆ Up to 16 branches can be used. (Cannot be branched again once branched.)
- ◆ System wiring can be up to a total of 2,000 meters. (Max. wiring length up to 1,000 meters).

■ Indoor unit terminal block

H Series	Input		Output		Remote controller		Centralized		Forced off	
	1	2	1	2	P1	P2	F1	F2	T1	T2

↓

K Series	Remote controller		Transmission wiring		External	
	N	P	F1	F2	T1	T2

■ Outdoor unit terminal block

H Series	C / H selector			Output		Out / D unit input		Out / D unit output		Sequential start KRP 80 - 51	
	A	B	C	1	2	3	4	3	4	5	6

↓

K Series	C / H selector			To In / D unit		To Out / D unit	
	A	B	C	F1	F2	F1	F2

2 central remote controller can be connected in a transmission system.

VRV System Inverter K Series equipment can be connected with two central remote controllers, and can individual control 128 unit (64 units T 2) on a single transmission line.

Change in Mode of Transmission Between Outdoor Units

Wiring for transmission between outdoor units is necessary for selecting cool or heat mode for several units at once. This transmission has been changed as follows.

H Series

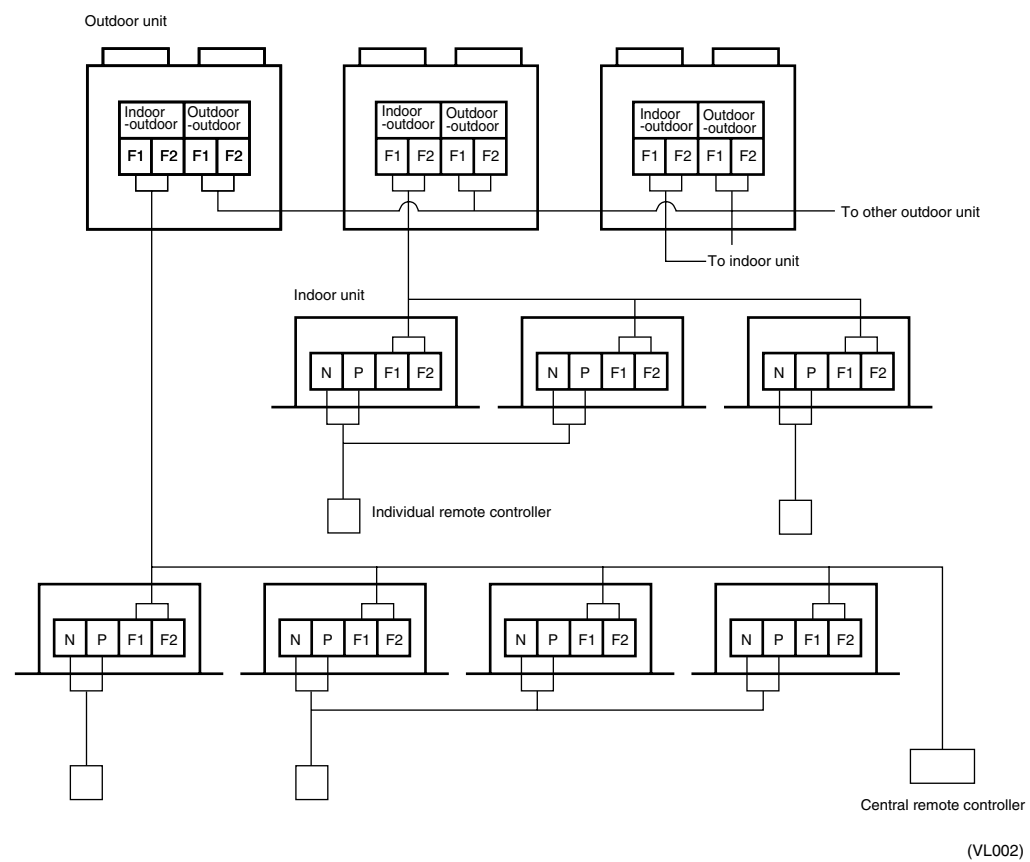
- ◆ Separate input and output terminals.
- ◆ Sequential start requires adaptor PC board.
- ◆ Simultaneous cool/heat selection and low noise operation require only wiring between outdoor units and setting.

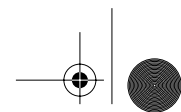
↓

K Series

- ◆ Same terminals used for input and output.
- ◆ Sequential start requires only wiring between outdoor units and setting.
- ◆ Simultaneous cool/heat selection and low noise operation require a separate adaptor for outside control of outdoor units.
- ◆ Transmission can be conducted between a maximum of 10 units.
- ◆ Optional controllers for centralized control can be connected to a transmission line between outdoor units.

VRV System Inverter K Series





Outline of System

SiE-05C

2.2.2 Changes in Indoor Units

Drain Pump

When the TEST OPERATION button has been pushed in order to facilitate checking drainage when installing, the drain pump is force-operated regardless of the temperature control mode. If a humidifier is to be included in the setup, you must set to gusing humidifier with the remote controller. (With the factory settings, the drain pump is not operated during heating.)

Swing Louver

The wall mounted type is equipped with a swing louver . The ceiling mounted cassette type can be set to prevent the ceiling from being soiled.

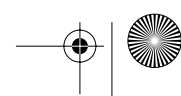
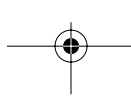
**Able to Use
Wireless Remote
Controllers**

The multi flow, double flow, ceiling suspended and wall mounted types can be fitted with a wireless remote controller kit.
(Other types can use a separate wireless remote controller.)

2.2.3 Changes in Outdoor Units

**Equipped with Oil
Temperature
Sensor Thermistor
(8 and 10HP)**

Oil temperature detection has been incorporated into control in order to prevent wet operation and improve dilution of oil.

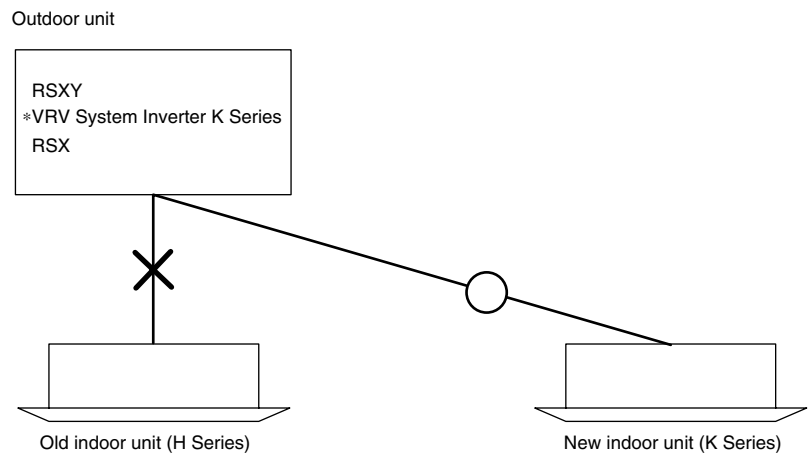


2.3 Compatibility of Old and New VRV System Inverter

2.3.1 H Series Indoor Units:

Cannot be connected to new outdoor unit

Connectable Combinations



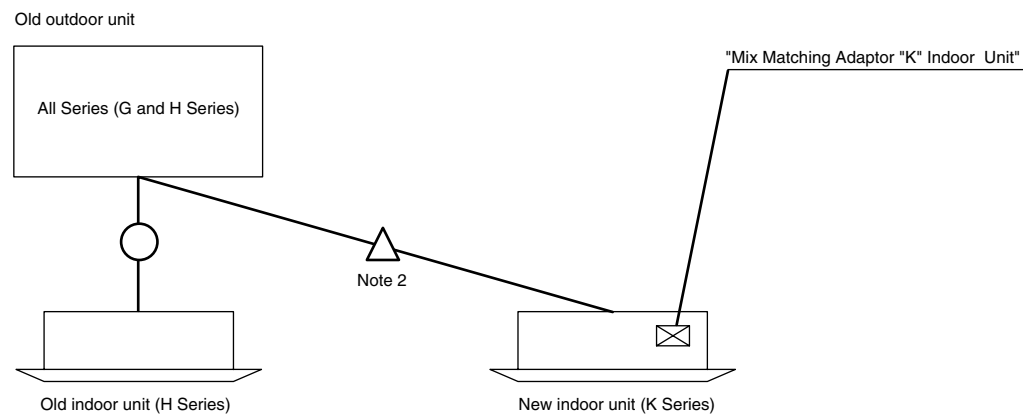
○	Can be connected
x	Cannot be connected



Notes 1. Old and new indoor units cannot be used together.

2.3.2 The new K Series indoor unit can be connected as an extension to an existing outdoor unit using an optional accessory "Mix Matching Adaptor "K" Indoor Unit"

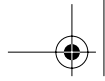
Connectable Combinations



DTA106A61
Double flow, built-in, wall mounted, concealed floor standing type
DTA106A62
Multi flow, ceiling suspended

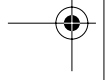
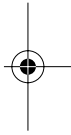


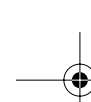
Notes 1. Old and new indoor units can be used together.
2. An Mix Matching Adapter for "K" Indoor Unit (DTA106A61/62) is required for one refrigerant system.



Outline of System

SI-E-05C

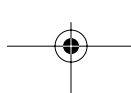




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Part2 Functions Inverter K Series

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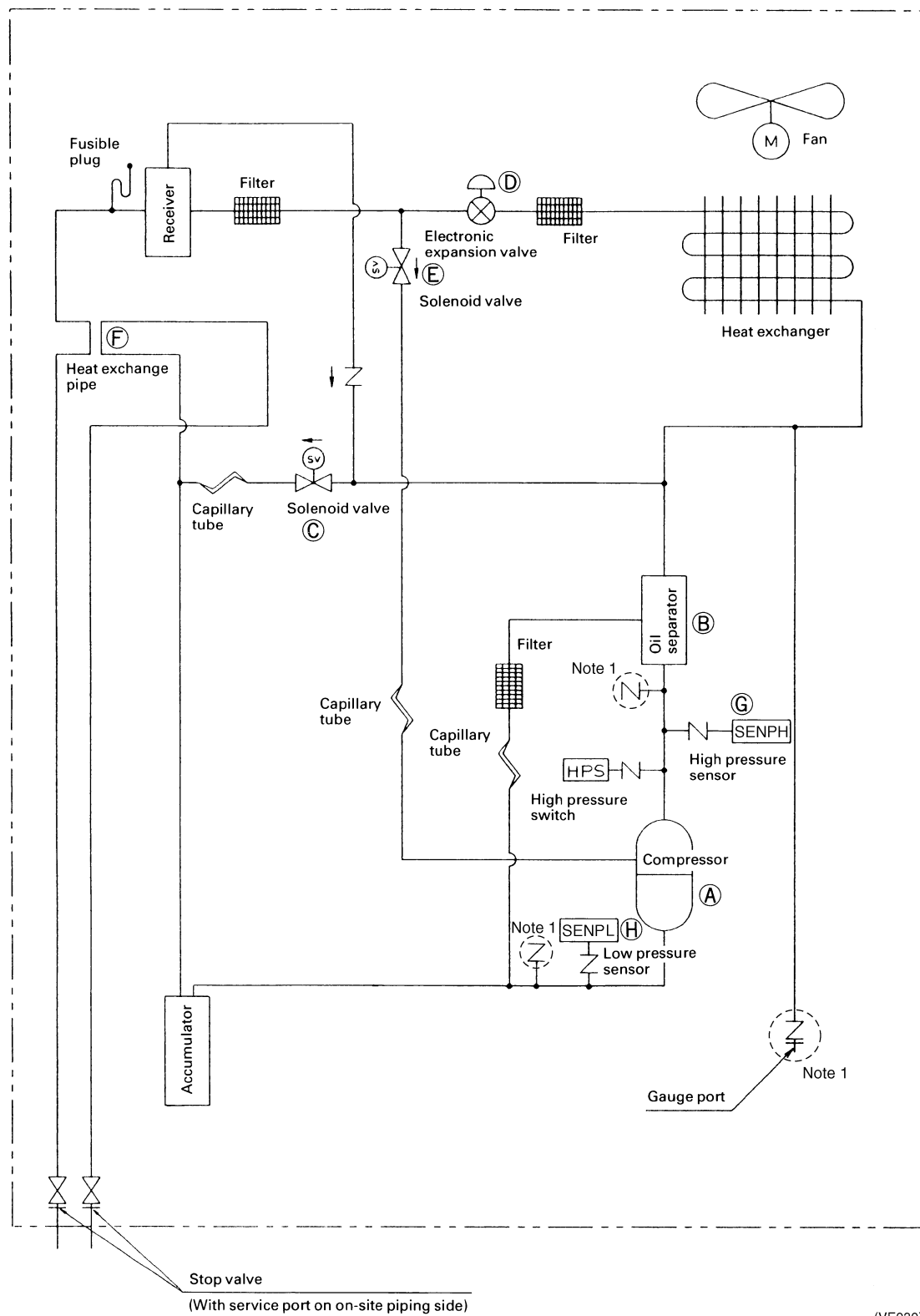




1. Functions

1.1 Outdoor Unit Refrigerant System Diagram

RSX5K Series (* Products produced before July '99 and included RSX5KY1C model produced before Dec. '99)



(VE030)

i Note: 1. These check valves are not fitted for RSX5KY1C model.





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Functions

A. Compressor M1C

Scroll compressor that operates on 30~116Hz by inverter drive enables 13-step capacity control. Capacity control is carried out for individual and linear control of indoor units.

B. Oil separator

The oil separator is a device that collects the oil discharged from the compressor. The collected oil is constantly recycled to the compressor via capillary tube.

C. Solenoid valve (hot gas bypass) Y2S

Valve is opened by low pressure safety control when low pressure drops. Balances high/low pressure when off in order to reduce load when the compressor starts.

D. Outdoor unit electronic expansion valve Y1E

Expansion valve is kept open.

E. Solenoid valve (injection) Y3S

Controls injection in order to prevent overheating.

F. Heat exchange pipe

Subcools so that refrigerant drift doesn't occur between indoor units when flash gas is produced in the liquid pipe.

G. Pressure sensor (high pressure, red) SENPH

Semiconductor pressure sensor carries out heat exchange control during low outdoor cooling operation by sensing discharge pressure.

H. Pressure sensor (low pressure, blue) SENPL

Semiconductor pressure sensor for sensing the operating status of the indoor by refrigerant pressure which senses suction pressure.

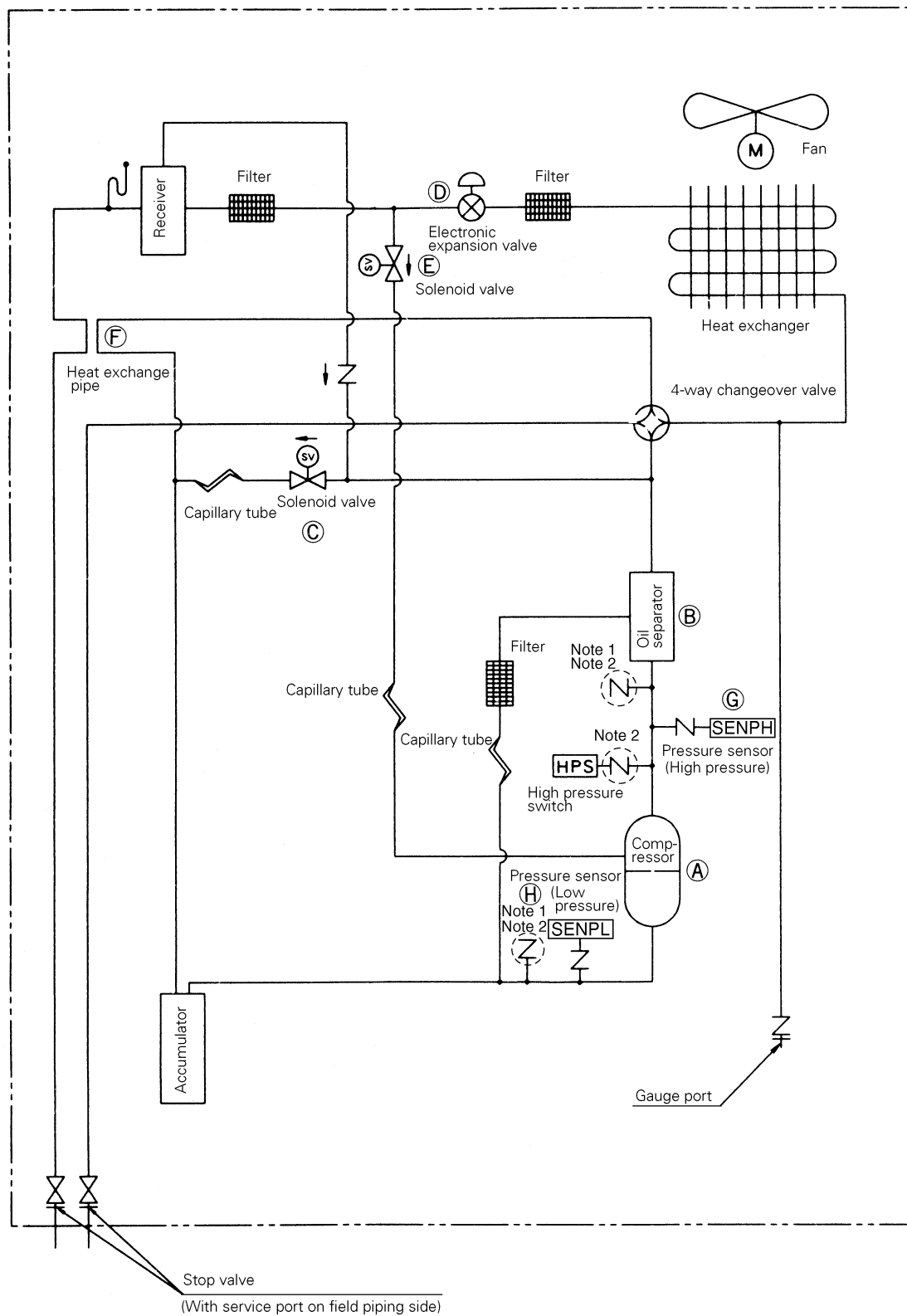




Functions

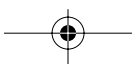
SI-E-05C

RSXY5K Series (* Included RSXY5KY1C model)



Note:

1. These check valves are not fitted for RSXY5KY1C model.
2. These check valves are not fitted for products produced after Aug. '99 and RSXY5KY1C model produced after Jan. 2000.





A. Compressor M1C

Scroll compressor that operates on 30~116Hz by inverter drive enables 13-step capacity control. Capacity control is carried out for individual and linear control of indoor units.

B. Oil separator

The oil separator is a device that collects the oil discharged from the compressor. The collected oil is constantly recycled to the compressor via capillary tube.

C. Solenoid valve (hot gas bypass) Y2S

Valve is opened by low pressure safety control when low pressure drops. Balances high/low pressure when off in order to reduce load when the compressor starts.

D. Outdoor unit electronic expansion valve Y1E

Expansion valve when heating. Senses compressor suction pipe and low pressure equivalent saturated temperature, and carries out superheat degree control.

E. Solenoid valve (injection) Y3S

Controls injection in order to prevent overheating.

F. Heat exchange pipe

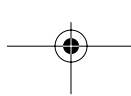
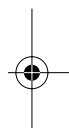
Subcools so that refrigerant drift doesn't occur between indoor units when flash gas is produced in the liquid pipe.

G. Pressure sensor (high pressure, red) SENPH

Semiconductor pressure sensor for sensing the operating status of the indoor by refrigerant pressure which senses discharge pressure.

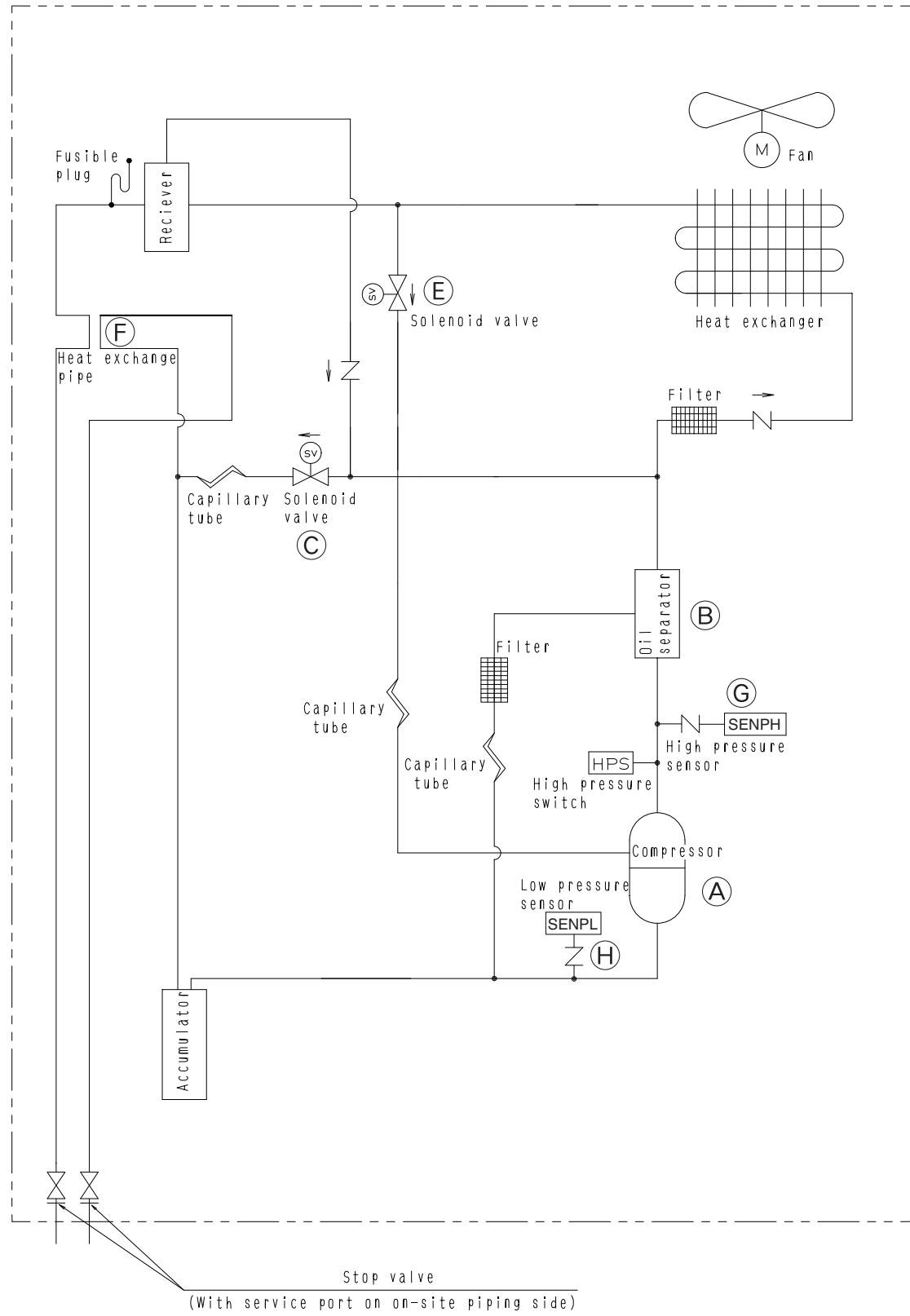
H. Pressure sensor (low pressure, blue) SENPL

Semiconductor pressure sensor for sensing the operating status of the indoor by refrigerant pressure which senses suction pressure.





RSX5K Series (* Products produced after August '99) (* RSX5KY1C model produced after Jan. 2000)



DU229-622A





SiE-05C

Functions

A. Compressor M1C

Scroll compressor that operates on 30~116Hz by inverter drive enables 13-step capacity control. Capacity control is carried out for individual and linear control of indoor units.

B. Oil separator

The oil separator is a device that collects the oil discharged from the compressor. The collected oil is constantly recycled to the compressor via capillary tube.

C. Solenoid valve (hot gas bypass) Y2S

Valve is opened by low pressure safety control when low pressure drops. Balances high/low pressure when off in order to reduce load when the compressor starts.

E. Solenoid valve (injection) Y3S

Controls injection in order to prevent overheating.

F. Heat exchange pipe

Subcools so that refrigerant drift doesn't occur between indoor units when flash gas is produced in the liquid pipe.

G. Pressure sensor (high pressure, red) SENPH

Semiconductor pressure sensor carries out heat exchange control during low outdoor cooling operation by sensing discharge pressure.

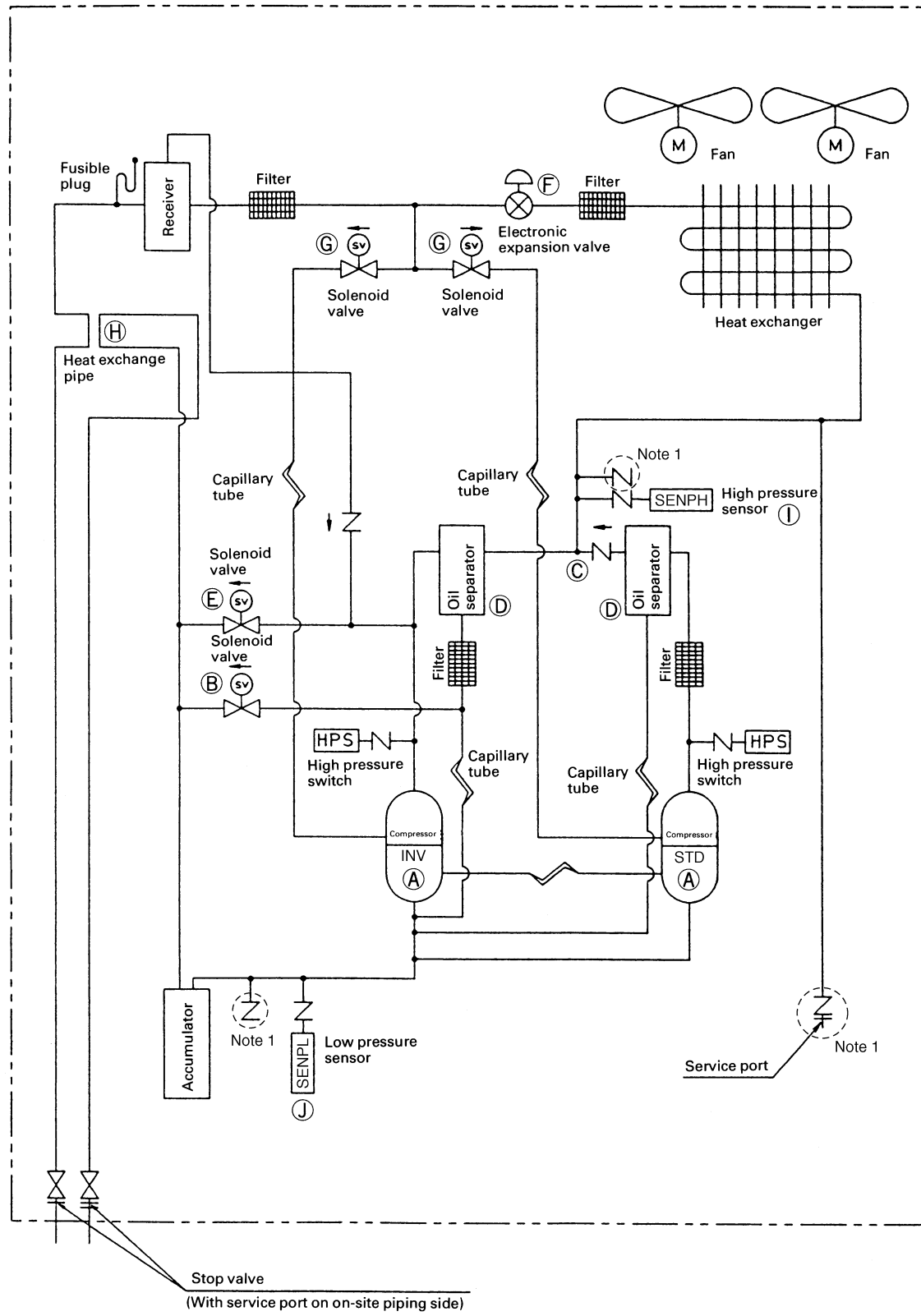
H. Pressure sensor (low pressure, blue) SENPL

Semiconductor pressure sensor for sensing the operating status of the indoor by refrigerant pressure which senses suction pressure.



RSX8K-10K Series

(* Products produced before July '99 and Included RSX8K, 10KY1C models produced before Dec. '99)



(VE032)

i Note: 1. These check valves are not fitted for RSX8K, 10KY1C models.



A. Compressor M1C / M2C

Connecting a scroll compressor (inverter compressor) that operates on 30~116Hz by inverter drive and a scroll compressor (standard compressor) that runs on a commercial power supply to the same refrigerant system enables 21-step capacity control. Capacity control is carried out for individual and linear control of indoor units.

(M1C: Inverter compressor, M2C: Standard compressor)

B. Solenoid valve (pressure equalizing) Y1S

Balances high/low pressure when off in order to reduce load when the compressor starts.

C. Check valve

Keeps liquid refrigerant from collecting in the standard compressor when only the inverter compressor is running.

D. Oil separator

The oil separator is a device that collects the oil discharged from the compressor. The collected oil is constantly recycled to the compressor via capillary tube.

E. Solenoid valve (hot gas bypass) Y2S

Valve is opened by low pressure safety control when low pressure drops.

F. Outdoor unit electronic expansion valve Y1E

Expansion valve is kept open.

G. Solenoid valve (injection) Y3S / Y4S

Controls injection in order to prevent overheating.

Y3S: Inverter compressor, Y4S: Standard compressor)

H. Heat exchange pipe

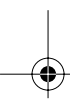
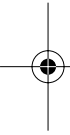
Subcools so that refrigerant drift doesn't occur between indoor units when flash gas is produced in the liquid pipe.

I. Pressure sensor (high pressure, red) SENPH

Semiconductor pressure sensor carries out heat exchange control during low outdoor cooling operation by sensing discharge pressure.

J. Pressure sensor (low pressure, blue) SENPL

Semiconductor pressure sensor for sensing the operating status of the indoor by refrigerant pressure which senses suction pressure.





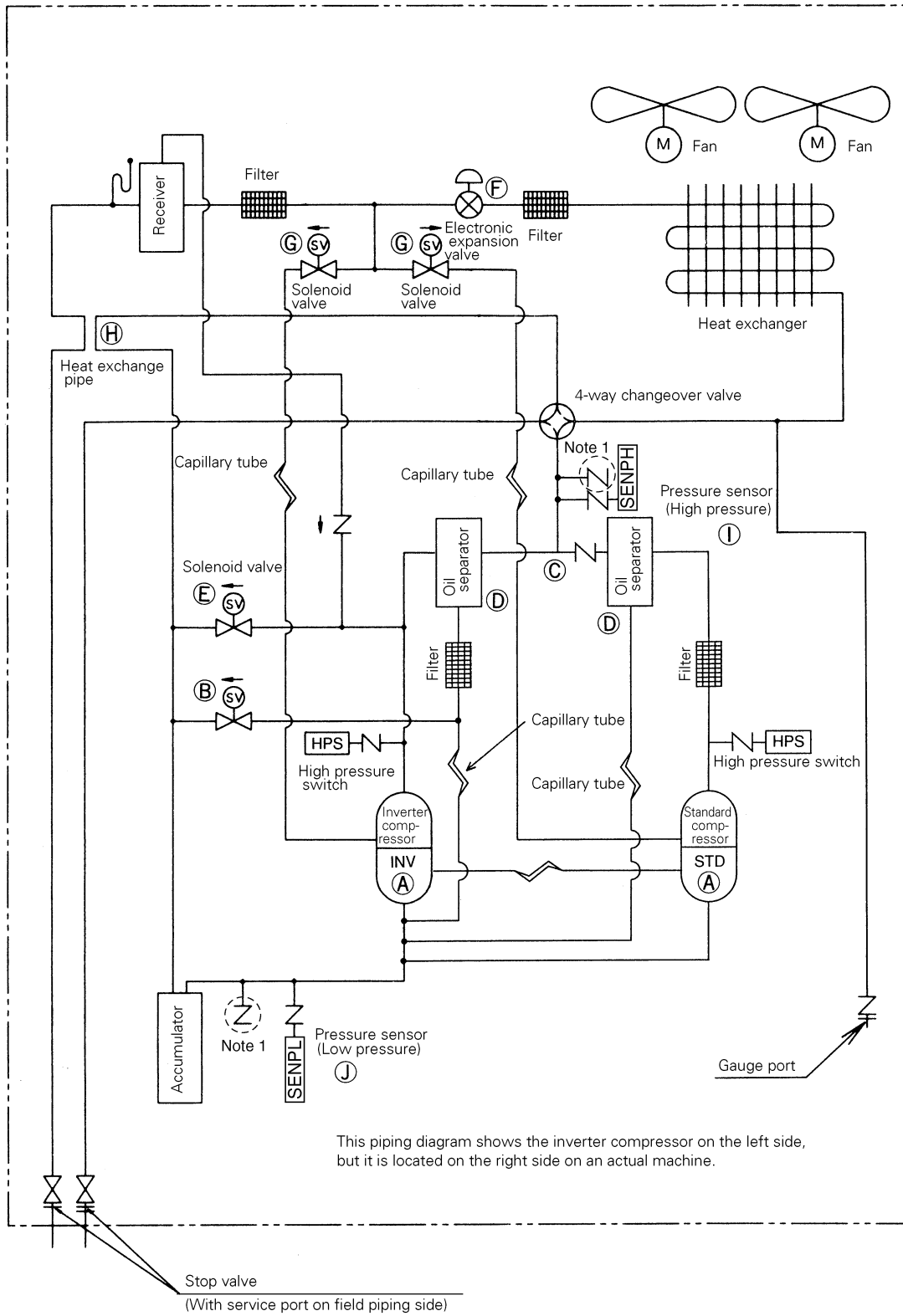
Functions

SI-05C



RSXY8, 10K Series

(* Products produced before July '99 and Included RSXY8K, 10KY1C models produced before Dec. '99)



Note: 1. These check valves are not fitted for RSXY8K, 10KY1C models.





A. Compressor M1C / M2C

Connecting a scroll compressor (inverter compressor) that operates on 30~116Hz by inverter drive and a scroll compressor (standard compressor) that runs on a commercial power supply to the same refrigerant system enables 21-step capacity control. Capacity control is carried out for individual and linear control of indoor units.

(M1C: Inverter compressor, M2C: Standard compressor)

B. Solenoid valve (pressure equalizing) Y1S

Balances high/low pressure when off in order to reduce load when the compressor starts.

C. Check valve

Keeps liquid refrigerant from collecting in the standard compressor when only the inverter compressor is running.

D. Oil separator

The oil separator is a device that collects the oil discharged from the compressor. The collected oil is constantly recycled to the compressor via capillary tube.

E. Solenoid valve (hot gas bypass) Y2S

Valve is opened by low pressure safety control when low pressure drops.

F. Outdoor unit electronic expansion valve Y1E

Expansion valve when heating. Senses compressor suction pipe and low pressure equivalent saturated temperature, and carries out superheat degree control.

G. Solenoid valve (injection) Y3S / Y4S

Controls injection in order to prevent overheating.

Y3S: Inverter compressor, Y4S: Standard compressor)

H. Heat exchange pipe

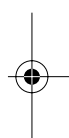
Subcools so that refrigerant drift doesn't occur between indoor units when flash gas is produced in the liquid pipe.

I. Pressure sensor (high pressure, red) SENPH

Semiconductor pressure sensor for sensing the operating status of the indoor by refrigerant pressure which senses discharge pressure.

J. Pressure sensor (low pressure, blue) SENPL

Semiconductor pressure sensor for sensing the operating status of the indoor by refrigerant pressure which senses suction pressure.

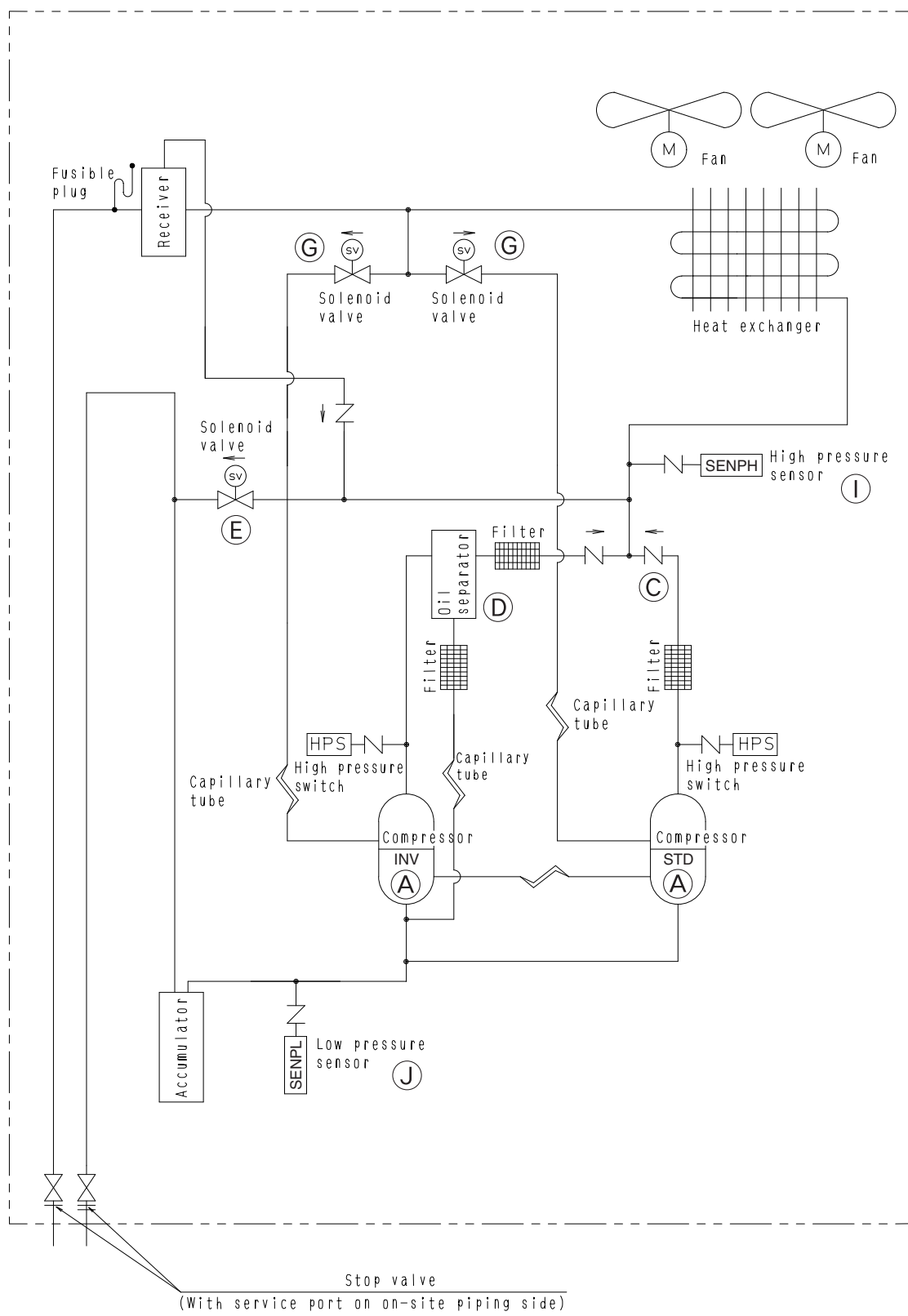




Functions

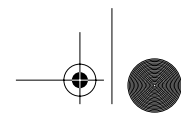
SI-05C

RSX8, 10K Series (* Products produced after August '99) (* RSX8K, 10KY1C models produced after Jan. 2000)



DU232-607A





A. Compressor M1C / M2C

Connecting a scroll compressor (inverter compressor) that operates on 30~116Hz by inverter drive and a scroll compressor (standard compressor) that runs on a commercial power supply to the same refrigerant system enables 21-step capacity control. Capacity control is carried out for individual and linear control of indoor units.

(M1C: Inverter compressor, M2C: Standard compressor)

C. Check valve

Keeps liquid refrigerant from collecting in the standard compressor when only the inverter compressor is running.

D. Oil separator

The oil separator is a device that collects the oil discharged from the compressor. The collected oil is constantly recycled to the compressor via capillary tube.

E. Solenoid valve (hot gas bypass) Y2S

Valve is opened by low pressure safety control when low pressure drops. Balances high/low pressure when off in order to reduce load when the compressor starts.

G. Solenoid valve (injection) Y3S / Y4S

Controls injection in order to prevent overheating.

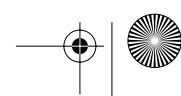
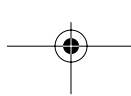
(Y3S: Inverter compressor, Y4S: Standard compressor)

I. Pressure sensor (high pressure, red) SENPH

Semiconductor pressure sensor carries out heat exchange control during low outdoor cooling operation by sensing discharge pressure.

J. Pressure sensor (low pressure, blue) SENPL

Semiconductor pressure sensor for sensing the operating status of the indoor by refrigerant pressure which senses suction pressure.

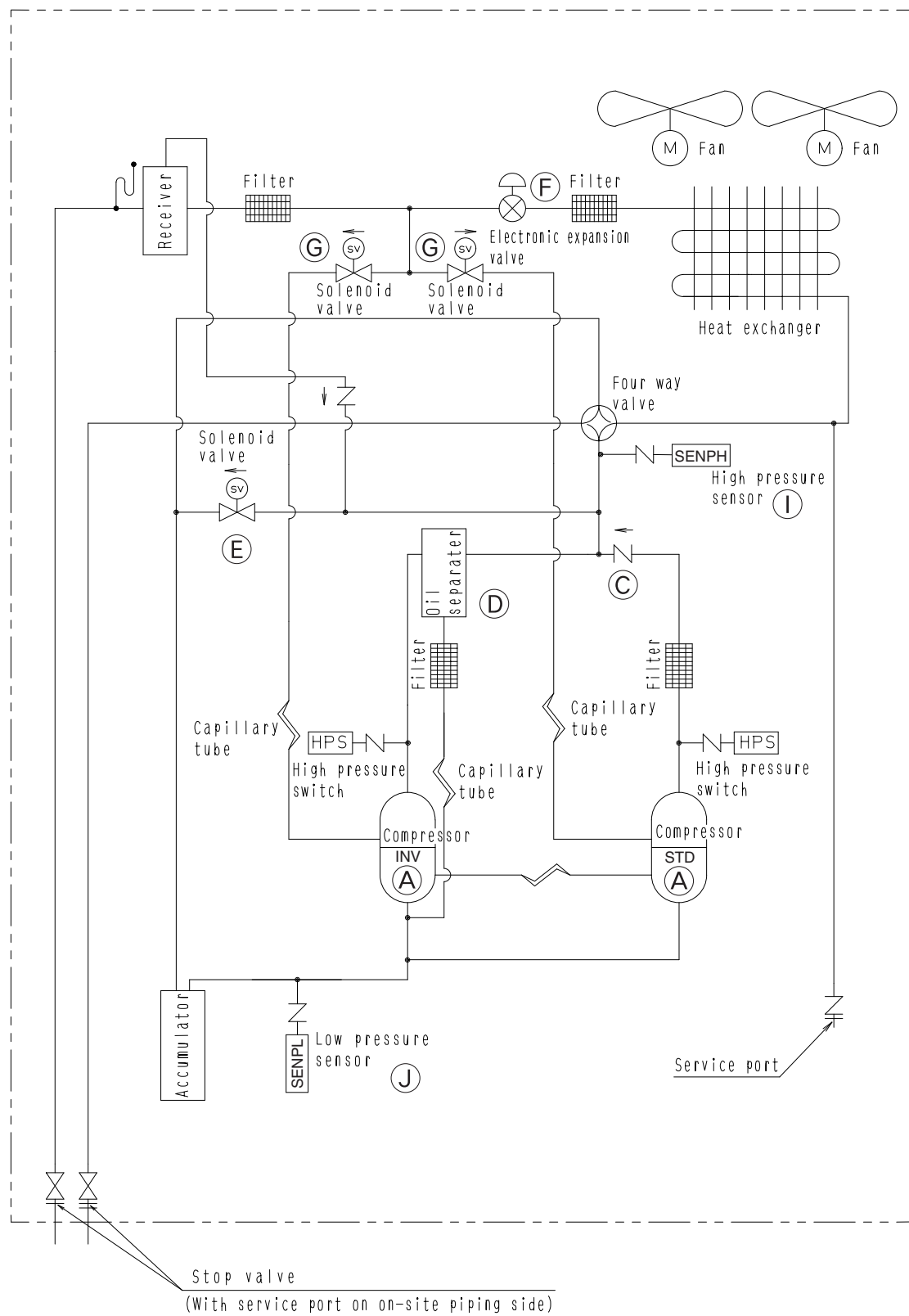




Functions

SI-E-05C

RSXY8K, 10K Series (* Products produced after August '99) (* RSXY8K, 10KY1C models produced after Jan. 2000)



4D014597





A. Compressor M1C / M2C

Connecting a scroll compressor (inverter compressor) that operates on 30~116Hz by inverter drive and a scroll compressor (standard compressor) that runs on a commercial power supply to the same refrigerant system enables 21-step capacity control. Capacity control is carried out for individual and linear control of indoor units.

(M1C: Inverter compressor, M2C: Standard compressor)

C. Check valve

Keeps liquid refrigerant from collecting in the standard compressor when only the inverter compressor is running.

D. Oil separator

The oil separator is a device that collects the oil discharged from the compressor. The collected oil is constantly recycled to the compressor via capillary tube.

E. Solenoid valve (hot gas bypass) Y2S

Valve is opened by low pressure safety control when low pressure drops. Balances high/low pressure when off in order to reduce load when the compressor starts.

F. Outdoor unit electronic expansion valve Y1E

Expansion valve when heating. Senses compressor suction pipe and low pressure equivalent saturated temperature, and carries out superheat degree control.

G. Solenoid valve (injection) Y3S / Y4S

Controls injection in order to prevent overheating.

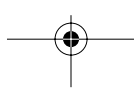
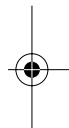
(Y3S: Inverter compressor, Y4S: Standard compressor)

I. Pressure sensor (high pressure, red) SENPH

Semiconductor pressure sensor for sensing the operating status of the indoor by refrigerant pressure which senses discharge pressure.

J. Pressure sensor (low pressure, blue) SENPL

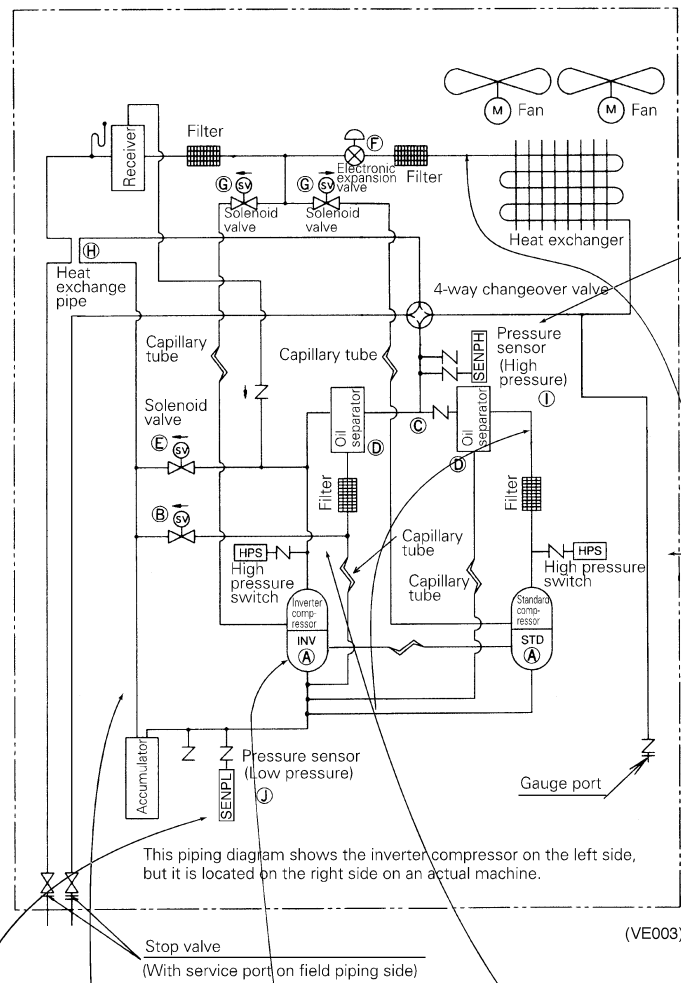
Semiconductor pressure sensor for sensing the operating status of the indoor by refrigerant pressure which senses suction pressure.



1.2 Function of Thermistors and Pressure Sensors

1.2.1 Outdoor Unit

RSXY8, 10K



High pressure sensor (SENPH)

When heating:
Used for compressor capacity control by sensing high pressure.

When cooling:
Carries out heat exchange control during low outdoor air cooling.

Outdoor temperature thermistor (R1T)

(When heating)

- Used as the function for defrost IN conditions.
- OFF by thermostat when temperature becomes 27°C or higher

Suction pipe temperature thermistor (R4T)

Used for superheat control of electronic expansion valve when heating.

Discharge pipe temperature thermistor

R3-1T (Inverter compressor)
R3-2T (Standard compressor)
Used for compressor discharge temperature safety.
(RSXY5K R3T)

Coil temperature thermistor (R2T)

(When cooling)
Not used for anything.

(When heating)
Used together with outdoor temperature as the function for defrost IN conditions.

Low pressure sensor (SENPL)

When cooling:
Used for compressor capacity control and low pressure safety control by sensing low pressure.

When heating:
Used for superheating control and low pressure safety control.

Oil temperature thermistor (R5T)

(8, 10 HP only)
(When heating)

- Alters the desired superheat degree (SH) to prevent wet operation.

(When defrosting)

- Controls upper limit frequency to improve dilution of oil.

1.3 List of Safety Devices and Functional Parts Setting Values

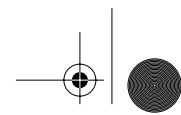
1.3.1 Outdoor Unit

RSXY5-10K

Item	Symbol	Name		Type					
				RSX(Y)5K		RSX(Y)8K		RSX(Y)10K	
Compressor	Inverter side Model Output	Y1	INV	JT100BAVYE	3.5 kW	JT100BAVTYE	3.5 kW	JT100BAVTYE	3.5 kW
			STD			JT100BATYE	2.2 kW	JT160BATYE	3.75kW
		YAL	INV	JT100BAVYE	3.5 kW	JT100BAVTYE	3.5 kW	JT100BAVTYE	3.5 kW
			STD			JT100BATYH	2.2 kW	JT160BATYH	3.75kW
		TAL	INV	JT100BAV	3.5 kW	JT100BAVT	3.5 kW	JT100BAVT	3.5 kW
			STD			JT100BAT	2.2 kW	JT160BAT	3.75kW
		Compressor safety thermostat	Discharge pipe thermistor 135°C OFF						
	J1HC/J2HC	Crank case heater	33W		33W+33W				
	F2C	Over-current relay	Y1		—		HOE-20F-TRA1 10A	HOE-20F-TRA1 13A	
			YAL		—		HOE-20F-TRA1 10A	HOE-20F-TRA1 13A	
TAL				—		HOE-20-TRA1 15A	HOE-26-TRA1 24A		
Safety device	Q1M	Fan motor		190W		140W+230W			
	Q2M	Safety thermostat		Open 135°C ± 5°C		140W: Open 120 ± 5°C, 230W: 135 ± 5°C			
	S1P	Pressure switch (for high pressure safety)		20SP-688-6 OFF: 27.5+0~-1.0kg/cm ² ON: 20.0+1.0~-1.0kg/cm ²		—			
	S1HP	Pressure switch (for high pressure safety)		—		20SP-688-6 OFF: 27.5+0~-1.0kg/cm ² ON: 20.0+1.0~-1.0kg/cm ²			
	S2HP	Pressure switch (for high pressure safety)		—		20SP-688-6 OFF: 27.5+0~-1.0kg/cm ² ON: 20.0+1.0~-1.0kg/cm ²			
		Fusible plug		FPG-3D 70~75°C					
Sensor	SENP	Pressure sensor		PS8030A 0~30kg/cm ² (0~2.94MPa)					
	SENP	Pressure sensor		PS8030A 0~10kg/cm ² (0~0.98MPa)					
	R1T	Thermistor (for outdoor air)		3.5~360KΩ					
	R2T	Thermistor (for heat exchange)		3.5~360KΩ					
	R3T	Thermistor (for discharge pipe)		3.5~400KΩ		—			
	R3-1T	Thermistor (for inverter discharge pipe)		—		3.5~400KΩ			
	R3-2T	Thermistor (for standard discharge pipe)		—		3.5~400KΩ			
	R4T	Thermistor (for suction pipe)		3.5~360KΩ					
	R5T	Thermistor for inverter oil temperature)		—		3.5~400KΩ (* 3.5~360KΩ)			
Other functions /parts	Y1E Note 1	Electronic expansion valve	When cooling	ON: 2,000 pulses (completely open); OFF: 0 pulses (completely closed)					
			When heating	ON: PI control; OFF: 0 pulses (completely closed)					
	Y2S	Solenoid valve (for hot gas bypass)		NEV603					
	Y3S	Solenoid valve (for inverter injection)		NEV202 (* ST10D)					
	Y4S	Solenoid valve (for standard injection)		—		NEV202 (* ST10D)			
Y1S Note 1	Solenoid valve (pressure equalizing)		—		NEV202 (* ST10D)				



- Note**
1. These parts are for heat pump model only.
 2. *: For products produced after Aug. '99.



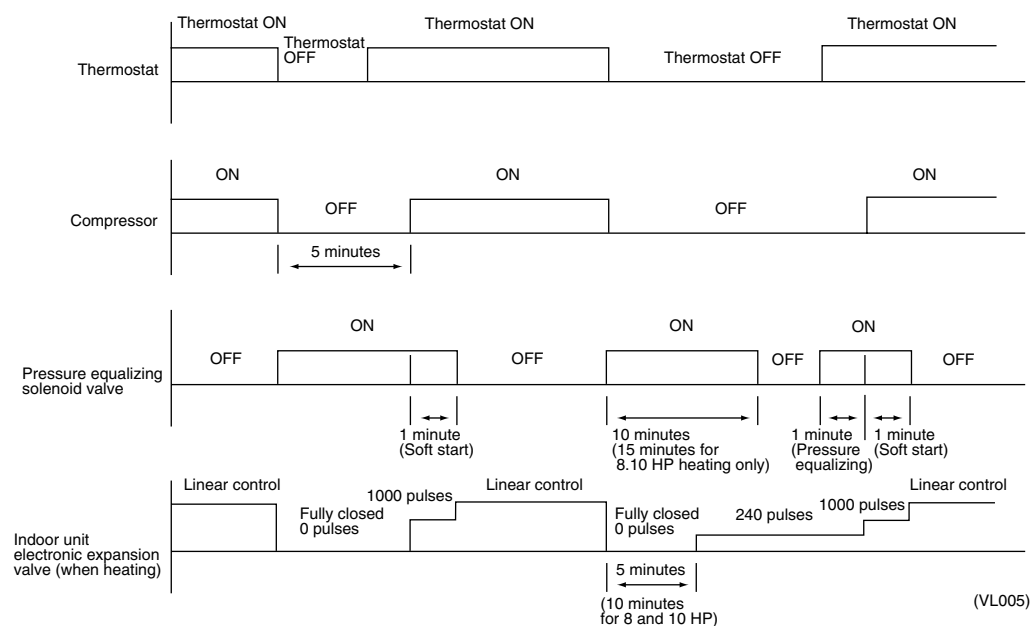
Functions

SI-E-05C

1.4 Safety for Restart

1.4.1 Restart Safety Timer

The compressor will not run for five minutes by making forced thermostat OFF condition in order to prevent it from being turned on and off in rapid succession, and to equalize pressure in the refrigerant circuit. It however restarts automatically after five minutes passes if it is in thermostat ON condition. The pressure equalizing solenoid valve is actuated for 10 minutes (15 minutes for 8 and 10HP heating only) after the compressor stops in order to equalize pressure.



If 10 minutes or more has elapsed since the compressor was turned off (15 minutes for 8 and 10HP heating only) , turn the solenoid valve for equalizing pressure on for about 1 minute and equalize the pressure.

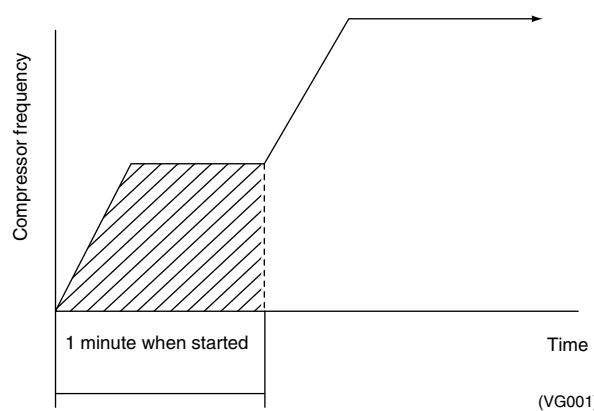
When heating, to prevent noise produced by the passing of indoor unit's refrigerant to equalize pressure after the compressor stops, fully close the indoor unit's electronic expansion valve for 5 minutes (10 minutes for 8 and 10HP).

1.4.2 Soft Start

The following control is carried out to protect the compressor and inverter.

1. Operates at low frequency (fixed) for 1 minute after compressor starts. (Prevents liquid refrigerant backflow)
2. Pressure equalizing and hot gas bypass solenoid valves open and start low load.

Soft Start of Compressor



	Frequency during soft start
5K	42Hz
8,10K	42Hz+OFF





SiE-05C

Functions

1.4.3 Pump Down Start

If the compressor stops running with refrigerant still remaining in the accumulator, in order to prevent wet operation at the next compressor starting, it will perform pump down start with a completely dry accumulator, then it will operate normally.

Pump down start should be performed if the unit is in any of the conditions given below when pressure equalizing control has been completed before start.

If R3T (R3-1T) is less than 95°C and the unit is in any of the following conditions.

- ◆ Within 10 minutes of the compressor starting
- ◆ Defrosting or during oil return
- ◆ Within 20 minutes of completion of defrost or oil return
- ◆ Outdoor air temperature is less than -5°C

Operation During Pump Down Start

	← 11 min. 30 sec. →				
	1 min.	5 min.	30 sec.	30 sec.	4 min. 30 sec.
Compressor	42Hz (42Hz+OFF)	42Hz (42Hz+OFF)	42Hz (42Hz+OFF) Note 1		30~106 Hz+OFF PI control * Note 2
Outdoor unit EV	0 pulses	0 pulses	0 pulses		SH control (Initial opening 150 pulses)
Outdoor unit fan	H tap (H+ON)	H tap (H+ON)	H tap (H+ON)		H tap (H+ON)
Y2S	ON	ON	ON	OFF	ON/OFF (LP protection control)
Y3S, Y4S	ON	ON/OFF (Td protection control)	ON/OFF (Td protection control)		ON/OFF (Td protection control)

**Note**

1. Note 1: 30Hz (30Hz+OFF) for products produced after Aug. '99.
2. *Note 2 : When heating, low pressure < 1.5 kg/cm² (0.147MPa) → running frequency 54Hz (54Hz + OFF)
Low pressure > 1.7 kg/cm² (0.167MPa) [30 sec. continuous] → release

- ◆ Y2S: Hot gas bypass solenoid valve
- ◆ Y3S: Injection solenoid valve

1.4.4 Heating Lay-Up Start

If the compressor hasn't run for a long time and the refrigerant isn't circulated, foaming could cause a lack of oil when the compressor is started at the next time. It should therefore perform heating lay-up start to keep the low pressure from dropping too low in the following cases.

- ◆ When, after being power ON, the accumulated running time of the compressor does not exceed one hour.
- ◆ When the compressor has been stopped for more than 24 hours.

Operation During Heating Lay-Up Start

Make the compressor's upper limit frequency 60Hz (60Hz+OFF) for 10 minutes 20 seconds after the compressor starts.

* If the low pressure becomes < 1.5kg/cm² (0.147MPa) within 10 minutes after starting, Y2S is actuated and outdoor unit EV becomes 0 pulses. 10 minutes after start, the unit starts up as described below. (8,10 Hp)

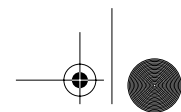
	4 min. 30 sec.
Compressor	PI control (upper limit 116Hz [116Hz+OFF]) *
Outdoor unit EV	SH control (initial opening 150 pulses)
Outdoor unit fan	H tap (H+ON)
Y2S	ON/OFF (LP safety control)
Y3S	ON/OFF (Td safety control)

- ◆ Y2S: Hot gas bypass solenoid valve
- ◆ Y3S: Injection solenoid valve

* If low pressure becomes < 1.5 kg/cm² (0.147MPa), operating frequency becomes 54Hz.
If low pressure becomes > 1.7 kg/cm² (0.167MPa), the heating lay-up operation is released.

Все каталоги и инструкции здесь: <https://splitssystem48.ru/instrukcii-po-ekspluatatsii-kondicionerov.html>





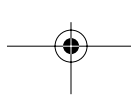
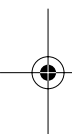
1.5 Equalized Oil Level Operation (Equalized Oil Level between Twin Compressors)

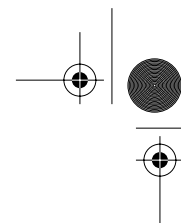
If using two compressors (8, 10Hp) connected in parallel, oil level equalizing is carried out for 5 minutes if the cumulative running time of the standard compressor exceeds 2 hours in order to prevent lack of oil cause by difference in pressure inside the dome due to drift, and then reverts to normal operation.

Inverter compressor	Standard compressor
106Hz	OFF

* If oil pressure equalization is not achieved during 5 minutes by stopping or step down control, oil pressure equalization is carried out when the compressor starts running.

With an inverter compressor operation, however, if the standard compressor remains off for 10 minutes, the cumulative running time of the standard compressor is reset.





1.6 Oil Return Operation

In order to collect refrigeration oil held up in connecting piping, the compressor's operating time is counted, and oil return operation is carried out for 4 minutes every 8 hours (2 hour after turning on the power supply, and every 8 hours after that).

(When heating, the indoor unit's electric heater is tuned off one minute prior to oil return operation in preparation for oil return.)

1.6.1 Compressor Operation Frequency

Type	Cool	Heat
5K(5HP)	106Hz	96Hz
8K(8HP)	106Hz+ON	86Hz+ON
10K(10HP)	106Hz+ON	86Hz+ON

- ◆ When heating, frequency is lower than that given in the table for the first 30 seconds and 30 seconds after completion.
- ◆ Frequency may drop according to the various types of step-down control. If so, the next oil return must be carried out 4 hours later.

1.6.2 Opening of The Electronic Expansion Valve

	Outdoor unit	Operating indoor unit	Indoor unit turned off
When cooling	2000 pulses (fully open)	2000 pulses (fully open)	1440 pulses
When heating	2000 pulses (fully open)	2000 pulses (fully open)	2000 pulses (fully open)

1.6.3 4-way Changeover Valve (Y1R)

When cooling: No change

When heating: Switches to cooling mode

1.6.4 Fan and Solenoid Valve

Step No. changes according to high pressure.

Step No.	Y2S	Y3S, Y4S	Fan
1	ON*	ON	H(H+ON)
2	OFF**	ON	L(H+OFF)
3	OFF**	ON	OFF

(Step No. becomes higher as high pressure decreases.)

Step 1 → Step 2 30 sec. after oil return start or high pressure < 16kg/cm² (1.57MPa)

Step 2 → Step 3 High pressure < 7.5 kg/cm² (0.74MPa)

Step 3 → Step 2 High pressure > 15 kg/cm² (1.47MPa)

Step 2 → Step 1 High pressure > 20 kg/cm² (1.96MPa)

* When heating only

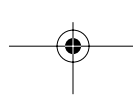
** On when low pressure < 0.3 kg/cm² (0.029MPa)

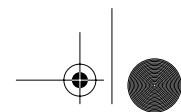
Off when low pressure > 0.8 kg/cm² (0.078MPa)



Notes:

1. If the compressor frequency continues at 68Hz (38Hz+ON for 8, 10HP) or more for more than eight minutes with defrosting while the oil return timer is counting, the timer is reset and counts again for eight hours.
2. If on standby (forced thermostat OFF) or the compressor stops due to malfunction during oil return operation, the next time the compressor starts, oil return operation is again carried out for four minutes after completion of soft start.
3. Oil return operation is not carried out for 28 minutes after defrost is completed.





1.7 Defrost

■ Function

Defrost operation is carried out if the relation of the outdoor unit's coil temperature (T_{coil}) and outdoor temperature (T_{air}) satisfies the conditions given below for 5 minutes continuously.

$$T_{coil} \leq C \cdot T_{air} - \alpha$$

- T_{coil} : Temperature detected by R2T
- T_{air} : Temperature detected by R1T
- C : $T_{air} < 0^{\circ}\text{C} \rightarrow 0.8$
 $T_{air} \geq 0^{\circ}\text{C} \rightarrow 0.6$

The values of (α) according to defrost temperature changeover switch are given in the table below.

Switch position LED (23 24 25 26)	L (●●●○)	M (●●○●)	H (●○●●)
(deg)	12	10	8

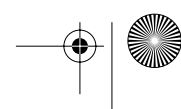
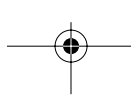
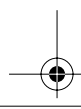
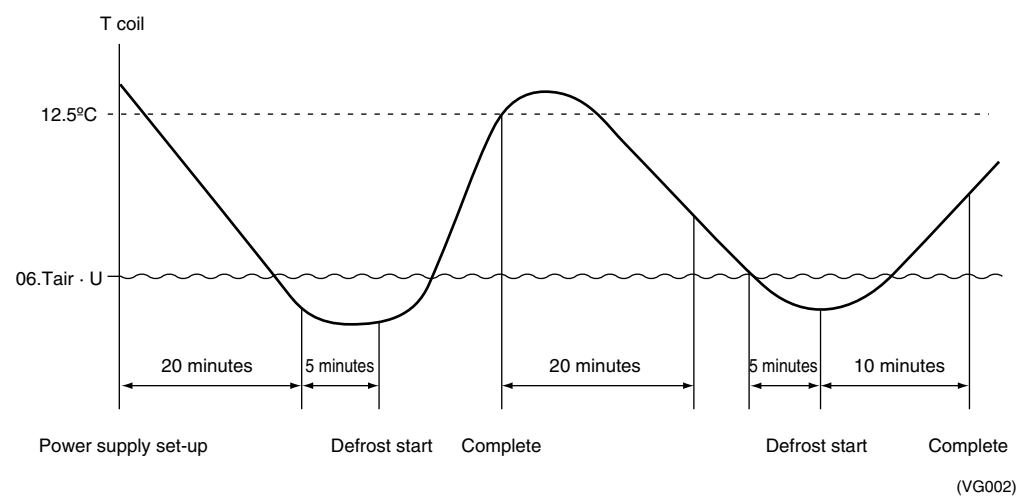
Therefore, if outdoor temperature is 0°C :

- (1) If position L, $T_{coil} \leq -12^{\circ}\text{C}$
- (2) If position M, $T_{coil} \leq -10^{\circ}\text{C}$
- (3) If position H, $T_{coil} \leq -8^{\circ}\text{C}$

Because defrost operation is carried out, set to the "H" position if frost builds up easily, and set to "L" if not. Factory set is position "M."

Defrost is carried out when the coil temperature rises to 12.5°C or higher, and is completed after defrosting for 10 minutes. After defrosting, indoor units carry out hot start operation and the DEFROSTING display lights until hot start is complete.

Defrost conditions are not counted from completion of power supply set-up and defrost until the compressor runs (count) for 20 minutes.



1.8 Heating Pump Down Residual Operation

1.8.1 For RSXY 8, 10 K

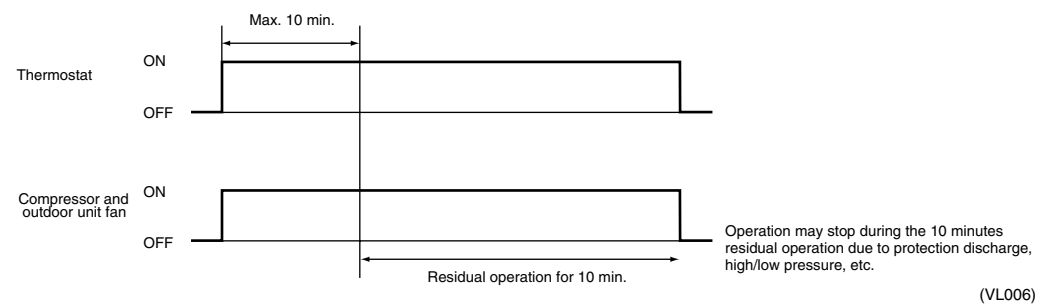
If refrigerant is remaining in the accumulator when the compressor starts, liquid refrigerant is sucked into the compressor, diluting the refrigerant machine oil and reducing the lubricating performance. To prevent this, the pump-down operation discharges refrigerant from the low pressure side when the unit is not in operation.

Residual operation may be carried out for 10 minutes under the following conditions when heating.

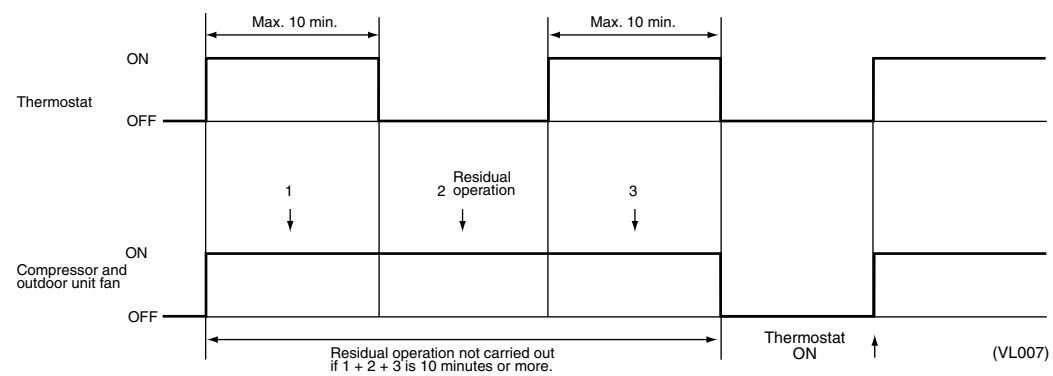
1. When outdoor temperature (R1T) is $\geq -5^{\circ}\text{C}$ and inverter discharge pipe temperature (R3-1T) $< 95^{\circ}\text{C}$, and a OFF by thermostat command is received with the compressor's continuous operation time being 10 minutes or less, residual operation is carried out for a maximum of 10 minutes.

< For products produced in and after August 1999 >

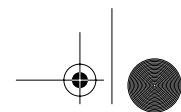
& OR	Discharge pipe thermistor (R3-1T) on inverter side: 95°C or lower
	Outside air temperature thermistor (R1T) $< 0^{\circ}\text{C}$
	When compressor continuous operating time is less than 10 minutes and thermostat is OFF, or when stop command is received from remote controller
	Within 20 minutes after defrost or oil return operation
T0 (oil temperature) $\leq T_e + 10$	



2. When the thermostat is ON during residual operation, residual operation is not carried out if the total of 1+2+3 is 10 minutes or more.



3. When outdoor temperature (R1T) $< -5^{\circ}\text{C}$ and a stop command is received from the thermostat sensor, etc., residual operation is carried out for 10 minutes without fail. (Operation may however stop for discharge pipe or high/low pressure safety.)



Functions

SiE-05C

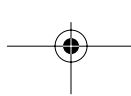
**Outdoor Unit
Function**

Outdoor air (R1T)	Compressor		Electronic expansion valve	Pressure equalizing solenoid valve	Time
	INV	STD			
R1T < -10°C	86Hz	OFF	0~300 pulses	ON or OFF	10 min.
-10°C ≤ R1T < 0°C	76Hz	OFF	0~300 pulses	ON or OFF	10 min.
R1T ≥ 0°C	60Hz	OFF	0~300 pulses	ON or OFF	10 min.



Notes

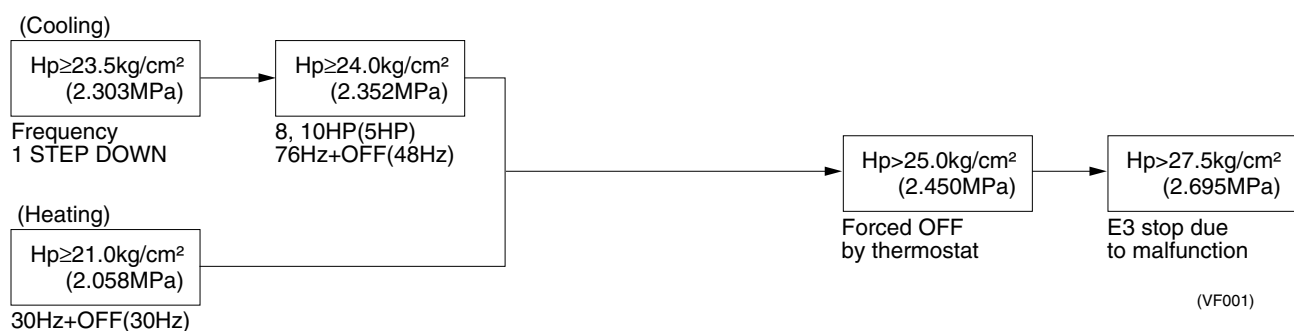
- Compressor upper limit is 116Hz+OFF for 10 minutes of next start after entering residual operation.
(* Except for products produced after Aug. '99.)
- During defrost or oil return, residual operation is not carried out even if a stop command comes.
- Forced thermostat OFF occurs if defrost or oil return signal comes during residual operation.



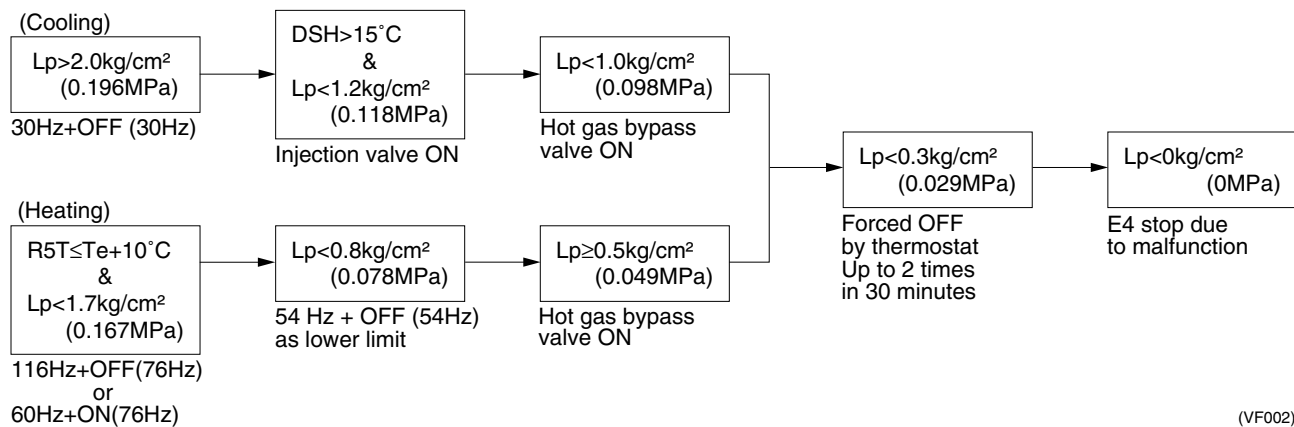


1.9 Step Down / Safety Control → Standby (Forced Thermostat OFF) → Stop Due to Malfunction

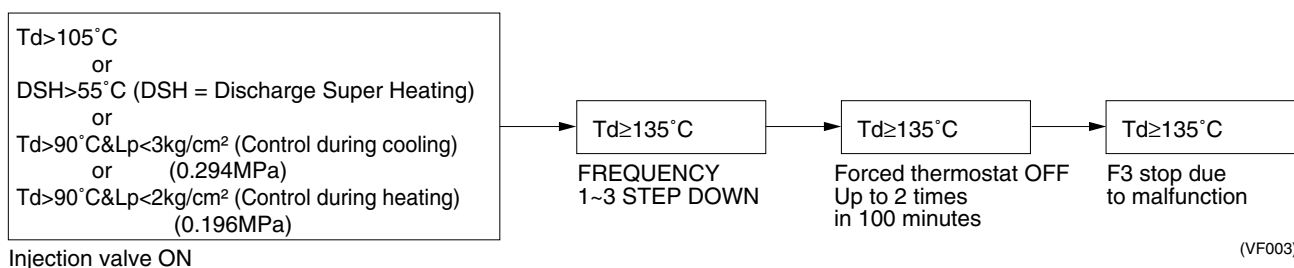
High Pressure (Hp) Control



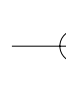
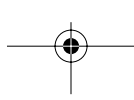
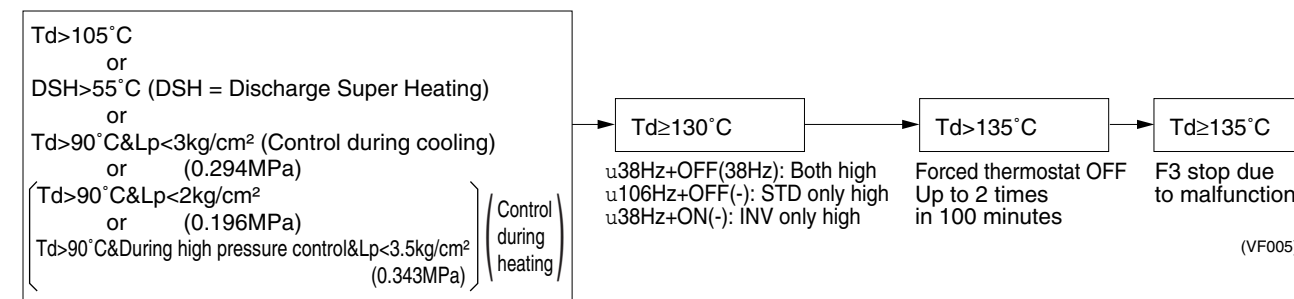
Low Pressure (Lp) Control

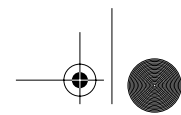


Discharge Pipe Temperature (Td) Control <For Products Produced before July '99>



<For Products Produced after Aug. '99>





Functions

SiE-05C

Inverter Current Control

27.0 / 15.0

INV \geq 27.0A(TAL)
15.0A(Y1, YAL)

FREQUENCY
1 STEP DOWN

27.5 / 15.0

INV \geq 27.5A(TAL)
15.0A(Y1, YAL)

Forced OFF by thermostat
UP to 4 times in 60 minutes

L8 stop due
to malfunction

(VF004)

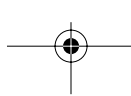
Discharge Super Heating (DSH) Control

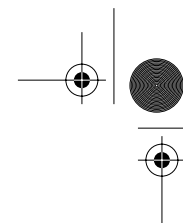
(DSH = Td - high pressure condensation saturation temperature)

During both the inverter and standard compressors are running, when the injection valve for either one goes OFF and discharge super heating (DSH) continues for 10 minutes at temperature difference of less than 10°C, the inverter+standard compressor are controlled at 76 Hz or less+OFF for 3 minutes.

Control According to Outdoor Temperature

If the outdoor temperature exceeds 27°C when heating, forced thermostat OFF is carried out in order to prevent a safety device from being tripped or a sensor malfunction.





1.10 Control During Low Outdoor Air Temperature Cooling

When the outdoor air temperature is low in cooling operation, outdoor unit fans, electronic expansion valve and compressors are controlled as follows in order to primarily maintain high pressure and to protect drop in refrigerant circulation caused by drop in high pressure.

RSXY5K

Operating status		Electronic expansion valve	Fan	Frequency (Hz)	
Normal operation		Fully open	H	Changes according to operating status	
Low outdoor temperature cooling operation	Step 1	Fully open	L	76	
	Step 2	Fully open	OFF	48	

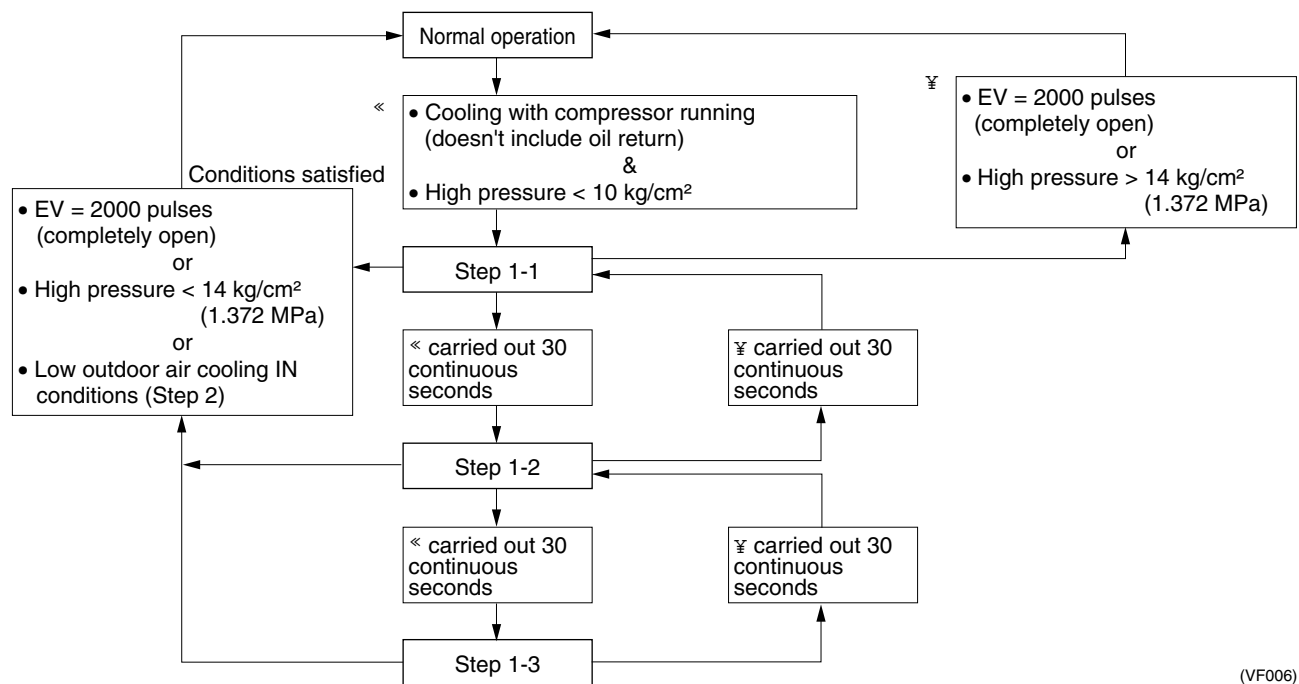
RSXY8,10K

Operating status		Electronic expansion valve	Fan		Frequency (Hz)	
			M1F	M2F	8K	10K
Normal operation		Fully open	H	ON	Changes according to operating status	
Low outdoor temperature cooling operation	Step 1-1	Fully open	L	ON	96	116
	Step 1-2	Fully open	H	OFF	86	106
	Step 1-3	Fully open	L	OFF	76	96
	Step 2	Fully open	OFF	OFF	60	76



NOTE: Step No. changes according to high pressure, low pressure and frequency.
(Step No. increases with reduction of high and low pressure.)

Low Outdoor Air Cooling IN Conditions (Steps 1-1, 2, 3)

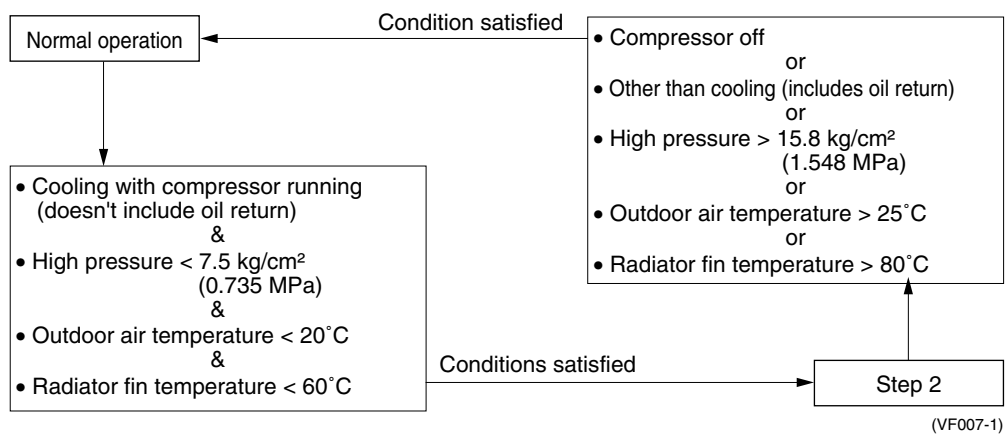




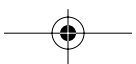
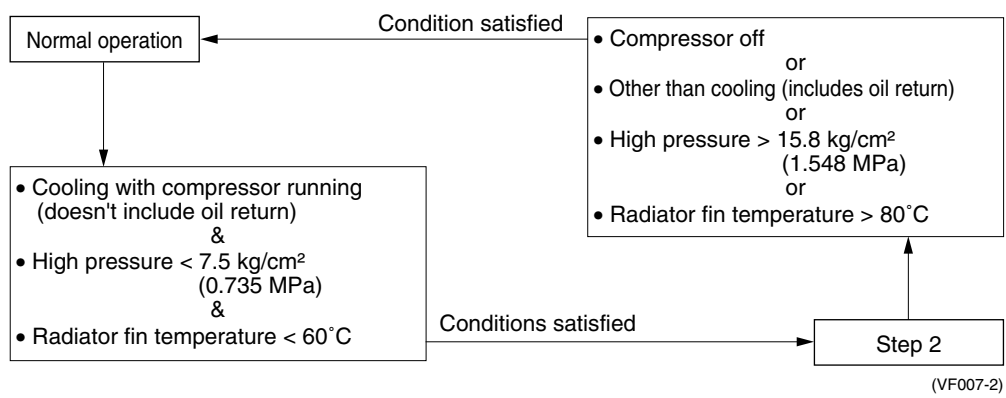
Functions

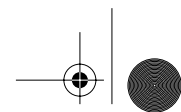
SI-E-05C

Low Outdoor Air Cooling IN Conditions (Step 2)



<For products produced after Aug. '99>





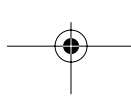
1.11 Low Noise Control

If sound produced by outdoor units is a problem at night, etc., you can reduce the running noise by 2 to 3 dB by running the outdoor unit fans and compressors at low speed via contact input (low noise input) from outside. When low noise input is received (contact short circuit) while the compressor is running (except when defrosting or oil return is being carried out), the operation upper limit is as follows.

		5K	8K	10K
		(5HP)	(8HP)	(10HP)
Outdoor unit fan	step 1	L tap	H tap+OFF	
	step 2	L tap	L tap+OFF	
compressor		60Hz	86Hz+OFF	96Hz+OFF

- ◆ When cooling: Step1 → 2 high pressure > 24 kg/cm² (2.35 MPa)
Step2 → 1 high pressure < 19 kg/cm² (1.86 MPa)

- Low noise control reduces capacity by limiting the fan and compressor. The load when heating is particularly large at night when the outdoor temperature is low, and could result in insufficient capacity.
- During low noise control, retry is unlimited for standby (forced thermostat OFF) produced by high pressure, low pressure or discharge pipe temperature.
- An optional external control adaptor of outdoor units is required for low noise control. For method of connection, see low noise operation in the test operation section.





1.12 Demand Control

When you like to save the power consumption, there are three modes of demand operation which controls forced capacity save for outdoor units via contact input (demand input) from outside in order to control demand.

Demand 1: Holds electric power consumption down to approx. 70%

Demand 2: Holds electric power consumption down to approx. 40%

Demand 3: Forced thermostat OFF

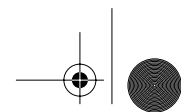
- An optional external control adaptor of outdoor units is required for demand control. For method of connection, see demand operation in the test operation section.
- Control is carried out by limiting the upper limit for frequency of demand 1 and demand 2 as given in the table below.

	5HP	8HP	10HP
Demand 1	68Hz	48Hz+ON	60Hz+ON
Demand 2	34Hz	60Hz+OFF	76Hz+OFF
Demand 3	Forced thermostat OFF		

<For products produced after Aug. '99>

	5HP	8HP	10HP
Demand 1	60Hz	48Hz+ON	60Hz+ON
Demand 2	34Hz	60Hz+OFF	76Hz+OFF
Demand 3	Forced thermostat OFF		





1.13 Compressor Capacity Control

RSXY5K

Pressure is sampled every 20 seconds by pressure sensor, and the inverter compressor is controlled in 13 stages by microcomputer.

Frequency range: 34 - 116 Hz (13 stages) and common for 50/60Hz area.

Frequency	Min. output
30Hz	↑ ↓
34Hz	
38Hz	
42Hz	
48Hz	
54Hz	
60Hz	
68Hz	
76Hz	
86Hz	
96Hz	
106Hz	
116Hz	

Max. output

(VE004)

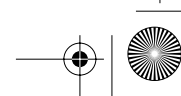
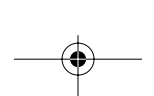
RSXY8, 10K

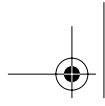
<For products produced before July '99>

Pressure is sampled every 20 seconds by two pressure sensors, and the inverter compressor is controlled in 21 stages by microcomputer. (* 20 Stages for products produced after Aug. '99)

Commercial power supply compressor (off)	Commercial power supply compressor (full load)	Min. output ↑ ↓ Max. output
Frequency	Frequency	
30Hz+OFF		
34Hz+OFF		
38Hz+OFF		
42Hz+OFF		
48Hz+OFF		
54Hz+OFF		
60Hz+OFF		
68Hz+OFF		
76Hz+OFF		
86Hz+OFF		
96Hz+OFF		
106Hz+OFF		
116Hz+OFF		
	38Hz+ON	
	48Hz+ON	
	60Hz+ON	
	76Hz+ON	
	86Hz+ON	
	96Hz+ON	
	106Hz+ON	
	116Hz+ON	

(VE005)





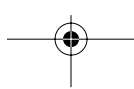
<For products produced after Aug. '99>

Commercial power supply compressor (off)	Commercial power supply compressor (full load)
Frequency	Frequency
30Hz+OFF	
34Hz+OFF	
38Hz+OFF	
42Hz+OFF	
48Hz+OFF	
54Hz+OFF	
60Hz+OFF	
68Hz+OFF	
76Hz+OFF	
86Hz+OFF	
96Hz+OFF	
106Hz+OFF	
	38Hz+ON
	48Hz+ON
	60Hz+ON
	76Hz+ON
	86Hz+ON
	96Hz+ON
	106Hz+ON
	116Hz+ON

Min. output

Max. output

(VE006)





1.14 Te / Tc Setting

You can alter the value of targets Te (evaporating pressure equivalent temperature) and Tc (condensing pressure equivalent temperature) with setting mode 2. PI control is used to control compressor capacity so that Te when cooling and Tc when heating are constant.

Te setting	Set temperature
High	8.5 °C
Standard	5.5 °C
Low	2.5 °C

◆ Target Te changes according to compressor operating frequency, length of piping and indoor load. The range is $-10^{\circ}\text{C} \leq \text{target Te} \leq 5.5^{\circ}\text{C}$. (Piping length is determined automatically during oil return operation.)

Tc setting	Set temperature
High	49 °C
Standard	46 °C
Low	43 °C

* Target Tc becomes 3°C higher when indoor load is large. Target Tc is controlled in accordance with the following conditions:

- ◆ Outdoor temp. $> 10^{\circ}\text{C} \rightarrow \text{target Tc} \leq 46^{\circ}\text{C}$
- ◆ Outdoor temp. $\leq 10^{\circ}\text{C} \rightarrow \text{target Tc} \leq 49^{\circ}\text{C}$
- ◆ Target Tc = 43°C when high pressure $> 17 \text{ kg/cm}^2$ (1.67 MPa) and low pressure $< 1.8 \text{ kg/cm}^2$ (0.176 MPa).





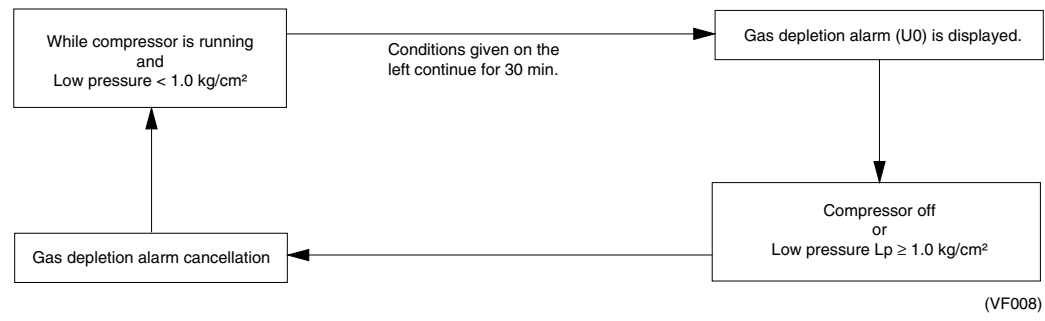
Functions

SI-E-05C

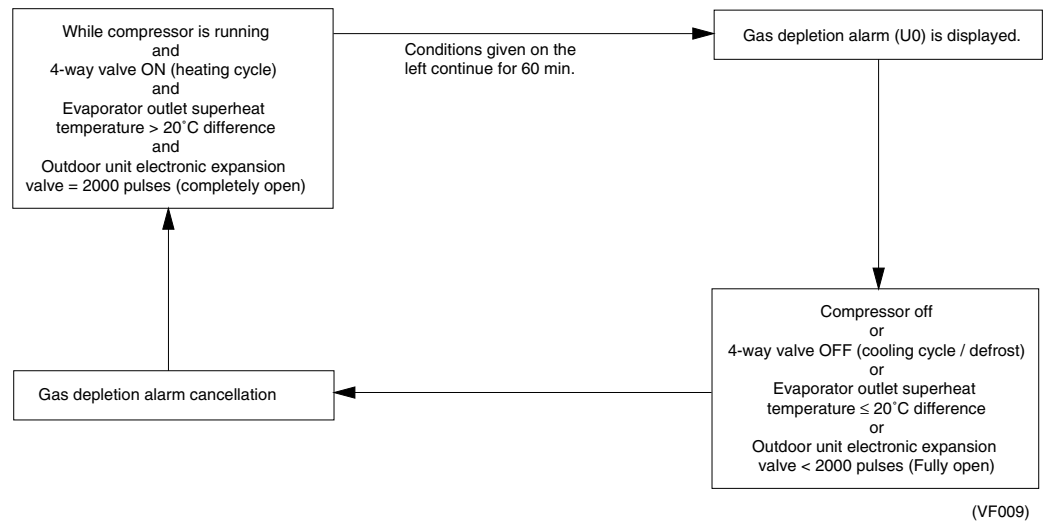
1.15 Gas Depletion Alarm

An alarm (U0) is given for severe gas depletion. Alarm is indicated but operation continues.

When cooling



When heating

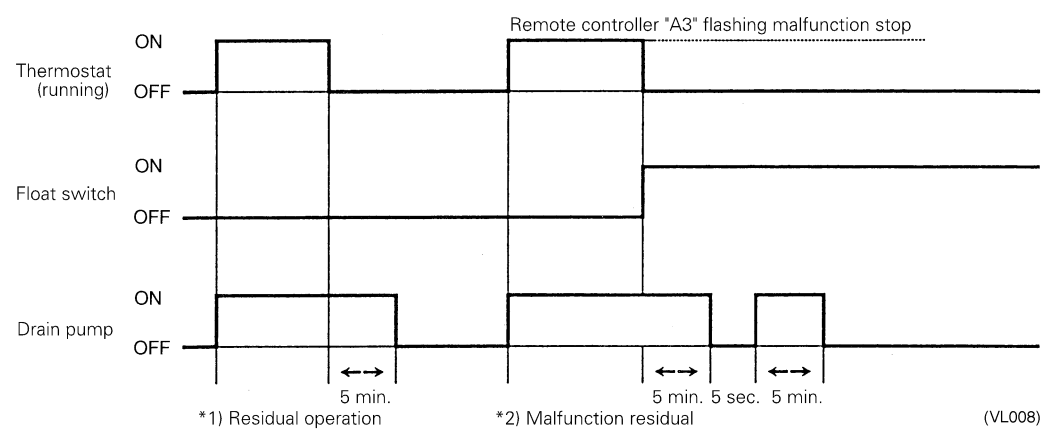




1.16 Drain Pump Control

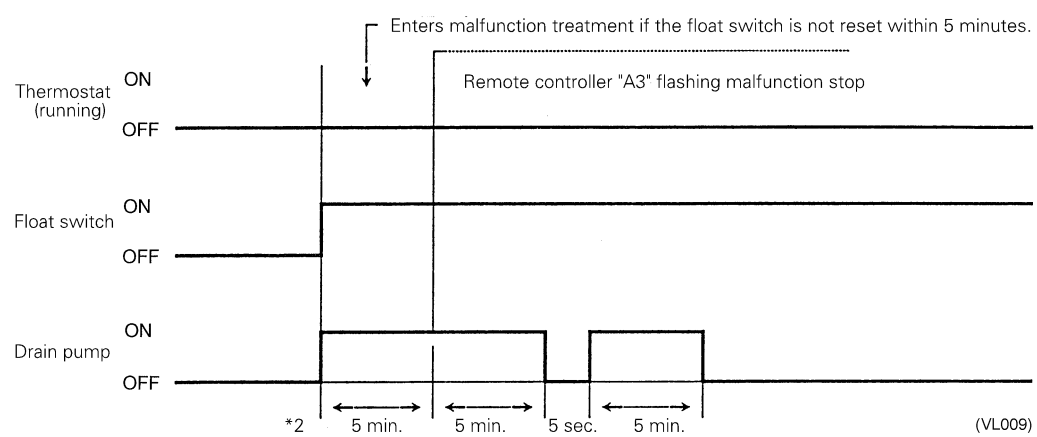
1. The drain pump is controlled by the ON/OFF buttons (4 button (1) - (4) given in the figure below).

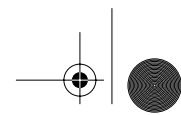
1.16.1 When the Float Switch is Tripped While the Cooling Thermostat is ON:



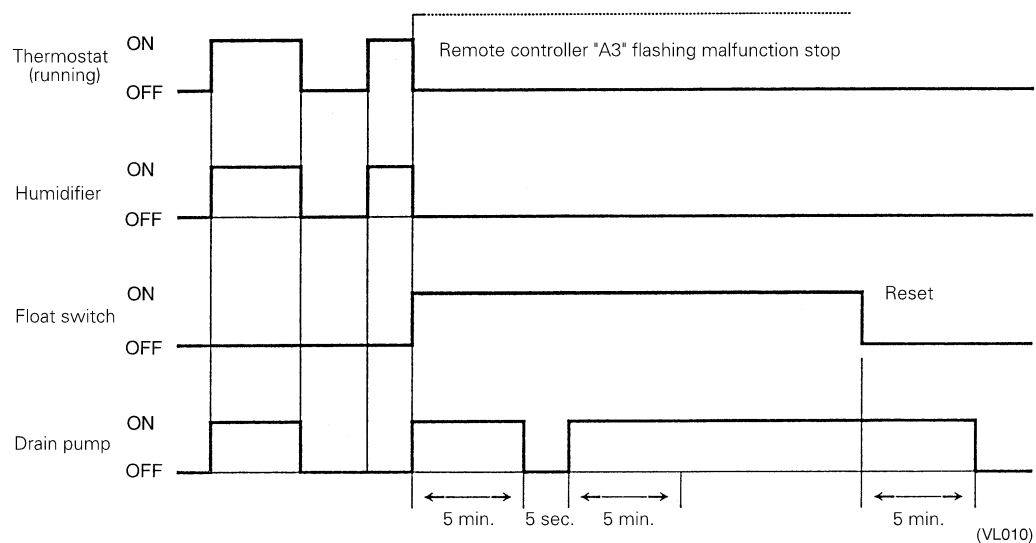
- * 1. The objective of residual operation is to completely drain any moisture adhering to the fin of the indoor unit heat exchanger when the thermostat goes off during cooling operation.
- * 2. One cycle consists of 5 minutes of operation, 5 seconds stop, and another 5 minutes of operation.

1.16.2 When the Float Switch is Tripped During Cooling OFF by Thermostat:



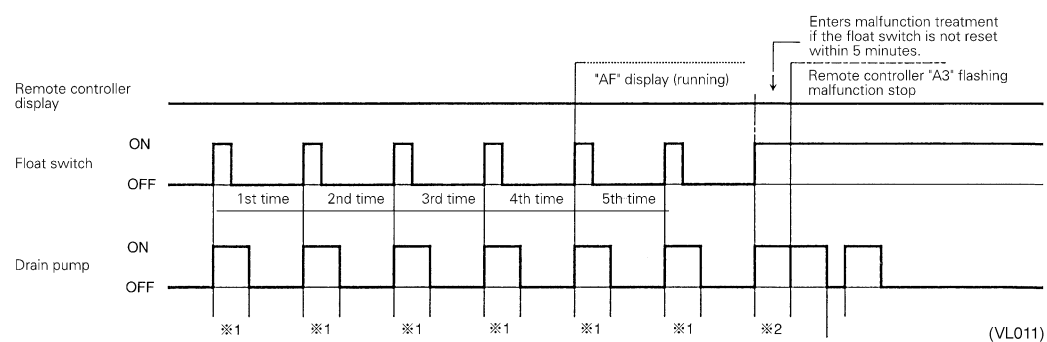


1.16.3 When the Float Switch is Tripped During Heating Operation:

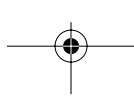


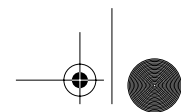
During heating operation, if the float switch is not reset even after the 5 minutes operation, 5 seconds stop, 5 minutes operation cycle ends, operation continues until the switch is reset.

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



i Note: If the float switch is tripped five times in succession, a drain malfunction is determined to have occurred. "AF" is then displayed as operation continues.

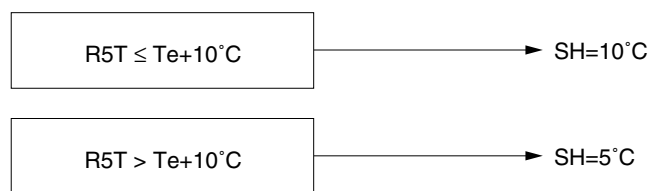




1.17 Oil Temperature Sensor (8 and 10 Hp only)

1.17.1 Prevention of Wetness During Heating

- ◆ Wet operation is prevented by modification of super heating (SH) by oil temperature sensor (R5T). (Low equivalent pressure = Te)

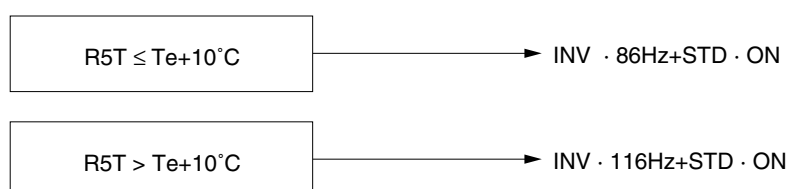


(VF010)

1.17.2 Prevention of Oil Dilution During Defrost

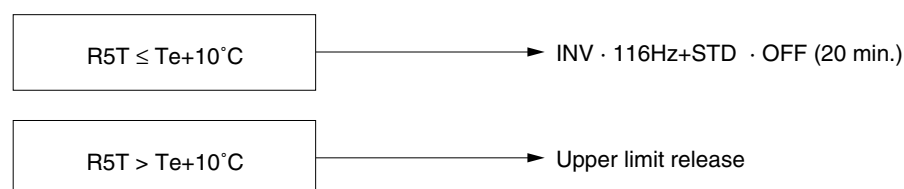
<For products produced before July '99>

- ◆ The unit controls upper limit frequency of the compressor and is designed to prevent oil from being diluted while defrosting by means of an oil temperature sensor.



(VF011)

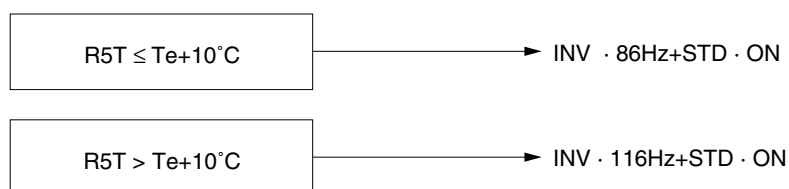
- ◆ Startup subsequent to defrosting is improved by the oil temperature sensor.



(VF010)

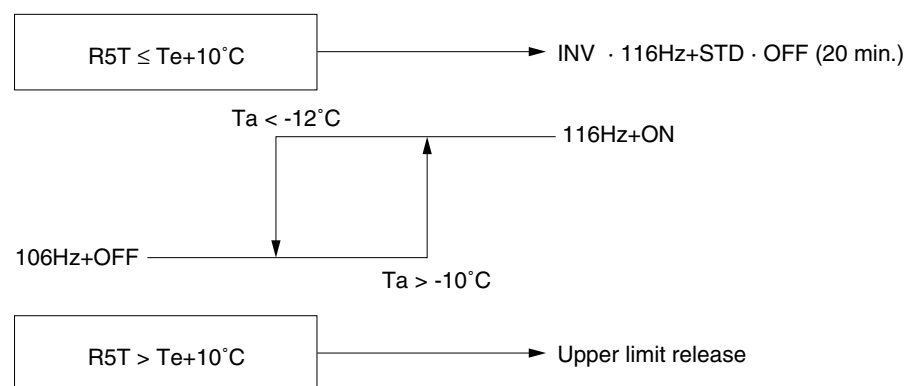
<For products produced after Aug. '99>

- ◆ The unit controls upper limit frequency of the compressor and is designed to prevent oil from being diluted while defrosting by means of an oil temperature sensor.

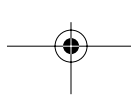


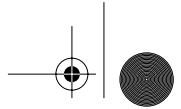
(VF083)

- ◆ Startup subsequent to defrosting is improved by the oil temperature sensor.



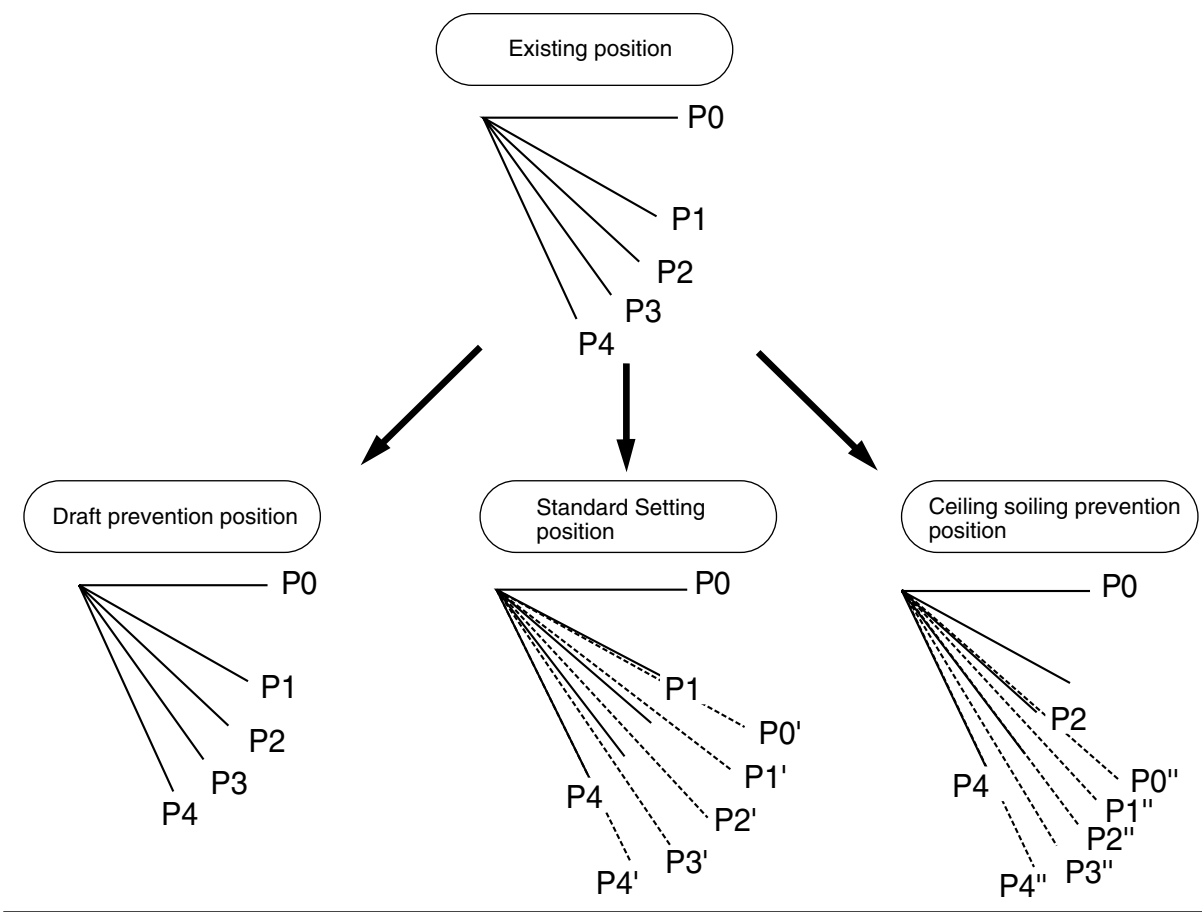
(VF013)





1.18 Louver Control for Preventing Ceiling Dirt

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

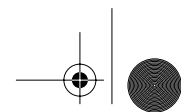


Draft prevention position	P0	P1	P'	P3	P4	Same as existing position
	Range of direction adjustment					
Standard position	Prohibited	P0'	P1'	P2'	P3'	P4'
	Range of direction adjustment					
Dirt prevention position	Prohibited	P0''	P1''	P2''	P3''	P4''
	Range of direction adjustment					

The factory set position is standard position.

(VL012)



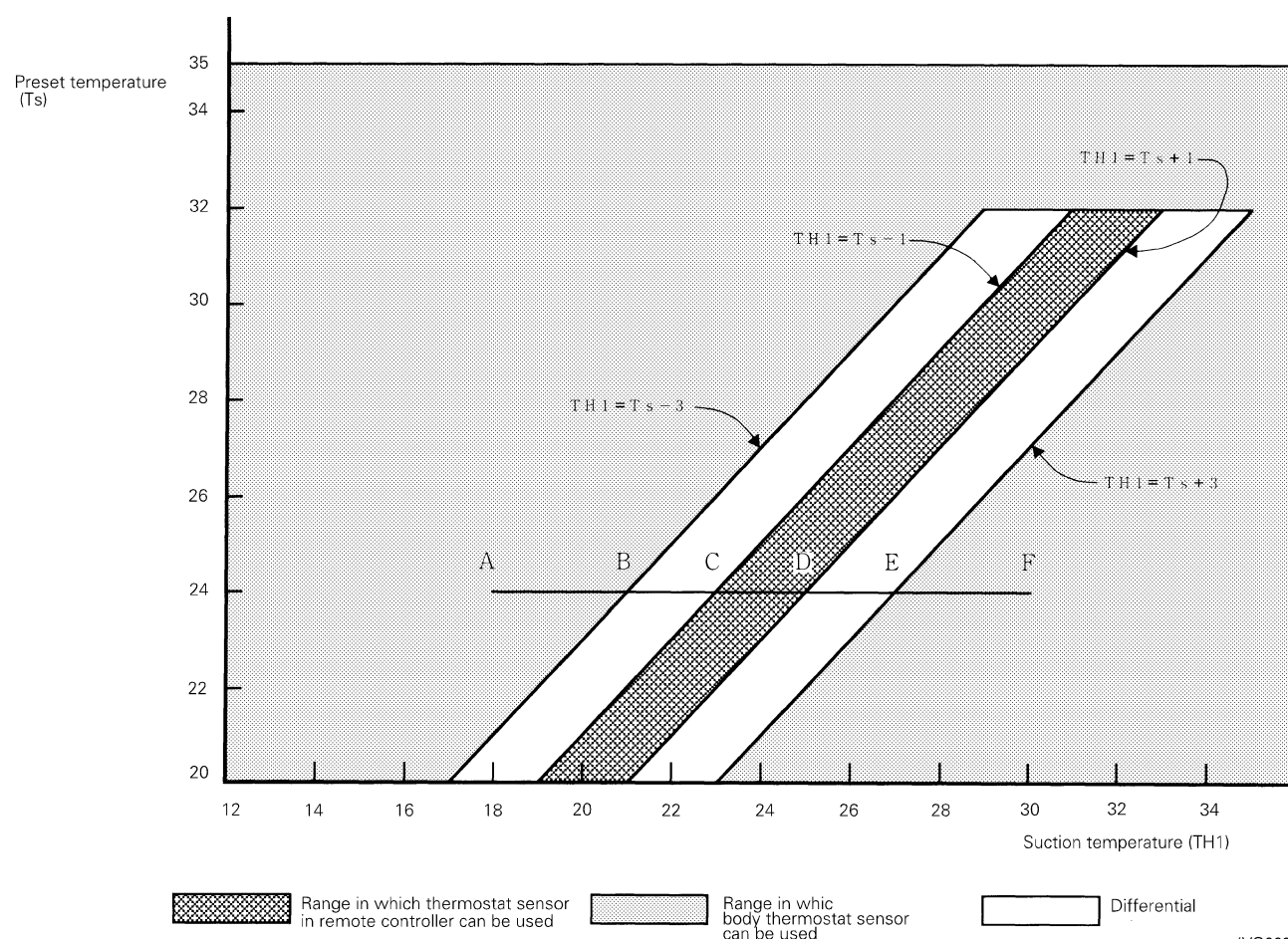


1.19 Thermostat Sensor in Remote Controller

Temperature is controlled by both the thermostat sensor in remote controller and air suction thermostat in the indoor unit. (This is however limited to when the field setting for the thermostat sensor in remote controller is set to "Use.")

Cooling

If there is a significant difference in the preset temperature and the suction temperature, fine adjustment control is carried out using a body thermostat sensor, or using the sensor in the remote controller near the position of the user when the suction temperature is near the preset temperature.



■ **Ex: When cooling**

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

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

Body thermostat sensor is used for temperatures from 18°C to 23°C (A → C).

Remote controller thermostat sensor is used for temperatures from 23°C to 27°C (C → E).

Body thermostat sensor is used for temperatures from 27°C to 30°C (E → F).

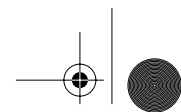
And, assuming suction temperature has changed from 30°C to 18°C (F → A):

Body thermostat sensor is used for temperatures from 30°C to 25°C (F → D).

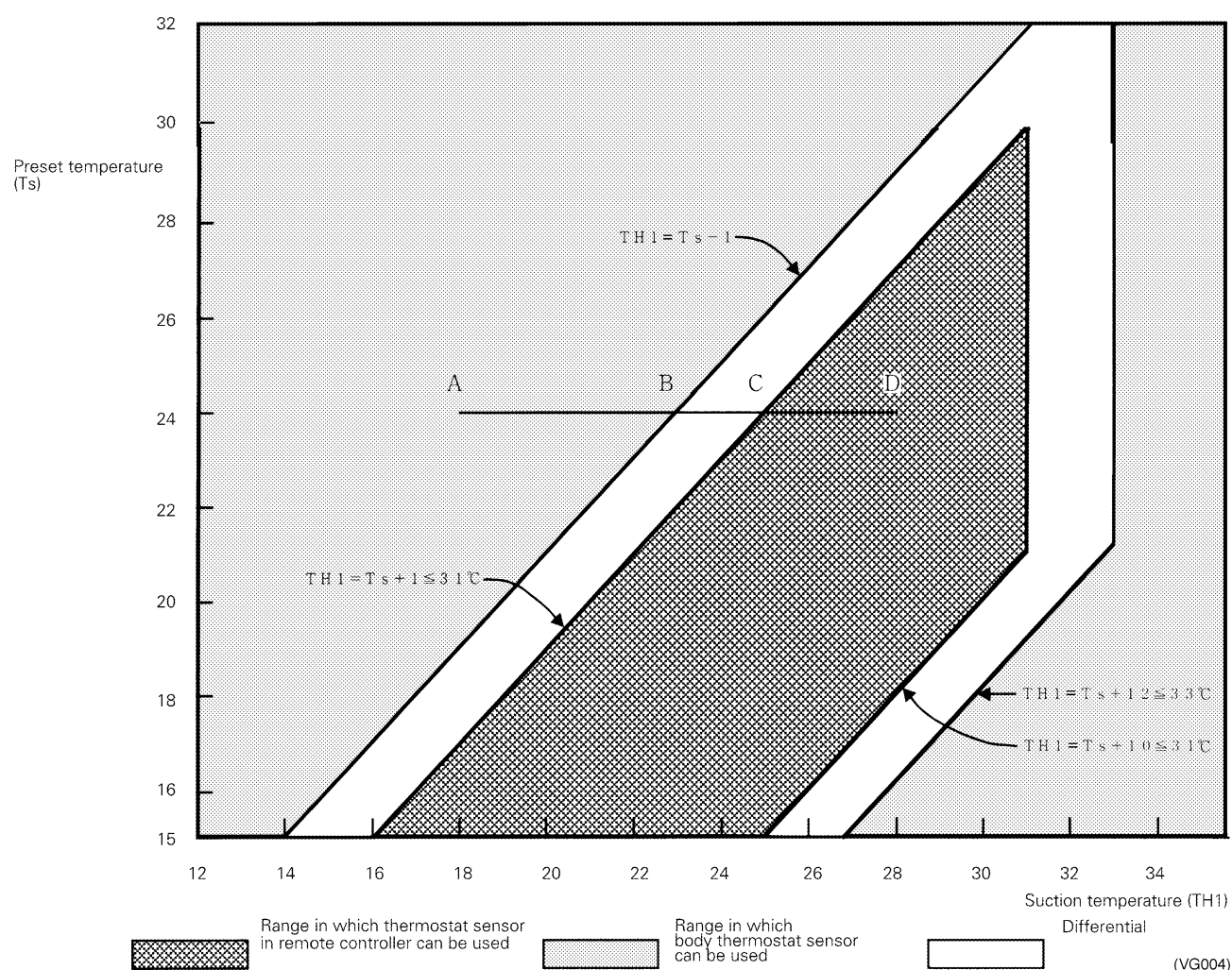
Remote controller thermostat sensor is used for temperatures from 25°C to 21°C (D → B).

Body thermostat sensor is used for temperatures from 21°C to 18°C (B → A).



**Functions****SiE-05C****Heating**

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

**■ Ex: When heating**

Assuming the preset temperature in the figure above is 24°C, and the suction temperature has changed from 18°C to 28°C (A → F):

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

Body thermostat sensor is used for temperatures from 18°C to 25°C (A → C).

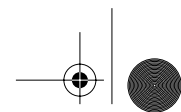
Remote controller thermostat sensor is used for temperatures from 25°C to 28°C (C → E).

And, assuming suction temperature has changed from 28°C to 18°C (D → A):

Remote controller thermostat sensor is used for temperatures from 28°C to 23°C (D → B).

Body thermostat sensor is used for temperatures from 23°C to 18°C (B → A).





1.20 Freeze Prevention

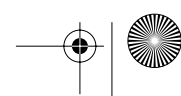
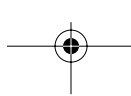
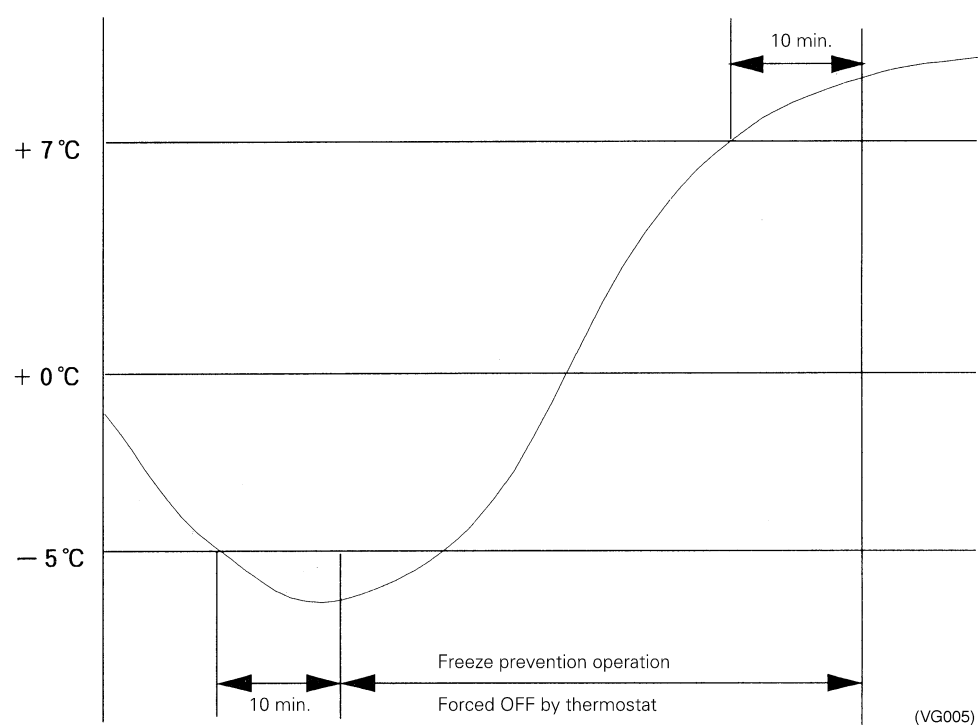
Freeze Prevention by Off Cycle (Indoor Unit)

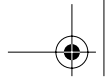
When the temperature detected by liquid pipe temperature thermistor (R2T) of the indoor unit heat exchanger drops too low, the unit enters freeze prevention operation in accordance with the following conditions, and is also set in accordance with the conditions given below.

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

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

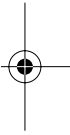
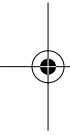
Ex: Case where temperature is -5°C or less for total of 10 min.

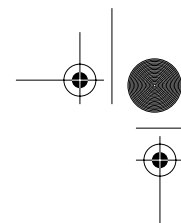




Functions

SI-E-05C

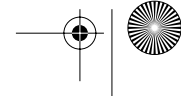
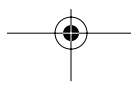


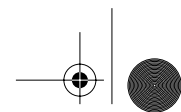


SiE-05C

Part3 Test Operation Inverter K Series

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1. Test Operation

1.1 When Power is Turned On

1.1.1 When Turning Power on the First Time

The unit will not run for up to 12 minutes in order for master power supply and address (indoor unit address, etc.) to be set automatically.

Outdoor unit

Warning lamp (HWL) On
Test lamp (H2P) Flicker
Can be set while in operation.

Indoor unit

“UH” malfunction code flickers when the ON/OFF button is pushed during the aforementioned operation.
(Returns to normal when automatic setting is complete.)

1.1.2 When Turning Power on after the First Time

* Tap the RESET button on the outdoor unit PC Board. The unit can be operated after setting up for about two minutes.

If the RESET button is not pushed, the unit will not run for up to 10 minutes in order for master power supply to be set automatically.

Outdoor unit

HWL lamp On
Test lamp (H2P) Flicker
Can be set while in operation.

Indoor unit

If the ON/OFF button is pushed during the aforementioned operation, the operation lamp lights but the unit will not run.
(Returns to normal when automatic setting is complete.)

1.1.3 If outdoor, indoor or BS unit is extended, or if indoor/outdoor unit PC board is replaced:

In these cases, be sure to push and hold the RESET button for 5 seconds or more. The system will not recognize the extension if this operation is not performed. The unit will not run for up to 12 minutes in order for the addresses (indoor unit address, etc.) to be set automatically.

Outdoor unit

Warning lamp (HWL) On
Test lamp (H2P) Flicker
Can be set while in operation.

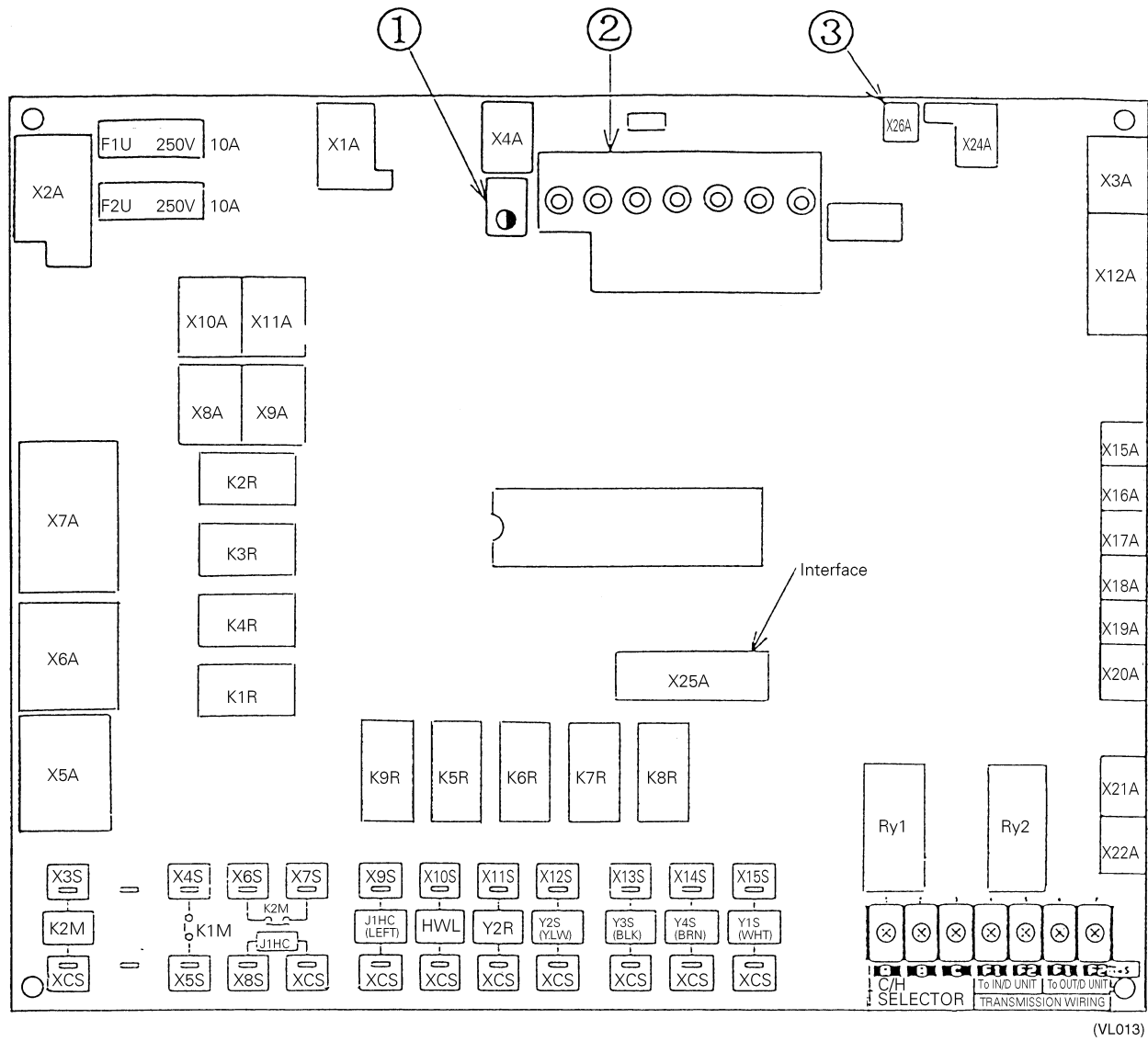
Indoor unit

“UF” or “U4” malfunction code flickers when the ON/OFF button is pushed during the aforementioned operation.
(Returns to normal when automatic setting is complete.)



1.2 Outdoor Unit PC Board Ass'y

RSXY8K
10K



Test Operation

SI-E-05C

1	Service monitor <HAP> (Green)	Normal Flicker Malfunction On or off
2	Function setting switch or LED	<div> <p>LED display ○ : On ◐ : Flicker ● : Off</p> </div> <div> </div> <div> <p>Mode button Mode change</p> <p>Setting mode 1 (H1P off) → Push 1 time. → Monitor mode (H1P flickers) → Push 1 time. → Setting mode 2 (H1P on) → Push 1 time. → Setting mode 2 (H1P on)</p> <p>Setting mode 1 (H1P off) → Push and hold for 5 sec. → Setting mode 2 (H1P on)</p> <p>(VF014)</p> </div> <div> <ul style="list-style-type: none"> • Set return button Changes or enters address or data. • Wiring check button Push and hold for 5 sec. to start wiring check. • Reset button Push and hold for 5 sec. if the indoor unit's PC board has been replaced, or there has been a change in the combination of indoor and outdoor units, such as indoor unit extension, etc. </div>
3	<p>Jumper pin</p> <p>(VL015)</p>	Forced defrost operation by short circuit.

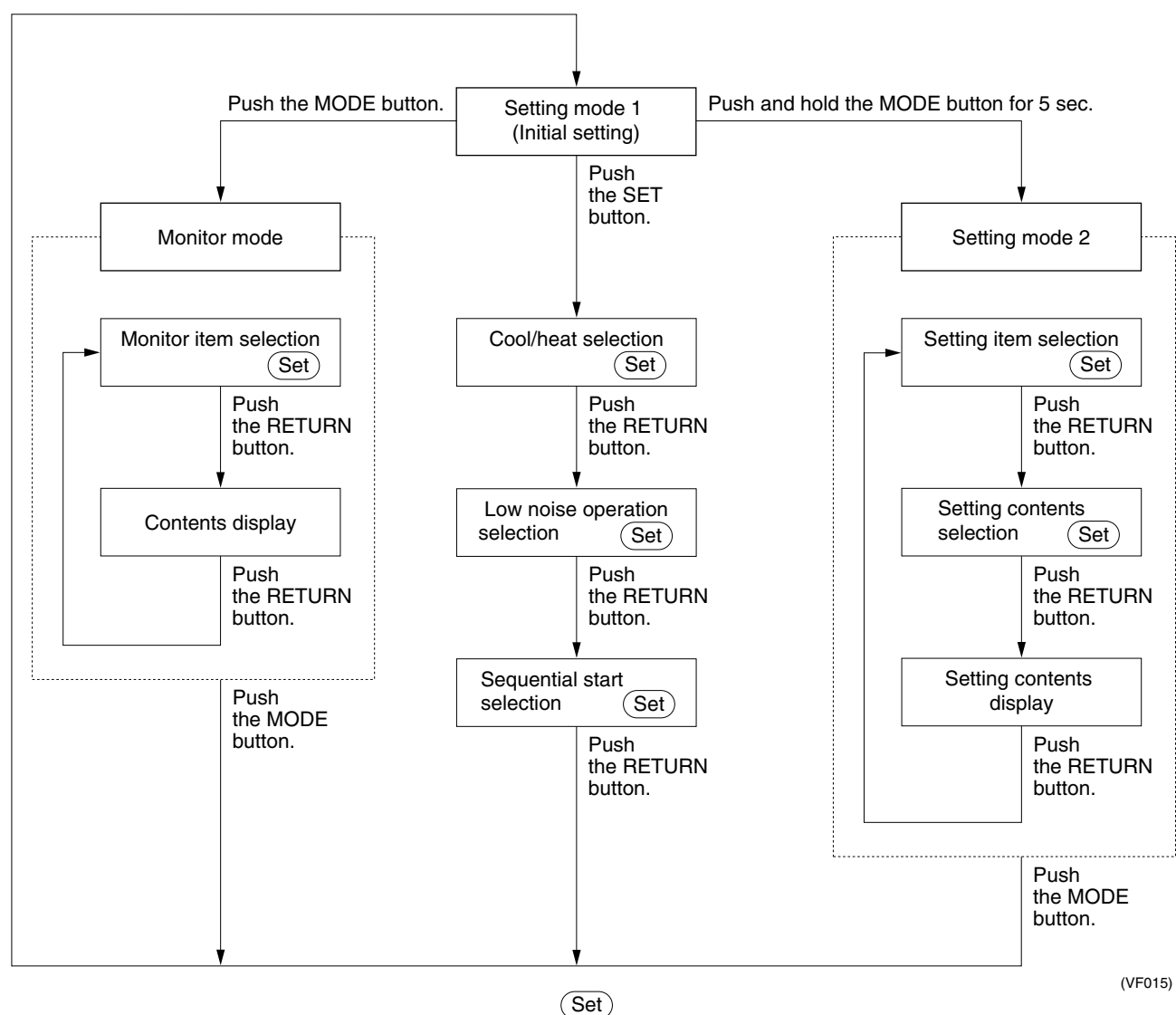
1.3 Setting Modes

The three setting modes are as follows:

- ◆ **Setting mode 1** Mode for selecting cool/heat setting method, and whether or not to use low noise operation and sequential start.
(H1P off)
- ◆ **Setting mode 2** Mode for changing operating status and setting addresses; used primarily for service.
(H1P on)
- ◆ **Monitor mode** Mode for checking setting made in the setting modes, number of connected units, etc.
(H1P flickers)

Mode Changing Procedure

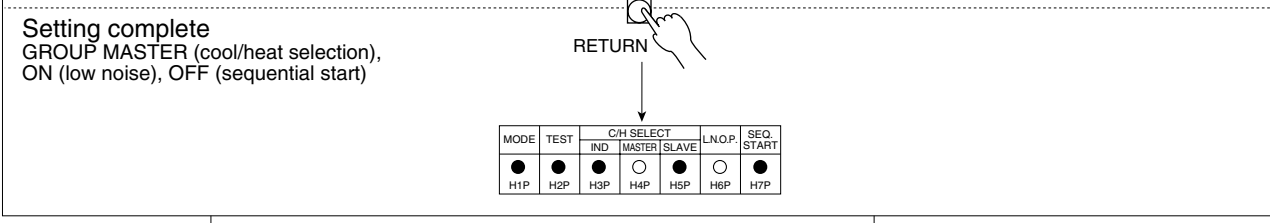
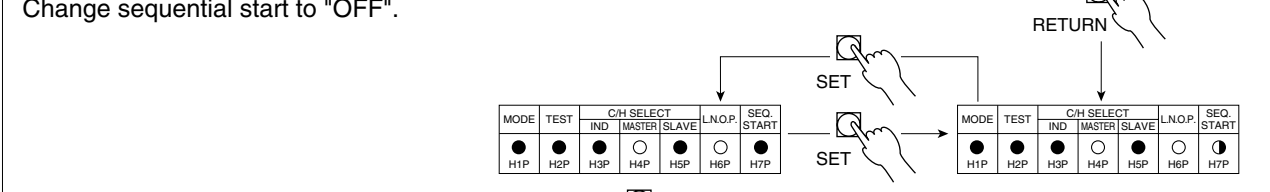
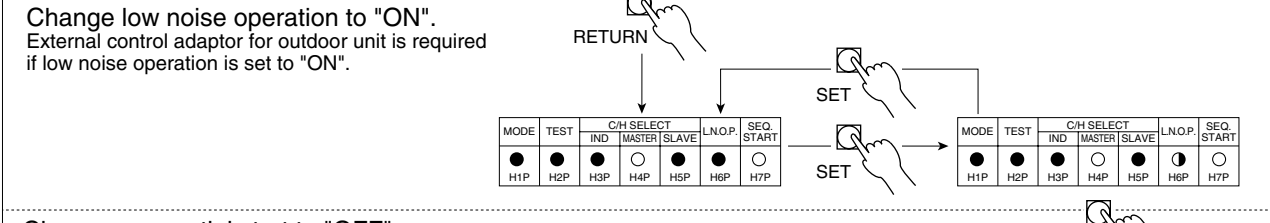
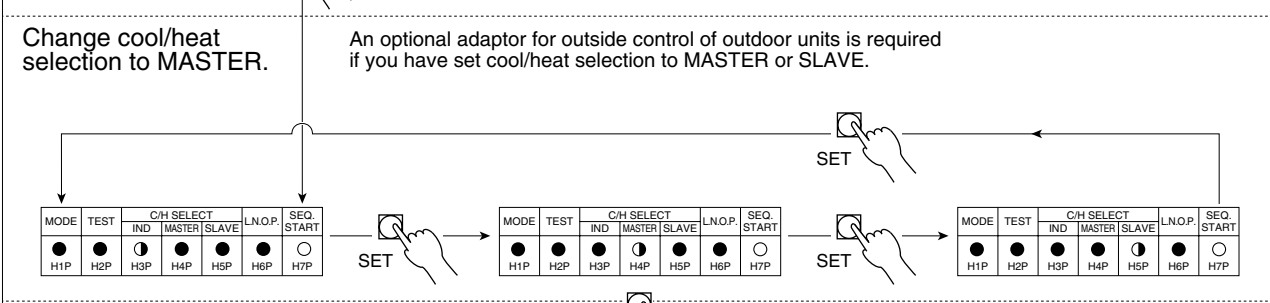
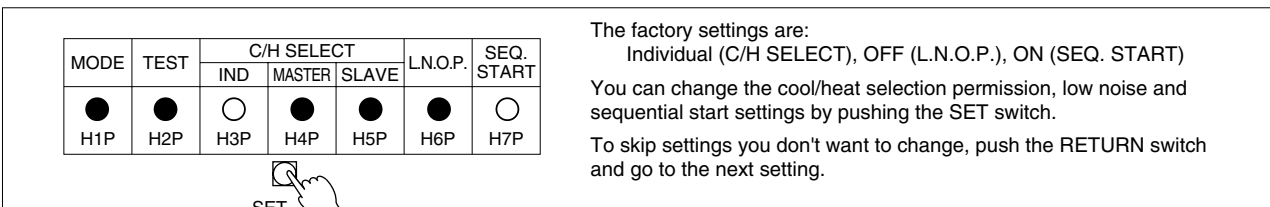
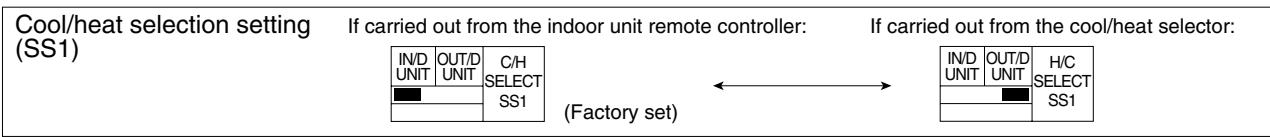
The flow of the setting modes is as follows. (See the following pages for details.)



(VF015)

- You can make your selections with the SET button.
- **If you become unsure of how to proceed, push the MODE button and return to setting mode 1.**
- You don't have to perform power supply reset after changing settings in setting mode 1 (including [SS1] cool/heat selection switch on the outdoor unit PC board) and setting mode 2.

1.3.1 Setting Mode 1



(VF016)

- i** NOTE:
- RSXY5K is completed by low noise setting.
 - External control adaptor for outdoor unit is required if cool/heat selection set to MASTER or SLAVE, or if low noise operation is set to ON. For further information, see page 64.

1.3.2 Setting Mode 2

To enter setting mode 2 from setting mode 1 (normal), you must push and hold the MODE button (BS1) for 5 seconds. (Setting mode 2 cannot be entered while still making settings in setting mode 1.)

Setting procedure

1. Push the SET button and match with the setting item (LED display). (All 10 settings)
- ↓
2. Push the RETURN button (BS3) and the present settings flicker (LED display).
- ↓
3. Push the SET button (BS2) and match with each setting (LED flicker display).
- ↓
4. Push the RETURN button (BS3) and enter the settings.
- ↓
5. Push the RETURN button (BS3) and return to the initial status.



Note:

- If you become unsure of how to proceed, push the MODE button (BS1) and return to setting mode 1.
- The initial status of setting mode 2 is the status of setting item No. 1 in mode 2.

Setting items

Setting item	Description	LED display	LED display	
		H1P H2P H3P H4P H5P H6P H7P	H1P H2P H3P H4P H5P H6P H7P	H1P H2P H3P H4P H5P H6P H7P
1 EMG * 1	Emergency operation when malfunction occurs	○ ● ● ● ● ● ● ●	Emergency operation	○ ● ● ● ● ● ● ●
			(Runs only by standard compressor)	○ ● ● ● ● ● ● ●
			Normal operation	○ ● ● ● ● ● ● ●
2 Cool/heat group address	Address for cool/heat group operation	○ ● ● ● ● ● ○	Address	0 ○ ● ● ● ● ● ●
			Binary number	1 ○ ● ● ● ● ● ○
			(6 digits)	2 ○ ● ● ● ● ● ○ ●
				31 ○ ● ○ ○ ○ ○ ○ ○
3 Low noise / demand address	Address for low noise / demand group operation	○ ● ● ● ● ○ ●	Address	0 ○ ● ● ● ● ● ●
			Binary number	1 ○ ● ● ● ● ● ○
			(6 digits)	2 ○ ● ● ● ● ○ ● ●
				31 ○ ● ○ ○ ○ ○ ○ ○
4 Forced fan switch	Fan of stopped indoor unit turns	○ ● ● ● ○ ● ○	Forced fan operation (H tap)	○ ● ● ● ● ● ○ ●
			Normal operation	○ ● ● ● ● ● ○ ○
5 Indoor unit forced operation	Allows operation of indoor unit from outdoor unit	○ ● ● ● ○ ○ ●	Indoor unit forced operation	○ ● ● ● ● ● ○ ●
			Normal operation	○ ● ● ● ● ● ○ ○
6 Frequency fix	Fixes the frequency of the inverter compressor 5HP...68Hz 8.10HP...86Hz+ON	○ ● ● ● ○ ○ ○	Frequency fix	○ ● ● ● ● ● ○ ●
			Normal operation	○ ● ● ● ● ● ○ ○
7 Te setting	Low pressure setting for cooling	○ ● ● ○ ● ● ●	High	○ ● ● ● ○ ● ● ●
			Normal (factory set)	○ ● ● ● ● ● ○ ●
			Low	○ ● ● ● ● ● ○ ○
8 Tc setting	High pressure setting for heating	○ ● ● ○ ● ● ○		
9 Defrost setting	Temperature setting for defrost	○ ● ● ○ ● ○ ●	Quick defrost	○ ● ● ● ○ ● ● ●
			Normal (factory set)	○ ● ● ● ● ● ○ ●
			Slow defrost	○ ● ● ● ● ● ○ ○
10 Not used	Airnet address	○ ● ● ○ ○ ● ○	Address	0 ○ ● ● ● ● ● ●
			Binary number	1 ○ ● ● ● ● ● ○
			(6 digits)	2 ○ ● ● ● ● ○ ● ●
				63 ○ ○ ○ ○ ○ ○ ○ ○

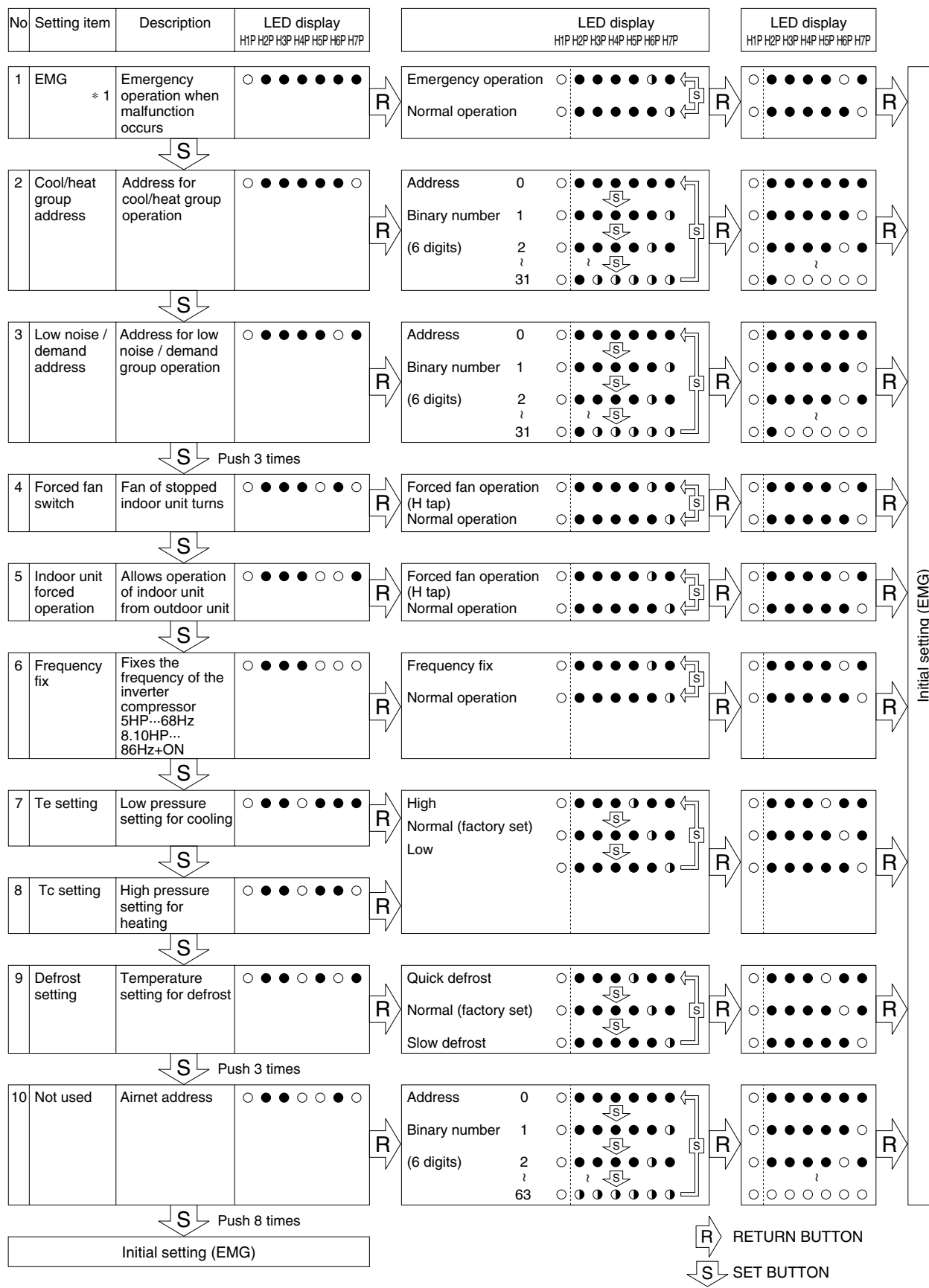
(VF084)



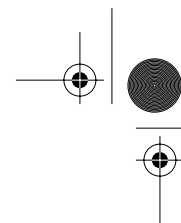
Note: * 1: Cannot be set with RSXY5K.

Test Operation

SI-E-05C



(VF017)

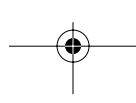
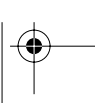


Test Operation

SI-E-05C

Monitor Mode Data

Mode No.	LED	Data	Display method	Size (binary number)
No 1	○ ● ● ● ● ● ○	Cool/heat group address	0 ~ 31	Lower 6 digits
No 2	○ ● ● ● ● ○ ●	Low noise / demand address	0 ~ 31	Lower 6 digits
No 3	○ ● ● ● ● ○ ○	Not used		
No 4	○ ● ● ● ○ ● ●	Not used	0 ~ 63	Lower 6 digits
No 5	○ ● ● ● ○ ● ○	Number of connected units	0 ~ 63 units	Lower 6 digits
No 6	○ ● ● ● ○ ○ ●	Number of connected BS units	0 ~ 63 units	Lower 6 digits
No 7	○ ● ● ● ○ ○ ○	Number of connected zone units (excluding outdoor and BS units)	0 ~ 63 units	Lower 6 digits
No 8	○ ● ● ○ ● ● ●	Number of outdoor units	0 ~ 63 units	Lower 6 digits
No 9	○ ● ● ○ ● ● ○	Number of BS units	0 ~ 128 units	Lower 4 digits, upper
No 10	○ ● ● ○ ● ○ ●	Number of BS units	0 ~ 128 units	Lower 4 digits, lower
No 11	○ ● ● ○ ● ○ ○	Number of zone units (excluding outdoor and BS units)	0 ~ 63 units	Lower 6 digits
No 12	○ ● ● ○ ○ ● ●	Number of terminal blocks	0 ~ 128 units	Lower 4 digits, upper
No 13	○ ● ● ○ ○ ● ○	Number of terminal blocks	0 ~ 128 units	Lower 4 digits, lower
No 14	○ ● ● ○ ○ ○ ●	Not used		
No 15	○ ● ● ○ ○ ○ ○	Not used		
No 16	○ ● ○ ● ● ● ●	Not used		



1.4 Sequential Start

Separates the start timing for standard compressors by three seconds each in order to prevent over-current when several compressors are to be started simultaneously.

Sequential start is possible for up to three units wired as a group to a single power supply. You should however connect an outdoor unit of small capacity as the third unit in the sequence.

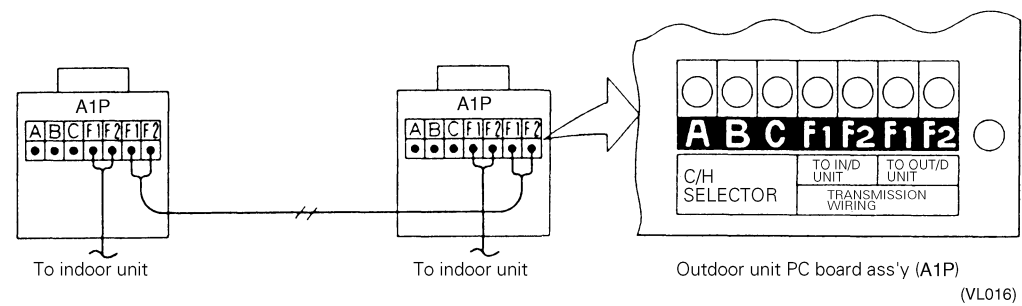
Method of Sequential Start

1. Power supply wiring

Must be wired as a group to the power supply.

2. Wiring

Connect transmission wiring to terminals F1 and F2 (outdoor - outdoor) on the outdoor unit PC board (A1P). Switch to the monitoring mode and see if sequential start has been selected. If not, switch to setting mode 1 and select sequential start. (Sequential start is factory set to "ON.") For transmission wiring, use 0.75 - 1.25 mm² sheathed vinyl cord or double-core cable.



1.5 External Control Adaptor for Outdoor Unit

Purpose / Application

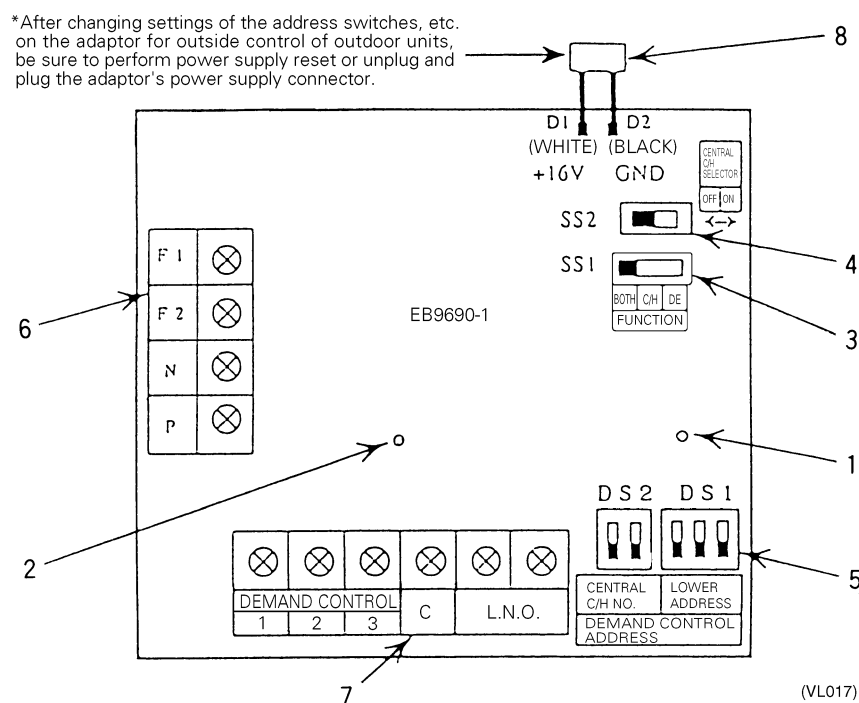
External control adaptor for outdoor unit is required in order for the VRV System Inverter K Series to carry out the types of control given below.

1. Group switching of cool/heat mode for more than one outdoor unit system. The adaptor is required for cool/heat selection by indoor unit remote controller, by cool/heat selector, or by cool/heat central remote controller.
2. Low noise control
3. Demand control

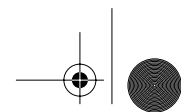
Installation Position

The adaptor can be installed inside any indoor unit or BS unit connected to a D III-NET.

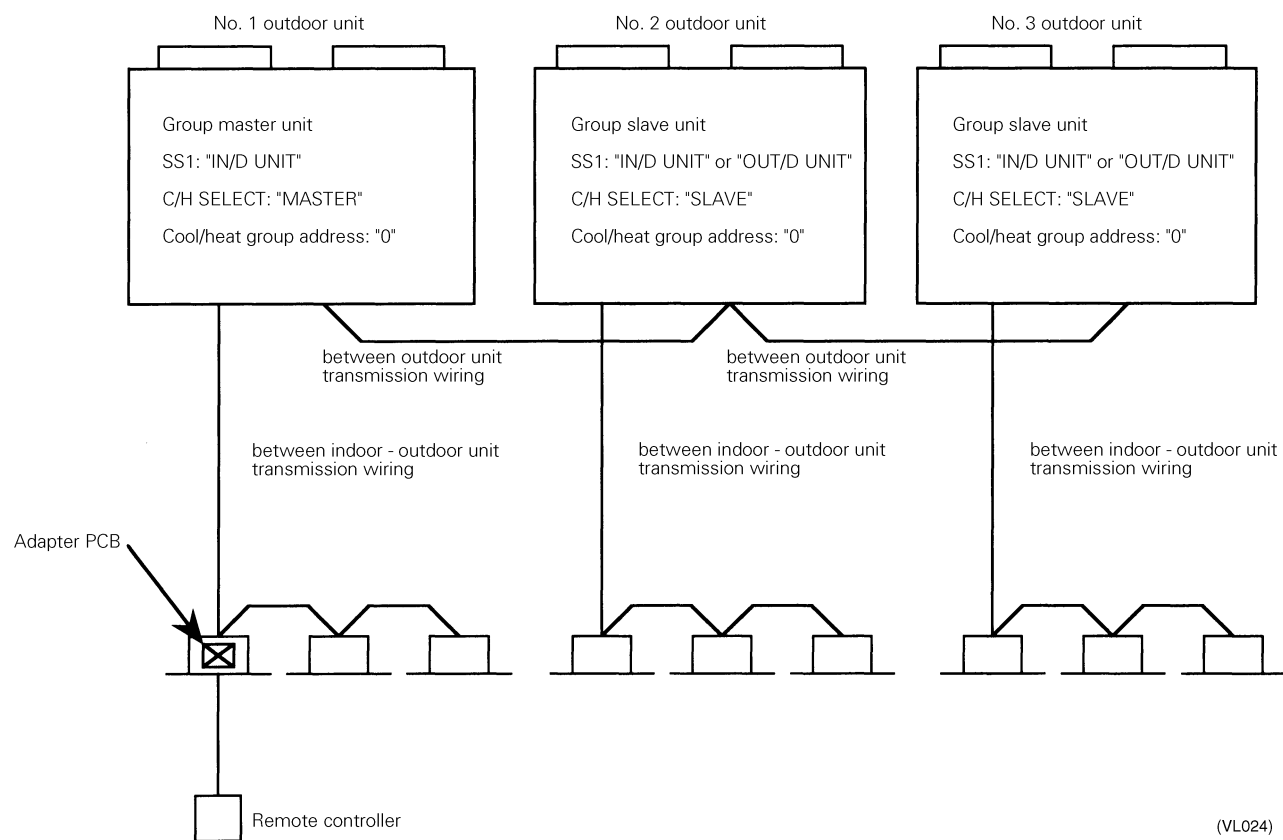
Part Names and Functions



1	SERVICE MONITOR [HAP] (Green)	Normal: Flicker Malfunction: On or off	LED display ○ : On ◐ : Flicker ● : Off
2	SERVICE MONITOR [H01P] (Green)	When using cool/heat central remote controller: Normal: On Malfunction: Off (If not using cool/heat central remote controller, LED remains off.)	
3	Function switch [SS1] (Factory set: BOTH)	Sets whether the address setting switch will set cool/heat address, demand / low noise address, or both. <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <input type="checkbox"/> Left (BOTH) </div> <div style="text-align: center;"> <input type="checkbox"/> Middle (C / H) </div> <div style="text-align: center;"> <input type="checkbox"/> Right (DE-LOW NOISE) (VL018) </div> </div>	
4	Cool/heat central remote controller selection switch [SS2] (Factory set: No)	Sets whether cool/heat central remote controller is connected or not. <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <input type="checkbox"/> Left (Not connected) </div> <div style="text-align: center;"> <input type="checkbox"/> Right (Connected) (VL019) </div> </div>	
5	Address setting switch [DS2 / DS1] (Factory set: 0)	Sets cool/heat address or demand address. <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <input type="checkbox"/> Upper 2 bits (ON) (1) </div> <div style="text-align: center;"> <input type="checkbox"/> Lower 3 bits (OFF) (0) (VL020) </div> </div> <p>(The black part represents the switch.)</p>	
6	Terminal block for transmission (F1 / F2) (N / P)	F1 / F2 : Wiring connection with terminals F1 and F2 of outdoor unit, etc. N / P : Wiring connection with terminals N and P of cool/heat central remote controller.	
7	Demand / low noise input terminal block (X1M)	Connects control input from remote source (host computer monitor panel, demand controller, timer, etc.).	
8	Power supply connector (D1 / D2)	Connects "power supply connector for adaptor for outside control of outdoor units" of indoor unit or BS unit, etc.	

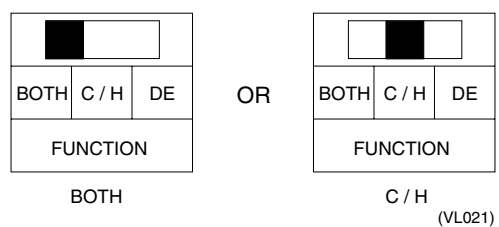


System Examples Group selection of cool/heat mode by indoor unit remote controller

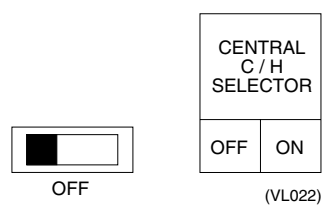


Switch Settings on the Adaptor PCB

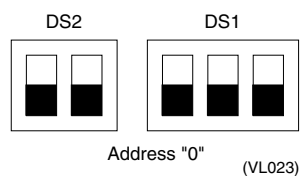
■ SS1

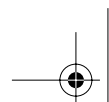


■ SS2



■ DS1 / DS2





Test Operation

SI-E-05C

Outdoor Unit PCB Settings

- Group master unit
SS1: "IN/D UNIT"
Setting mode 1
C / H SELECT : "MASTER"
Setting mode 2
Cool/heat group address: "0"
Combines DS1 and DS2 of PC board adaptor.

- Group slave unit
SS1: "IN/D UNIT" or "OUT/D UNIT"
Setting mode 1
C / H SELECT : "SLAVE"
Setting mode 2
Cool/heat group address: "0"
Combines DS1 and DS2 of adaptor PCB.



1.6 Cool / Heat Mode Selection

The VRV System Inverter K Series offers the following four cool/heat mode selections.

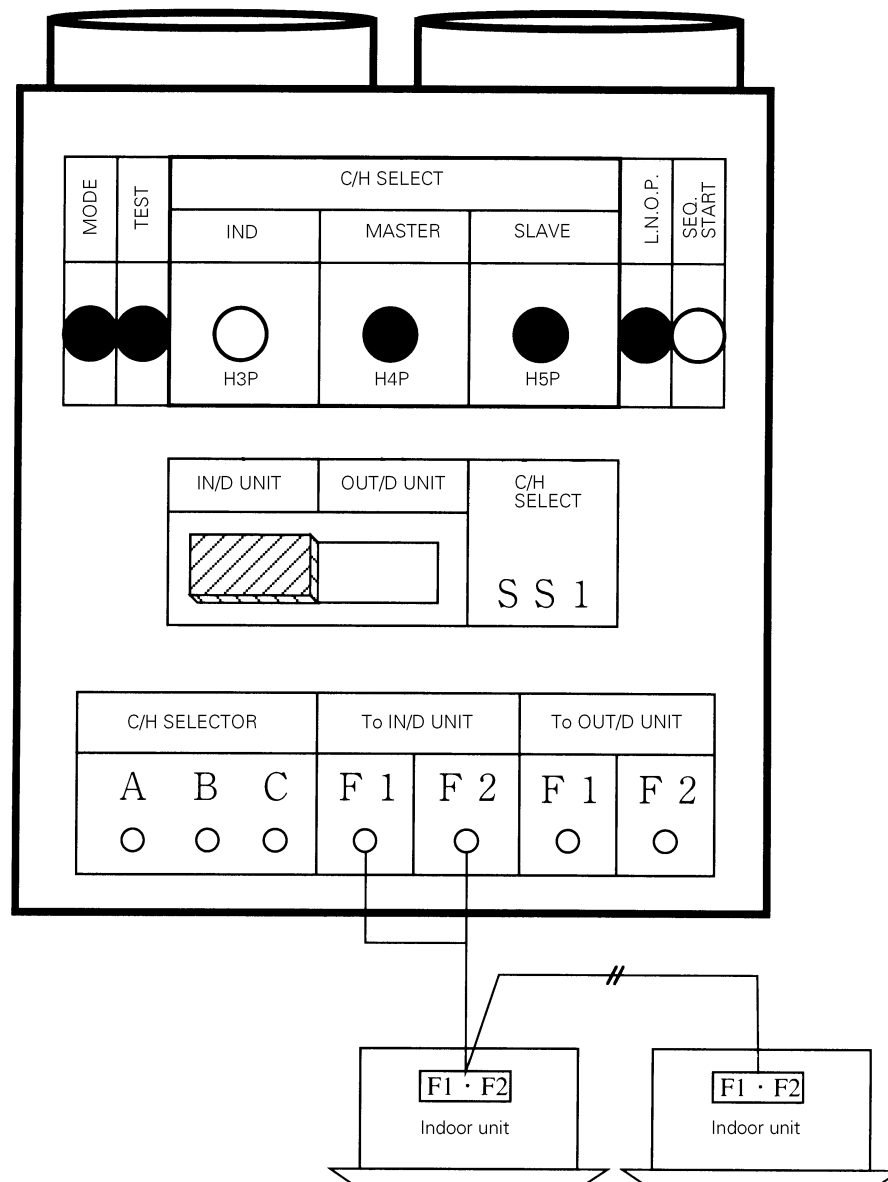
1. Setting of cool/heat by individual outdoor unit system by indoor unit remote controller
2. Setting of cool/heat by individual outdoor unit system by cool/heat selector
3. Setting of cool/heat by outdoor unit system group in accordance with group master outdoor unit by indoor unit remote controller
4. Setting of cool/heat by outdoor unit system group in accordance with group master outdoor unit by cool/heat selector

Each of these setting methods is explained in detail below.

(For 3 and 4 be sure to perform power supply reset after changing settings.)

1.6.1 Setting of Cool / Heat by Individual Outdoor Unit System by Indoor Unit Remote Controller

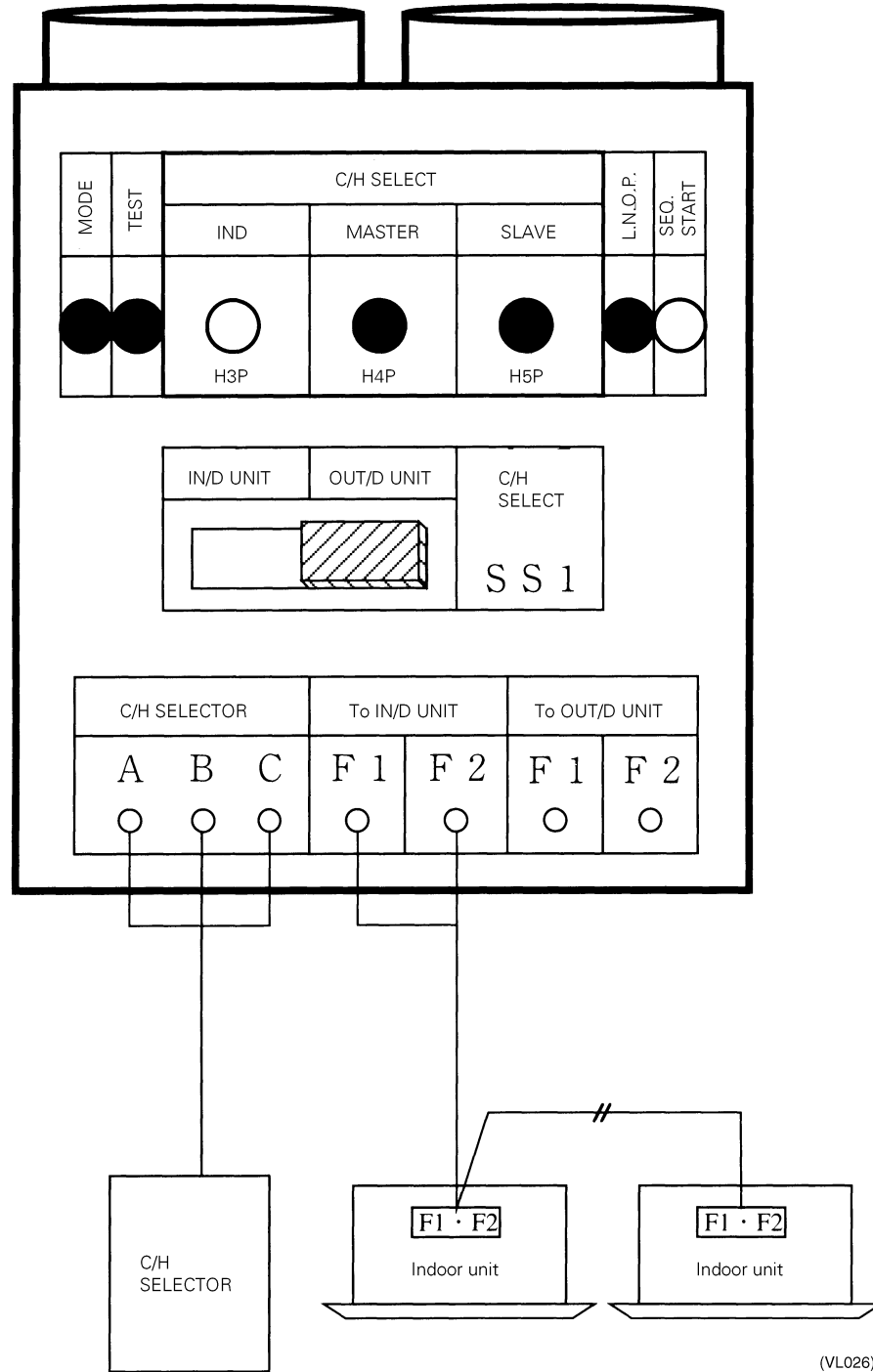
- Doesn't matter whether or not there is outdoor - outdoor unit wiring.
- Set SS1 of the outdoor unit PCB to "IN / D UNIT" (factory set).
- In setting mode 1, set cool/heat selection to "IND" (factory set).



(VL025)

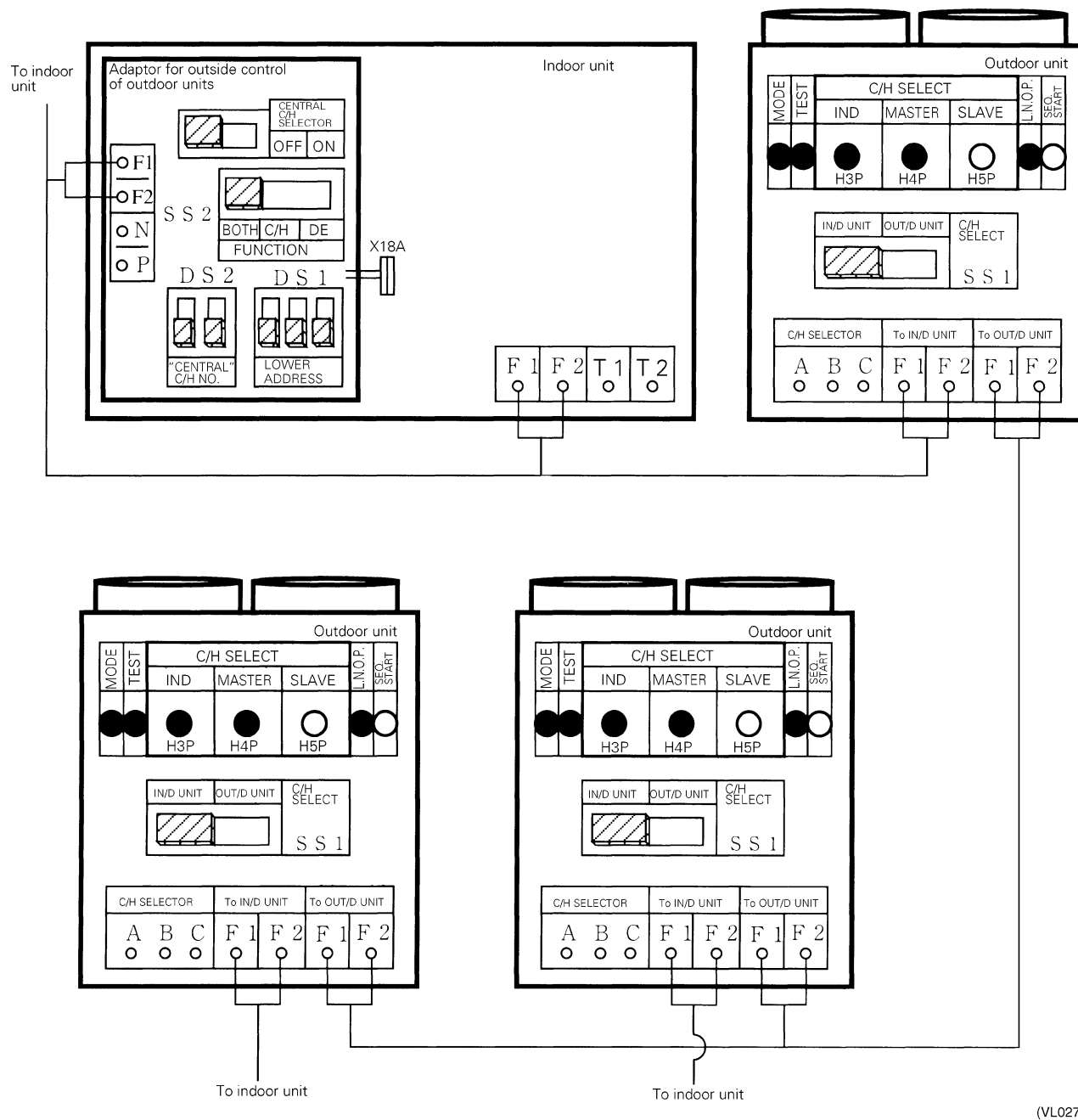
1.6.2 Setting of Cool / Heat by Individual Outdoor Unit System by Cool/Heat Selector

- Doesn't matter whether or not there is outdoor - outdoor unit wiring.
- Set SS1 of the outdoor unit PC board to "OUT / D UNIT."
- In setting mode 1, set cool/heat selection to "IND" (factory set).



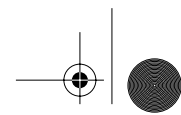
1.6.3 Setting of Cool / Heat by Outdoor Unit System Group in Accordance with Group Master Outdoor Unit by Indoor Unit Remote Controller

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



1.6.4 Setting of Cool / Heat by Outdoor Unit System Group in Accordance with Group Master Outdoor Unit by Cool/Heat Selector

- In addition to 1.6.3, change the following:
- Install a cool / heat selector to the group master outdoor unit.
- Set SS1 of the group master outdoor unit's PCB to "OUT / D UNIT."



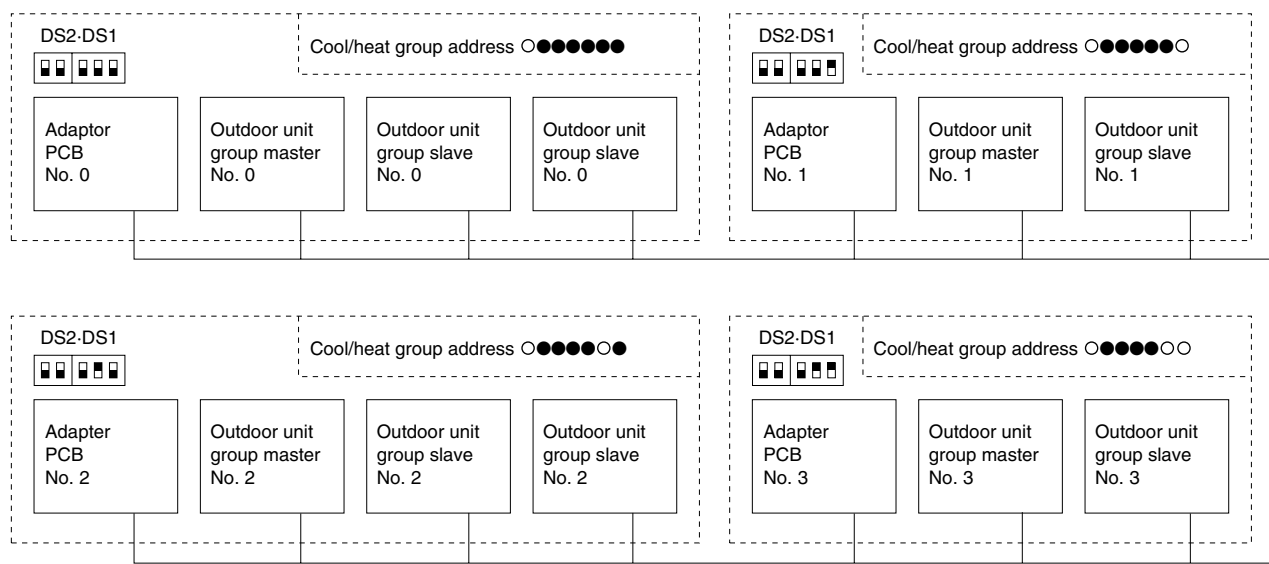
Test Operation

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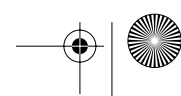
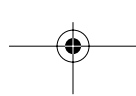
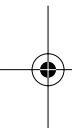
Supplement

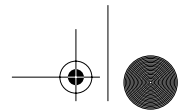
■ Supplement to 1.6.3 and 1.6.4

If using several adaptor PCB and you want to select cool/heat mode for each adaptor PCB, set DS1 / DS2 of the adaptor PCB and the cool/heat group address on the outside unit's PCB to the same setting in setting mode 2.



(VL028)





SI-E-05C

Test Operation

Setting Method

1.6.3 and 1.6.4 address setting method (combine lower 5 digits as binary number)

Address No.	Outdoor unit PC board LED Set in setting mode 2		PC board adaptor	
			DS2	DS1
No 0		 0		0
No 1		 1		1
No 2		 2		2
No 3		 3		3
No 4		 4		4
No30		 30		30
No31		 31		31

○ On ● Off



Up (ON)

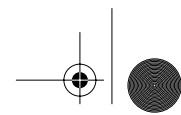


Down (OFF)

(The black part represents the switch.)

(VL029)

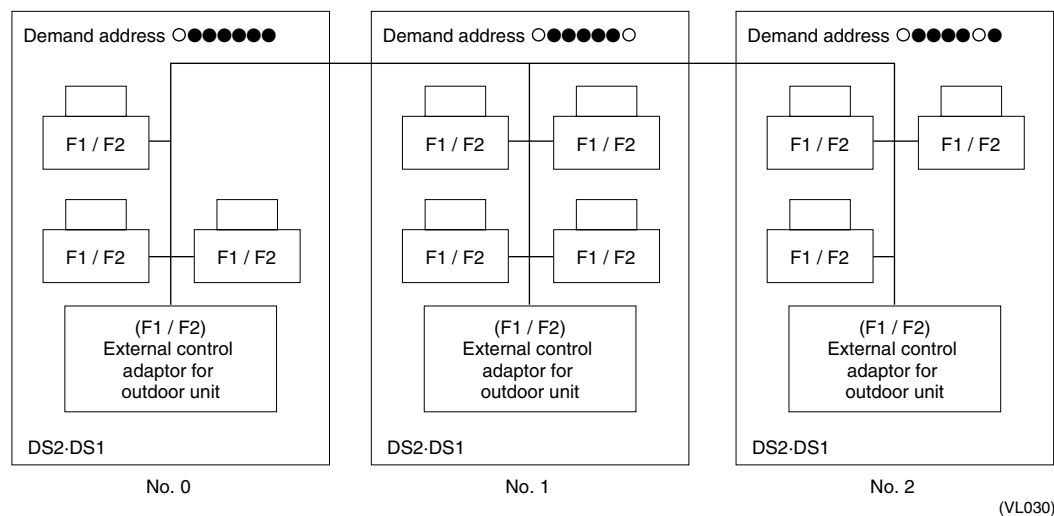




1.7 Low Noise / Demand Operation

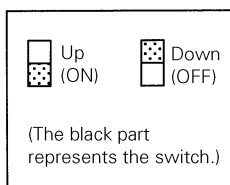
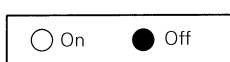
External control adaptor for outdoor unit is required for each low noise and demand control zone.

- By using a separate External control adaptor for outdoor unit and setting the outdoor unit address (setting mode 2) for each low noise and demand control zone, demand and low noise operation is carried out in accordance with contact input received from the adaptor in each zone.

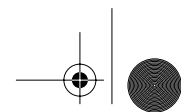


- Outdoor unit address setting (Setting mode 2; see page 59.)
- External control adaptor for outdoor unit address setting
- ◆ Decide and set demand address 0 - 31 for each demand and low noise control zone. (See fig. below.)
- ◆ Set SS1 to "BOTH" (factory set) or "C / H."

Demand No.	Outdoor unit PCB LED Set in setting mode 2	External control adaptor for outdoor unit		No 11	No 12	No 30	No 31
		DS2	DS1				
No 0	○●●●●●						
No 1	○●●●●○						
No 2	○●●●○●						
No 3	○●●●○						
No 11	○●●●●○						
No 12	○●●●●●						
No 30	○●●●○●						
No 31	○●●●○						



(VL031)

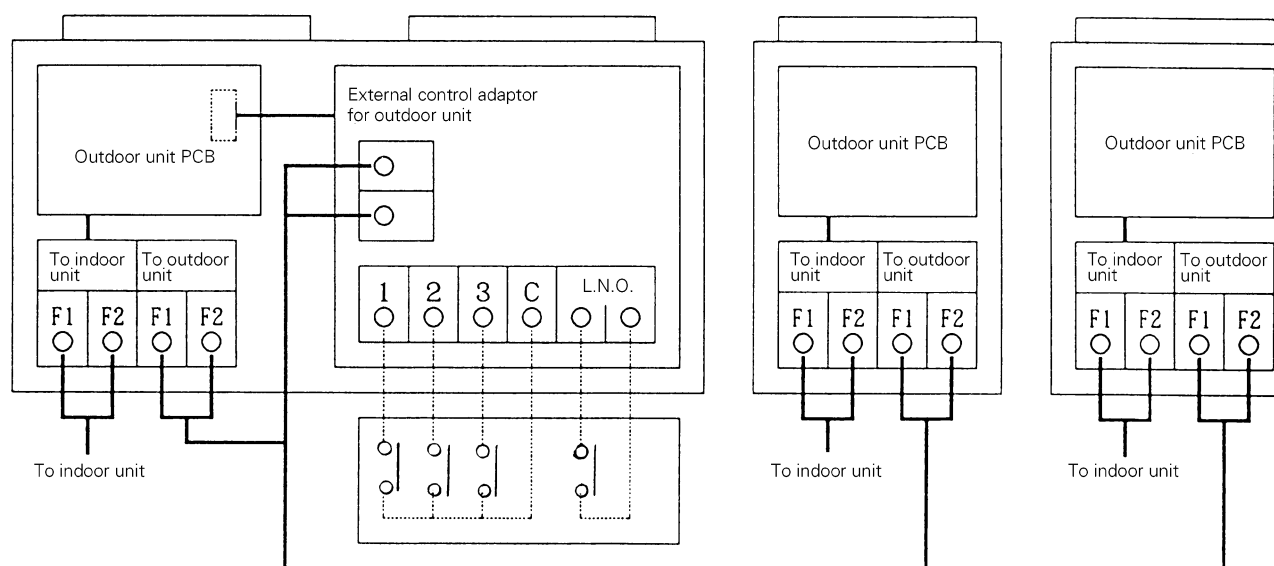


SiE-05C

Test Operation

Wiring Method

Wire to the control box for the indoor unit or BS unit. (Note: Differs according to the type of outside control adaptor.)



(VL032)

Demand / Low Noise Input

Short circuit between Demand 1 and C: Holds demand down to approx. 70%
 Short circuit between Demand 2 and C: Holds demand down to approx. 40%
 Short circuit between Demand 3 and C: Forced OFF by thermostat
 L.N.O (jumper): Carries out low noise operation.

Input Signal

Input current by constant contact a is about 10 mA per contact. Use a micro-current contact for the relay contact.

Exterior wiring specifications for demand and low noise operation
 Recommended wiring: Sheathed vinyl cord or cable
 Wiring length: 150 m
 Keep away from power line in order to prevent malfunction.



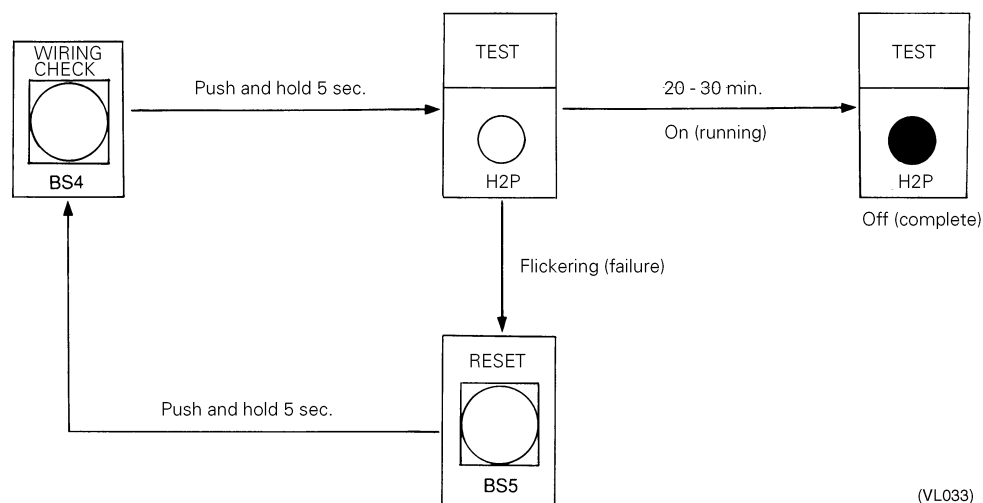


1.8 Wiring Check Operation

If within 12 hours of stopping cooling or heating, be sure to run all indoor units in the system you want to check in the fan mode for about 60 minutes in order to prevent mis-detection.

Operation Method

1. In the monitor mode, check the number of connected indoor units. (See monitor mode.)
2. Push and hold the WIRING CHECK button (BS4) for 5 seconds to perform wiring check operation. While running, TEST (H2P) lights and goes off when finished. If TEST (H2P) flickers (wiring check operation failure), push and hold the RESET button (BS5) for 5 seconds, and then repeat the procedure from the beginning.
3. About 1 minute after you finish running the system, once again check the number of connected indoor units in the monitor mode and make sure the number agrees with the first time you checked. If not, it indicates that there is a wiring mistake. Fix the wiring of the indoor unit whose remote controller displays "UF" when its ON/OFF switch is turned ON.



(VL033)

i **NOTE:** Other settings are not accepted during wiring check operation.

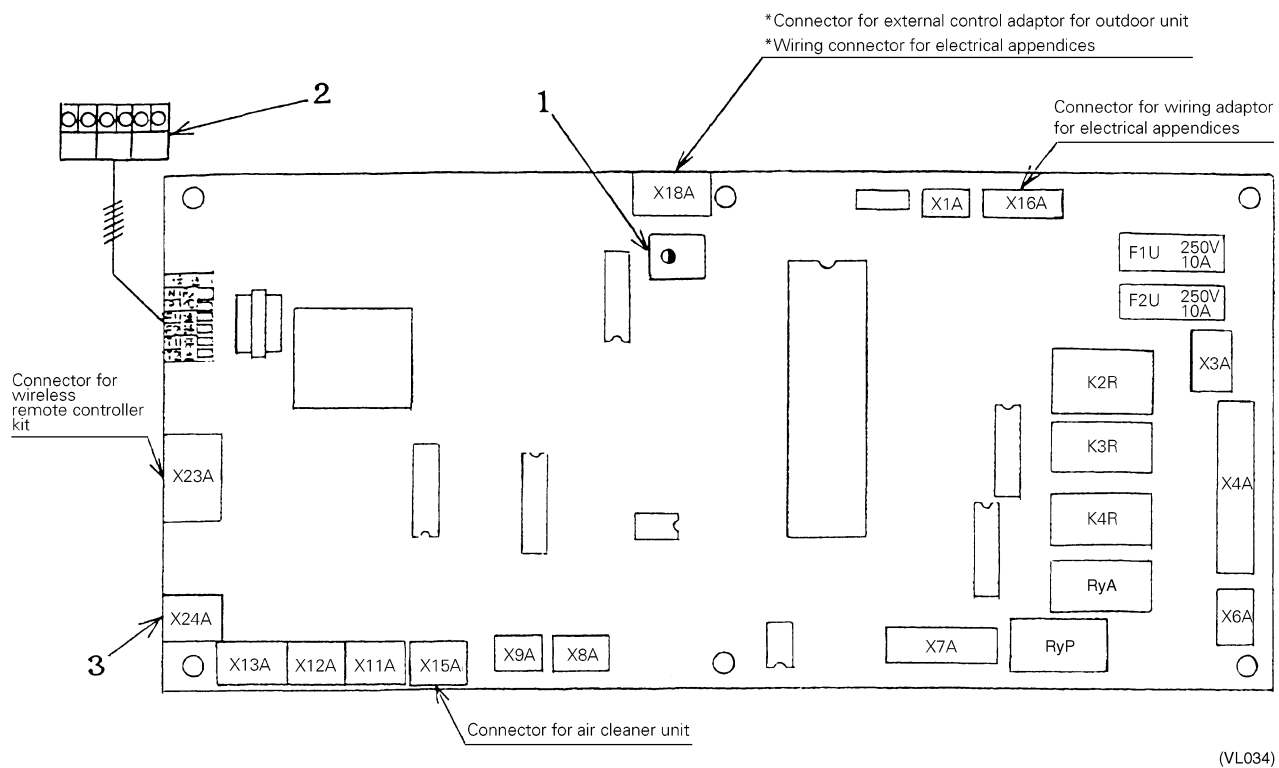


1.9 Indoor Unit PCB Ass'y

The indoor unit PCB ass'y is equipped with terminals for control wiring and connectors for optional control accessories .

Group No. setting for central control and various operation setting switches, etc., are set by indoor unit remote controller.

Ceiling Mounted Cassette Type (Double Flow Type): FXYC-K



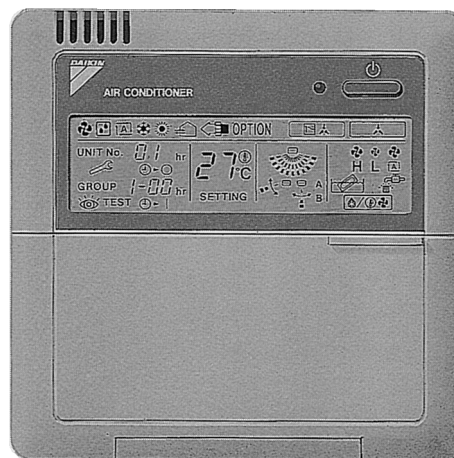
1 Service Monitor [HAP] (Green)	Lets you check the function status of the microcomputer. Normal : Flicker Malfunction : On or off												
2 Transmission wiring terminal	Terminal for remote controller wiring, indoor - outdoor unit transmission wiring (central wiring), and wiring for outside input <table border="1"> <thead> <tr> <th colspan="2">Remote controller</th> <th colspan="2">Transmission wiring</th> <th colspan="2">Outside input</th> </tr> </thead> <tbody> <tr> <td>N</td> <td>P</td> <td>F1</td> <td>F2</td> <td>T1</td> <td>T2</td> </tr> </tbody> </table>	Remote controller		Transmission wiring		Outside input		N	P	F1	F2	T1	T2
Remote controller		Transmission wiring		Outside input									
N	P	F1	F2	T1	T2								
3 Connector for capacity setting adaptor	Connector for inserting the capacity setting adaptor for when replacing with auxiliary PC board. The adaptor is required for all models. * Fan phase control for FXYF, FXYH and FXYA only.												

1.10 Remote Controllers (Wired and Wireless)

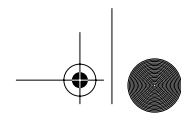
By making use of optional liquid crystal indoor unit remote controller switches, you can construct a versatile control system.

The remote controller control wiring for simplified remote controllers (BRC2A51/3A61) is the same as that of standard remote controllers (BRC1A61/1A62), but since the functions of the simplified remote controllers are limited, we recommend they should be used together with a central remote controller.

Appearance / Functions



- ◆ Large liquid crystal screen that displays operating status in detail.
- ◆ Preset temperature is indicated in digital display, and can be set in 1°C increments.
- ◆ Enables independent operation without the remote controller for HRV as well as operation interlocked with HRV total heat exchanger units. (Applies only to B Series and multifunctional types)
- ◆ Display of malfunction is also available for air cleaner units.
- ◆ Operation can be individually programmed to start and stop time up to 72 hours in advance.
- ◆ The remote controller is equipped with a thermostat sensor to realize better room temperature control.
- ◆ Room temperature and preset temperature are monitored by microcomputer, and cool/heat operation mode is selected automatically. (Applies only to simultaneous cool/heat type only)
- ◆ Cool, heat or fan operation mode can be selected by any indoor unit remote controller without using the cool/heat selector switch. (Applies to all VRV System equipment)
- ◆ The system can be monitored for malfunctions covering 40 items. Equipped with a "self-diagnosis function" which displays a message to let you know immediately when a malfunction occurs.
- ◆ Field settings can be made by remote controller.



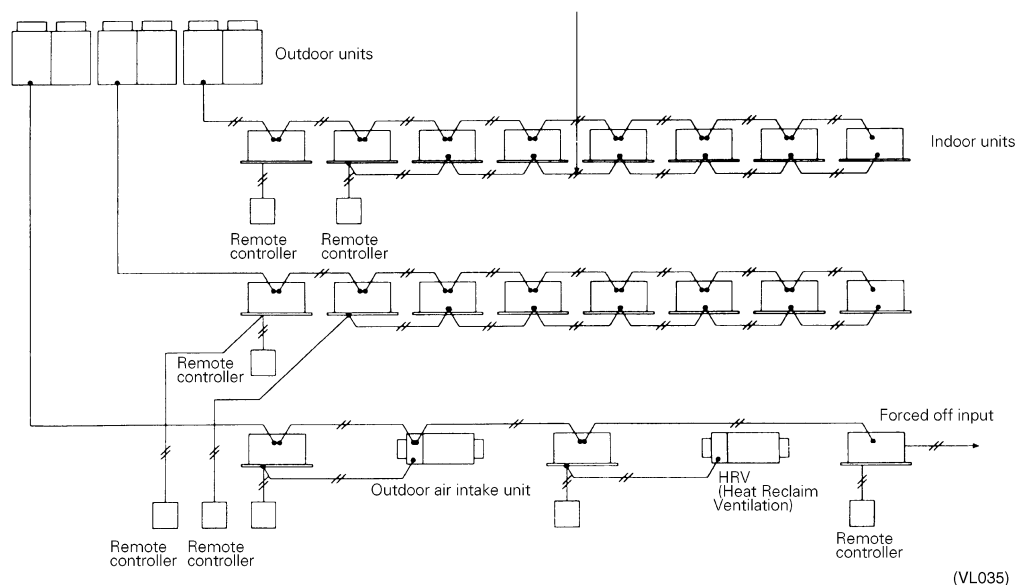
Remote Control Example

■ **Cool/heat operation mode selection control**

With the VRV System Inverter K Series, you can select the cool/heat operation mode for outdoor units in the same system with an indoor unit remote controller.

■ **Group control**

Up to 16 indoor units can be simultaneously controlled with a single remote controller.



■ **Control by 2 remote controllers**

By connecting two remote controllers to a single indoor unit, you can for instance freely control from both in the room and from the control room (individual control), not to mention that you can carry out group control with two remote controllers.

■ **Electrical appendices**

Remote controller wiring can be extended up to 500 meters, and you can easily make a central control setup in one place with indoor unit remote controllers set up in various places around the room.

■ **Interlock control**

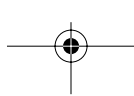
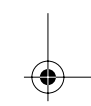
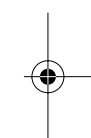
You can simultaneously control HRV total heat exchanger units or humidifiers with direct expansion coils via an indoor unit. Also displays cleaning period for air cleaner units.

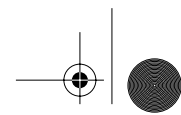
■ **System extension**

Allows extension of the system such as a building control system or forced off command input by key control system.

1.10.1 Applicable Remote Controller Models (Wired Type)

Model No.	Applicable types
BRCIA61	Ceiling mounted cassette (multi flow, double flow, corner), ceiling suspended, wall mounted
BRCIA62	Ceiling mounted built-in, ceiling mounted duct, concealed floor standing

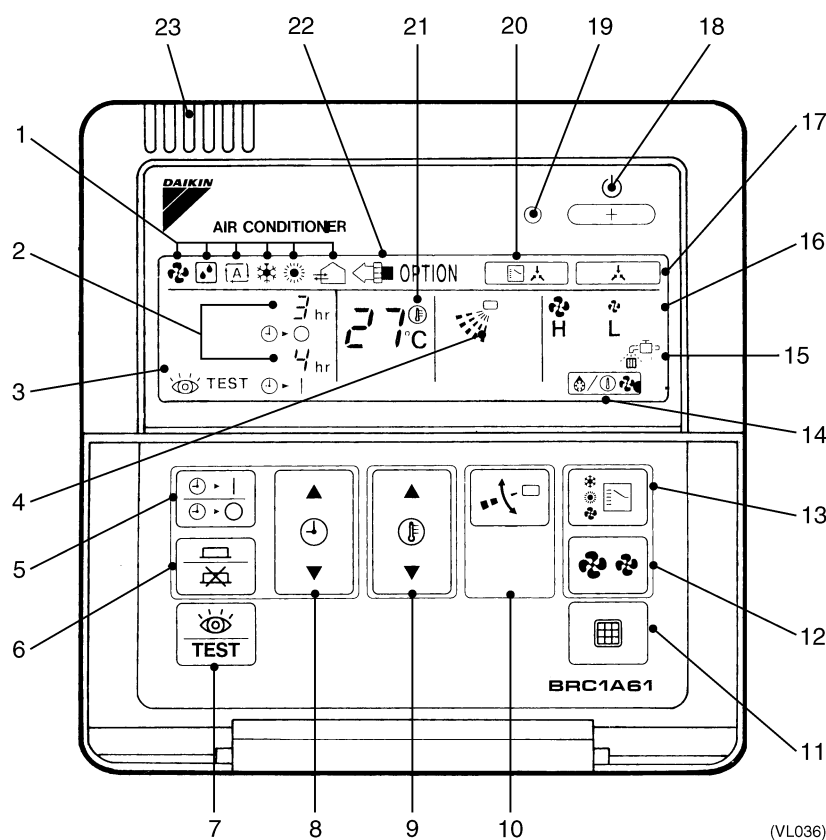




Test Operation

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Part Names and Functions



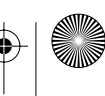
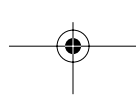
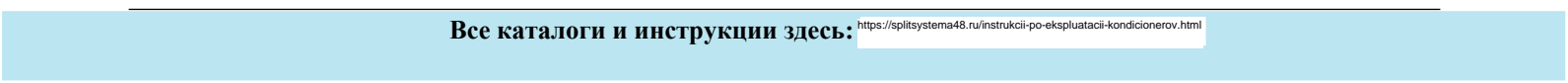
(VL036)

1	Operation mode display Displays status during operation. • "Auto" can be set only for cool/heat simultaneous operation systems.	13	Operation mode selector button Push to switch the operation mode. *Note
2	Display programmed time Displays programmed time.	14	Defrost / hot start display Displayed when defrosting.
3	Inspection / test operation display When the inspection / test operation button is pushed, displays whether the system is in the inspection or test operation mode.	15	Air filter cleaning time display Displays the preset temperature when air condition operation exceeds a certain period of time.
4	Display air flow / flap Displays "fixed" or "swing" for air direction.	16	Display of fan speed Displays set fan speed.
5	Time mode START/STOP button Push to start and stop the timer.	17	Display "under centralized control" Displayed when under centralized control.
6	Timer ON/OFF button Push to turn the timer on or off.	18	ON/OFF button One push starts the system, and a second push stops the system again.
7	Inspection / test operation button Push for inspection or test operation.	19	Operation lamp (Red) Lights during operation.
8	Programming time button Push to set programming time.	20	Display "changeover under control" Cool/heat/auto/dry cannot be switched with remote controllers equipped with this display.
9	Temperature control button Push to set temperature.	21	Preset temperature display Displays the preset temperature.
10	Air flow direction adjustment button Push to set the air flow direction to "fixed" or "swing."	22	Display ventilation/cleaning Displayed when connected to dust collector, etc., equipped with HRV total heat exchanger unit.
11	Filter sign reset button After cleaning the filter, push to cancel the air filter cleaning time.	23	Thermostat sensor in remote controller Senses the room temperature near the remote controller.
12	Fan speed adjustment button Each time this button is pushed, fan speed toggles between "high" and "low."		



Note: * Works only for remote controller set to have cool/heat selection permission.

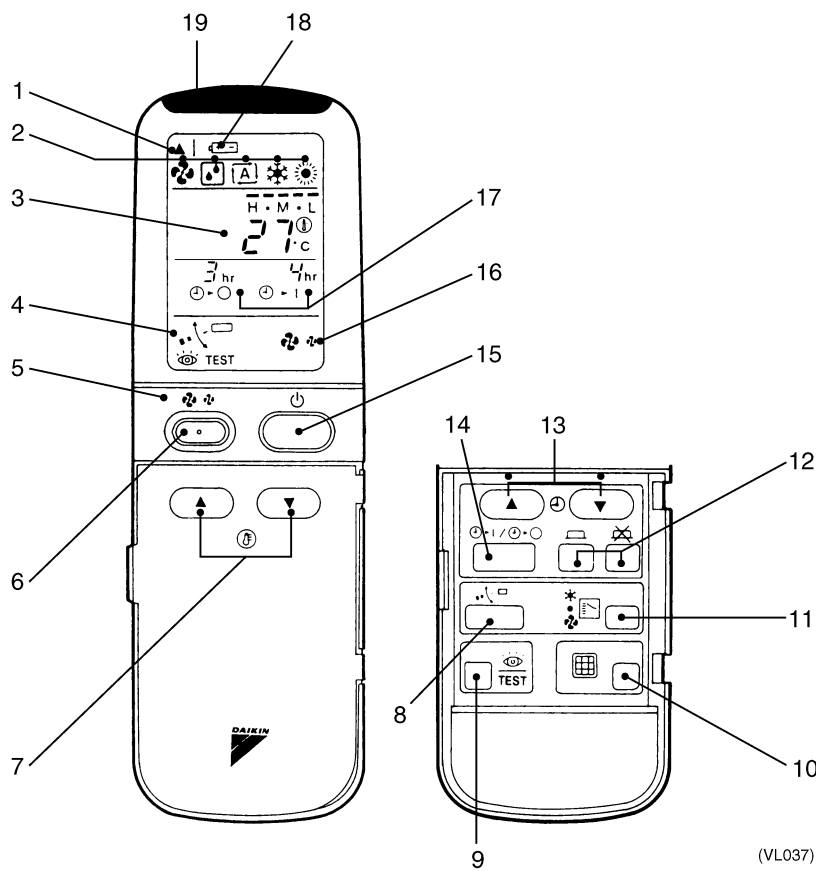
Все каталоги и инструкции здесь: <https://splitssystema48.ru/instrukcii-po-ekspluatatsii-kondicionerov.html>



1.10.2 Applicable Wireless Remote Controller Models

Type		FXYC-K	FXYK-K	FXYF-K	FXY S-K	FXYH-K	FXYA-K	FXYL-K FXYLM-K	FXYM-K
Wireless remote controller	H / P	BRC7A62	—	BRC7A61W	BRC4A62	BRC7A63W	BRC7A64W	BRC4A62	BRC4A62
	C / O	BRC7A67	—	BRC7A66W	BRC4A64	BRC7A68W	BRC7A69W	BRC4A64	BRC4A64

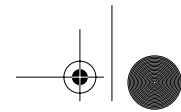
Part Names and Functions



(VL037)

1	Display of transmission Blinks when a signal is being sent to an indoor unit.	10	Filter sign reset button After cleaning the filter, push to cancel the air filter cleaning time.
2	Operation mode display Displays status during operation. • "Auto" can be set only for cool/heat simultaneous operation systems.	11	Operation mode selector button Push to switch the operation mode. *Note
3	Preset temperature display Displays the preset temperature.	12	Timer ON/OFF button Push to turn the timer on or off.
4	Display air flow / flap Displays "fixed" or "swing" for air direction.	13	Programming time button Push to set programming time.
5	Inspection / test operation display When the inspection / test operation button is pushed, displays whether the system is in the inspection or test operation mode.	14	Time mode START/STOP button Push to start or stop the timer.
6	Fan speed adjustment button Each time this button is pushed, fan speed toggles between "high" and "low."	15	ON/OFF button One push starts the system, and a second push stops the system again.
7	Temperature control button Push to set temperature.	16	Display of fan speed Displays set fan speed.
8	Air flow direction adjustment button Push to set the air flow direction to "fixed" or "swing."	17	Display programmed time Displays programmed time.
9	Inspection / test operation button Push for inspection or test operation.	18	Battery change display Blinks to let you know it is time to replace the battery.
		19	Transmitter Transmits signals to the indoor unit.

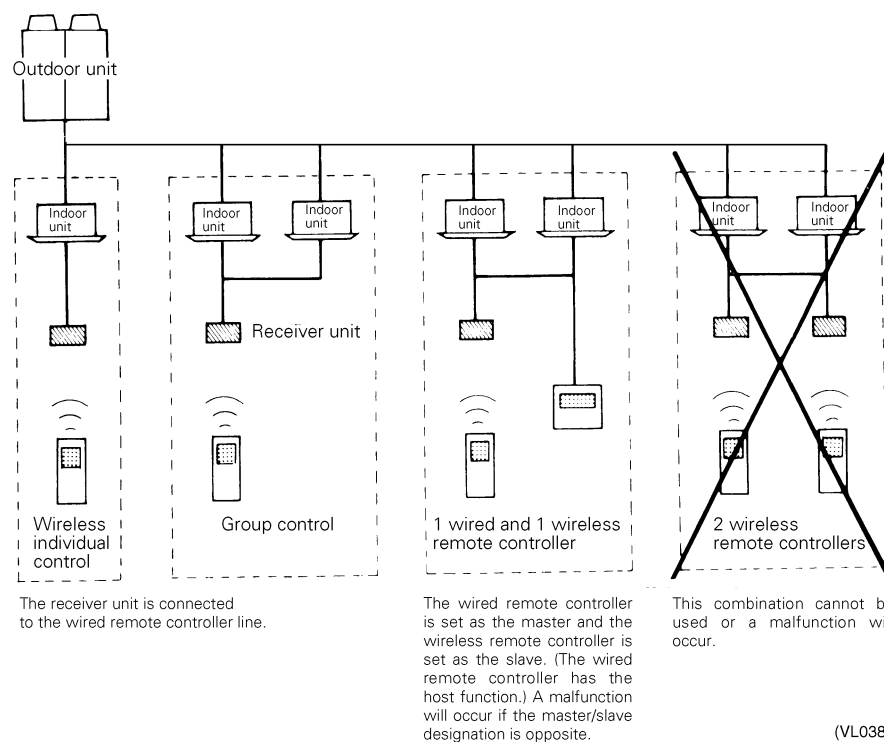
i Note: * Works only for indoor unit set to have cool/heat selection permission.



Test Operation

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Example of System Using Wireless Remote Controller



For control by two remote controllers, be sure to designate the indoor unit remote controller as the master. The only combination that can't be used is two wireless remote controllers. Transmission wiring between the separately installed receiver unit unit and indoor unit can be up to 200 meters long.

Comparison of Functions of Wired and Wireless Remote Controllers

Function /display	Wired remote controller	Wireless remote controller
Operation lamp	Remote controller LED	Receiver unit LED
ON/OFF	Toggles between on and off each time the button is pushed.	
Operation mode selection	Selects operation mode. Cool/heat mode cannot be switched during changeover under control.	Selects operation mode. Cool/heat display switches during changeover under control.
Air flow direction setting	The air flow direction is set by adjusting with the air flow direction adjustment button while viewing setting position in the liquid crystal display.	The air flow direction is set by adjusting with the air flow direction adjustment button while viewing the position of the louver.
Filter sign reset	Resets the filter and element cleaning display.	Resets the filter and element cleaning display. Displayed by optical sensor LED.
Display "time to clean air cleaner element" Filter sign display	Remote controller LCD display	Displayed by receiver unit LED.
Display "ventilation/cleaning"	Displayed when HRV or air cleaner unit is connected.	Ventilation/cleaning displayed by receiver unit LED.
Defrost hot start	Displays defrost and hot start.	Displayed by receiver unit LED.
Display "under centralized control"	Displayed during centralized control.	Not displayed, but you are warned by a buzzer sound emitted from the receiver unit .
Display "changeover under control"	Displayed when cool/heat mode cannot be switched.	Not displayed (you are warned by a buzzer sound when the mode cannot be switched).
Thermostat sensor in remote controller	Equipped	Not equipped
Ventilation mode	Equipped	Not equipped

■ All operation buttons (preset temperature, fan speed, timer, inspection / test operation, cool/heat selection permission and group No. setting for centralized control) function in the same manner.

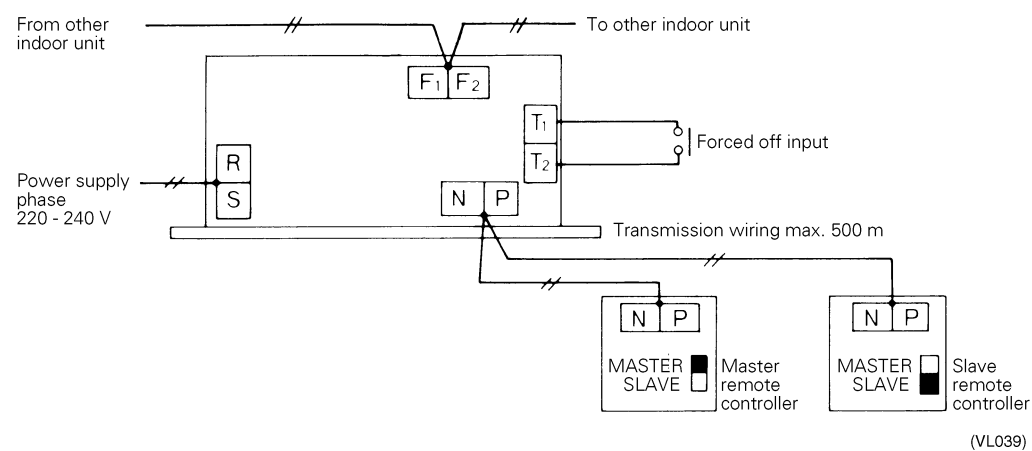


1.11 Control by Remote Controller (Double Remote Controllers, Group, Remote)

Double Remote Controllers

Lets you control a single indoor unit using two remote controllers in different locations.

System which is convenient for cases where for instance you may want to control an indoor unit in the reception room from your office, or when you may want to have fine control of a far away indoor unit at your fingertips. (Applies to other indoor unit types as well.)



(VL039)

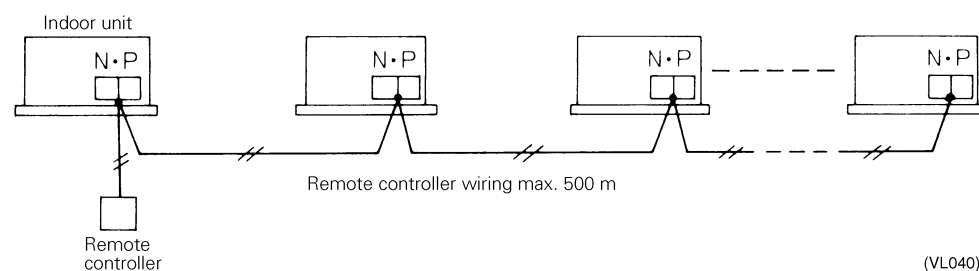
i **NOTE:** The remote controller contains a thermostat sensor. If the master and slave remote controllers are located in different rooms, set field setting to "Not used" by the master remote controller. (No need field setting to "Not used" for the slave remote controller)

- Operation control for indoor units is last command priority.
- Remove the remote controllers' front panels and set the MASTER/SLAVE switch on the remote controller's built-in PC board to MASTER for the master remote controller and SLAVE for the slave remote controller. Field setting can be made only for the master remote controller.

Group Control

Up to 16 indoor units are simultaneously controlled as a group with single remote controller.

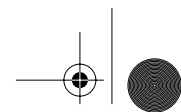
System which is convenient for cases where for instance you may want to simultaneously control several indoor units with the same settings, such as on a huge single floor.



(VL040)

i **NOTE:** Shows remote controller wiring only.

- Remote controller wiring for group control has no polarity, so it doesn't matter if N and P are connected inversely.
- Settings are the same for all indoor units in the group, and each indoor unit is controlled individually by its thermostat sensor.
- Address is set automatically for group control, so there is no need to set the address for by the group control remote controller.



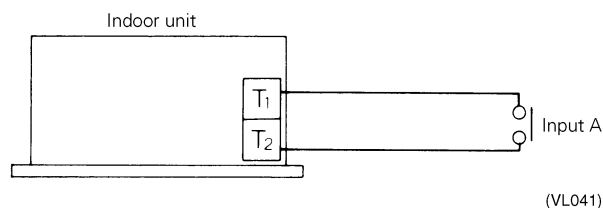
Remote Control

Forced OFF or ON/OFF control of indoor units can be input from outside.

Enables indoor units to be turned on and off by a building control or key control system.

1. Wiring method and specifications

Remote control is carried out by connecting input from outside to pins T1 and T2 on the terminal block (for remote controller and transmission wiring)



Wiring specifications	Sheathed vinyl cord or cable (double core)
Wiring thickness	0.75~1.25mm ²
Wiring length	MAX 100m
Outside contact specs.	Contact which guarantees min. applicable load of 15 VDC, 10 mA

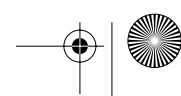
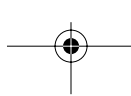
Forced OFF	ON/OFF control
Forced OFF by input A "ON" (remote controller prohibited)	On by input A "OFF" → "ON"
Remote controller permitted by input A "OFF"	OFF by input A "ON" → "OFF"

2. Operation contents

Input A of forced stop and stop operation operates as described in the table on the right.

3. Forced OFF and ON/OFF control selection

- Switch input by remote controller after turning on the power supply.
- Set field setting mode with the remote controller.
- When you enter the field setting mode, select mode No. 12, and set the first code No. to "1." for forced OFF, set the second code No. to "01," and from ON/OFF control, set to "02." (Factory set is forced OFF.)

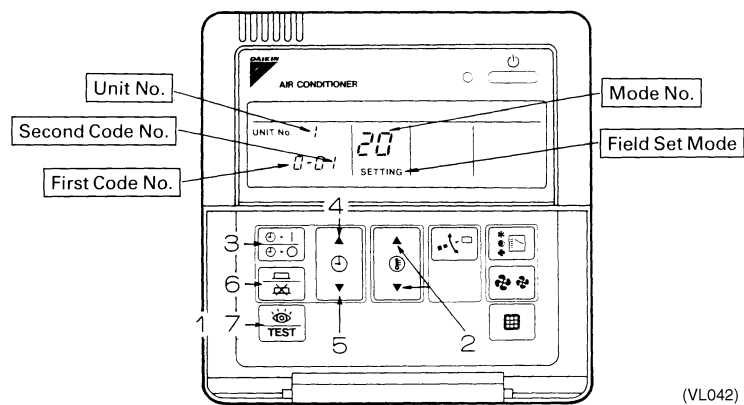


1.12 Indoor Field Setting

Making a field setting

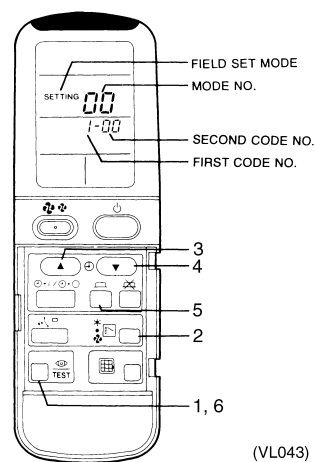
Field settings must be made by remote controller if optional accessories have been installed on the indoor unit, or if the indoor unit or HRV unit's individual functions have been modified.

1.12.1 Wired Remote Controller



1. When in the normal mode, push the button for 4 seconds or more, and operation then enters the "field set mode."
2. Select the desired "mode No." with the button.
3. During group control and you want to set by each individual indoor unit (when mode No. 20, 21, 22, 23, 25 has been selected), push the time mode button and select the "indoor unit No." to be set.
Note: This operation is not required when setting as a group.
4. Push the button and select the first code No.
5. Push the button and select the second code No.
6. Push the timer button one time and "define" the currently set contents.
7. Push the button to return to the normal mode.

1.12.2 Wireless Remote Controller



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

Test Operation

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



- NOTES:**
- Settings are made simultaneously for the entire group, however, if you select the mode No. inside parentheses, you can also set by each individual unit. Setting changes however cannot be checked except in the individual mode for those in parentheses.
 - The mode numbers inside parentheses cannot be used by wireless remote controllers, so they cannot be set individually. Setting changes also cannot be checked.
 - Mode numbers 17 (27) and 19 (29) are HRV functions that can be set from a VRV system remote controller.
 - The second code No. is factory set to "01." The field set air flow direction position and thermostat sensor in remote controller is however set to "02," and ventilation fan speed is set to "05."
 - Do not make settings other than those described above. Nothing is displayed for functions the indoor unit is not equipped with.
 - "88" may be displayed to indicate the remote controller is resetting when returning to the normal mode.

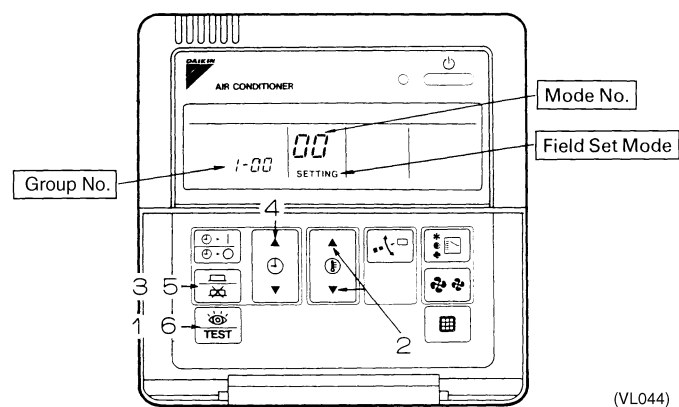
1.12.3 Setting Contents and Code No.

VRV system indoor unit settings	Mode No. Note 2	First Code No.	Setting Contents	Second Code No.(Note 3)								
				01		02		03		04		
10(20)	0		Filter contamination heavy/light (Setting for display time to clean air filter) (Sets display time to clean air filter to half when there is heavy filter contamination.)	Super long life filter	Light	Approx. 10,000 hrs.	Heavy	Approx. 5,000 hrs.	—		—	
				Long life filter		Approx. 2,500 hrs.		Approx. 1,250 hrs.				
				Standard filter		Approx. 200 hrs.		Approx. 100 hrs.				
	1		Long life filter type (FXYC only, 01 indicates long life)	Long life filter		Super long life filter		—		Soot filter		
	2		Thermostat sensor in remote controller	Use		No use		—				
	3		Display time to clean air filter calculation (Set when filter sign is not to be displayed.)	Display		No display		—				
	12(22)	0		Optional accessories output selection (field selection of output for adaptor for wiring)	Indoor unit turned ON by thermostat				Operation output		Malfunction output	
					Forced OFF		ON/OFF control		External protection device		—	
		1		ON/OFF input from outside (Set when ON/OFF is to be controlled from outside.)	1°C		0.5°C		—		—	
		2		Thermostat differential changeover (Set when remote sensor is to be used.) FXYC, FXYE, FXYF, FXYK, FXYH only	LL		Set fan speed		—		—	
3			OFF by thermostat fan speed	01:0	02:1	03:2	4:03	05:4	6:05	7:06	08:7	
4			Automatic mode differential (automatic temperature differential setting for VRV system heat recovery series cool/heat)	Not equipped		Equipped		—		—		
13(23)	0		High air outlet velocity (Set when installed in place with ceiling higher than 2.7 m.) FXYF only	N		H		—		—		
				F (4 directions)		T (3 directions)		W (2 directions)		—		
	1		Selection of air flow direction (Set when a blocking pad kit has been installed.) FXYF only	Equipped		Not equipped				—		
	2		Horizontal air discharge	Equipped		Not equipped				—		
	3		Air flow direction adjustment (Set at installation of decoration panel.) FXYK only	Equipped		Not equipped				—		
	4		Field set air flow position setting	Draft prevention		Standard		Ceiling Soiling prevention		—		
15(25)	1		Thermostat OFF excess humidity	Standard		Optional accessory 1		Optional accessory 2		—		
				Standard		Optional accessory 1		Optional accessory 2		—		
	3		Thermostat OFF excess humidity	Not equipped		Equipped		—		—		
	3		Drain pump humidifier interlock selection	Not equipped		Equipped		—		—		
	4		Sets whether filter sign is to be output by time or by input.	Time addition		Input		—		—		
	5		Field set selection for individual ventilation setting by remote controller	Not equipped		Equipped		—		—		
6		Field set selection for individual ventilation setting by remote controller	Not equipped		Equipped		—		—			

For HRV settings, see the proper documents for HRV.



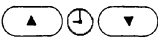


1.13 Centralized Control Group No. Setting

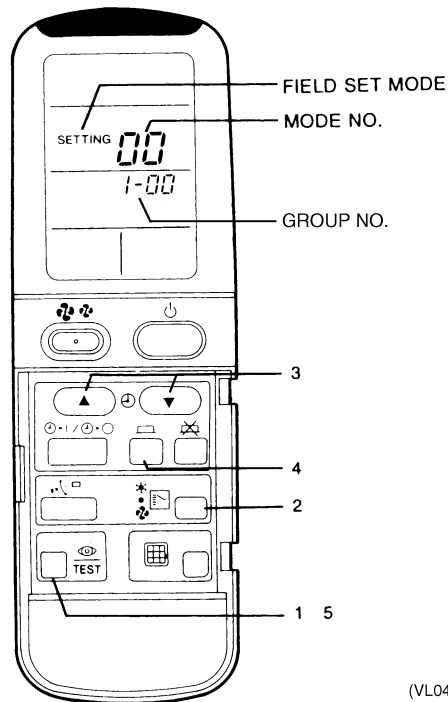
- If carrying out centralized control by central remote controller or unified ON/OFF controller, group No. must be set for each group individually by remote controller.
 - Group No. setting by remote controller for centralized control
1. When in the normal mode, push the  button for 4 seconds or more, and operation then enters the "field setting mode."
 2. Set mode No. "00" with the  button. *
 3. Push the  button to inspect the group No. display.
 4. Set the group No. for each group with the  button (The group No. increases in the manner of 1-00, 1-01, ..., 1-15, 2-00, ..., 4-15. However, the unified ON/OFF controller displays only the group No. within the range selected by the switch for setting each address.)
 5. Push the timer  button to define the selected group No.
 6. Push the  button to return to the normal mode.



- Even if not using a remote controller, connect the remote controller when setting the group No., set the group No. for centralized control, and disconnect after making the setting.
- Set the group No. after turning on the power supply for the central remote controller, unified ON/OFF controller, and indoor unit.

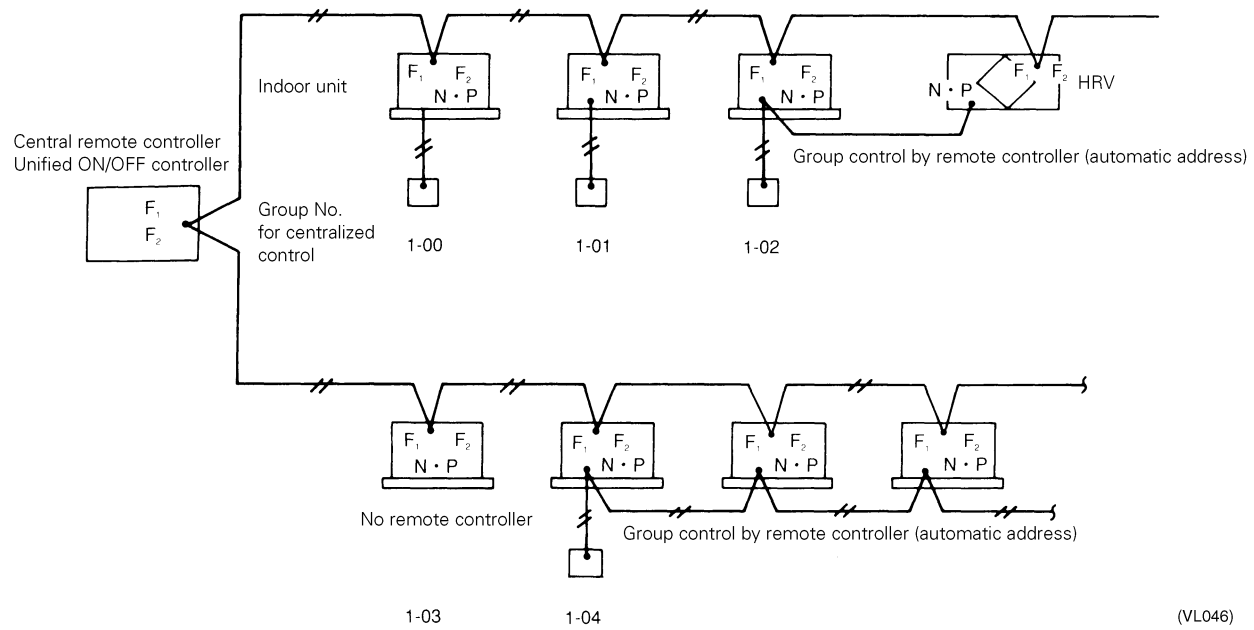
■ Group No. setting by wireless remote controller for centralized control

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



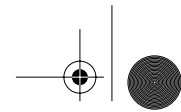
(VL045)

Group No. Setting Example



(VL046)

- If you have to set the address for each unit for calculating cost, etc., set the mode No. to "30."

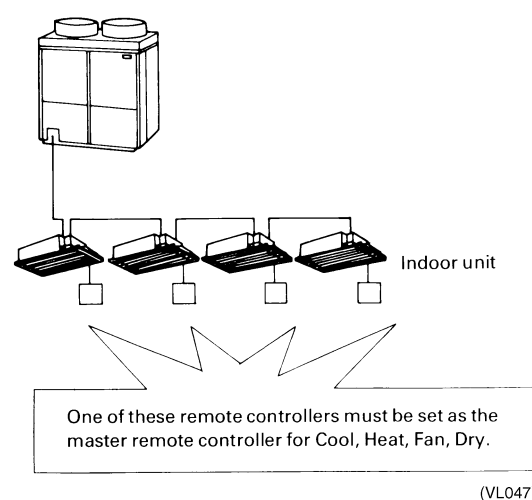


1.14 Setting of Master Remote Controller

By Indoor Unit Remote Controller

Operation mode (Fan, Dry, Cool, Heat) can be freely selected by indoor unit remote controller for the VRV K series outdoor units, however, as shown in the example below, the remote controller of one of the indoor units connected to 1 outdoor unit must be set as the master remote controller for Fan, Dry, Cool, Heat. (Operation mode can be switched by only the remote controller set as the master remote controller.)

VRV K series



Setting Method

Preparations

When turning the power supply on for the first time, the display of **<CHANGEOVER UNDER CONTROL>** lights when the power supply is turned on.

When you want to set:

1	Set the outdoor unit's cool/heat selector (Filed setting mode1) to inside.
---	--

Setting of master remote controller

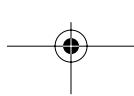
2	<p>Continue pushing <OPERATION MODE SELECTOR> for about 4 seconds. The display of <CHANGEOVER UNDER CONTROL> on all remote controllers connected to the same outdoor unit blinks.</p> <p>(VL048)</p>
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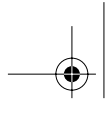
Setting of master remote controller

3	<p>Push the <OPERATION MODE SELECTOR> of the remote controller you want to set as the master remote controller. This completes the setting. The remote controller is now set as the master remote controller and the display of <CHANGEOVER UNDER CONTROL> goes off. <CHANGEOVER UNDER CONTROL> is displayed on the other remote controllers.</p>
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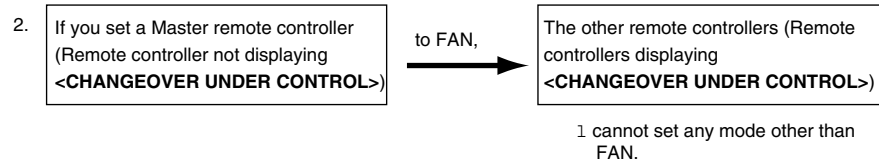
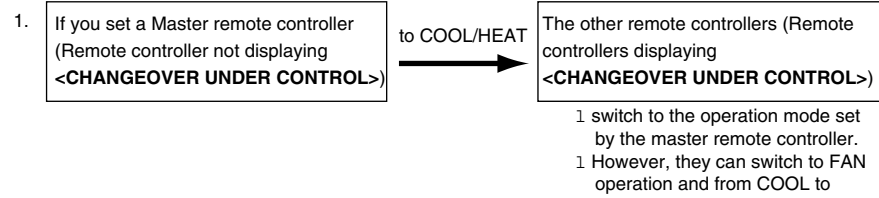
Operation mode selection

4	<p>Push the <OPERATION MODE SELECTOR> of the master remote controller (remote controller not displaying <CHANGEOVER UNDER CONTROL>) the amount of times required to select the desired operation mode. Each push switches the display from FAN to DRY, COOL, and HEAT. The operation mode changes automatically for all remote controllers that are not set as a master remote controller.</p>
---	--

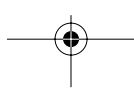
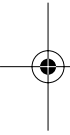


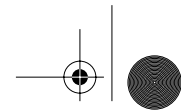


Operation Contents and Function



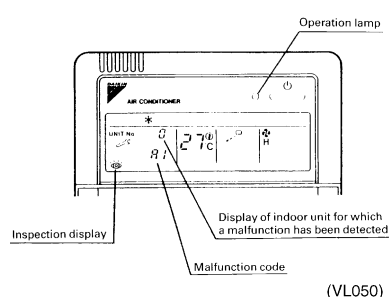
(VL049)



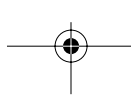


1.15 Remote Controller Self-Diagnosis Function

The remote controller switches are equipped with a self diagnosis function so that more appropriate maintenance can be carried out. If a malfunction occurs during operation, the operation lamp, malfunction code and display of malfunctioning unit No. let you know the contents and location of the malfunction. When there is a stop due to malfunction, the contents of the malfunction given below can be diagnosed by a combination of operation lamp, INSPECTION display of the liquid crystal display and display of malfunction code. It also lets you know the unit No. during group control.




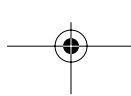
Operation lamp	Inspection display	Unit No.	Malfunction code	Malfunction contents
Blinking	Blinking	Blinking	A0	Indoor unit: Error of external protection device
Blinking	Blinking	Blinking	A1	Indoor unit: Failure of PC board
On	Off	Blinking	A1	Indoor unit: Failure of PC board
Blinking	Blinking	Blinking	A3	Indoor unit: Malfunction of drain level control system (33H)
Blinking	Blinking	Blinking	A6	Indoor unit: Fan motor lock
On	Off	Blinking	A7	Indoor unit: Malfunction of swing flap motor (M1S)
Blinking	Blinking	Blinking	A9	Indoor unit: Malfunction of moving part of electronic expansion valve (Y1E)
On	Off	Blinking	AF	Indoor unit: Drain level above limit
Blinking	Blinking	Blinking	AH	Indoor unit: Malfunction of air filter maintenance
Blinking	Blinking	Blinking	AJ	Indoor unit: Malfunction of capacity setting
Blinking	Blinking	Blinking	C4	Indoor unit: Malfunction of thermistor (R2T) for liquid pipe (loose connection, disconnection, short circuit, failure)
Blinking	Blinking	Blinking	C5	Indoor unit: Malfunction of thermistor (R3T) for gas pipes (loose connection, disconnection, short circuit, failure)
Blinking	Blinking	Blinking	C9	Indoor unit: Malfunction of thermistor (R1T) for air inlet (loose connection, disconnection, short circuit, failure)
On	On	On	CJ	Indoor unit: Malfunction of thermostat sensor in remote controller
Blinking	Blinking	Blinking	E0	Outdoor unit: Actuation of safety device
Blinking	Blinking	Blinking	E1	Outdoor unit: PC board failure
On	Off	Blinking	E1	Outdoor unit: PC board failure
Blinking	Blinking	Blinking	E3	Outdoor unit: Actuation of high pressure switch
Blinking	Blinking	Blinking	E4	Outdoor unit: Actuation of low pressure switch
Blinking	Blinking	Blinking	E9	Outdoor unit: Malfunction of moving part of electronic expansion valve (Y1E)
Blinking	Blinking	Blinking	F3	Outdoor unit: Abnormal discharge pipe temperature
On	Off	Blinking	H3	Outdoor unit: High pressure switch failure
Blinking	Blinking	Blinking	H4	Outdoor unit: Actuation of low pressure switch
Blinking	Blinking	Blinking	H9	Outdoor unit: Malfunction of thermistor (R1T) for outdoor air (loose connection, disconnection, short circuit, failure)
On	Off	Blinking	H9	Outdoor unit: Malfunction of thermistor (R1T) for outdoor air (loose connection, disconnection, short circuit, failure)
Blinking	Blinking	Blinking	J1	Outdoor unit: Malfunction of pressure sensor
Blinking	Blinking	Blinking	J3	Outdoor unit: Malfunction of discharge pipe thermistor (R3T) (loose connection, disconnection, short circuit, failure)
On	Off	Blinking	J3	Outdoor unit: Malfunction of discharge pipe thermistor (R3T) (loose connection, disconnection, short circuit, failure)
Blinking	Blinking	Blinking	J5	Outdoor unit: Malfunction of thermistor (R4T) for suction pipe (loose connection, disconnection, short circuit, failure)



**Test Operation****SI-E-05C**



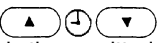
Operation lamp	Inspection display	Unit No.	Malfunction code	Malfunction contents
Blinking	Blinking	Blinking	J6	Outdoor unit: Malfunction of thermistor (R2T) for heat exchanger (loose connection, disconnection, short circuit, failure)
On	Off	Blinking	J6	Outdoor unit: Malfunction of thermistor (R2T) for heat exchanger (loose connection, disconnection, short circuit, failure)
Blinking	Blinking	Blinking	JA	Outdoor unit: Malfunction of discharge pipe pressure sensor
Blinking	Blinking	Blinking	JC	Outdoor unit: Malfunction of suction pipe pressure sensor
On	Off	Blinking	JH	Outdoor unit: Malfunction of oil temperature sensor
Blinking	Blinking	Blinking	L0	Outdoor unit: Failure of inverter system
Blinking	Blinking	Blinking	L4	Outdoor unit: Failure of inverter cooling
Blinking	Blinking	Blinking	L5	Outdoor unit: Compressor motor insulation defect, short circuit, power unit short circuit
Blinking	Blinking	Blinking	L6	Outdoor unit: Compressor motor insulation defect, short circuit
Blinking	Blinking	Blinking	L8	Outdoor unit: Compressor overload, compressor motor wire cut
Blinking	Blinking	Blinking	L9	Outdoor unit: Compressor lock
Blinking	Blinking	Blinking	LA	Outdoor unit: Malfunction of power unit
Blinking	Blinking	Blinking	LC	Outdoor unit: Malfunction of transmission between inverter and outdoor control unit
Blinking	Off	Blinking	PO	Gas depletion (heat build up)
Blinking	Blinking	Blinking	P1	Outdoor unit: Power supply voltage imbalance, open phase
Blinking	Blinking	Blinking	P4	Outdoor unit: Malfunction of power unit temperature sensor
On	Off	Blinking	U0	Refrigerant shortage, low pressure drop due to failure of electronic expansion valve
Blinking	Blinking	Blinking	U1	Negative phase / open phase
Blinking	Blinking	Blinking	U2	Power supply insufficient or instantaneous failure
Blinking	Blinking	Blinking	U4	Malfunction of transmission between indoor unit and outdoor unit / BS unit, or outdoor unit and BS unit
Blinking	Blinking	Blinking	U5	Malfunction of transmission between remote controller and indoor unit
Off	On	Off	U5	Failure of remote controller PC board or setting during control by remote controller
Blinking	Blinking	Blinking	U7	Malfunction of transmission between indoor units Malfunction of transmission between outdoor units, malfunction of transmission between outdoor unit and ice build-up heat unit
On	Off	Blinking	U7	Malfunction of transmission between outdoor units (cool/heat unified, low noise)
Blinking	Blinking	Off	U8	Malfunction of transmission between main remote controller and sub remote controller (malfunction of slave remote controller)
Blinking	Blinking	Blinking	U9	Malfunction of transmission between indoor unit and outdoor unit in same system Malfunction of transmission between BS unit and indoor/outdoor unit in same system
Blinking	Blinking	Blinking	UA	Failure of combination of indoor / BS / outdoor units (model, No. of units, etc.) Failure of combination of indoor unit and remote controller (applicable remote controller) Failure of BS unit connection position
On	On	On	UC	Address duplication of central remote controller
Blinking	Blinking	Blinking	UE	Malfunction of transmission between indoor unit and central remote controller
Blinking	Blinking	Blinking	UF	System not set
Blinking	Blinking	Blinking	UH	Failure of system

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



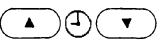
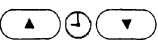
**Failure Diagnosis
by Wireless Remote
Controller**

The indoor unit display section or the separately installed receiver unit's operation lamp blinks for stop due to malfunction. You can diagnose the problem as described on the following page using the malfunction code located by the method described below.

1. Push the  button;  is displayed and "0" blinks.
2. Push the time mode  button and locate the number of the unit which is stopped due to malfunction. A beep is then emitted to indicate signal reception.

◆ **No. of times signal reception beep is emitted**


3 times	Perform the procedure given below in the order of 3, 4, 5, 6.
1 time	Perform steps 3 and 6.
Continuous beep	No malfunction

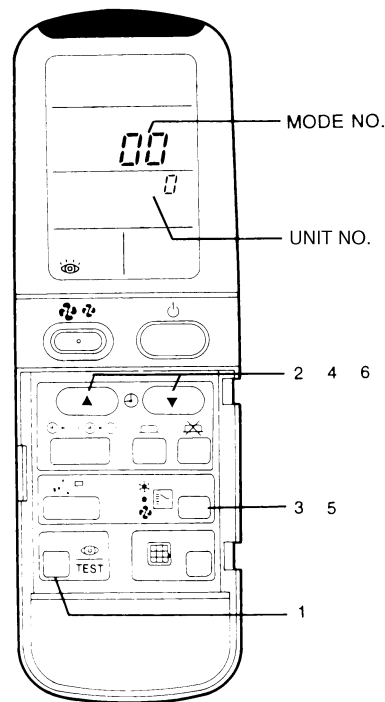
3. Push the operation mode selector button, and the upper digit of the malfunction code blinks.
4. Push the time mode  button until signal reception beeps twice, and then locate the upper code.
5. Push the operation mode selector button, and the lower digit of the malfunction code blinks.
6. Push the time mode  button until signal reception beeps continuously, and then locate the lower code.

◆ **Continuous signal reception beep indicates that the malfunction code has been ascertained.**



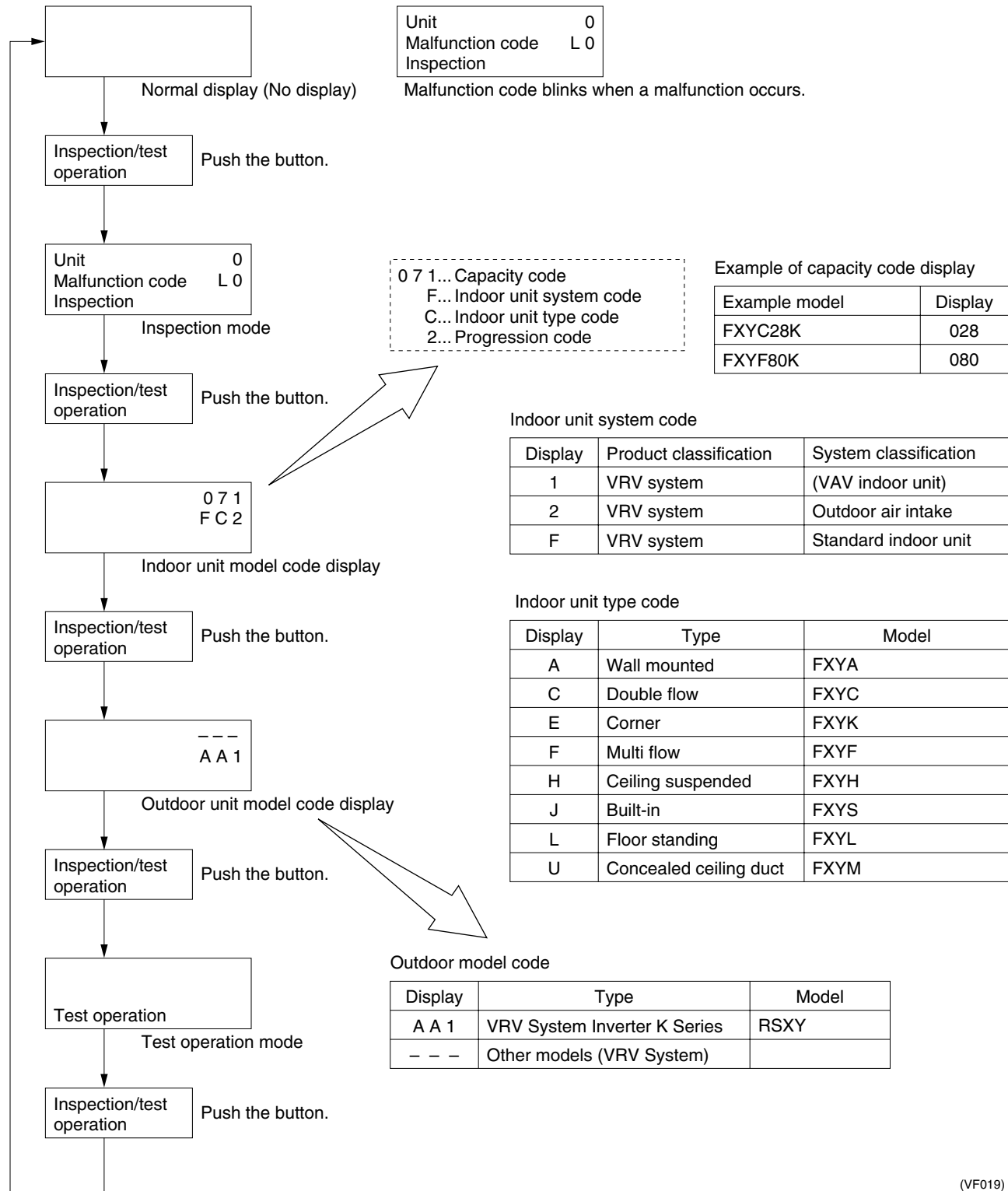
Note:

1. "INSPECTION" display blinks when the remote controller's  button is pushed.
2. If you push and hold the ON/OFF button for 5 seconds or more in the INSPECTION mode, the failure hysteresis is canceled. In this case, after the malfunction code blinks twice, the code display changes to "00" (normal) and the unit No. changes to "0." The mode than automatically changes from the inspection mode to the normal mode (preset temperature display).



(VL051)

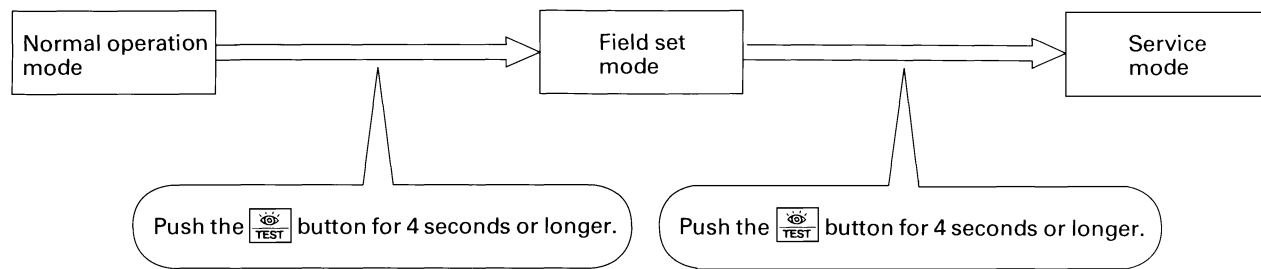
1.16 Operation of the Remote Controller's Inspection / Test Operation Button



(VF019)

1.17 Remote Controller Service Mode


How to Enter the Service Mode






(VF020)

Service Mode Operation Method

1. Select the mode No.

Set the desired mode No. with the  button.


2. Select the unit No. (For group control only)

Select the indoor unit No. to be set with the time mode    button.


3. Make the settings required for each mode. (Modes 41, 44, 45)

For details, refer to the table below.

4. Define the setting contents. (Modes 44, 45)









Define by pushing the timer  button.

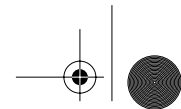
5. Return to the normal operation mode.

Push the  button one time.

Test Operation

SI-E-05C

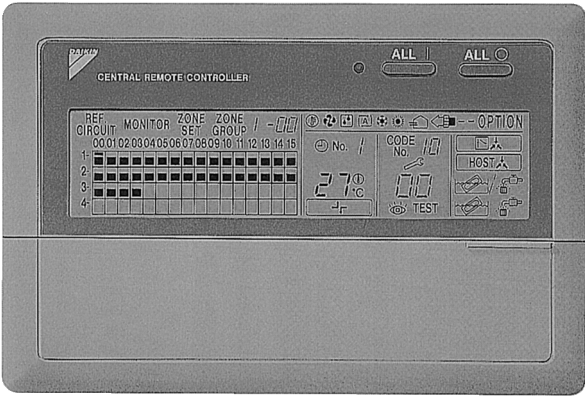
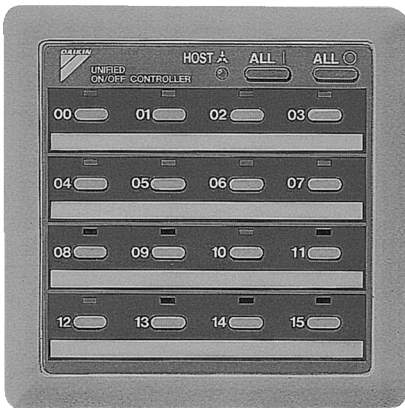
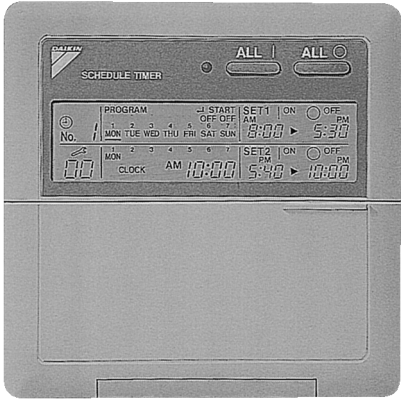
Mode No	Function	Contents and operation method	Remote controller display example
40	Malfunction hysteresis display	<p>Display malfunction hysteresis.</p> <p>The hysteresis No. can be changed with the  button.</p>	<p>Unit 1 Malfunction code 40</p> <p>2-U4 Malfunction code</p> <p>Hysteresis No: 1 - 9 1: Latest</p> <p>(VE007)</p>
41	Display of sensor and address data	<p>Display various types of data.</p> <p>Select the data to be displayed with the  button.</p> <p>Sensor data 0: Thermostat sensor in remote controller. 1: Suction 2: Liquid pipe 3: Gas pipe</p> <p>Address data 4: Indoor unit address 5: Outdoor unit address 6: BS unit address 7: Zone control address 8: Cool/heat group address 9: Demand / low noise address</p>	<p>Sensor data display</p> <p>Unit No. Sensor type</p> <p>1 1 2 7 41 Temperature °C</p> <p>Address display</p> <p>Unit No. Address type</p> <p>1 8 41 1 Address</p> <p>(VE008)</p>
43	Forced fan ON	<p>Manually turn the fan ON by each unit. (When you want to search for the unit No.)</p> <p>By selecting the unit No. with the  button, you can turn the fan of each indoor unit on (forced ON) individually.</p>	<p>Unit 1</p> <p>43</p> <p>(VE009)</p>
44	Individual setting	<p>Set the fan speed and air flow direction by each unit</p> <p>Select the unit No. with the time mode  button.</p> <p>Set the fan speed with the  button</p> <p>Set the air flow direction with the  button.</p>	<p>Unit 1 Code 44</p> <p>1 3</p> <p>Fan speed 1: Low 3: High</p> <p>Air flow direction P0 - P4</p> <p>(VE010)</p>
45	Unit No. transfer	<p>Transfer unit No.</p> <p>Select the unit No. with the  button.</p> <p>Set the unit No. after transfer with the  button.</p>	<p>Present unit No.</p> <p>Unit 1 Code 45</p> <p>0 2 Unit No. after transfer</p> <p>(VE011)</p>
46	This function is not used by VRV System Inverter K Series.		
47			



1.18 Model Change of Centralized Control Devices

The following optional controllers for centralized control will be changed from model A to model B, and will be an upgrade in terms of the system. The main modifications are as follows.

1.18.1 Main Modifications Changes (Model A to Model B)

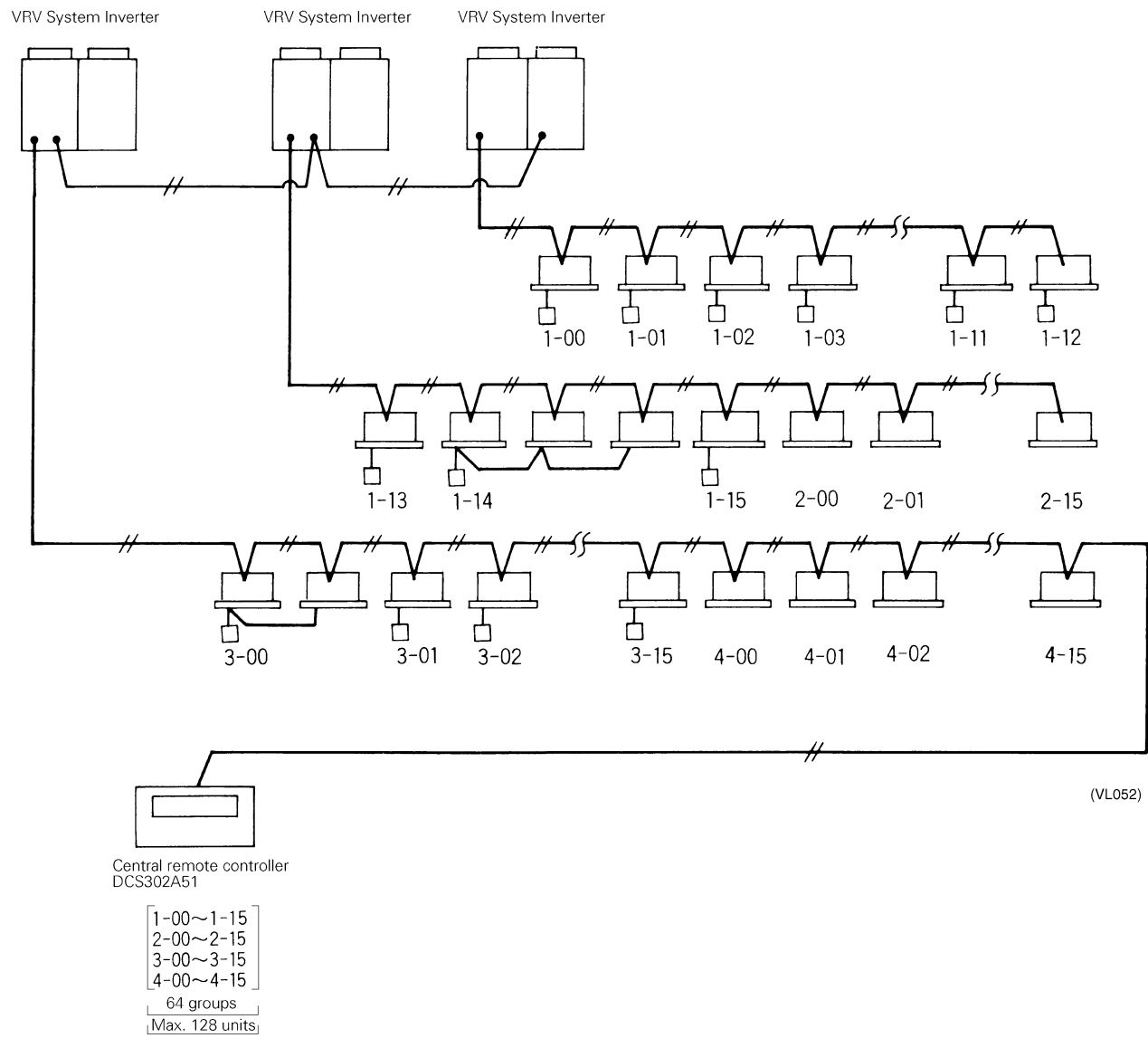
Central remote controller	Model No.	DCS302A51	DCS302B61
	Appearance (Outside dimensions and operation functions are the same.)		
	No. of units that can be connected within one control wiring system	1	Up to 2
Unified ON/OFF controller	Model No.	DCS301A51	DCS301B61
	Appearance (Outside dimensions and operation functions are the same.)		
	No. of units that can be connected within one control wiring system	Up to 4	Up to 8
Schedule timer	Model No.	DST301A51	DST301B61
	Appearance (Outside dimensions and operation functions are the same.)		
	No. of units that can be connected within one control wiring system	1	1
Common	Indoor unit start method	Group start	Sequential start

- The control range setting (connector or switch) inside the controller is altered to increase the number of units that can be connected within one control wiring system.



1.18.2 When Using Model A Centralized Control Device

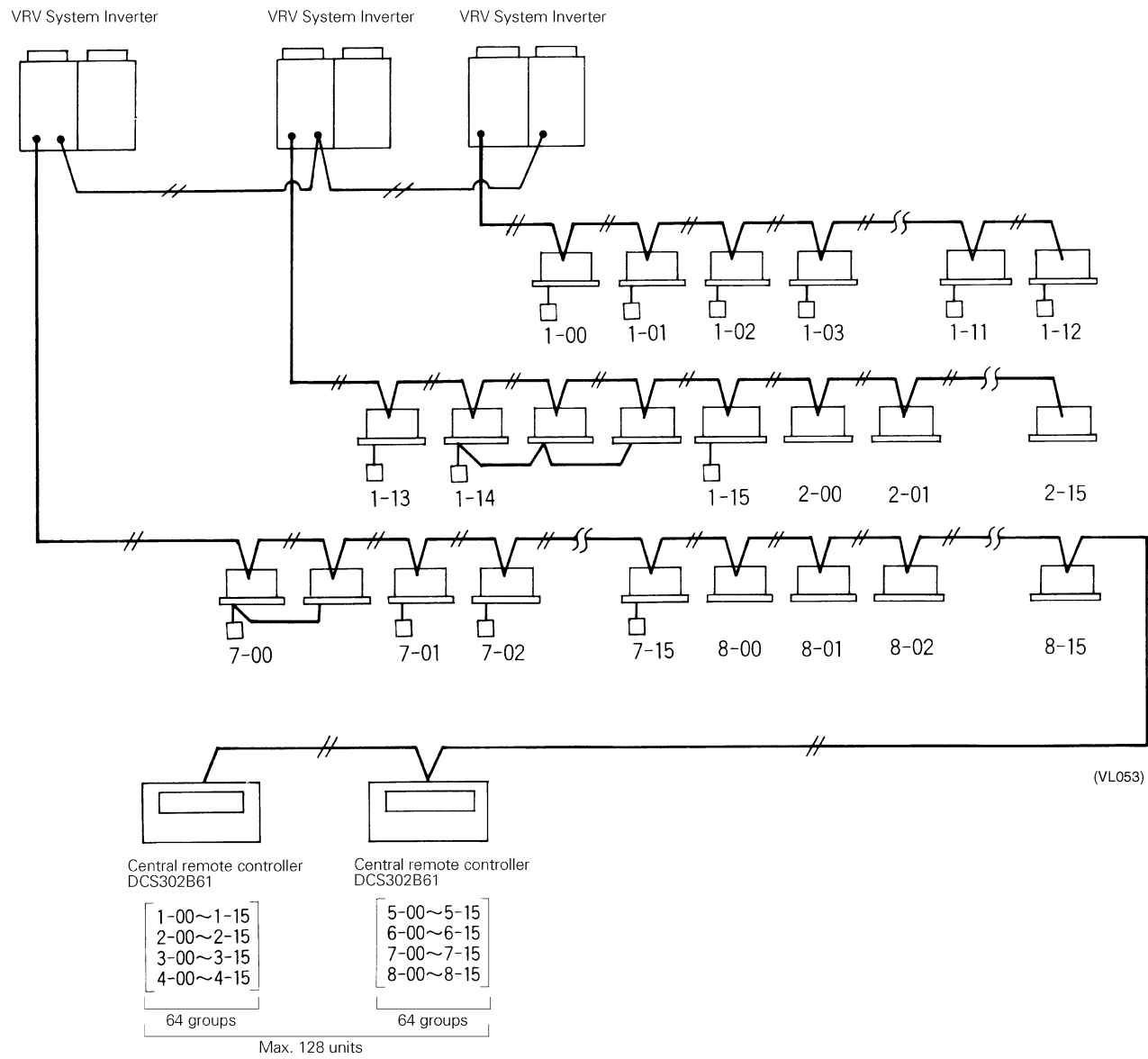
- ◆ Up to 128 indoor units can be connected within a system. (Group control by remote controller is required if more than 64 units are connected with the same system.)



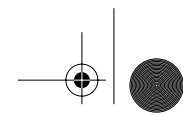
- ◆ Only 1 central remote controller can be connected per system.
- ◆ Up to 4 unified ON/OFF controllers can be connected per system.
- ◆ Only 1 schedule timer can be connected per system.

1.18.3 When Using Model B Centralized Control Device

- ◆ Up to 128 indoor units can be connected within a system. (Group control is not required to increase the number of units that can be connected within the system.)
- ◆ When double remote controllers are connected, the same indoor unit cannot be registered for more than one central remote controller.

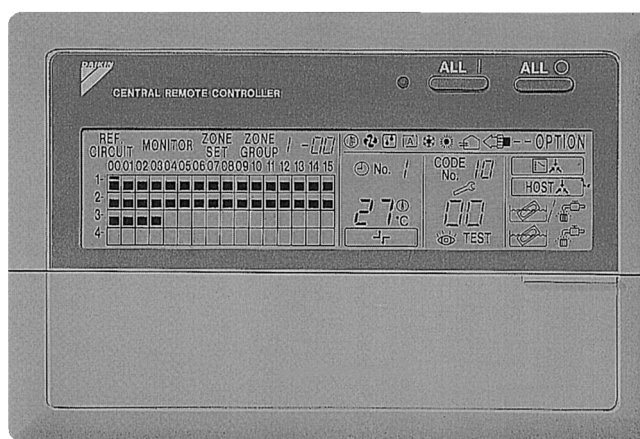


- ◆ Up to 2 central remote controllers can be connected per system.
- ◆ Up to 8 unified ON/OFF controllers can be connected per system.
- ◆ Only 1 schedule timer can be connected per system.



1.19 Central Remote Controller (DCS302A51 / DCS302B61)

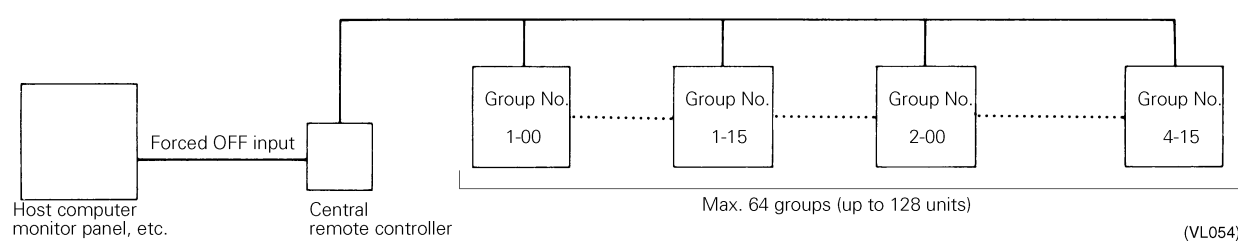
Enables central control with the performance of a series of remote controllers by connecting with up to 64 groups of indoor units (128 units).



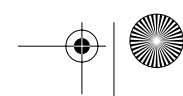
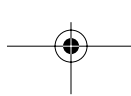
- ◆ You can connect with up to 64 groups of indoor units (128 units) and monitor or perform operations such as turning on/off individually or simultaneously, setting temperature, etc., by the zone.
- ◆ Designed to save labor of operation, and is able to execute zone control for up to 64 zones.
- ◆ Malfunction contents are given in code, so maintenance or inspection can be carried out quickly.
- ◆ Lets you connect 1 schedule timer and 4 unified ON/OFF controllers per central remote controller, and enables you to freely expand the central control system in accordance with scale and use.
- ◆ Wiring can be extended up to 1 km. Besides crossover wiring, bus or star type can also be used.
- ◆ Can be used in combination with other D-BACS equipment and allows input from outside of forced OFF, etc.
- ◆ Enables individual on/off and monitoring of total heat exchanger units (HRV) (model B Series and multifunction type).

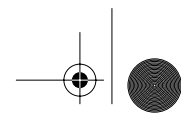
1.19.1 System Configuration

With a central remote controller, you can simultaneously turn up to 64 groups of indoor units on or off (up to 128 units). You can also turn on or off, set operation and control modes such as operation controlled by timer, make operation by remote controller possible or impossible, and control or display operation conditions such as preset temperature by zone. (Case where operation controlled by timer is used in combination with schedule timer.) By group, you can display operation conditions such as operation mode and preset temperature. Connection by forced OFF input (non-voltage a contact) with outside key system or host computer monitor panel is impossible.



(This optional accessory cannot be used in combination with optional accessory wiring adaptor KRP4A51, 52 or KRP2A61, 62 for electrical appendices.)





A Group of Indoor Units

- 1. 1 indoor unit with no remote controller



No remote controller
(VL055)

- 2. 1 indoor unit controlled by either 1 or 2 remote controllers



1 remote controller

or



2 remote controllers
(VL056)

- 3. Max. 16 indoor units controlled by either 1 or 2 remote controllers



Remote controller Max. 16 units

or

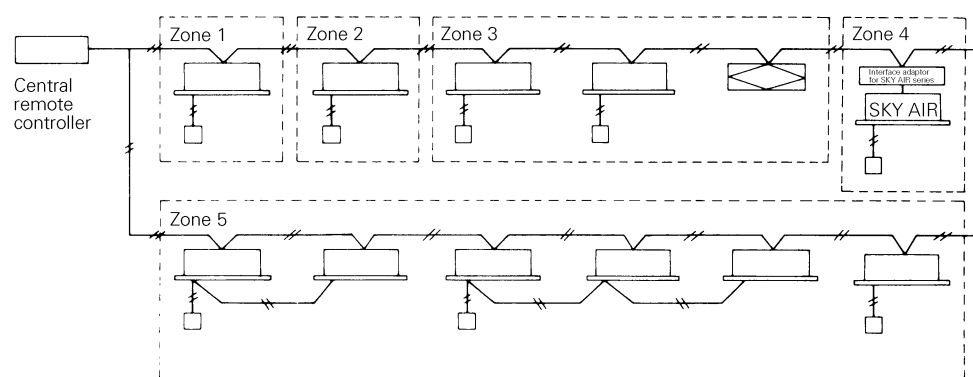


2 remote controllers Max. 16 units
(VL058)

Zone Control by Central Remote Controller

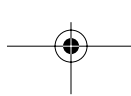
A "zone" is a collection of 1 or more groups.

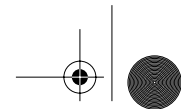
Zone control lets you make settings for several groups simultaneously in order to facilitate the task of setting.



(VL059)

By setting once, everything in the zone becomes set to the same setting. The number of zones that can be set by the central remote controller is MINI~MAX 64 zones. (The number of groups in 1 zone is MINI~MAX 64 groups.) The manner of linking zones can be set as desired with the central remote controller.



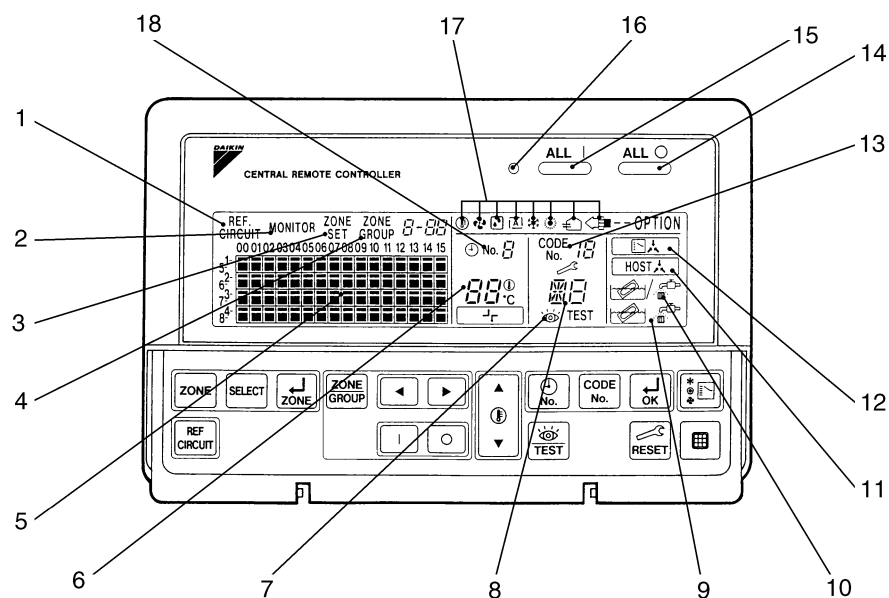


Test Operation

SI-E-05C

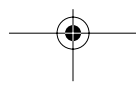
1.19.2 Central Remote Controller Part Names and Functions

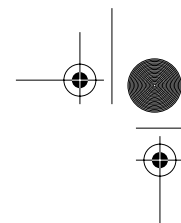
Display Section (All items in the display are lit for the purpose of explanation, contrary to when actually operating.)



(VL060)

1	Refrigerant system display The inclination in the square is lit while the refrigerant system is being displayed.	10	Display of time to clean Lights when it's time to clean the element or filter of any group.
2	Display "monitor" Lights for display "monitor."	11	Display "under host computer integrated control" Settings cannot be made while this indicator is lit.
3	Display of zoning Light for zone set mode.	12	Display "changeover under control." Cool/heat cannot be selected for zones or groups of this display.
4	Display of zone/group Status display indicates whether operation is by zone or group.	13	Control mode display Displays mode of control (ON/OFF control impossible by remote controller, centralized, individual, etc.) in code. If there is an indoor unit stopped due to malfunction, the display indicates that unit's unit No.
5	Group No. in operation Each square displays the state corresponding to each group.	14	Unified stop button Stops all indoor units.
6	Display (preset temperature) Displays the preset temperature.	15	Unified operation button Runs all indoor units.
7	Display (inspection/test) Press the inspection/test operation button. Either the inspection or test lamp lights up.	16	Operation lamp Lights even if 1 controlled indoor unit is running.
8	Display (malfunction code) Displays the contents of a malfunction. The lamp flashes when a malfunction stops operation. The contents of the current malfunction are displayed in the inspection mode.	17	Display "operation mode" Indicates status of operation/
9	Display of "time to clean air cleaner element/time to clean air filter" Lights when it's time to clean the element or filter of indicated group.	18	Display of timer No. Indicates the operation timer No. when used in combination with a schedule timer.

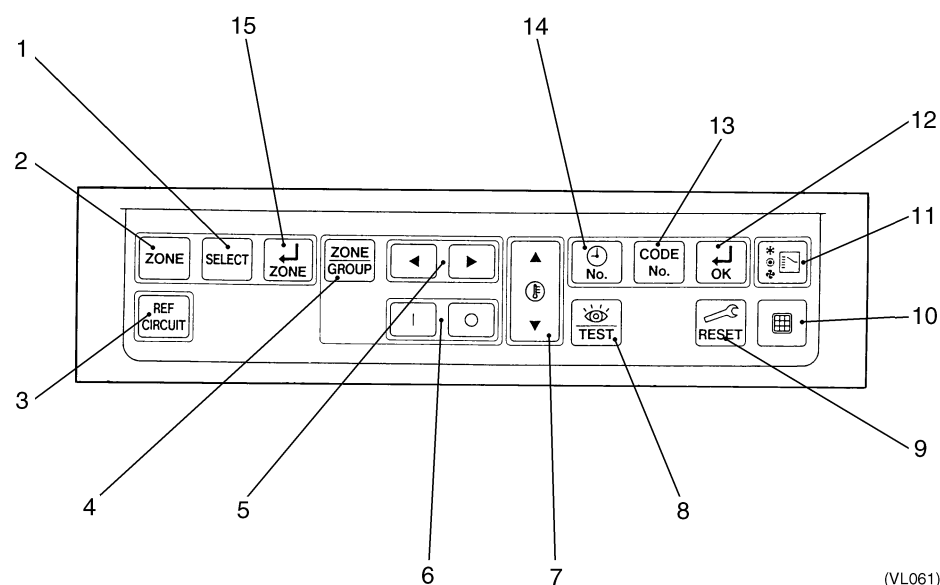




SiE-05C

Test Operation

Control Section

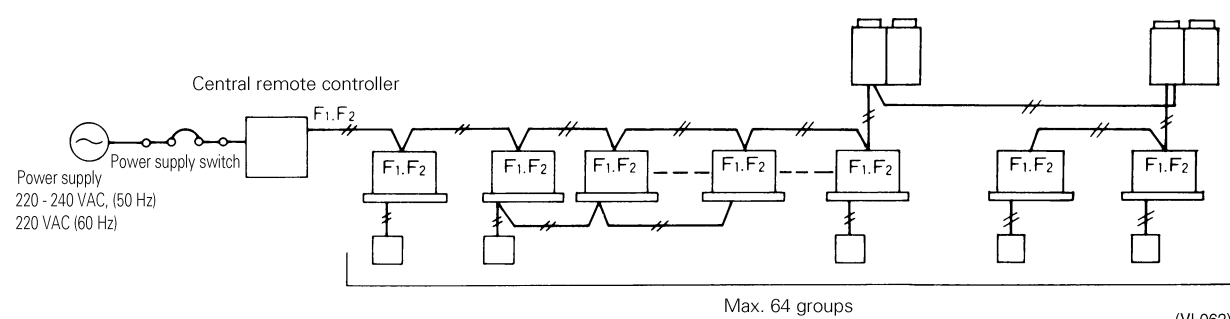


(VL061)

1	Selector button Selects group belonging to the zone.	9	Clearing button for malfunction code memory Push to reset the malfunction code.
2	Zone setting button Turns zone setting mode on or off.	10	Filter sign reset button Turns the filter cleaning indicator off.
3	Button for refrigerant system display Indicates indoor unit group connected to same outdoor unit.	11	Operation mode selector button Sets to operation mode.
4	Zone/group changeover button Selects zone or group display.	12	Timer ON button Defines control mode and timer No.
5	Advance/backward button Sets zone with several groups.	13	Control mode button Selects the control mode.
6	ON/OFF button Runs or stops for each zone.	14	Timer No. button Selects timer No. (Only when used in combination with a schedule timer)
7	Temperature setting button Push to set temperature.	15	Zone operation ON/OFF button Defines zone.
8	Inspection/test operation button Push when you want to carry out inspection or test operation.		

1.19.3 Control Wiring

Wiring Outline

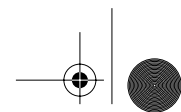


(VL062)

Wiring specifications

Power supply wiring	2 mm ²
Transmission wiring for control	0.75 ~ 1.25 mm ² sheathed vinyl cord or cable (double core); max. extension 1000 m (total wiring length 2000 m)
Power supply switch	10A

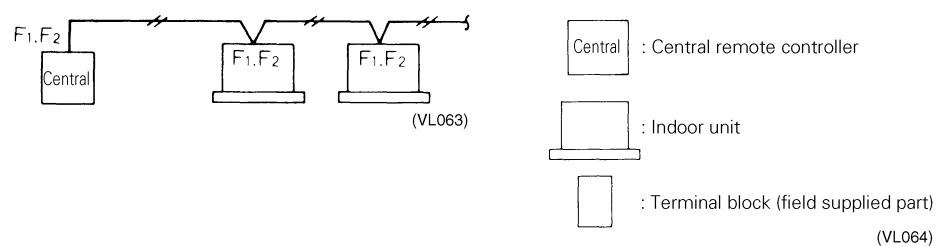
Все каталоги и инструкции здесь: <https://splitsystema48.ru/instrukcii-po-ekspluatatsii-kondicionerov.html>



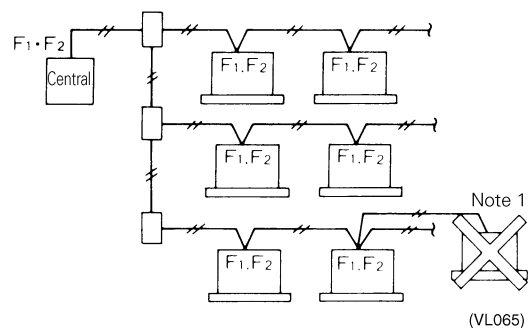
Control Wiring Connection Example

(Indoor units in same system shown in the following examples.)

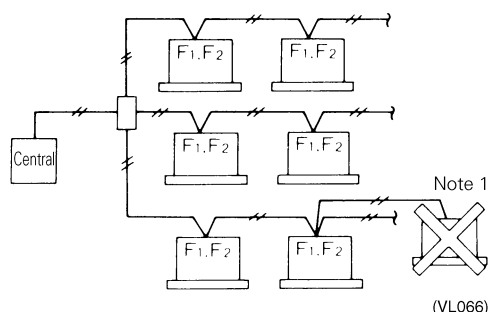
1. series wiring



2. Bus wiring (can be branched in max. 16 locations)
Example showing 3 branches



3. Star wiring (can be branched in max. 16 locations)
Example showing 3 branches



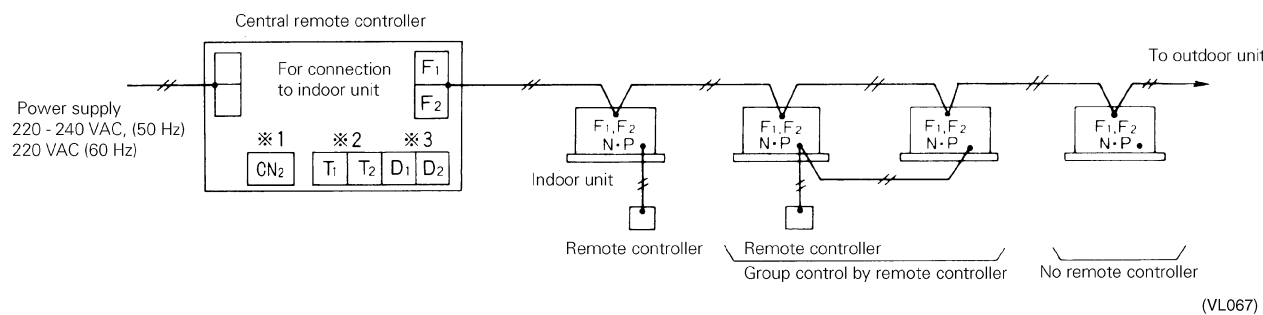
Notes

1. Cannot be branched again after being branched once.
2. Use a junction terminal block if branching 3 or more control wires from the same terminal block.
3. Do not connect transmission wiring between indoor and outdoor units of different refrigerant circuits.



Wiring to Indoor Units

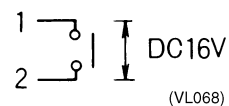
The terminals (F1, F2) of the control terminal block of the central remote controller and the terminals (F1, F2) of indoor units for which a group No. has been set are wired as shown in the figure below. (There is no polarity, so it doesn't matter if F1 and F2 are wired inversely.)



* 1. Connector for unification adaptor for computerized control (CN2)

* 2. Forced OFF input (T1, T2)

Forced OFF input (no-voltage contact for micro-current) turns off all indoor units while the contact is "closed." Use a contact which guarantees min. applicable load of 16VDC, 10 mA.



* 3. Power supply for schedule timer (D1, D2)

1.19.4 Contents of Control Modes

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

- ◆ ON/OFF control impossible by remote controller
Used when you want to turn on/off by central remote controller only.
(Cannot be turned on/off by remote controller.)
- ◆ OFF control only possible by remote controller
Used when you want to turn on by central remote controller only, and off by remote controller only.
- ◆ Centralized
Used when you want to turn on by central remote controller only, and turn on/off freely by remote controller during set time.
- ◆ Individual
Used when you want to turn on/off by both central remote controller and remote controller.
- ◆ Timer operation possible by remote controller
Used when you want to turn on/off by remote controller during set time and you do not want to start operation by central remote controller when time of system start is programmed.
- ◆ The operation modes are from 0 through 19, however, they can only be set for outdoor units (VRV System inverter K Series) for which cool/heat can be selected by indoor unit. With the exception of this, settings are 0 through 9.

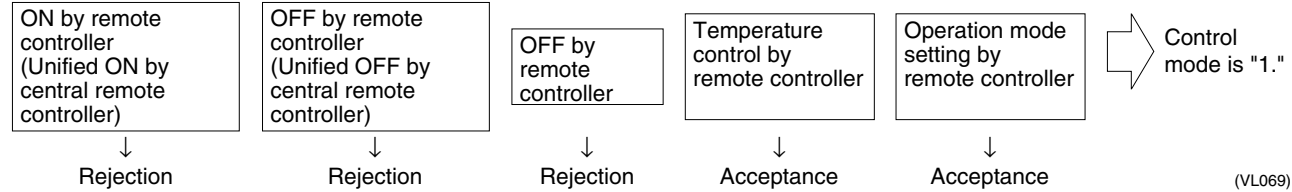
Test Operation

SI-E-05C

How to Select Operation Mode

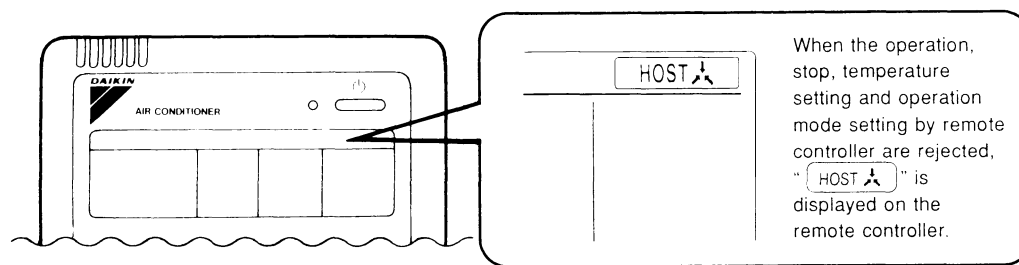
Whether operation by remote controller will be possible or not for turning on/off, controlling temperature or setting operation mode is selected and decided by the operation mode given on the right edge of the table below.

Example



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

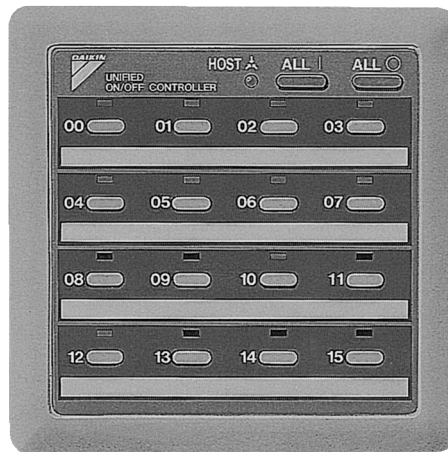
Do not select "timer operation possible by remote controller" if not using a remote controller. Operation by timer is impossible in this case.



(VL070)

1.20 Unified ON/OFF Controller (DCS301A51/ DCS301B61)

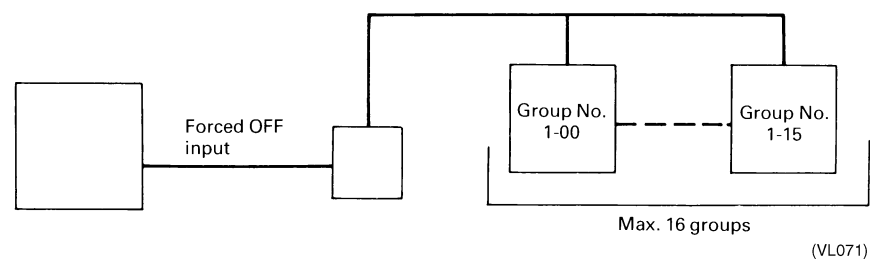
Turns each group of indoor units on/off individually or simultaneously for up to 16 groups (128 units), and lets you check the operation/malfunction display all at once at a glance.



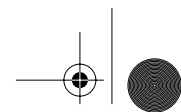
- ◆ Lets you turn up to 16 groups of indoor units (128 units) on/off simultaneously or individually, and lets you check the operation/malfunction display all at once at a glance.
- ◆ By combining with a central remote controller or schedule timer, you can build a system that matches scale and use .
- ◆ Features compact size casing with thickness of only 16 mm. (Uses JIS recessed box for 2)
- ◆ Wiring can be extended up to 1 km. For the wiring method, bus type and star type wiring crossover wiring can be used as well as crossover wiring.
- ◆ Can be used in combination with other D-BACS equipment.

1.20.1 System Configuration

Up to 16 groups of indoor units can be turned on/off individually or simultaneously by unified ON/OFF controller. Also lets you connect with an outside key system or host computer monitor panel by forced OFF input (no-voltage a contact).



(This optional accessory cannot be used in combination with optional accessory wiring adaptor for electrical appendices.)

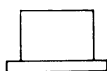


Test Operation

SI-E-05C

A Group of Indoor Units

- 1 indoor unit with no remote controller

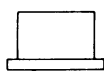


No remote controller
(VL072)



NOTE: If not using remote controllers, use in combination with central remote controller.

- 1 indoor unit controlled by either 1 or 2 remote controllers



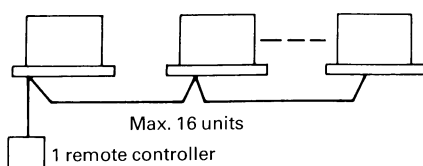
1 remote controller

or



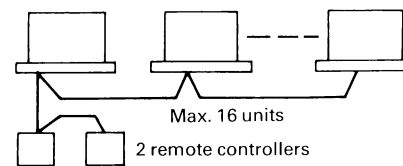
2 remote controllers
(VL074)

- Max. 16 indoor units group-controlled by either 1 or 2 remote controllers



Max. 16 units
1 remote controller

or

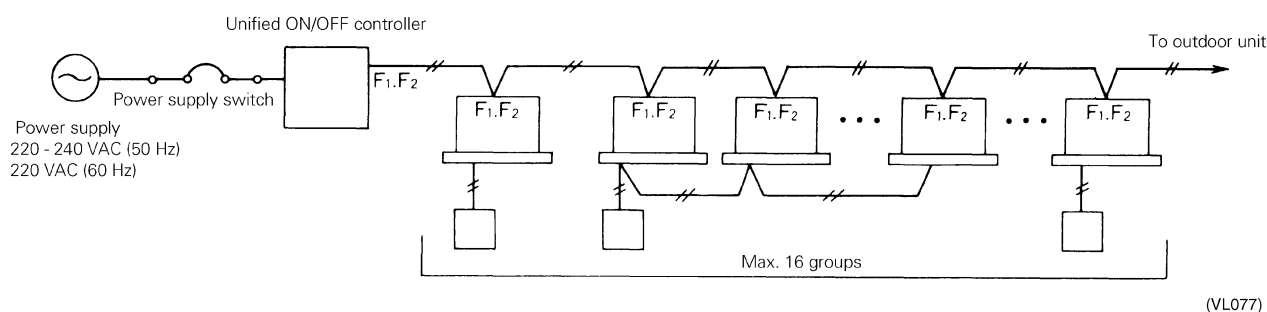


Max. 16 units
2 remote controllers

(VL076)

1.20.2 Wiring for Transmission

Wiring Outline



(VL077)

Wiring specifications

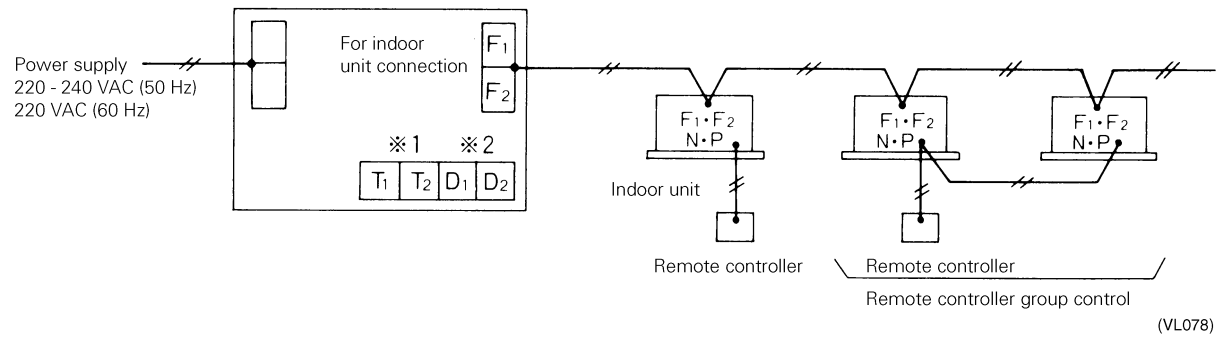
Power supply wiring	2 mm ²
Wiring for transmission	0.75 ~ 1.25 mm ² sheathed vinyl cord or cable (double core); max. extension 1000 m (total wiring length 2000 m)
Power supply switch	10A

Connection Example of Wiring for Transmission

(1)series wiring, (2)bus type wiring and (3)star type wiring are the same as with a central remote controller.

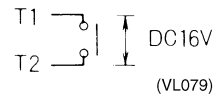
Wiring for Indoor Unit

Terminals F1 and F2 of the unified ON/OFF controller's terminal block for control and terminals F1 and F2 of the indoor unit with set group No. are wired as shown in the figure below. (There is no polarity, so it doesn't matter if F1 and F2 are inverted.)



* 1: Forced OFF input (T1, T2)

All connected indoor units go off and do not run while forced OFF input (for no-voltage contact, micro-current) is "closed." Use a contact that can guarantee a 16 VDC, 10 mA minimum applicable load.

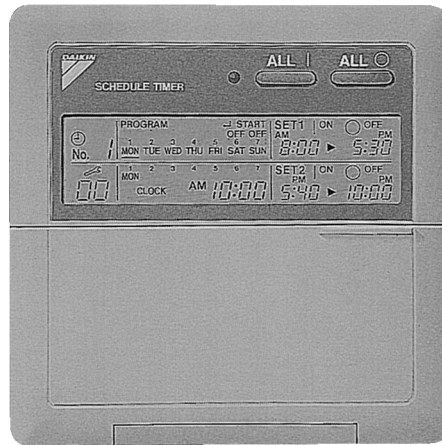


NOTE:

- If using an instantaneous contactor, use one that handles conducting time of 200 msec or more.
- * 2: Power supply for schedule timer (D1, D2)
- * Wire only if 1, 2 and 3 are used.

1.21 Schedule Timer (DST301A51 / DST301B61)

Allows you to connect and manage by unified control the weekly schedule of up to 128 indoor units.

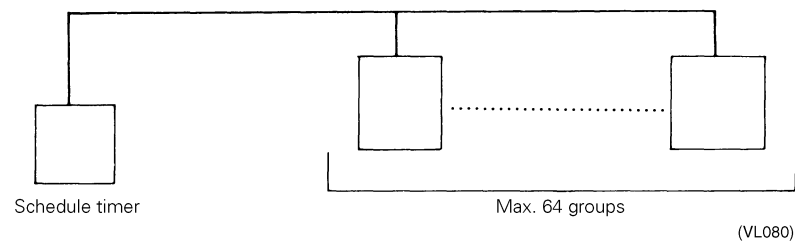


- ◆ Manages by unified control the weekly schedule of up to 128 indoor units.
- ◆ Lets you set in 1-minute increments on/off time twice a day by the week.
- ◆ By combining with a central remote controller or unified ON/OFF controller, you can build a system that matches scale and use.
- ◆ When using in combination with a central remote controller, you can set up to eight weekly schedule patterns and distribute among zones by central remote controller as desired.
- ◆ Equipped with a power failure compensation function effective for up to 48 hours.
- ◆ Features compact size casing with thickness of only 16 mm. (Uses JIS recessed box for 2)
- ◆ Wiring can be extended up to 1 km. For the wiring method, bus type and star type wiring crossover wiring can be used as well as crossover wiring.
- ◆ Can be used in combination with other D-BACS equipment.

1.21.1 System Configuration and Electrical Wiring

With a schedule timer, you can program the time units will be turned on/off simultaneously for periods of one week each for up to 16 groups of indoor units.

System Configuration

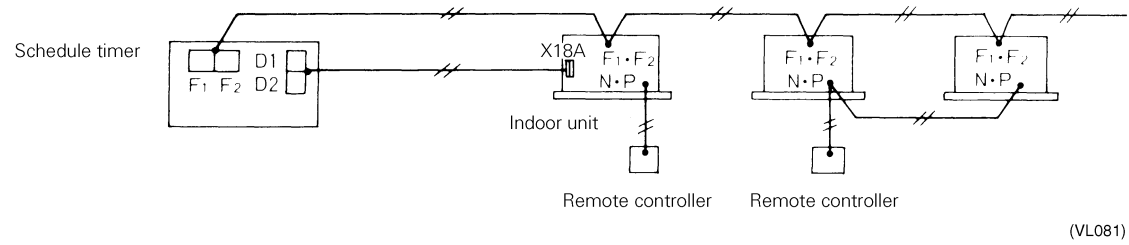


If using the schedule timer individually, you don't have to set the group No. setting for centralized control for group unified control.

Wiring for Transmission

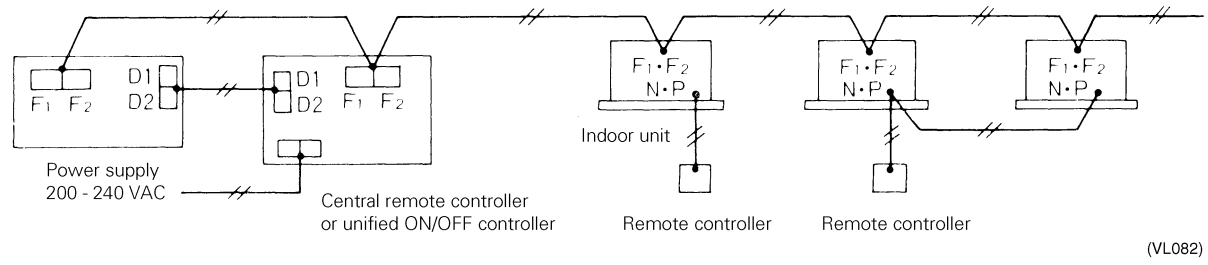
<Indoor unit wiring>

1. If schedule timer individual use:



■ For the schedule timer's power supply, connect the schedule timer's connectors (D1/D2) and the connector on the indoor unit's PC board (CN18) with the attached cable and crimp style terminals.

2. If using in combination with other optional controllers for centralized control:



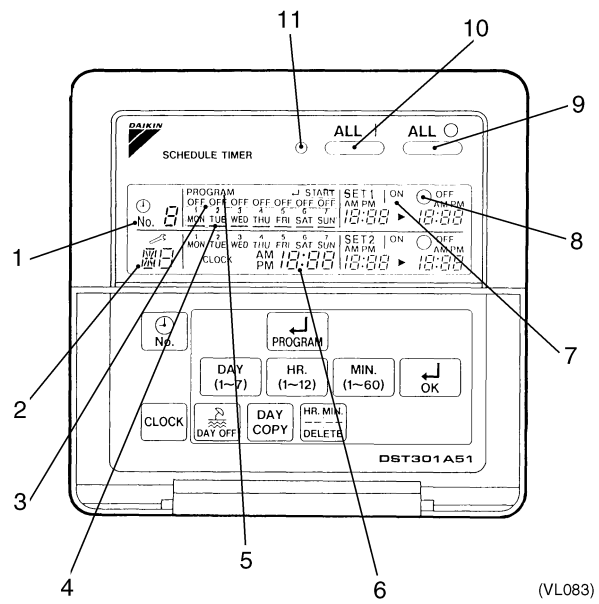
Wiring for transmission: 0.75~1.25 mm² sheathed vinyl cord or cable (double core)....Max. extension 1000 m (Total wiring length 2000 m)

<Connection example of wiring for transmission>

(1) series wiring, (2) bus type wiring and (3) star type wiring are the same as with a central remote controller.

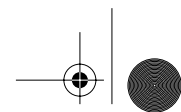
1.21.2 Schedule Timer Part Names and Functions

Display Section All items in the display are lit for the purpose of explanation, contrary to when actually operating



(VL083)

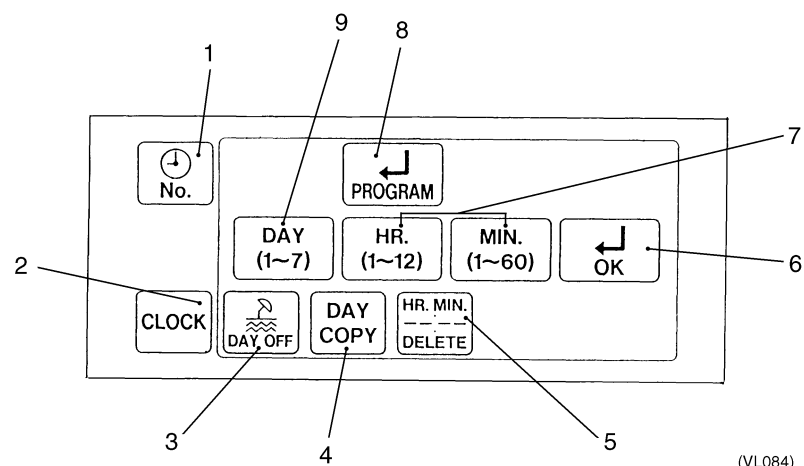
1	Programmed time No. Displays time No. only when used in combination with a central remote controller.	7	Display of programmed time of system start Displays the time when the system is programmed to turn on.
2	Display of malfunction code Displays malfunction code.	8	Display of programmed time of system off. Displays the time when the system is programmed to go off.
3	Display of holiday. Displays day designated as a holiday inside a circle. The system is not programmed to turn on for days designated as a holiday.	9	Unified stop button Push to stop simultaneously without regard for the No. of programmed time.
4	Display of days of a week Displayed and blinks below programmed day.	10	Unified operation button Push to turn on simultaneously without regard for the No. of programmed time
5	Display of programming start. Displayed when programmed to start by timer.	11	Operation lamp (red) Lights during operation.
6	Display of present time Displays the present day and time.		



SiE-05C

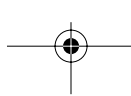
Test Operation

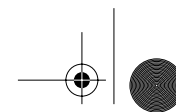
Control Section



(VL084)

1	Clock adjusting button Push to set the present time.	6	Timer ON button Sets the present time or programmed time.
2	Button for selecting days of a week Push when selecting days of a week.	7	Hour/minute button Push to adjust the present time or programmed time.
3	Holiday setting button Sets holiday.	8	Programming start button Push to set or check No. of programmed time. After completion, push again.
4	Button for copying programs of previous day Sets to same No. of programmed time as previous day.	9	Clock adjusting button Push to set the present time.
5	Program canceling button Cancels programmed time and sets display to [— : — —].		





1.22 Combining Different Types of Centralized Control Devices

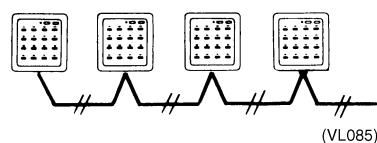
<DCS302A51 · DCS301A51 · DST301A51>

<DCS302B61 · DCS301B61 · DST301B61>

In addition to using optional controllers for centralized control independently, you also combine and connect a schedule timer and unified ON/OFF controller with a central remote controller. By designing with components, you can construct the best central remote control system for your purpose and scale.

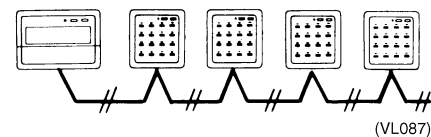
1.22.1 Example of DCS302A51 / DCS301A51/ DST301A51 Systems

■ Unified ON/OFF controller



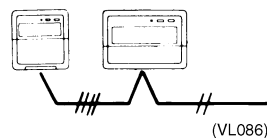
Unified ON/OFF controllers are connected in accordance with the number of indoor units. A single line network can contain up to 16 groups of four units each.

■ Central remote controller plus unified ON/OFF controller



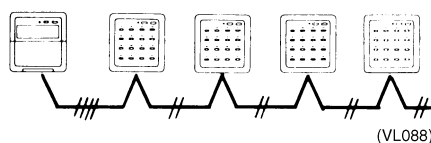
Combines the functionality of a central remote controller with the operability of a unified ON/OFF controller. Enables central control of up to 64 groups of indoor units.

■ Schedule timer plus central remote controller

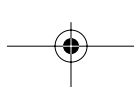
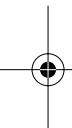


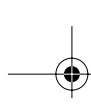
Allows you to set up to eight weekly schedules for turning units ON/OFF twice each day. Enables scheduled operation of up to 64 groups of indoor units individually or by zone.

■ Schedule timer plus unified ON/OFF controller



Allows you to set the time for turning units ON/OFF twice each day. Enables unified scheduled operation of up to 64 groups of indoor units.



**1.22.2 Connection for Optional Controller for Centralized Control**

You can use any combination of one central remote controller, one schedule timer, and from one to four unified ON/OFF controllers. If using the model B Series, you can use any combination of two central remote controller, one schedule timer, and from one to eight unified ON/OFF controllers. The maximum number of units for a single system is 128 for both model A and B.

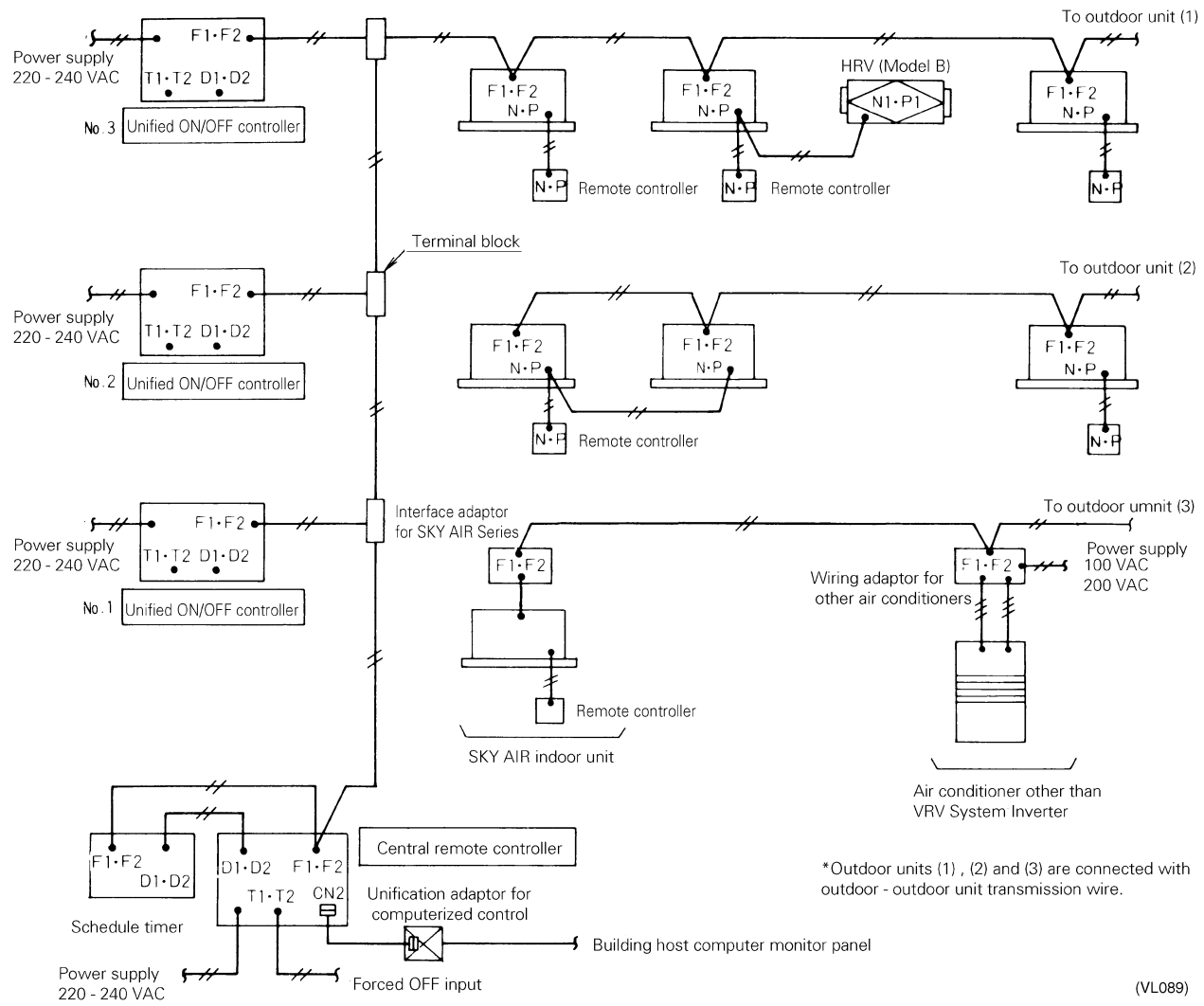
Central remote controller DCS302A51	Unified ON/OFF remote controller DCS301A51	Schedule timer DST301A51
1	—	—
1	1	—
1	2 ~ 4	—
1	—	1
1	1	1
1	2 ~ 4	1
—	1	—
—	2 ~ 4	—
—	1	1
—	2 ~ 4	1
—	—	1

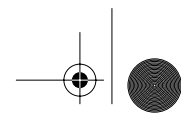
Central remote controller DCS302B61	Unified ON/OFF remote controller DCS301B61	Schedule timer DST301B61
2	—	—
2	1	—
2	2 ~ 8	—
2	—	1
2	1	1
2	2 ~ 8	1
—	1	—
—	2 ~ 8	—
—	1	1
—	2 ~ 8	1
—	—	1



1.2.2.3 Electric Wiring

Combination of one central remote controller, one schedule timer and three unified ON/OFF controllers





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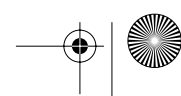
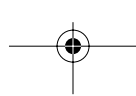
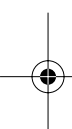
Test Operation

**Initial Settings of
Optional
Controllers for
Centralized Control**

1. Central remote controller
 - ◆ Leave the connector for setting master controller (CN) connected. (Connected at factory set.)
Connect this connector to one central control line only.
 - ◆ Control mode
Sets priority sequence for control of central remote controller and indoor unit remote controllers.
 - ◆ Zone setting
Sets zone for controlling several groups within the same zone.
2. Unified ON/OFF controller (No. 1, No. 2, No. 3 in figure above)
 - ◆ Disconnect the connector for setting master controller (X1A).
 - ◆ Switch for setting each address (DS1)
Sets the group No. address for each group of indoor units controlled by unified ON/OFF controller No. 1, No. 2 and No. 3 in the figure above. You can set 16 units (16 groups) for one unified ON/OFF controller.
 - ◆ Control mode switch (DS2)
Sets priority sequence for control of central remote controller and indoor unit remote controllers. If used together with a central remote controller, however, the central remote controller's control mode has priority.
3. Schedule timer
 - ◆ Leave the connector for setting master controller (X1A) disconnected. (Factory set)
 - ◆ Control mode switch (SS2)
Sets priority sequence for control of schedule timer and indoor unit remote controllers. If used together with a central remote controller, however, the central remote controller's control mode has priority.

**Group No. Setting
Centralized Control**

1. Set by indoor unit remote controller
 - ◆ Sets group No. by remote controller in the field set mode. (Group No. are 1 - 00 ~ 1 - 15, 2 - 00 ~ 2 - 15,4 - 00 ~ 4 - 15.....)
2. Setting by PC board adaptor
 - ◆ If using an interface adaptor for SKY AIR Series or wiring adaptor for other air conditioners, set the centralized control group No. with group No. setting switches RS1 and RS2 on the PC board.
1 ~ 4 for RS1 (upper)
(1 ~ 8 for interface adaptor for SKY AIR Series)
0 ~ F for RS2 (lower)

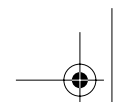




Test Operation

SI-E-05C

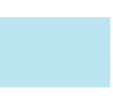
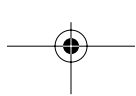
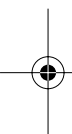


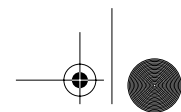


Part 4

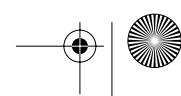
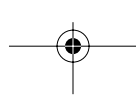
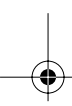
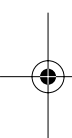
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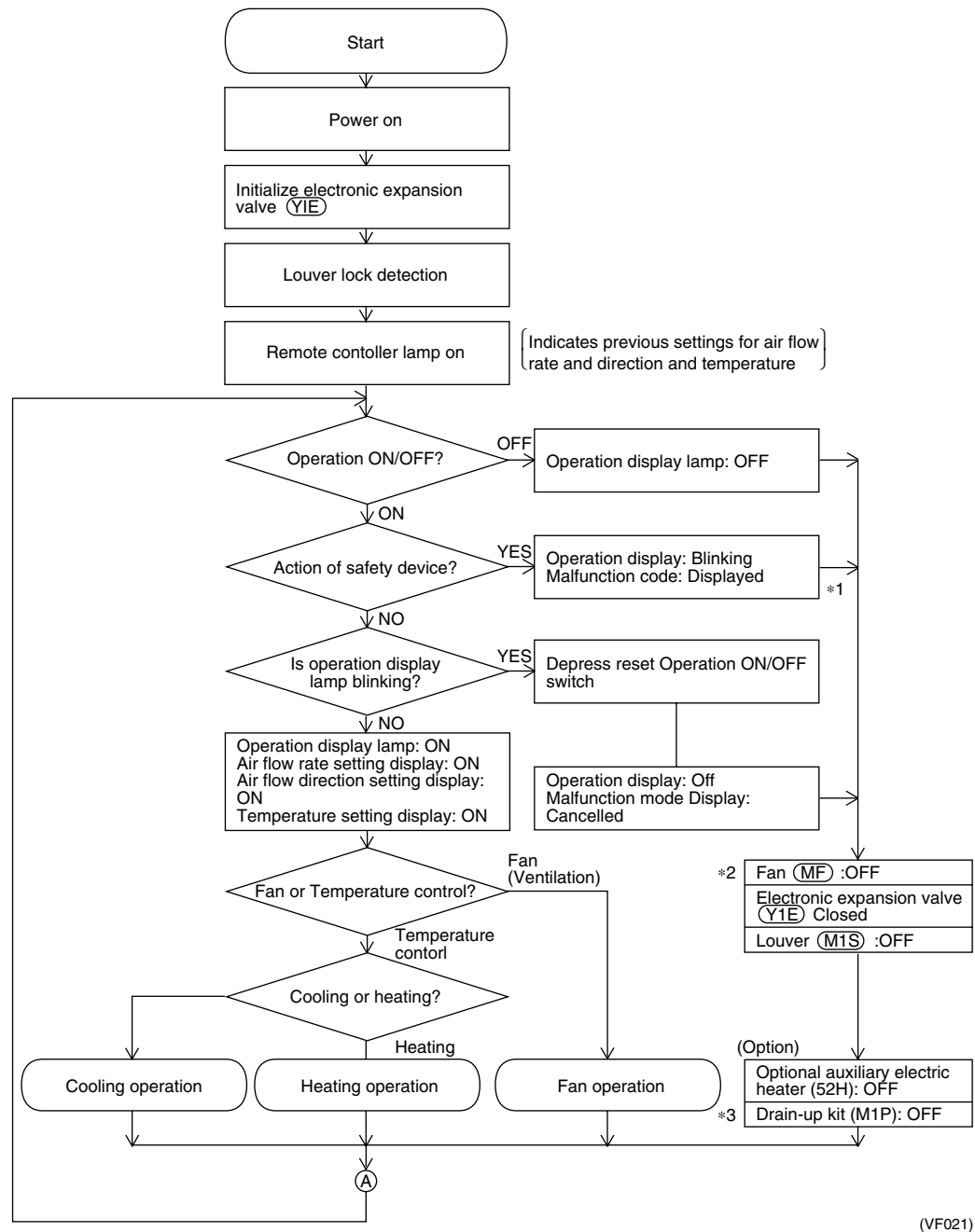


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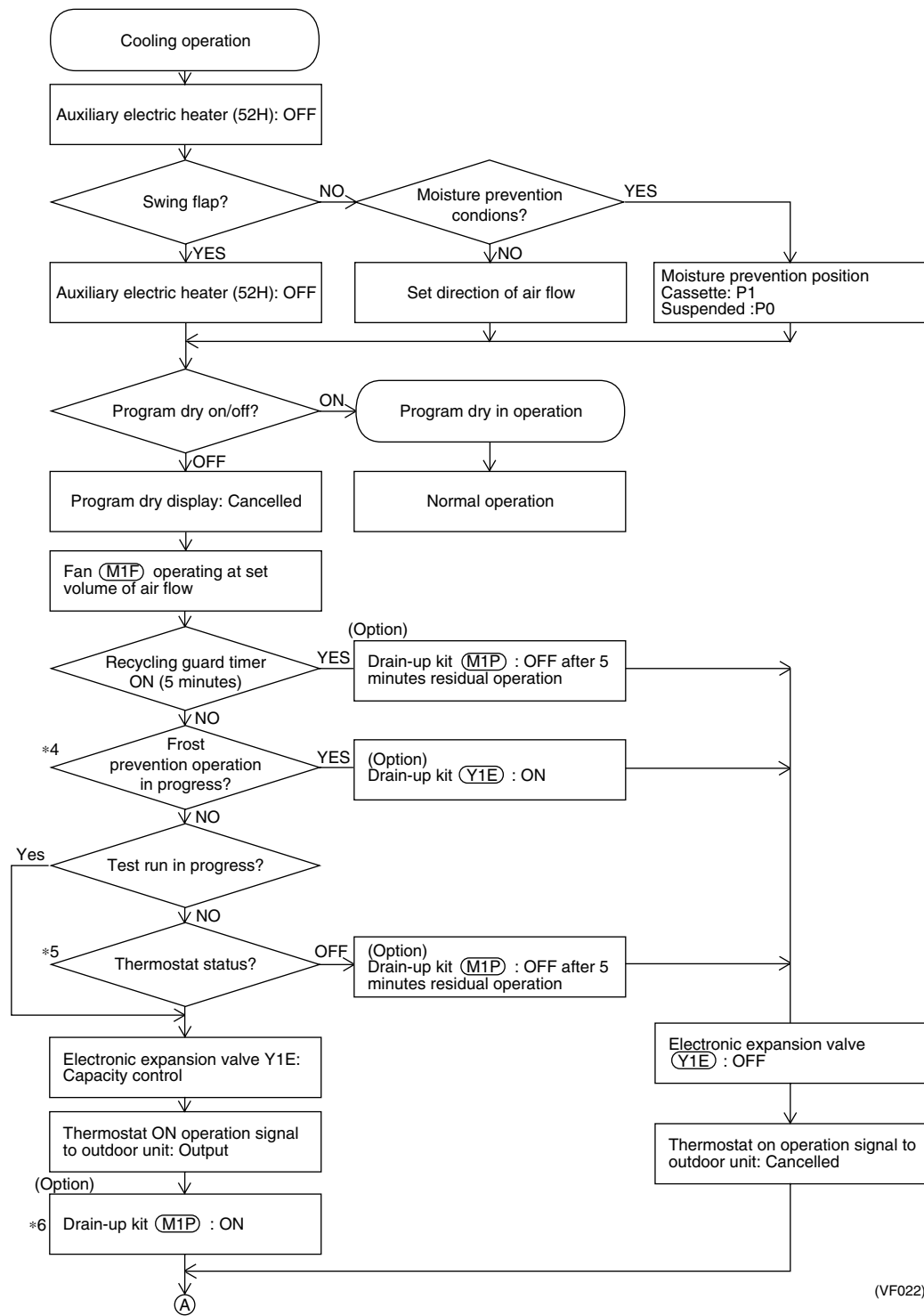


1. Operation Flowcharts

1.1 Indoor Unit Operation Flowchart



- *1 In the event of a malfunction, the malfunction code is displayed in the remote controller's malfunction code display.
- *2 When the auxiliary electric heater is on, the fan stops after one minute residual operation.
- *3 When the drain-up kit is ON, it stops after five minutes residual operation.

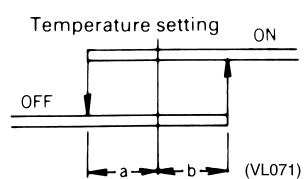


*4 If the evaporator inlet temperature is -5°C or lower for a total of 10 minutes, or is -1°C or lower for a total of 40 minutes, frost prevention operation is initiated. Normal operation resumes when the temperature is $+7^{\circ}\text{C}$ or higher for 10 consecutive minutes.

*5 Thermostat status

*6 The drain-up kit is standard equipment for models FXYC - H, FXYF, FXYK and FXYS.

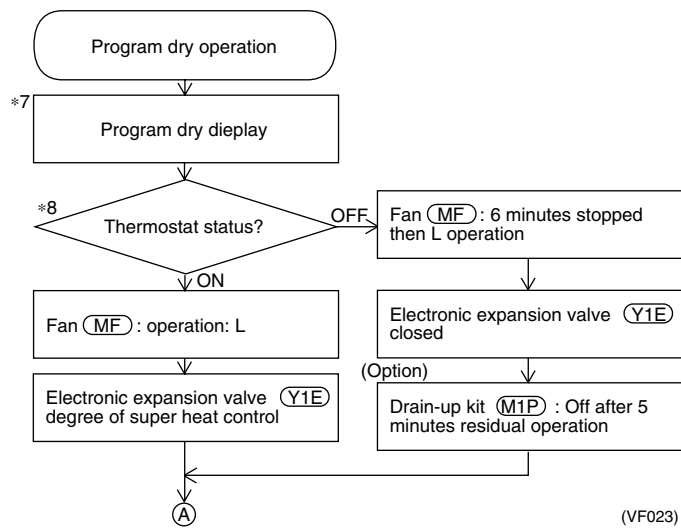
Preset temperature



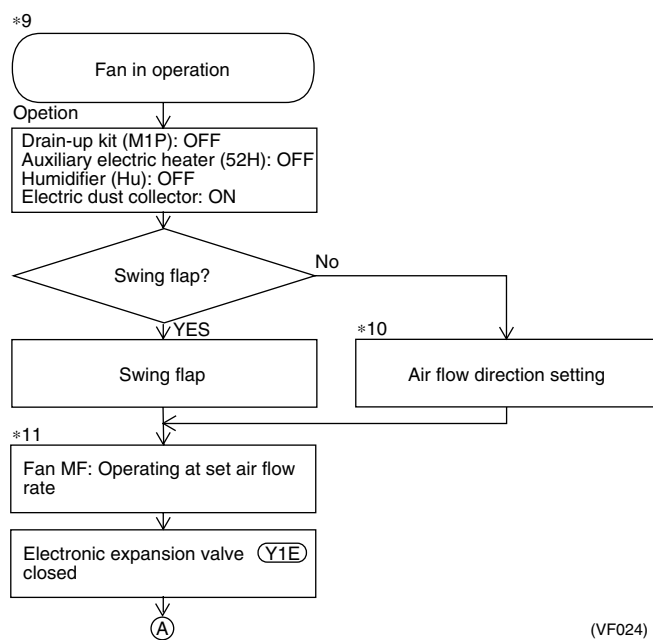
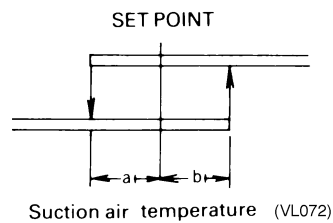
Intake air temperature

$a = b = 1$ ($a = b = 0.5$ possible for FXYC, FXYE, FXYF, FXYH, FXYK only.)

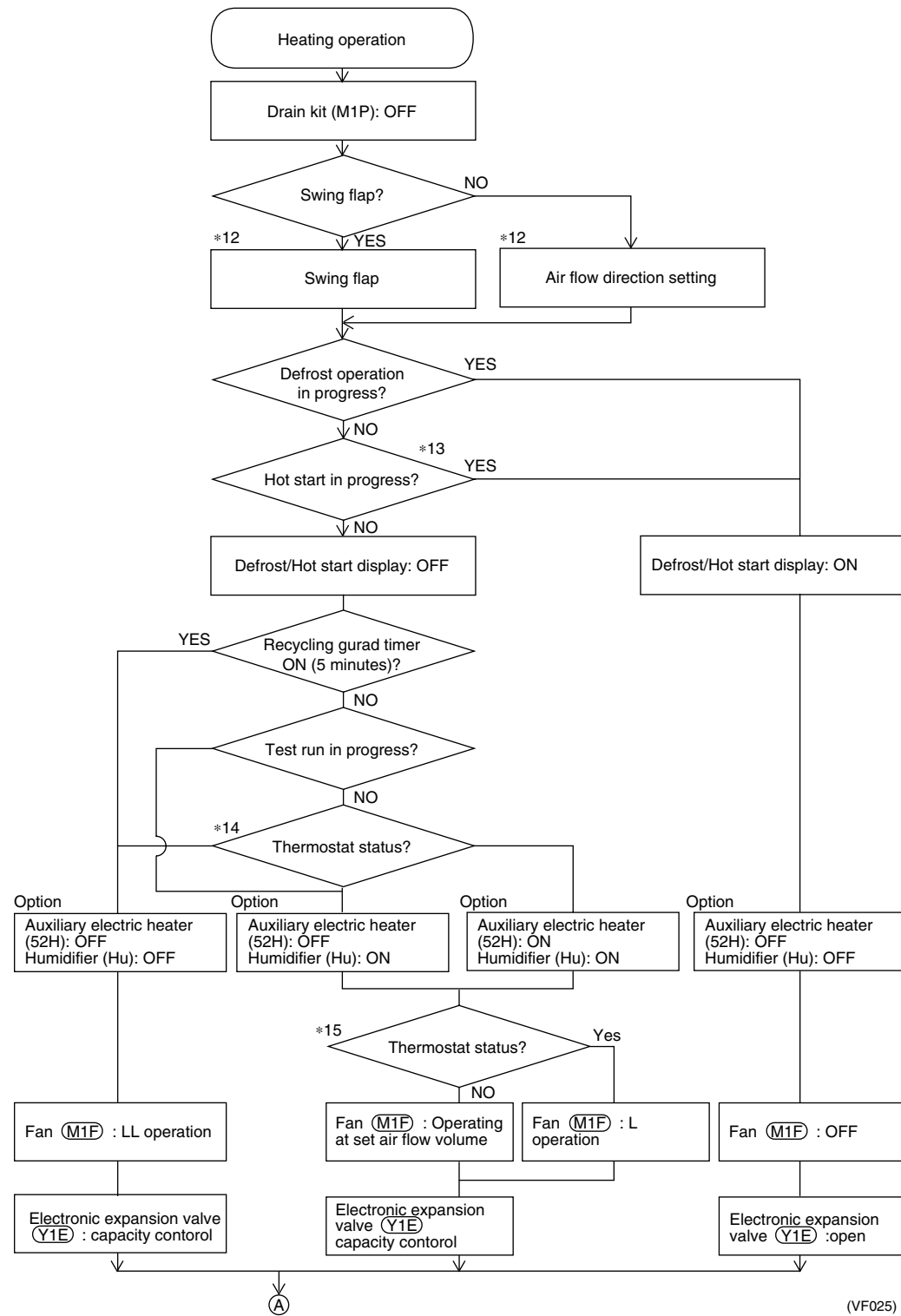
Все каталоги и инструкции здесь: <https://splitssystem48.ru/instrukcii-po-ekspluatácii-kondicionerov.html>



- *7 Programmed dry display
Does not display preset temperature and air flow settings of the controller.
- *8 Thermostat status
Preset temperature during programmed dry operation



- *9 Fan operation
When fan operation has been selected using the remote controller, operation is turned OFF by thermostat when temperature control operation has been selected.
- *10 Air flow direction setting
If fan operation is selected with the remote controller, air discharge is 100% horizontal during heating.
- *11 Fan
If fan operation is selected with the remote controller, LL speed operation is carried out during heating.

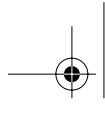


*12 Air flow direction

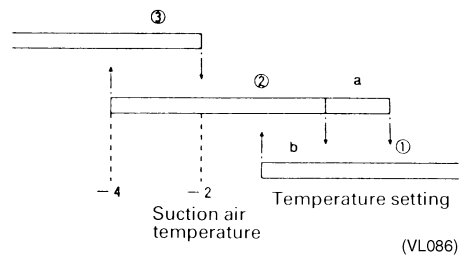
Air discharge is 100% horizontal when heating operation is turned off by thermostat.

*13 Hot start

Hot start is carried out when operation starts or defrosting is complete, and condenser inlet temperature exceeds 34°C, or 3 minutes elapses, or when Tc > 52°C.

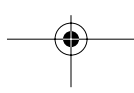


*14. Thermostat status

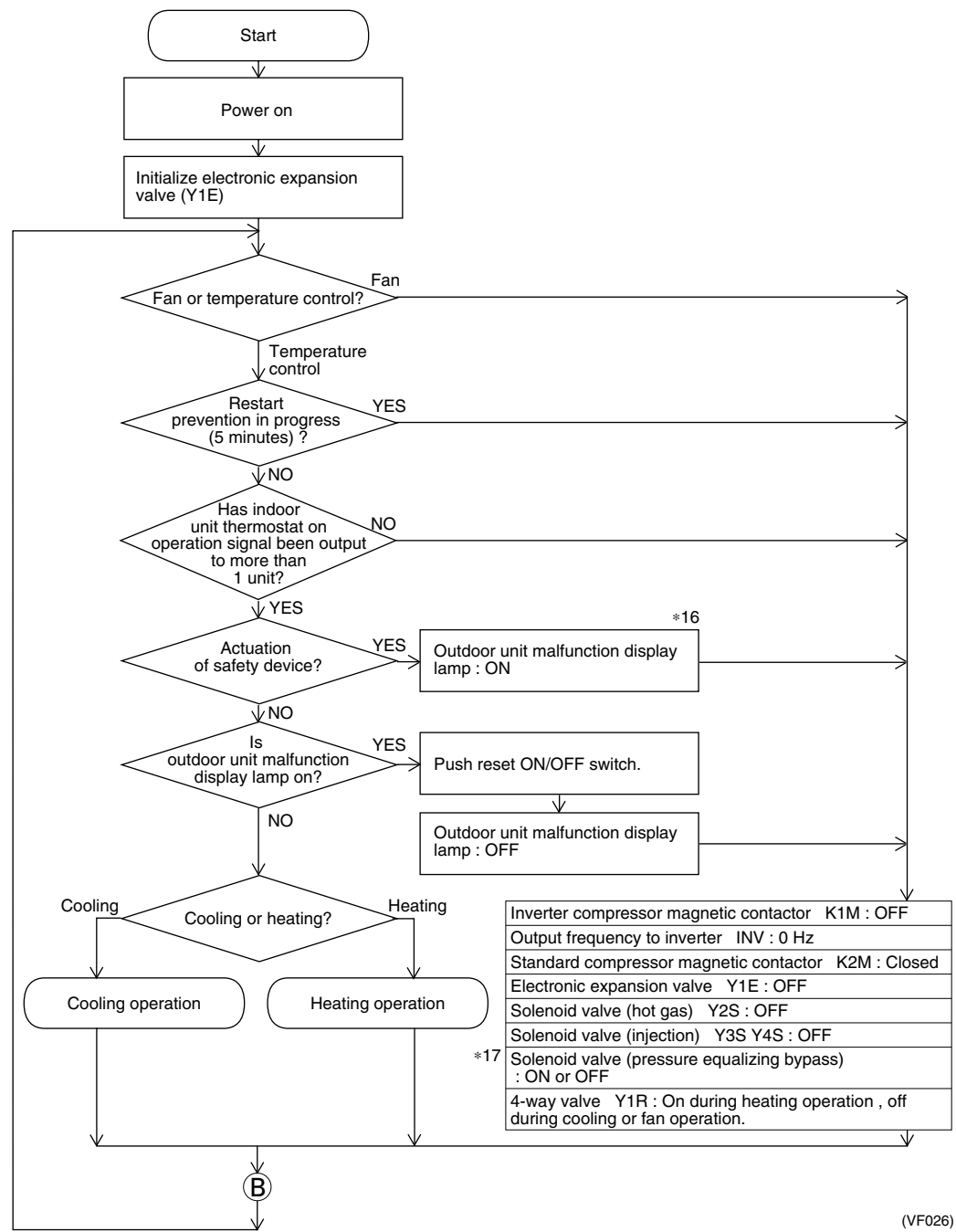


*15 Low discharge air temperature protection

Protection is effected when the preset temperature is 24°C or lower and the opening of the electronic expansion valve is slight.

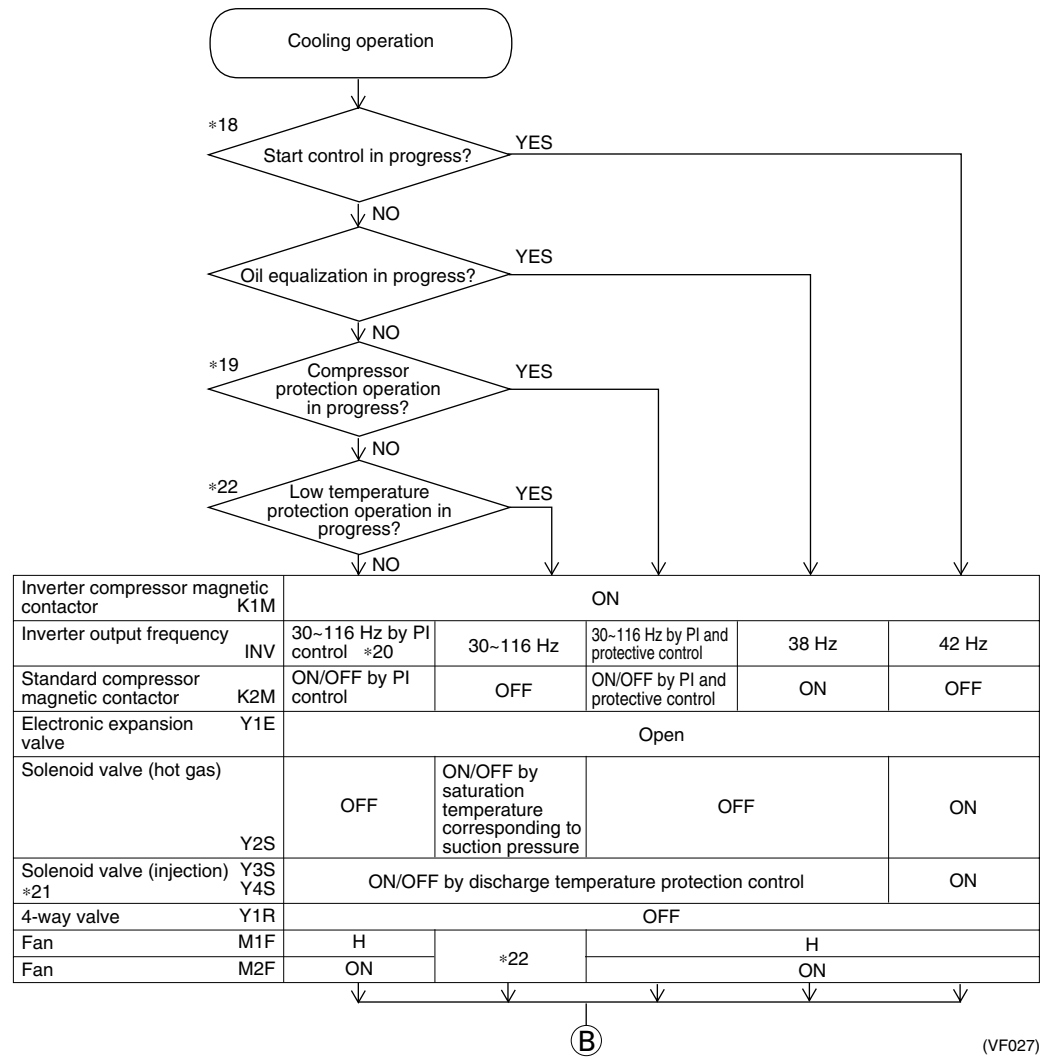


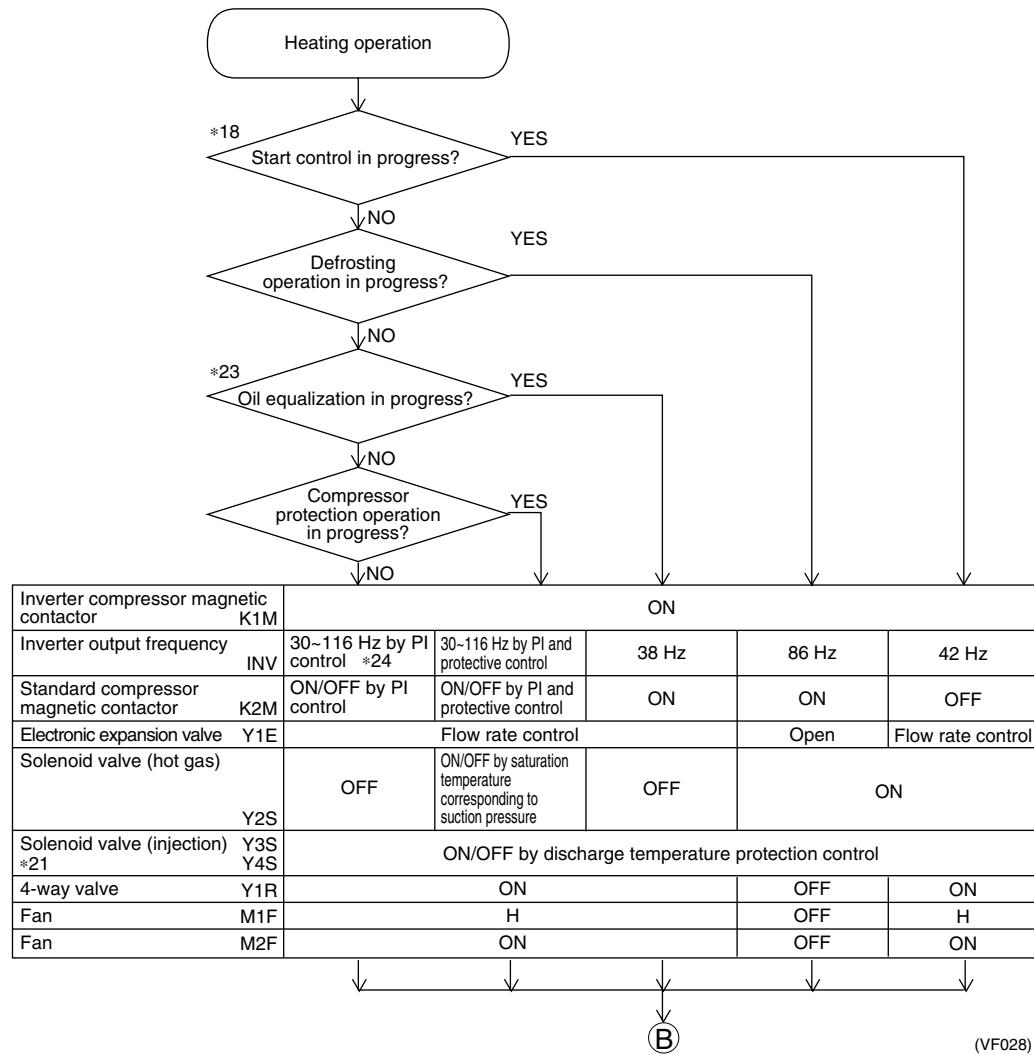
1.2 Outdoor Unit Operation Flowchart



*16 If the outdoor unit malfunction display lamp is on then this either indicates that the outdoor unit operation has been terminated abnormally or warns that there is refrigerant shortage or else that there is a piping or wiring fault (operations will continue). (Refer to Indoor Unit Control *1)

*17 Keep on operations for 15 minutes after the inverter compressor has stopped.
 Note: The crank case heaters (CH) are on when the magnetic relays of their respective compressors are off.



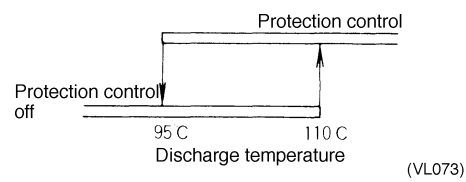


*18 Start control

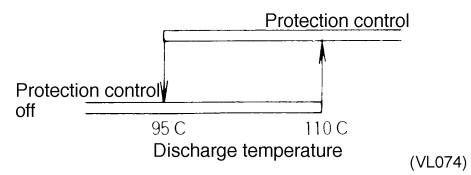
60 second start control in order to prevent liquid back to the compressor.

*19 Compressor protection

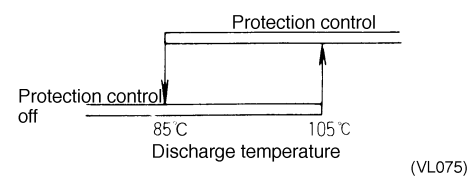
1. Protection control is triggered when the cooling load is large and the saturation temperature corresponding to suction pressure is high.
2. Protection control is triggered when secondary inverter current exceeds set current.
3. Protection control is triggered by discharge temperature.
4. Protection control is triggered when saturation temperature corresponding to suction pressure is low.



- *20 PI control
Controls ON/OFF of the standard compressor and inverter output frequency so that suction pressure is the optimal value.
- *21 Discharge temperature protection



- *22 Fan control during low temperature protection
If Tc is less than 26.1°C for 30 continuous seconds, fan speed changes as follows: H + ON / H + OFF / L + OFF. When Tc becomes greater than 52.4°C, fan speed returns to H + ON.
- *23 Compressor protection
 1. Protection control is triggered when secondary inverter current exceeds set current.
 2. Protection control is triggered by discharge temperature.



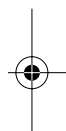
3. Protection control is triggered when the heating load is small and the saturation temperature corresponding to suction pressure is high.
 4. Protection control is triggered when saturation temperature corresponding to suction pressure is low.
- *24 PI control
Controls ON/OFF of the standard compressor and inverter output frequency so that discharge pressure is the optimal value.

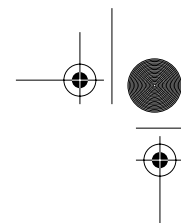


2. Diagnosis by Malfunction Code

2.1 Diagnosis by Malfunction Code

Malfunction code	Malfunction contents	Fan operation	Page
A0	Indoor unit: Error of external protection device		130
A1	Indoor unit: PC board defect		131
A3	Indoor unit: Malfunction of drain level control system (33H)	○	132
A6	Indoor unit: Fan motor (M1F) lock, overload		133
A7	Indoor unit: Malfunction of swing flap motor (M1S)	○	134
A9	Indoor unit: Malfunction of moving part of electronic expansion valve (Y1E)	○	135
AF	Indoor unit: Drain level above limit		136
AJ	Indoor unit: Malfunction of capacity determination device		136
C4	Indoor unit: Malfunction of thermistor (R2T) for liquid pipe	○	137
C5	Indoor unit: Malfunction of thermistor (R3T) for gas pipes	○	137
C9	Indoor unit: Malfunction of thermistor (R1T) for air inlet	○	138
CJ	Indoor unit: Malfunction of thermostat sensor in remote controller	○	138
E0	Outdoor unit: Actuation of safety device		139
E1	Outdoor unit: PC board defect		139
E3	Outdoor unit: Actuation of high pressure switch		140
E4	Outdoor unit: Actuation of low pressure switch	○	141
E9	Outdoor unit: Malfunction of moving part of electronic expansion valve (Y1E)	○	142
F3	Outdoor unit: Abnormal discharge pipe temperature	○	143
H9	Outdoor unit: Malfunction of thermistor for outdoor air (R1T)	○	144
J3	Outdoor unit: Malfunction of discharge pipe thermistor (R3T)	○	144
J5	Outdoor unit: Malfunction of thermistor (R4T) for suction pipe	○	145
J6	Outdoor unit: Malfunction of thermistor (R2T) for heat exchanger	○	145
JA	Outdoor unit: Malfunction of discharge pipe pressure sensor	○	146
JC	Outdoor unit: Malfunction of suction pipe pressure sensor	○	147
JH	Outdoor unit: Malfunction of oil temperature thermistor (R5T)	○	148
U0	Low pressure drop due to refrigerant shortage or electronic expansion valve failure	○	149
U1	Negative phase, open phase	○	150
U2	Power supply insufficient or instantaneous failure	○	166
U4	Malfunction of transmission between indoor units	○	151
U5	Malfunction of transmission between remote controller and indoor unit		152
U7	Malfunction of transmission between outdoor units	○	153
U8	Malfunction of transmission between master and slave remote controllers	○	154
U9	Malfunction of transmission between indoor and outdoor units in the same system	○	155
UA	Excessive number of indoor units	○	156
UC	Address duplication of central remote controller	○	156
UF	Refrigerant system not set, incompatible wiring/piping	○	157
UH	Malfunction of system, refrigerant system address undefined	○	158





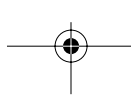
2.2 Failure Diagnosis

2.2.1 Inverter Failure Diagnosis

Malfunction code	Malfunction contents	Fan operation	Page
L4	Outdoor unit: Malfunction of inverter radiating fin temperature rise	○	161
L5	Outdoor unit: Inverter instantaneous over-current	○	162
L8	Outdoor unit: Inverter thermostat sensor, compressor overload	○	163
L9	Outdoor unit: Inverter stall prevention, compressor lock	○	164
LC	Outdoor unit: Malfunction of transmission between inverter and control PC board	○	165
P1	Outdoor unit: Inverter over-ripple protection	○	167
P4	Outdoor unit: Malfunction of inverter radiating fin temperature rise sensor	○	168

2.2.2 Failure Diagnosis for Optional Controllers for Centralized Control

Malfunction code	Optional controllers for centralized control	Malfunction contents	Page
UE	Central remote controller Schedule timer	Malfunction of transmission between central remote controller and indoor unit	169 173
M1	Central remote controller Schedule timer	PC board defect	170 174
M8	Central remote controller Schedule timer	Malfunction of transmission between optional controllers for centralized control	170 174
MA	Central remote controller Schedule timer	Improper combination of optional controllers for centralized control	171 175
MC	Central remote controller Schedule timer	Address duplication, improper setting	172 176
—	Unified ON/OFF controller	Operation lamp blinks	177
		Display "under host computer integrate control" blinks (repeats single blink)	178
		Display "under host computer integrate control" blinks (repeats double blink)	180





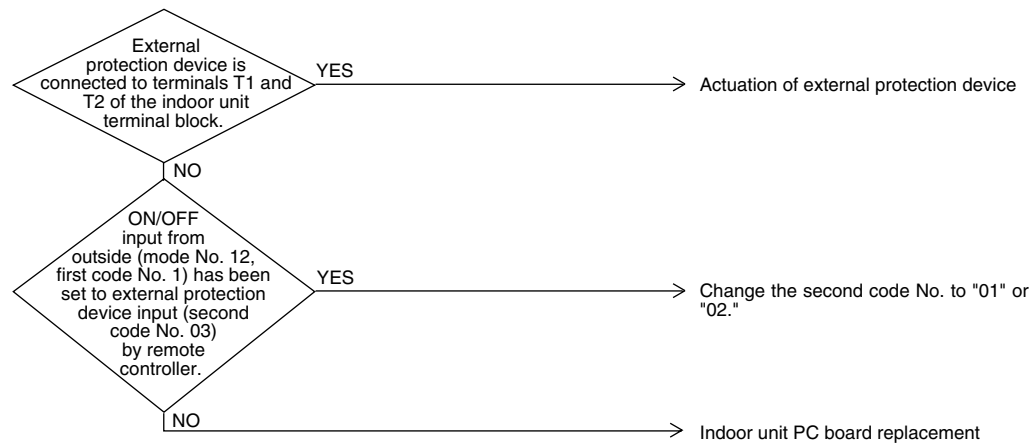
3. Troubleshooting

3.1 Indoor Unit: Error of External Protection Device

Remote Controller **RD**
Display

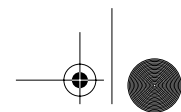
- Supposed Causes**
- Actuation of external protection device
 - Improper field set
 - Defect of indoor unit PC board

Troubleshooting



(VF029)





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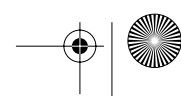
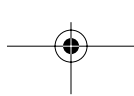
Troubleshooting

3.2 Indoor Unit: PC Board Defect

Remote Controller Display **A1**

Supposed Causes ■ Defect of indoor unit PC board

Troubleshooting Replace the indoor unit PC board.

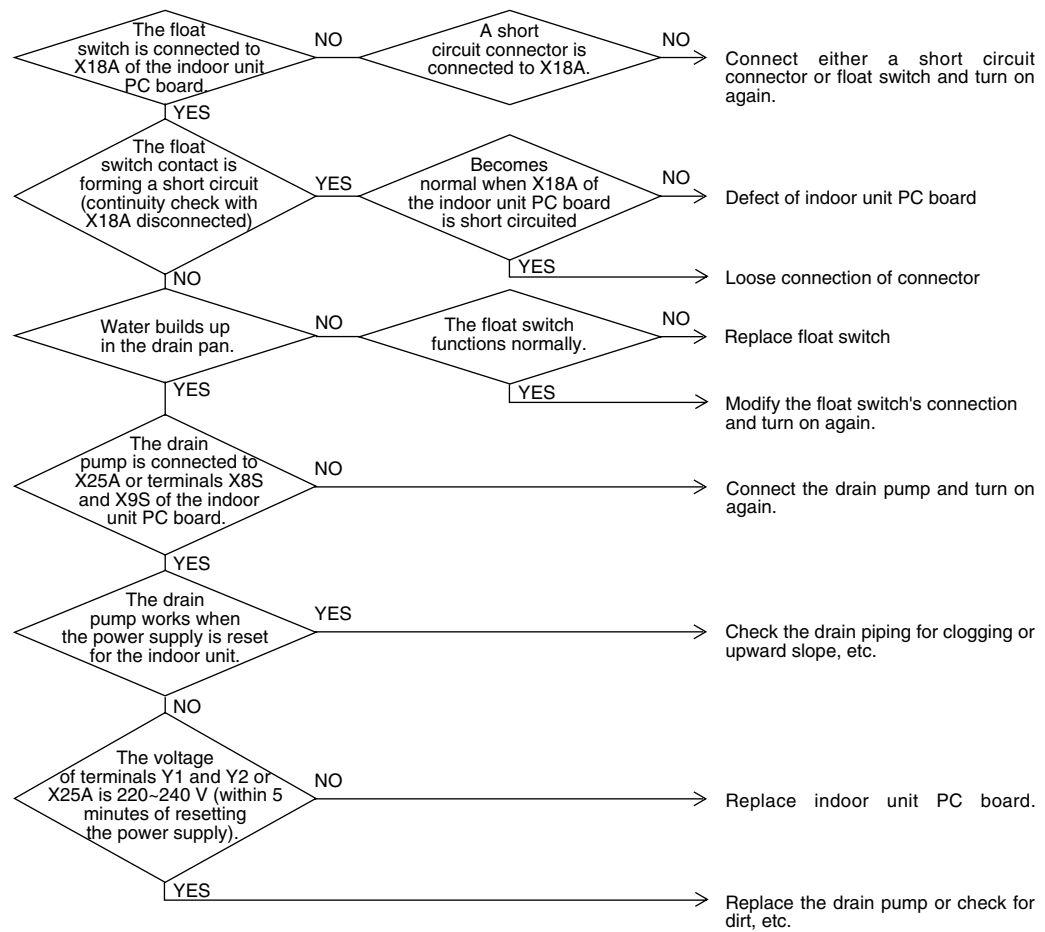


3.3 Indoor Unit: Malfunction of Drain Level Control System (33H)

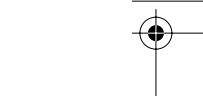
Remote Controller Display **A3**

- Supposed Causes**
- Defect of float switch or short circuit connector
 - Defect of drain pump
 - Drain clogging, upward slope, etc.
 - Defect of indoor unit PC board
 - Loose connection of connector

Troubleshooting



(VF030)



SiE-05C

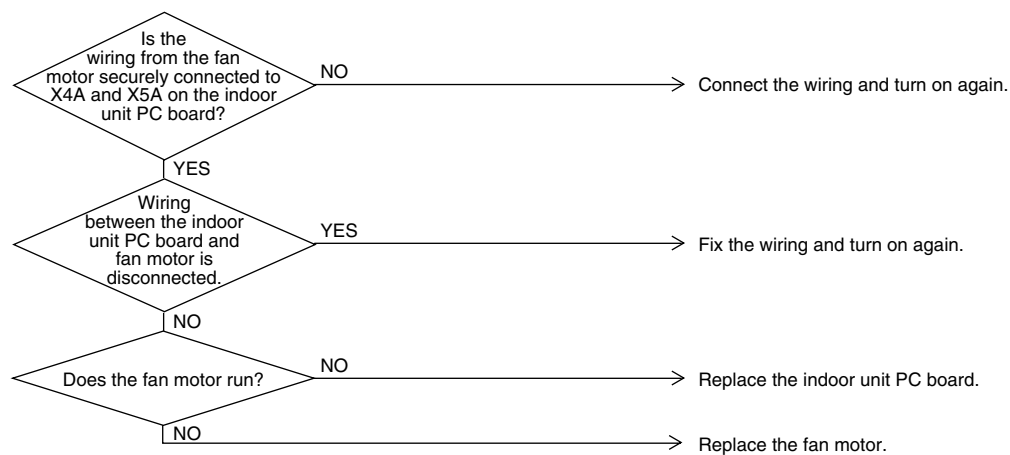
Troubleshooting

3.4 Indoor Unit: Fan Motor (M1F) Lock, Overload

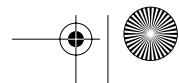
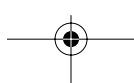
Remote Controller Display **R6**

- Supposed Causes**
- Fan motor lock
 - Disconnected or faulty wiring between fan motor and PC board

Troubleshooting



(VF031)



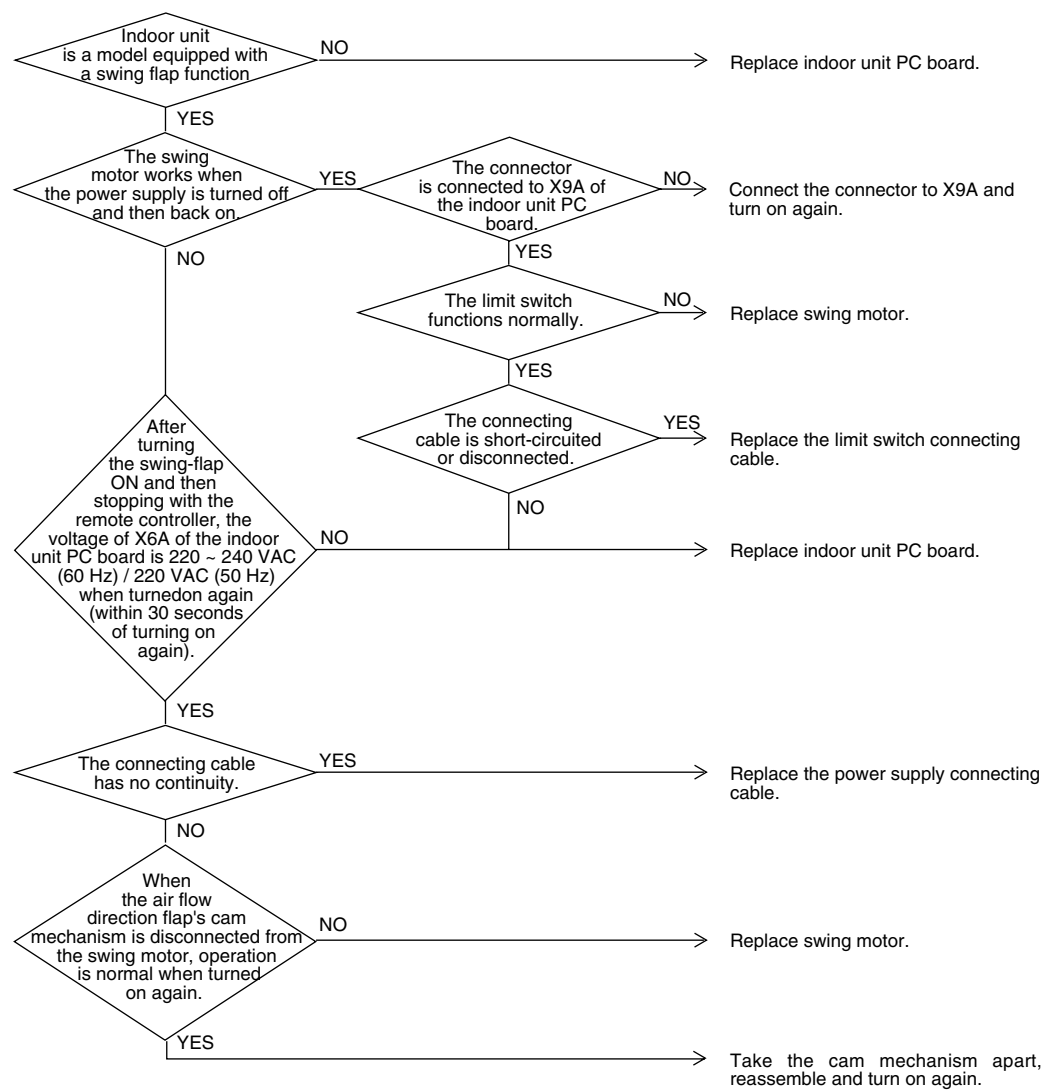


3.5 Indoor Unit: Malfunction of Swing Flap Motor (M1S)

Remote Controller Display **A7**

- Supposed Causes**
- Defect of swing motor
 - Defect of connection cable (power supply and limit switch)
 - Defect of air flow direction adjusting flap-cam
 - Defect of indoor unit PC board

Troubleshooting



(VF032)

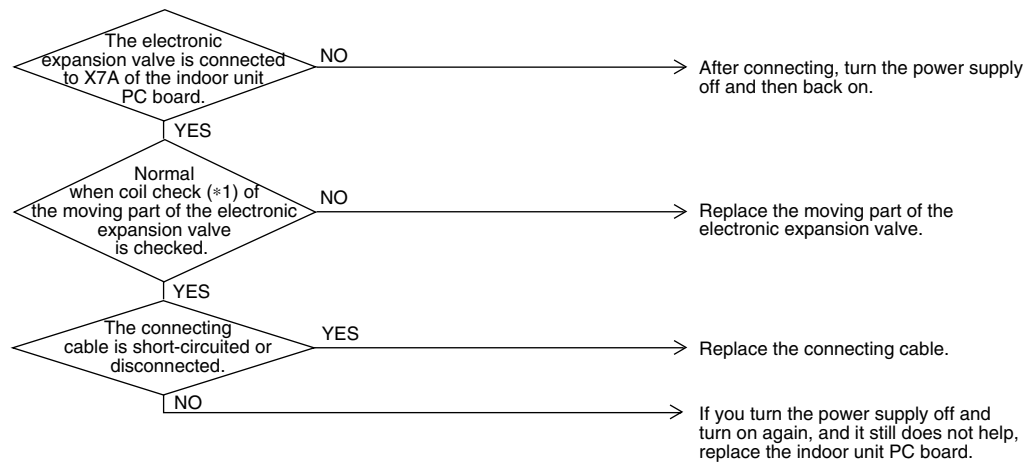


3.6 Indoor Unit: Malfunction of Moving Part of Electronic Expansion Valve (Y1E)

Remote Controller Display **R9**

- Supposed Causes**
- Malfunction of moving part of electronic expansion valve
 - Defect of indoor unit PC board
 - Defect of connecting cable

Troubleshooting



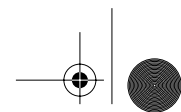
(VF033)

*1: Coil check method for the moving part of the electronic expansion valve

(Normal)

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

○: Continuity
x: No continuity



Troubleshooting

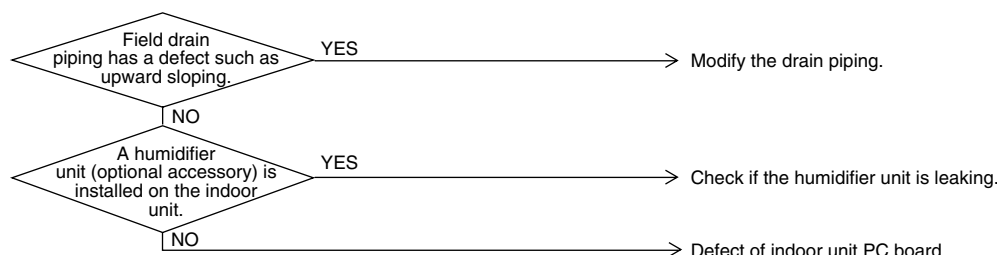
SI-E-05C

3.7 Indoor Unit: Drain Level above Limit

Remote Controller Display **RF**

- Supposed Causes**
- Humidifier unit (optional accessory) leaking
 - Defect of drain pipe (upward slope, etc.)
 - Defect of indoor unit PC board

Troubleshooting



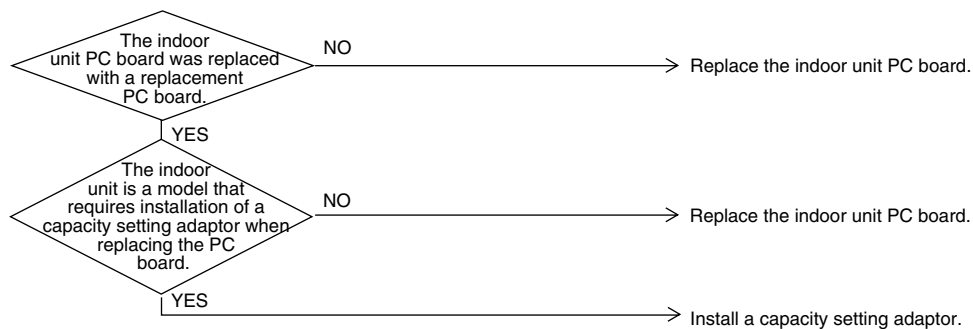
(VF034)

3.8 Indoor Unit: Malfunction of Capacity Determination Device

Remote controller display **AJ**

- Supposed Causes**
- You have forgotten to install the capacity setting adaptor.
 - Defect of indoor unit PC board

Troubleshooting



(VF035)

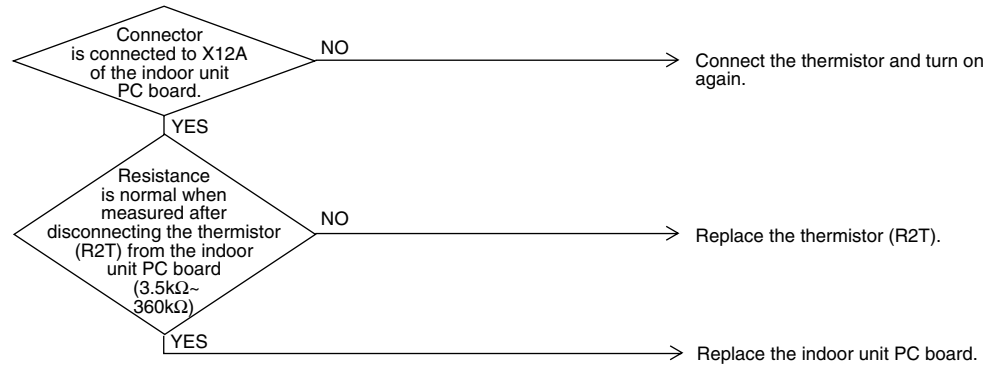


3.9 Indoor Unit: Malfunction of Thermistor (R2T) for Liquid Pipe

Remote Controller Display **C4**

- Supposed Causes**
- Defect of thermistor (R2T) for liquid pipe
 - Defect of indoor unit PC board

Troubleshooting



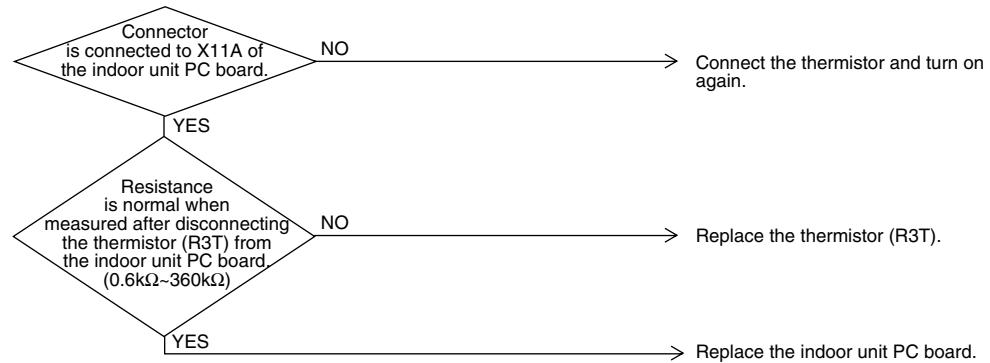
(VF036)

3.10 Indoor Unit: Malfunction of Thermistor (R3T) for Gas Pipes

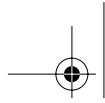
Remote Controller Display **C5**

- Supposed Causes**
- Defect of indoor unit thermistor (R3T) for gas pipe
 - Defect of indoor unit PC board

Troubleshooting



(VF037)

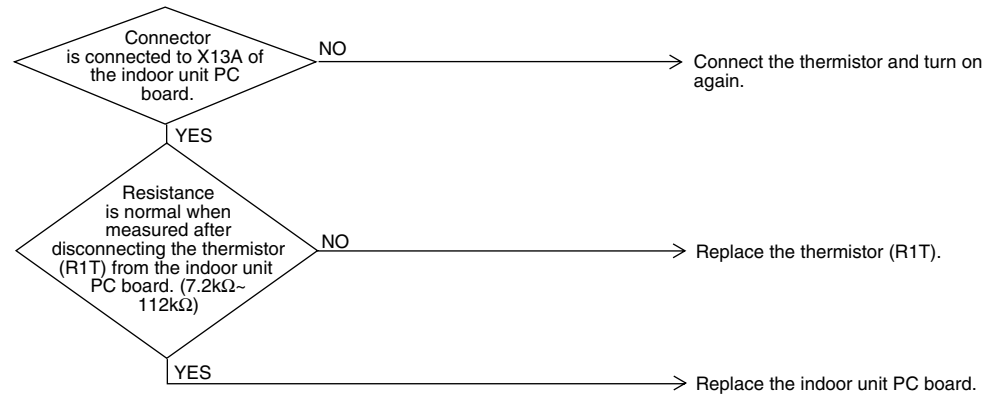


3.11 Indoor Unit: Malfunction of Thermistor (R1T) for Air Inlet

Remote Controller Display **C9**

- Supposed Causes**
- Defect of indoor unit thermistor (R1T) for air inlet
 - Defect of indoor unit PC board

Troubleshooting



(VF038)

3.12 Indoor Unit: Malfunction of Thermostat Sensor in Remote Controller

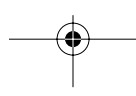
Remote Controller Display **CJ**

- Supposed Causes**
- Defect of remote controller thermistor
 - Defect of remote controller PC board

Troubleshooting



(VF039)



SiE-05C

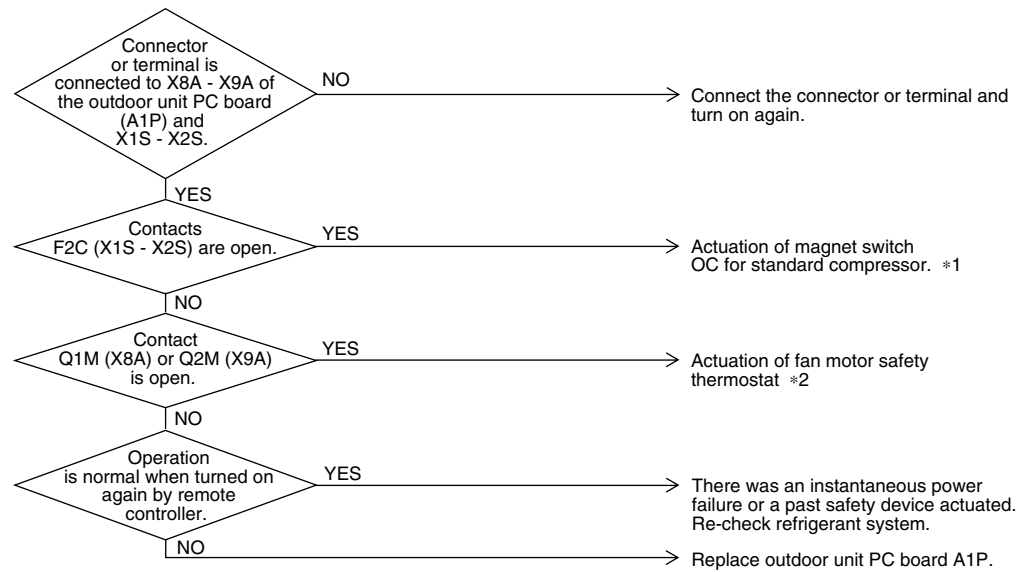
Troubleshooting

3.13 Outdoor Unit: Actuation of Safety Device

Remote Controller Display **E0**

- Supposed Causes**
- Actuation of outdoor unit safety device
 - Defect of outdoor unit PC board
 - Instantaneous power failure

Troubleshooting



(VF040)

*1: Actuation of magnet switch OC
 Defect of compressor
 Power supply insufficient
 Defect of magnet switch, etc.

*2: Actuation of fan motor safety thermostat
 Defect of fan motor
 Defect of capacitor, etc.

3.14 Outdoor Unit: PC Board Defect

Remote Controller Display **E1**

- Supposed Causes**
- Defect of outdoor unit PC board (EC1)

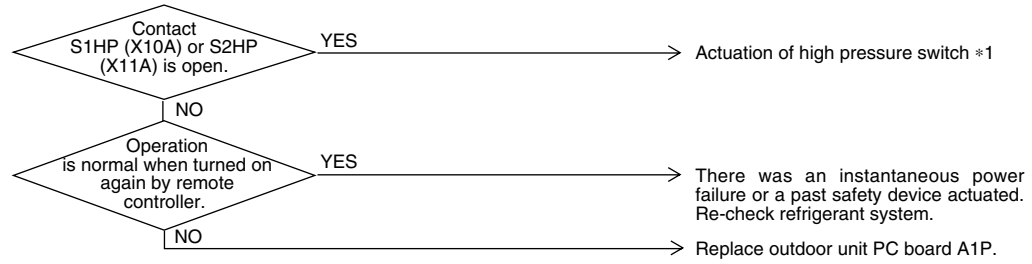
Troubleshooting Replace outdoor unit PC board A1P.

3.15 Outdoor Unit: Actuation of High Pressure Switch

Remote Controller Display **E3**

- Supposed Causes**
- Actuation of outdoor unit high pressure switch
 - Defect of outdoor unit PC board (A1P)
 - Instantaneous power failure

Troubleshooting



(VF041)

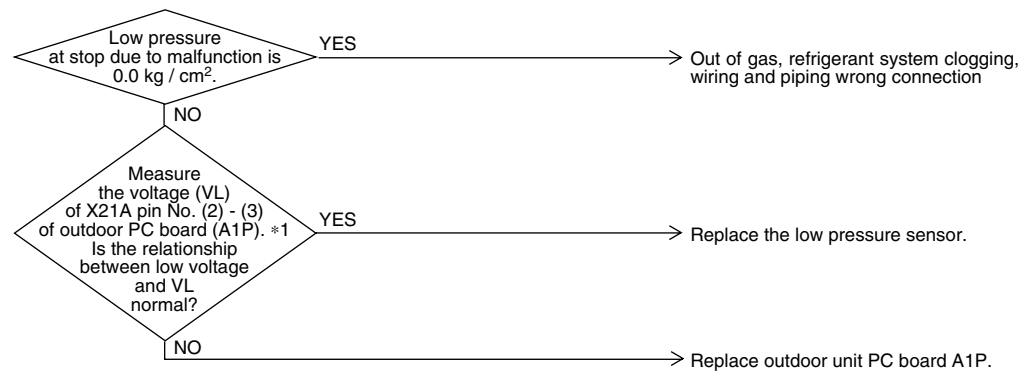
*1: Actuation of high pressure switch (HPS)
 The outdoor unit PC board's connector is disconnected.
 Is the outdoor unit heat exchanger dirty?
 Defect of outdoor fan
 Is the refrigerant over-charged?

3.16 Outdoor Unit: Actuation of Low Pressure Switch

Remote Controller Display **E4**

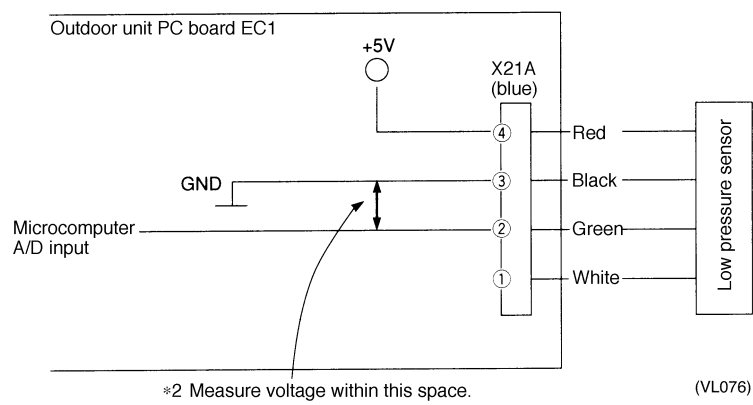
- Supposed Causes**
- Abnormal drop of low pressure (0 kg/cm² [0 MPa])
 - Defect of low pressure sensor
 - Defect of outdoor unit PC board

Troubleshooting



(VF042)

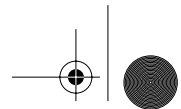
*1: Voltage measurement point



(VL076)



*2: Refer to pressure sensor, pressure - voltage characteristics table on P366.

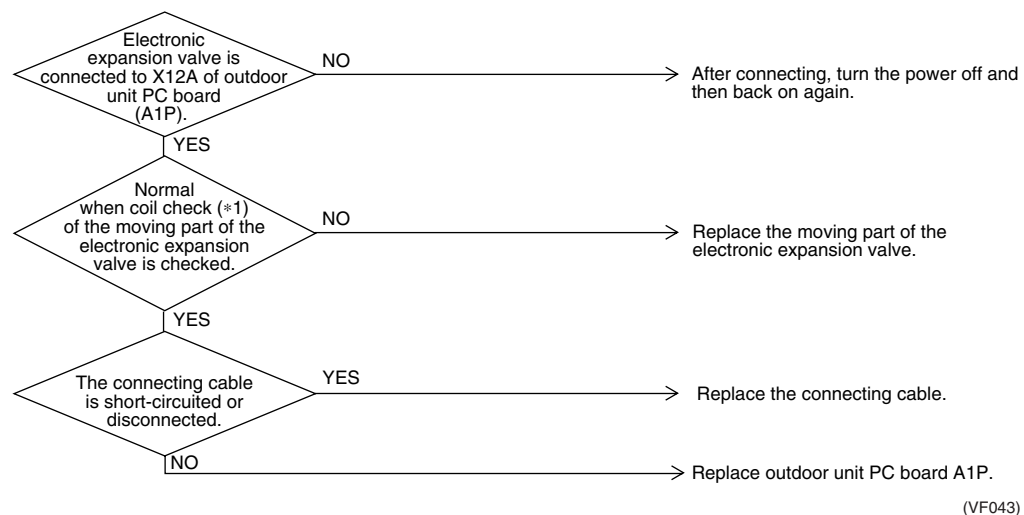


3.17 Outdoor Unit: Malfunction of Moving Part of Electronic Expansion Valve (Y1E)

Remote Controller Display **E9**

- Supposed Causes**
- Defect of moving part of electronic expansion valve
 - Defect of outdoor unit PC board (A1P)
 - Defect of connecting cable

Troubleshooting



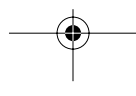
(VF043)

*1 Coil check method for the moving part of the electronic expansion valve
 Disconnect the electronic expansion valve from the PC board and check the continuity between the connector pins.

(Normal)

Pin No.	1. White	2. Yellow	3. Orange	4. Blue	5. Red	6. Brown
1. White		x	⊙	x	○	x
2. Yellow			x	⊙	x	○
3. Orange				x	○	x
4. Blue					x	○
5. Red						x
6. Brown						

⊙: Continuity Approx. 300Ω
 ○: Continuity Approx. 150Ω
 x: No continuity

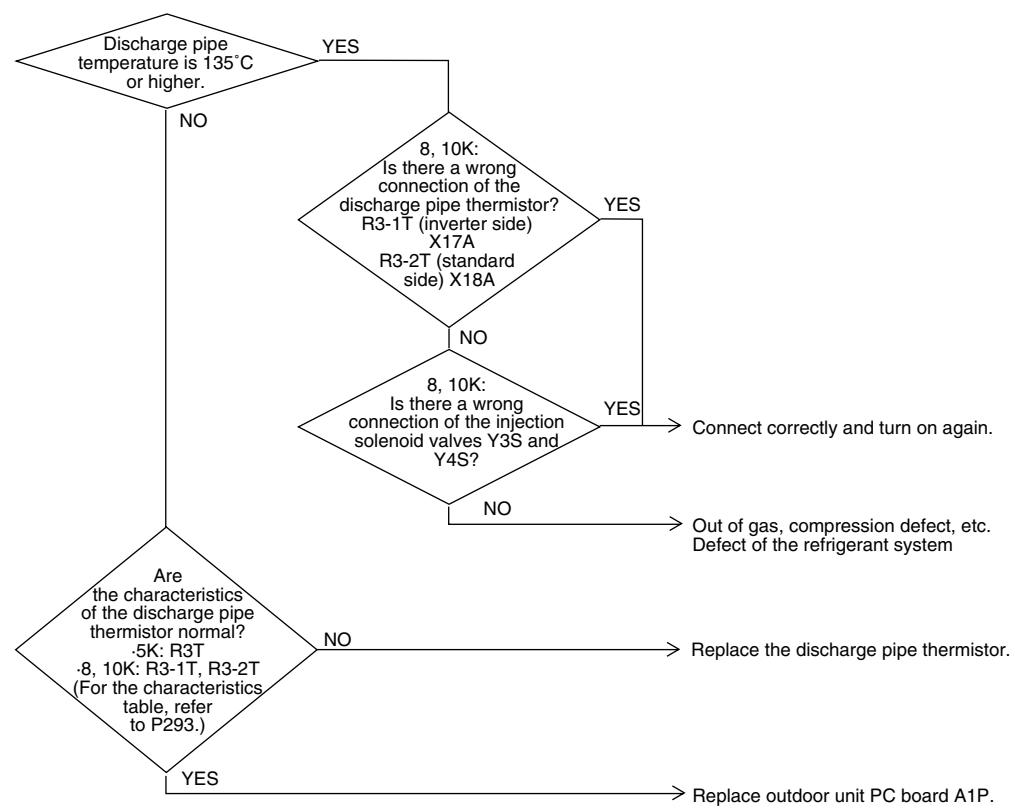


3.18 Outdoor Unit: Abnormal Discharge Pipe Temperature

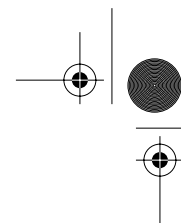
Remote Controller Display **F3**

- Supposed Causes**
- Abnormal discharge pipe temperature
 - Defect of discharge pipe thermistor (5K: R3T 8K, 10K: R3-1T, R3-2T)
 - Defect of outdoor unit PC board
 - Discharge pipe thermistor wrong connection
 - Liquid injection solenoid valve wrong connection

Troubleshooting



(VF044)

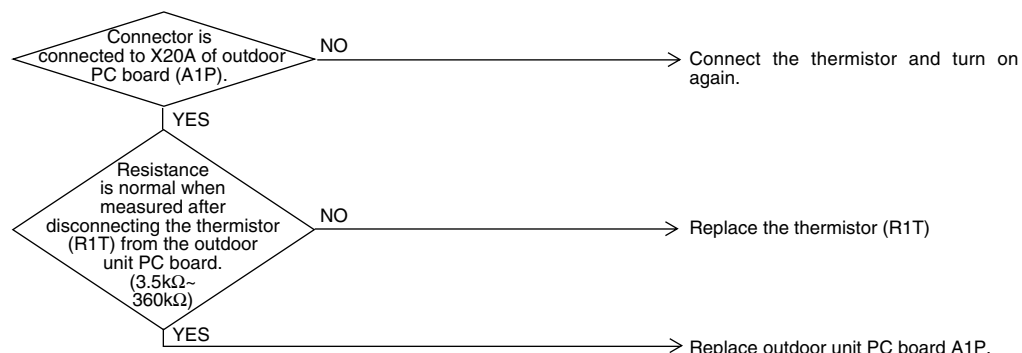


3.19 Outdoor Unit: Malfunction of Thermistor for Outdoor Air (R1T)

Remote Controller Display **H9**

- Supposed Causes**
- Defect of thermistor (R1T) for outdoor unit outdoor air intake
 - Defect of outdoor unit PC board (A1P)

Troubleshooting



(VF045)

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

3.20 Outdoor Unit: Malfunction of Discharge Pipe Thermistor (R3T)

Remote Controller Display **J3**

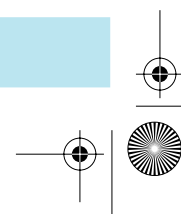
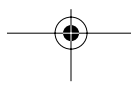
- Supposed Causes**
- Defect of thermistor (R3T, R3-1T, R3-2T) for outdoor unit discharge pipe
 - Defect of outdoor unit PC board (A1P)

Troubleshooting



(VF046)

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



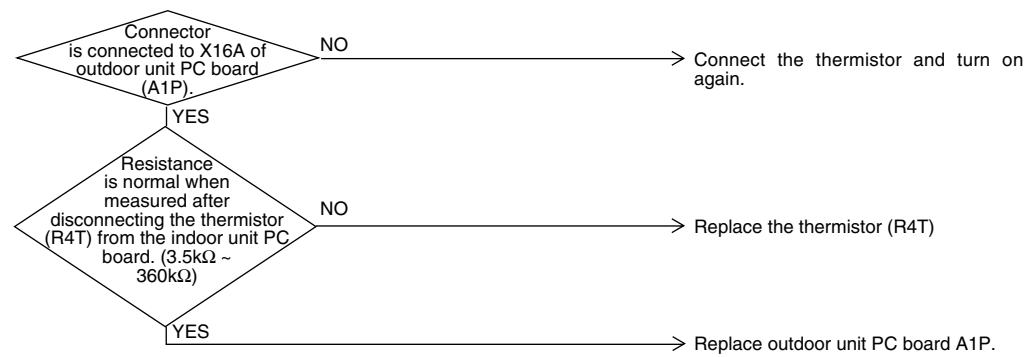
3.21 Outdoor Unit: Malfunction of Thermistor (R4T) for Suction Pipe

Remote Controller Display **J5**

Supposed Causes

- Defect of thermistor (R4T) for outdoor unit suction pipe
- Defect of outdoor unit PC board (A1P)

Troubleshooting



(VF047)

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

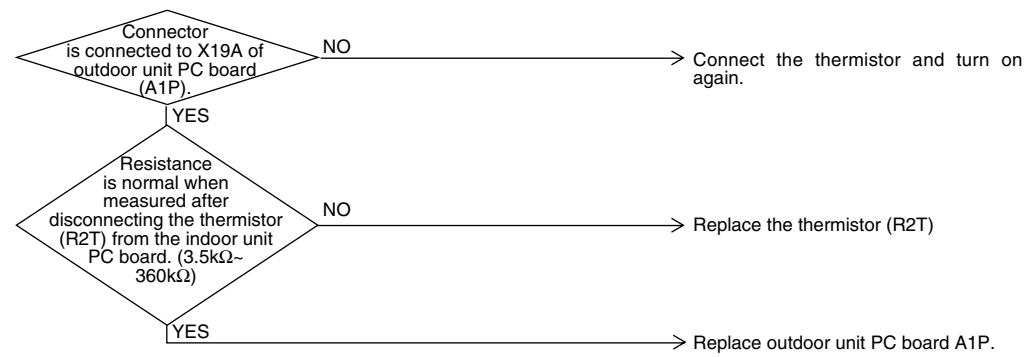
3.22 Outdoor Unit: Malfunction of Thermistor (R2T) for Heat Exchanger

Remote Controller Display **J6**

Supposed Causes

- Defect of thermistor (R2T) for outdoor unit coil
- Defect of outdoor unit PC board (A1P)

Troubleshooting



(VF048)

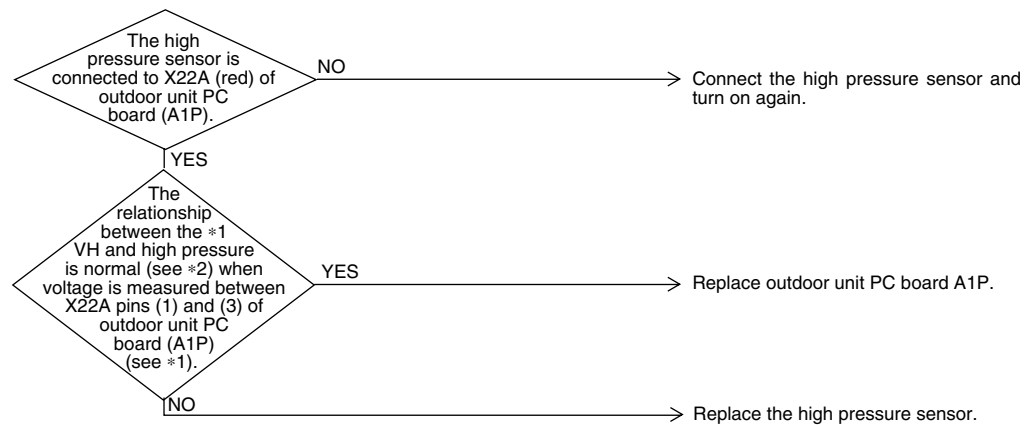
The alarm indicator is displayed when the fan is being used also.

3.23 Outdoor Unit: Malfunction of Discharge Pipe Pressure Sensor

Remote Controller Display **JR**

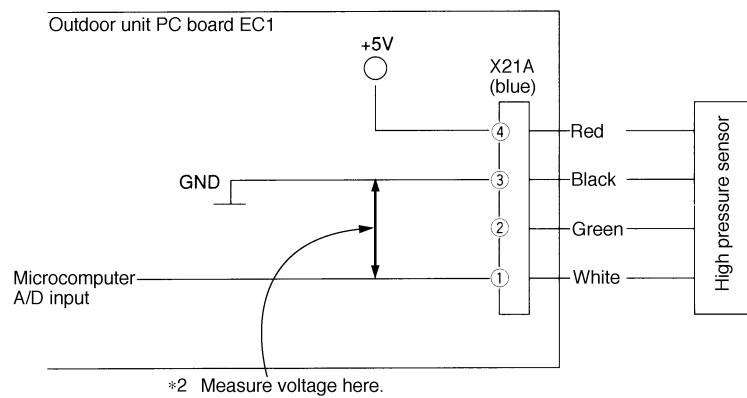
- Supposed Causes**
- Defect of high pressure sensor system
 - Connection of low pressure sensor with wrong connection.
 - Defect of outdoor unit PC board.

Troubleshooting



(VF049)

*1: Voltage measurement point



(VL077)



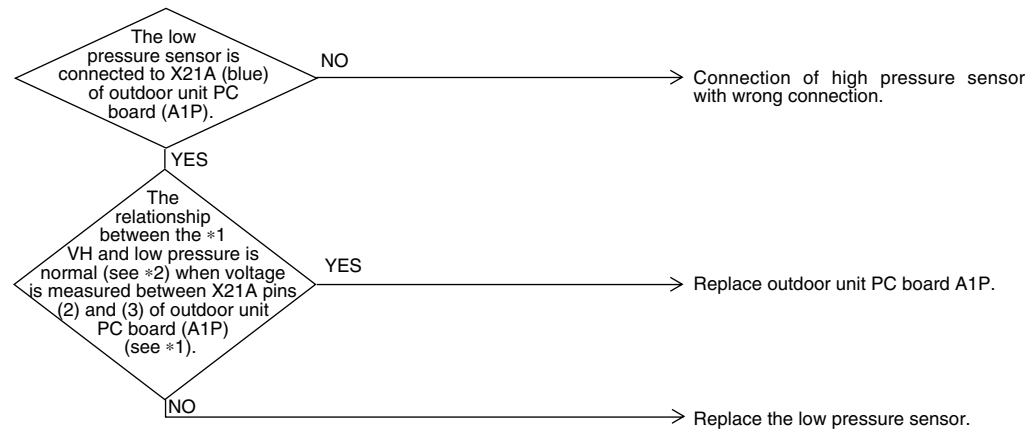
*2: Refer to pressure sensor, pressure / voltage characteristics table on P366.

3.24 Outdoor Unit: Malfunction of Suction Pipe Pressure Sensor

Remote Controller Display **JC**

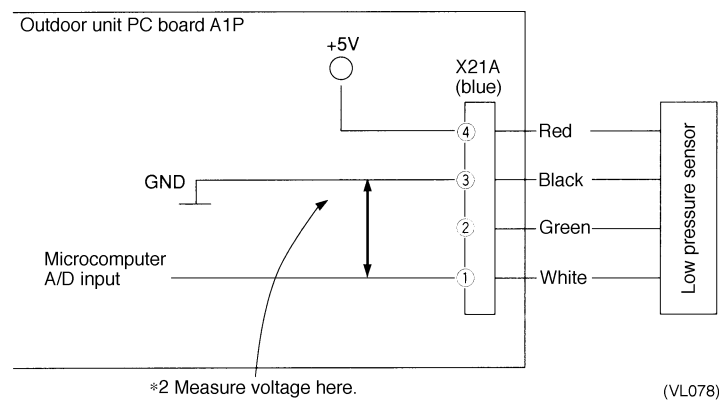
- Supposed Causes**
- Defect of low pressure sensor system
 - Connection of high pressure sensor with wrong connection.
 - Defect of outdoor unit PC board.

Troubleshooting



(VF050)

*1: Voltage measurement point



(VL078)



*2: Refer to pressure sensor, pressure/voltage characteristics table on P366.

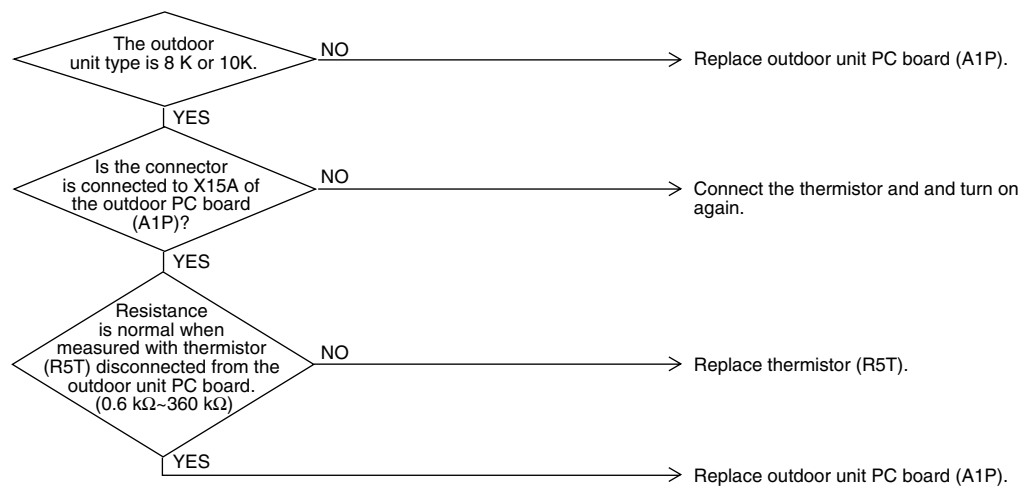


3.25 Outdoor Unit: Malfunction of Oil Temperature Thermistor (R5T)

Remote Controller **JH**
Display

- Supposed Causes**
- Defect of oil temperature thermistor (R5T)
 - Defect of outdoor unit PC board (A1P)

Troubleshooting



(VF051)

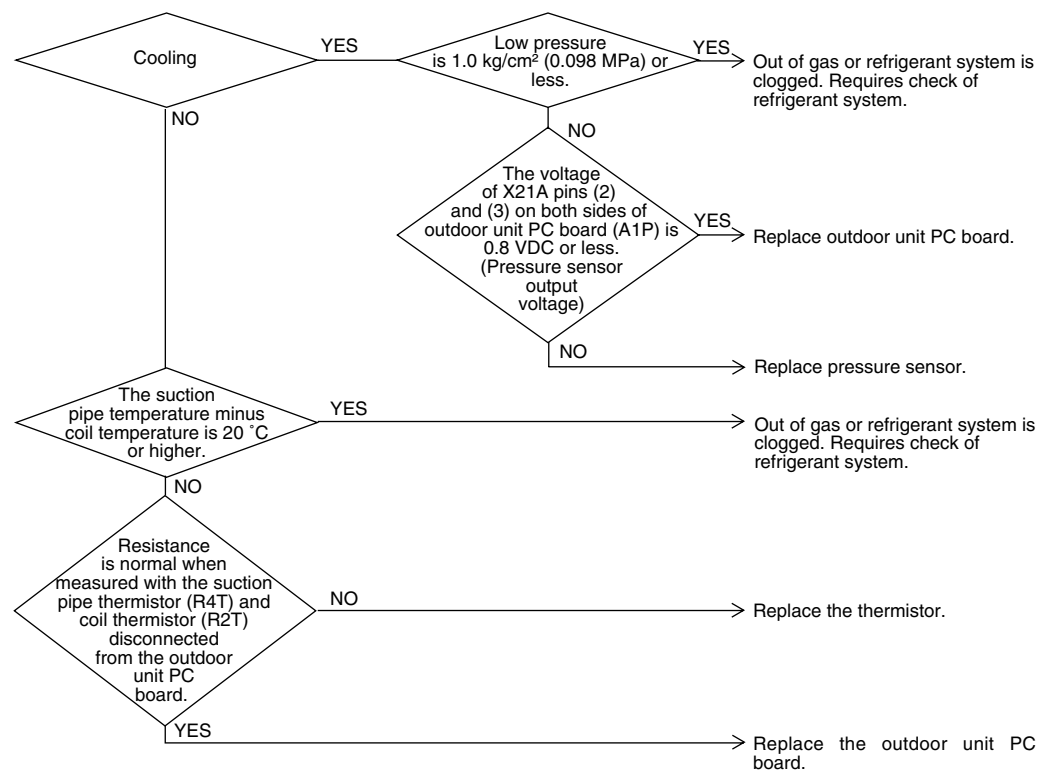


3.26 Low Pressure Drop Due to Refrigerant Shortage or Electronic Expansion Valve Failure

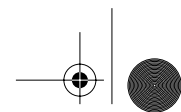
Remote Controller Display **U0**

- Supposed Causes
- Out of gas or refrigerant system clogging (incorrect piping)
 - Defect of pressure sensor
 - Defect of outdoor unit PC board

Troubleshooting



(VF052)

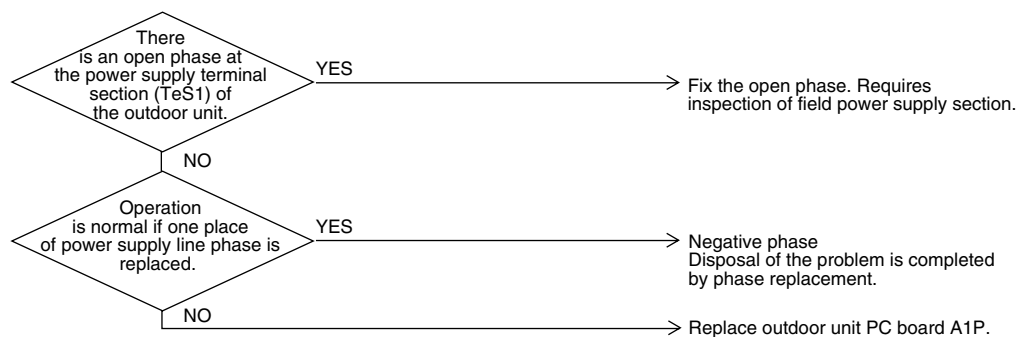


3.27 Negative Phase, Open Phase

Remote Controller Display **U1**

- Supposed Causes**
- Power supply negative phase
 - Power supply open phase
 - Defect of outdoor PC board A1P

Troubleshooting



(VF053)

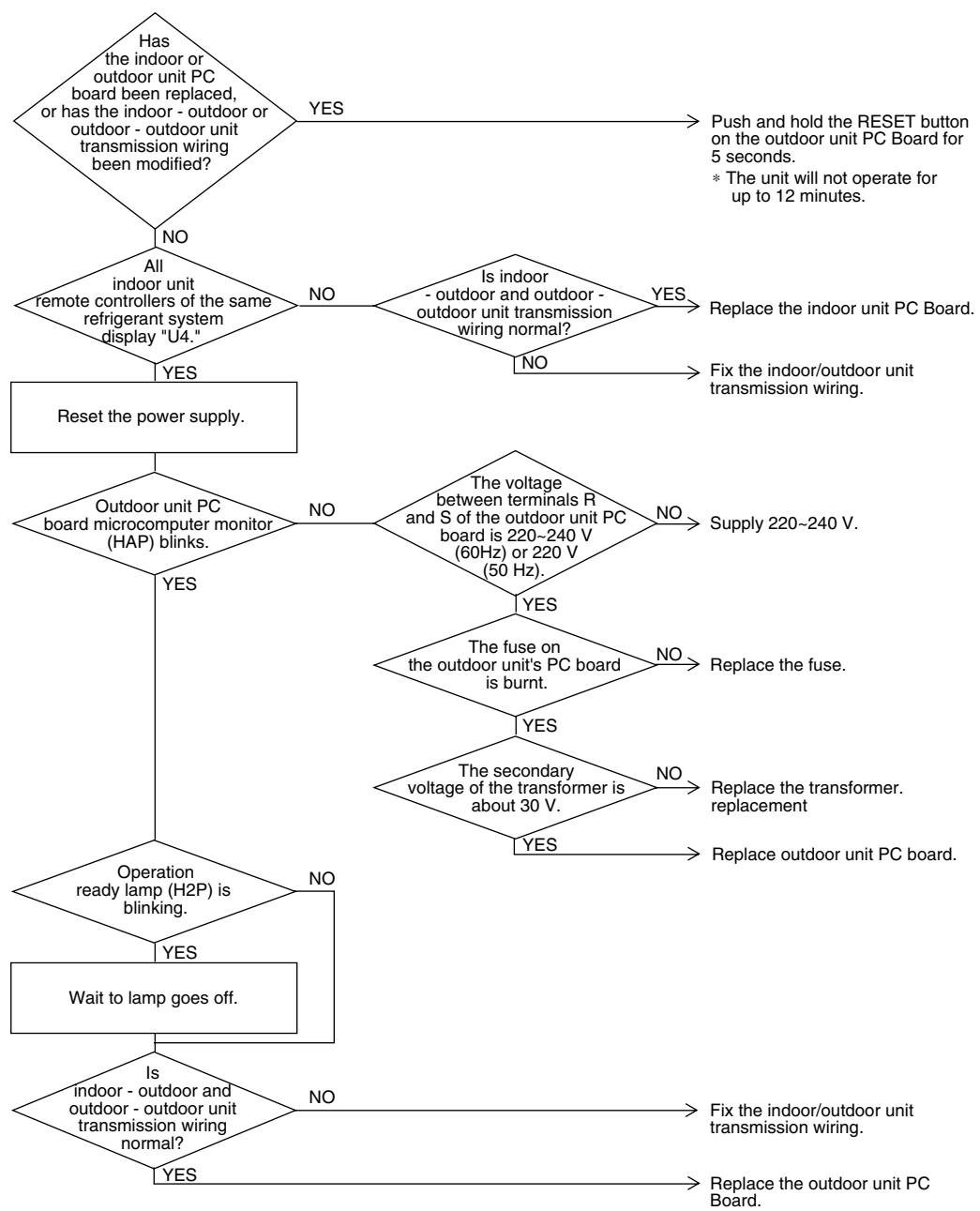


3.28 Malfunction of Transmission Between Indoor Units

Remote Controller Display **U4**

- Supposed Causes**
- Indoor to outdoor, outdoor to outdoor crossover wiring disconnection, short circuit or wrong check
 - Outdoor unit power supply is OFF
 - System address doesn't match
 - Defect of indoor unit PC board
 - Defect of outdoor unit PC board

Troubleshooting



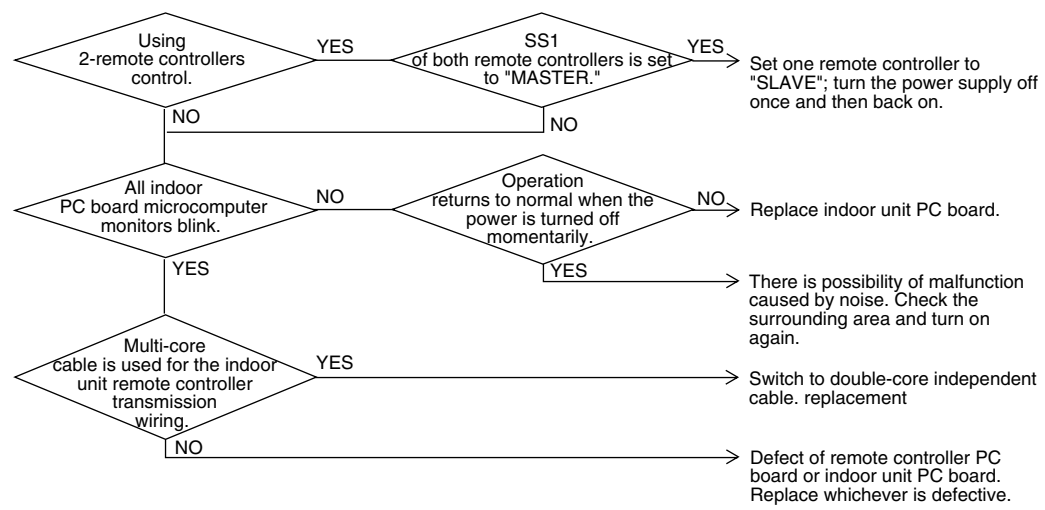
(VF054)

3.29 Malfunction of Transmission Between Remote Controller and Indoor Unit

Remote Controller Display **U5**

- Supposed Causes**
- Malfunction of indoor unit remote controller transmission
 - Connection of two main remote controllers (when using 2 remote controllers)
 - Defect of indoor unit PC board
 - Defect of remote controller PC board
 - Malfunction of transmission caused by noise

Troubleshooting



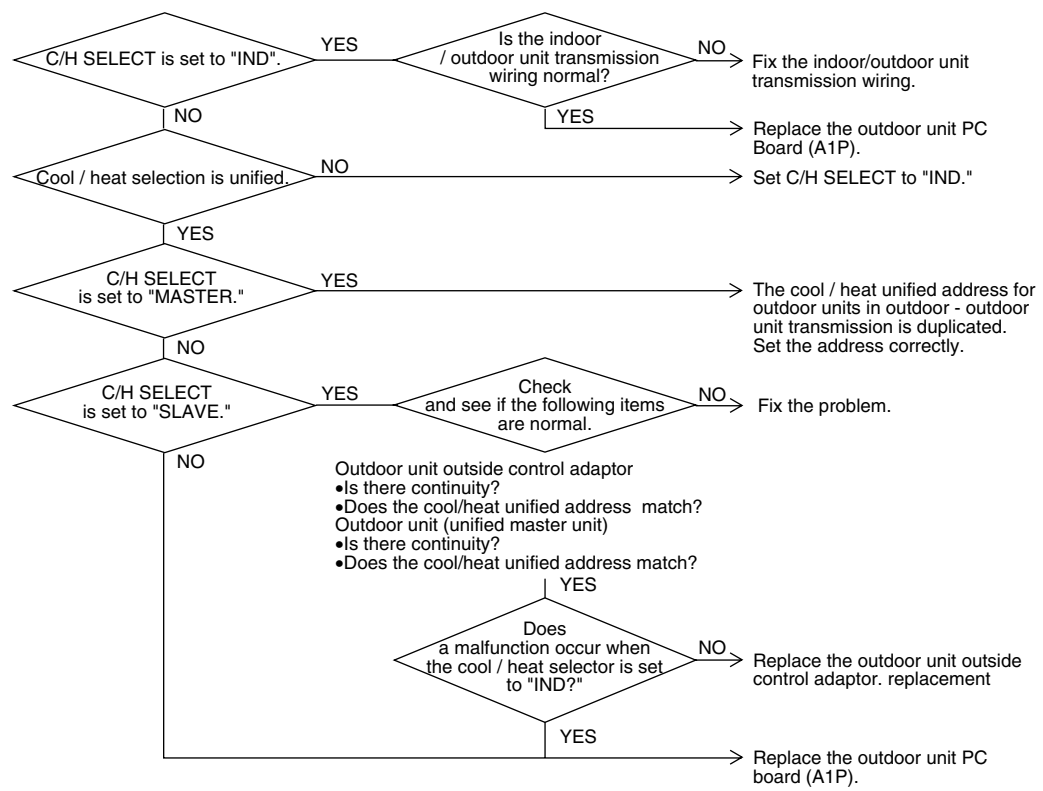
(VF055)

3.30 Malfunction of Transmission Between Outdoor Units

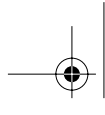
Remote Controller Display **U7**

- Supposed Causes**
- Improper connection of transmission wiring between outdoor unit and outdoor unit outside control adaptor
 - Improper cool/heat selection
 - Improper cool/heat unified address (outdoor unit, external control adaptor for outdoor unit)
 - Defect of outdoor unit PC board (A1P)
 - Defect of outdoor unit outside control adaptor

Troubleshooting



(VF056)

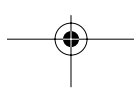
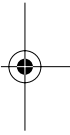
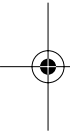
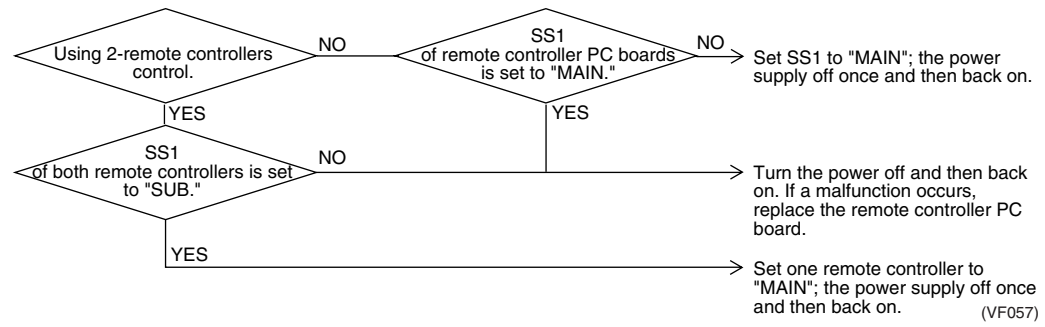


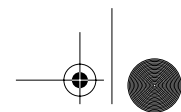
3.31 Malfunction of Transmission Between Master and Slave Remote Controllers

Remote Controller Display **UB**

- Supposed Causes**
- Malfunction of transmission between main and sub remote controller
 - Connection between sub remote controllers
 - Defect of remote controller PC board

Troubleshooting



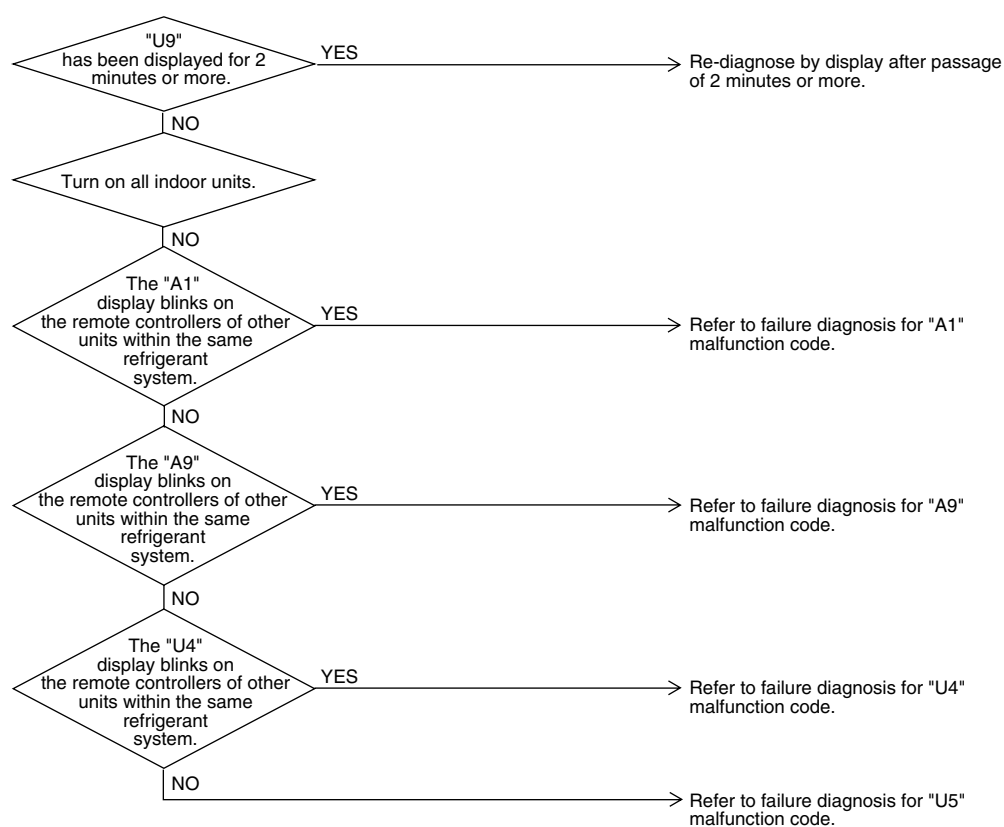


3.32 Malfunction of Transmission Between Indoor and Outdoor Units in the Same System

Remote Controller Display **U9**

- Supposed Causes**
- Malfunction of transmission within or outside of other system
 - Malfunction of electronic expansion valve in indoor unit of other system
 - Defect of PC board of indoor unit in other system
 - Improper connection of transmission wiring between indoor and outdoor unit

Troubleshooting



(VF058)

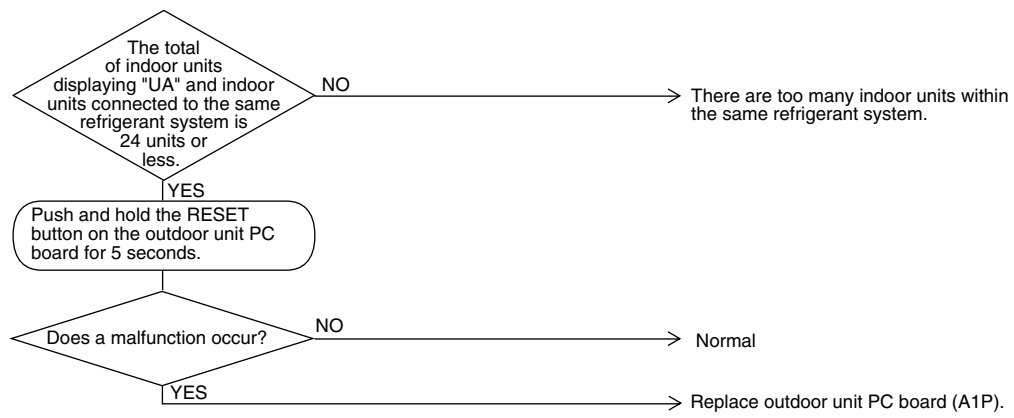


3.33 Excessive Number of Indoor Units

Remote Controller Display **UA**

- Supposed Causes**
- Excess of connected indoor units
 - Defect of outdoor unit PC board (A1P)

Troubleshooting



(VF059)

The number of indoor units that can be connected to a single outdoor unit system depends on the type of outdoor unit.

RSXY 5K : Max. 8 units

RSXY 8K : Max. 13 units

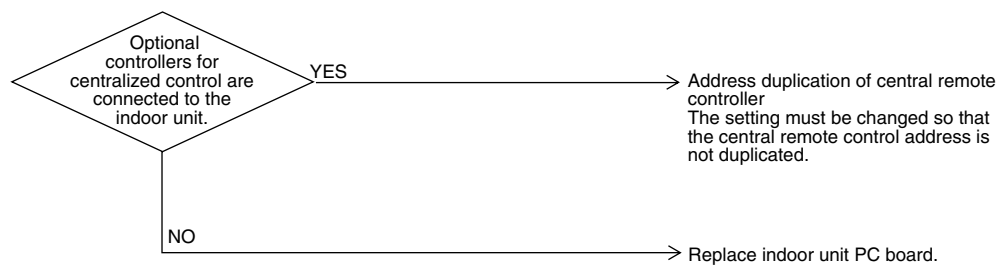
RSXY10K : Max. 16 units

3.34 Address Duplication of Central Remote Controller

Remote Controller Display **UC**

- Supposed Causes**
- Address duplication of central remote controller
 - Defect of indoor unit PC board

Troubleshooting



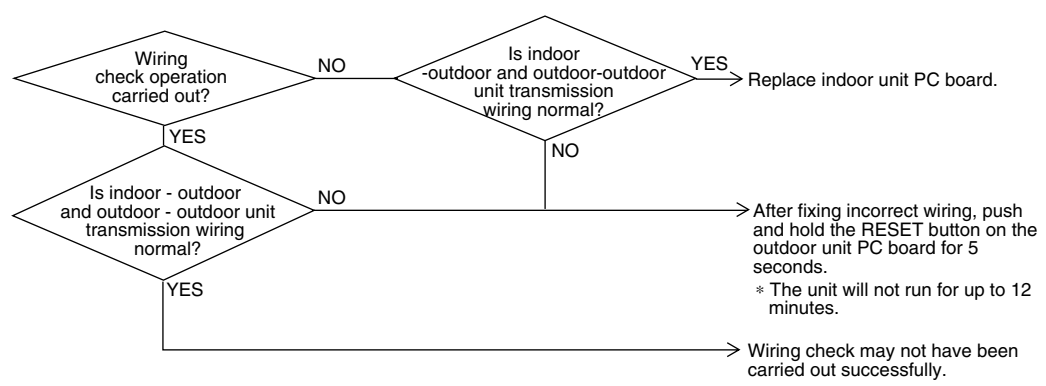
(VF060)

3.35 Refrigerant System not set, Incompatible Wiring/Piping

Remote Controller Display **UF**

- Supposed Causes**
- Improper connection of transmission wiring between outdoor unit and outdoor unit outside control adaptor
 - Failure to execute wiring check operation
 - Defect of indoor unit PC board

Troubleshooting



(VF061)

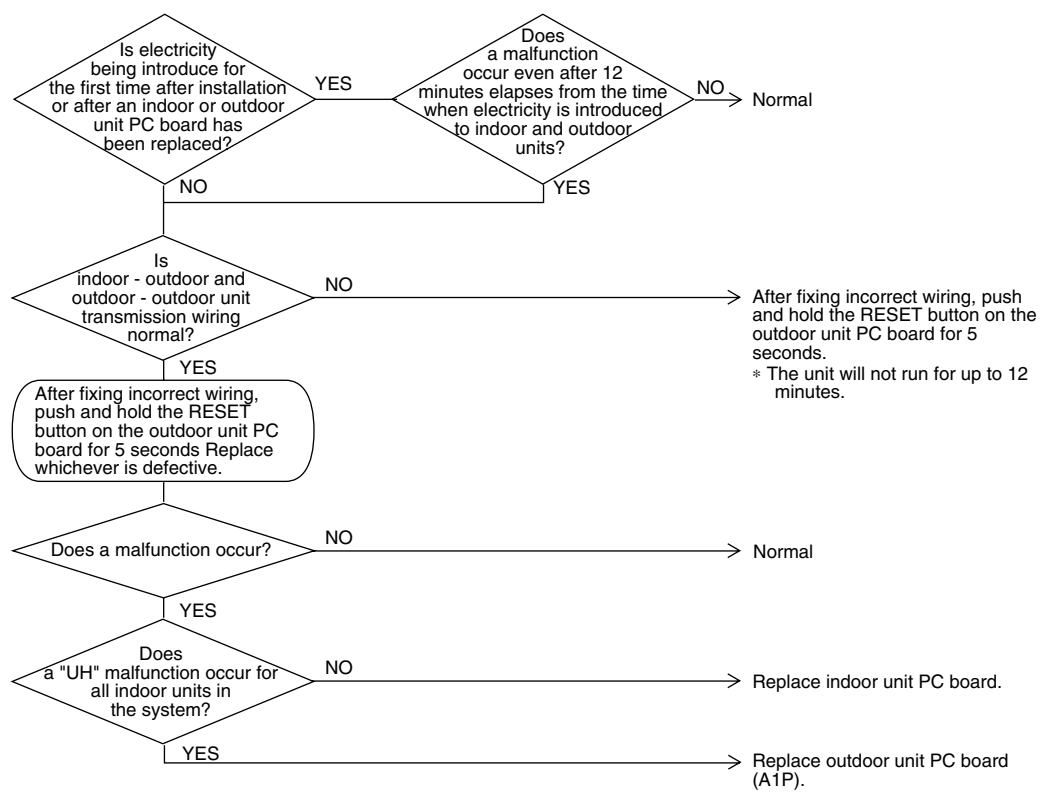
Wiring check may not be successful if carried out after the outdoor unit has been off for more than 12 hours, or if it is not carried out after running all connected indoor units in the fan mode for at least an hour.

3.36 Malfunction of System, Refrigerant System Address Undefined

Remote Controller Display **UH**

- Supposed Causes**
- Improper connection of transmission wiring between outdoor unit and outdoor unit outside control adaptor
 - Defect of indoor unit PC board
 - Defect of outdoor unit PC board (A1P)

Troubleshooting



(VF062)

4. Failure Diagnosis for Inverter System

4.1 Points of Diagnosis

The main causes for each malfunction code are given in the table below. (For details refer to the next page and those following.)

⊙ : Failure is probable

○ : Failure is possible

□ : Failure is improbable

— : Failure is impossible

Malfunction code	Contents of malfunction	Location of failure							Point of diagnosis
		Inverter		Compressor	Refrigerant system	Outdoor unit PC board	Other	Field cause	
		PC board power unit	Other						
L4	Radiator fin temperature rise	□	⊙	—	—	—	—	□	Is the intake port of the radiator fin clogged?
L5	Instantaneous over-current	○	—	⊙	□	—	—	—	Inspect the compressor.
L8	Electronic thermostat	□	—	⊙	○	—	—	—	Inspect the compressor and refrigerant system.
L9	Stall prevention	□	—	○	⊙	—	—	—	Inspect the compressor and refrigerant system.
LC	Malfunction of transmission between inverter PC board and outdoor unit PC board	○	⊙	—	—	□	—	—	Inspect the connection between the inverter PC board and outdoor unit PC board. Next, inspect the inverter PC board.
U2	Abnormal current/voltage	○	○	—	—	—	□	⊙	<ul style="list-style-type: none"> • Inspect the fuse on the inverter PC board. • Check the DC voltage.
P1	Over-ripple protection	○	○	—	—	—	—	○	<ul style="list-style-type: none"> • Open phase • Current/voltage imbalance • Defect of main circuit wiring
P4	Defect of radiator fin temperature sensor	○	□	—	—	—	—	—	Inspect the radiator fin thermistor.



4.2 How to use the Monitor Switch on the Inverter PC Board

The monitor lets you know the contents of the latest stop due to malfunction by LED display on the inverter PC Board. The inverter is equipped with a retry function that retries operation each time stop due to malfunction occurs, and malfunction is therefore not ascertained by merely entering the five minutes standby while retry is attempted the prescribed number of times. If the number of retry times is exceeded within 60 minutes, malfunction is ascertained, and the corresponding malfunction code is displayed on the indoor unit remote controller.

LED	A	1	2	3	4	Malfunction contents	Retry times
	●	●	●	●	●	Normal	
	●	●	●	●	○	Malfunction of fin thermistor	3
	●	○	○	●	●	Sensor malfunction	0
	●	○	●	●	○	Insufficient voltage	3
	●	●	●	○	●	Instantaneous over-current	3
	●	●	○	○	○	Electronic thermistor	3
	●	○	○	○	○	Stall prevention	3
	●	●	○	●	●	Open phase detection	3
	●	●	●	●	●	Malfunction of microcomputer	Unlimited

● : Blink

○ : On

● : Off



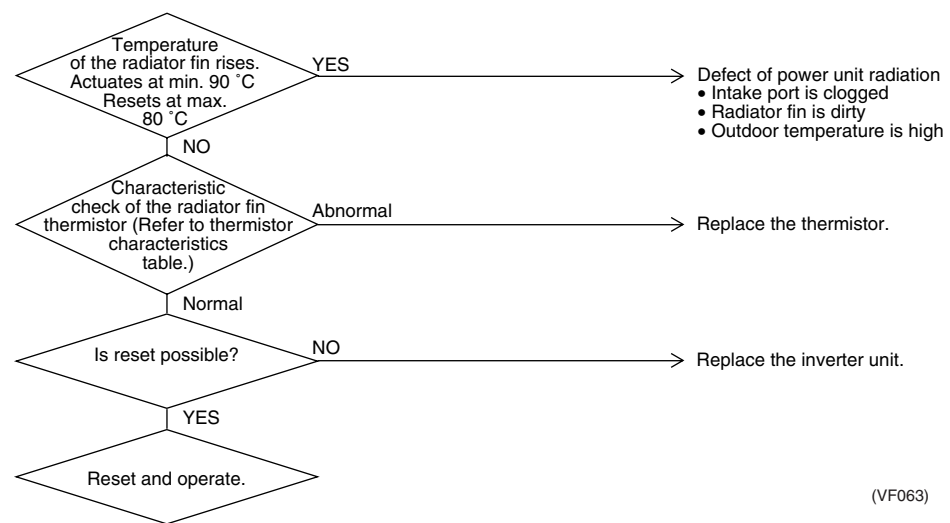
5. Troubleshooting (Inverter)

5.1 Outdoor Unit: Malfunction of Inverter Radiating Fin Temperature Rise

Remote Controller **L4**
Display

- Supposed Causes**
- Actuation of fin thermal (Actuates at min. 90°C and resets at max. 80°C)
 - Defect of inverter PC board
 - Defect of fin thermistor

Troubleshooting



(VF063)

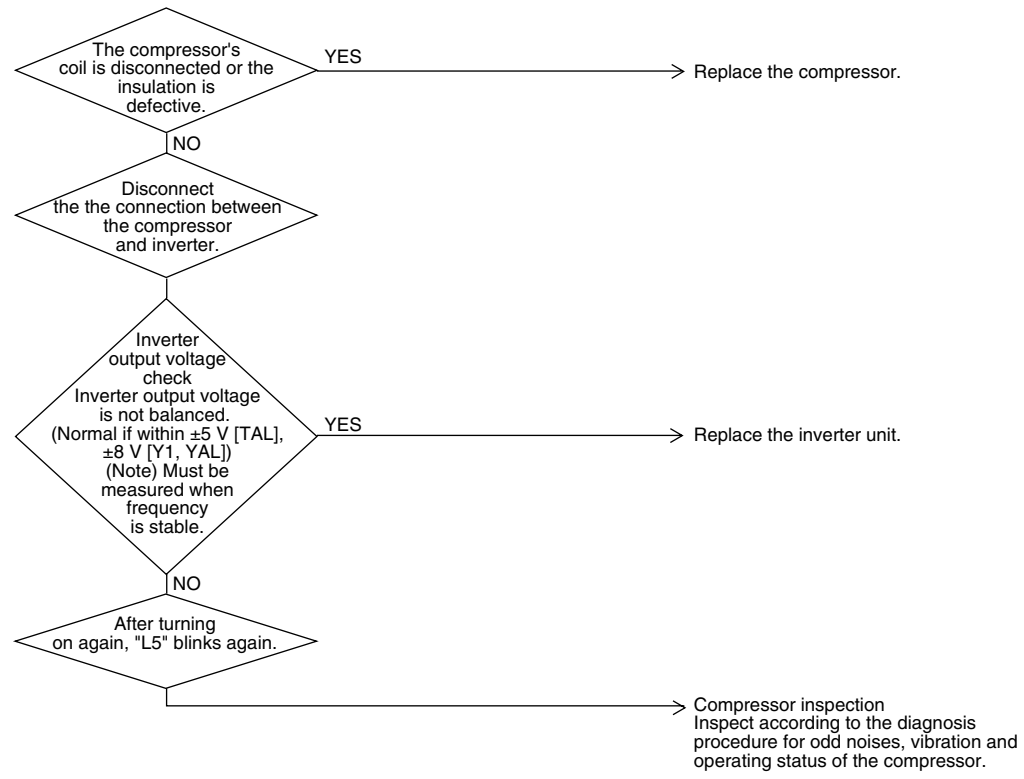


5.2 Outdoor Unit: Inverter Instantaneous Over-Current

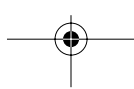
Remote Controller Display **L5**

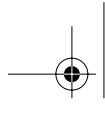
- Supposed Causes**
- Defect of compressor coil (disconnected, defective insulation)
 - Compressor start-up malfunction (mechanical lock)
 - Defect of inverter unit

Troubleshooting Compressor inspection



(VF064)





SiE-05C

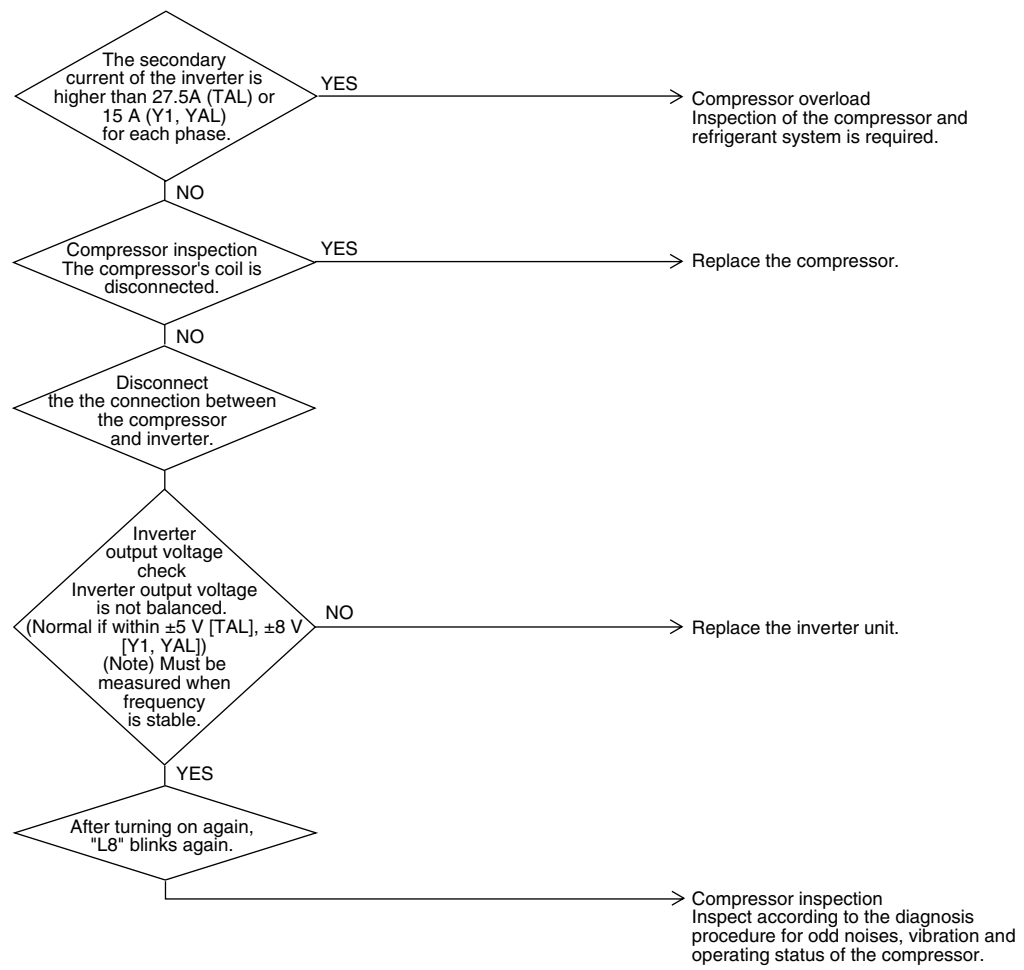
Troubleshooting (Inverter)

5.3 Outdoor Unit: Inverter Thermostat Sensor, Compressor Overload

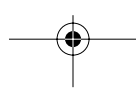
Remote Controller Display **L8**

- Supposed Causes
- Compressor overload
 - Compressor coil disconnected
 - Defect of inverter unit

Troubleshooting Output current check



(VF065)



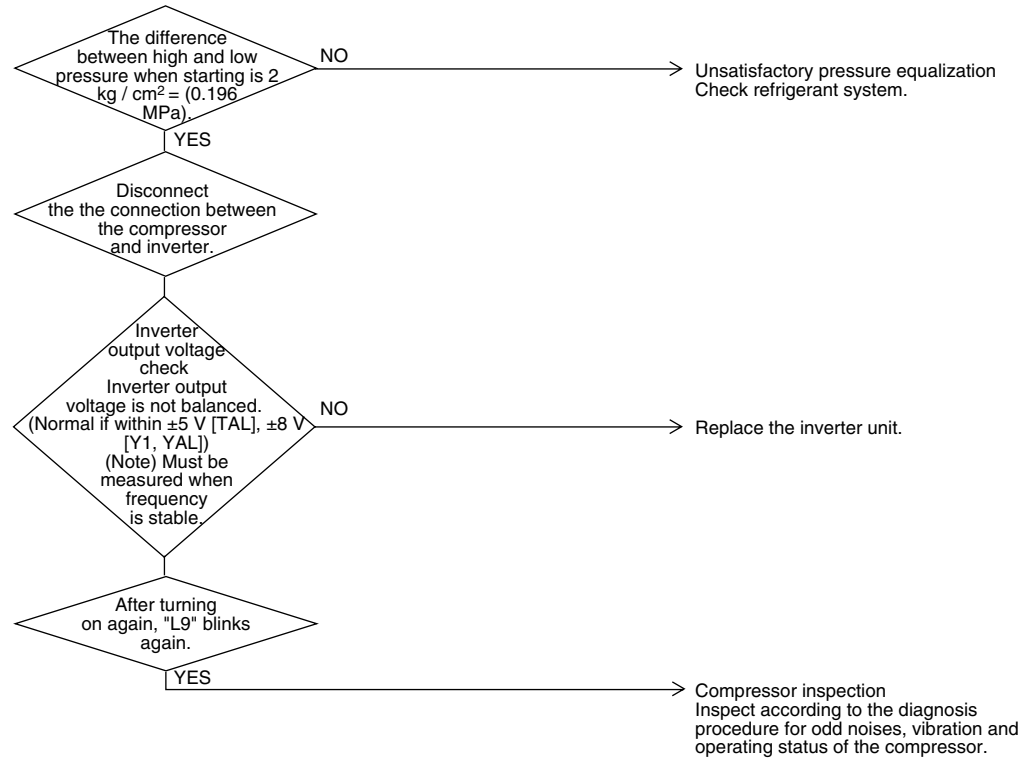


5.4 Outdoor Unit: Inverter Stall Prevention, Compressor Lock

Remote Controller Display **L9**

- Supposed Causes
- Defect of compressor
 - Pressure differential start
 - Defect of inverter unit

Troubleshooting



(VF066)



5.5 Outdoor Unit: Malfunction of Transmission between Inverter and Control PC Board

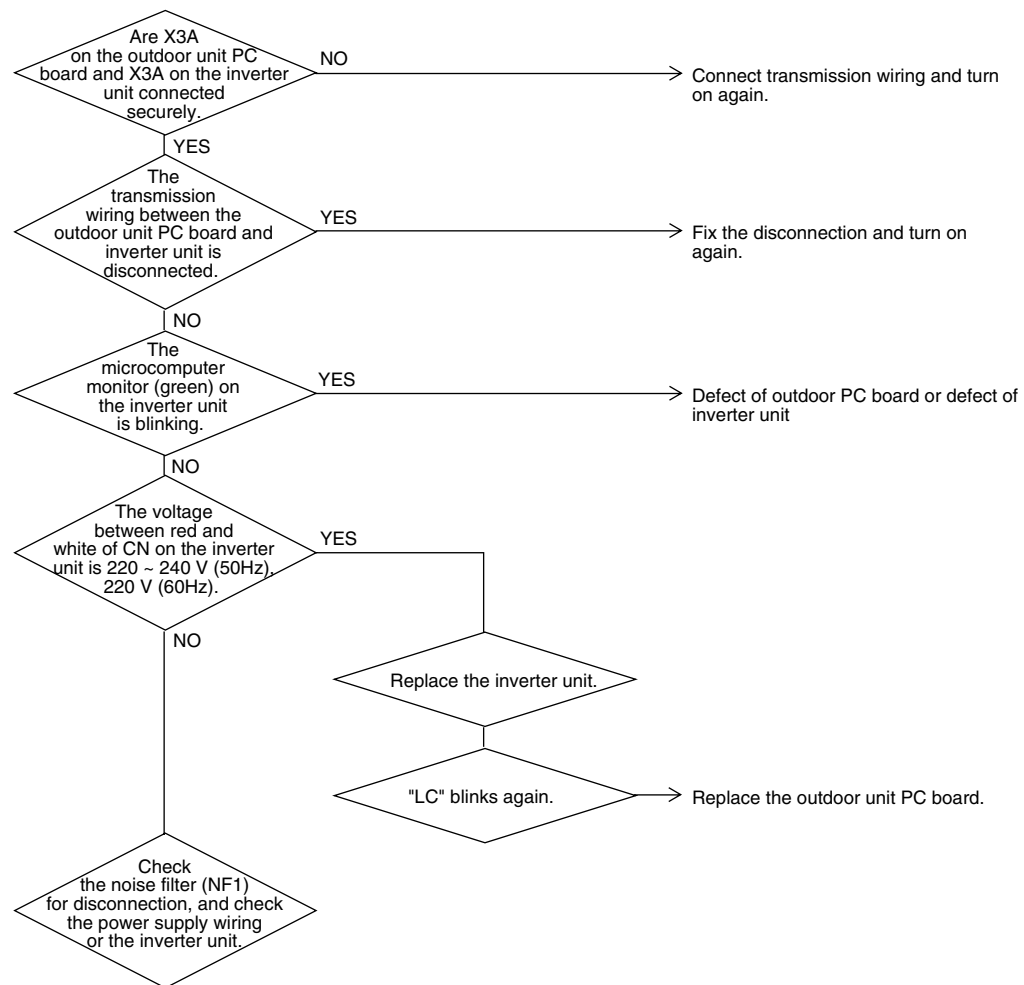
Remote Controller Display

LC

Supposed Causes

- Malfunction of connection between the inverter unit and outdoor unit PC board
- Defect of outdoor unit PC board (transmission section)
- Defect of inverter unit
- Defect of noise filter (NF1)

Troubleshooting



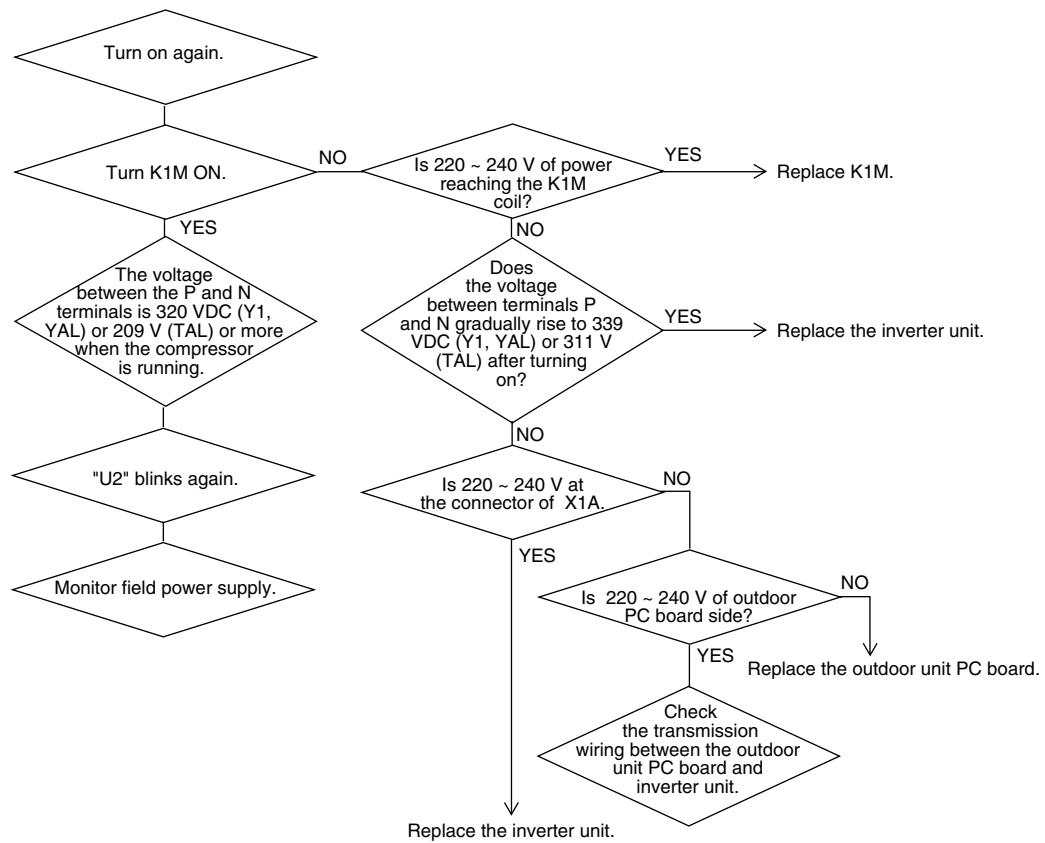
(VF067)

5.6 Power Supply Insufficient or Instantaneous Failure

Remote Controller Display **U2**

- Supposed Causes**
- Power supply insufficient
 - Instantaneous failure
 - Open phase
 - Defect of inverter unit
 - Defect of outdoor PC board
 - Defect of K1M.
 - Main circuit wiring defect

Troubleshooting



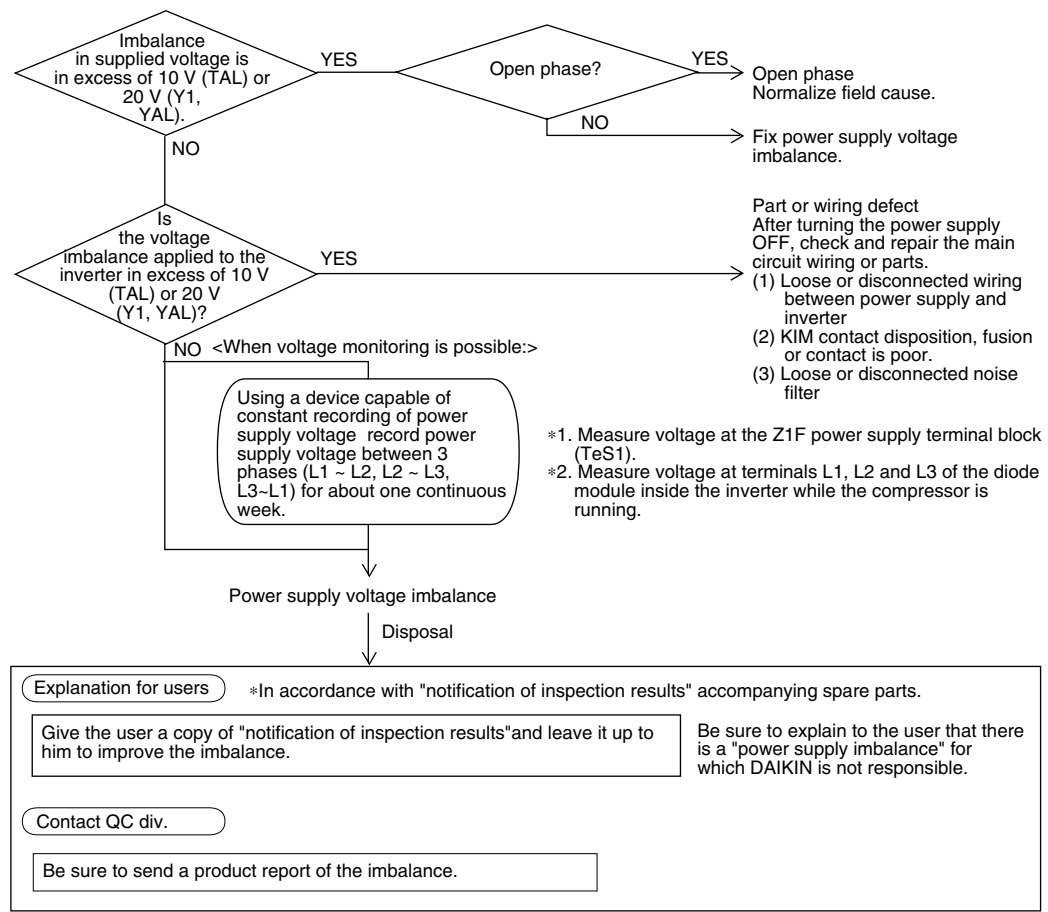
(VF068)

5.7 Outdoor Unit: Malfunction of Inverter Radiating Fin Temperature Rise Sensor

Remote Controller Display **P1**

- Supposed Causes**
- Open phase
 - Voltage imbalance between phases
 - Defect of main circuit capacitor
 - Defect of inverter unit
 - Defect of K1M
 - Improper main circuit wiring

Troubleshooting



(VF069)

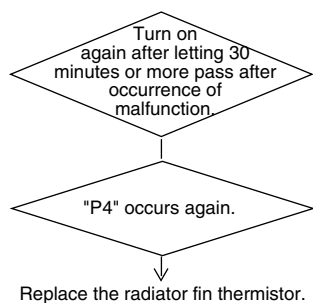


5.8 Outdoor Unit: Inverter Over-Ripple Protection

Remote Controller Display **P4**

- Supposed Causes
- Defect of radiator fin temperature sensor
 - Defect of inverter unit

Troubleshooting



(VF070)



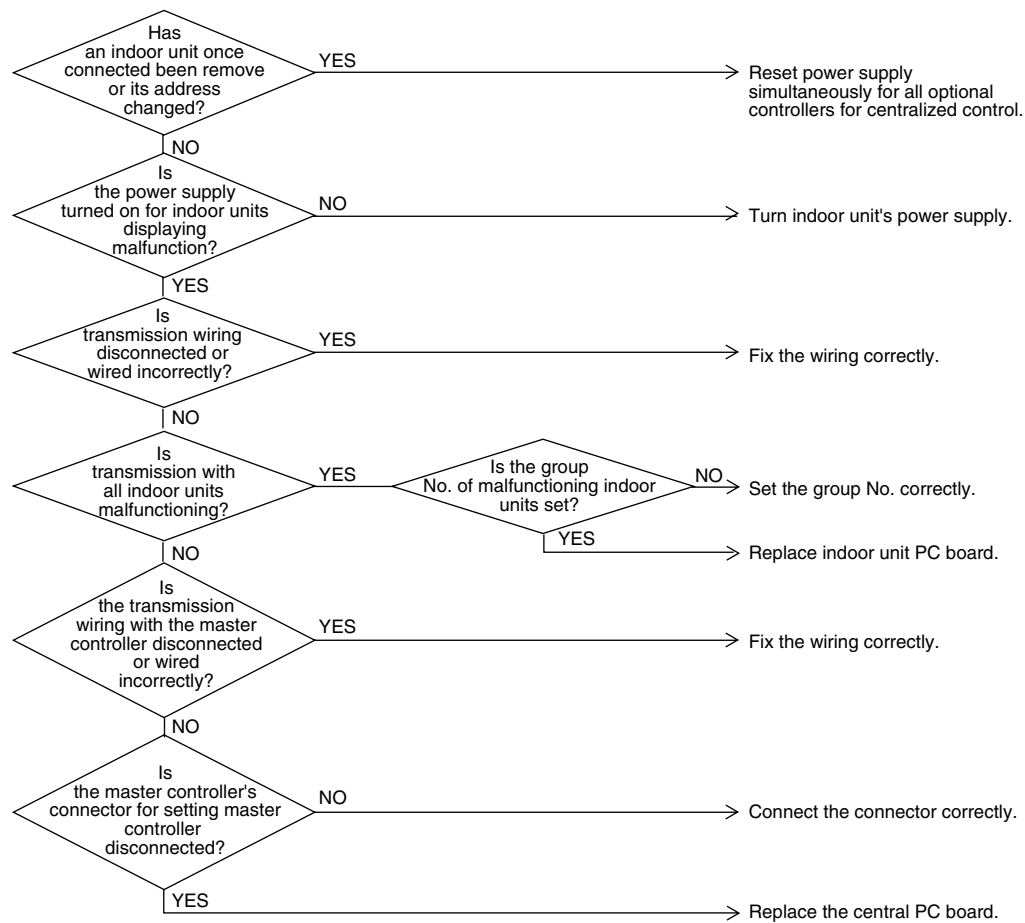
6. Troubleshooting (OP: Central Remote Controller)

6.1 Malfunction of Transmission between Central Remote Controller and Indoor Unit

Remote Controller Display **UE**

- Supposed Causes**
- Malfunction of transmission between optional controllers for centralized control and indoor unit
 - Connector for setting master controller is disconnected.
 - Failure of PC board for central remote controller
 - Defect of indoor unit PC board

Troubleshooting



(VF071)



Troubleshooting (OP: Central Remote Controller)

SI-E-05C

6.2 PC Board Defect

Remote Controller Display **M1**

Supposed Causes ■ Defect of central remote controller PC board

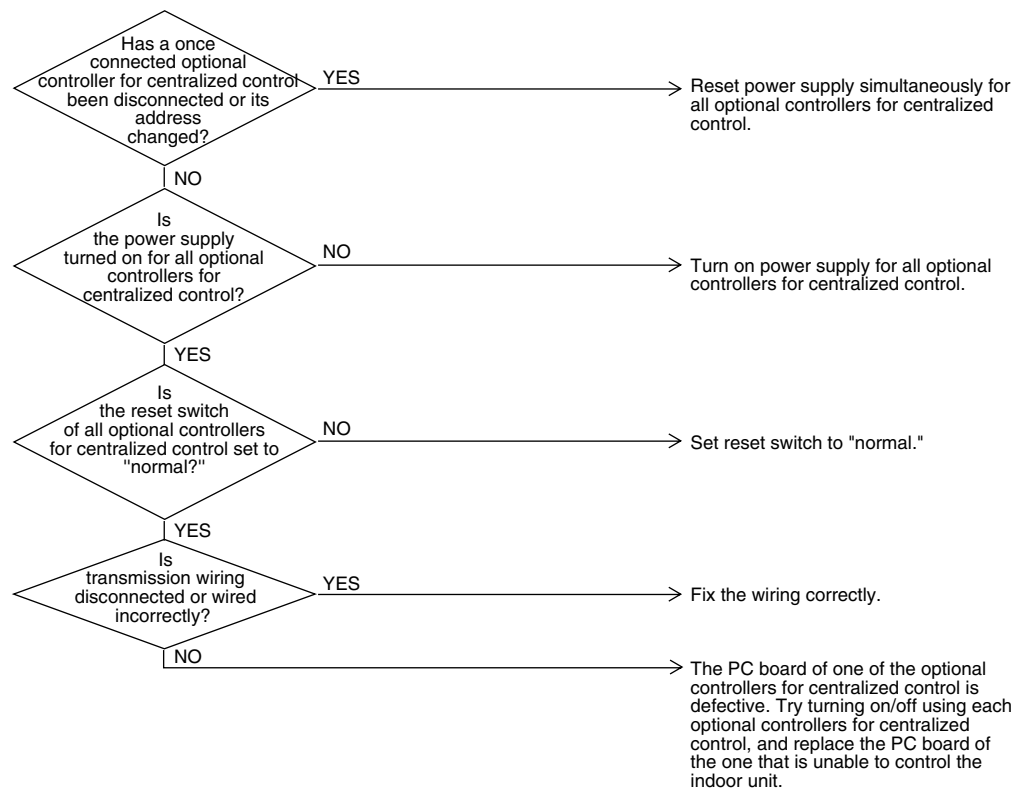
Troubleshooting Replace the central remote controller PC board.

6.3 Malfunction of Transmission between Optional Controllers for Centralized Control

Remote Controller Display **M8**

Supposed Causes ■ Malfunction of transmission between optional controllers for centralized control
■ Defect of PC board of optional controllers for centralized control

Troubleshooting



(VF072)

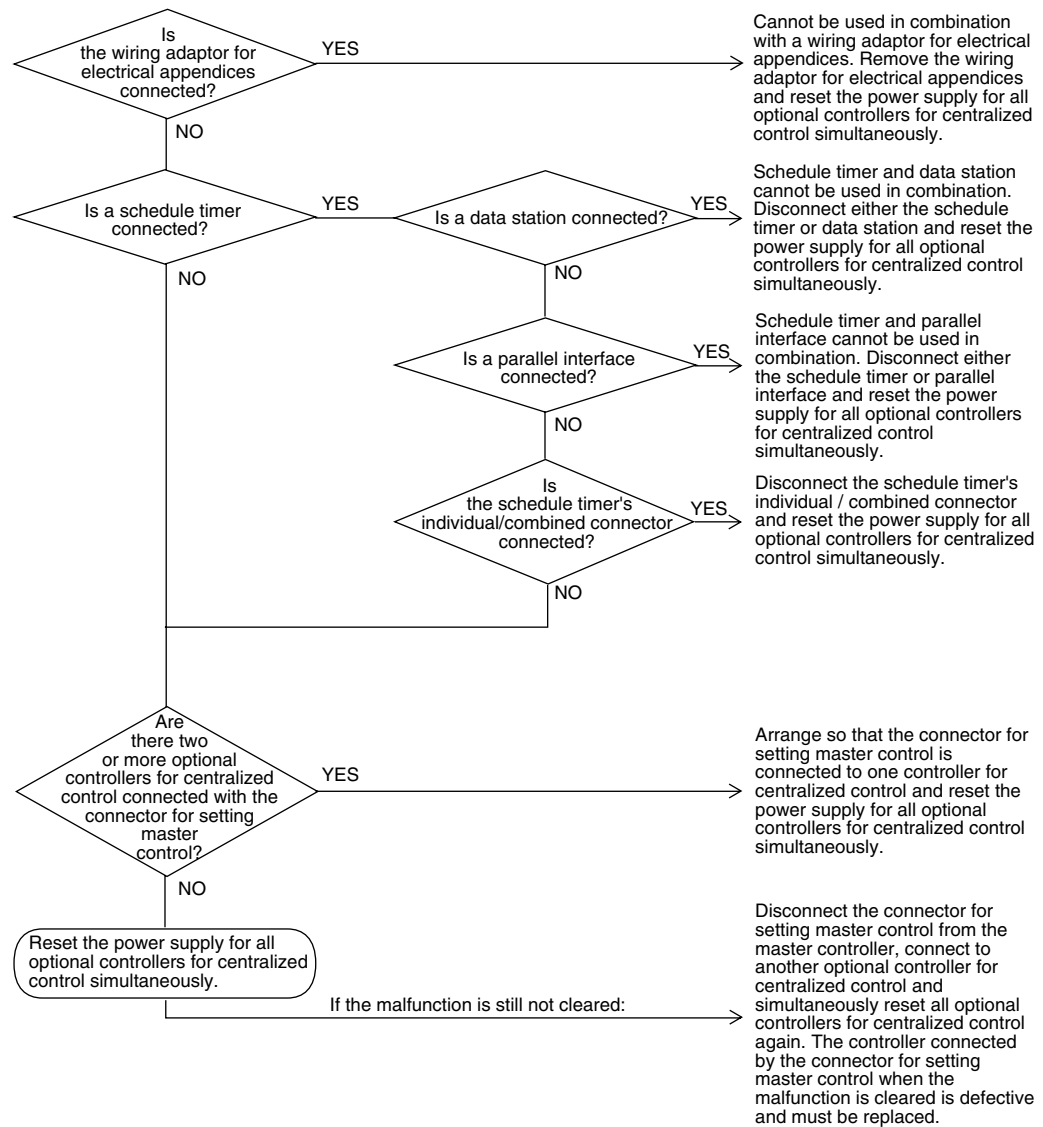


6.4 Improper Combination of Optional Controllers for Centralized Control

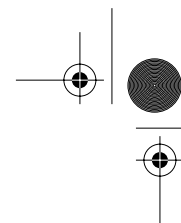
Remote Controller Display **MA**

- Supposed Causes**
- Improper combination of optional controllers for centralized control
 - More than one master controller is connected
 - Defect of PC board of optional controller for centralized control

Troubleshooting



(VF073)

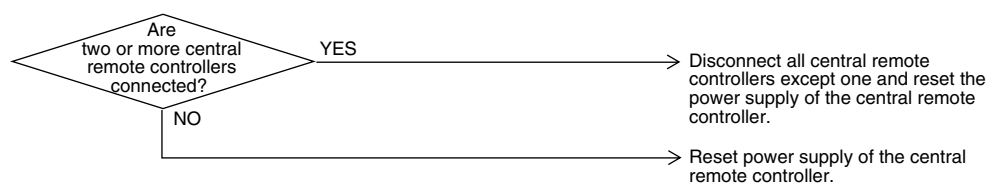


6.5 Address Duplication, Improper Setting

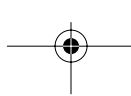
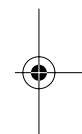
Remote Controller **RC**
Display

Supposed Causes ■ Address duplication of central remote controller

Troubleshooting



(VF074)



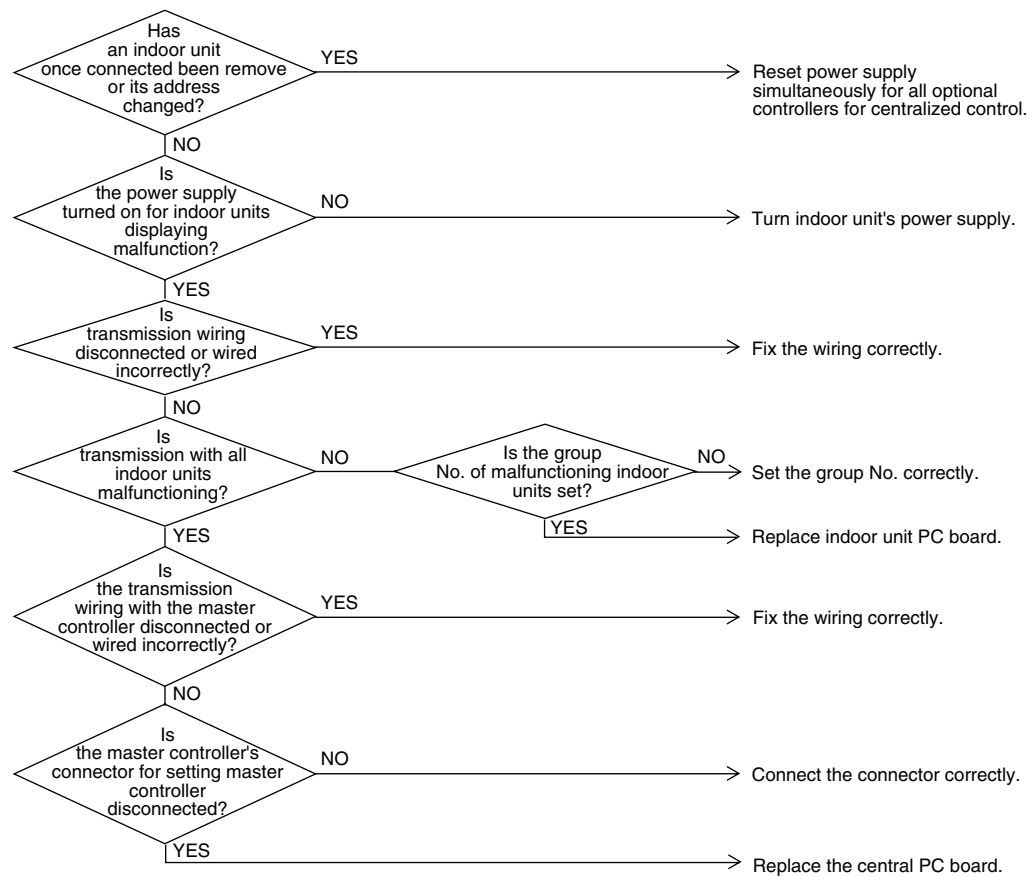
7. Troubleshooting (OP: Schedule Timer)

7.1 Malfunction of Transmission between Central Remote Controller and Indoor Unit

Remote Controller Display **UE**

- Supposed Causes**
- Malfunction of transmission between central remote controller and indoor unit
 - Disconnection of connector for setting master controller (or individual/combined switching connector)
 - Defect of schedule timer PC board
 - Defect of indoor unit PC board

Troubleshooting



(VF075)

7.2 PC Board Defect

Remote Controller Display **M1**

Supposed Causes ■ Defect of schedule timer PC board

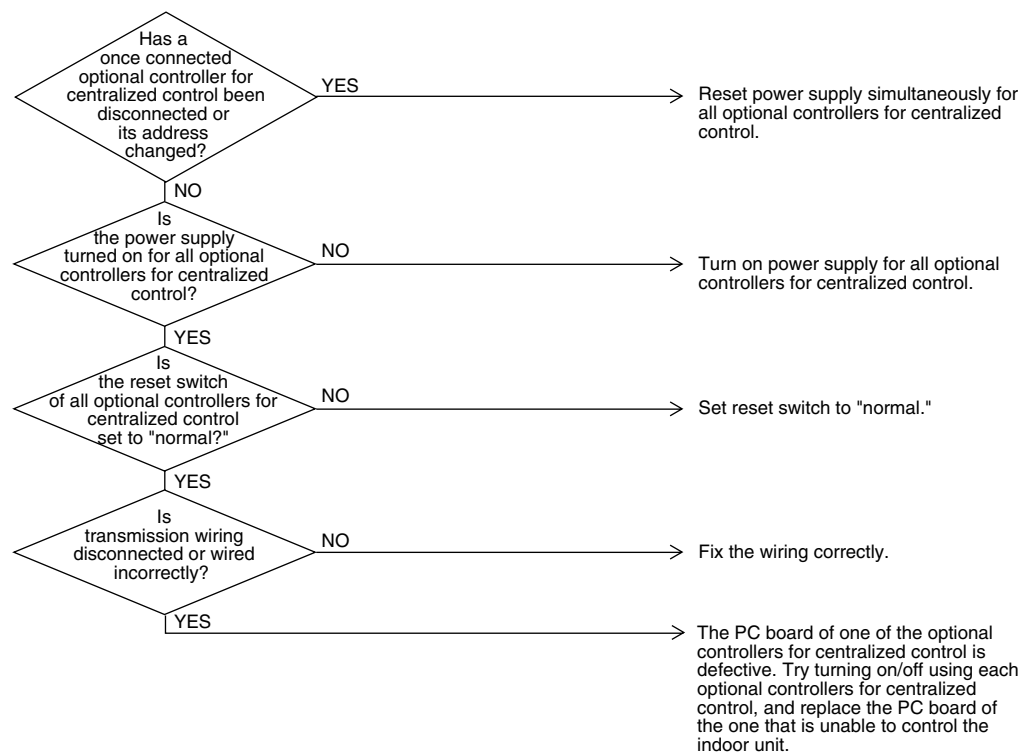
Troubleshooting Replace the schedule timer PC board.

7.3 Malfunction of Transmission between Optional Controllers for Centralized Control

Remote Controller Display **M8**

Supposed Causes ■ Malfunction of transmission between optional controllers for centralized control
 ■ Defect of PC board of optional controllers for centralized control

Troubleshooting



(VF076)

7.4 Improper Combination of Optional Controllers for Centralized Control

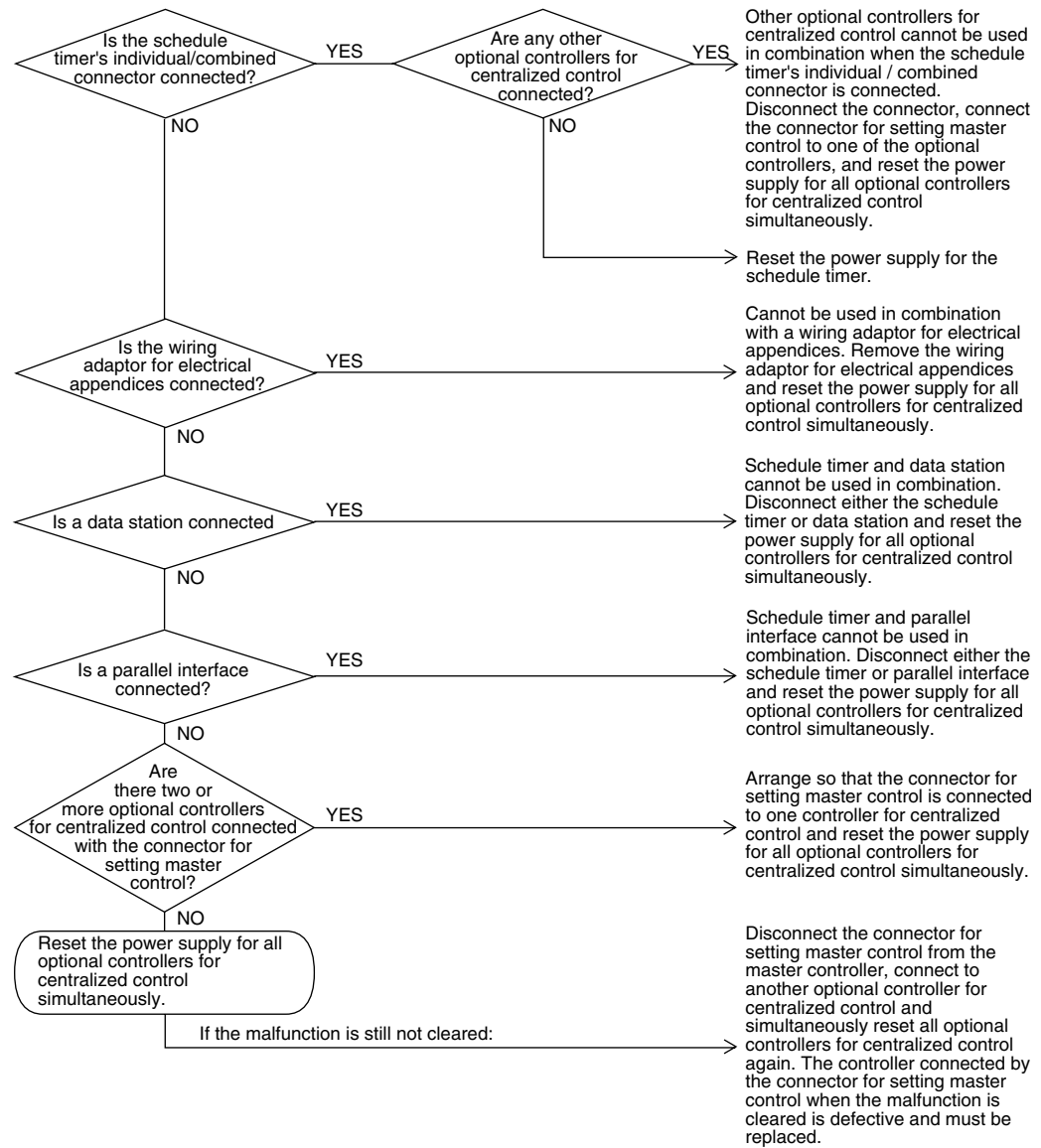
Remote Controller Display

MA

Supposed Causes

- Improper combination of optional controllers for centralized control
- More than one master controller is connected.
- Defect of PC board of optional controller for centralized control

Troubleshooting



(VF077)



7.5 Address Duplication, Improper Setting

Remote Controller
Display

MC

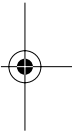
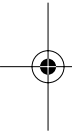
Supposed Causes

- Address duplication of optional controller for centralized control

Troubleshooting



(VF078)



8. Troubleshooting (OP: Unified ON/OFF Controller)

8.1 Operation Lamp Blinks

Remote Controller Display Operation lamp blinks

- Supposed Causes**
- Malfunction of transmission between optional controller and indoor unit
 - Connector for setting master controller is disconnected
 - Defect of unified ON/OFF controller
 - Defect of indoor unit PC board
 - Malfunction of air conditioner

Troubleshooting



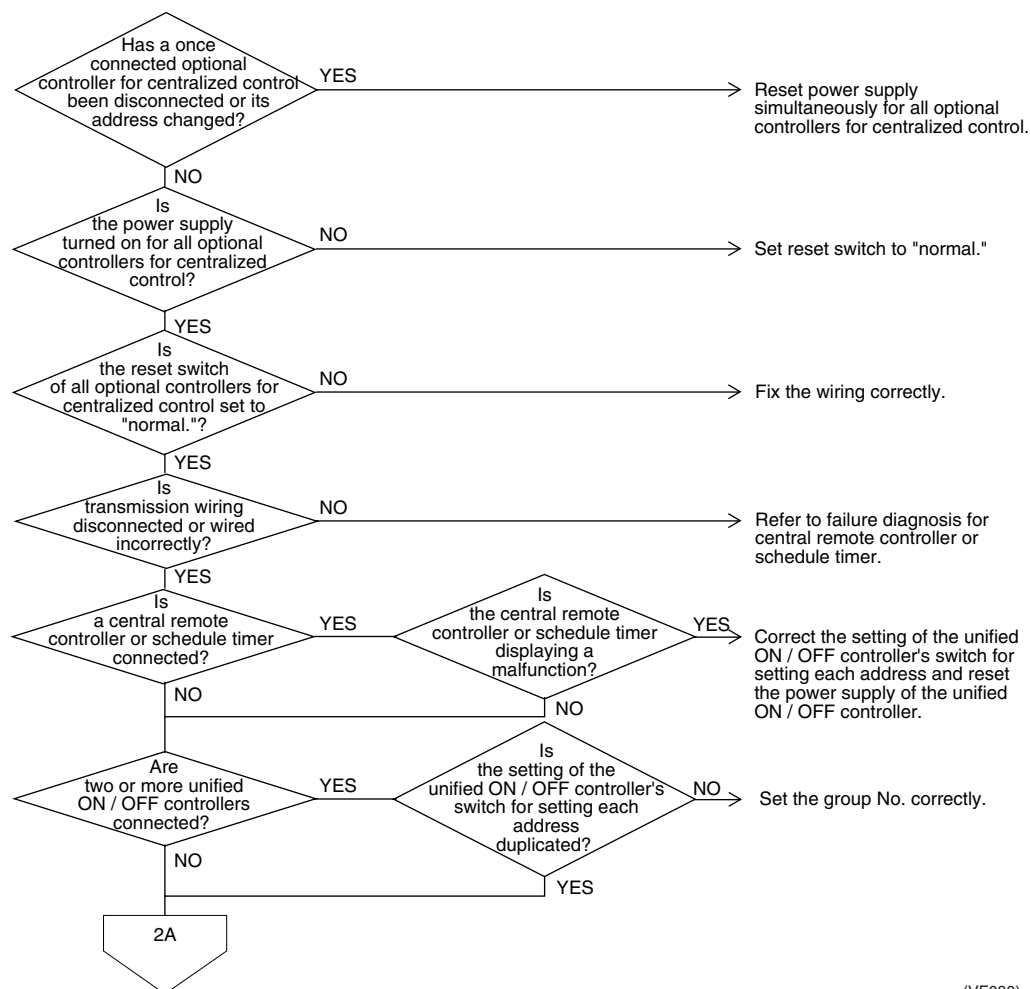
(VF079)

8.2 Display “Under Host Computer Integrate Control” Blinks (Repeats Single Blink)

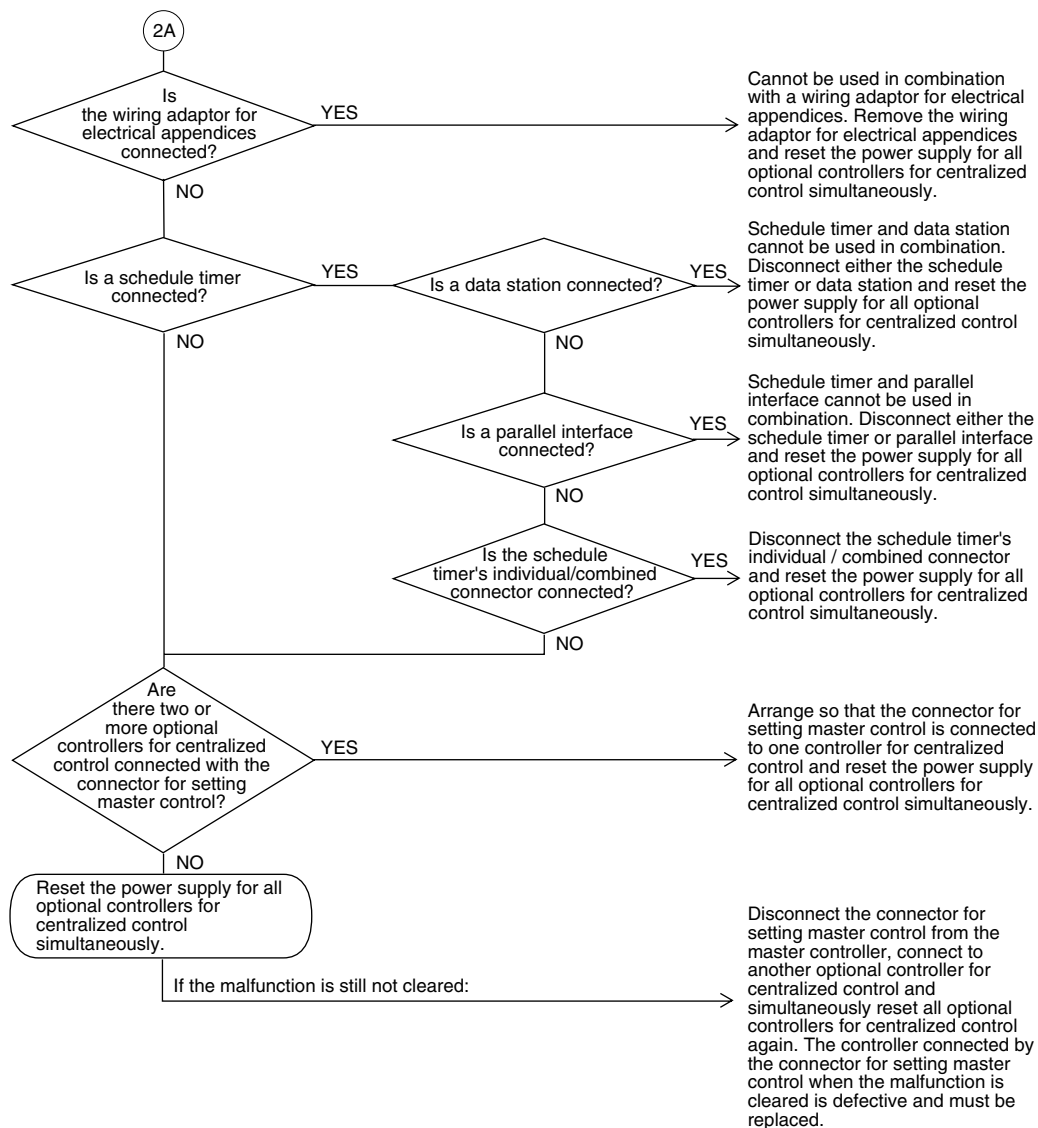
Remote Controller Display “under host computer integrated control” (Repeats single blink)

- Supposed Causes**
- Address duplication of central remote controller
 - Improper combination of optional controllers for centralized control
 - Connection of more than one master controller
 - Malfunction of transmission between optional controllers for centralized control
 - Defect of PC board of optional controllers for centralized control

Troubleshooting



(VF080)



(VF081)

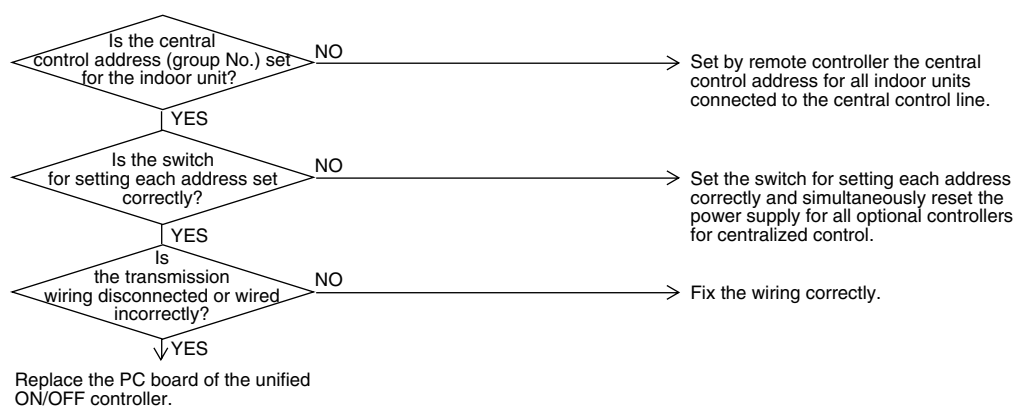


8.3 Display “Under Host Computer Integrate Control” Blinks (Repeats Double Blink)

Remote Controller Display “under host computer integrated control” (Repeats double blink)

- Supposed Causes**
- Central control address (group No.) is not set for indoor unit.
 - Improper address setting
 - Improper wiring of transmission wiring

Troubleshooting



(VF082)



9. Appendix

9.1 Precaution

9.1.1 Precautions When Replacing K Series PC Boards

If you replace the indoor or outside unit PC board, push and hold the RESET button on the outdoor unit PC Board for 5 seconds.

- In this case, the unit will not run for up to 12 minutes.

Precautions when replacing indoor unit PC board

When replacing the indoor unit PC board, the following contents are factory set. Change the settings if necessary.

1. Field set contents (dirty filter, stop input from outside, etc.)

- ◆ Change settings with the remote controller.

- ◆ When using group control or setting by individual indoor units, the "indoor unit No." before and after changing the PC board may differ.

Set after checking the indoor unit No.

2. Central address

Change setting with the remote controller.

3. Capacity display

A capacity setting adaptor must be installed for all models.

*Fan phase control is for FXYF, FXYH, FXYA only.

- Precautions when replacing outdoor unit PC board

When replacing the outdoor unit PC board, set the following settings again.

1. Field set contents (setting mode 1)

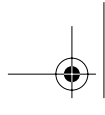
Set cool/heat selection, low noise and sequential start again.

2. Setting mode 2

Change the TC setting, TE setting and defrost setting as required.

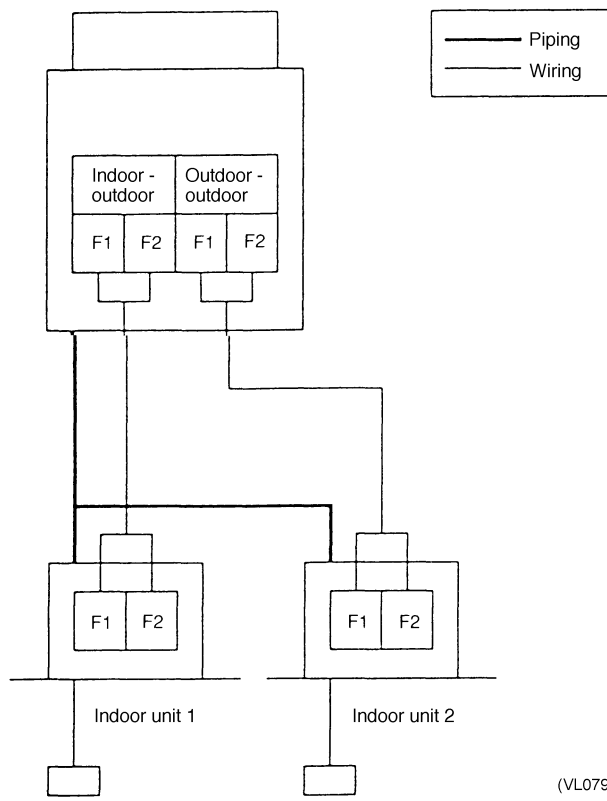
9.1.2 Precautions Concerning the Remote Controller's Mode No.

Mode numbers that are not in the list but can be set may be displayed by the remote controller. Do not change settings not included in the list. If so, we may not be able to guarantee operation.



9.2 Typical Wiring Mistakes

One of the indoor units is connected to outdoor-to-outdoor transmission terminals

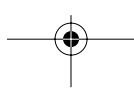


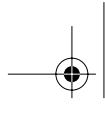
Installation / test operation

Indoor unit 1	Normal
Indoor unit 2	UF malfunction

Other

Indoor unit 1	Normal
Indoor unit 2	U4 malfunction or no malfunction display

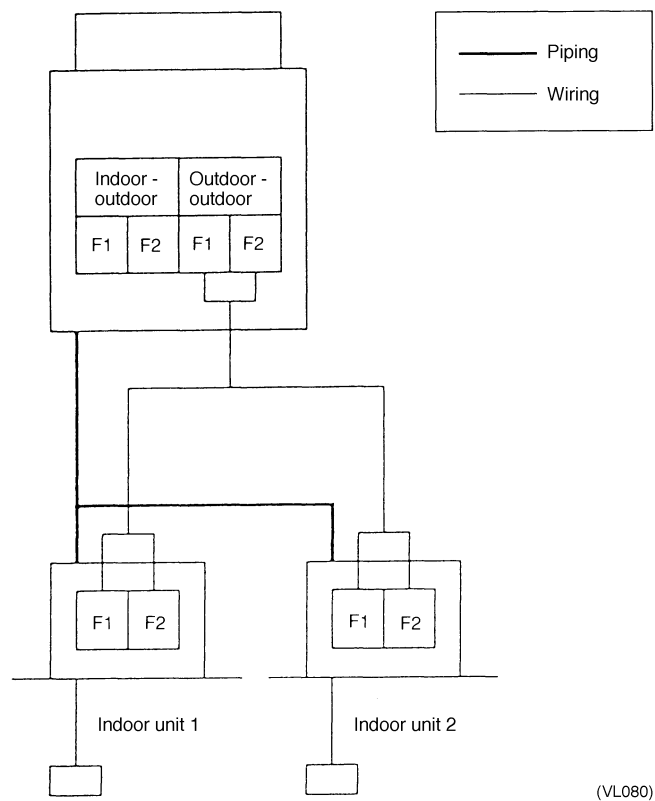




SiE-05C

Appendix

**All Indoor Units
Connected to the
Outdoor-to-
Outdoor Unit
Terminal**

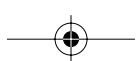


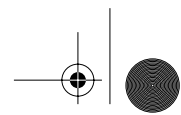
Installation / test operation

Indoor unit 1	UF malfunction
Indoor unit 2	

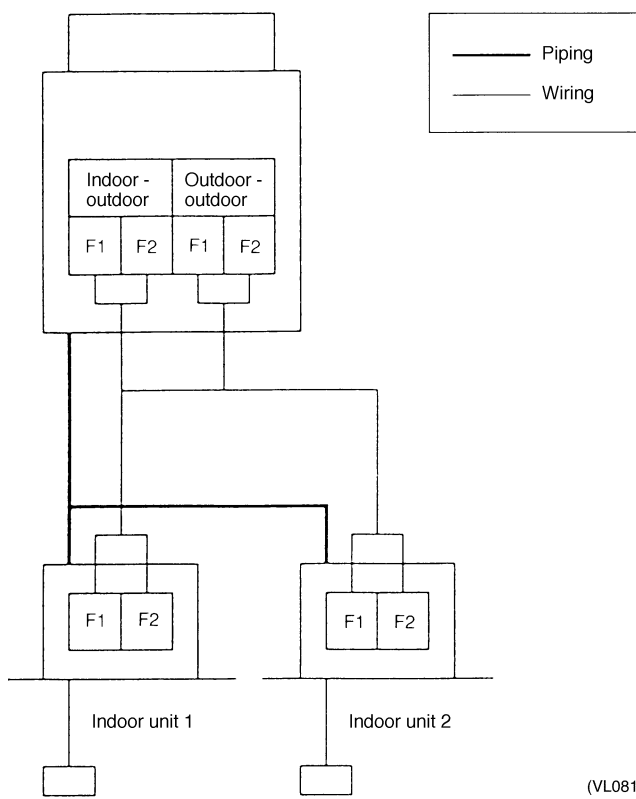
Other

Indoor unit 1	U4 malfunction or no malfunction display
Indoor unit 2	



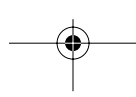
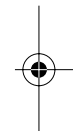
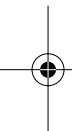


**All Indoor Units
Connected to
Indoor-to-Outdoor
and Outdoor-to-
Outdoor Unit
Terminals**



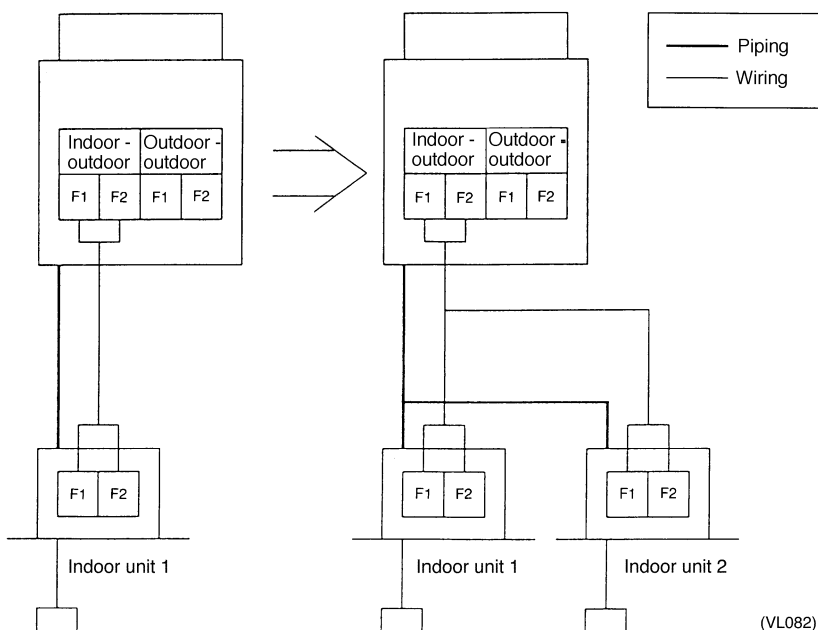
Installation / test operation

Indoor unit 1	U4 malfunction
Indoor unit 2	





Extended Indoor Unit



10 min. after turning power on

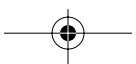
Indoor unit 1	Normal
Indoor unit 2	U4 malfunction



Push and hold RESET button for 5 sec.

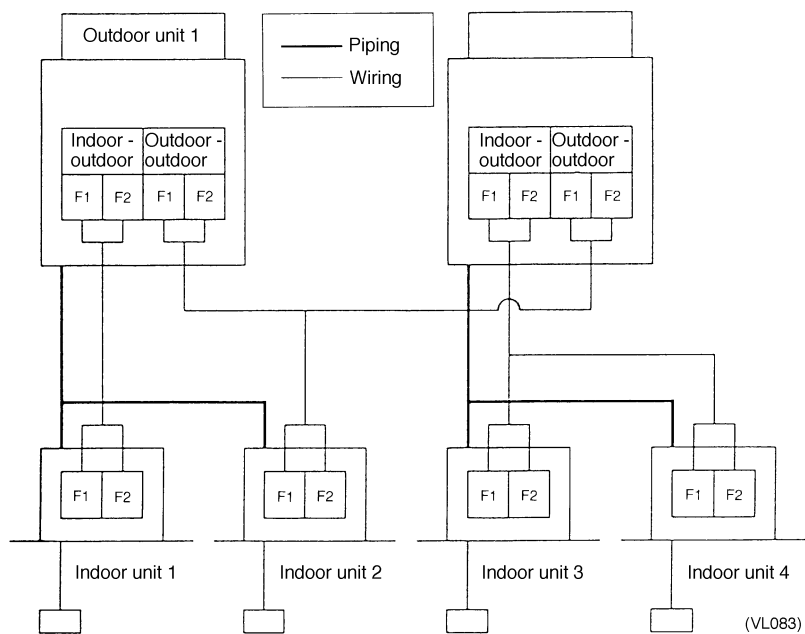
↓ After 12 minutes elapse

Indoor unit 1	Normal
Indoor unit 2	Normal





One of the indoor units of outdoor unit 1 is connected to outdoor-to-outdoor transmission terminals

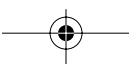


Installation / test operation

Indoor unit 1	Normal
Indoor unit 2	UF malfunction
Indoor unit 3	Normal
Indoor unit 4	Normal

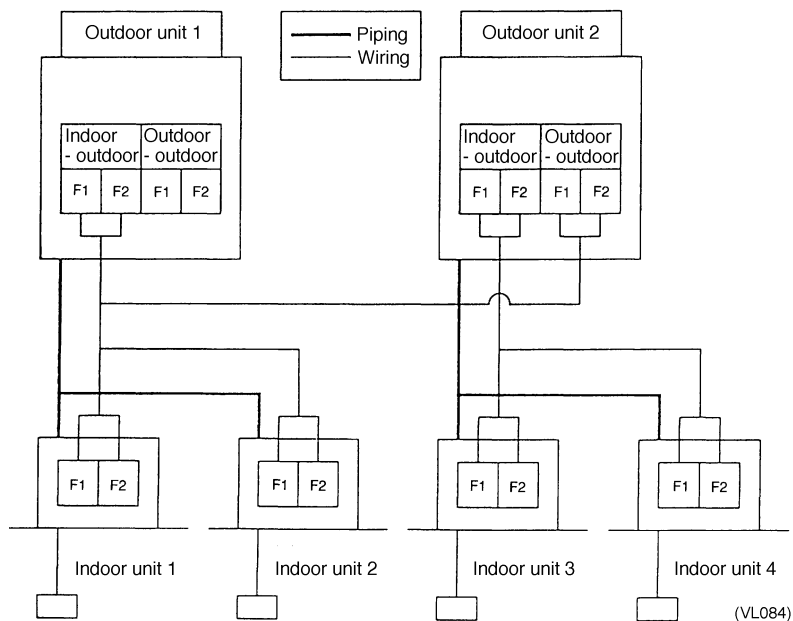
Other

Indoor unit 1	Normal
Indoor unit 2	U4 malfunction
Indoor unit 3	Normal
Indoor unit 4	Normal



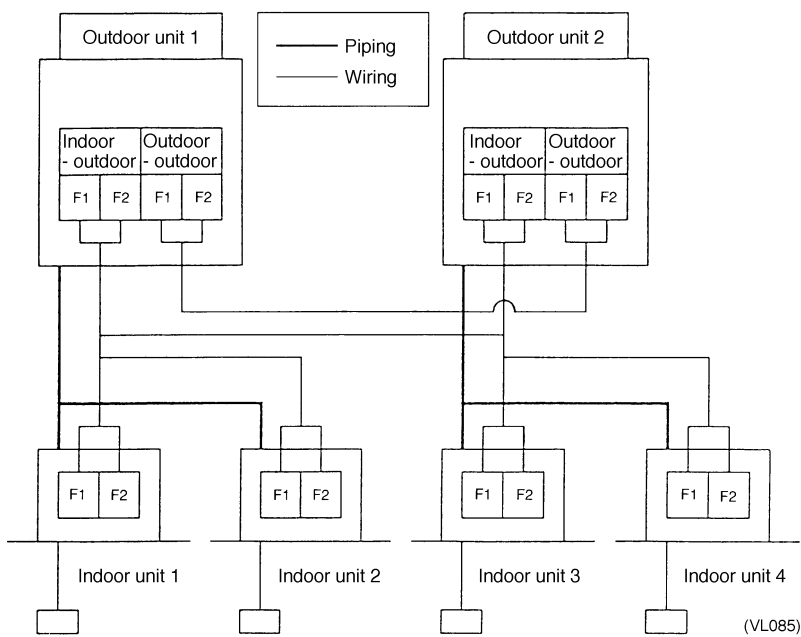


The indoor-to-outdoor terminal of outdoor unit 1 and the outdoor-to-outdoor terminal of outdoor unit 2 are connected

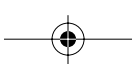


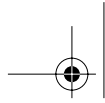
Indoor unit 1	Normal
Indoor unit 2	Normal
Indoor unit 3	UH malfunction
Indoor unit 4	UH malfunction

The indoor-to-outdoor terminals of outdoor units 1 and 2 are connected



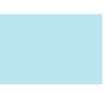
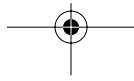
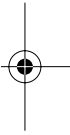
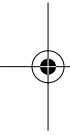
Indoor unit 1	UH malfunction
Indoor unit 2	
Indoor unit 3	
Indoor unit 4	

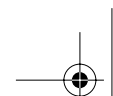




Appendix

SI-E-05C





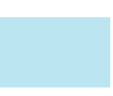
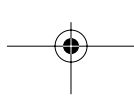
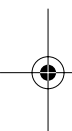
SiE-05C

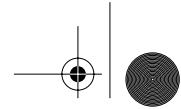
Part 5

General Information

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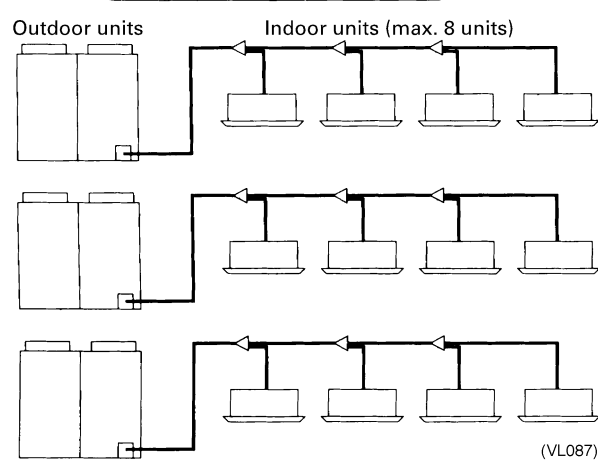


1. Features of the VRV PLUS Series

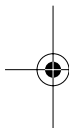
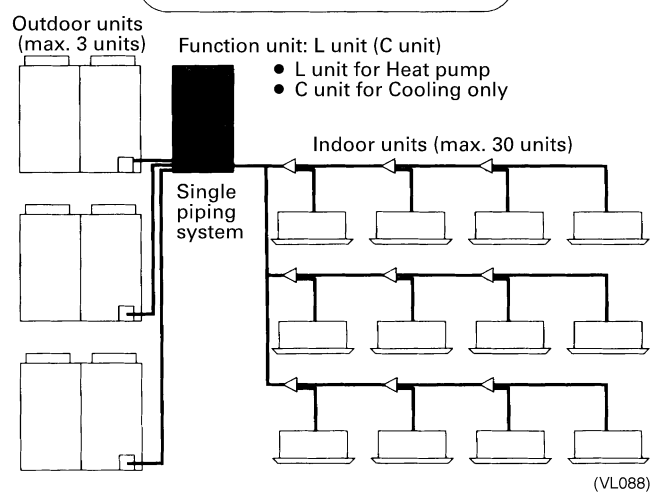
1.1 Improved Piping System

A newly developed function unit realizes a single piping system for the VRV PLUS Series. The series is designed for use with both heat pump system and heat recovery system type outdoor units. Reduction of piping not only aids users and designers, but facilitates installation to dramatically reduce the amount of time and labor required for connection and test operation.

Existing

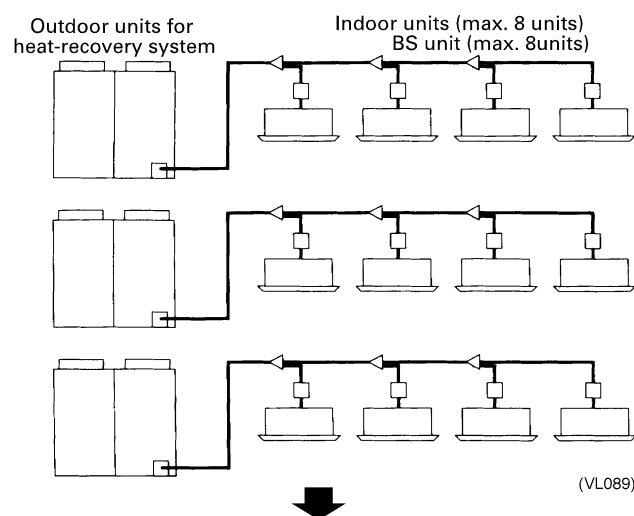


Improved Piping System

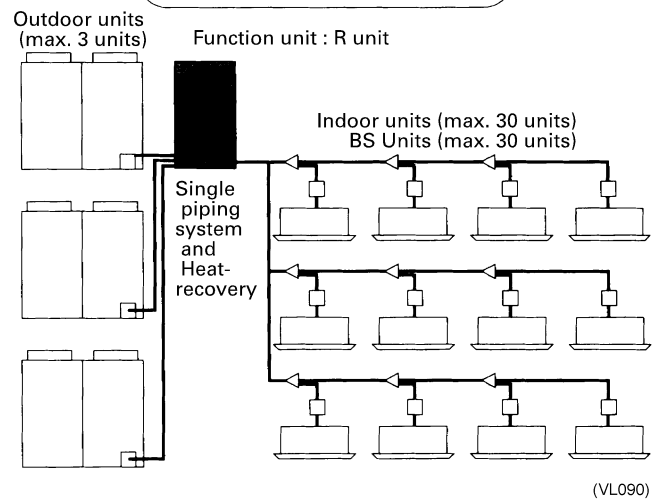




Existing

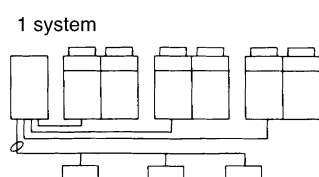
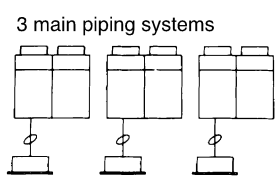


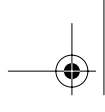
Improved Piping System



Product Features

- Saves Labor and Space
Offers 30% reduction of refrigerant piping work cost.



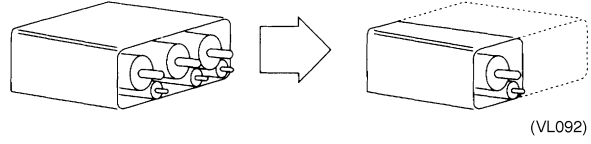


Features of the VRV PLUS Series

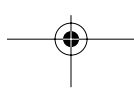
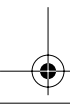
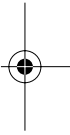
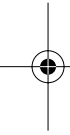
SI-E-05C

Offers approx. 70% reduction of pipe shaft and space.

Reduction of 6 main liquid and gas pipes to 2 pipes.

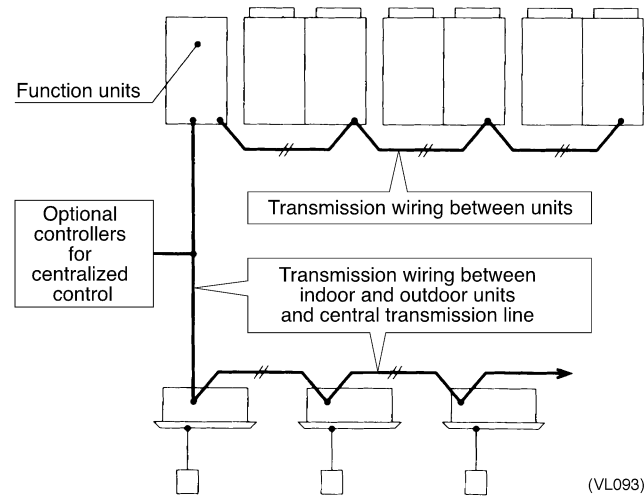


- Combination of outdoor and function units enables selection that matches required capacity.
- Single piping system reduces time and labor required for connection check.



1.2 Improved Piping System

VRV PLUS Series System Example



Sales Points

- Dramatic reduction of wiring saves time and labor when installing.

<Present System>

Transmission wiring between indoor and outdoor units

(double core with polarity)

Central transmission line (double core with polarity)

↓

<Super Wiring System>

Transmission wiring between indoor and outdoor units plus central transmission line (double core without polarity)

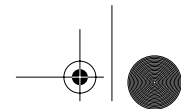
- D-III NET Advanced Function Junction

Flexible centralized control system

Central remote controller, unified on/off controller, schedule timer

Total of 128 indoor units can be controlled by centralized control.

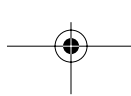
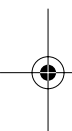
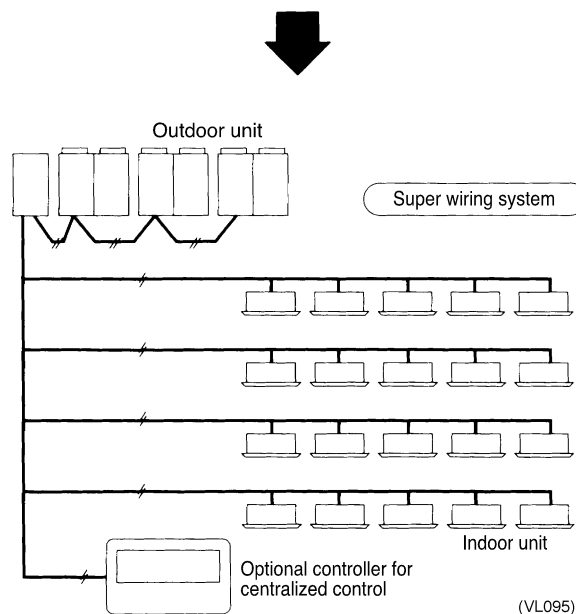
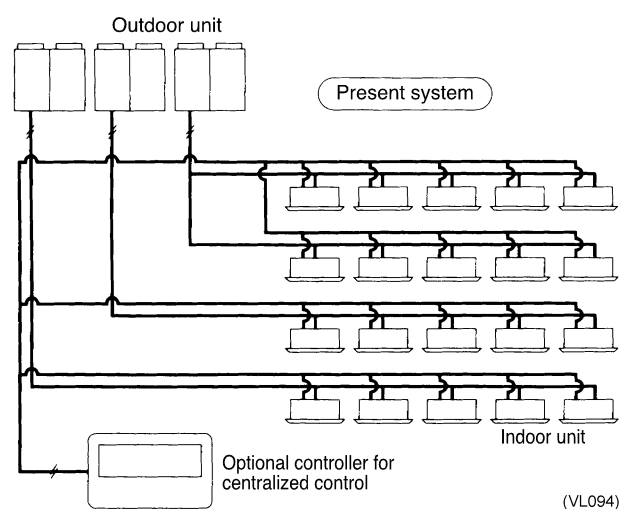
Sky Air Series and HRV can be controlled simultaneously.

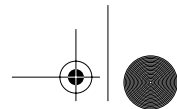


1.3 Dramatic Reduction of Wiring Saves Time and Labor When Installing

With the existing VRV H Series, the transmission wiring between indoor and outdoor units and central transmission line for when using a central remote controller are run separately. The VRV PLUS Series takes maximum advantage of our exclusively developed DIII-NET which boasts high speed and high performance to realize the use of an super wiring system which enables transmission signals of transmission wiring between indoor and outdoor units (on/off, cool/heat mode, preset temperature, current indoor/outdoor temperature, malfunction signals, etc.) to be used with transmission signals on the central transmission line. The dramatic reduction in wiring realized by doing so reduces wiring cost, facilitates connection, and reduces the possibility of incorrect connection in the field. Even if wires are incorrectly connected, the system is equipped with a wiring mistake check function which improves reliability of the system as a whole. Because the VRV PLUS Series uses an improved wiring system, you can connect optional controllers for centralized control anywhere on the transmission wiring between indoor and outdoor units. The system also provides flexibility for situations that may arise when designing or installing. The double-core, no-polarity wiring doesn't require special care when connecting, so you run wiring without having to worry about polarity.

1.3.1 Less Wiring





SiE-05C

System Outline

2. System Outline

2.1 Heat Pump and Cooling Only System

RX(Y)-K

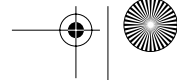
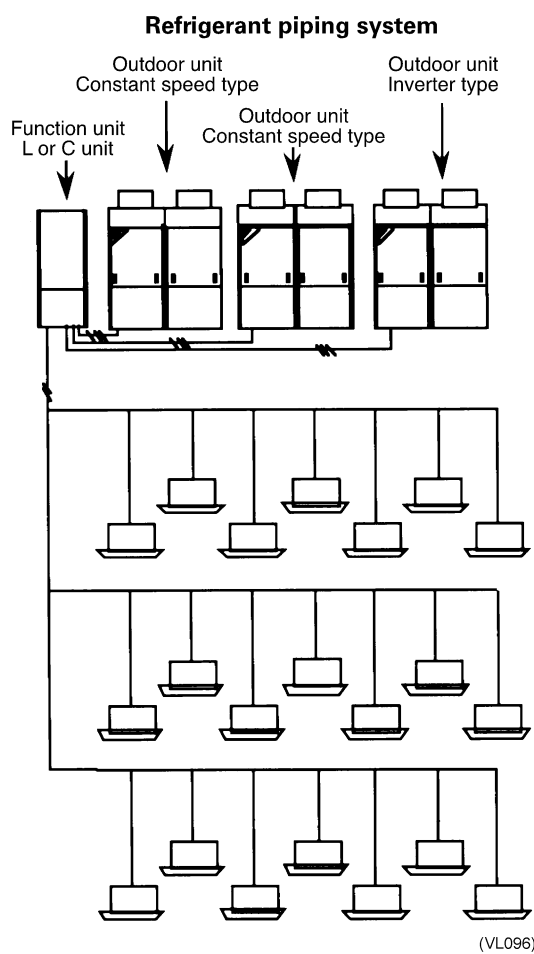
Heat pump	
L unit	BL-K
Inverter type outdoor unit	RXY-K
Constant speed type outdoor unit	RNY-K

Cooling only	
C unit	BC-K
Inverter type outdoor unit	RX-K
Constant speed type outdoor unit	RN-K

Connectable Indoor Unit Capacity 20type

Indoor Unit Connection Capacity 50 - 130% of outdoor unit total capacity

No. of Connectable Indoor Units
RX(Y)16K ~ 20K Max. 20 units
RX(Y)24K ~ 30K Max. 30 units





System Outline

SI-E-05C

2.2 Heat Recovery System

REY-K

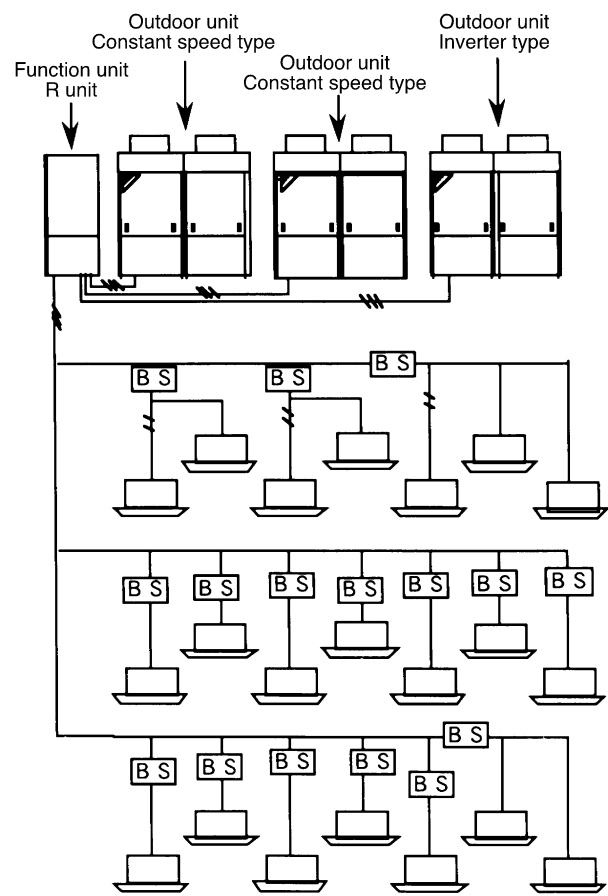
R unit	BR-K
Inverter type outdoor unit	RXY-K
Constant speed type outdoor unit	RNY-K

Connectable Indoor Unit Capacity 20type

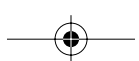
Indoor Unit Connection Capacity 50 - 130% of outdoor unit total capacity

No. of Connectable Indoor Units
REY16 ~ 20K Max. 20 units
REY24 ~ 30K Max. 30 units

Refrigerant piping system



Refer to the SERVICE MANUAL SI-11.



3. Indoor / Outdoor Unit Combinations

3.1 Indoor/Outdoor Unit Combinations

3.1.1 Heat Pump System

Model *1	Function unit	Combination		No. of indoor unit to be connected
		Inverter	Constant speed	
RXY16K	BL 2 K	RXY 8 K	RNY 8 K	20
RXY18K		RXY10K	RNY 8 K	
RXY20K		RXY10K	RNY10K	
RXY24K	BL 3 K	RXY 8 K	RNY 8 K x 2	30
RXY26K		RXY10K	RNY 8 K x 2	
RXY28K		RXY10K	RNY 8 K x 1 RNY10K x 1	
RXY30K		RXY10K	RNY10K x 2	

*1 Combination Model name

3.1.2 Cooling Only System

Model *1	Function unit	Combination		No. of indoor unit to be connected
		Inverter	Constant speed	
RX16K	BC 2 K	RX 8 K	RN 8 K	20
RX18K		RX10K	RN 8 K	
RX20K		RX10K	RN10K	
RX24K	BC 3 K	RX 8 K	RN 8 K x 2	30
RX26K		RX10K	RN 8 K x 2	
RX28K		RX10K	RN 8 K x 1 RN10K x 1	
RX30K		RX10K	RN10K x 2	

*1 Combination Model name

3.1.3 Heat Recovery System

Model	Function unit	Combination		No. of indoor unit to be connected
		Inverter	Constant speed	
REY16K	BR 2 K	RXY 8 K	RNY 8 K	20
REY18K		RXY10K	RNY 8 K	
REY20K		RXY10K	RNY10K	
REY24K	BR 3 K	RXY 8 K	RNY 8 K x 2	30
REY26K		RXY10K	RNY 8 K x 2	
REY28K		RXY10K	RNY 8 K x 1 RNY10K x 1	
REY30K		RXY10K	RNY10K x 2	

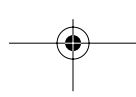
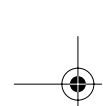


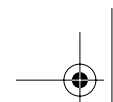
Refer to the SERVICE MANUAL Si-11.



Indoor / Outdoor Unit Combinations

SI-E-05C

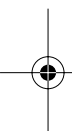




SiE-05C

Part 6 Functions PLUS Series

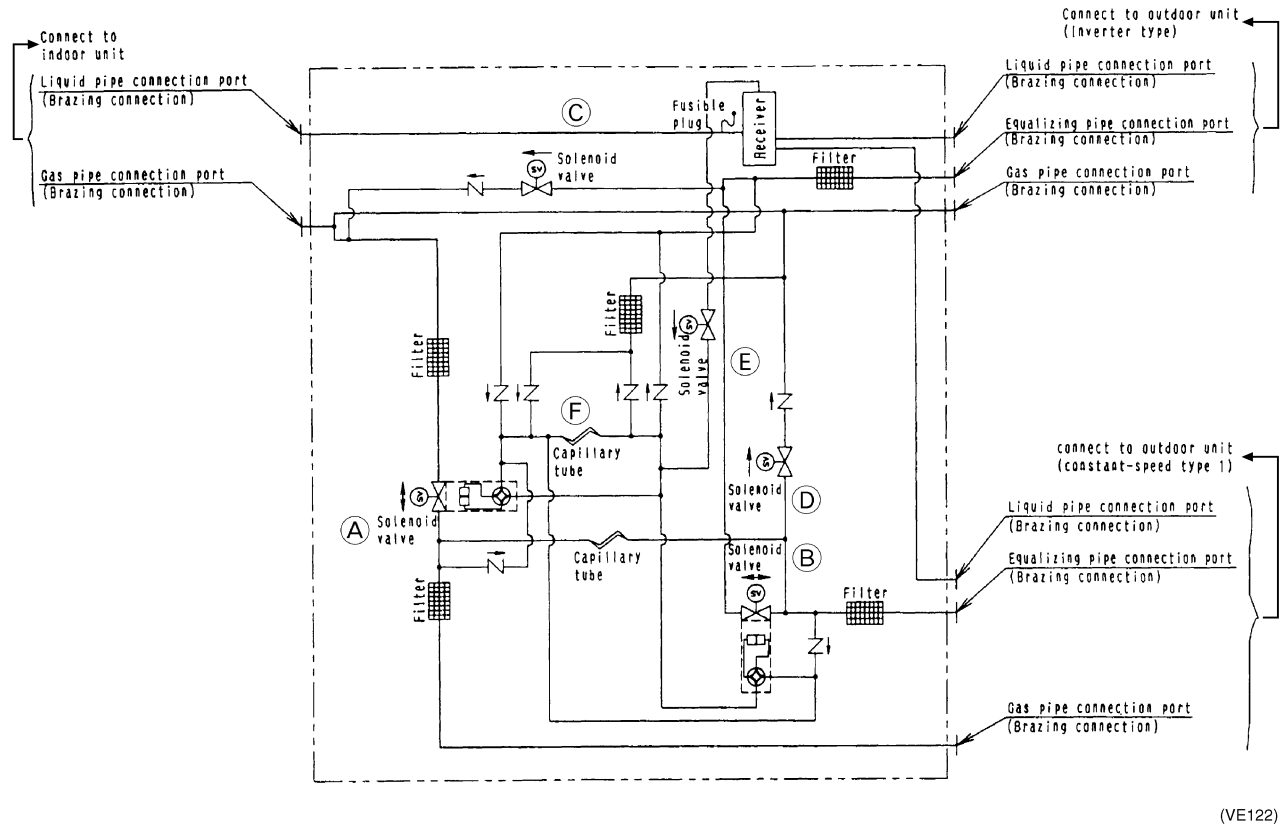
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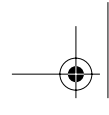


1. Outdoor Unit Refrigerant System Diagrams

1.1 Function Unit

BL2K





A. Solenoid valve (for shutting system 2 gas pipe) Y1S

2-way solenoid valve for shutting the gas pipe of the second system when system 2 outdoor units are stopped during heating.

(Features)

External pressure equalizing (maintains pressure difference outside the valve in order to drive the valve) 2-way solenoid valve that closes when energized and opens when not receiving power (opposite of conventional solenoid valve). Construction is similar to 4-way valve, and similarly does not operate unless there is differential pressure (3.5 kg/cm²).

B. Solenoid valve (for shutting system 2 equalized pressure gas pipe) Y3S

2-way solenoid valve for shutting the equalized pressure gas pipe of the second system when system 2 outdoor units are stopped during cooling.

(Features)

External pressure equalizing (maintains pressure difference outside the valve in order to drive the valve) 2-way solenoid valve that opens when energized and closes when not receiving power. Construction is similar to 4-way valve, and similarly does not operate unless there is differential pressure (3.5 kg/cm²).

C. Solenoid valve (for system 1 devices) Y5S

Solenoid valve primarily for supplying system 2 and 3 outdoor units with excess oil from system 1 outdoor units during cooling oil equalizing operation. (Pressure equalized pipes are closed at this time.)

D. Solenoid valve (for system 2 bypass) Y6S

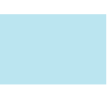
Solenoid valve primarily for supplying system 1 outdoor units with excess oil from system 2 outdoor units during cooling oil equalizing operation. (Pressure equalized pipes are closed at this time.)

E. Solenoid valve (for hot gas equalizing) Y8S

Solenoid primarily for equalizing pressure of refrigerant in liquid pipes when the compressor is stopped, but is also used for high and low pressure protection.

F. Check valve bridge circuit

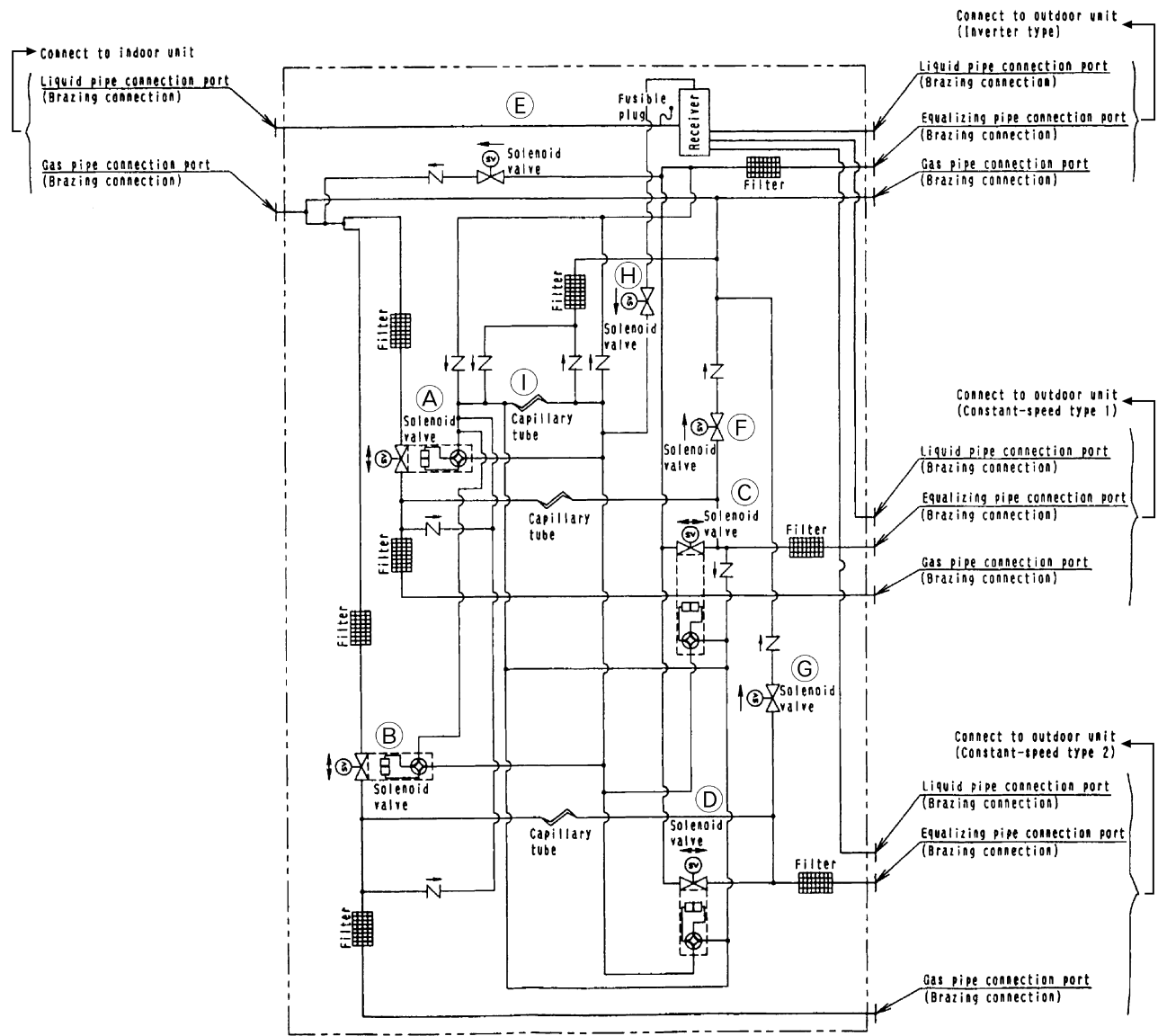
Constant high pressure or constant low pressure are created by the check valve in order to provide solenoid valve A with differential pressure.



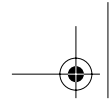
Outdoor Unit Refrigerant System Diagrams

SI-E-05C

BL3K



(VE123)



A. Solenoid valve (for shutting system 2 gas pipe) Y1S

2-way solenoid valve for shutting the gas pipe of the second system when system 2 outdoor units are stopped during heating.

(Features)

External pressure equalizing (maintains pressure difference outside the valve in order to drive the valve) 2-way solenoid valve that closes when energized and opens when not receiving power (opposite of conventional solenoid valve). Construction is similar to 4-way valve, and similarly does not operate unless there is differential pressure (3.5 kg/cm²)

B. Solenoid valve (for shutting system 3 gas pipe) Y2S

2-way solenoid valve for shutting the gas pipe of the third system when system 3 outdoor units are stopped during heating. The valve itself is the same as solenoid valve A.

C. Solenoid valve (for shutting system 2 equalized pressure gas pipe) Y3S

2-way solenoid valve for shutting the equalized pressure gas pipe of the second system when system 2 outdoor units are stopped during cooling.

(Features)

External pressure equalizing (maintains pressure difference outside the valve in order to drive the valve) 2-way solenoid valve that opens when energized and closes when not receiving power. Construction is similar to 4-way valve, and similarly does not operate unless there is differential pressure (3.5 kg/cm²).

D. Solenoid valve (for shutting system 3 equalized pressure gas pipe) Y4S

2-way solenoid valve for shutting the equalized pressure gas pipe of the third system when system 3 outdoor units are stopped during cooling. The valve itself is the same as solenoid valve C.

E. Solenoid valve (for system 1 bypass) Y5S

Solenoid valve primarily for supplying system 2 and 3 outdoor units with excess oil from system 1 outdoor units during cooling oil equalizing operation. (Pressure equalized pipes are closed at this time.)

F. Solenoid valve (for system 2 bypass) Y6S

Solenoid valve primarily for supplying system 1 outdoor units with excess oil from system 2 outdoor units during cooling oil equalizing operation.

G. Solenoid valve (for system 3 bypass) Y7S

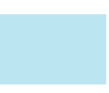
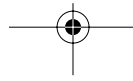
Solenoid valve primarily for supplying system 1 outdoor units with excess oil from system 3 outdoor units during cooling oil equalizing operation.

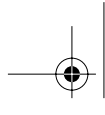
H. Solenoid valve (for hot gas equalizing) Y8S

Solenoid primarily for equalizing pressure of refrigerant in liquid pipes when the compressor is stopped, but is also used for high and low pressure protection.

I. Check valve bridge circuit

Constant high pressure or constant low pressure are created by the check valve in order to provide solenoid valve A with differential pressure.



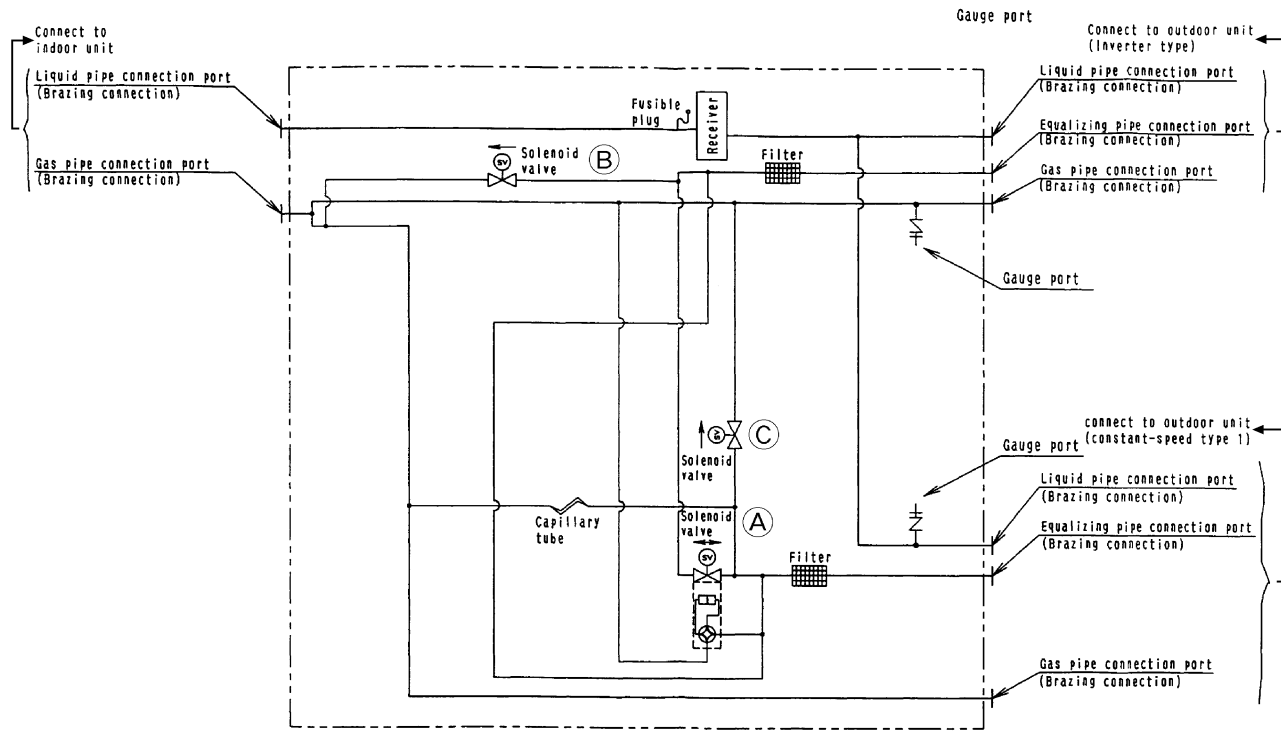


Outdoor Unit Refrigerant System Diagrams

SI-E-05C

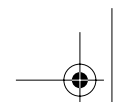


BC2K



(VE124)





A. Solenoid valve (for shutting system 2 equalized pressure gas pipe) Y3S

2-way solenoid valve for shutting the equalized pressure gas pipe of the second system when system 2 outdoor units are stopped during cooling.

(Features)

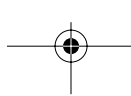
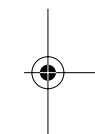
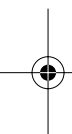
External pressure equalizing (maintains pressure difference outside the valve in order to drive the valve) 2-way solenoid valve that opens when energized and closes when not receiving power. Construction is similar to 4-way valve, and similarly does not operate unless there is differential pressure (3.5 kg/cm²).

B. Solenoid valve (for system 1 devices) Y5S

Solenoid valve primarily for supplying system 2 and 3 outdoor units with excess oil from system 1 outdoor units during cooling oil equalizing operation. (Pressure equalized pipes are closed at this time.)

C. Solenoid valve (for system 2 bypass) Y6S

Solenoid valve primarily for supplying system 1 outdoor units with excess oil from system 2 outdoor units during cooling oil equalizing operation. (Pressure equalized pipes are closed at this time.)

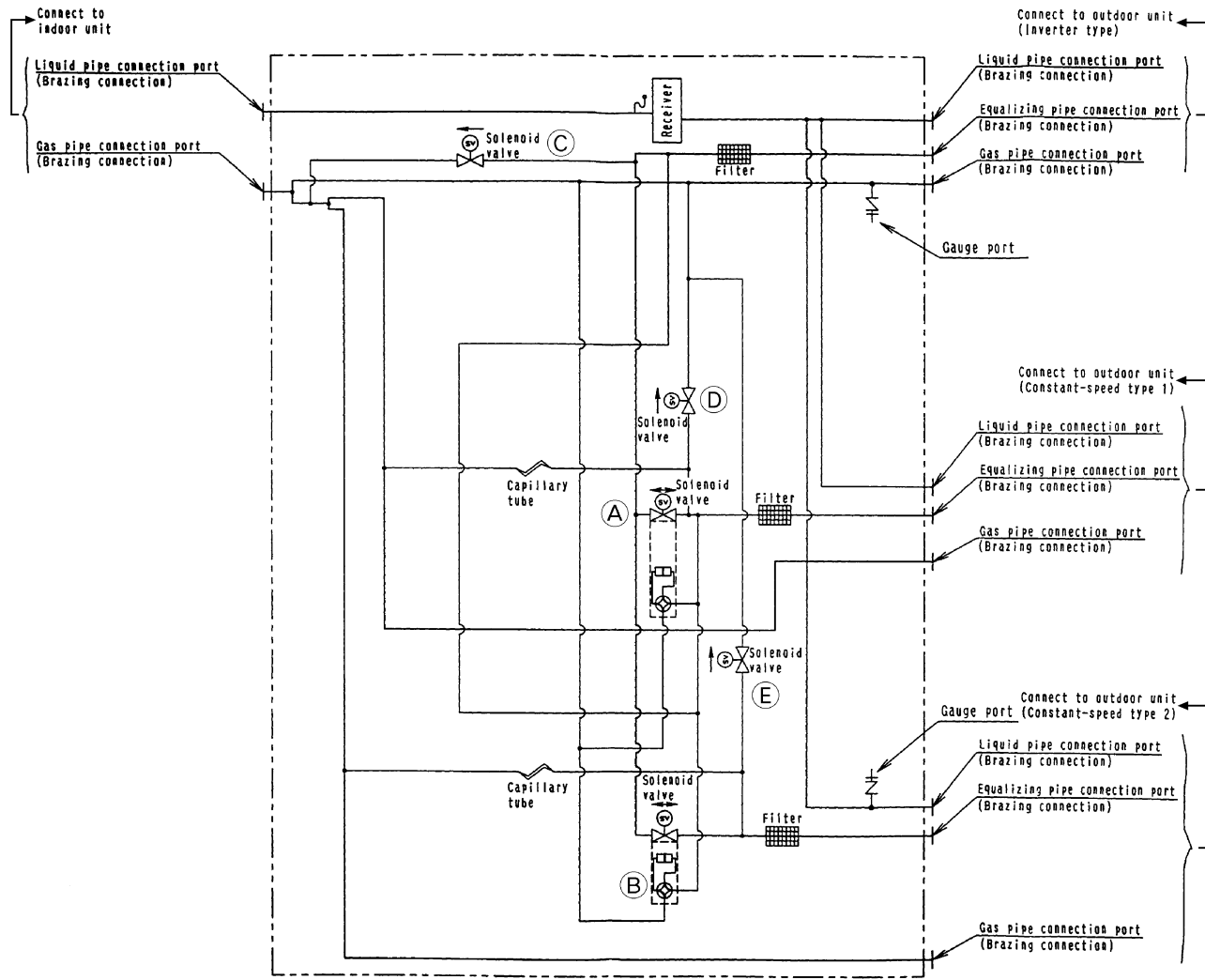




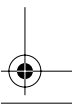
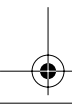
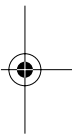
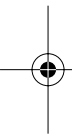
Outdoor Unit Refrigerant System Diagrams

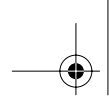
SI-E-05C

BC3K



(VE125)





A. Solenoid valve (for shutting system 2 equalized pressure gas pipe) Y3S

2-way solenoid valve for shutting the equalized pressure gas pipe of the second system when system 2 outdoor units are stopped during cooling.

(Features)

External pressure equalizing (maintains pressure difference outside the valve in order to drive the valve) 2-way solenoid valve that opens when energized and closes when not receiving power. Construction is similar to 4-way valve, and similarly does not operate unless there is differential pressure (3.5 kg/cm²).

B. Solenoid valve (for shutting system 3 equalized pressure gas pipe) Y4S

2-way solenoid valve for shutting the equalized pressure gas pipe of the third system when system 3 outdoor units are stopped during cooling. The valve itself is the same as solenoid valve C.

C. Solenoid valve (for system 1 bypass) Y5S

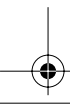
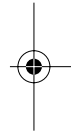
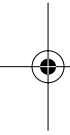
Solenoid valve primarily for supplying system 2 and 3 outdoor units with excess oil from system 1 outdoor units during cooling oil equalizing operation. (Pressure equalized pipes are closed at this time.)

D. Solenoid valve (for system 2 bypass) Y6S

Solenoid valve primarily for supplying system 1 outdoor units with excess oil from system 2 outdoor units during cooling oil equalizing operation.

E. Solenoid valve (for system 3 bypass) Y7S

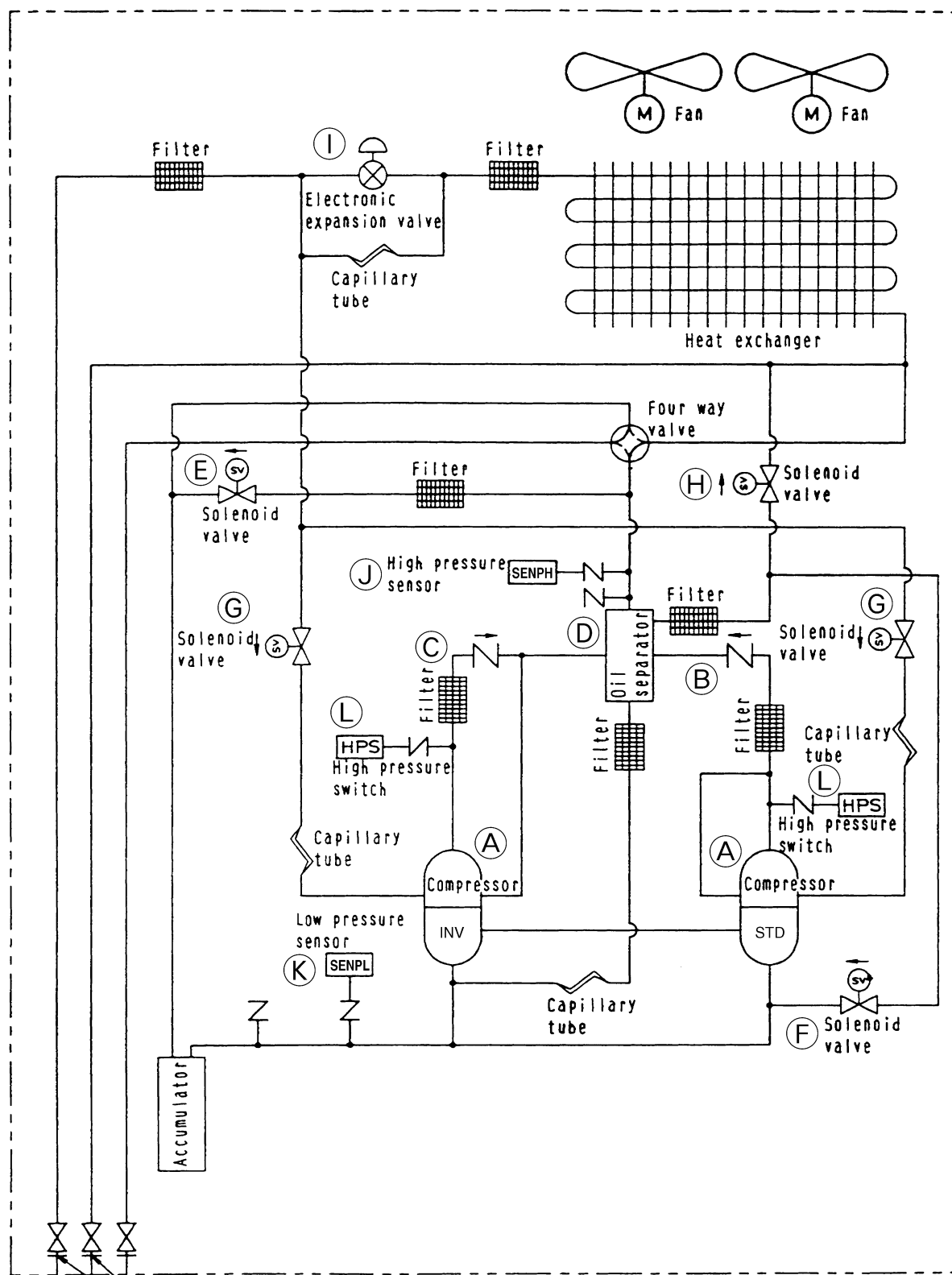
Solenoid valve primarily for supplying system 1 outdoor units with excess oil from system 3 outdoor units during cooling oil equalizing operation.





1.2 Outdoor Unit

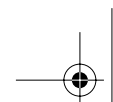
RXY8K / RXY10K (8. 10HP)



Stop valve
(With service port on on-site piping side)

(VE126)





A. Compressor

A combination of scroll compressor enabling operation at 30 - 106 Hz by inverter and constant speed type compressor for carrying out on/off control realizes capacity control in 19 steps, and carries out capacity control for individual and linear control of indoor units. Compressors are equipped with an oil discharge function for draining excess oil from the high pressure side.

B. Check valve

Prevents refrigerant from collecting in the constant speed type when operating the inverter type units only.

C. Check valve

Installed so that the inverter type's oil discharge function functions properly.

D. Oil separator

Device which collected oil discharged from the compressor and returns it to the compressor via capillary tubes. Also functions as reservoir for holding excess oil.

E. Solenoid valve (for low pressure protection) Y1S

Provides hot gas bypass to prevent low pressure from dropping radically for excessive defrost of load reduction when the compressor starts.

F. Solenoid valve (for pressure equalization) Y4S

Balances high and low pressure when stopped.

G. Solenoid valve (for liquid injection) Y2S, Y3S

Controls liquid injection to prevent overheating.

H. Solenoid valve (for oil discharge control) Y5S

Discharges excess oil to other outdoor units during oil equalization operation.

I. Outdoor unit electronic expansion valve Y1E

Expansion valve for heating. Senses low pressure and temperature of outdoor unit heat exchanger outlets and carries out overheating control.

J. High pressure sensor SENPH

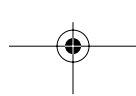
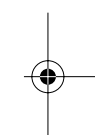
Semiconductor pressure sensor for detecting outdoor unit high pressure.

K. Low pressure sensor SENPL

Semiconductor pressure sensor for detecting outdoor unit low pressure.

L. High pressure switches S1HP, S2HP

Switches trip when discharge pressure exceeds $27.5 \pm 0.5K$, thus stopping operation.

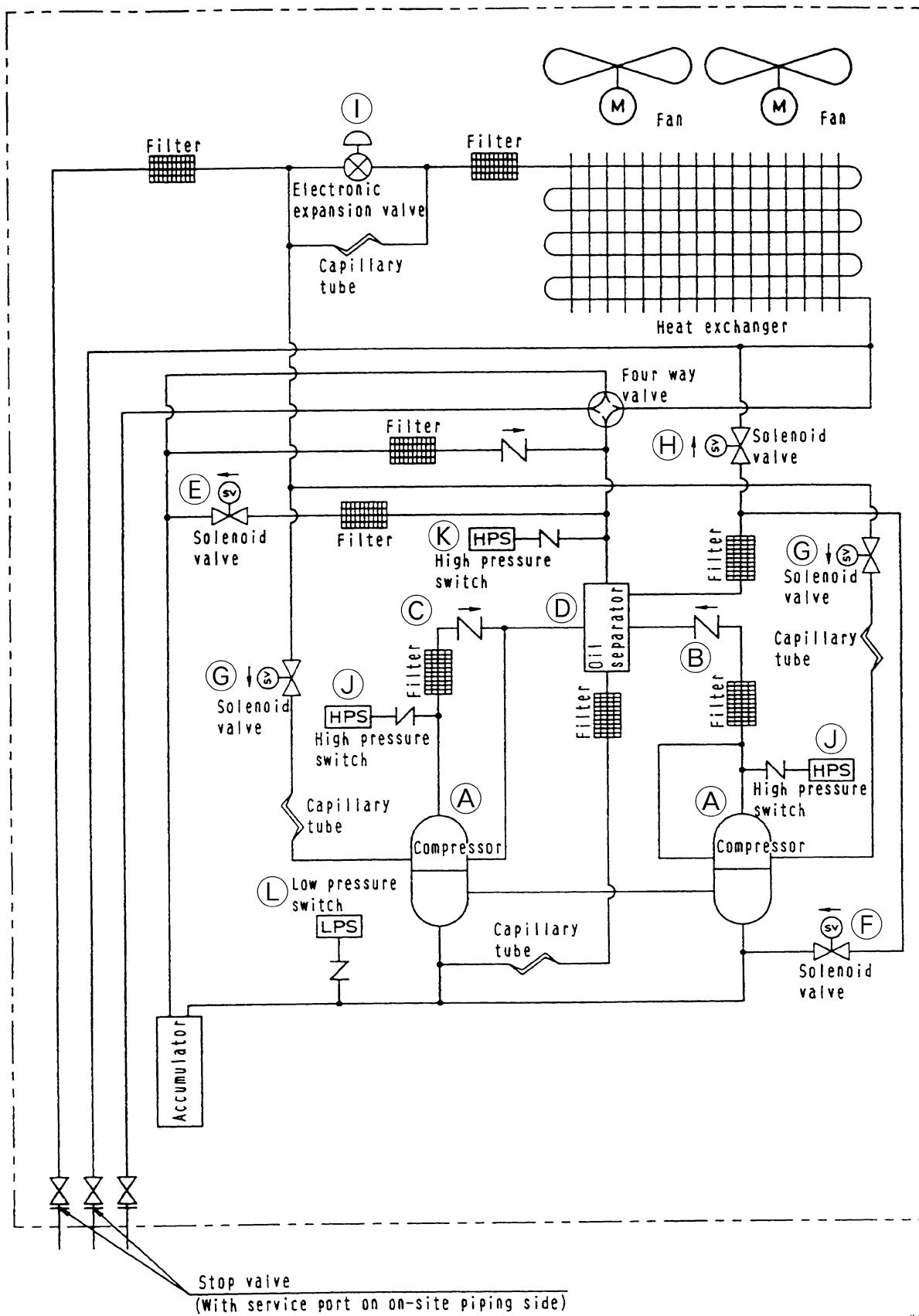




Outdoor Unit Refrigerant System Diagrams

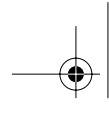
SI-E-05C

RNY8K / RNY10K (8.10HP)



(VE127)





SiE-05C

Outdoor Unit Refrigerant System Diagrams

A. Compressor

Controls capacity of 0 - 45 - 100% by combination of constant speed type compressors 1 and 2.
Compressor is equipped with an oil discharge function for draining excess oil from the high pressure side.

B. Check valve

Prevents refrigerant from collecting in the constant speed type compressor 2 when operating constant speed type compressor 1 only.

C. Check valve

Installed so that constant speed type compressor 1's oil discharge function functions properly.

D. Oil separator

Device which collected oil discharged from the compressor and returns it to the compressor via capillary tubes. Also functions as reservoir for holding excess oil.

E. Solenoid valve (for low pressure protection) Y1S

Provides hot gas bypass to prevent low pressure from dropping radically for excessive defrost of load reduction when the compressor starts.

F. Solenoid valve (for pressure equalization) Y4S

Balances high and low pressure when stopped.

G. Solenoid valve (for liquid injection) Y2S, Y3S

Controls liquid injection to prevent overheating.

H. Solenoid valve (for oil discharge control) Y5S

Discharges excess oil to other outdoor units during oil equalization operation.

I. Outdoor unit electronic expansion valve Y1E

Expansion valve for heating. Senses low pressure and temperature of outdoor unit heat exchanger outlets and carries out overheating control.

J. High pressure switches S1HP, S2HP

Switches trip when preset pressure exceeds $27.5 \pm 0.5K$, thus stopping operation.

K. High pressure switch S3HP

Switch trips when operation pressure exceeds $24.0K$ and switch on at $17.0K$, thus control high pressure.

L. Low pressure switch S1PL

Switches trip when the suction pressure is lower than $0 \pm 0.3K$.

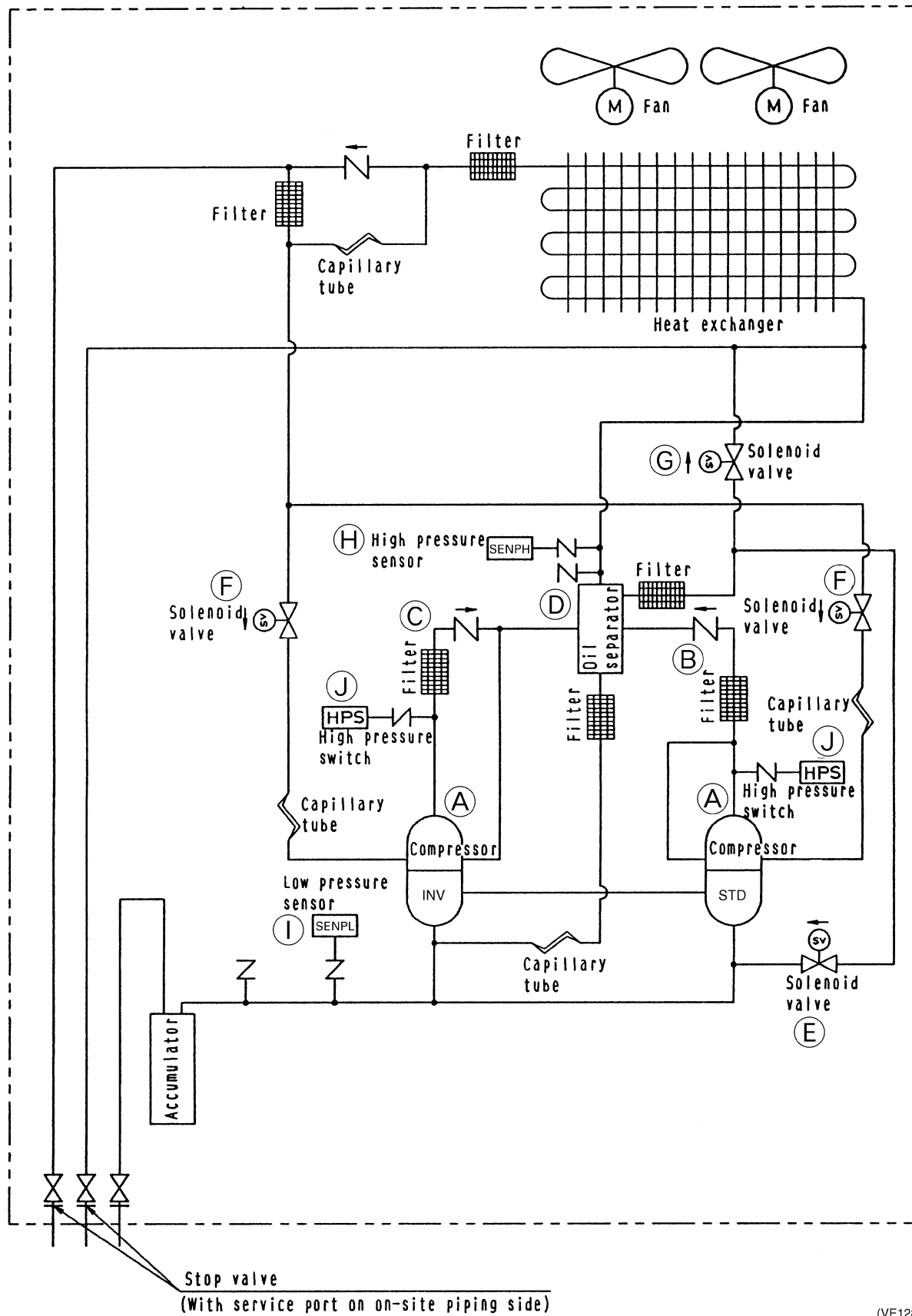


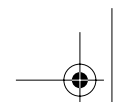


Outdoor Unit Refrigerant System Diagrams

SI-E-05C

RX8K / RX10K (8.10HP)





A. Compressor

A combination of scroll compressor enabling operation at 30 - 106 Hz by inverter and constant speed type compressor for carrying out on/off control realizes capacity control in 19 steps, and carries out capacity control for individual and linear control of indoor units. Compressors are equipped with an oil discharge function for draining excess oil from the high pressure side.

B. Check valve

Prevents refrigerant from collecting in the constant speed type when operating the inverter type units only.

C. Check valve

Installed so that the inverter type's oil discharge function functions properly.

D. Oil separator

Device which collected oil discharged from the compressor and returns it to the compressor via capillary tubes. Also functions as reservoir for holding excess oil.

E. Solenoid valve (for pressure equalization) Y4S

Balances high and low pressure when stopped.

F. Solenoid valve (for liquid injection) Y2S, Y3S

Controls liquid injection to prevent overheating.

G. Solenoid valve (for oil discharge control) Y5S

Discharges excess oil to other outdoor units during oil equalization operation.

H. High pressure sensor SENPH

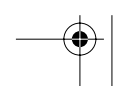
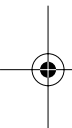
Semiconductor pressure sensor for detecting outdoor unit high pressure.

I. Low pressure sensor SENPL

Semiconductor pressure sensor for detecting outdoor unit low pressure.

J. High pressure switches S1HP, S2HP

Switches trip when discharge pressure exceeds $27.5 \pm 0.5K$, thus stopping operation.



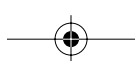
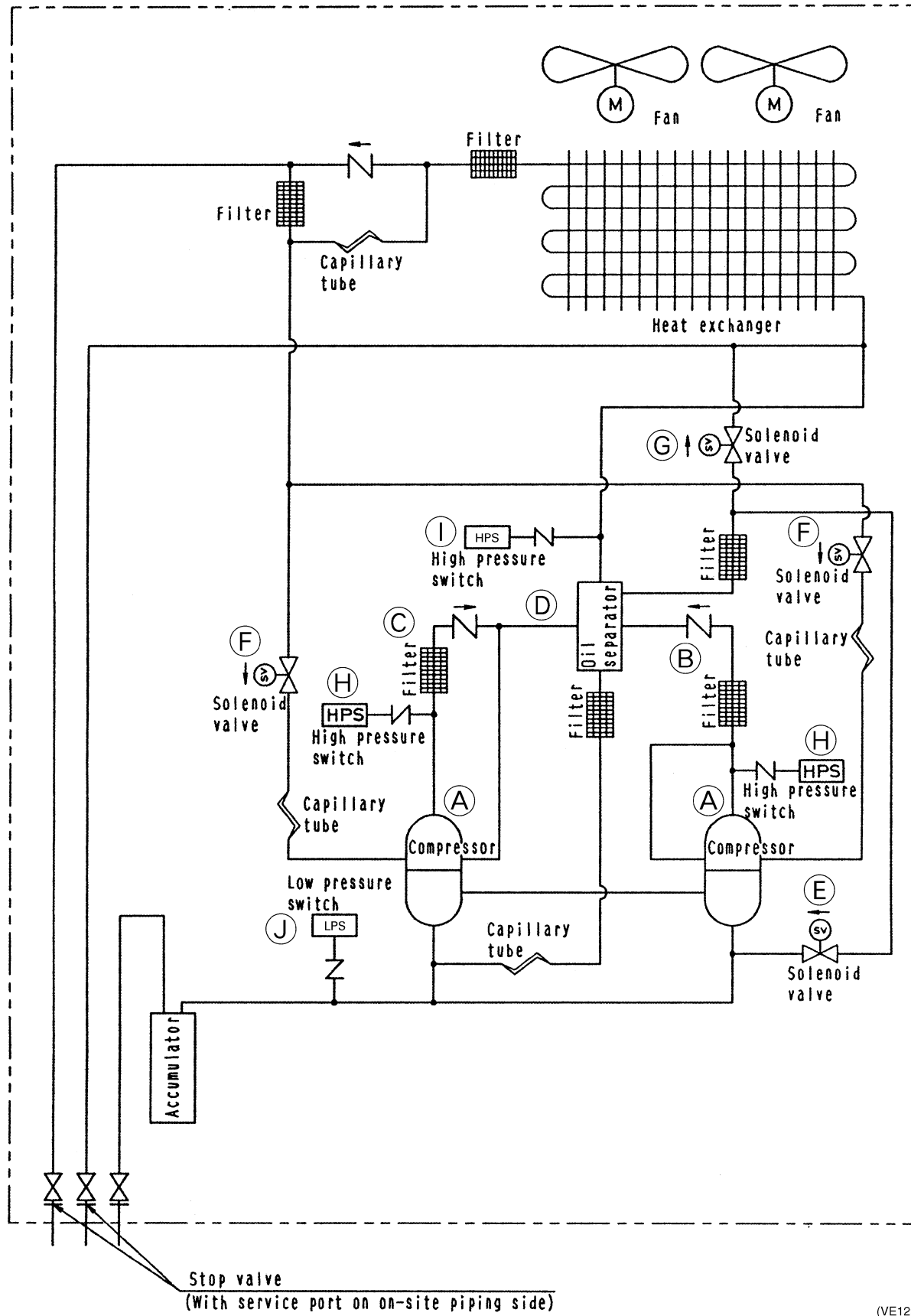


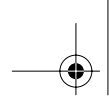
Outdoor Unit Refrigerant System Diagrams

SI-E-05C



RN8K / RN10K (8.10HP)





SiE-05C

Outdoor Unit Refrigerant System Diagrams

A. Compressor

Controls capacity of 0 - 45 - 100% by combination of constant speed type compressors 1 and 2.
Compressor is equipped with an oil discharge function for draining excess oil from the high pressure side.

B. Check valve

Prevents refrigerant from collecting in the constant speed type compressor 2 when operating constant speed type compressor 1 only.

C. Check valve

Installed so that constant speed type compressor 1's oil discharge function functions properly.

D. Oil separator

Device which collected oil discharged from the compressor and returns it to the compressor via capillary tubes. Also functions as reservoir for holding excess oil.

E. Solenoid valve (for pressure equalization) Y4S

Balances high and low pressure when stopped.

F. Solenoid valve (for liquid injection) Y2S, Y3S

Controls liquid injection to prevent overheating.

G. Solenoid valve (for oil discharge control) Y5S

Discharges excess oil to other outdoor units during oil equalization operation.

H. High pressure switches S1HP, S2HP

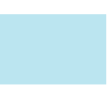
Switches trip when preset pressure exceeds $27.5 \pm 0.5K$, thus stopping operation.

I. High pressure switch S3HP

Switch trips when operation pressure exceeds $24.0K$ and switch on at $17.0K$, thus control high pressure.

J. Low pressure switch S1PL

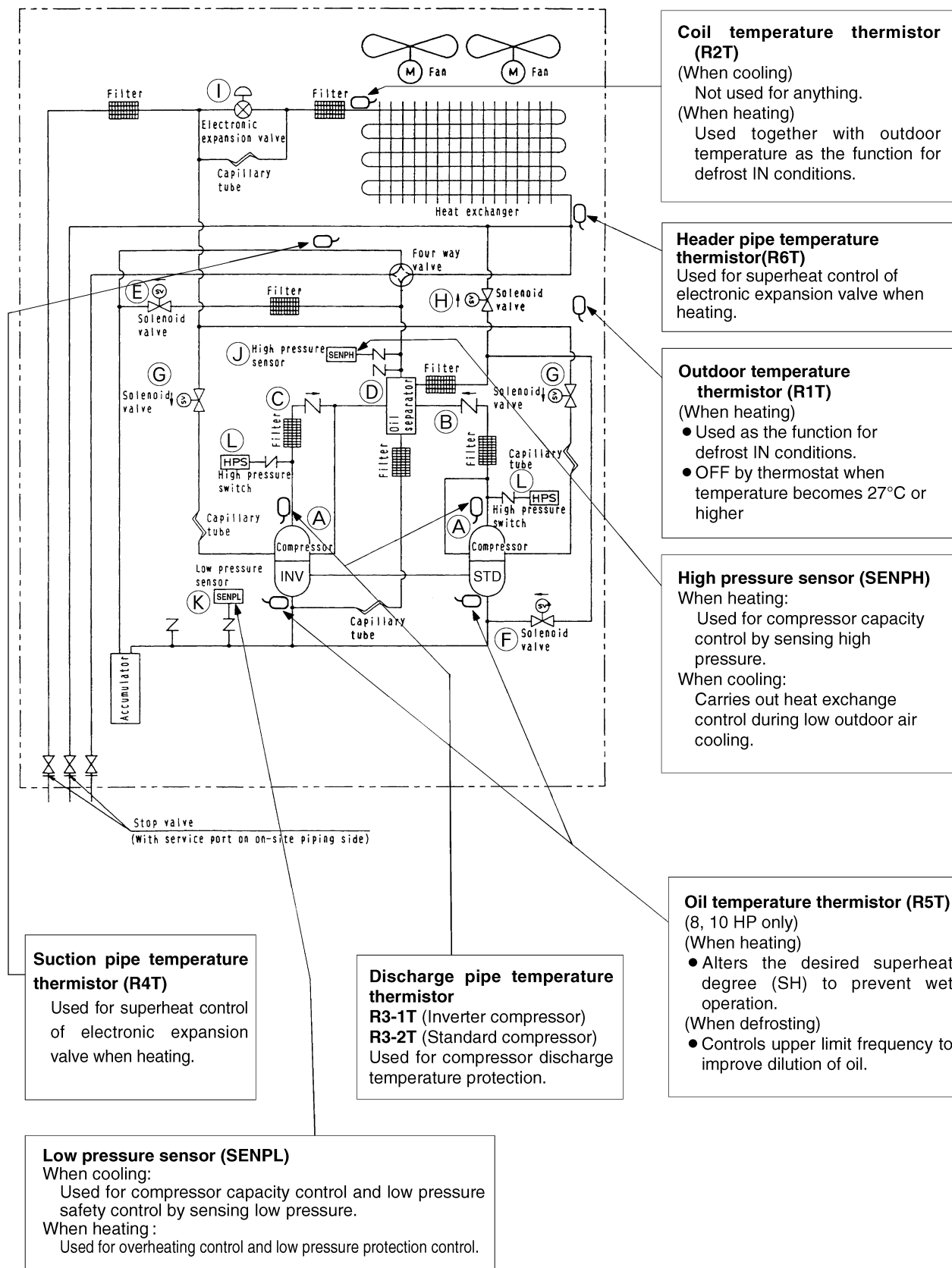
Switches trip when the suction pressure is lower than $0 \pm 0.3K$.



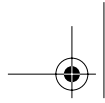
2. Function of Thermistors and Pressure Sensors

2.1 Function of Thermistors and Pressure Sensors

RX(Y)8K / RX(Y)10K



(VE130)



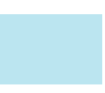
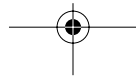
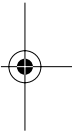
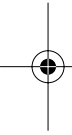
SI-E-05C

Function of Thermistors and Pressure Sensors

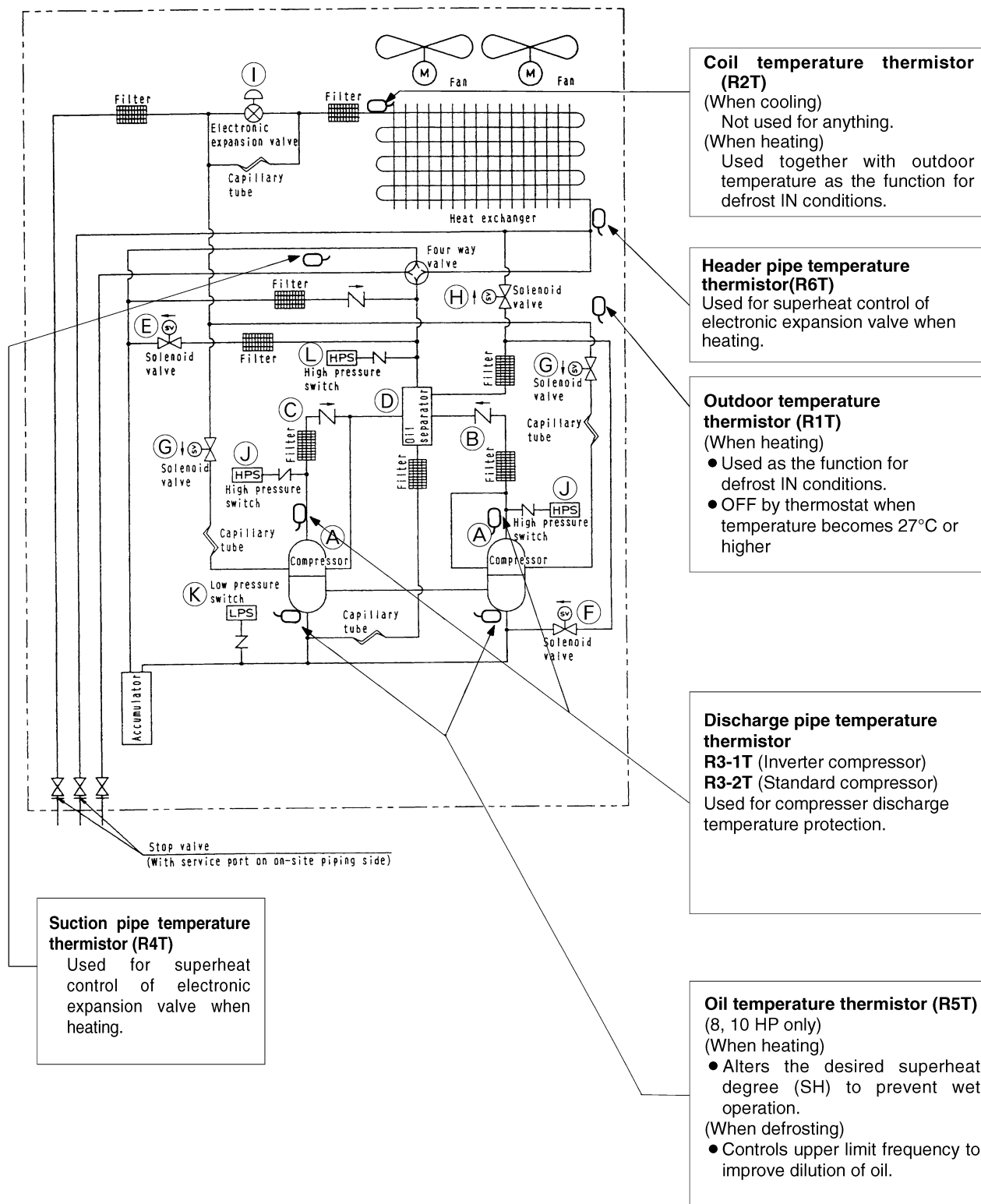


Notes:

1. R2T and R6T are not fitted on cooling only model.
2. R1T used for "Low outdoor temperature control" too when cooling, on both heat-pump and cooling only models.
3. R4T used for "Pump down operation" too on both heat pump and cooling only models.
4. R5T used for "Oil temperature control" too on both heat-pump and cooling only models.

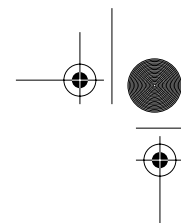


RN(Y)8K / RN(Y)10K



(VE131)

- i** **Notes:**
1. R6T is not fitted on cooling only model.
 2. R1T used for "Low outdoor temperature control" too when cooling, on both heat-pump and cooling only models.
 3. R4T used for "Pump down operation" too on both heat pump and cooling only models.
 4. R5T used for "Oil temperature control" too on both heat-pump and cooling only models.



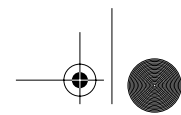
3. List of Safety Devices and Functional Parts Setting Values

3.1 Outdoor Unit

Item	Symbol	Name	Inverter		Constant speed		
			RX(Y) 8 K	RX(Y)10K	RN(Y) 8 K	RN(Y)10K	
Compressor	M 1 C	Inverter	Y 1 (kW)	JT100BDVTYE 3.5	JT100BDVTYE 3.5	—	—
			YAL (kW)	JT100BDVTYE 3.5	JT100BDVTYE 3.5	—	—
	M 2 C *RNY M 1 C M 2 C	Standard	Y 1 (kW)	JT100BDTYE 2.2	JT160BDTYE 3.75	JT125BDTYE JT160BDTYE 2.5+3.75	JT160BDTYE JT200BDTYE 3.75+4.0
			YAL (kW)	JT100BDTYH 2.2	JT160BDTYH 3.75	JT125BDTYH JT160BDTYH 2.5+3.75	JT160BDTYHJ T200BDTYH 3.75+4.0
	J1HC/ J2HC	Crank case heater	33W + 33W				
Safety device	R3-1T R3-2T	Compressor safety thermostat	Discharge pipe thermistor 135°C OFF				
	F 2 C	Over-current relay	HOE-20F-TRA1 10A	HOE-20F-TRA1 13A	HOE-26F-TRA113A 13A	HOE-26F-TRA113A 18A	
	Q 1 M Q 2 M	Fan motor	140W + 230W				
		Thermal protector	Q 1 M : OFF 120°C Q 2 M : OFF 135°C				
	S 1 PH S 2 PH	High pressure switch	20PS688		OFF : 27.5kg/cm ² ON : 20.0kg/cm ²		
S 1 PL	Low pressure switch	—		LCB-LA32	OFF : 0kg/cm ² ON : 0.6kg/cm ²		

3.2 Function Unit

Item	Symbol	Name	BL 2 K BC 2 K	BL 3 K BC 3 K	BR2K	BR3K
Safety device		Fusible plug	FPG - 3 D 70 ~ 75 °C			

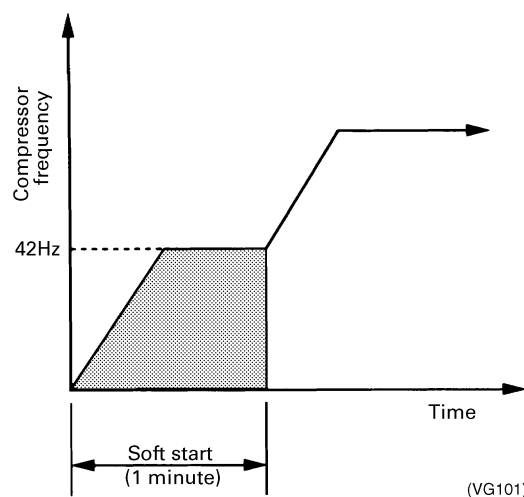


4. Outline of Control

4.1 Starting Control

4.1.1 Soft Start

Starts inverter type by low operation frequency in order to prevent refrigerant pump down when the compressor starts for both cooling and heating.



INV outdoor unit	Frequency at start	42Hz + OFF
	Hot gas bypass	ON
	Liquid injection	ON
STD outdoor unit	Hot gas bypass	ON

* INV : Inverter, STD : Standard
Herein after we indicate
INV for inverter and STD for standard.

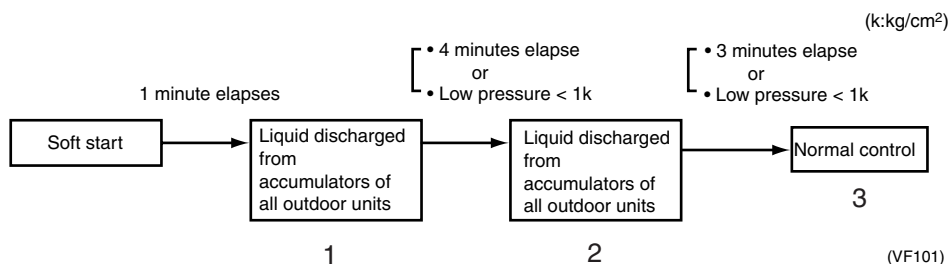
<In Case of Cooling Only System>

INV outdoor unit	Frequency at start	42Hz + OFF
	Liquid injection	ON
Function unit (BC)	Solenoid valve Y5, Y6, Y7	ON



4.1.2 Cooling Start Following Layup

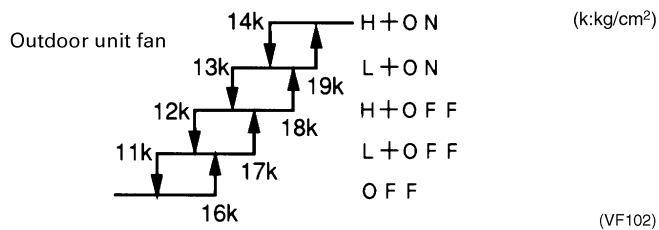
When starting for the first time after turning on the power, temporarily starts all outdoor units in order to discharge refrigerant from the low pressure line and accumulator when outdoor temperature is low.



Outdoor Unit Operation During Cooling Accumulation Start

	1			2			3 (Initial settings)		
	INV outdoor unit	STD outdoor unit 1	STD outdoor unit 2	INV outdoor unit	STD outdoor unit 1	STD outdoor unit 2	INV outdoor unit	STD outdoor unit 1	STD outdoor unit 2
Compressor	48+OFF	ON+OFF	ON+OFF	48+OFF	ON+OFF	ON+OFF	48+OFF	OFF	OFF
Outdoor fan	Control by high pressure						H+ON		
Outdoor EEV	2000PLS	2000PLS	2000PLS	2000PLS	2000PLS	2000PLS	2000PLS	0PLS	0PLS
Hot gas bypass	ON	ON	ON	ON	OFF	OFF	ON	OFF	OFF
Hot gas bypass for equalizing pressure	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Injection	No1	Td safety control	Td safety control	Td safety control	Td safety control	Td safety control	Td safety control	OFF	OFF
	No2	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Oil control solenoid valve	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

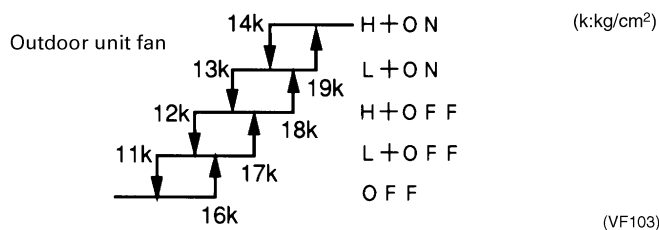
* EEV : Herein after we indicate EEV for Electronic expansion valve.



<In Case of Cooling Only System>

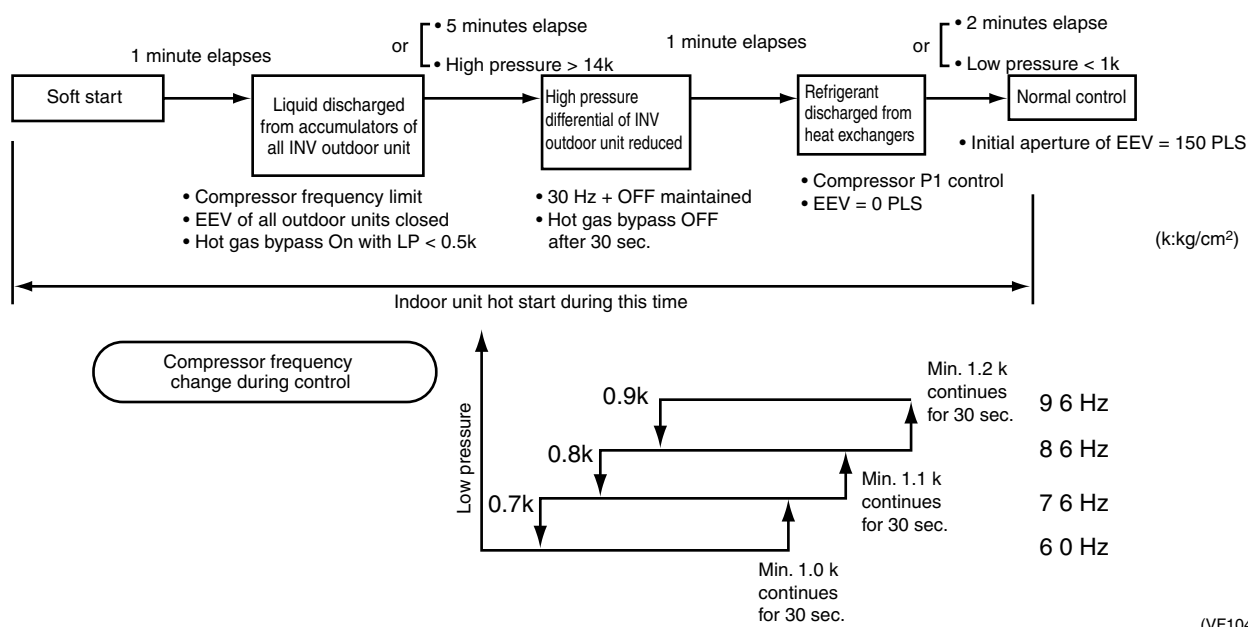
Outdoor unit and function unit operation during cooling accumulation start

	1			2			3 (Initial settings)		
	INV outdoor unit	STD outdoor unit 1	STD outdoor unit 2	INV outdoor unit	STD outdoor unit 1	STD outdoor unit 2	INV outdoor unit	STD outdoor unit 1	STD outdoor unit 2
Compressor	48 + OFF	ON + OFF	ON + OFF	48 + OFF	ON + OFF	ON + OFF	48 + OFF	OFF	OFF
Outdoor fan	Control by high pressure						H ## ON		
Hot gas bypass for equalizing pressure	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Injection	No.1	Td safety control	Td safety control	Td safety control	Td safety control	Td safety control	Td safety control	OFF	OFF
	No.2	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Oil control solenoid valve	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Function unit's solenoid valve	Y5-ON	Y6-ON	Y7-ON	Y5-ON	Y6-OFF	Y7-OFF	Y5-ON	Y6-OFF	Y7-OFF



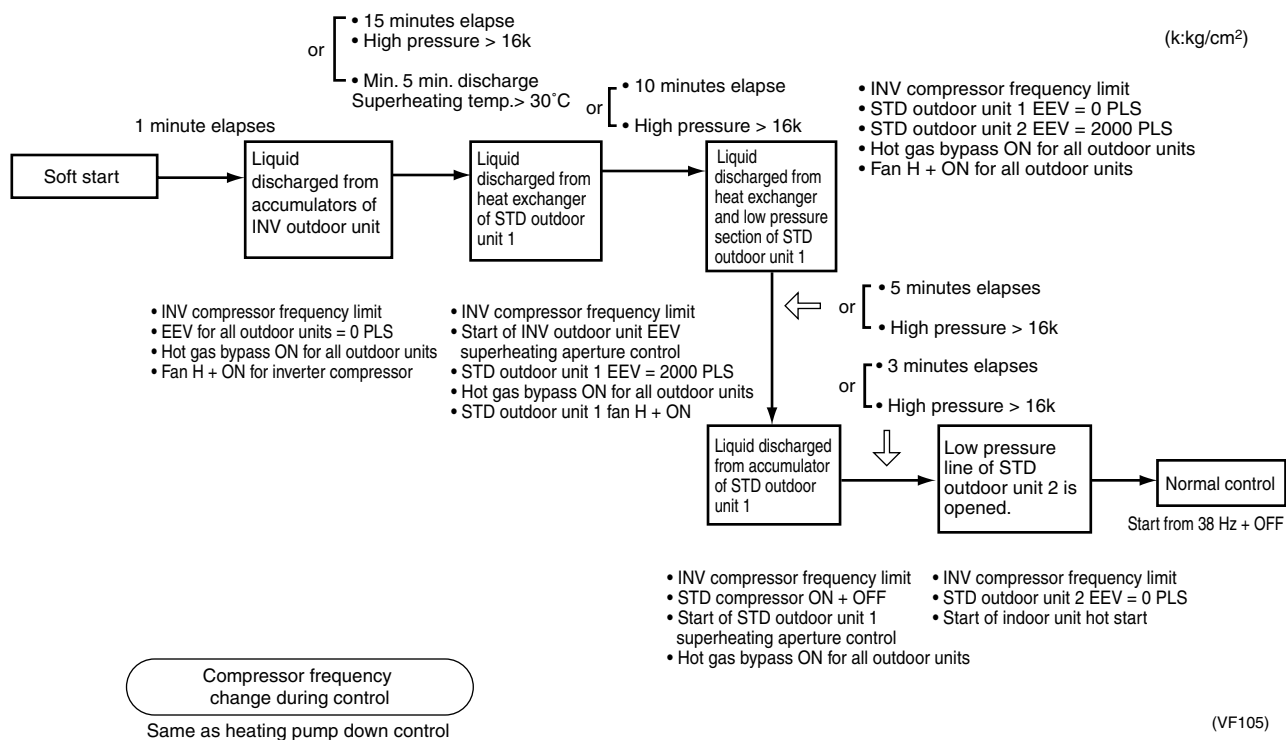
4.1.3 Heating Pump Down Start (For Heat Pump System)

When starting within 3 hours after the compressor stops and pump down residual operation has been executed before the compressor was stopped, after completing soft start, compressor operating frequency is held to (60 Hz + OFF) ~ (96 Hz + OFF), the heat exchange pressure equalizing piping solenoid for standard types 1 and 2 is opened, and the refrigerant in the accumulator of the inverter type is discharged. The frequency is further maintained at (30 Hz + OFF) for 1 minute, refrigerant in outdoor unit heat exchangers is evaporated by shutting off hot gas, and operation switches to normal control.



4.1.4 Heating Power on Start (For Heat Pump System)

Discharge refrigerant collected in the low pressure side to protect the compressor when starting for the first time within 6 hours after turning off the power. After completing soft start, compressor operating frequency is held to (60 Hz + OFF) ~ (96 Hz + OFF). After the refrigerant in the pressure equalizing line and accumulator of the inverter type is discharged, the standard compressors start in sequence, and refrigerant is discharged from each respective low pressure line.



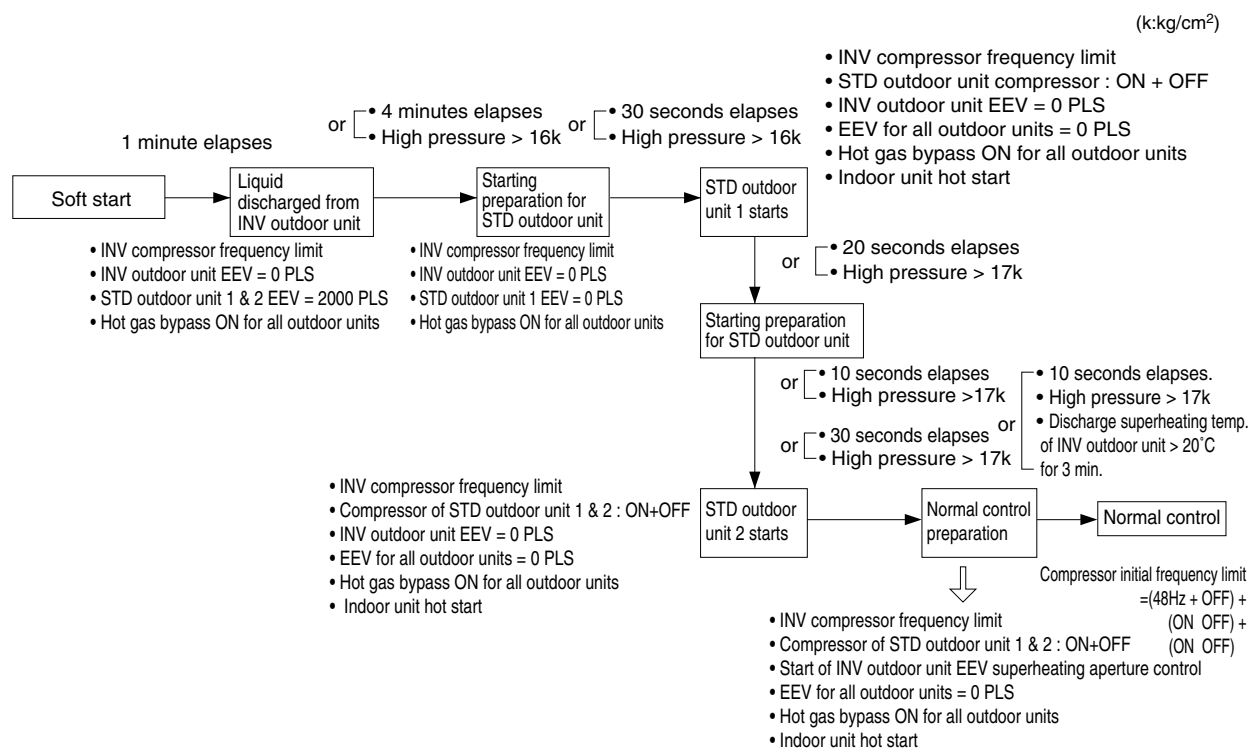
4.1.5 Heating Start Following Layup (For Heat Pump System)

Discharge refrigerant from outdoor unit or pressure equalizing piping when starting if the compressor has been stopped for 3 hours or more or when starting for the first time after turning on the power. Also discharges refrigerant when starting for the first time if the 6 or more hours has elapsed since turning on the power.

After completing soft start, compressor operating frequency is held to (60 Hz + OFF) ~ (96 Hz + OFF), refrigerant in the pressure equalizing line and low pressure line is discharged and the unit is prepared for normal compressor control.

Conditions for layup starting after tuning on the power

OR	Inverter comp. oil temp. > outdoor temp. + 15°C
	Inverter comp. discharge temp. > outdoor temp. + 10°C (Outdoor temp. ≥ 0°C)
	Inverter type comp. discharge temp. > 10°C (Outdoor temp. ≥ 0°C)



Compressor frequency change during control
Same as heating pump down control

(VF106)



4.2 Pressure Equalizing Control Before Starting

If differential pressure remains when the compressor starts, starting current increases and the unit may stop due to malfunction. In order to prevent this, the hot gas bypass valve is opened for a certain amount of time just before the compressor starts to equalize the pressure between high and low pressure. After this control is completed, the unit immediately enters soft control.

	Control contents	Required time
When cooling	Hot gas bypass valve ON for INV outdoor unit and STD outdoor unit 1	1 minute
When heating		2 minutes. However, requires 3 minutes if $T_c - T_e > \Delta T$ when 1 minute elapses.

ΔT is a constant determined by outdoor temperature and T_e .

<In Case of Cooling Only System>

	Control contents	Required time
When cooling	Function unit's solenoid valve Y5, Y6, Y7 are ON	1 minute



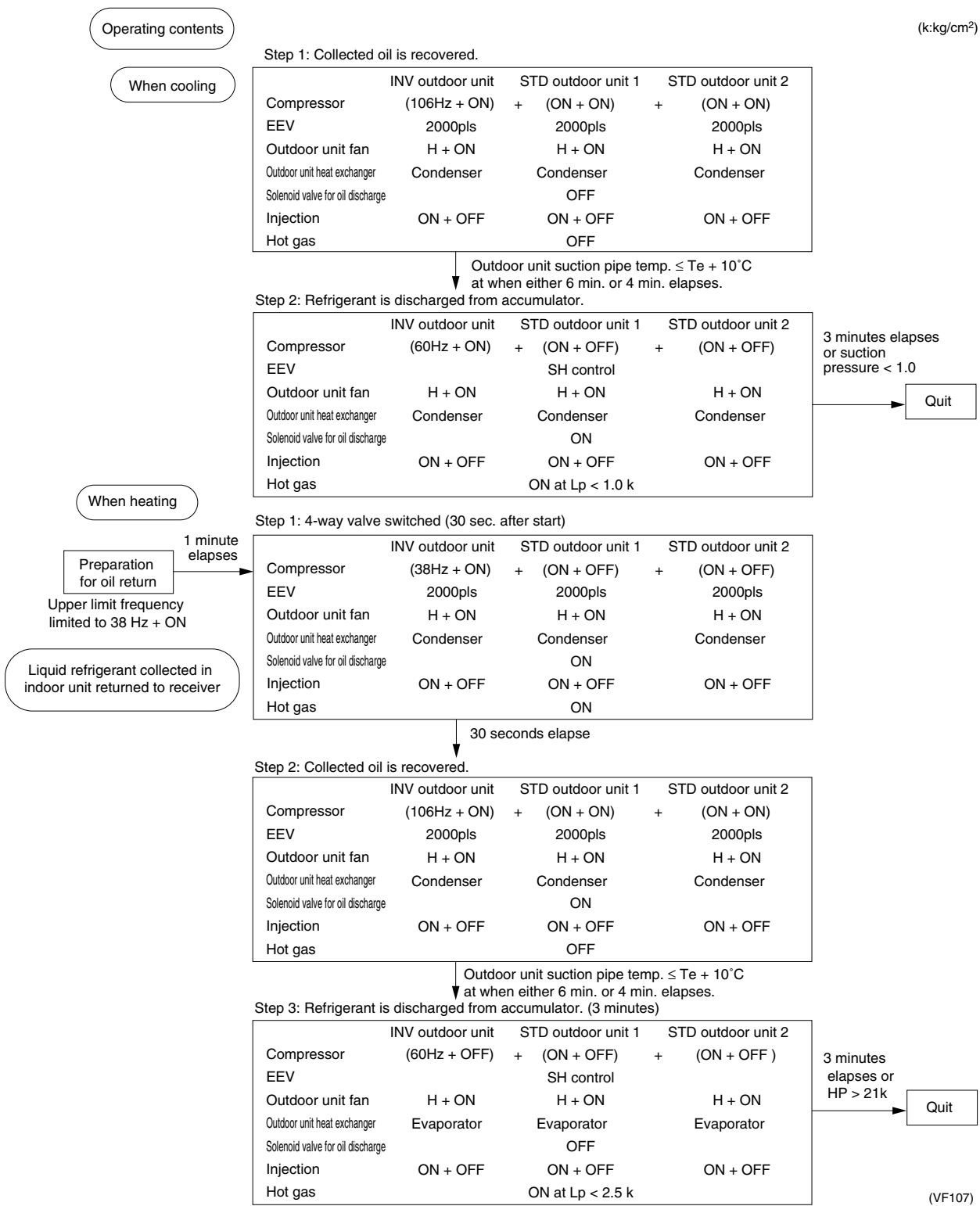
4.3 Oil Return Control

In order to recover refrigeration oil, when total compressor operation capacity equals the reference values, the capacity is increased, all solenoid valves in the system are fully opened and the oil is recovered at each compressor.

4.3.1 Conditions for Executing Oil Control

Total compressor operating time = point when approx. 8 hours elapses (Differs somewhat according to operation status.)

<Heat Pump System>





Outline of Control

SI-E-05C

<In Case of Cooling Only System>

Operating contents

(k:kg/cm²)

When cooling

Step 1: Collected oil is recovered.

	INV outdoor unit	STD outdoor unit 1	STD outdoor unit 2
Compressor	(106Hz + ON)	+ (ON + ON)	+ (ON + ON)
Outdoor unit fan	H + ON	H + ON	H + ON
Outdoor unit heat exchanger	Condenser	Condenser	Condenser
Solenoid valve for oil discharge		OFF	
Injection	ON + OFF	ON + OFF	ON + OFF

Outdoor unit suction pipe temp. $\leq T_e + 10^\circ\text{C}$
at when either 6 min. or 4 min. elapses.

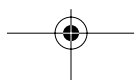
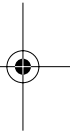
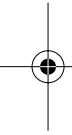
Step 2: Refrigerant is discharged from accumulator.

	INV outdoor unit	STD outdoor unit 1	STD outdoor unit 2
Compressor	(60Hz + ON)	+ (ON + OFF)	+ (ON + OFF)
Outdoor unit fan	H + ON	H + ON	H + ON
Outdoor unit heat exchanger	Condenser	Condenser	Condenser
Solenoid valve for oil discharge		ON	
Injection	ON + OFF	ON + OFF	ON + OFF
Function unit's solenoid valve	Y5-ON at Lp < 1.0	Y6-ON at Lp < 1.0 k	Y7-ON at Lp < 1.0 k

3 minutes elapses
or suction
pressure < 1.0

Quit

(VF108)



4.4 Defrost (For Heat Pump System)

Melts frost which might collect on outdoor heat exchangers during heating in order to recover their heat conveying performance.

4.4.1 Conditions for Executing Defrost

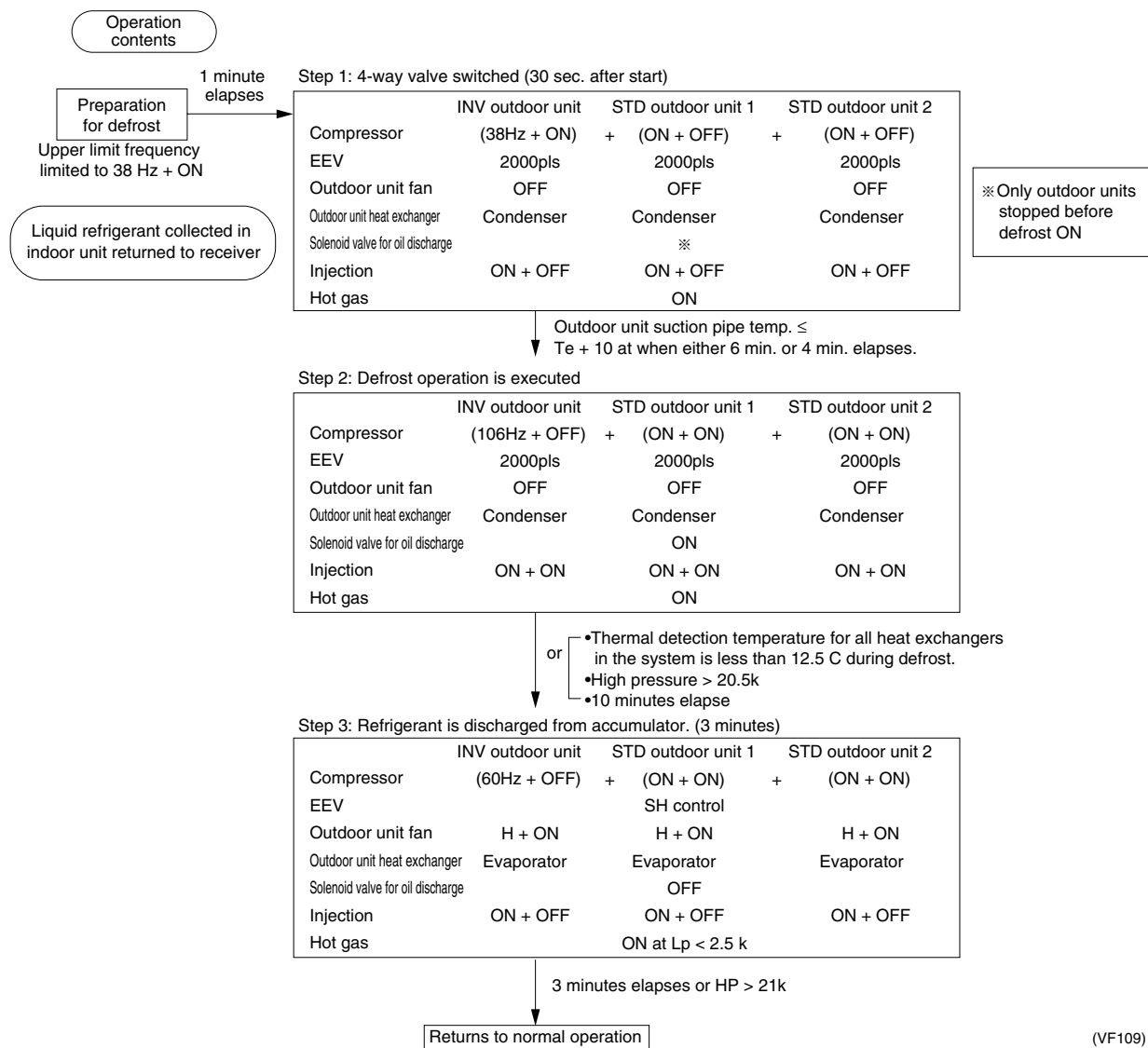
(k:kg/cm²)

&	At least 20 minutes have elapsed since completion of oil return or since compressor starts.
	High pressure < 19.9k (Tc = 52.4°C)
	Compressor is running at least 30 minutes since completion of previous defrost.
	Liquid pipe thermal detection temperature ≤ T°C for 5 minutes during operation for all outdoor units, or 15 minutes for any one outdoor unit.

$$T=C \times (\text{Outdoor temp.}) - \alpha$$

(C is constant value)

&	Forced defrost test pin (MDS) is shorted.
	Liquid pipe thermal detection temperature < 12.5°C for 5 minutes for all units
	High pressure < 19.9k (Tc = 52.4°C)



4.5 Oil Equalization Control

Because oil could collect in the outdoor units or between inverter outdoor unit and standard outdoor unit 1 outdoor units when only inverter outdoor unit is operating due to the compressor stopping during operation, oil that collects in standard outdoor unit 1 is returned to inverter outdoor unit.

4.5.1 When Cooling

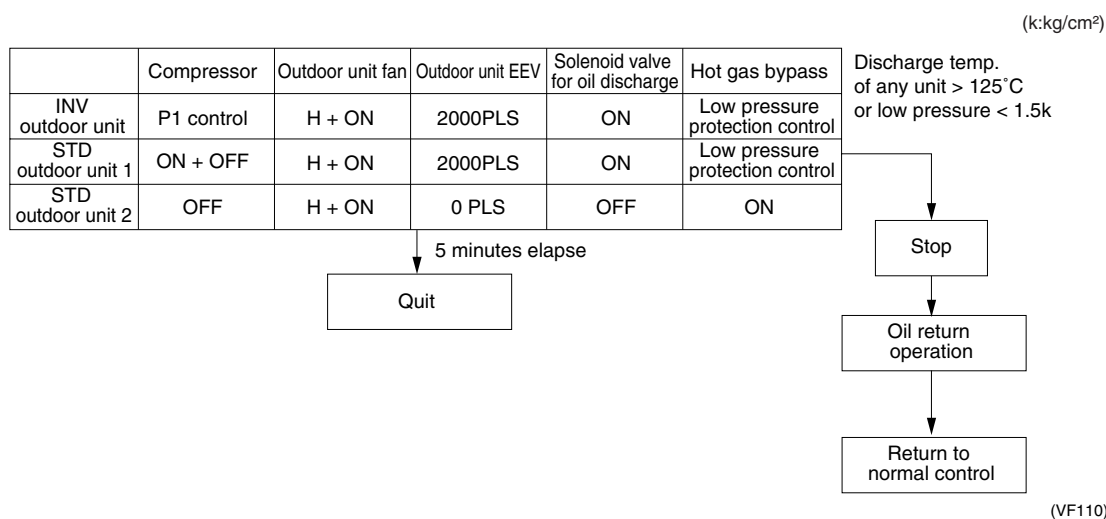
<Heat Pump System>

Oil is moved between inverter outdoor unit and standard outdoor unit 1 units by operating them simultaneously.

When all three systems are operating, however, oil equalization is not executed because oil separation is not carried out.

Operation conditions

&	&	2-system operation		
		At least 20 minutes has elapsed since completing start processing, and at least 20 minutes has elapsed since oil return.		
		At least 28 minutes has elapsed since defrost completion.		
		OR	At least 10 continuous minutes has elapsed since inverter outdoor unit started.	
			&	INV compressor oil temperature > Te+10°C
		At least 3 minutes has elapsed since inverter outdoor unit started.		
At least A Time has elapsed by total operating time of standard outdoor unit 1 since completion of previous oil equalization operation.				



A Time

	16Hp	18Hp	20Hp	24Hp	26Hp	28Hp	30Hp
Cooling	2 hours	2 hours	2 hours	2 hours	2 hours	2 hours	2 hours
Heating	3 hours	3 hours	2 hours	3 hours	3 hours	3 hours	2 hours



SiE-05C

Outline of Control

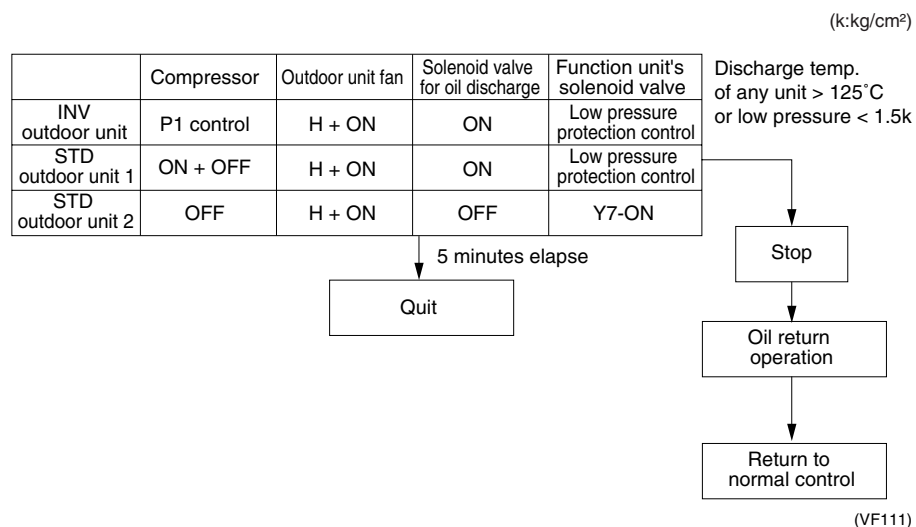
<In Case of Cooling Only System>

Oil is moved between inverter outdoor unit and standard outdoor unit 1 units by operating them simultaneously.

When all three systems are operating, however, oil equalization is not executed because oil separation is not carried out.

Operation conditions

&	&	2-system operation	
		At least 20 minutes has elapsed since completing start processing, and at least 20 minutes has elapsed since oil return.	
		At least 28 minutes has elapsed since defrost completion.	
	OR	At least 10 continuous minutes has elapsed since standard outdoor unit 1 started.	
		&	INV compressor oil temperature > Te+10°C
		At least 3 minutes has elapsed since inverter outdoor unit started.	
At least A Time has elapsed by total operating time of standard outdoor unit 1 since completion of previous oil equalization operation.			



A Time

	16Hp	18Hp	20Hp	24Hp	26Hp	28Hp	30Hp
Cooling	2 hours	2 hours	2 hours	2 hours	2 hours	2 hours	2 hours

Outline of Control

SiE-05C

4.5.2 When Heating

Oil level between both units is equalized in 2 steps: oil transfer from INV outdoor unit to STD outdoor unit 1, and STD outdoor unit 1 to INV outdoor unit.

When all three systems are operating, however, oil equalization is not executed because oil separation is not carried out.

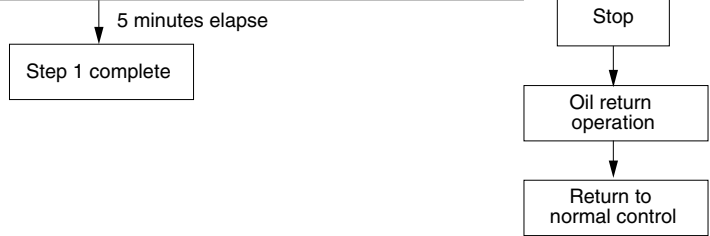
Operation conditions

&	2-system operation			
	At least 20 minutes has elapsed since completing start processing, and at least 20 minutes has elapsed since oil return.			
	At least 28 minutes has elapsed since defrost completion.			
	OR	At least 10 continuous minutes has elapsed since the INV outdoor unit started.		
		<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">&</td> <td>INV compressor oil temperature > Te+10°C</td> </tr> <tr> <td colspan="2">At least 3 continuous minutes has elapsed since INV outdoor unit started.</td> </tr> </table>	&	INV compressor oil temperature > Te+10°C
&	INV compressor oil temperature > Te+10°C			
At least 3 continuous minutes has elapsed since INV outdoor unit started.				
OR	At least A Time has elapsed by total operating time of STD outdoor unit since completion of previous oil equalization operation.			
	The standard type 1 compressor has start/stopped and defrost has been executed B Times since completion of previous oil equalization operation.			

(k:kg/cm²)

Step 1 : Oil collected in inverter type is returned to STD outdoor unit 1.

	Compressor	Outdoor unit fan	Outdoor unit EEV	Solenoid valve for oil discharge	Hot gas bypass
INV outdoor unit	38 + OFF	H + ON	1000PLS	ON	Low pressure protection control
STD outdoor unit 1	ON + OFF	H + ON	0 PLS	OFF	Low pressure protection control
STD outdoor unit 2	OFF	H + ON	0 PLS	OFF	ON



(VF112)

Operation conditions

Completion of Step 1	
2-system operation	
&	OR At least 10 continuous minutes has elapsed since the STD outdoor unit 1 compressor started.
	& Oil temp. of INV unit STD compressor > Te+10°C
At least 3 continuous minutes has elapsed since STD outdoor unit 1 started.	
Step 1 complete	

Step 2 : Oil collected in STD outdoor unit 1 is returned to INV outdoor unit.

	Compressor	Outdoor unit fan	Outdoor unit EEV	Solenoid valve for oil discharge	Hot gas bypass
INV outdoor unit	54 + OFF	H + ON	0 PLS	OFF	Low pressure protection control
STD outdoor unit 1	ON + OFF	H + ON	1000PLS	ON	Low pressure protection control
STD outdoor unit 2	OFF	H + ON	0 PLS	OFF	ON



B Time

	16Hp	18Hp	20Hp	24Hp	26Hp	28Hp	30Hp
Heating	5 times						



4.6 Heating Pump Down Residual Operation (For Heat Pump System)

If refrigerant collects in the accumulator, the liquid refrigerant is sucked into the compressor when it starts. This dilutes the refrigeration oil in the compressor and lowers the oil's ability to provide lubrication. Low pressure side refrigerant is therefore discharged when the compressor is stopped in order to prevent this from happening.

4.6.1 Conditions for Pump Down Residual Operation

	INV compressor discharge temp. < 95°C when off	
&	Any one of these (1~4)	<ol style="list-style-type: none"> 1. Stopped no more than 10 minutes from compressor start 2. No more than 20 minutes from completion of defrost or oil return 3. Outdoor temp. < -5°C 4. INV compressor oil temp. < Te + 10°C

Operation contents

Outdoor temp.	Outdoor unit function		L unit function	Indoor unit function
	Compressor	EEV	Receiver gas purge solenoid valve	EEV
Less than -10°C -10°C ≤ Temp. < 0°C Min. 0°C	86Hz + OFF 76Hz + OFF 60Hz + OFF	300 PLS or fully closed	ON	300 PLS

Outdoor unit EEV are either 300m PLS or fully closed due to low pressure.

Completion conditions (k:kg/cm²)

Any one of these (1~5)	<ol style="list-style-type: none"> 1. Low pressure less than 0.7k after 30 sec. subsequent to start of residual operation 2. Hp > 22k 3. INV compressor oil temp. > 110°C 4. Retry, malfunction 5. 10 minutes have elapsed since start of residual operation
------------------------	---

This control is executed if stopped during defrost or oil return.
Pump down is started if a start command is received during residual operation.



4.7 Compressor Oil Temperature Protection Control

1. Even if the compressor is running, if oil temperature of the inverter compressor lowers, the control crankcase heater (CH3) is energized and refrigerant is discharged from inside the compressor by evaporation.

■ Control conditions

Crankcase heater (J3HC) is turned on if inverter compressor oil temp. $< 0^{\circ}\text{C}$.

■ Control cancel conditions

Crankcase heater (J3HC) is turned off if inverter compressor oil temp. $> 40^{\circ}\text{C}$.

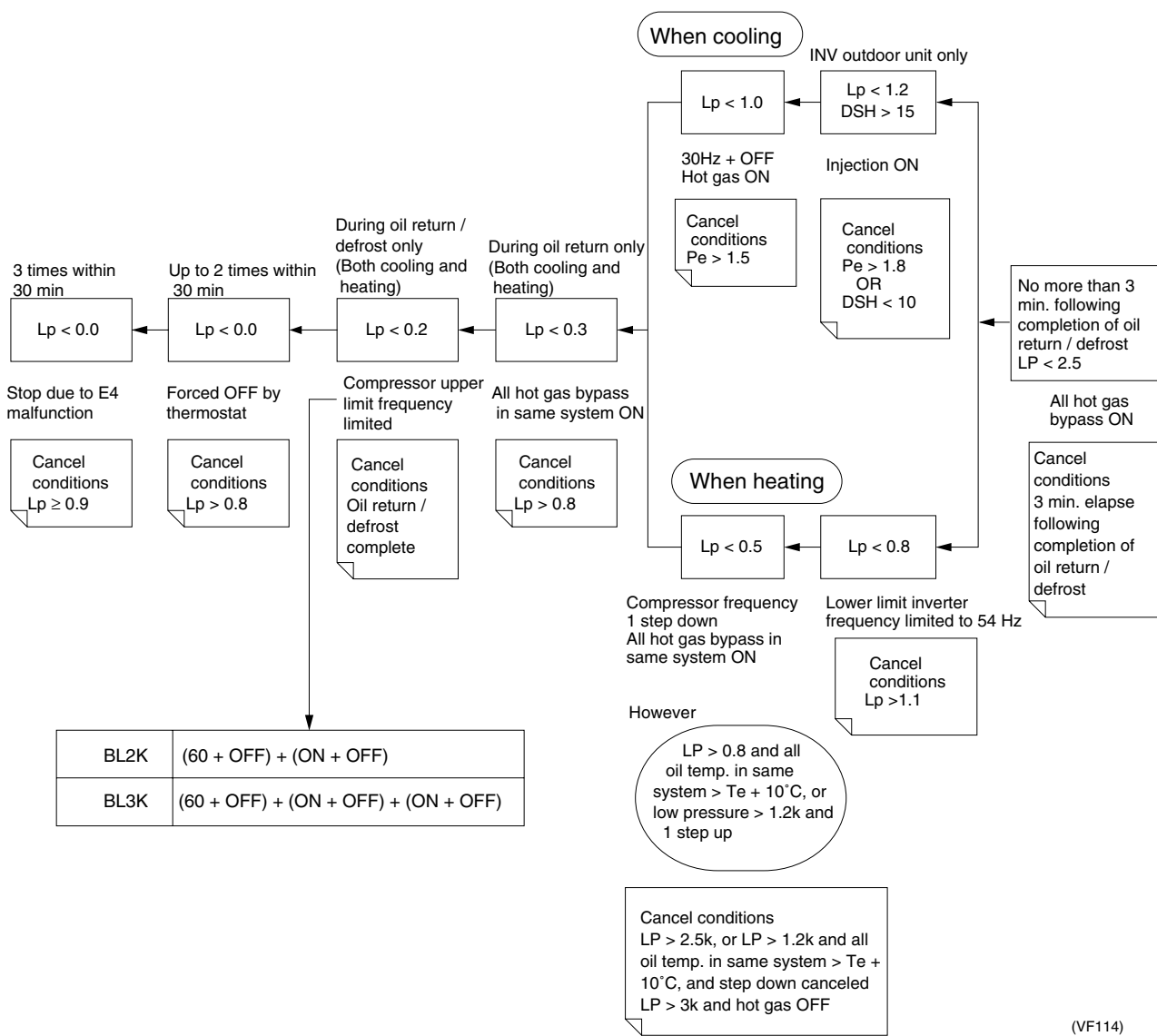
2. Compressor operating capacity is controlled if oil temperature of outdoor units drops below the reference value.

	Control conditions	Cancel conditions	Contents
INV outdoor unit	No more than 30 min. after start or no more than 20 min. since completion of defrost or oil return & INV compressor temp. $< -15^{\circ}\text{C}$	Time given on left has been exceeded or INV compressor temp. $> -10^{\circ}\text{C}$	Limited to either: 106+OFF (106+OFF) + (ON+OFF) (106+OFF) + (ON+OFF) + (ON+OFF)
STD outdoor unit 1	No more than 30 min. after start or no more than 20 min. since completion of defrost or oil return & No.1 compressor temp. $< -15^{\circ}\text{C}$	Time given on left has been exceeded or No.1 compressor temp. $> -10^{\circ}\text{C}$	Limited to either: (106+ON) + (ON+OFF) (106+ON) + (ON+OFF) + (ON+OFF)
STD outdoor unit 2	No more than 30 min. after start or no more than 20 min. since completion of defrost or oil return & No.1 compressor temp. $< -15^{\circ}\text{C}$	Time given on left has been exceeded or No.1 compressor temp. $> -10^{\circ}\text{C}$	Limited to (106+ON) + (ON+ON) + (ON+OFF)

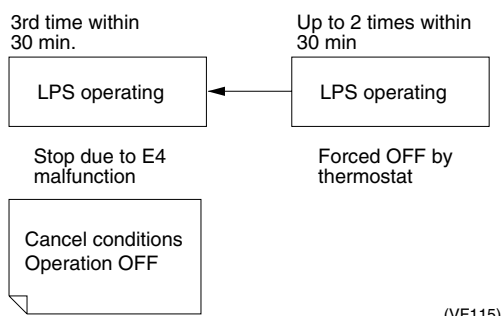
4.8 Low Pressure Protection Control Step

The following types of control are executed if low pressure drops below the reference values in order to prevent temperature inside the compressor from rising abnormally due to drop of compressor suction pressure, and in order to maintain oil pressure for supplying oil to the inside of the compressors during operation.

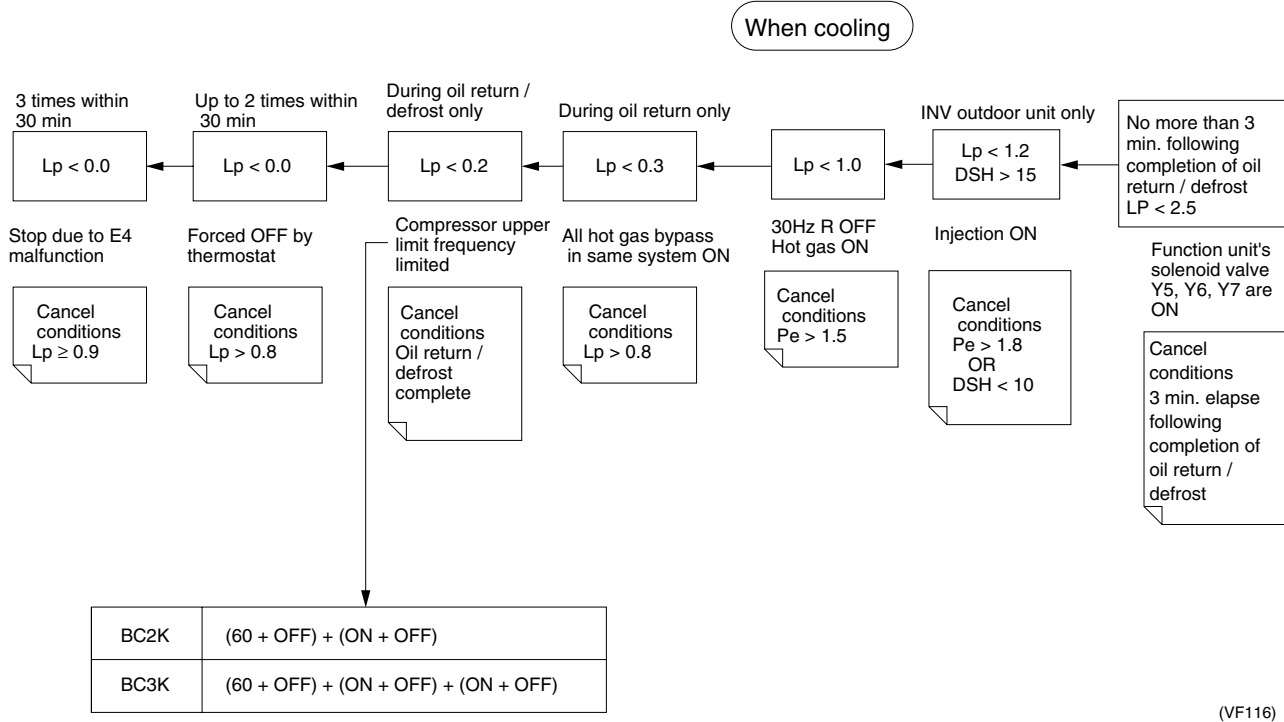
Low Pressure Protection Control



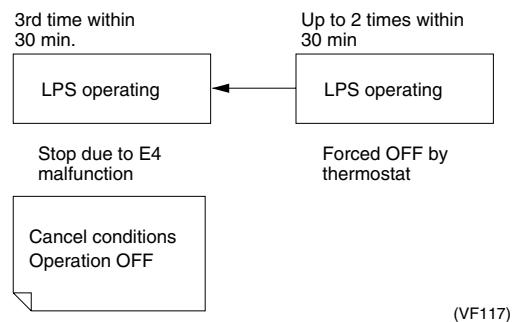
Control During LPS Operation of STD Outdoor Unit



Low Pressure Protection Control (In Case of Cooling Only System)

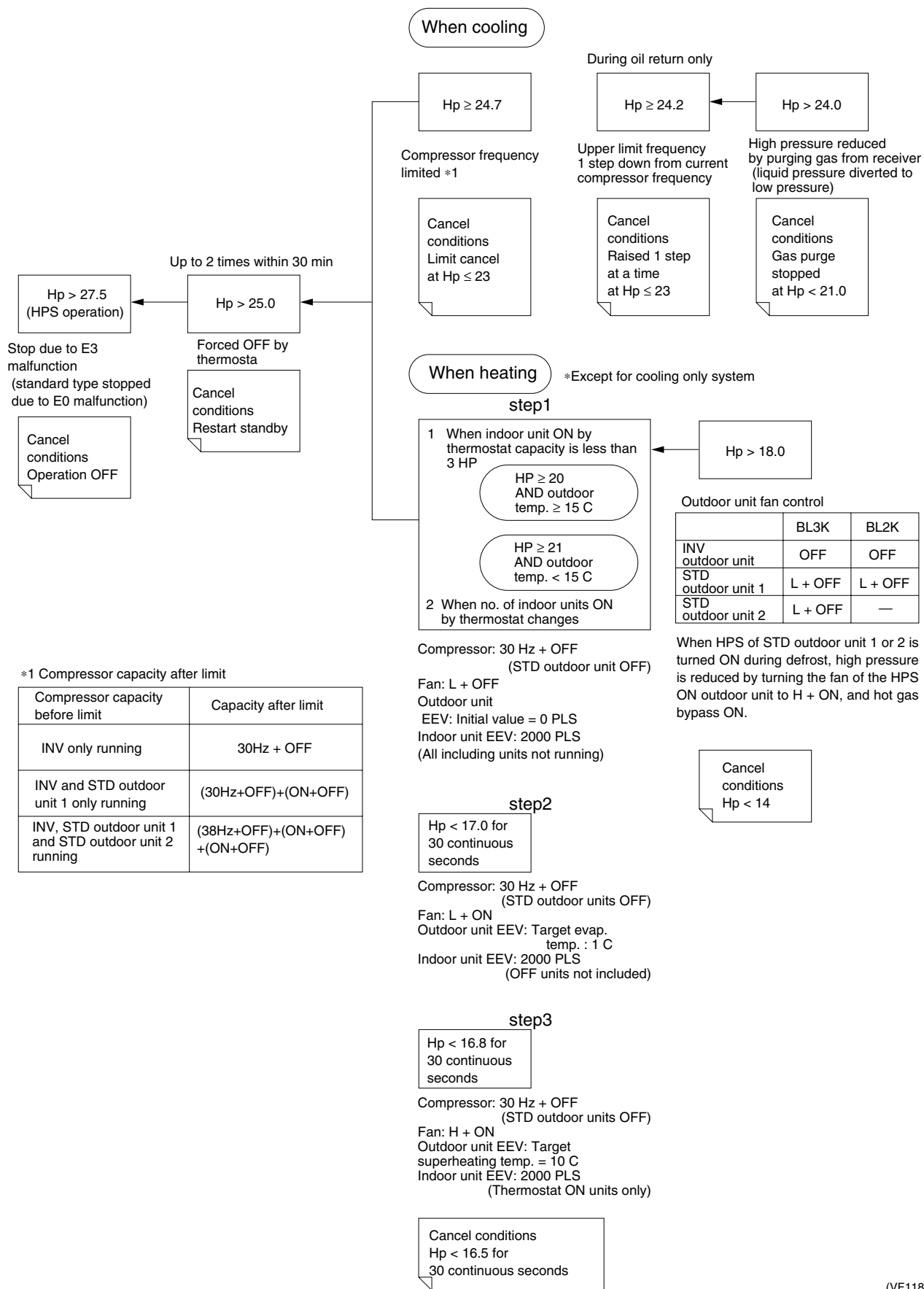


Control During LPS
Operation of STD
Outdoor Unit (In
Case of Cooling
System)



4.9 High Pressure Control Step

In order to regulate high pressure rise, the compressor's operation capacity is reduced if high pressure rises above the reference value. When heating, outdoor unit fans are set to (L + OFF), and indoor unit solenoid valves are fully opened.



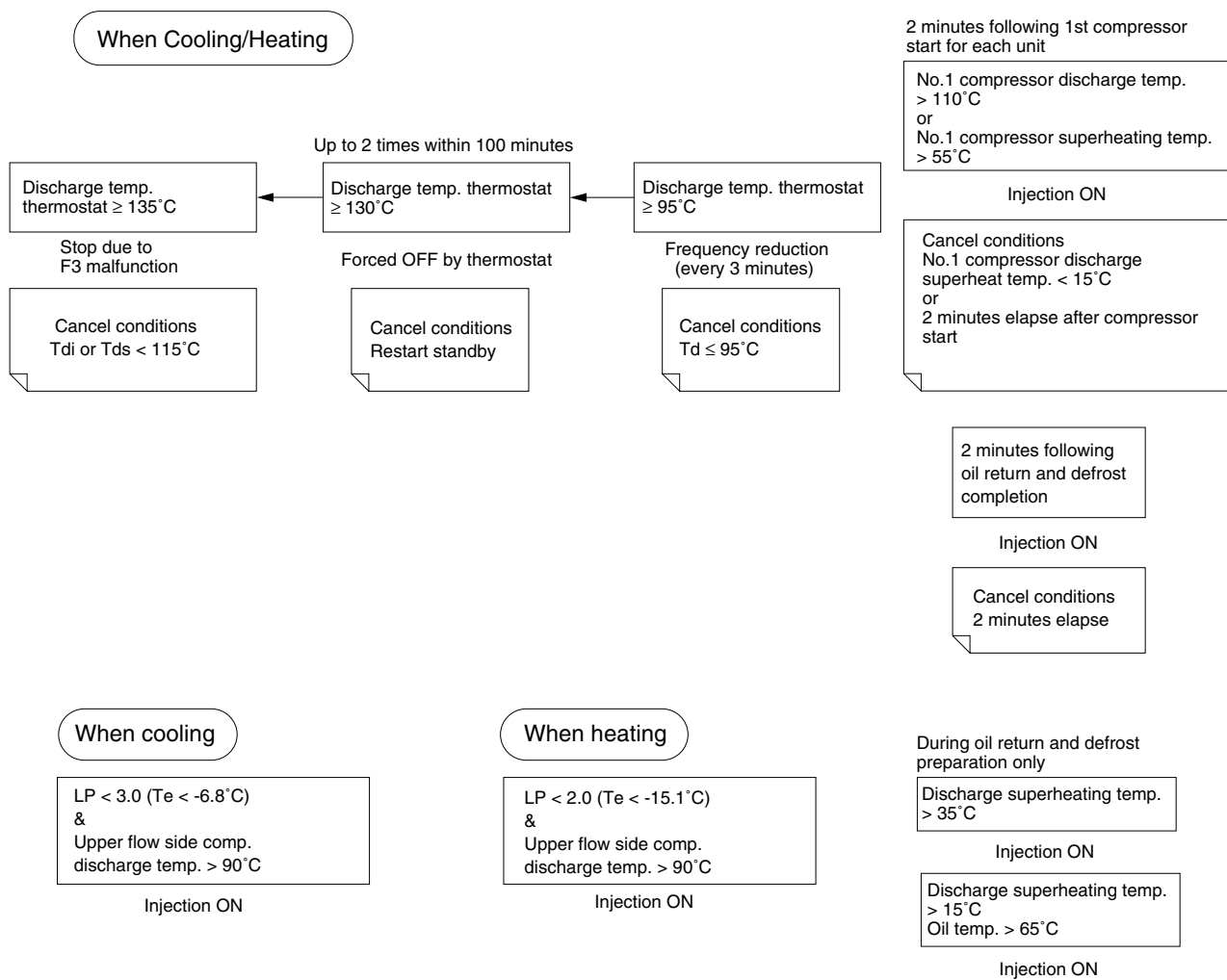
(VF118)

4.10 Discharge Temperature Protection Control

In order to prevent deterioration of refrigeration oil due to rising discharge temperature, temperature is kept from rising by reduction of compressor frequency or injection cooling at the following stages when temperature falls below the reference values.

4.10.1 Both Inverter and Standard Outdoor Units

(k:kg/cm²)



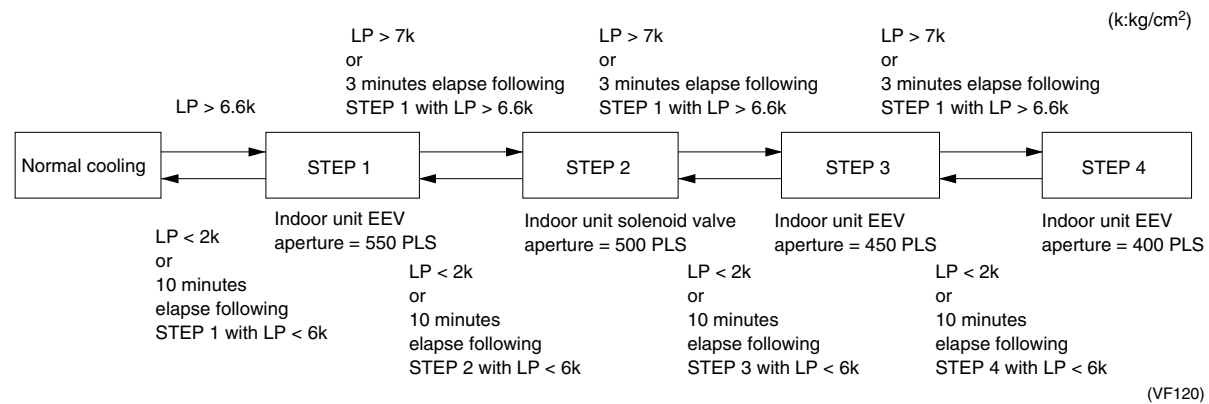
Injection cancel conditions
Injection is canceled if any of the following five conditions are met.

(1) No.1 compressor discharge temp. $< 90^{\circ}\text{C}$ & No.1 compressor discharge superheating temp. $< 35^{\circ}\text{C}$ & Oil temp. $< 55^{\circ}\text{C}$	(3) Upper flow side comp. discharge superheating temp. $< 15^{\circ}\text{C}$
(2) Upper flow side comp. discharge temp. below 105°C & Upper flow side comp. discharge superheating temp. $< 50^{\circ}\text{C}$ & Oil temp. $< \text{Te} + 10^{\circ}\text{C}$	(4) LP > 4.0 (Te $> -0.4^{\circ}\text{C}$) or Upper flow side comp. discharge temp. $< 70^{\circ}\text{C}$
	(5) LP > 4.0 (Te $> -10.7^{\circ}\text{C}$) or Upper flow side comp. discharge temp. $< 80^{\circ}\text{C}$

(VF119)

4.11 Cooling Overload Control

Controls electronic expansion valve aperture of indoor units to prevent low pressure from rising abnormally if many indoor units are operating.



4.12 Inverter Protection Control

4.12.1 Step Down Control by Inverter Current

Reduces compressor operating capacity if current is detected to be in excess of the setting value in order to protect the inverter from overcurrent.

IN conditions	Control contents
27A or more detected	Capacity lowered one step from compressor capacity at this point is used as upper limit. → After that, one step is advanced every three minutes if current doesn't exceed the setting value.

OUT conditions	Upper limit frequency is canceled if: 106 + ON when INV outdoor unit only is operating. (106 + ON) + (ON + ON) if 2 systems operating (106 + ON) + (ON + ON) + (ON + ON) if 3 systems operating
----------------	--

4.12.2 Step Down Control by Inverter Fin

Reduces compressor operating capacity if current exceeds the setting value in order to prevent the temperature of the inverter itself from rising above the setting value.

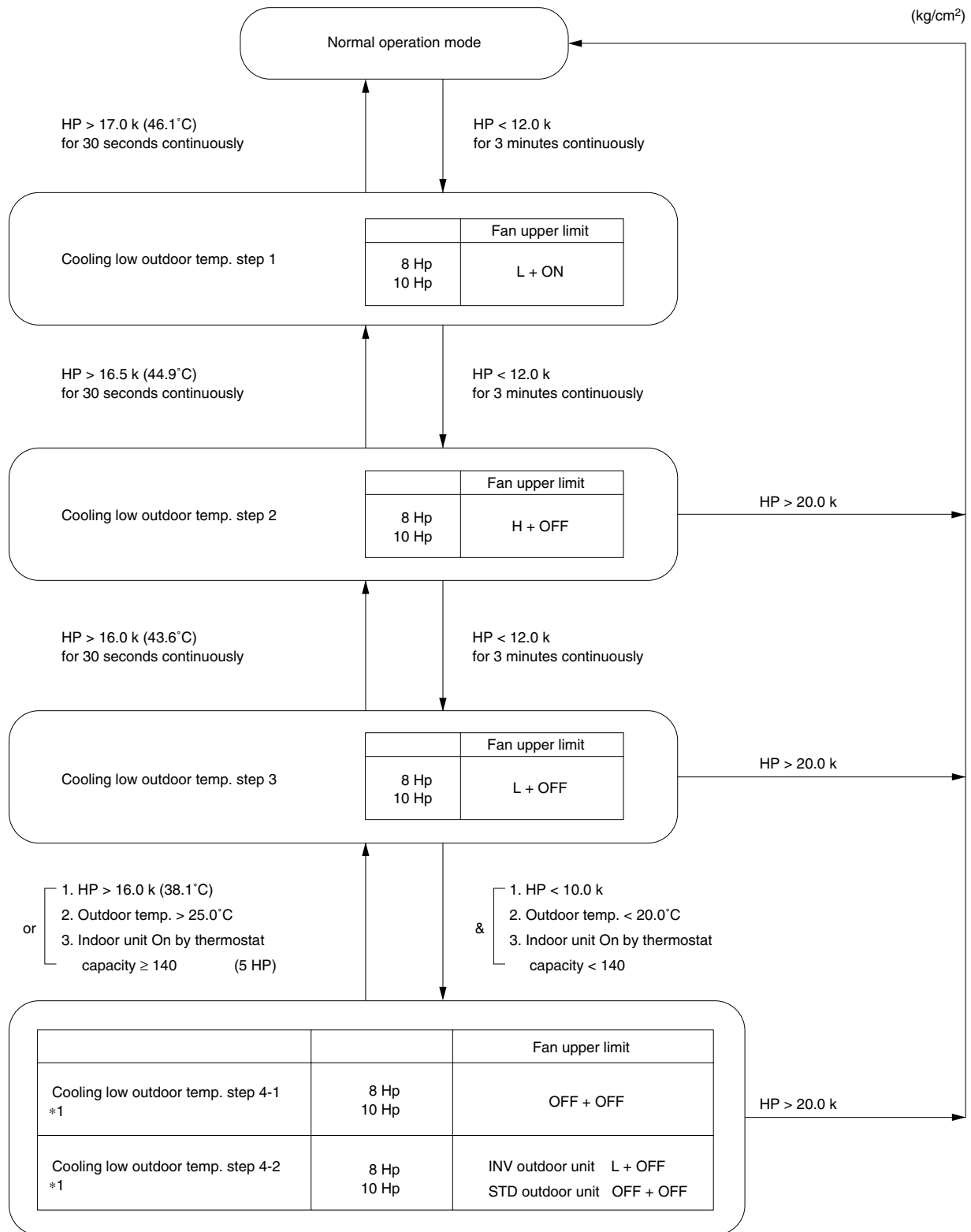
IN conditions	Control contents
Fin temp. 92°C or higher detected	Capacity lowered one step from compressor capacity at this point is used as upper limit. → After that, one step is advanced every three minutes if current doesn't exceed 87°C.

4.13 Standby by Outdoor Temperature When Heating (For Heat Pump System)

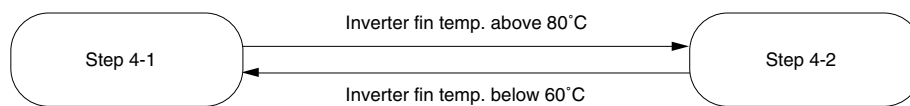
If outdoor temperature is above 27°C when heating, forces the compressor to stop to prevent safety devices from tripping or sensor malfunction. (Same as off by thermostat.)

4.14 Low Outdoor Temperature Control When Cooling

Controls the fan in order to prevent high-low pressure differential from dropping due to high pressure reduction if cooling when outdoor temperature is low.



*1: Inverter cooling is insufficient to stop the fan at 4-1. When inverter fin temperature reaches 80°C or higher, the inverter is cooled by the inverter fan at step 4-2.



(VF121)

Outline of Control**SI-E-05C****4.15 Low Noise and Demand Control****4.15.1 Low Noise Control**

When the outdoor unit operating sound can cause a noise problem during the night, an external contact input (low-noise input) can be used to operate the outdoor fan and compressor at low speed. This reduces the operating noise by approximately 2 to 3 dB.

Action During Low Noise Operation (Except Oil Return, Defrost)

Conditions	Outdoor Fan	Limit of compressor frequency (k:kg/cm ²)	
		INV outdoor unit	STD outdoor unit
1	H + OFF	96Hz + OFF	ON + OFF
2	L + ON		

1 Discharge pressure \leq 24k

2 Discharge pressure $>$ 24k

External control adaptor for outdoor unit is required to the low noise control (OPTION)

4.15.2 Demand Control

By connecting the external contact input to the Demand control input of the outdoor unit external control adaptor(option), you can save power with limit of compressor frequency.

Upper Limit of Compressor Frequency in Demand Control

	3 outdoor units	2 outdoor units	Capacity saving
	RX(Y) 24 ~ 30K REY 24 ~ 30K (24 ~ 30Hp)	RX(Y) 16 ~ 20K REY 16 ~ 20K (16 ~ 20Hp)	
Demand input 1	INV (106 + ON) STD1 (ON + OFF) STD2 (ON + OFF)	INV (106 + ON) STD (ON + OFF)	Power consumption will be reduced to around 70% of normal usage.
Demand input 2	INV (60 + ON) STD1 (ON + OFF) STD2 (OFF + OFF)	INV (106 + OFF) STD (OFF + OFF)	Power consumption will be reduced to around 40% of normal usage.
Demand input 3	Forced thermostat OFF		Not run



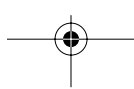
4.16 Compressor Capacity Control

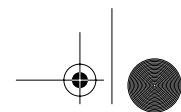
4.16.1 2 Outdoor Units Combination

RX(Y)16K /
RX(Y)18K /
RX(Y)20K

INV outdoor unit	STD outdoor unit
30Hz + OFF	OFF + OFF
34Hz + OFF	
38Hz + OFF	
42Hz + OFF	
48Hz + OFF	
54Hz + OFF	
60Hz + OFF	
68Hz + OFF	
76Hz + OFF	
96Hz + OFF	
106Hz + OFF	
38Hz + ON	
48Hz + ON	
60Hz + ON	
76Hz + ON	
86Hz + ON	
96Hz + ON	
106Hz + ON	
38Hz + ON	ON + OFF
48Hz + ON	
60Hz + ON	
76Hz + ON	
86Hz + ON	
96Hz + ON	
106Hz + ON	
38Hz + ON	ON + ON
60Hz + ON	
96Hz + ON	
106Hz + ON	

42Hz + ON : Frequency during soft start





Outline of Control

SiE-05C

4.16.2 3 Outdoor Units Combination

RX(Y)24K /
RX(Y)26K /
RX(Y)28K /
RX(Y)30K

INV outdoor unit	STD outdoor unit 1	STD outdoor unit 2
30Hz + OFF	OFF + OFF	OFF + OFF
34Hz + OFF		
38Hz + OFF		
42Hz + OFF		
48Hz + OFF		
54Hz + OFF		
60Hz + OFF		
68Hz + OFF		
76Hz + OFF		
86Hz + OFF		
96Hz + OFF		
106Hz + OFF		
38Hz + ON		
48Hz + ON		
60Hz + ON	ON + OFF	
76Hz + ON		
86Hz + ON		
96Hz + ON		
106Hz + ON		
38Hz + ON		
60Hz + ON	ON + OFF	ON + OFF
96Hz + ON		
106Hz + ON		
38Hz + ON		
60Hz + ON	ON + ON	ON + OFF
96Hz + ON		
106Hz + ON		
38Hz + ON		
60Hz + ON	ON + ON	ON + ON
96Hz + ON		
106Hz + ON		
38Hz + ON		

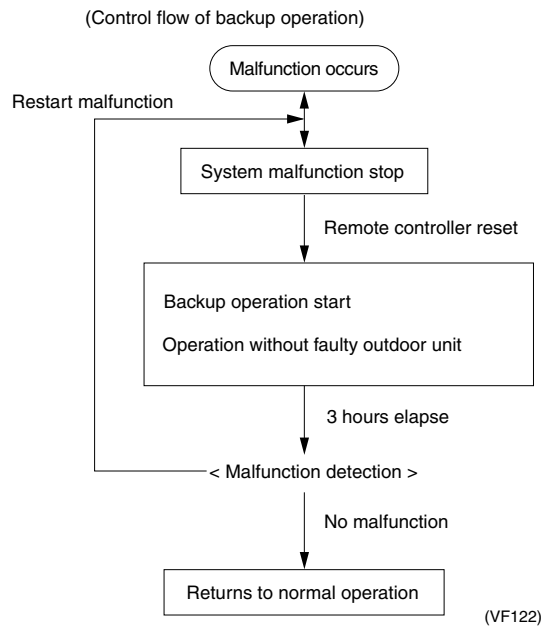


Note: Combinations other than those given above are possible according to operating status.
(60Hz + OFF) + (ON + OFF) + (ON + OFF)



4.17 Backup Operation

If a STD outdoor unit is faulty, if you restart with the remote controller after it stops due to malfunction, the system starts operating again without the faulty STD outdoor unit. Backup operation can be used up to a total of 3 hours of indoor unit operation. When 3 hours elapses, if the malfunction continues, the unit stops again due to malfunction. If it returns to normal, it can continue to operate as is.



After the system stops due to malfunction to let you know the system is faulty, backup operation is started by remote controller. Three hours after starting backup operation for the reason given above, malfunction detection is once again carried out, and the system stops due to malfunction if a malfunction still exists. (All indoor units in the system stop.)

■ Operation of faulty STD outdoor unit

	Compressor	Outdoor unit fan	Outdoor unit EEV	Hot gas bypass
Faulty STD outdoor unit	OFF	H + ON	0 PLS	ON

<In case of cooling only system>

	Compressor	Outdoor unit fan	Function unit's solenoid valve Y5, Y6, Y7
Faulty STD outdoor unit	OFF	H + ON	ON

■ Other outdoor units carry out normal operation.

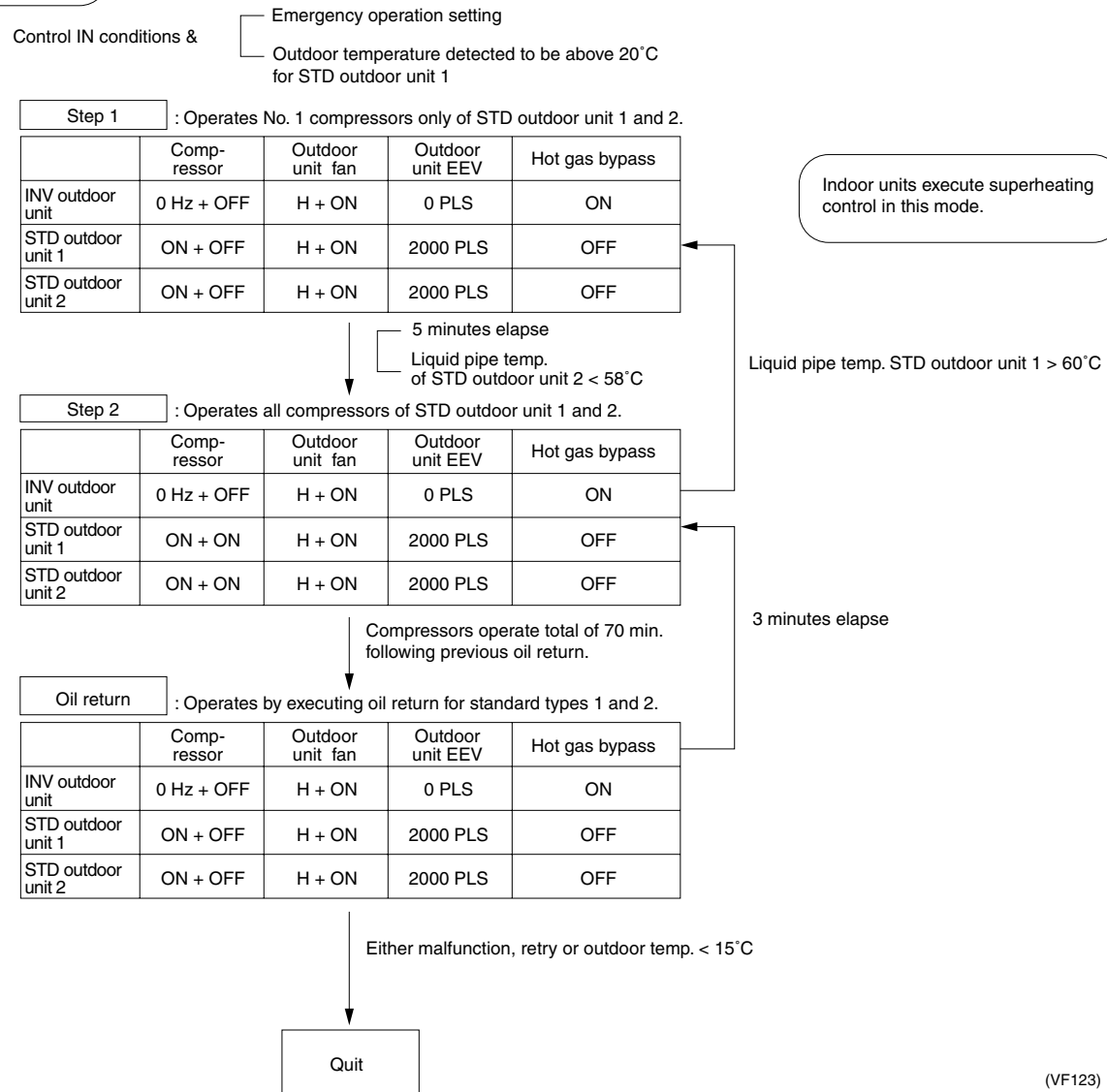
4.18 Emergency Operation

4.18.1 Emergency Operation 1

If INV outdoor unit cannot operate, you can operate with STD outdoor units only if the outdoor temperature doesn't exceed the reference temperature. Emergency operation is executed by setting mode 2 to EMG (emergency operation).

When Cooling (For Heat Pump System)

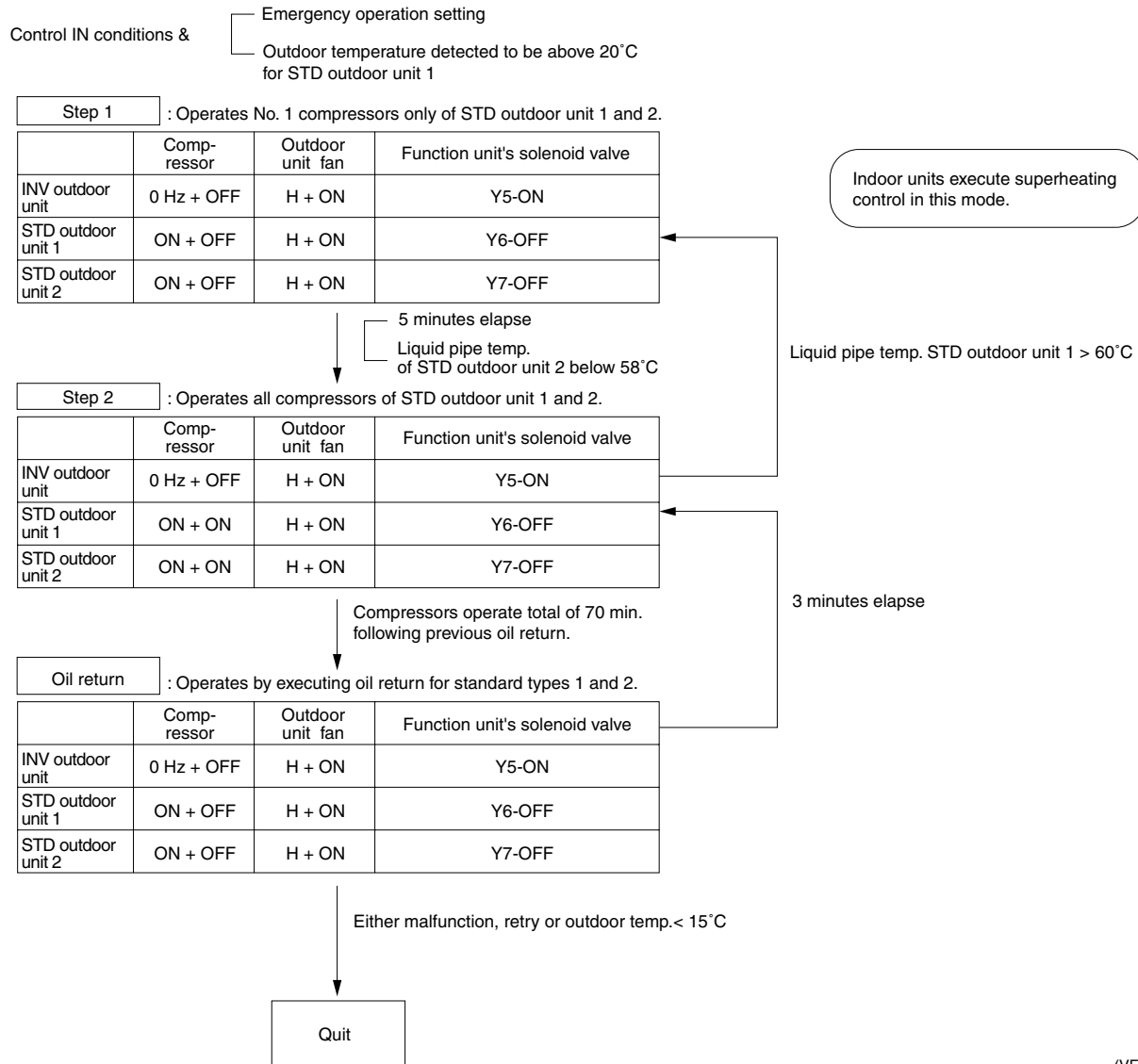
When Cooling



■ Indoor Unit Fan Control

HPS operation for either STD outdoor unit 1 or 2 → Fixed to L tap ON by thermostat unit only.

When Cooling (In Case of Cooling Only System)



■ **Indoor Unit Fan Control**

HPS operation for either STD outdoor unit 1 or 2 → Fixed to L tap ON by thermostat unit only.

Outline of Control

SiE-05C

When Heating

When Heating

Control IN conditions &
 Emergency operation setting
 Outdoor temperature detected to be above -5°C
 for STD outdoor unit 1

Aperture of solenoid valves is fixed
 for indoor units in this mode.

Step 1 : Operates No. 1 compressors only of STD outdoor unit 1 and 2.

	Comp-ressor	Outdoor unit fan	Outdoor unit EEV	Hot gas bypass
INV outdoor unit	0 Hz + OFF	H + ON	0 PLS	ON
STD outdoor unit 1	ON + OFF	H + ON	SH control	OFF
STD outdoor unit 2	ON + OFF	H + ON	SH control	OFF

5 minutes elapse

Step 2 : Operates all compressors of STD outdoor unit 1 and 2.

	Comp-ressor	Outdoor unit fan	Outdoor unit EEV	Hot gas bypass
INV outdoor unit	0 Hz + OFF	H + ON	0 PLS	ON
STD outdoor unit 1	ON + ON	H + ON	SH control	OFF
STD outdoor unit 2	ON + ON	H + ON	SH control	OFF

Any unit executing
 HPS operation

Defrost : Heat exchange temp.
 of any unit < -10°C.

Oil return : Compressors operate total
 of 70 min. following previous oil
 return.

Oil return / defrost : Operates by executing oil return for STD outdoor unit 1 and 2.

step 1

	Comp-ressor	Outdoor unit fan	Outdoor unit EEV	Hot gas bypass
INV outdoor unit	0 Hz + OFF	H + ON	0 PLS	OFF
STD outdoor unit 1	ON + OFF	H + ON	2000 PLS	ON
STD outdoor unit 2	ON + OFF	H + ON	2000 PLS	ON

3 minutes 30 seconds elapse.

step 2

	Comp-ressor	Outdoor unit fan	Outdoor unit EEV	Hot gas bypass	Injection
INV outdoor unit	0 Hz + OFF	H + ON	0 PLS	OFF	OFF
STD outdoor unit 1	ON + ON	H + ON	2000 PLS	ON	ON
STD outdoor unit 2	ON + ON	H + ON	2000 PLS	ON	ON

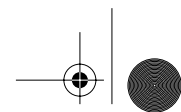
Either malfunction, retry or outdoor temp. < -10°C

Quit

(VF125)

■ Indoor unit fan control

HPS operation for either STD outdoor unit 1 or 2 → Fixed to L tap by thermostat ON unit only.



4.18.2 Emergency Operation 2

Setting forced backup operation by setting mode 2 enables emergency operation with INV outdoor unit and other STD outdoor unit if STD outdoor unit malfunction.

■ Operation of faulty STD outdoor unit

	Compressor	Outdoor unit fan	Outdoor unit EEV	Hot gas bypass
Faulty STD outdoor unit	OFF	H + ON	0 PLS	ON

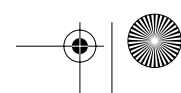
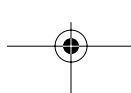
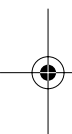
◆ In case of cooling only system

	Compressor	Outdoor unit fan	Function unit's solenoid valve Y5, Y6, Y7
Faulty STD outdoor unit	OFF	H + ON	ON

■ Other outdoor units operate by normal operation.

■ Difference with Backup Operation

Backup operation is conducted for a maximum of 3 hours, but there is no time limit with this mode.





4.19 Pump Down Operation

When an outdoor unit is faulty, by fully closing both liquid and pressure equalizing valves and switching to the service mode, you can conduct pump down operation (max. 1 hour) which purges refrigerant from the faulty unit. When doing so, all indoor units are turned ON by thermostat. Refrigerant is discharged from the low pressure line of the faulty unit by cooling with outdoor units that are not faulty up to low pressure equivalent. Pump down operation is quit automatically after one hour. Just before quitting (when approx. 50 minutes elapse), shut the gas pipe's stop valve and then stop the outdoor unit. After another 10 minutes passes, if the pressure in the outdoor unit doesn't exceed outdoor temperature equivalent pressure, the process is complete.

4.19.1 Heat Pump System

Pump Down Operation of INV Outdoor Unit

First fully close the liquid side and pressure equalizing side stop valves of the INV outdoor unit. The execute low pressure control by setting indoor unit fan to L or off in accordance with the outdoor temperature and No. 2 system outdoor unit suction pipe temperature.

Step 1 : Operates No. 1 compressors only of STD outdoor unit 1 and 2.

	Compressor	Outdoor unit fan	Outdoor unit EEV	Hot gas bypass
INV outdoor unit	0 Hz + OFF	H + ON	500 PLS	ON
STD outdoor unit 1	ON + OFF	H + ON	2000 PLS	OFF
STD outdoor unit 2	ON + OFF	H + ON	2000 PLS	OFF

Indoor units execute superheating control in this mode.

1 No. 2 outdoor unit liquid pipe temp. < 58 C
&
1.5 minutes elapse

Step 2 : Operates all compressors of STD outdoor unit 1 and 2.

	Compressor	Outdoor unit fan	Outdoor unit EEV	Hot gas bypass
INV outdoor unit	0 Hz + OFF	H + ON	500 PLS	ON
STD outdoor unit 1	ON + ON	H + ON	2000 PLS	OFF
STD outdoor unit 2	ON + ON	H + ON	2000 PLS	OFF

STD outdoor unit 2 liquid pipe temp. > 60°C

(VF126)

Pump Down Operation of STD Outdoor Unit

First fully close the liquid side and pressure equalizing side stop valves of the STD outdoor unit to be pumped down. The indoor unit fan is fixed at L tap.

◆ To pump down refrigerant of STD outdoor unit 1

Normal cooling operation is executed by INV outdoor unit and STD outdoor unit 2 only.

	Compressor	Outdoor unit fan	Outdoor unit EEV	Hot gas bypass
INV outdoor unit	P I control	H + ON	2000 PLS	Low pressure protection control
STD outdoor unit 1	OFF	H + ON	500 PLS	ON
STD outdoor unit 2	P I control	H + ON	2000 PLS	Low pressure protection control

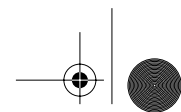
Indoor units execute superheating control in this mode.

(VF170)

◆ To pump down refrigerant of STD outdoor unit 2:

Normal cooling operation is executed by INV outdoor unit and STD outdoor unit 1 only.

Outdoor unit operation is same as STD outdoor unit 1.



4.19.2 In Case of Cooling Only System

Pump Down Operation of INV Outdoor Unit

First fully close the liquid side and pressure equalizing side stop valves of the INV outdoor unit. The execute low pressure control by setting indoor unit fan to L or off in accordance with the outdoor temperature and No. 2 system outdoor unit suction pipe temperature.

Step 1 : Operates No. 1 compressors only of STD outdoor unit 1 and 2.

	Compressor	Outdoor unit fan	Function unit's solenoid
INV outdoor unit	0 Hz + OFF	H + ON	Y5-ON
STD outdoor unit 1	ON + OFF	H + ON	Y6-OFF
STD outdoor unit 2	ON + OFF	H + ON	Y7-OFF

Indoor units execute superheating control in this mode.

1 No. 2 outdoor unit liquid pipe temp. below 58°C & 1 5 minutes elapse

Step 2 : Operates all compressors of STD outdoor unit 1 and 2.

	Compressor	Outdoor unit fan	Function unit's solenoid
INV outdoor unit	0 Hz + OFF	H + ON	Y5-ON
STD outdoor unit 1	ON + ON	H + ON	Y6-OFF
STD outdoor unit 2	ON + ON	H + ON	Y7-OFF

STD outdoor unit 2 liquid pipe temp. above 60°C

(VF127)

Pump Down Operation of STD Outdoor Unit

First fully close the liquid side and pressure equalizing side stop valves of the STD outdoor unit to be pumped down. The indoor unit fan is fixed at L tap.

◆ To pump down refrigerant of STD outdoor unit 1

Normal cooling operation is executed by INV outdoor unit and STD outdoor unit 2 only.

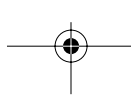
	Compressor	Outdoor unit fan	Function unit's solenoid
INV outdoor unit	P I control	H + ON	Low pressure protection control
STD outdoor unit 1	OFF	H + ON	Y6-ON
STD outdoor unit 2	P I control	H + ON	Low pressure protection control

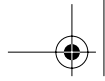
Indoor units execute superheating control in this mode.

(VF171)

◆ To pump down refrigerant of STD outdoor unit 2:

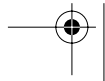
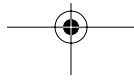
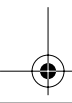
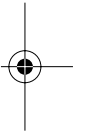
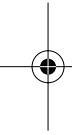
Normal cooling operation is executed by INV outdoor unit and STD outdoor unit 1 only. Outdoor unit operation is same as STD outdoor unit 1.





Outline of Control

SI-E-05C



5. Flow of Refrigerant in Each Operating Mode

5.1 Heat Pump Model

The flow of refrigerant in each mode is shown for high pressure gas or condensed liquid refrigerant by the line, and for evaporated low pressure gas by the line.

1. Normal operation
2. Normal operation (cooling)
3. Oil removal (heating)
4. Oil removal (heating)
5. Defrost operation (cooling)
6. Oil removal operation (heating step 1)
7. Oil removal operation (heating step 2)
8. Oil removal operation (heating step 2)
9. Heating up down residual operation
10. Refrigerant pump down operation
11. Emergency Operation for Inverter Failure (cooling)
12. Emergency Operation for Inverter Failure (heating)

Все каталоги и инструкции здесь:

<https://splitssystema48.ru/instrukcii-po-ekspluatatsii-kondicionerov.html>

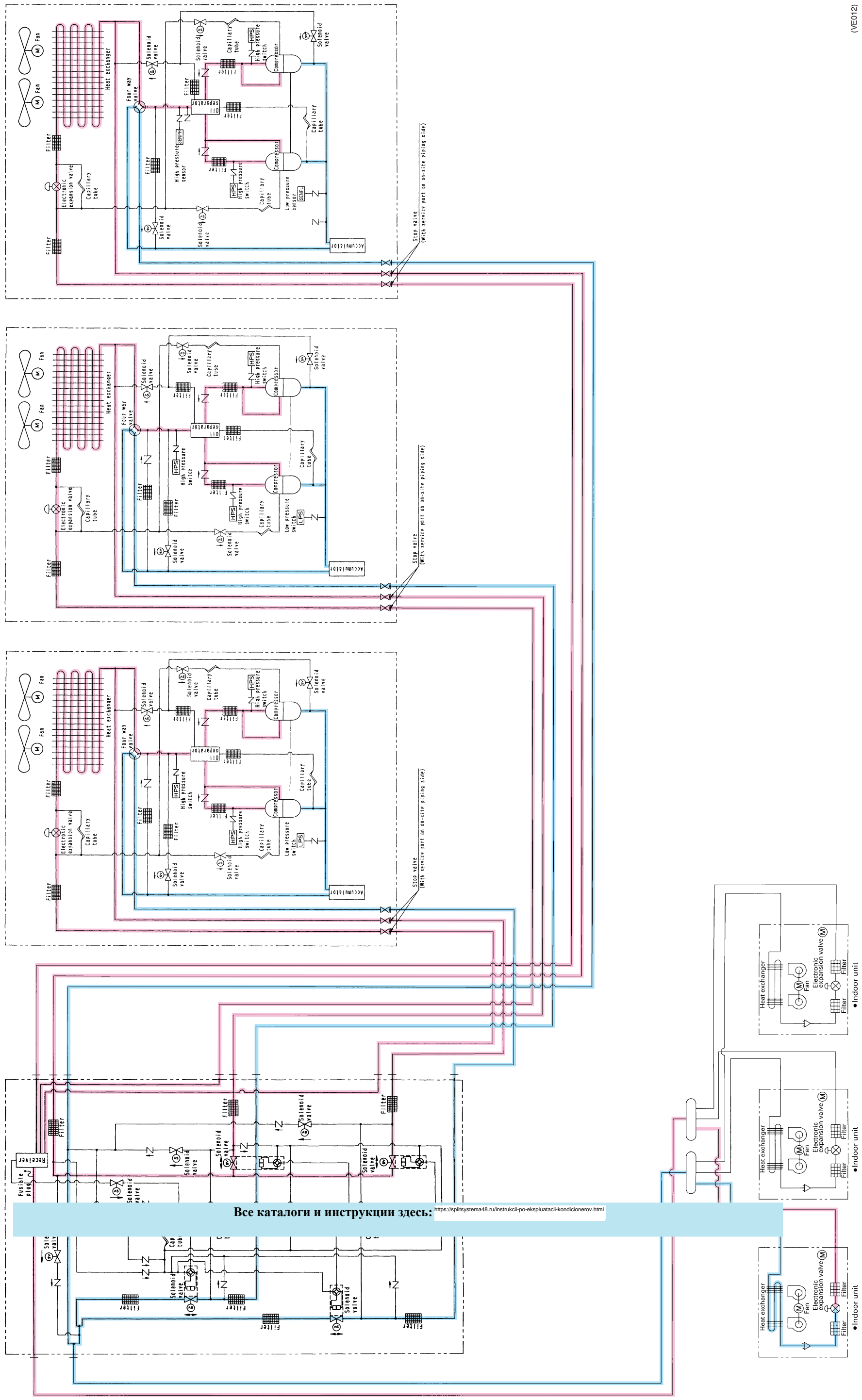
5.1.1 Normal Cooling

Function unit
BL3K

Constant speed outdoor unit 2
RNY10K

Constant speed outdoor unit 1
RNY10K

Inverter outdoor unit
RXY10K



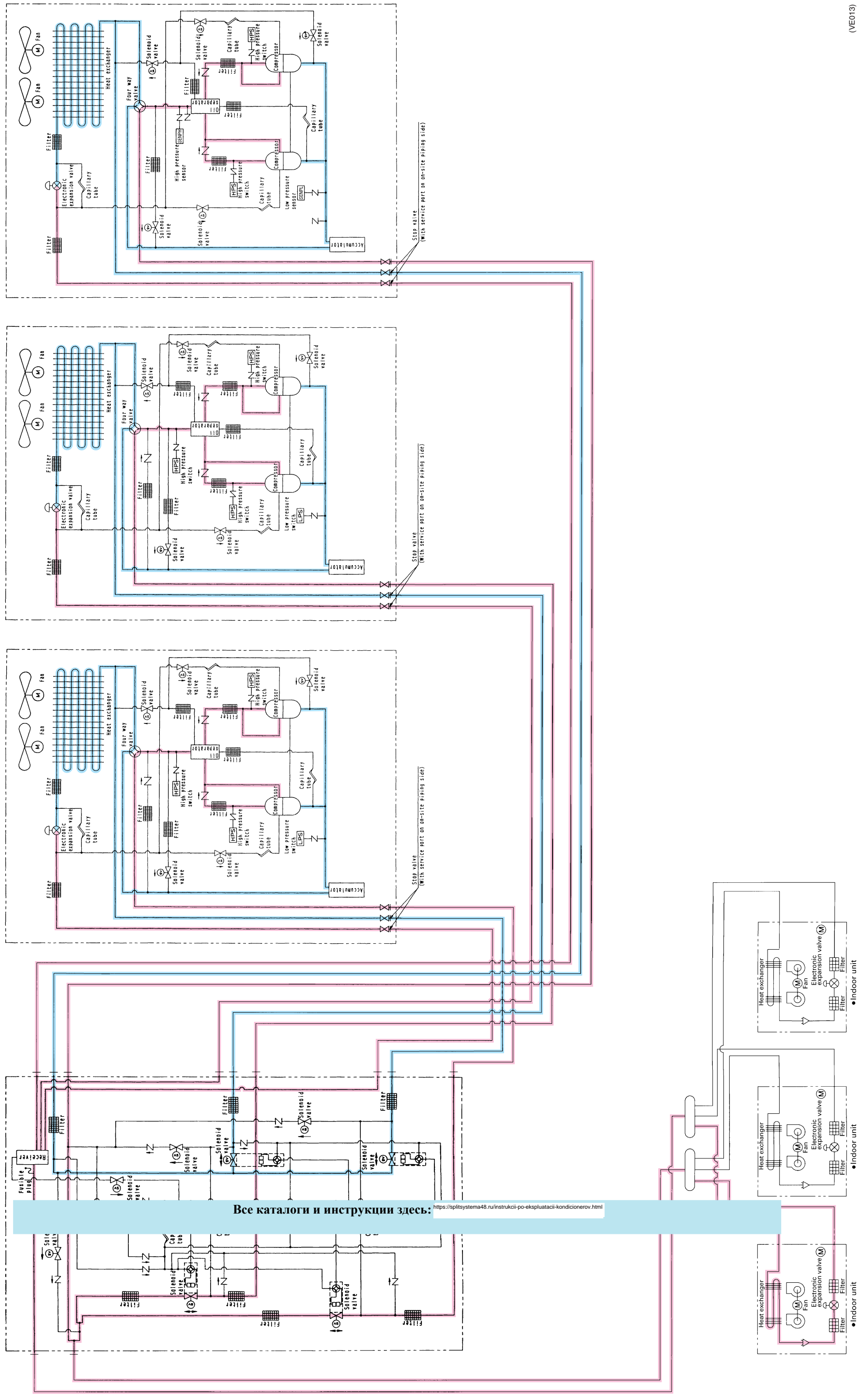
5.1.2 Normal Heating

Function unit BL3K

Constant speed outdoor unit 2 RNY10K

Constant speed outdoor unit 1 RNY10K

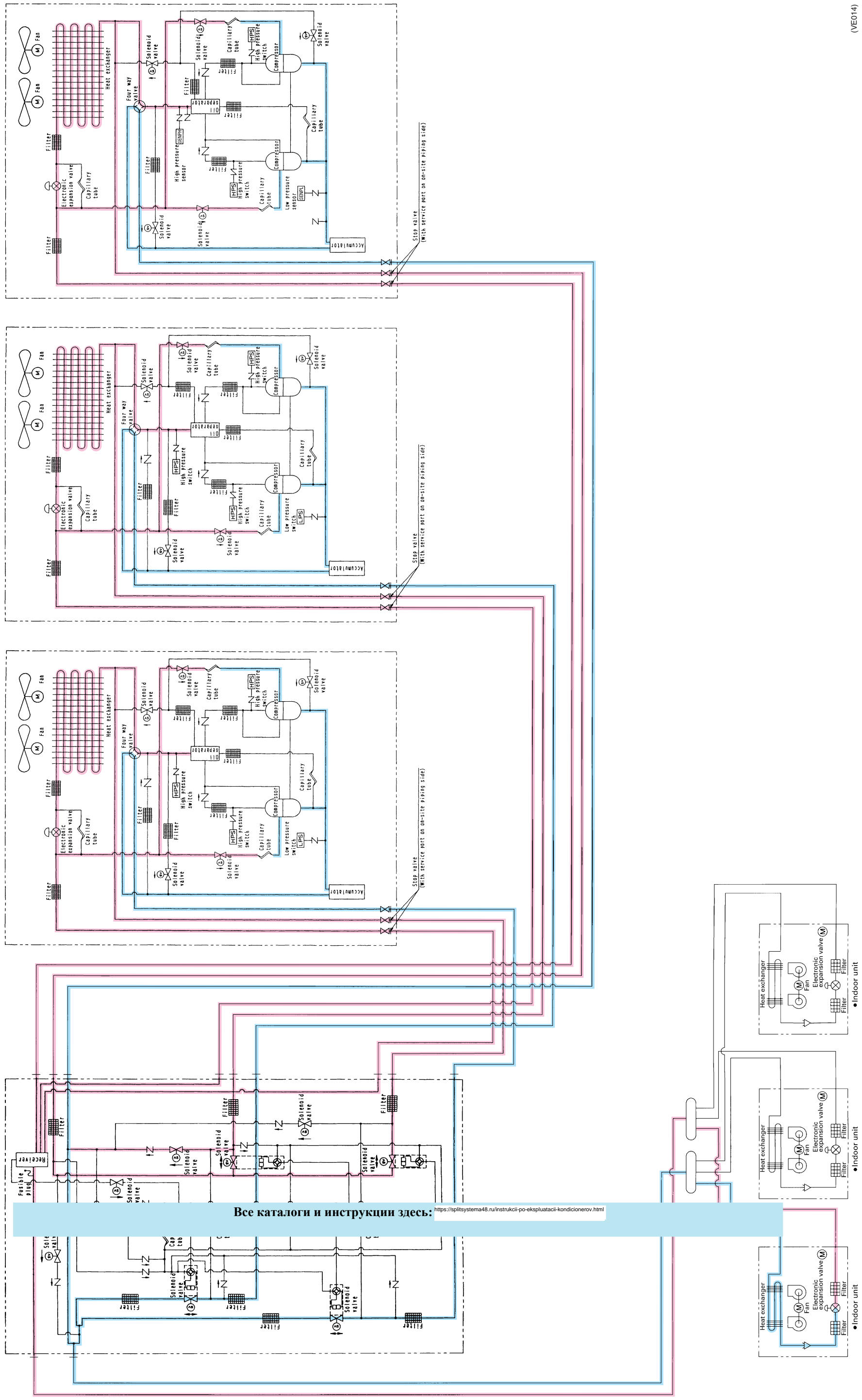
Inverter outdoor unit RXY10K



(VE013)

5.1.3 Oil Return (Cooling)

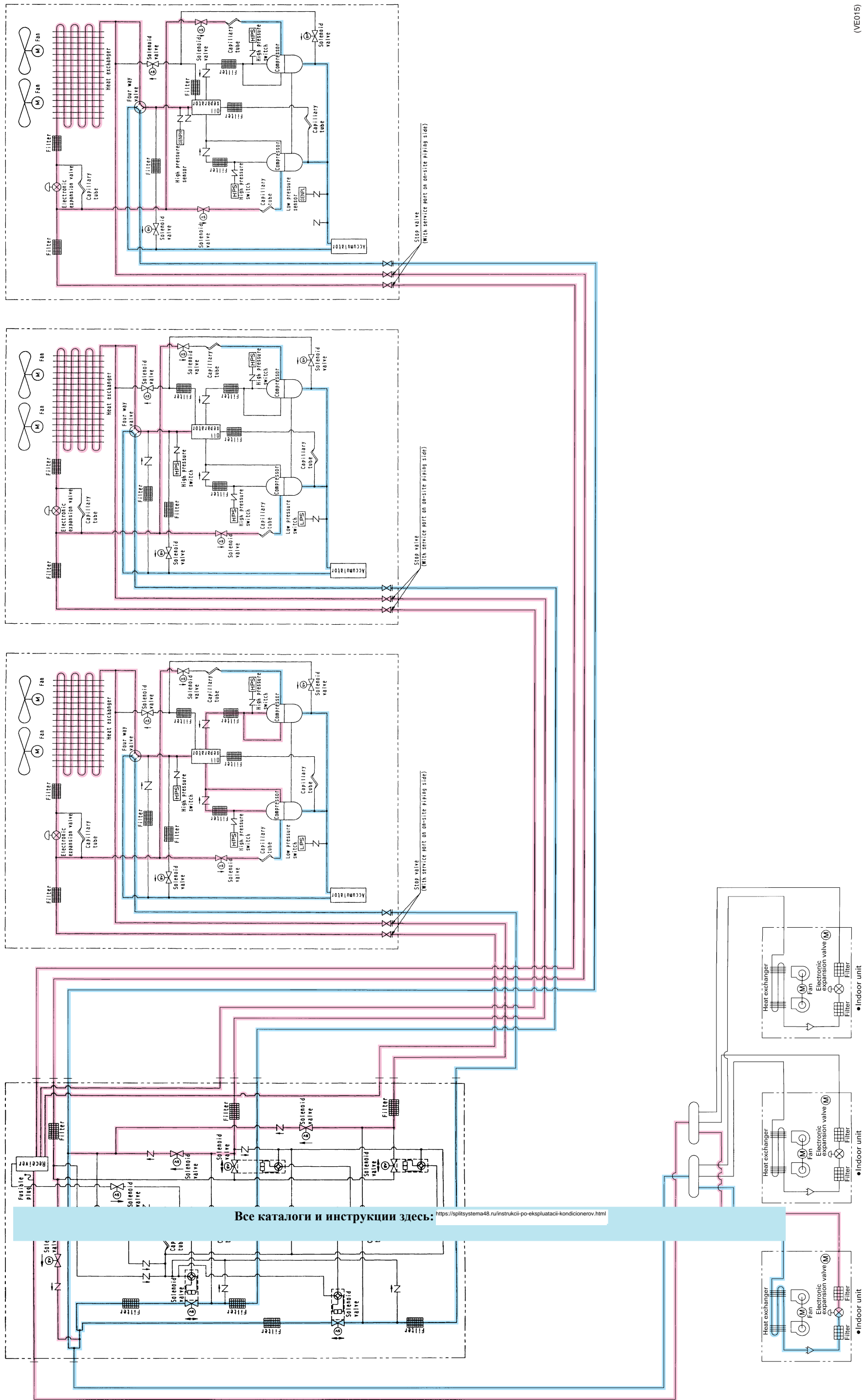
Function unit
BL3K



(VE014)

5.1.4 Oil Return (Heating)

Function unit BL3K



(VE015)

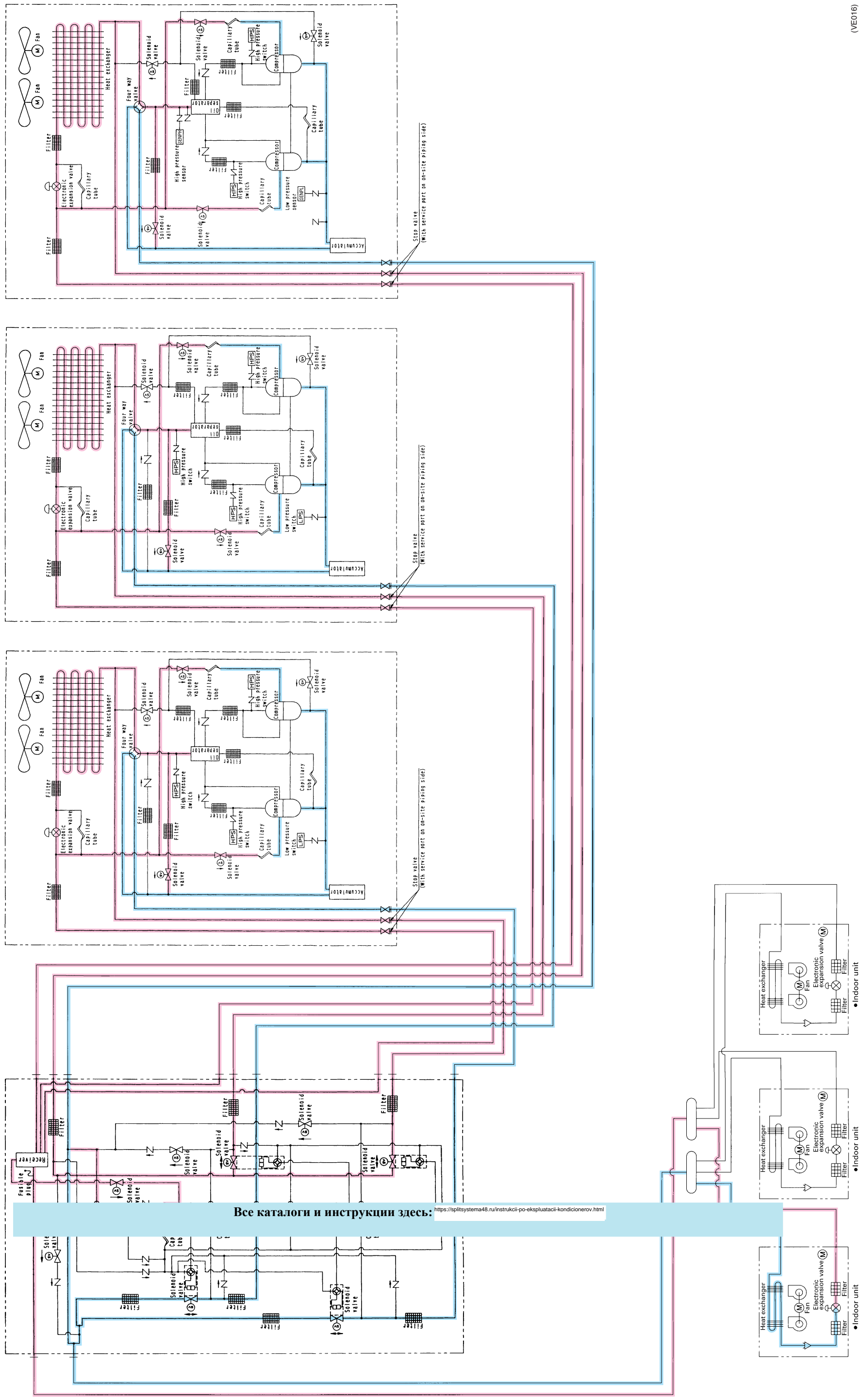
5.1.5 Defrost

Function unit
BL3K

Constant speed outdoor unit 2
RNY10K

Constant speed outdoor unit 1
RNY10K

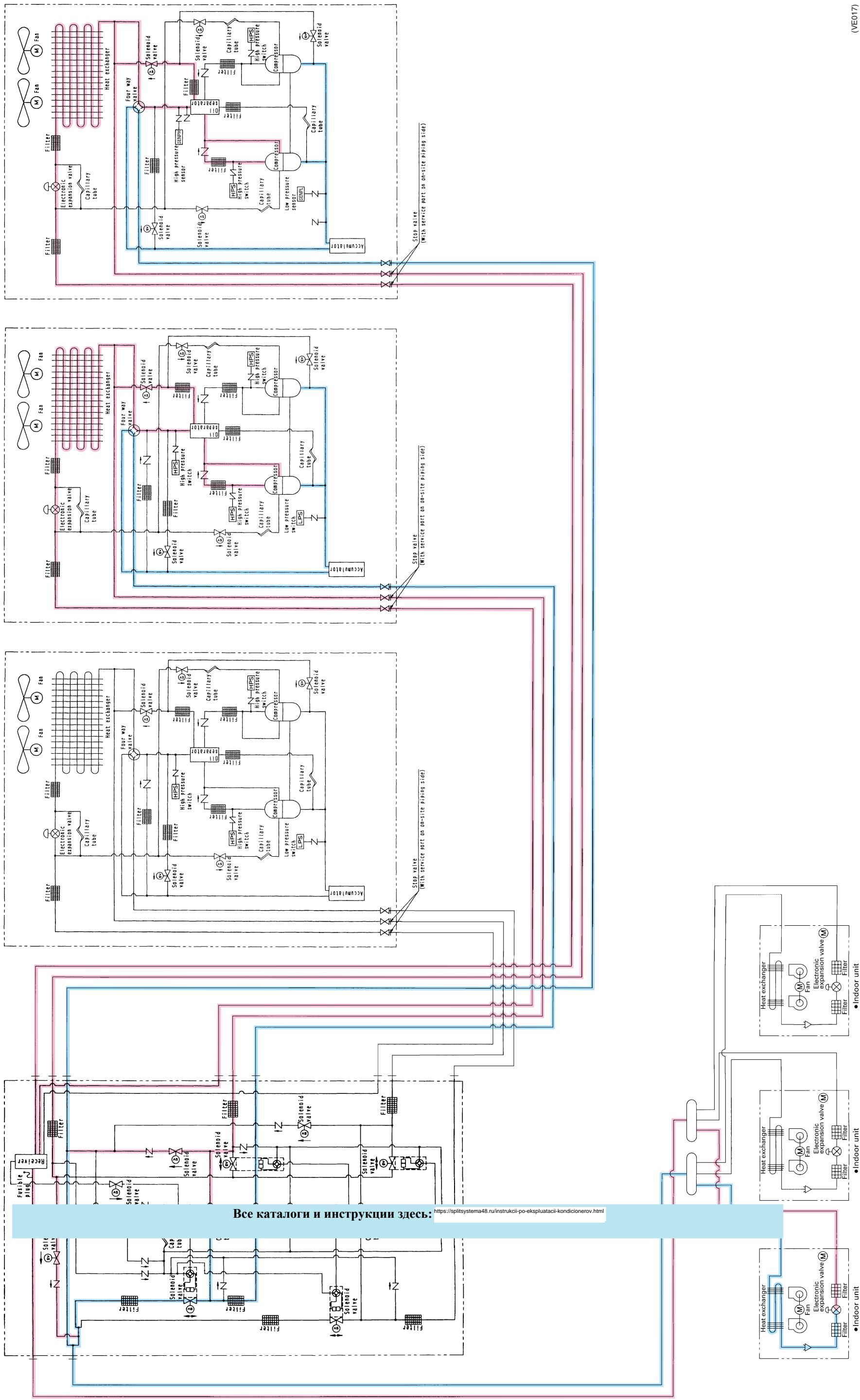
Inverter outdoor unit
RXY10K



(VE016)

5.1.6 Oil Equalizing Operation (Cooling)

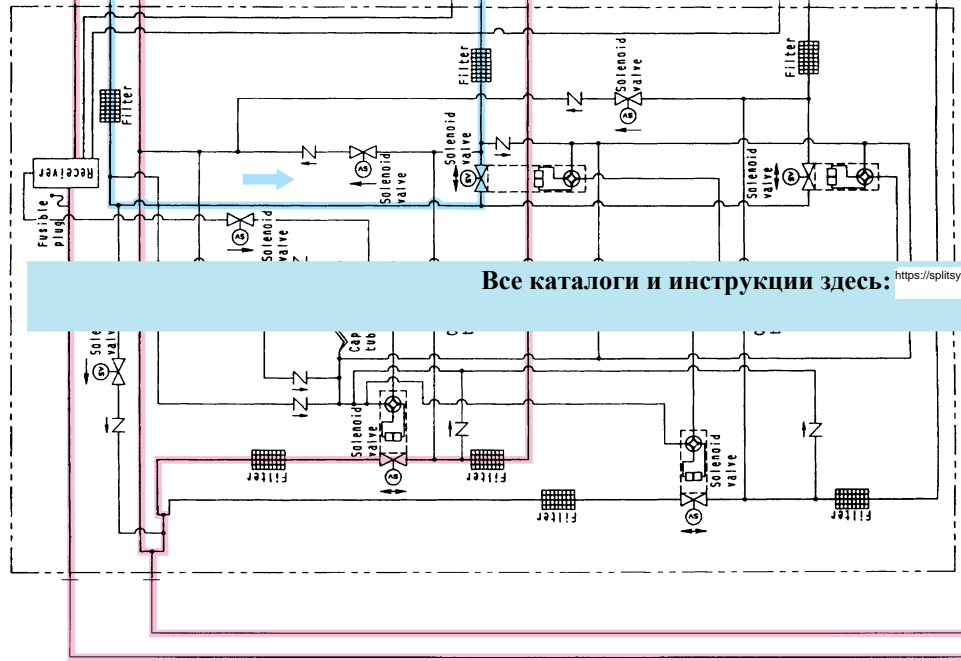
Function unit
BL3K



(VE017)

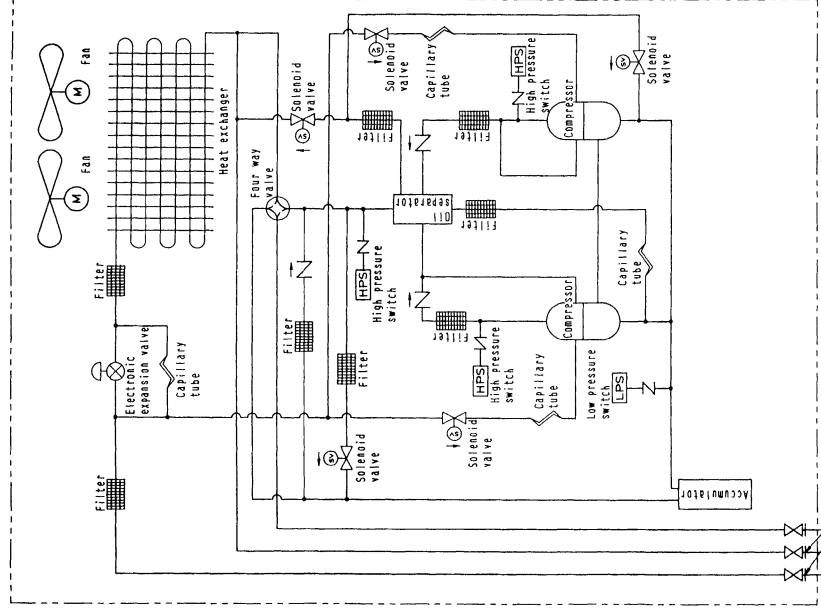
5.1.7 Oil Equalizing Operation (Heating Step 1)

Function unit
BL3K

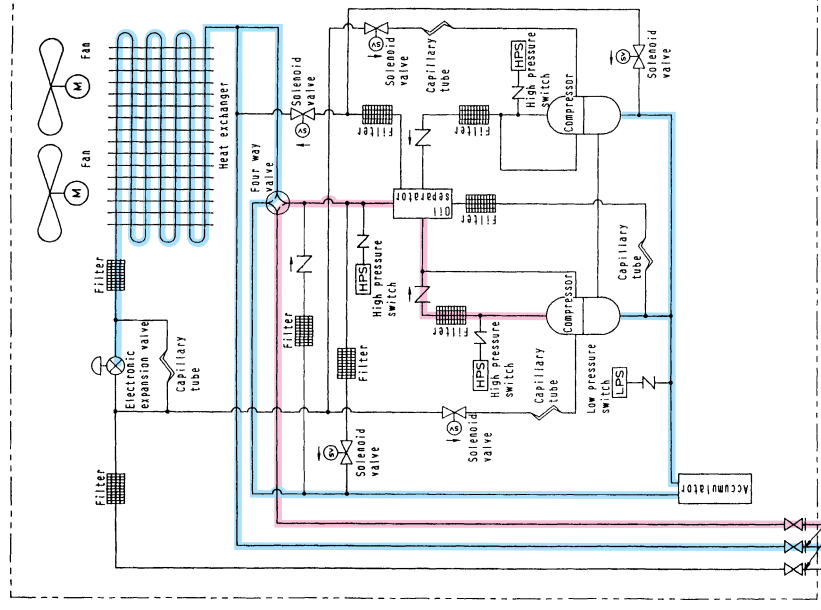


Все каталоги и инструкции здесь: <https://splitsystem48.ru/instrukcii-po-ekspluatcii-kondicionerov.html>

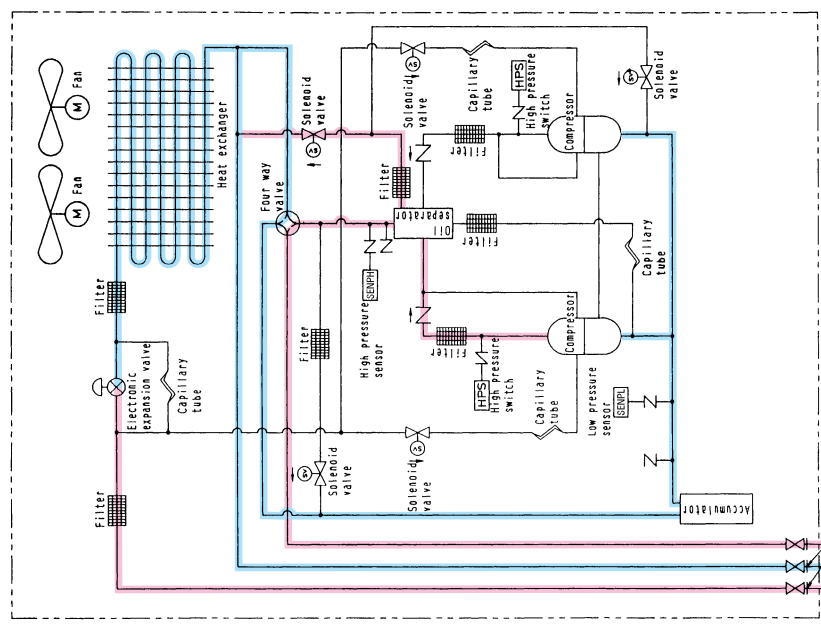
Constant speed outdoor unit 2
RNY10K



Constant speed outdoor unit 1
RNY10K



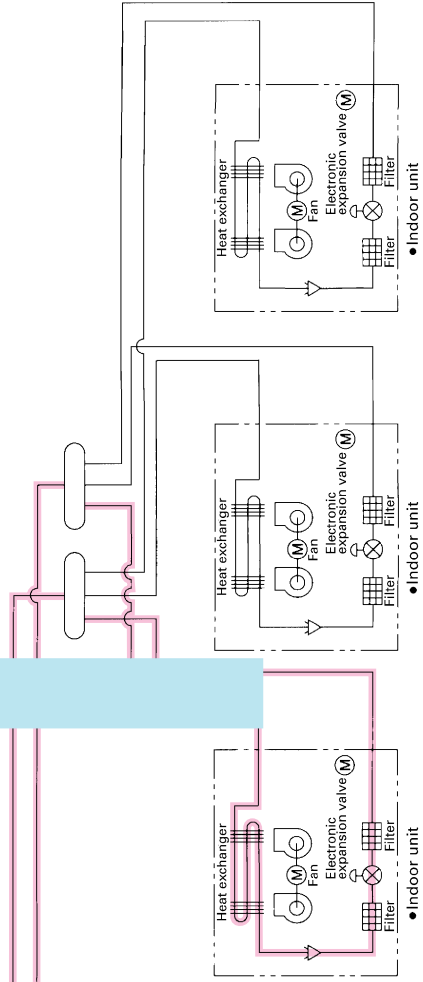
Inverter outdoor unit
RXY10K



STOP VALVE
(WITH SERVICE PORT ON ON-SITE PIPING SIDE)

STOP VALVE
(WITH SERVICE PORT ON ON-SITE PIPING SIDE)

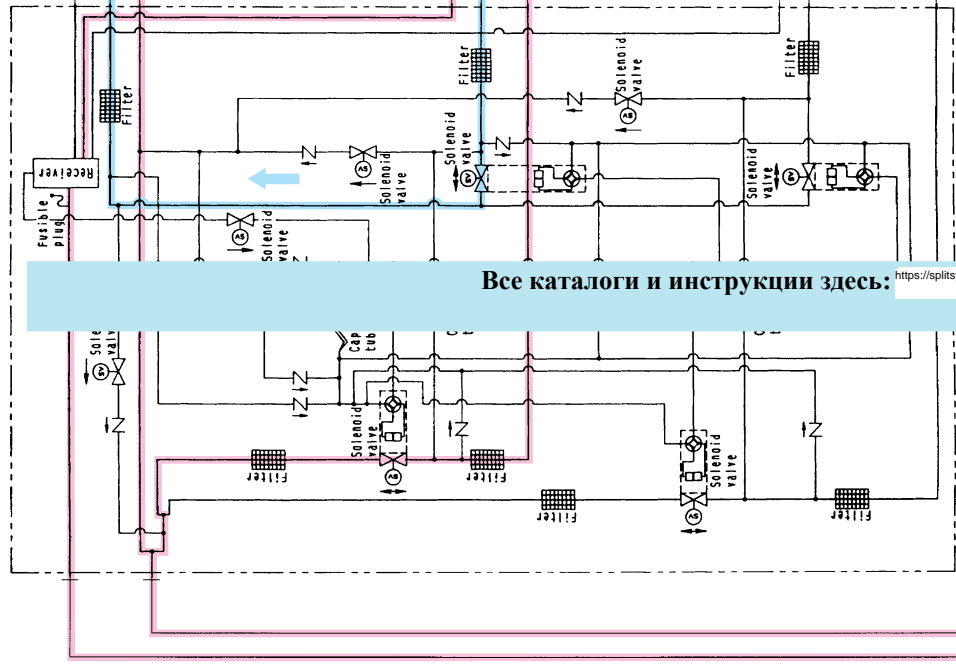
STOP VALVE
(WITH SERVICE PORT ON ON-SITE PIPING SIDE)



(VE018)

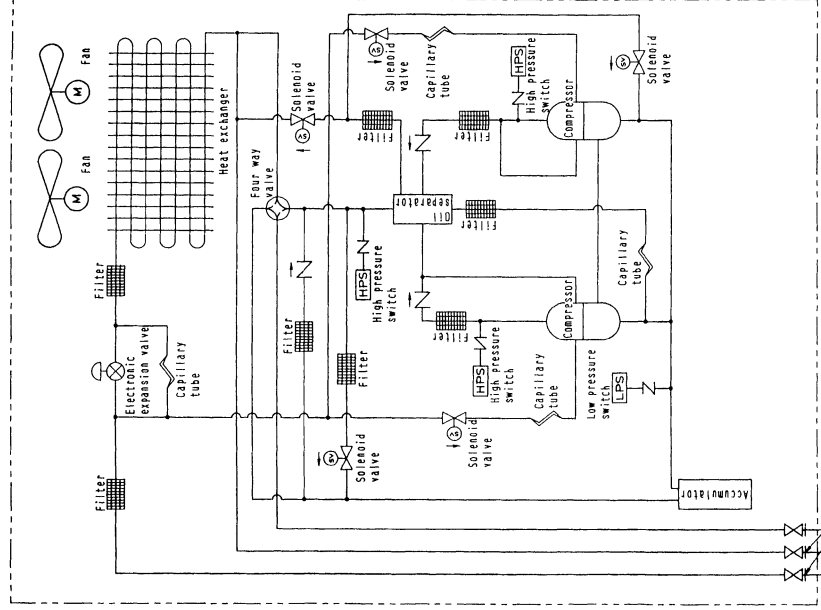
5.1.8 Oil Equalizing Operation (Heating Step 2)

Function unit
BL3K

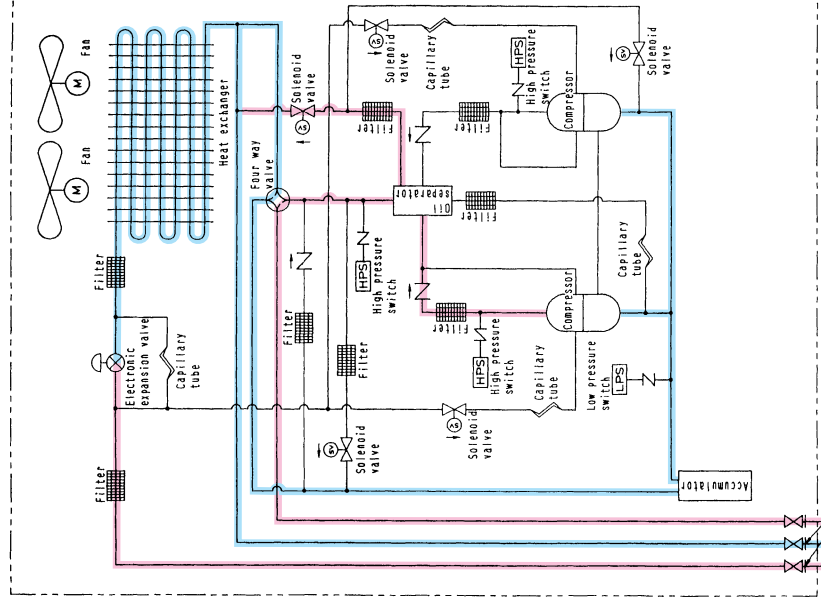


Все каталоги и инструкции здесь: <https://splitsystema48.ru/instrukcii-po-ekspluatcii-kondicionerov.html>

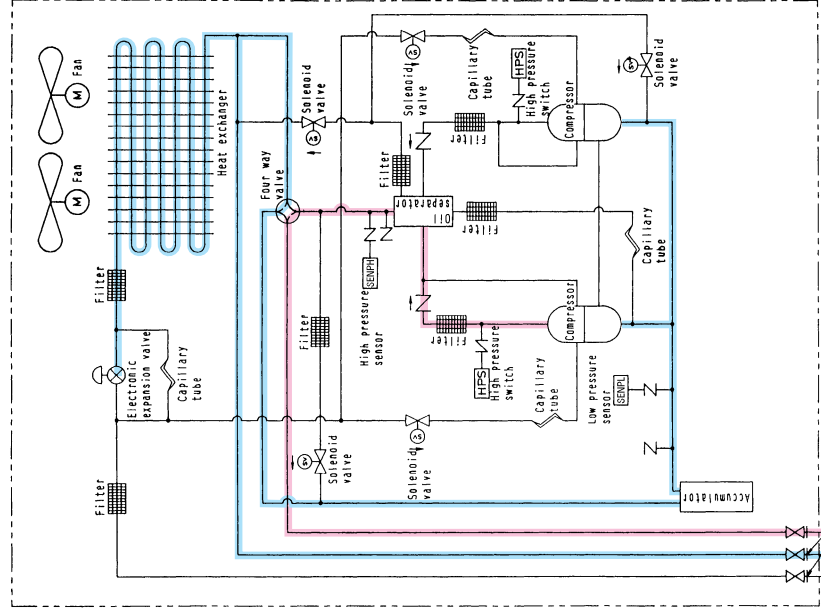
Constant speed outdoor unit 2
RNY10K



Constant speed outdoor unit 1
RNY10K



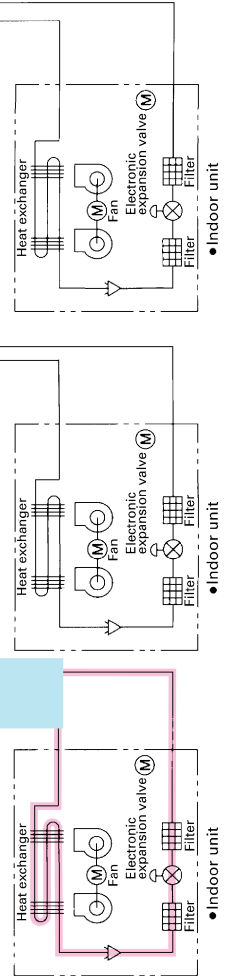
Inverter outdoor unit
RXY10K



STOP VALVE
(WITH SERVICE PORT ON ON-SITE PIPING SIDE)

STOP VALVE
(WITH SERVICE PORT ON ON-SITE PIPING SIDE)

STOP VALVE
(WITH SERVICE PORT ON ON-SITE PIPING SIDE)



Indoor unit

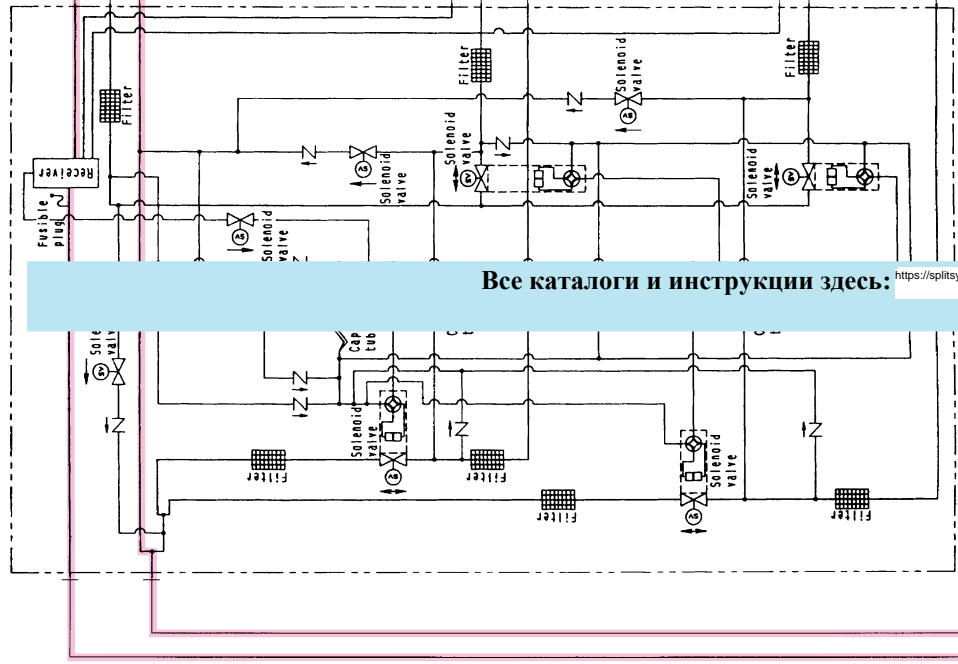
Indoor unit

Indoor unit

(VE019)

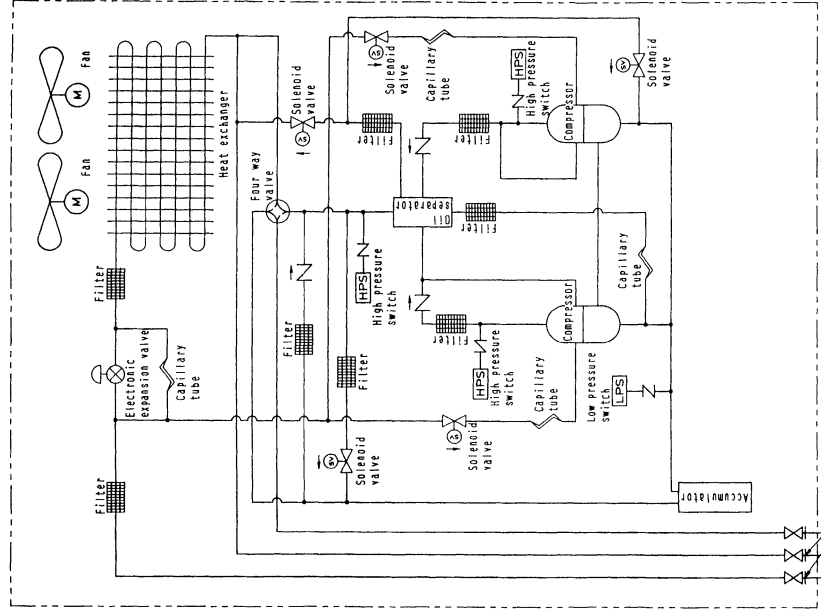
5.1.9 Heating Pump Down Residual Operation

Function unit
BL3K

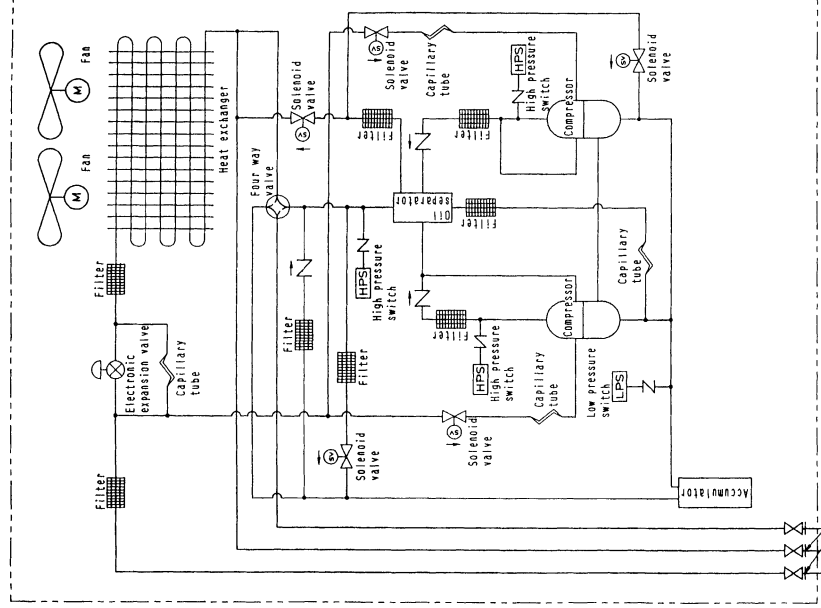


Все каталоги и инструкции здесь: <https://splitsystema48.ru/instrukcii-po-ekspluatcii-kondicionerov.html>

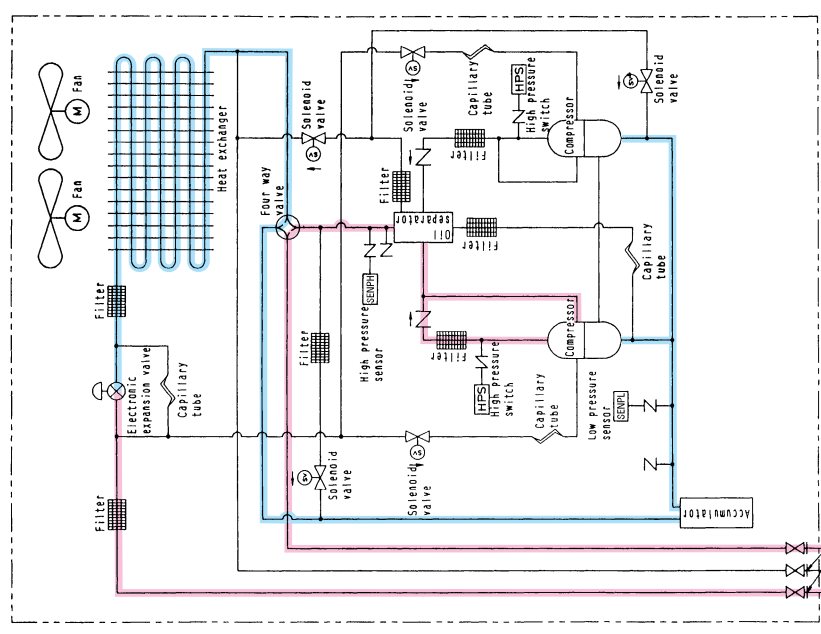
Constant speed outdoor unit 2
RNY10K



Constant speed outdoor unit 1
RNY10K



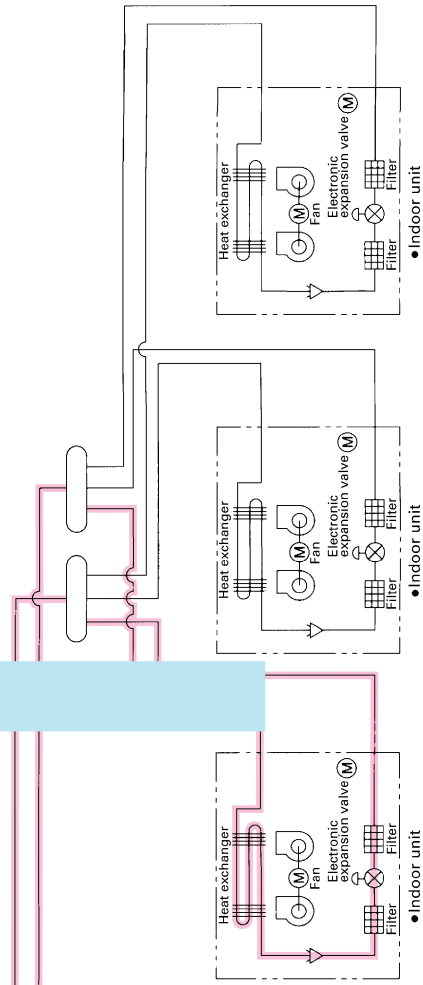
Inverter outdoor unit
RXY10K



STOP VALVE
(WITH SERVICE PORT ON ON-SITE PIPING SIDE)

STOP VALVE
(WITH SERVICE PORT ON ON-SITE PIPING SIDE)

STOP VALVE
(WITH SERVICE PORT ON ON-SITE PIPING SIDE)



Indoor unit

Indoor unit

Indoor unit

(VE020)

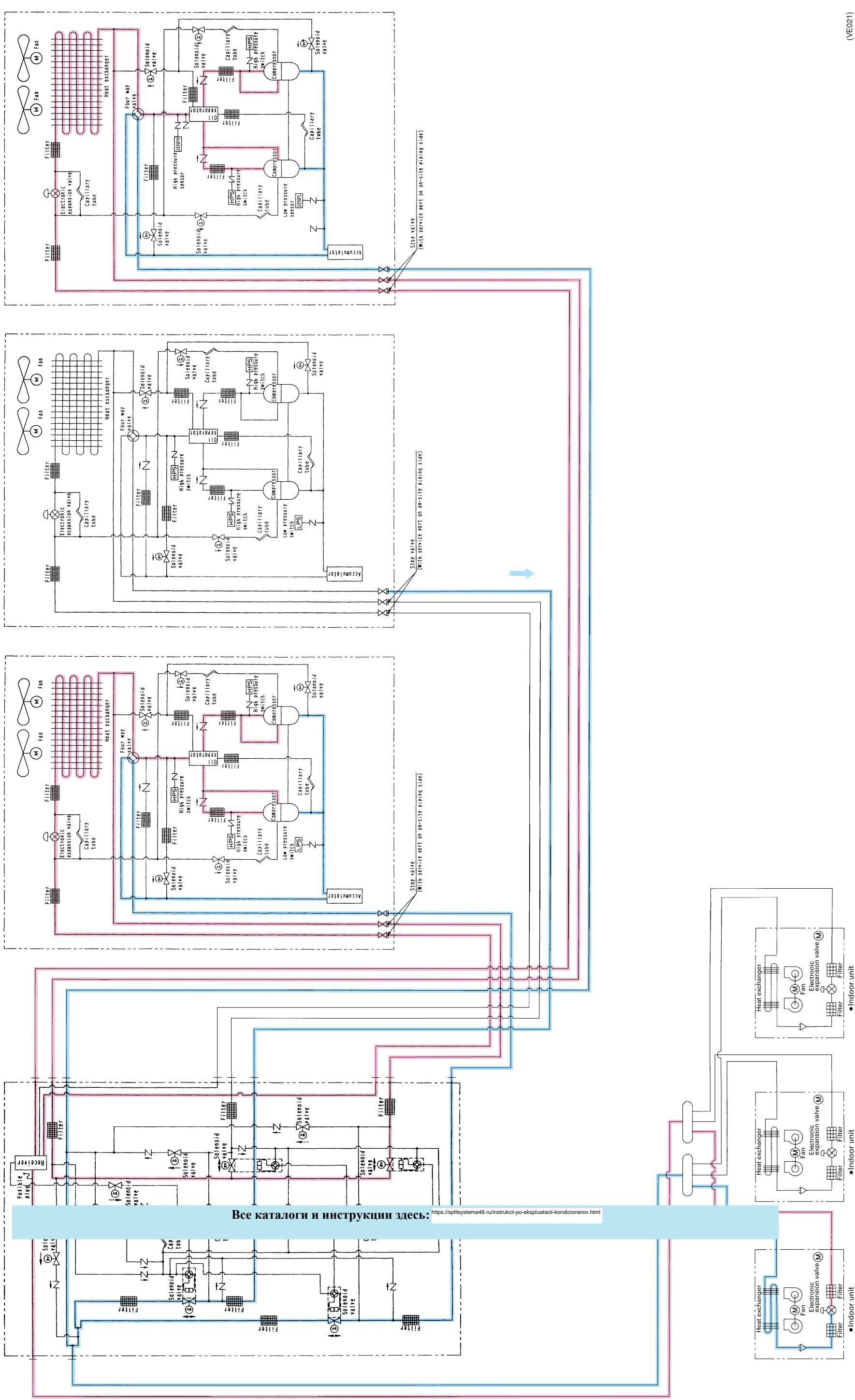
5.1.10 Refrigerant Pump Down Operation (When Constant Speed Outdoor Unit has a Malfunction)

Function unit
BL3K

Constant speed outdoor unit 2
RNY10K

Constant speed outdoor unit 1
RNY10K

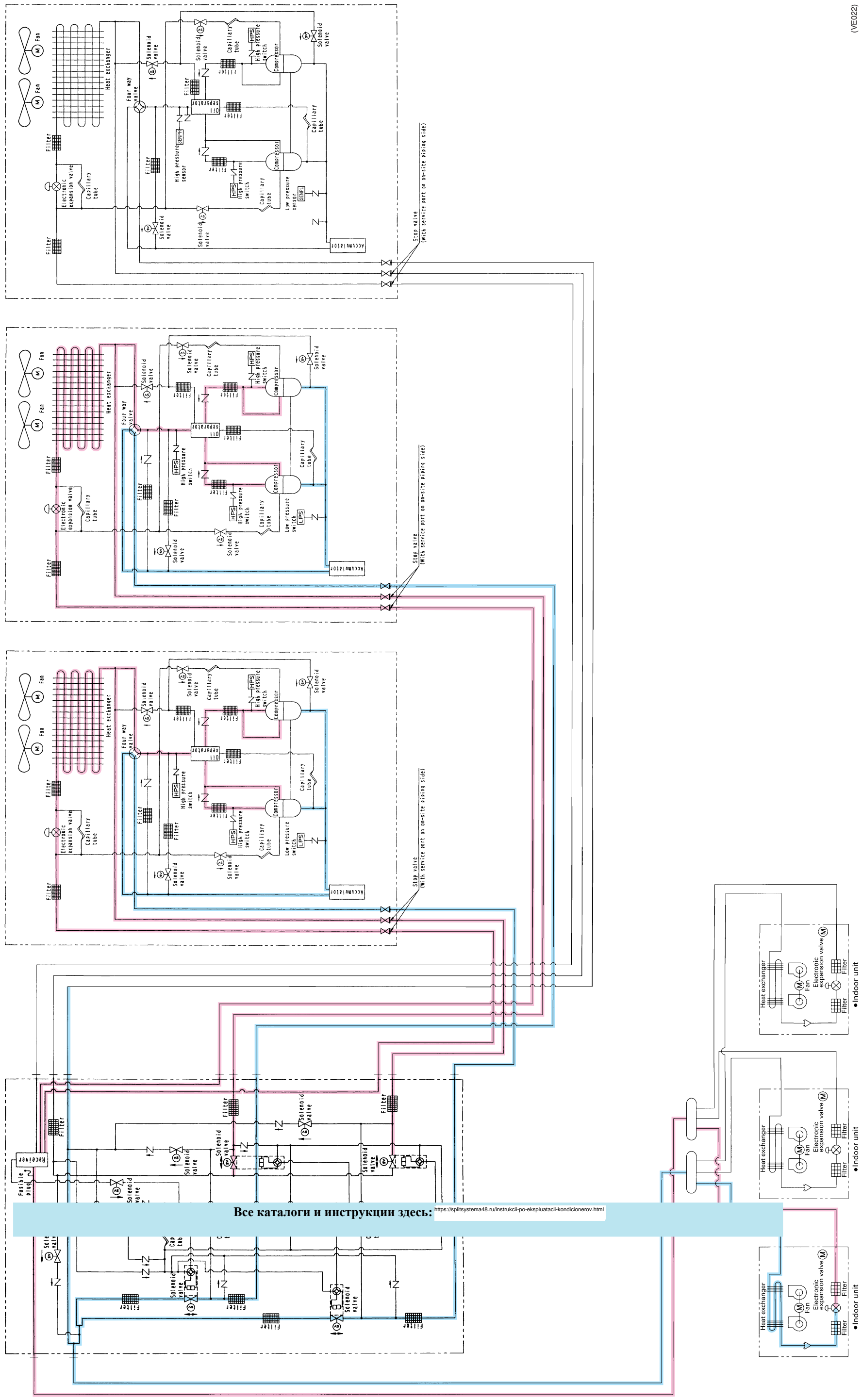
Inverter outdoor unit
RXY10K



(VE021)

5.1.11 Emergency Operation for Inverter Failure (Cooling)

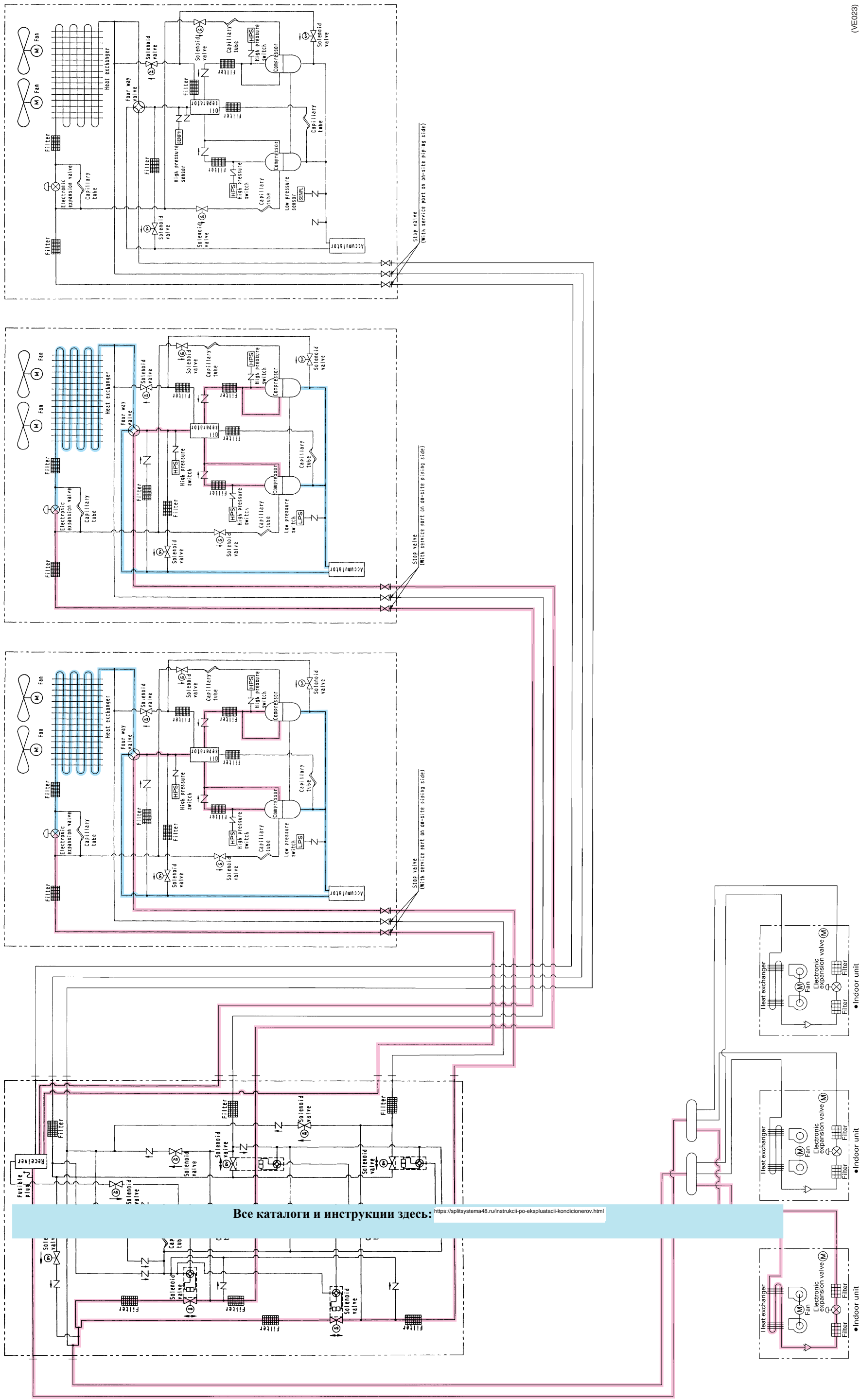
Function unit
BL3K



(VE022)



5.1.12 Emergency Operation for Inverter Failure (Heating)

Function unit
BL3K



(VE023)

5.2 Cooling Only Model

The flow of refrigerant in each mode is shown for high pressure gas or condensed liquid refrigerant by the  line, and for evaporated low pressure gas by the  line.

1. Normal cooling
2. Oil return (cooling)
3. Oil equalizing operation (cooling)
4. Refrigerant pump down operation
5. Emergency Operation for Inverter Failure (cooling)

Все каталоги и инструкции здесь: <https://splitssystema48.ru/instrukcii-po-ekspluatatsii-kondicionerov.html>

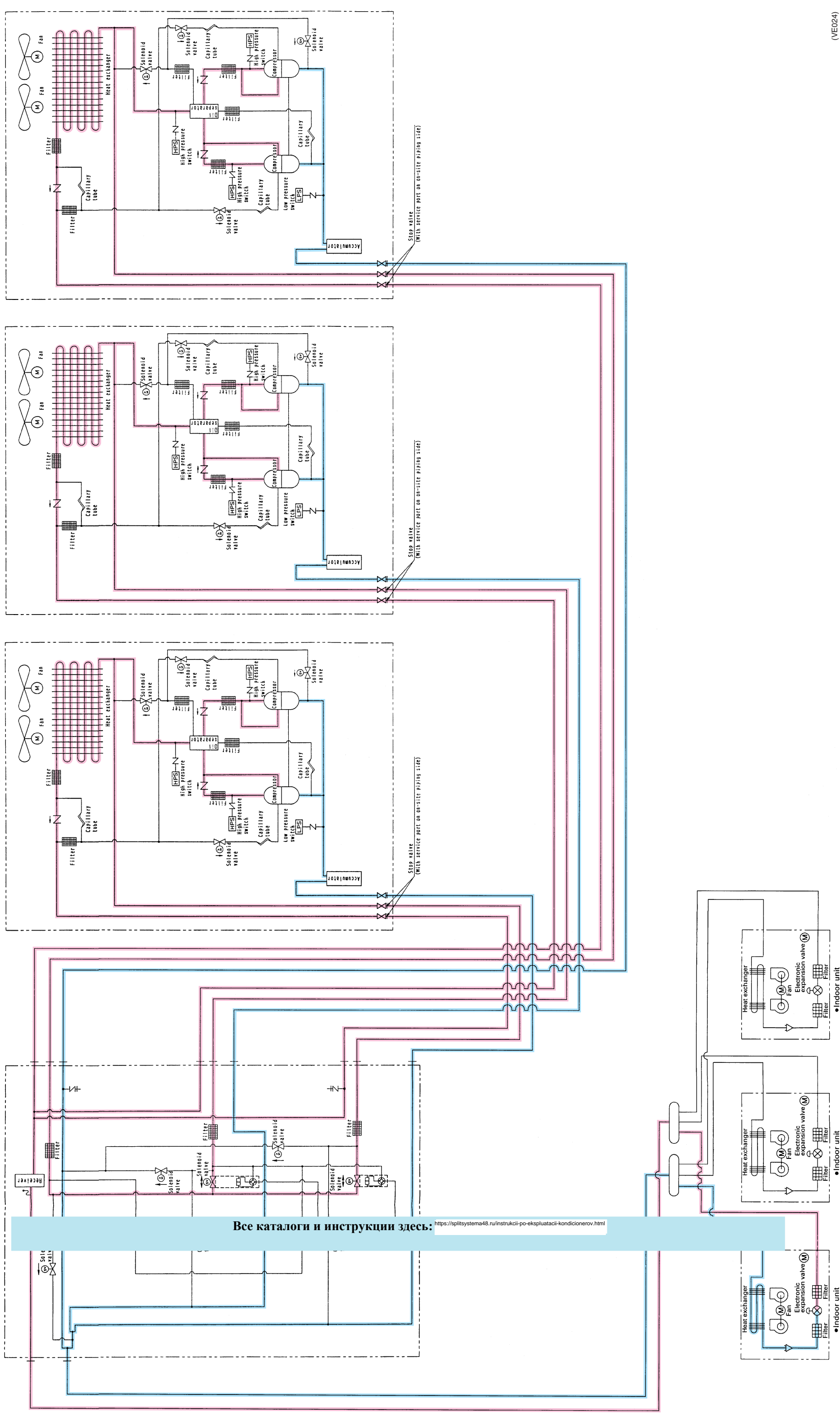
5.2.1 Normal Cooling

Function unit BC3K

Constant speed outdoor unit 1 RN10K

Constant speed outdoor unit 2 RN10K

Inverter outdoor unit RX10K



(VE024)

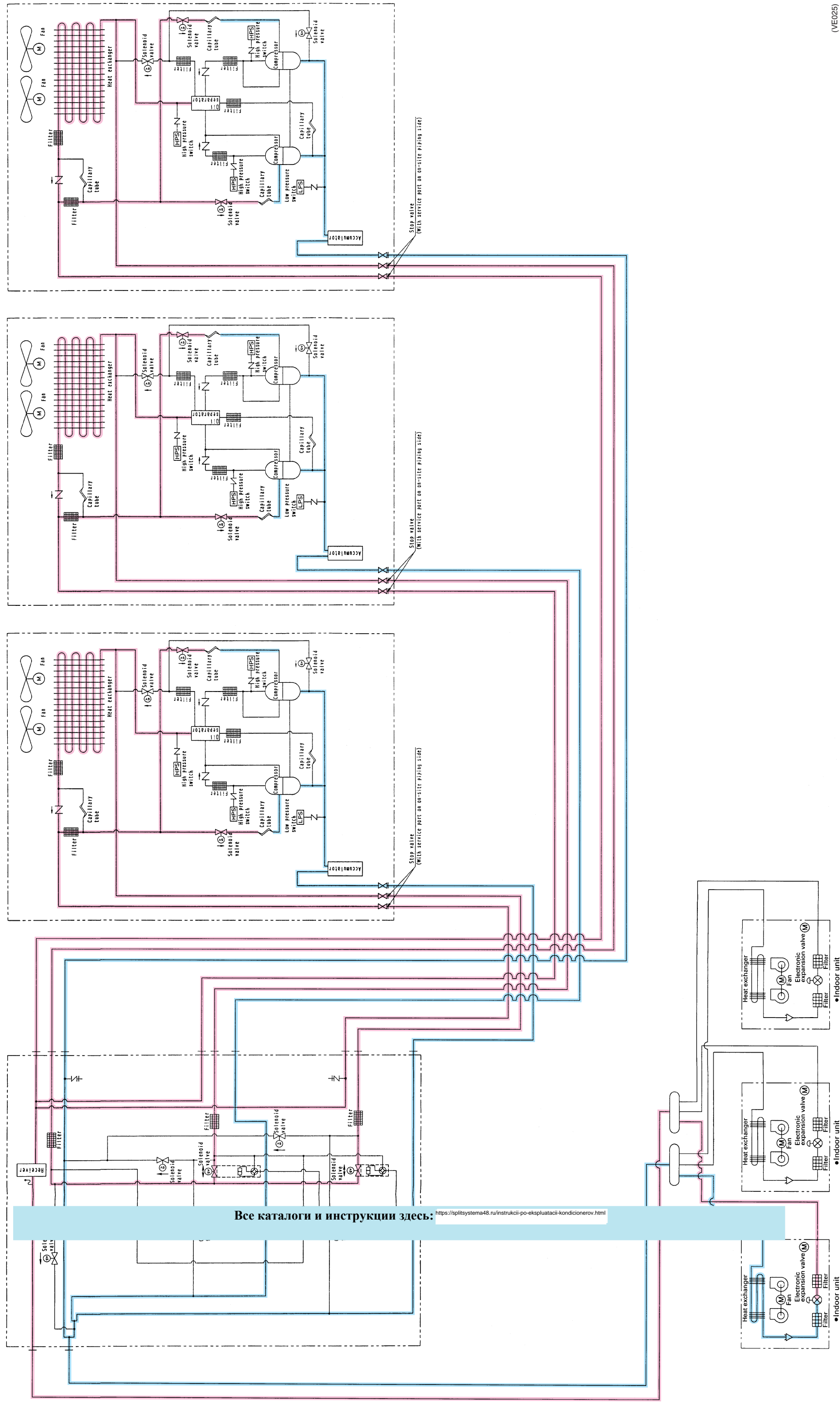
5.2.2 Oil Return (Cooling)

Function unit
BC3K

Constant speed outdoor unit 1
RN10K

Constant speed outdoor unit 2
RN10K

Inverter outdoor unit
RX10K



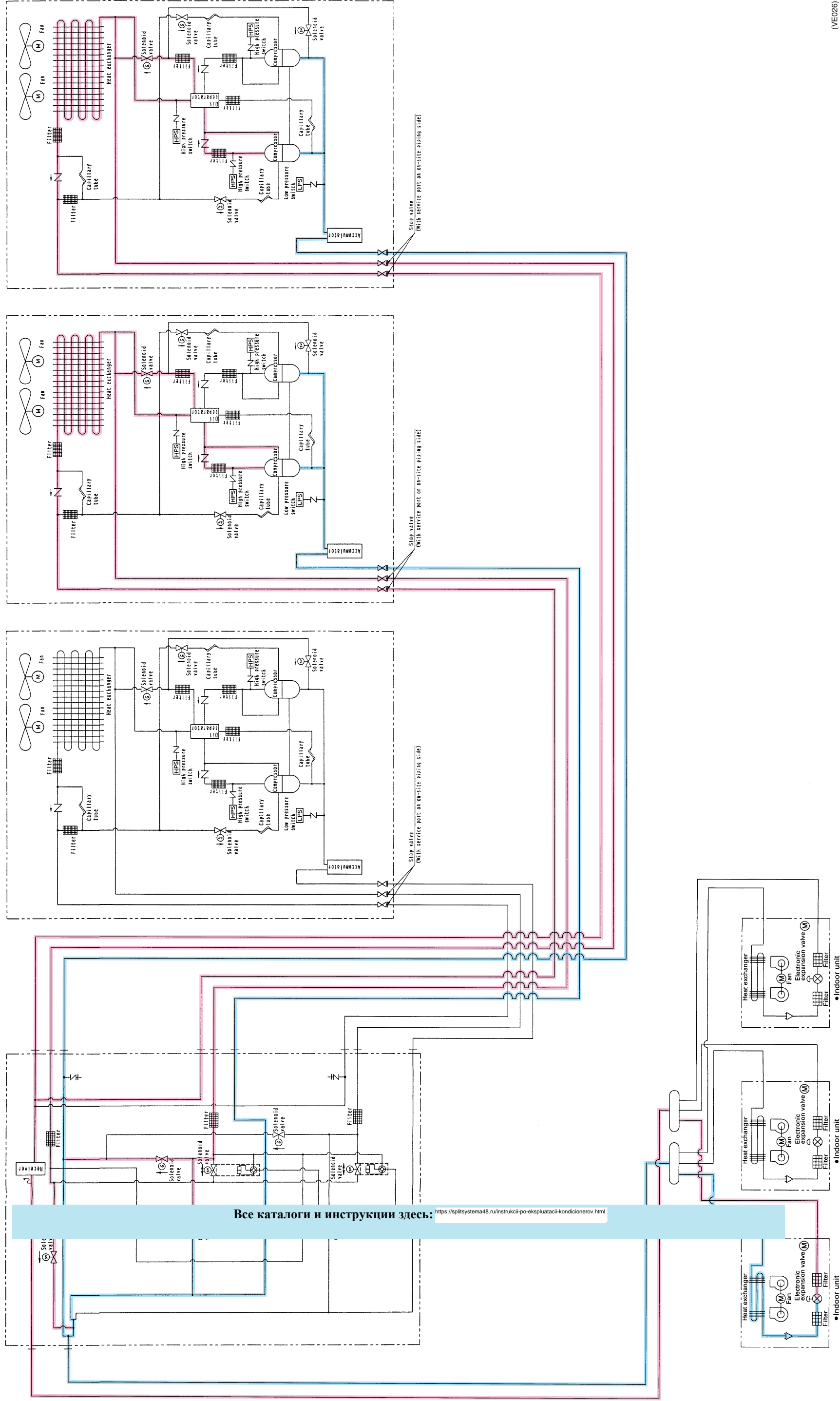
5.2.3 Oil Equalizing Operation (Cooling)

Function unit BC3K

Constant speed outdoor unit 1 RN10K

Constant speed outdoor unit 2 RN10K

Inverter outdoor unit RX10K



(VE026)

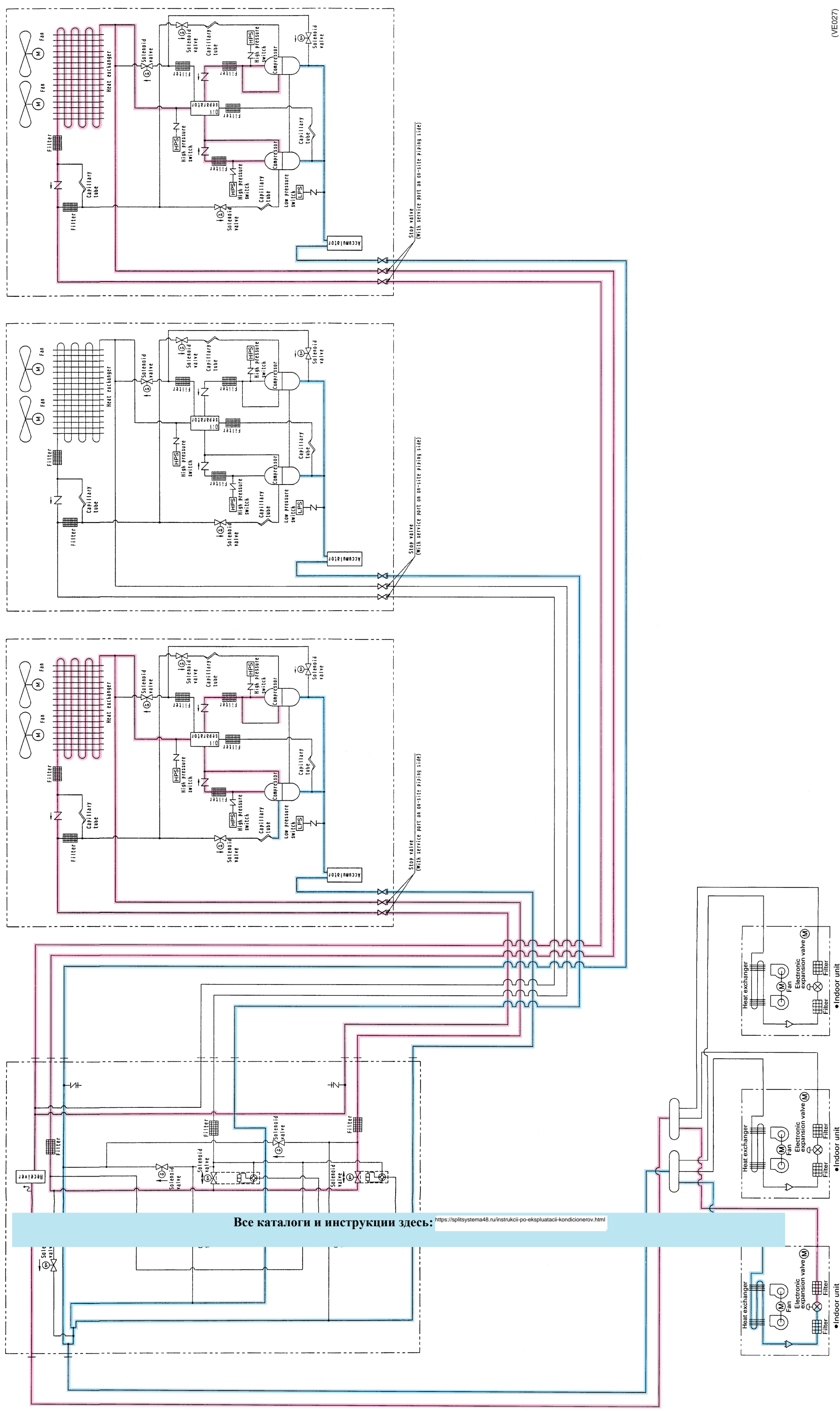
5.2.4 Refrigerant Pump Down Operation

Function unit
BC3K

Constant speed outdoor unit 1
RN10K

Constant speed outdoor unit 2
RN10K

Inverter outdoor unit
RX10K



(VE027)

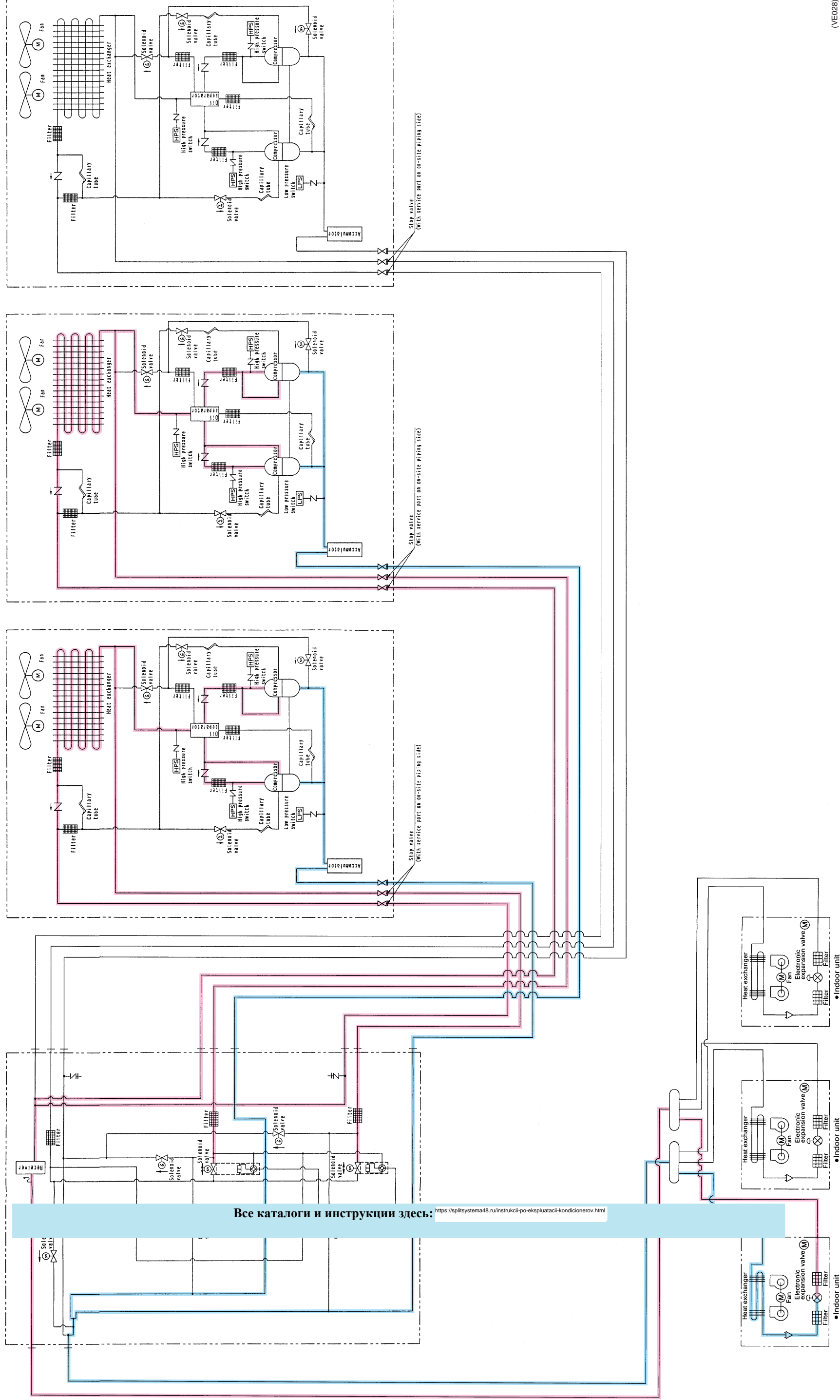
5.2.5 Emergency Operation for Inverter Failure (Cooling)

Function unit
BC3K

Constant speed outdoor unit 1
RN10K

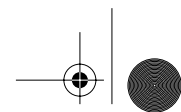
Constant speed outdoor unit 2
RN10K

Inverter outdoor unit
RX10K



(VE028)

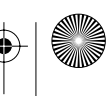
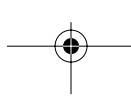
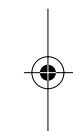
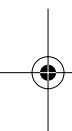
Все каталоги и инструкции здесь: <https://splitssystema48.ru/instrukcii-po-ekspluatatsii-kondicionerov.html>



SiE-05C

Part 7 Test Operation PLUS Series

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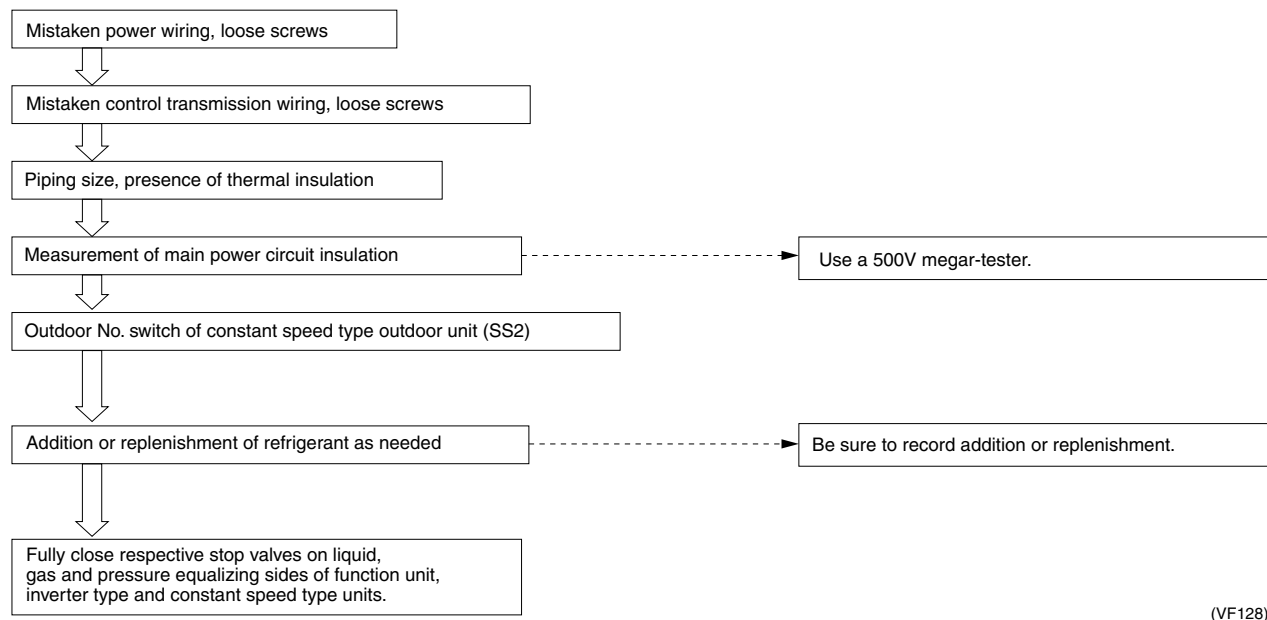


1. Test Operation

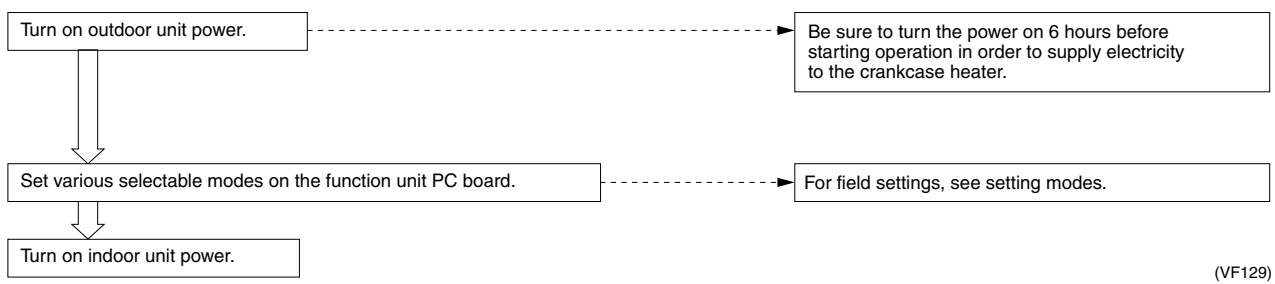
1.1 Procedure and Outline

The operation sequence is the most important thing for test operation. Follow the following outline.

1.1.1 Check The Following Before Turning Power On.

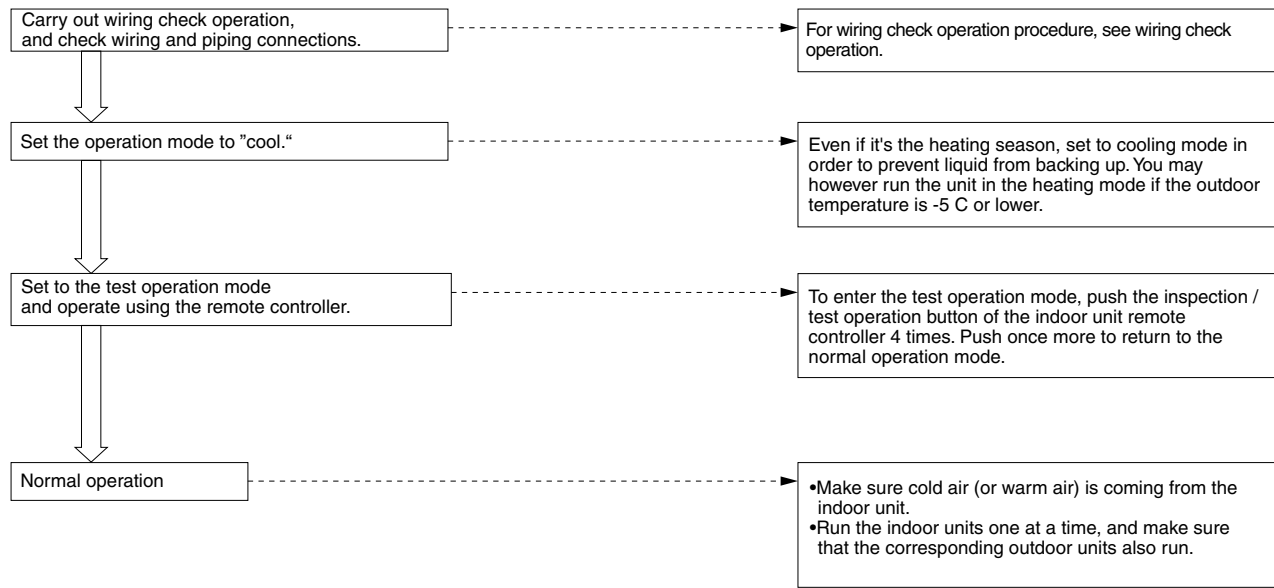


1.1.2 Turn Power On.



Refer to Setting Modes on P278

1.1.3 Check Operation.



(VF130)



Refer to Wiring Check Operation on P296



1.2 Operation When Power is Turned On

1.2.1 When Turning On Power for First Time

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

- ◆ Function unit ... Test lamp (H2P) blinks
Can also be set during operation described above.
- ◆ Outdoor unit ... Warning lamp (HWL) lights
- ◆ Indoor unit ... If ON button is pushed during operation described above, the "UH" malfunction indicator blinks. (Returns to normal when automatic setting is complete.)

1.2.2 When Turning On Power The Second Time and Subsequent

Tap the RESET button on the function unit PC board. Operation becomes possible after setting up for about 2 minutes. If you do not push the RESET button, the unit cannot be run for up to 10 minutes to automatically set master power.

- ◆ Function unit ... Test lamp (H2P) blinks
Can also be set during operation described above.
- ◆ Outdoor unit ... Warning lamp (HWL) lights
- ◆ Indoor unit ... If ON button is pushed during operation described above, the operation lamp lights but the compressor does not operate. (Returns to normal when automatic setting is complete.)

1.2.3 When an Outdoor Unit, Indoor Unit or BS Unit Has Been Added, or Indoor Unit PC Board Has Been Changed

Be sure to push and hold the wiring change button for 5 seconds or longer. If not, the addition cannot be recognized. In this case, the unit cannot be run for up to 12 minutes to automatically set the address (indoor-outdoor address, etc.).

- ◆ Function unit ... Test lamp (H2P) goes off
- ◆ Outdoor unit ... Warning lamp (HWL) lights
- ◆ Indoor unit ... If ON button is pushed during operation described above, the ##UH## or ##U4## malfunction indicator blinks. (Returns to normal when automatic setting is complete.)



Note:

Concerning compressor frequency when starting

Starting control is executed to stop operation frequency from rising to protect the compressor, and is carried out in accordance with the time elapsed since turning on the power, how long the compressors have been stopped, and outdoor temperature. The operating frequency of the compressor is held down during this time, and is not a malfunction.

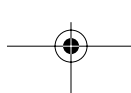
1. When cooling

Max. 7 minutes if outdoor temp. is low

2. When heating

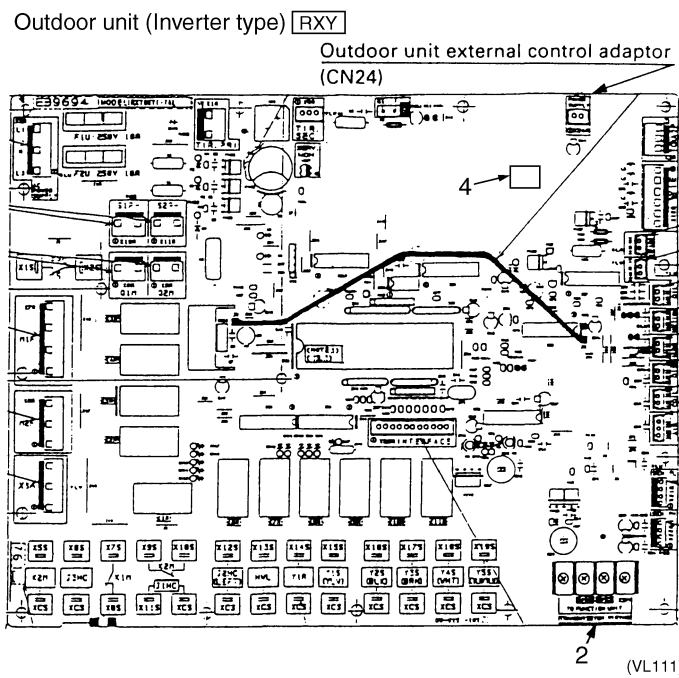
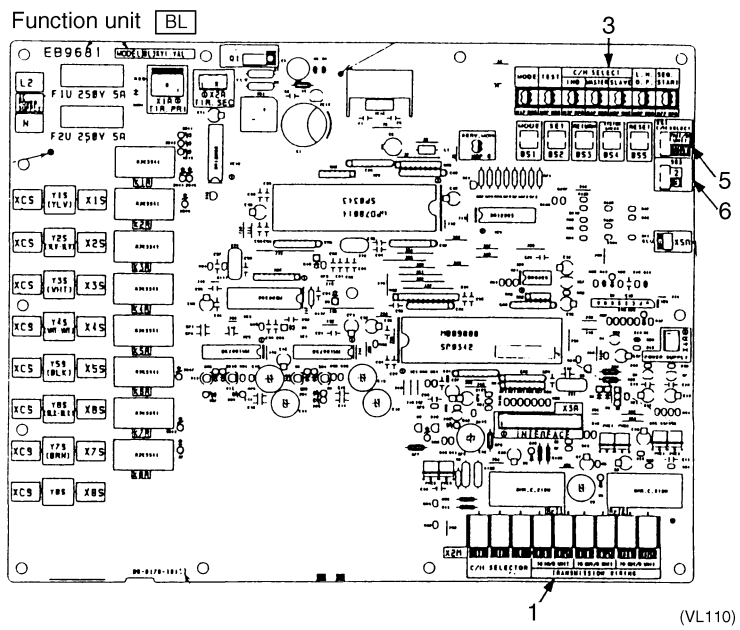
Max. 33 minutes if starting first time since turning power on

Max. 15 minutes is starting second time or subsequent since turning power on



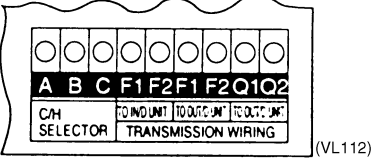
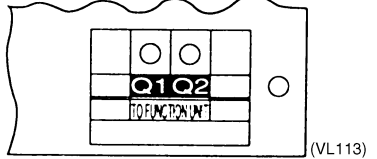
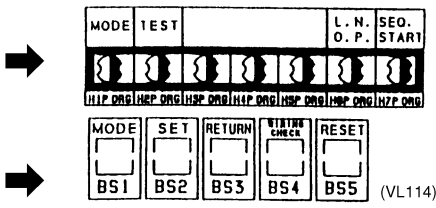
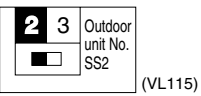
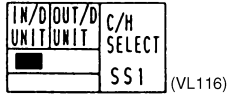
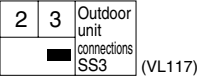
1.3 Outdoor Unit PC Board Ass'y

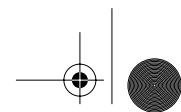
Function Unit and Outdoor Unit (Inverter Type)



Test Operation

SI-E-05C

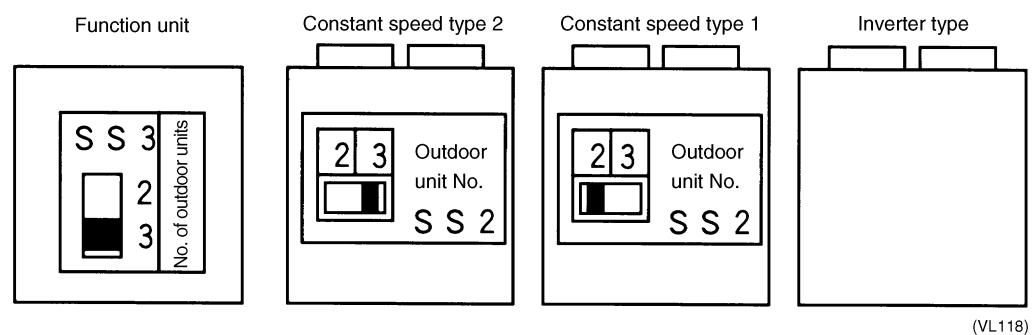
1	<p>Transmission terminal Indoor unit, Cool/Heat selector Outdoor - Outdoor Note: The R unit is not provided with the cool/heat select remote control terminals.</p>	
2	<p>Transmission terminal Function unit - Each outdoor unit Series connection</p>	
3	<p>Function setting mode switch and LED</p>	<p>LED</p> <p>LED ○ : ON ◐ : Flash ● : OFF</p> <p>Push Button switch</p> 
4	<p>Outdoor unit No. setting (SS2) Note: This setting is not available on the inverter type</p>	<p>Presetable for constant-speed outdoor unit only 2: Second unit, 3: Third unit</p> 
5	<p>Function of setting between cooling and heating(*Except for cooling only system)</p>	
6	<p>Outdoor unit connections setting (SS3) Note: This setting is not available on the BL2K and BR2K.</p>	<p>Set the number of outdoor units being connected.</p> 



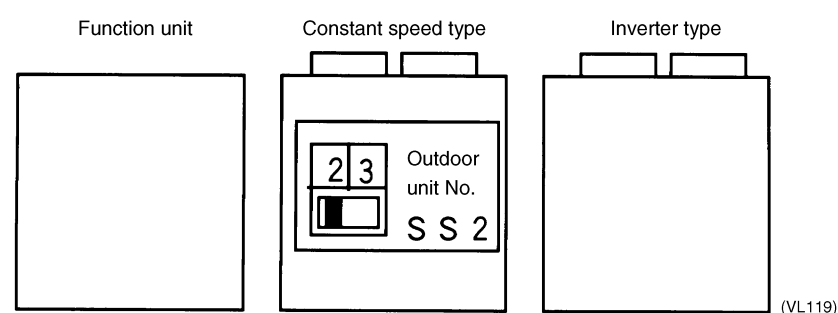
1.4 Switch Settings According to Number of Outdoor Units

The switches of the function unit and constant speed type outdoor unit PC boards must be set to match the number of outdoor units.

1.4.1 If there are 3 outdoor units:



1.4.2 If there are 2 outdoor units:



There is no switch for setting the number of outdoor units (SS3) for BL2K and BR2K.



NOTE:

1. Switch the switches described above before turning on the power.
2. Factory settings
 - Function unit switch for setting the number of outdoor units (SS3) ... 3
 - Constant speed type outdoor unit switch for setting the number of outdoor units (SS2) ... 2



1.5 Setting Modes

There are the following three setting modes.

◆ **Setting mode 1 (H1P off)**

Used to select the cool/heat setting, low-noise run and sequential start.

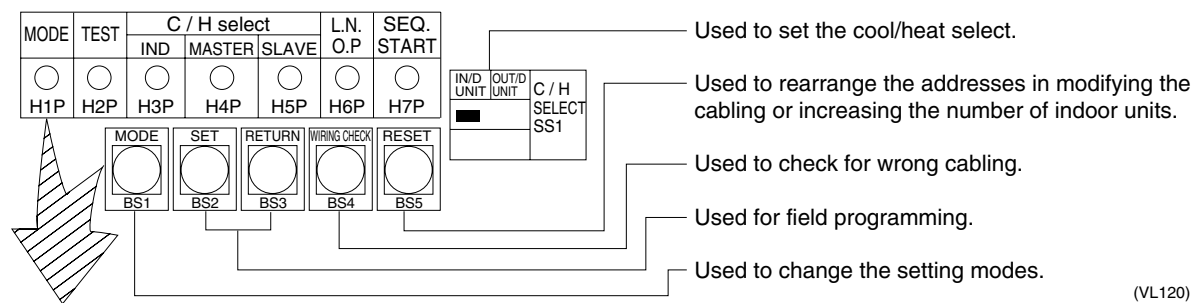
◆ **Setting mode 2 (H1P on)**

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

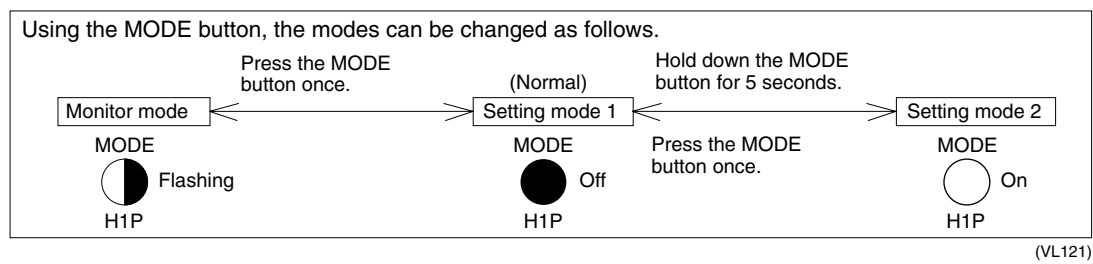
◆ **Monitor mode (H1P flashing)**

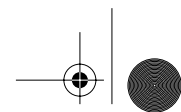
Used to check the programs made in the setting modes, the number of units being connected, and other entries.

Functions of Pushbutton Switches

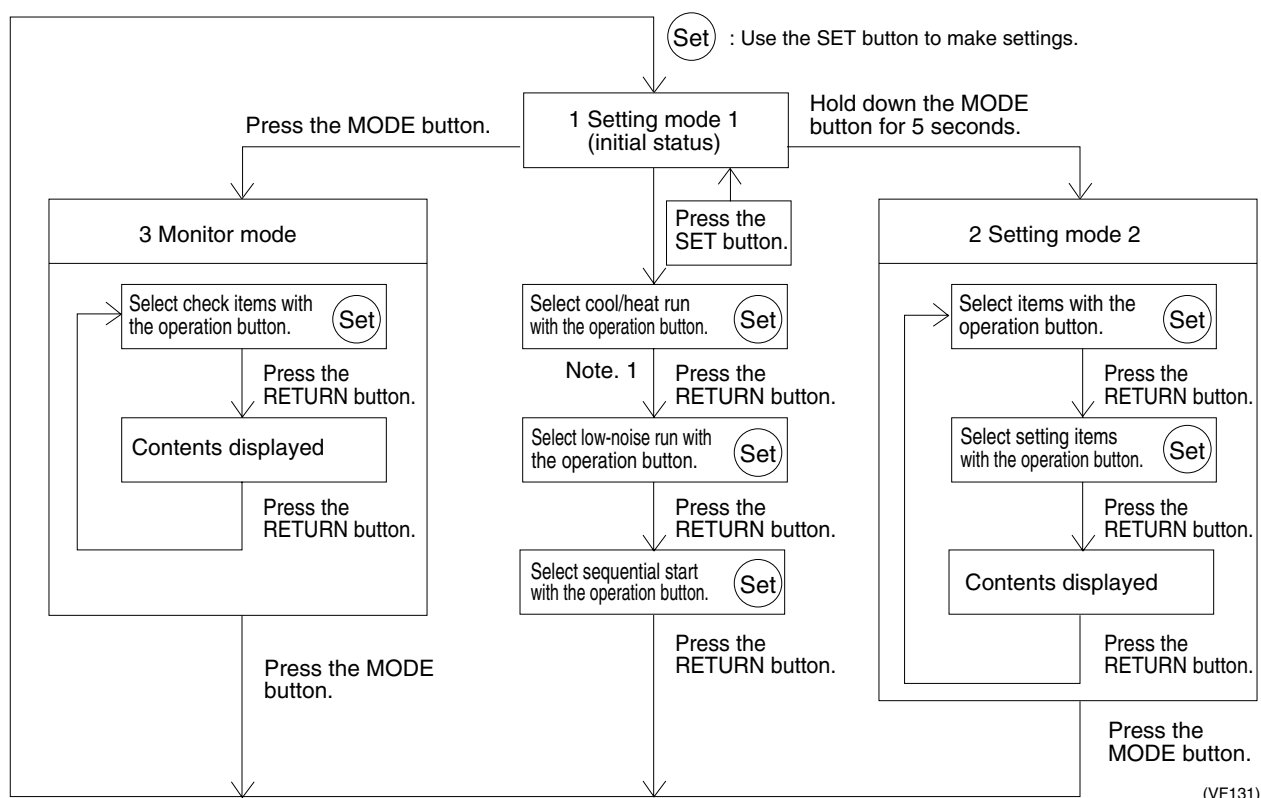


Mode Change

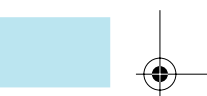
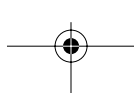
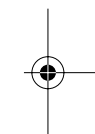
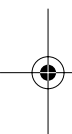




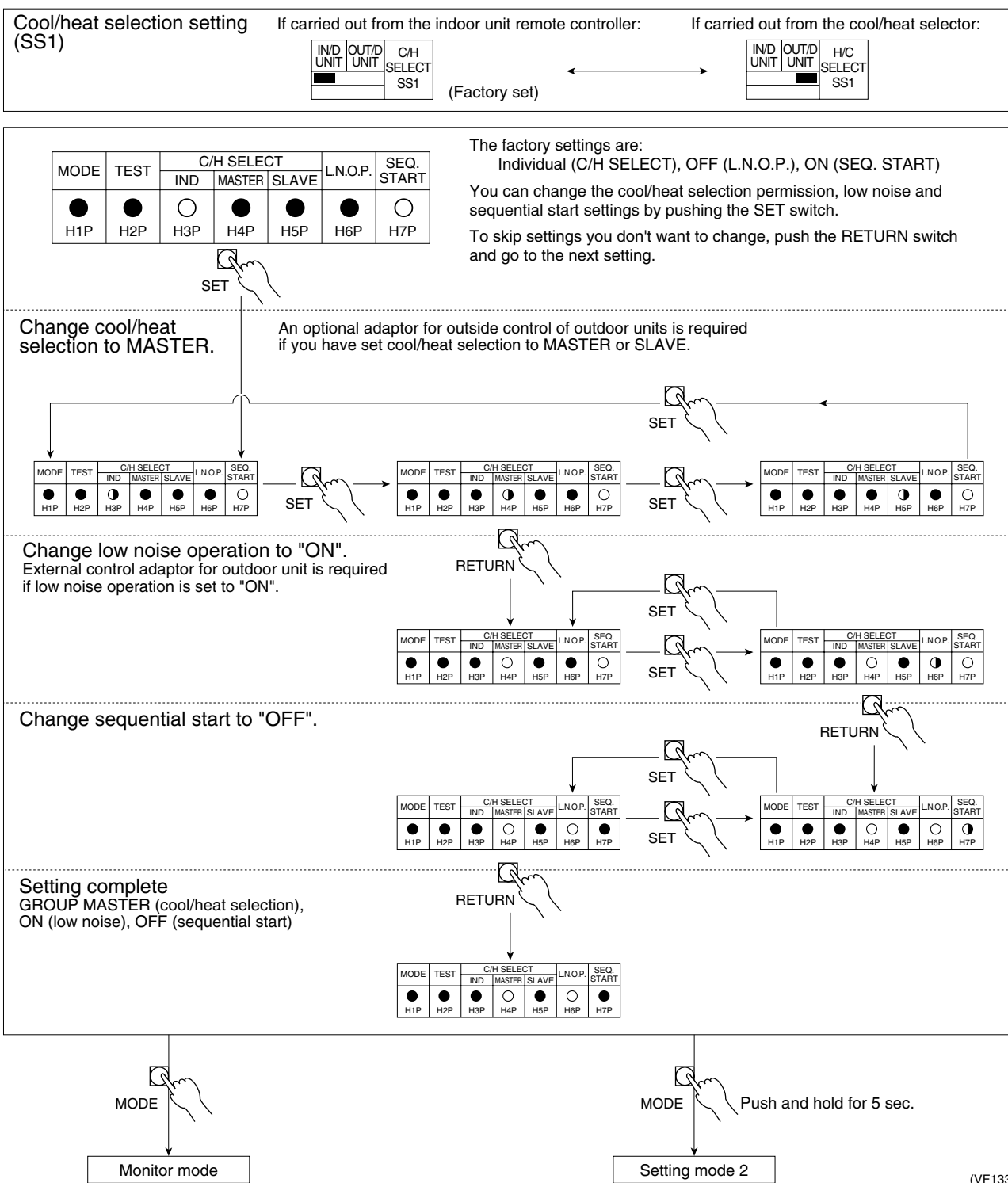
Mode Changing Procedure



i Note: No cool/heat selection for cooling only system

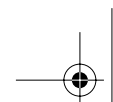


1.5.1 Setting Mode 1



(VF133)

Note: External control adaptor for outdoor unit is required if cool/heat selection set to MASTER or SLAVE, or if low noise operation is set to ON.



1.5.2 Setting Mode 2

To switch from setting mode 1 (normal) to setting mode 2, you must push and hold the next page button (BS1) for 5 seconds. (You cannot enter setting mode 2 while setting mode 1 is set.)

Setting Procedure

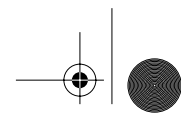
1. Push the SET button and match with the setting item (LED display). (All 10 settings)
↓
2. Push the RETURN button (BS3) and the present settings flicker (LED display).
↓
3. Push the SET button (BS2) and match with each setting (LED flicker display).
↓
4. Push the RETURN button (BS3) and enter the settings.
↓
5. Push the RETURN button (BS3) and return to the initial status.



Note:

1. If you become unsure of how to proceed, push the MODE button (BS1) and return to setting mode 1.
2. The initial status of setting mode 2 is the status of setting item No. 1 in mode 2.





Test Operation

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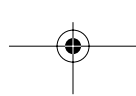
Setting Items

	Setting item	Description	LED display							LED display								
			H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P		
1	EMG (Emergency operation 1)	Emergency operation when inverter type outdoor unit malfunctions.	○ ● ● ● ● ● ●								Emergency operation (Operates by constant speed outdoor unit only.) Normal operation	○ ● ● ● ● ● ●						
2	Cool/heat unified address	Address for cool/heat unified operation	○ ● ● ● ● ● ●								Address Binary number (5 digits)	0 ○ ● ● ● ● ● ● 1 ○ ● ● ● ● ● ● 2 ○ ● ● ● ● ● ● ⋮ 31 ○ ● ● ● ● ● ●						
3	Low noise / demand address	Address for low noise / demand operation.	○ ● ● ● ● ● ●								Address Binary number (5 digits)	0 ○ ● ● ● ● ● ● 1 ○ ● ● ● ● ● ● 2 ○ ● ● ● ● ● ● ⋮ 31 ○ ● ● ● ● ● ●						
4	Forced fan switch	Indoor unit fan turns while unit is stopped.	○ ● ● ● ● ● ●								Forced fan operation (H tap) Normal operation	○ ● ● ● ● ● ● ○ ● ● ● ● ● ●						
5	Indoor unit forced operation	Allows operation of indoor unit from outdoor unit.	○ ● ● ● ● ● ●								Indoor unit forced operation Normal operation	○ ● ● ● ● ● ● ○ ● ● ● ● ● ●						
6	Frequency fix	Fixes compressor frequency. INV : (60Hz+OFF) STD1: (ON+OFF) STD2: (ON+OFF)	○ ● ● ● ● ● ●								Frequency fix Normal operation	○ ● ● ● ● ● ● ○ ● ● ● ● ● ●						
7	TE setting	Low pressure setting for cooling.	○ ● ● ● ● ● ●								High Normal (factory set)	○ ● ● ● ● ● ● ○ ● ● ● ● ● ●						
8	TC setting Note 1	High pressure setting for heating	○ ● ● ● ● ● ●								Low	○ ● ● ● ● ● ●						
9	Defrost setting Note 1	Temperature setting for defrost.	○ ● ● ● ● ● ●								Quick defrost Normal (factory set) Slow defrost	○ ● ● ● ● ● ● ○ ● ● ● ● ● ● ○ ● ● ● ● ● ●						
10	Air NET address	Address for Air NET	○ ● ● ● ● ● ●								Address Binary number (6 digits)	0 ○ ● ● ● ● ● ● 1 ○ ● ● ● ● ● ● 2 ○ ● ● ● ● ● ● ⋮ 63 ○ ● ● ● ● ● ●						
11	Pump down operation 1	Pump down operation of INV outdoor unit.	○ ● ● ● ● ● ●															
12	Pump down operation 2	Pump down operation of STD 1 outdoor unit.	○ ● ● ● ● ● ●								Pump down operation Normal operation	○ ● ● ● ● ● ● ○ ● ● ● ● ● ●						
13	Pump down operation 3	Pump down operation of STD 2 outdoor unit.	○ ● ● ● ● ● ●															
14	Forced backup operation (Emergency operation 2)	Executes emergency operation when constant speed outdoor unit is faulty.	○ ● ● ● ● ● ●								When constant speed outdoor unit 2 is faulty: When constant speed outdoor unit 1 is faulty: Normal operation	○ ● ● ● ● ● ● ○ ● ● ● ● ● ● ○ ● ● ● ● ● ●						

(VF169)



Note: TC setting and Defrost setting are not applicable to cooling only system.





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Test Operation

No	Setting item	Description	LED display H1P H2P H3P H4P H5P H6P H7P	LED display H1P H2P H3P H4P H5P H6P H7P	LED display H1P H2P H3P H4P H5P H6P H7P
1	EMG (Emergency operation 1)	Emergency operation when Inverter type outdoor unit malfunctions.	○ ● ● ● ● ● ●	Emergency operation Normal operation	○ ● ● ● ● ● ● ○ ● ● ● ● ● ●
2	Cool/heat unified address	Address for cool/heat unified operation	○ ● ● ● ● ● ○	Address 0 Binary number 1 (6 digits) 2 31	○ ● ● ● ● ● ● ○ ● ● ● ● ● ● ○ ● ● ● ● ● ● ○ ● ● ● ● ● ●
3	Low noise / demand address	Address for low noise / demand operation	○ ● ● ● ● ● ○	Address 0 Binary number 1 (6 digits) 2 31	○ ● ● ● ● ● ● ○ ● ● ● ● ● ● ○ ● ● ● ● ● ● ○ ● ● ● ● ● ●
4	Forced fan switch	Indoor unit fan turns while unit is stopped.	○ ● ● ● ● ● ○	Forced fan operation (H tap) Normal operation	○ ● ● ● ● ● ● ○ ● ● ● ● ● ●
5	Indoor unit forced operation	Allows operation of indoor unit from outdoor unit	○ ● ● ● ● ● ○	Forced fan operation (H tap) Normal operation	○ ● ● ● ● ● ● ○ ● ● ● ● ● ●
6	Frequency fix	Fixes compressor frequency. INV : (60Hz + OFF) STD 1 : (ON+OFF) STD 2 : (ON+OFF)	○ ● ● ● ● ● ○	Frequency fix Normal operation	○ ● ● ● ● ● ● ○ ● ● ● ● ● ●
7	TE setting	Low pressure setting for cooling	○ ● ● ● ● ● ○	High Normal (factory set) Low	○ ● ● ● ● ● ● ○ ● ● ● ● ● ● ○ ● ● ● ● ● ●
8	TC setting Note 1	High pressure setting for heating	○ ● ● ● ● ● ○		○ ● ● ● ● ● ● ○ ● ● ● ● ● ● ○ ● ● ● ● ● ●
9	Defrost setting Note 1	Temperature setting for defrost	○ ● ● ● ● ● ○	Quick defrost Normal (factory set) Slow defrost	○ ● ● ● ● ● ● ○ ● ● ● ● ● ● ○ ● ● ● ● ● ●
10	Air Net address	Address for Air Net	○ ● ● ● ● ● ○	Address 0 Binary number 1 (6 digits) 2 63	○ ● ● ● ● ● ● ○ ● ● ● ● ● ● ○ ● ● ● ● ● ● ○ ● ● ● ● ● ●
11	Pump down operation 1	Pump down operation of INV outdoor unit	○ ● ● ● ● ● ○	Pump down operation	○ ● ● ● ● ● ●
12	Pump down operation 2	Pump down operation of STD 1 outdoor unit	○ ● ● ● ● ● ○	Normal operation	○ ● ● ● ● ● ●
13	Pump down operation 3	Pump down operation of STD 2 outdoor unit	○ ● ● ● ● ● ○		○ ● ● ● ● ● ●
14	Forced back up operation (Emergency operation 2)	Executes emergency operation when constant speed outdoor unit is faulty.	○ ● ● ● ● ● ○	Constant speed outdoor unit 2 has broken Constant speed outdoor unit 1 has broken Normal operation	○ ● ● ● ● ● ● ○ ● ● ● ● ● ● ○ ● ● ● ● ● ●
Initial setting (EMG)					

Initial setting (EMG)

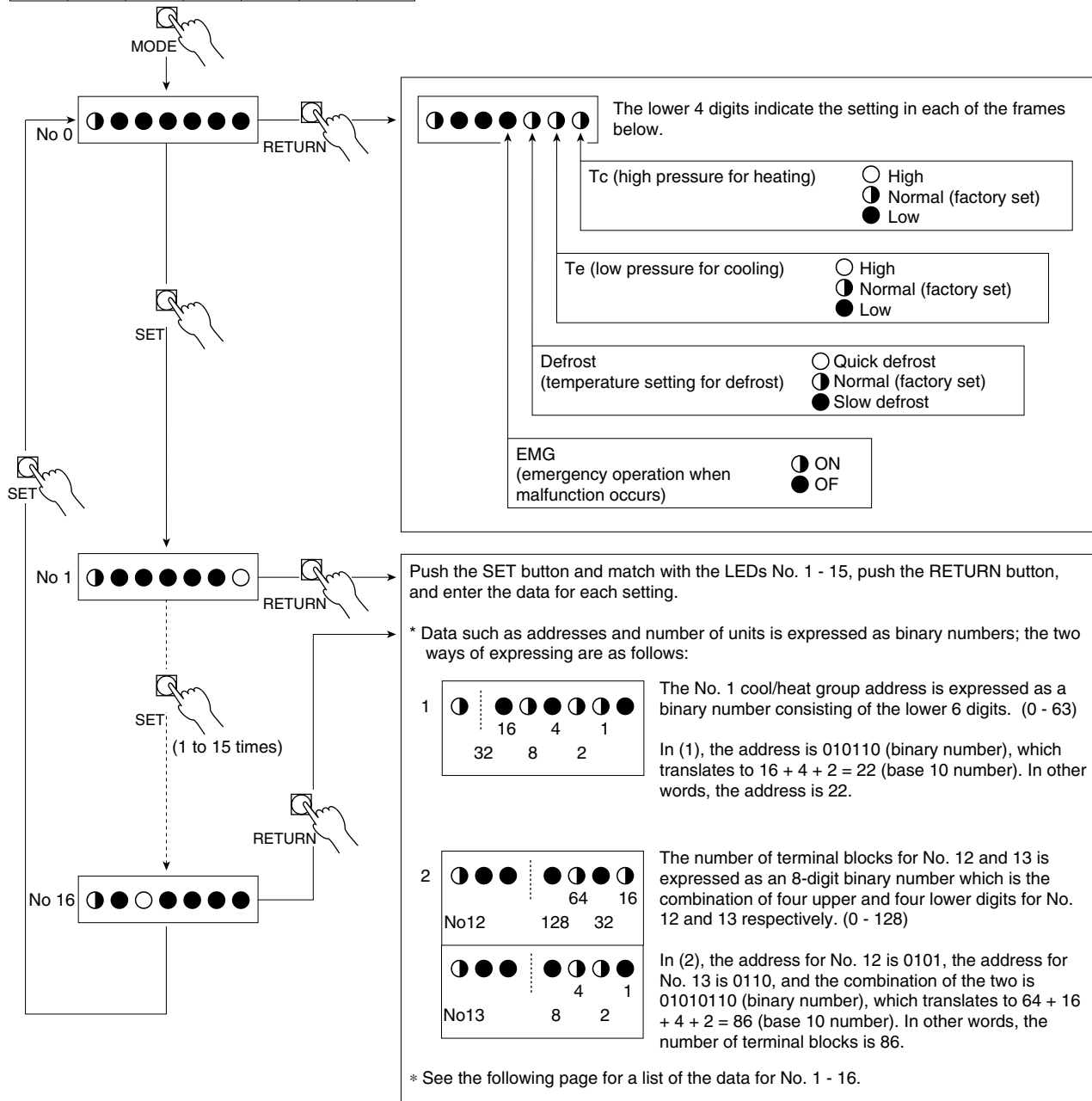
 RETURN BUTTON
 SET BUTTON

(VF134)

1.5.3 Monitor Mode

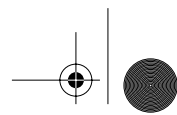
MODE	TEST	C/H SELECT			L.N.O.P.	SEQ. START
		IND	MASTER	SLAVE		
<input checked="" type="radio"/> H1P	<input checked="" type="radio"/> H2P	<input type="radio"/> H3P	<input checked="" type="radio"/> H4P	<input checked="" type="radio"/> H5P	<input checked="" type="radio"/> H6P	<input type="radio"/> H7P

To enter the monitor mode, push the MODE button when in setting mode 1.



(VF135)

- After making sure the data is correct, push the RETURN button and return to No. 0, or push the MODE button and return to setting mode 1.

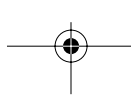
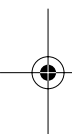


SiE-05C

Test Operation

Monitor Mode Data

Mode No.	LED	Data	Display method	Size (binary number)
No 1	○ ● ● ● ● ● ○	Cool/heat group address	0 ~ 31	Lower 6 digits
No 2	○ ● ● ● ● ○ ●	Low noise / demand address	0 ~ 31	Lower 6 digits
No 3	○ ● ● ● ● ○ ○	Not used		
No 4	○ ● ● ● ○ ● ●	Not used	0 ~ 63	Lower 6 digits
No 5	○ ● ● ● ○ ● ○	Number of connected units	0 ~ 63 units	Lower 6 digits
No 6	○ ● ● ● ○ ○ ●	Number of connected BS units	0 ~ 63 units	Lower 6 digits
No 7	○ ● ● ● ○ ○ ○	Number of connected zone units (excluding outdoor and BS units)	0 ~ 63 units	Lower 6 digits
No 8	○ ● ● ○ ● ● ●	Number of outdoor units	0 ~ 63 units	Lower 6 digits
No 9	○ ● ● ○ ● ● ○	Number of BS units	0 ~ 128 units	Lower 4 digits, upper
No 10	○ ● ● ○ ● ○ ●	Number of BS units	0 ~ 128 units	Lower 4 digits, lower
No 11	○ ● ● ○ ● ○ ○	Number of zone units (excluding outdoor and BS units)	0 ~ 63 units	Lower 6 digits
No 12	○ ● ● ○ ○ ● ●	Number of terminal blocks	0 ~ 128 units	Lower 4 digits, upper
No 13	○ ● ● ○ ○ ● ○	Number of terminal blocks	0 ~ 128 units	Lower 4 digits, lower
No 14	○ ● ● ○ ○ ○ ●	Not used		
No 15	○ ● ● ○ ○ ○ ○	Not used		
No 16	○ ● ○ ● ● ● ●	Not used		



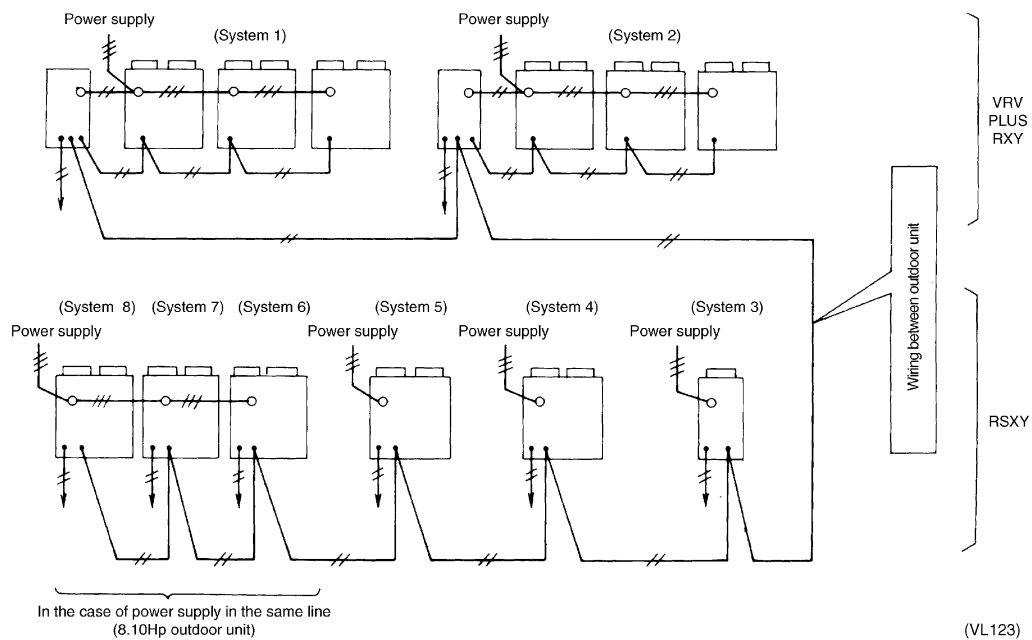
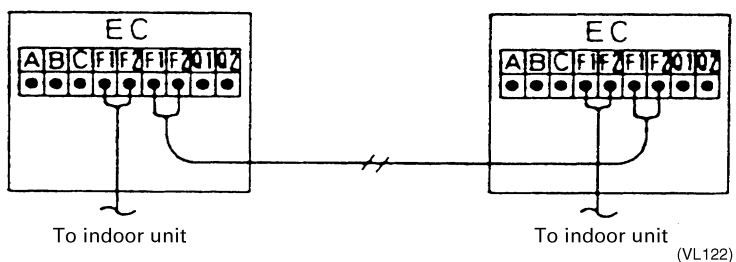


1.6 Sequential Start

- Separates path timing of commercial power supply compressors by 3 seconds each in order to prevent overcurrent when more than 1 compressor are to be started at the same time.
- Improved wiring system enables sequential start of up to 5 function units and 10 outdoor units.

If you want to carry out sequential start, connect outdoor unit - outdoor unit transmission wiring as shown below.

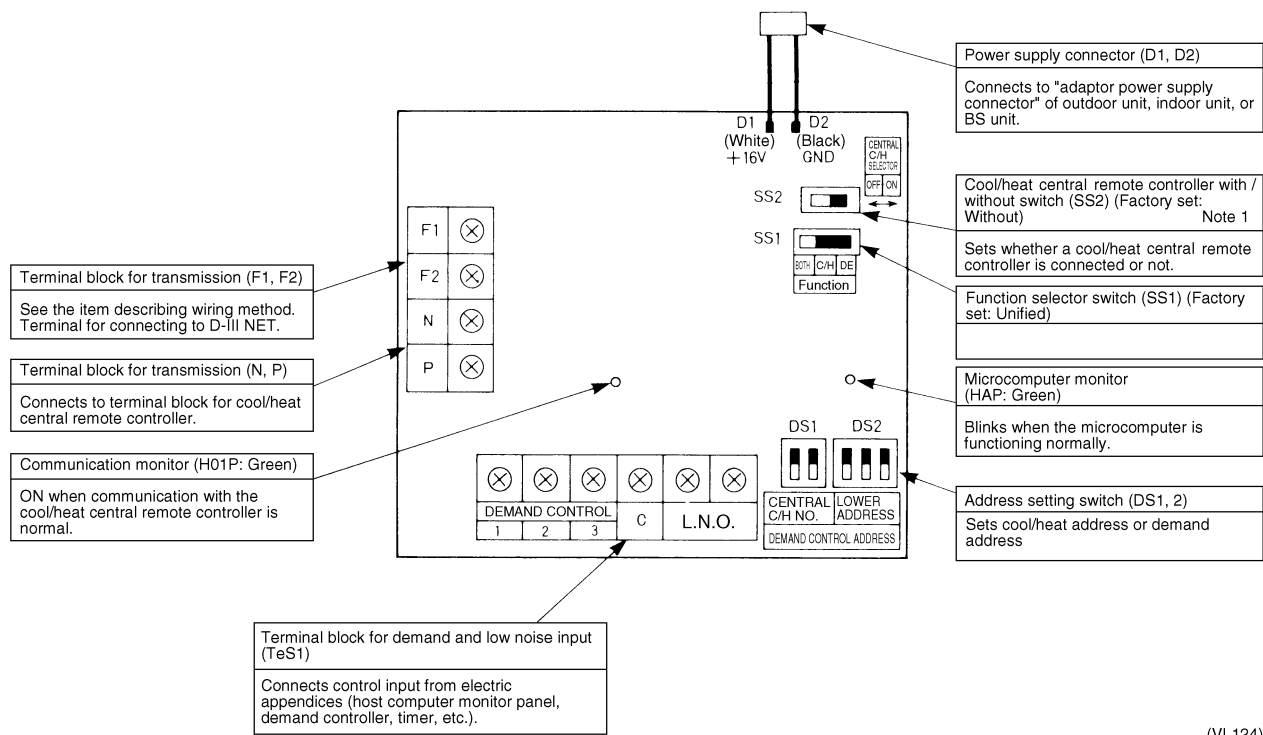
The function unit PC board (EC) is factory set to "sequential start."



1.7 External Control Adaptor for Outdoor Units (DTA104A61 · DTA104A62)

Objective/Use By adding an adaptor for outside control of outdoor units to BS units or indoor units connected in a DIII-NET, you can simultaneously select cool/heat mode for several outdoor units in the system, and it enables demand control and low noise control.

Part Names and Functions



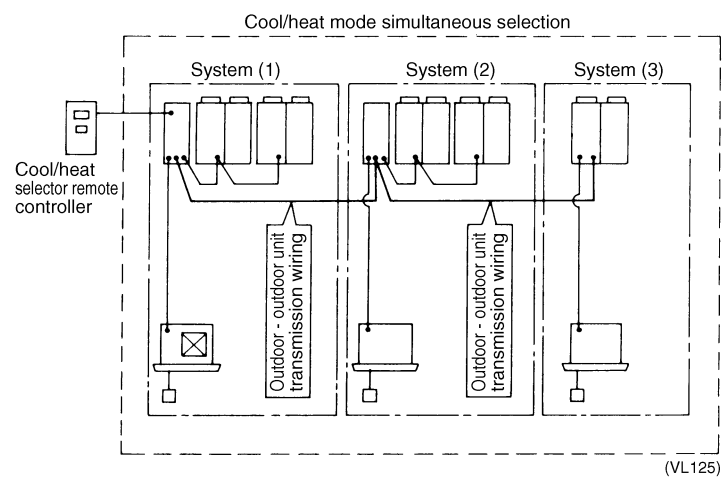
(VL124)

Note: SS2 is not applicable to cooling only system.

1.7.1 (1) Cool/Heat Mode Unified Selection (For Detailed Example of Wiring, See The Page Describing Cool/Heat Mode Control.)

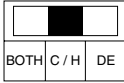

Refer to Cool/Heat Mode Switching on P290

System Outline



(VL125)

Settings of Switches on The PC Board Adaptor

- 1 SS1  C / H ("BOTH" is selected when demand control is carried out at the same time.)
- 1 SS2  OFF
- 1 DS1-2 Set the same address as the cool/heat mode address of the function unit. (VL193)

i Note: Set the SS1 cool/heat selector switch on the function unit to "outdoor." You must also set cool/heat selector "master" or "slave" by pushbutton switch.

1.7.2 Demand / Low Noise Control (*Except for Cooling Only System)

Connecting control input to the adaptor for outside control of outdoor units enables demand and low noise control.

■ **Demand control (figures indicate demand rate)**

When short circuit between (1) and (C): Approx. 70% as a guideline

When short circuit between (2) and (C): Approx. 40% as a guideline

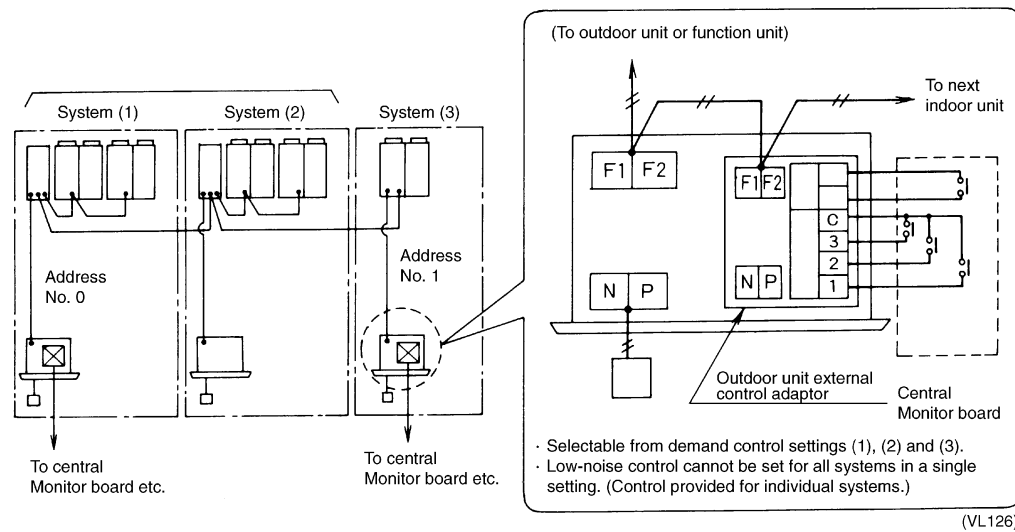
When short circuit between (3) and (C): Forced fan operation

■ **Low noise control (Outdoor unit)**

Running noise can be reduced by 2~ 3dB by controlling capacity of outdoor unit.

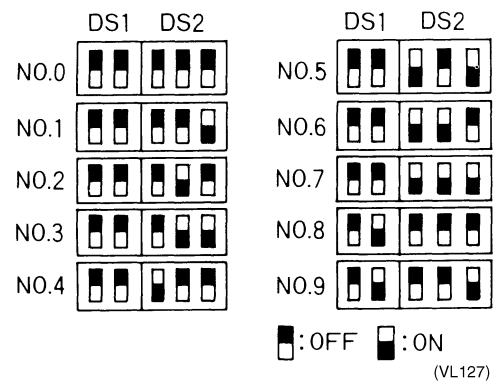
<System General>

When each system is set to the same address, the same demand control operation is conducted.



[Common]**■ Address Setting (DS1 / DS2)**

Decide the address for each control unit from 0~9 and set.

**■ Control Input Specifications****Input signal**

Constant contact a

Input current is approx. 12 - 24 VDC, 10 mA per contact.

Use a micro-current contact for the relay contact.

(Max. 12 VDC, 1 mA)

Outside wiring specifications

Recommended electric wiring: Sheathed vinyl cord or cable 0.75~1.25 mm² (double core)

Wiring length: Max. 150 m

Run separate from power line in order to prevent malfunction.

**Note:**

Be sure to make the address No. of the PC board adaptor described above match the address No. of function unit or outdoor unit (BS unit if using heat recovery type).
 (For detailed settings, see the installation manual.)



Refer to the INSTALLATION INSTRUCTION

1.8 Cool/Heat Mode Switching (*Except for Cooling Only System)

The VRV PLUS Series cool/heat switching system offers the following 4 cool/heat modes.

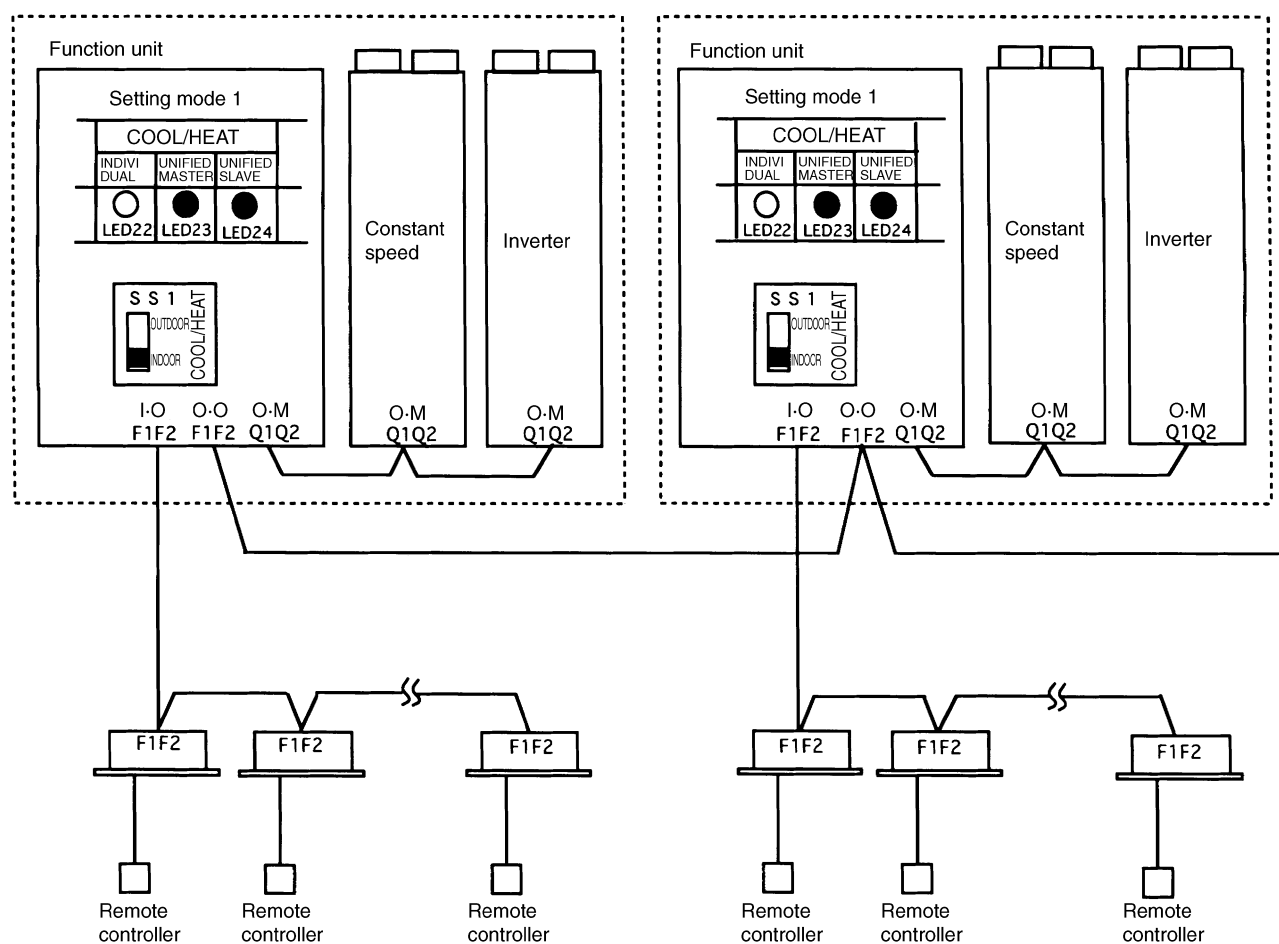
1. Set cool/heat separately for each outdoor system by indoor unit remote controller.
2. Set cool/heat separately for each outdoor system by cool/heat selector.
3. Set cool/heat for more than one outdoor unit system simultaneously in accordance with unified master outdoor unit by indoor unit remote controller.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

Details of each setting mode are explained below.

(For modes 3 and 4, perform power supply reset of the outdoor unit external control adaptor after changing the setting.)

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

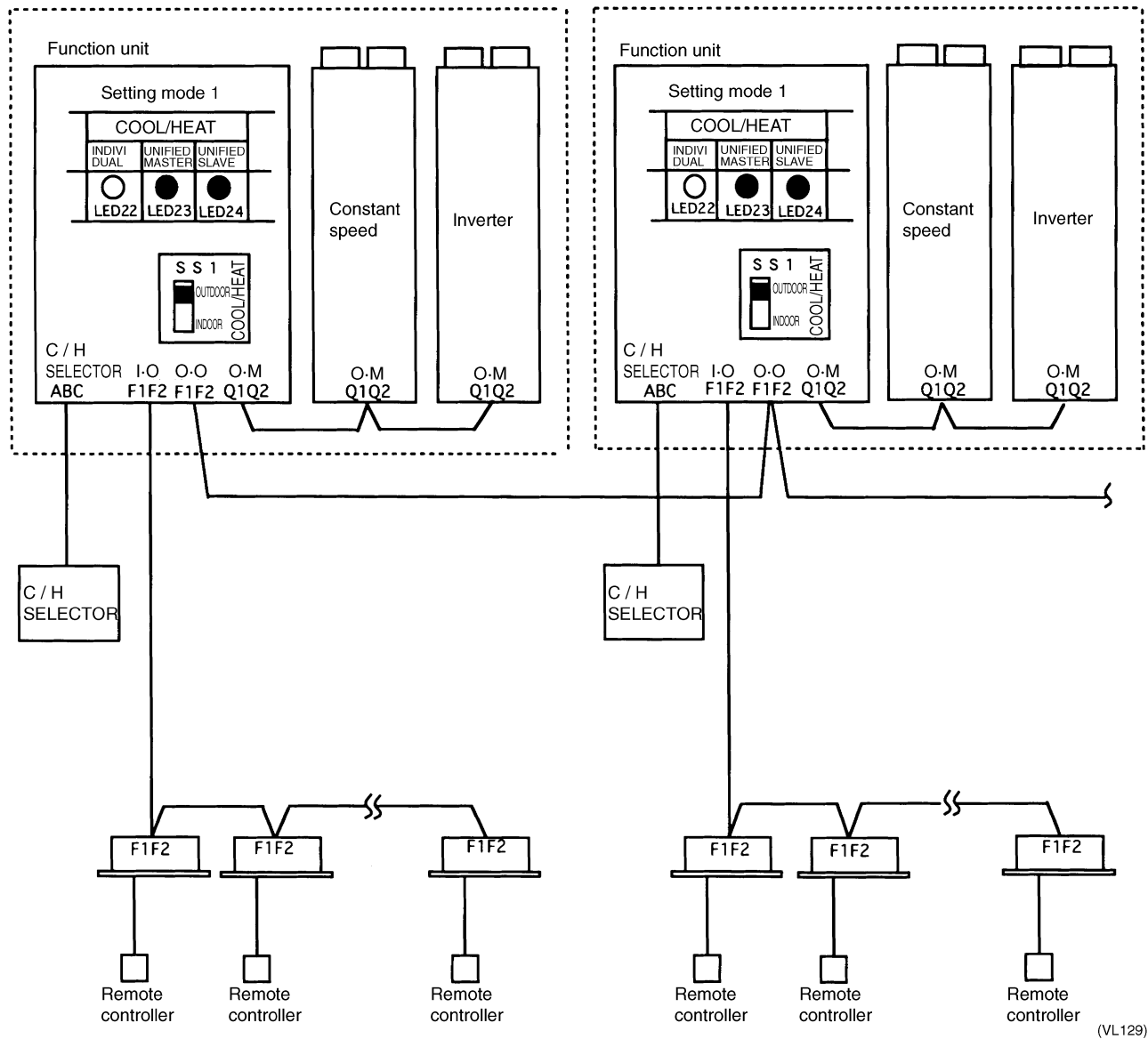
- It doesn't matter whether or not there is outdoor - outdoor unit wiring.
- Set function unit PC board SS1 to "indoor" (factory set).
- Set cool/heat switching to "individual" for setting mode 1 (factory set).



One of the remote controllers is given cool/heat (VL128)

1.8.2 Set Cool/Heat Separately for Each Outdoor System by C/H SELECTOR.

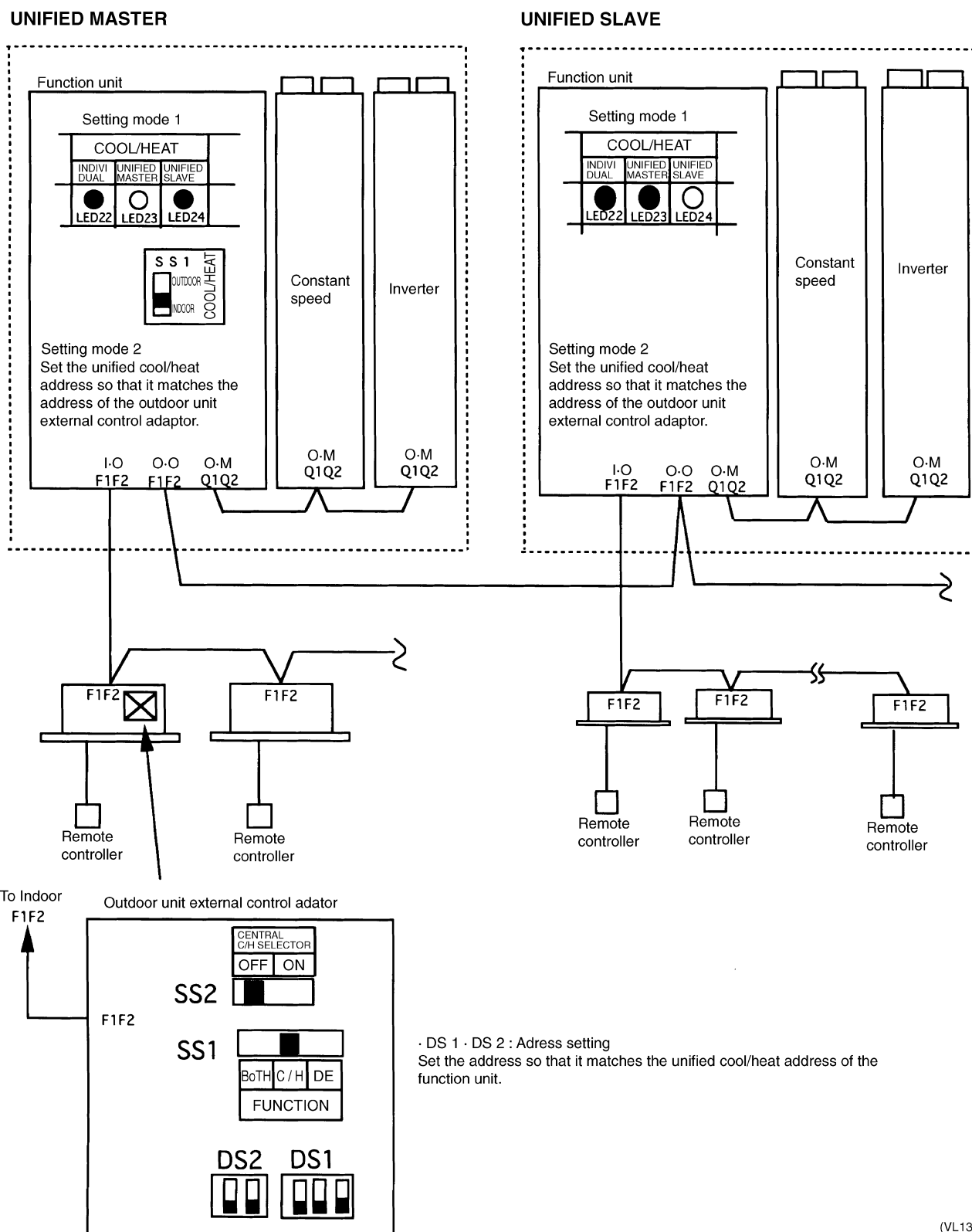
- It doesn't matter whether or not there is outdoor - outdoor unit wiring.
- Set function unit PC board SS1 to "outdoor".
- Set cool/heat switching to "individual" for setting mode 1 (factory set).



(VL129)

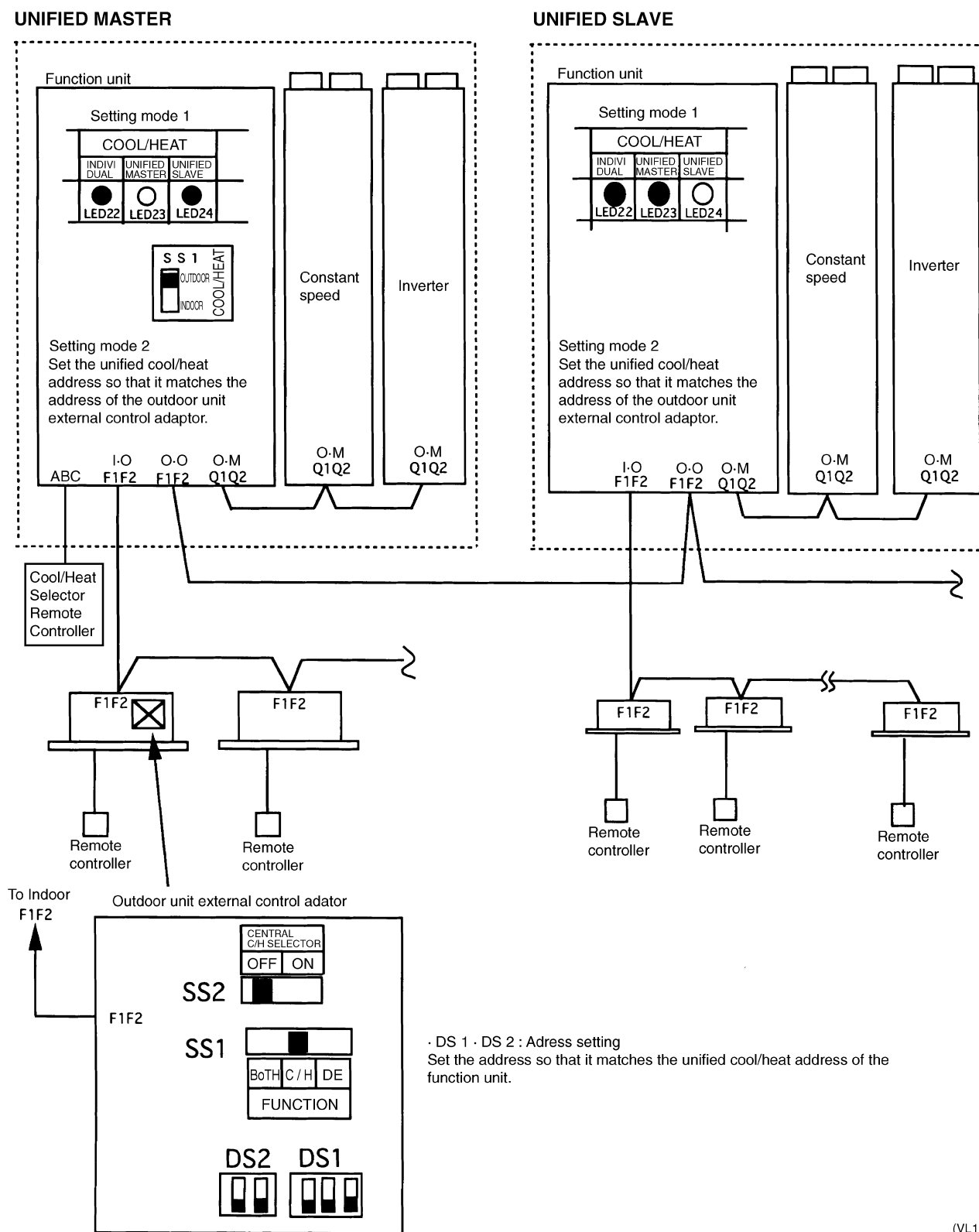
1.8.3 Setting of Cool/Heat by Outdoor Unit System Group in Accordance with Group Master Outdoor Unit by Indoor Unit Remote Controller

- Install the External control adaptor for outdoor unit on either the outdoor - outdoor, indoor - outdoor, or indoor - indoor transmission line.
- Set SS1 of the outdoor unit PCB to "IN / D UNIT" (factory set).
- In setting mode 1, set the outdoor unit you want to give cool/heat selection permission to as the group master, and set the other outdoor units as group slave units.



1.8.4 Setting of Cool/Heat by Outdoor Unit System Group in Accordance with Group Master Outdoor Unit by COOL/HEAT Selector Remote Controller

- Install the External control adaptor for outdoor unit on either the outdoor - outdoor, indoor - outdoor, or indoor - indoor transmission line.
- Set SS1 of the outdoor unit PCB to "OUT/DOOR UNIT" (factory set).
- In setting mode 1, set the outdoor unit you want to give cool/heat selection permission to as the group master, and set the other outdoor units as group slave units.



1.9 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 save power and lower operating noise by 2 -3 dB.

Instructions for Demand Control Operation

1. Outdoor unit field setting

- ◆ Setting mode 1: Set low noise operation to "ON."
- ◆ Setting mode 2: Match low noise operation and demand control address with address of outdoor unit external control adaptor.

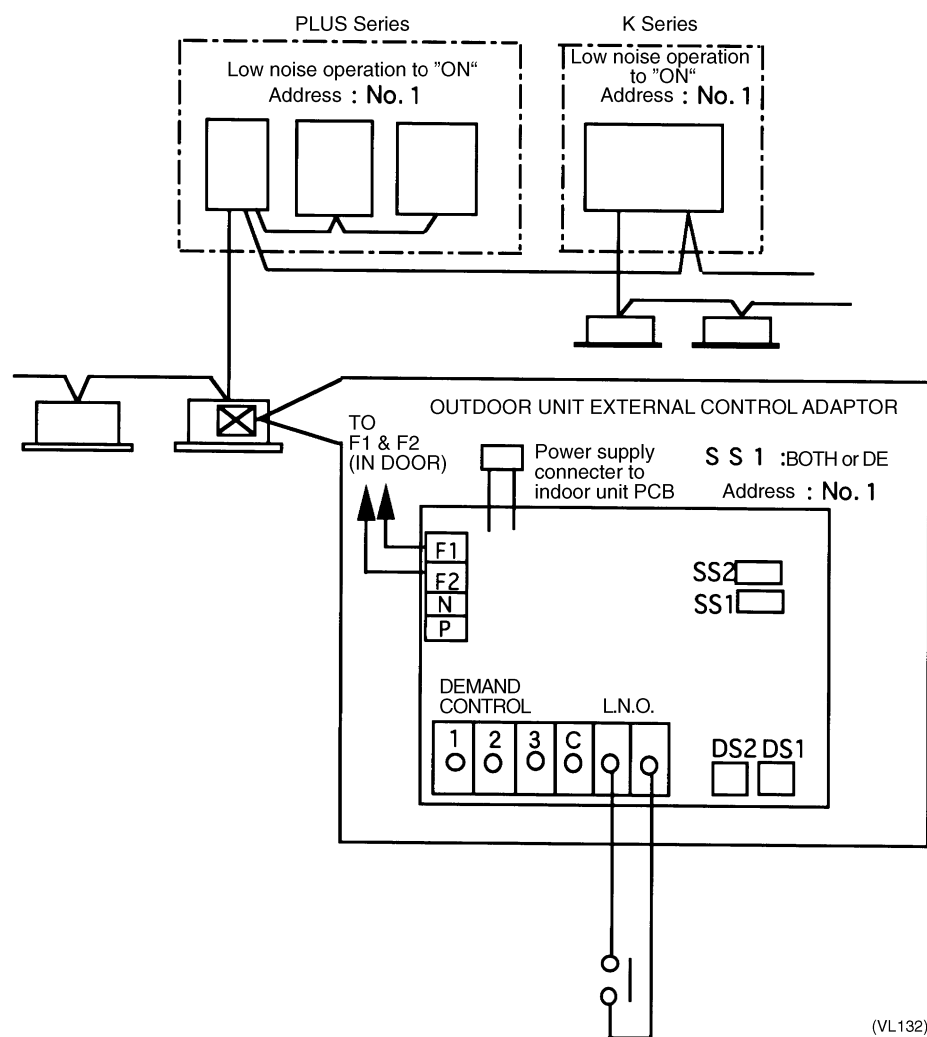
2. Outdoor unit external control adaptor setting

- ◆ Function switch (SS1)
Set to "BOTH" or "DE."

- ◆ Address setting switches (DS1, DS2)
Match with outdoor unit low noise operation and demand control address.

3. Short-circuit the low noise input of outdoor unit external control adaptor for outdoor unit.

Low Noise Control System Example



1.10 Demand Control

By connecting the external contact input to the demand input of the outdoor unit external control adaptor (option), the compressor operating conditions can be controlled for reduced power consumption.

- Demand 1 Approximately 70% level
- Demand 2 Approximately 40% level
- Demand 3 Forced thermostat OFF

Instructions for Demand Control Operation

1. Outdoor unit field setting

- ◆ Setting mode 1: Set low noise operation to "ON."
- ◆ Setting mode 2: Match low noise operation and demand control address with address of outdoor unit external control adaptor.

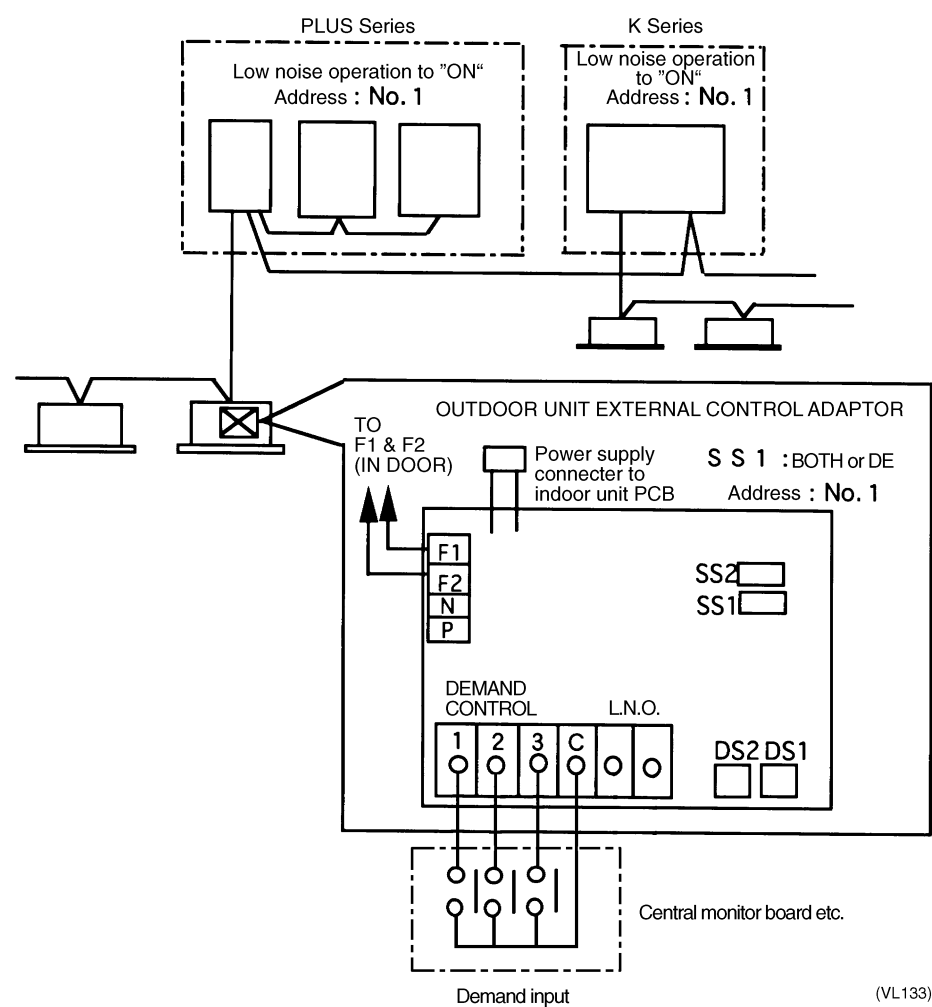
2. Outdoor unit external control adaptor setting

- ◆ Function switch (SS1)
Set to "BOTH" or "DE."
- ◆ Address setting switches (DS1, DS2)
Match with outdoor unit low noise operation and demand control address.

3. Select one from demand input terminals 1 through 3 on the outdoor unit external control adaptor, and short the corresponding terminals.

- Demand 1 Short 1-C.
- Demand 2 Short 2-C.
- Demand 3 Short 3-C.

Demand Control System Example

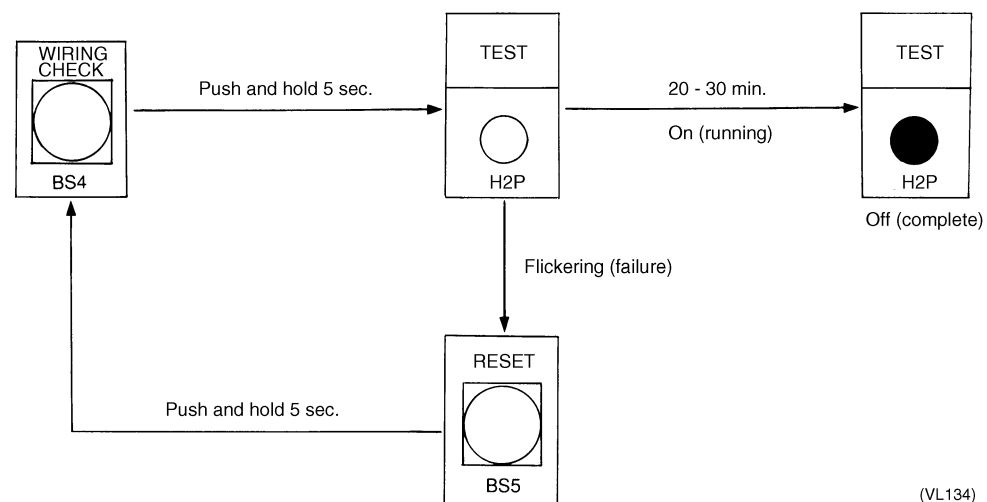


1.11 Wiring Check Operation

If within 12 hours of stopping cooling or heating, be sure to run all indoor units in the system you want to check in the fan mode for about 60 minutes in order to prevent mis-detection.

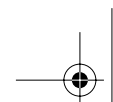
Operation Method

1. In the monitor mode, check the number of connected indoor units. (See monitor mode.)
2. Push and hold the WIRING CHECK button (BS4) for 5 seconds to perform wiring check operation. While running, TEST (H2P) lights and goes off when finished. If TEST (H2P) flickers (wiring check operation failure), push and hold the RESET button (BS5) for 5 seconds, and then repeat the procedure from the beginning.
3. About 1 minute after you finish running the system, once again check the number of connected indoor units in the monitor mode and make sure the number agrees with the first time you checked. If not, it indicates that there is a wiring mistake. Fix the wiring of the indoor unit whose remote controller displays "UF" when its ON/OFF switch is turned ON.



(VL134)

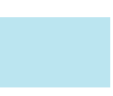
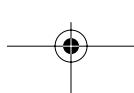
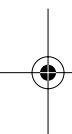
i Note: Other settings are not accepted during wiring check operation.

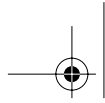


Part 8

Troubleshooting PLUS Series

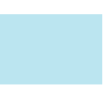
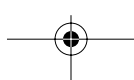
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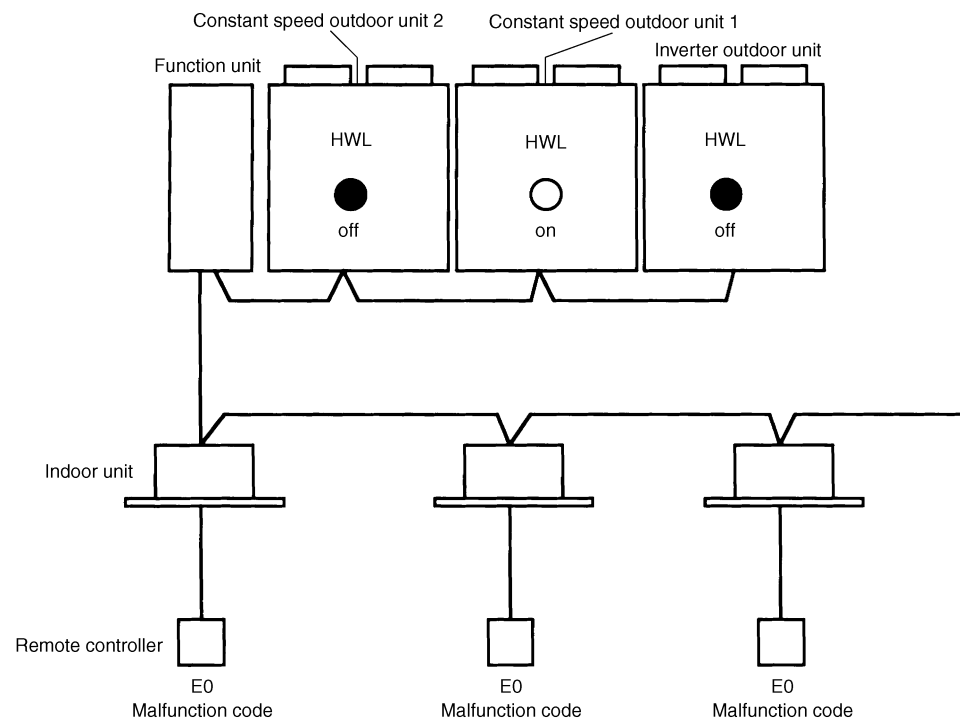


1. Troubleshooting for VRV PLUS Series

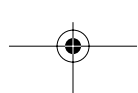
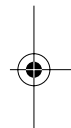
1.1 Troubleshooting for VRV PLUS Series

You can troubleshoot by the malfunction code displayed on the indoor unit's remote controller same as other series. The HWL lamp lights to let you know which of the outdoor units is malfunctioning. The function unit is not equipped with a HWL.

Example: If an "E0" malfunction is displayed on the remote controller and HWL is lit for constant speed type outdoor unit 1. This tells you that the malfunction was caused by a safety device of the constant speed type outdoor unit tripping.



(VL135)





2. Diagnosis by Malfunction Code

2.1 Diagnosis by Malfunction Code

Malfunction Code	Malfunction Contents	Fan Operation	Page
E0	Outdoor Unit: Actuation of Safety Device		301, 302
E1	Outdoor Unit: PC Board Defect		303
E3	Outdoor Unit: Actuation of High Pressure Switch		303
E4	Outdoor Unit: Actuation of Low Pressure Switch	○	304
E9	Outdoor Unit: Malfunction of Moving Part of Electronic Expansion Valve (Y1E)	○	305
F3	Outdoor Unit: Abnormal Discharge Pipe Temperature	○	306
H3	Outdoor Unit: Defect of Pressure Switch for High Pressure Control	○	307
H4	Outdoor Unit: Defect of Pressure Switch for Low Pressure Control	○	307
H9	Outdoor Unit: Malfunction of Thermistor for Outdoor Air (R1T)	○	308
J3	Outdoor Unit: Malfunction of Discharge Pipe Thermistor (R3T)	○	308
J5	Outdoor Unit: Malfunction of Thermistor (R4T) for Suction Pipe	○	309
J6	Outdoor Unit: Malfunction of Thermistor (R2T) for Heat Exchanger	○	309
J7	Outdoor Unit: Malfunction of Thermistor (R6T) for Header	○	310
JA	Outdoor Unit: Malfunction of Discharge Pipe Pressure Sensor	○	311
JC	Outdoor Unit: Malfunction of Suction Pipe Pressure Sensor	○	312
JH	Outdoor Unit: Malfunction of Oil Temperature Thermistor (R5T)	○	313
U0	Low Pressure Drop Due to Refrigerant Shortage or Electronic Expansion Valve Failure	○	314
U1	"Negative Phase, Open Phase	○	315
U4	Malfunction of Transmission between Indoor Units	○	316
U7	Malfunction of Transmission between Outdoor Units	○	317
UA	Excessive Number of Indoor Units	○	318
UF	"Refrigerant System not set, Incompatible Wiring/Piping	○	319
UH	"Malfunction of System, Refrigerant System Address Undefined	○	320
L4	Actuation of Fin Thermal	○	323
L5	Defect of Compressor Coil	○	324
L8	Compressor Overload	○	325
L9	Defect of Compressor	○	326
LC	Malfunction of Connection between The Inverter Unit and Outdoor Unit PC Board	○	327
U2	Power Supply Insufficient	○	328
P1	Open Phase	○	329
P4	Defect of Radiator Fin Temperature Sensor	○	330



3. Troubleshooting

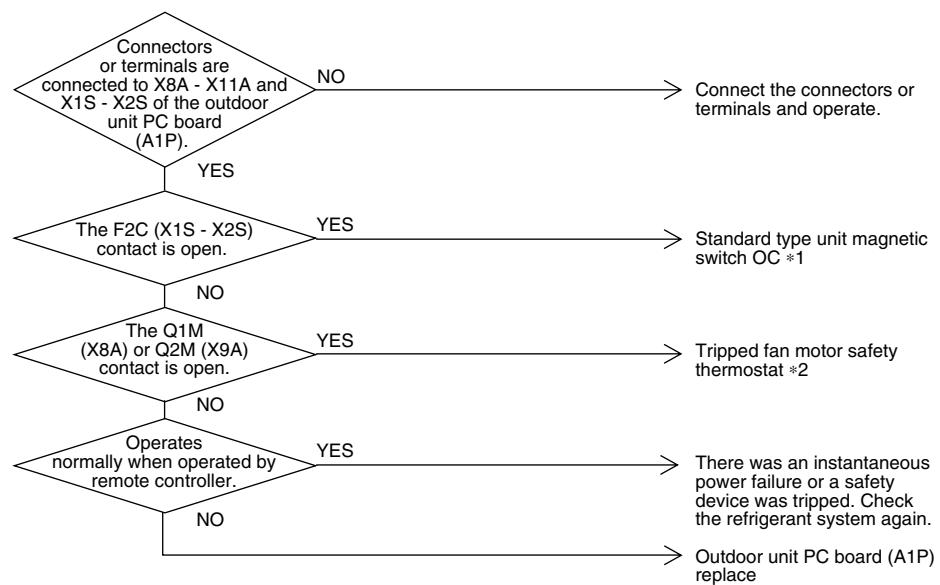
3.1 Outdoor Unit: Actuation of Safety Device

Remote Controller Display **EO**

Applicable Models Inverter type unit's HWL is lit.

- Supposed Causes
- Tripped outdoor unit safety device (INV outdoor unit / constant speed outdoor unit)
 - Faulty outdoor unit PC board (INV outdoor unit / constant speed outdoor unit)
 - Instantaneous power failure

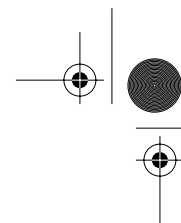
Troubleshooting



(VF136)

*1: Magnetic switch OC
 Faulty compressor
 Power supply voltage malfunction
 Faulty magnetic switch
 Other

*2: Tripped fan motor safety thermostat
 Faulty fan motor
 Faulty condenser
 Other



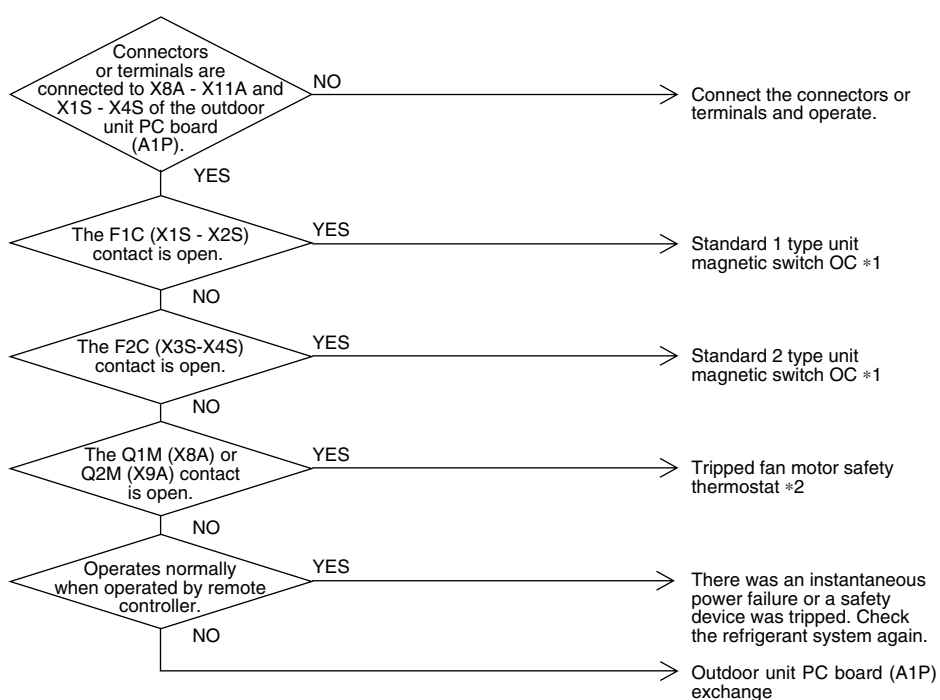
Troubleshooting

SI-E-05C

3.2 Outdoor Unit: Actuation of Safety Device

Remote Controller Display	EO
Applicable Models	HWL of constant speed outdoor Unit is lit
Supposed Causes	<ul style="list-style-type: none"> ■ Tripped outdoor unit safety device (INV outdoor unit / constant speed outdoor unit) ■ Faulty outdoor unit PC board (INV outdoor unit / constant speed outdoor unit) ■ Instantaneous power failure

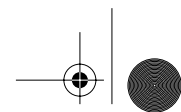
Troubleshooting



(VF137)

*1: Magnetic switch OC
 Faulty compressor
 Power supply voltage malfunction
 Faulty magnetic switch
 Other

*2: Tripped fan motor safety thermostat
 Faulty fan motor
 Faulty condenser
 Other



SiE-05C

Troubleshooting

3.3 Outdoor Unit: PC Board Defect

Remote Controller Display **E1**

Supposed Causes Faulty outdoor unit PC board (FUNCTION UNIT, INVERTER OUTDOOR UNIT, CONSTANT SPEED OUTDOOR UNIT)

Troubleshooting
A.Change the outdoor unit PC board of the inverter type or constant speed type outdoor unit for which the HWL is lit.
B.If the HWL for the inverter type or constant speed type outdoor unit is not lit, change the function unit's PC board. (The function unit is not equipped with a HWL.)

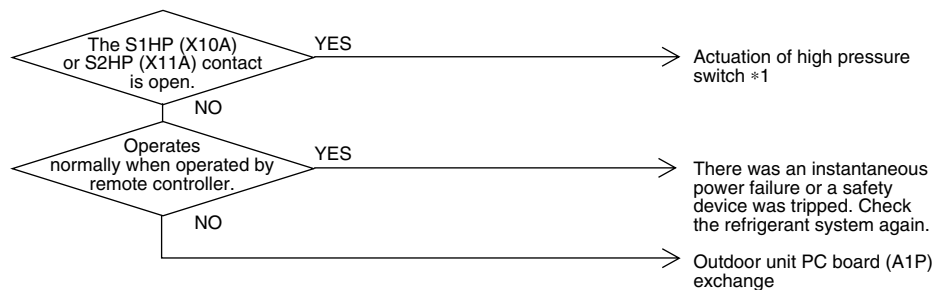
3.4 Outdoor Unit: Acturation of High Pressure Switch

Remote Controller Display **E3**

Supposed Causes

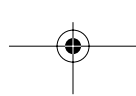
- Actuation of outdoor unit high pressure switch
- Defect of outdoor unit PC board
- Instantaneous power failure

Troubleshooting



(VF138)

*1: Actuation of high pressure switch (HPS)
The outdoor unit PC board's connector is disconnected.
Is the outdoor unit heat exchanger dirty?
Defect of outdoor fan
Is the refrigerant over-filled?

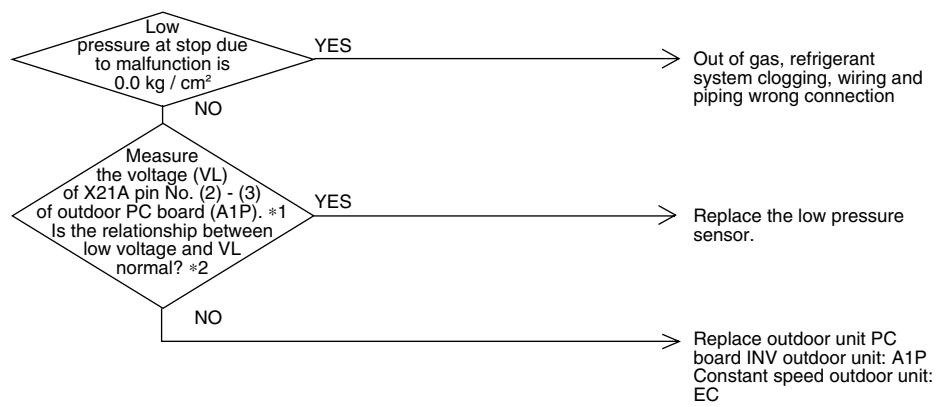


3.5 Outdoor Unit: Actuation of Low Pressure Switch

Remote Controller Display **E4**

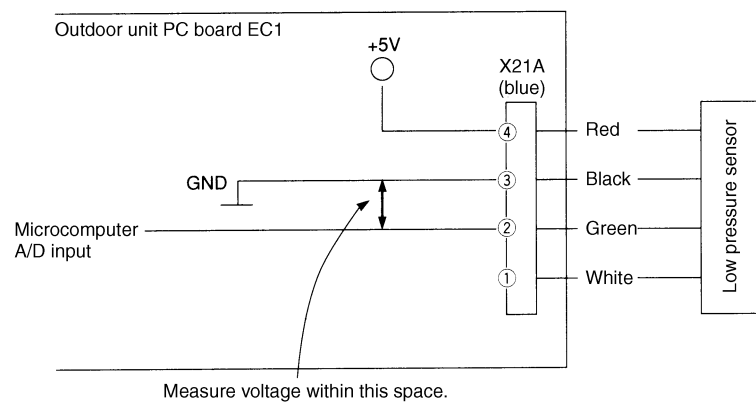
- Supposed Causes**
- Abnormal drop of low pressure (0 kg/cm² [0 MPa])
 - Defect of low pressure sensor
 - Defect of outdoor unit PC board

Troubleshooting



(VF139)

*1: Voltage measurement point



(VL136)

*2: Refer to the pressure sensor, pressure - voltage characteristics table.



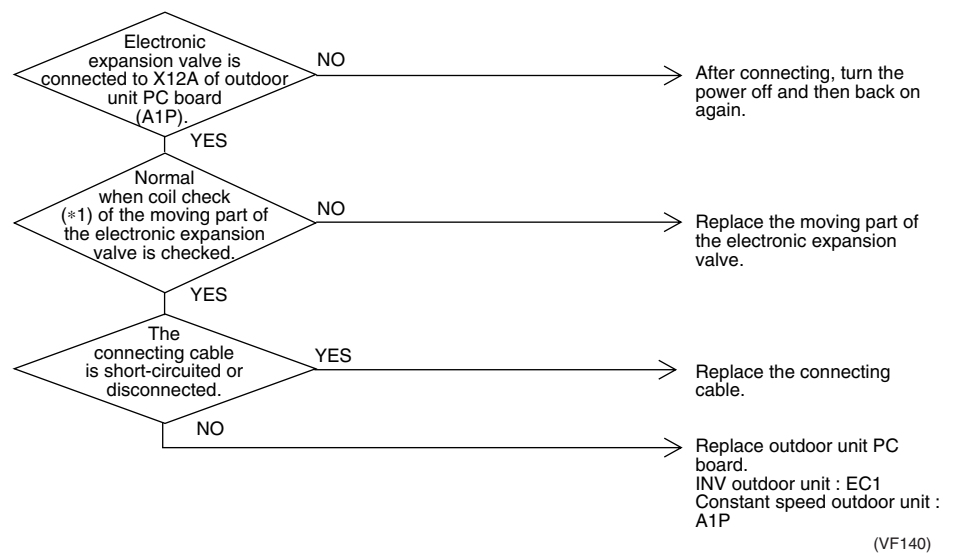
Refer to Pressure Sensor Voltage Output / Detected Pressure Characteristics on P366

3.6 Outdoor Unit: Malfunction of Moving Part of Electronic Expansion Valve (Y1E)

Remote Controller Display **E9**

- Supposed Causes**
- Defect of moving part of electronic expansion valve
 - Defect of outdoor unit PC board (A1P)
 - Defect of connecting cable

Troubleshooting Troubleshooting the outdoor unit for which the HWL is lit in accordance with the following flow chart.



*1 Coil check method for the moving part of the electronic expansion valve Disconnect the electronic expansion valve from the PC board and check the continuity between the connector pins.

(Normal)

Pin No.	1White	2Yellow	3Orange	4Blue	5Red	6Brown
1 White		x	⊙	x	○	x
2 Yellow			x	⊙	x	○
3 Orange				x	○	x
4 Blue					x	○
5 Red						x
6 Brown						

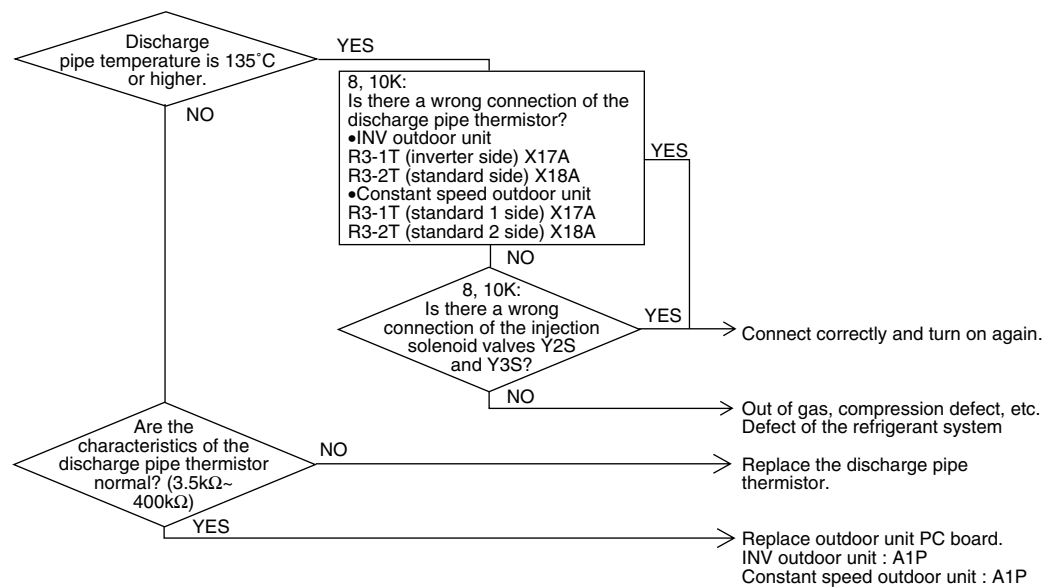
- ⊙: Continuity Approx. 300Ω
- : Continuity Approx. 150Ω
- x: No continuity

3.7 Outdoor Unit: Abnormal Discharge Pipe Temperature

Remote Controller Display **F3**

- Supposed Causes**
- Abnormal discharge pipe temperature
 - Defect of discharge pipe thermistor (5K: R3T 8K, 10K: R3-1T, R3-2T)
 - Defect of outdoor unit PC board
 - Discharge pipe thermistor wrong connection
 - Liquid injection solenoid valve wrong connection

Troubleshooting Troubleshooting the outdoor unit for which HWL is lit in accordance with the following flow chart.



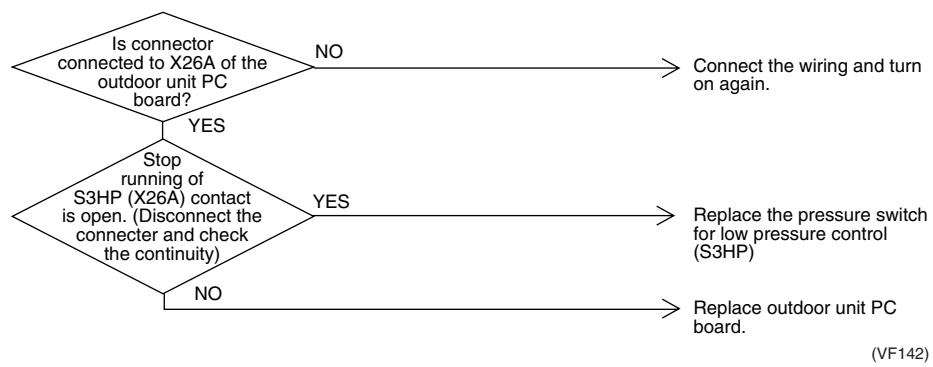
(VF141)

3.8 Outdoor Unit: Defect of Pressure Switch for High Pressure Control

Remote Controller Display **H3**

- Supposed Causes**
- Defect of pressure switch for high pressure control
 - Defect of outdoor unit PC board
 - Disconnected or faulty wiring connector

Troubleshooting

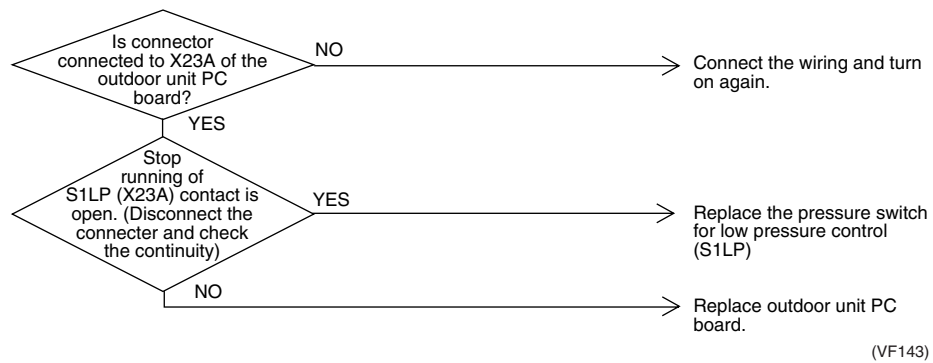


3.9 Outdoor Unit: Defect of Pressure Switch for Low Pressure Control

Remote Controller Display **H4**

- Supposed Causes**
- Defect of pressure switch for low pressure control
 - Defect of outdoor unit PC board
 - Disconnected or faulty wiring connector

Troubleshooting

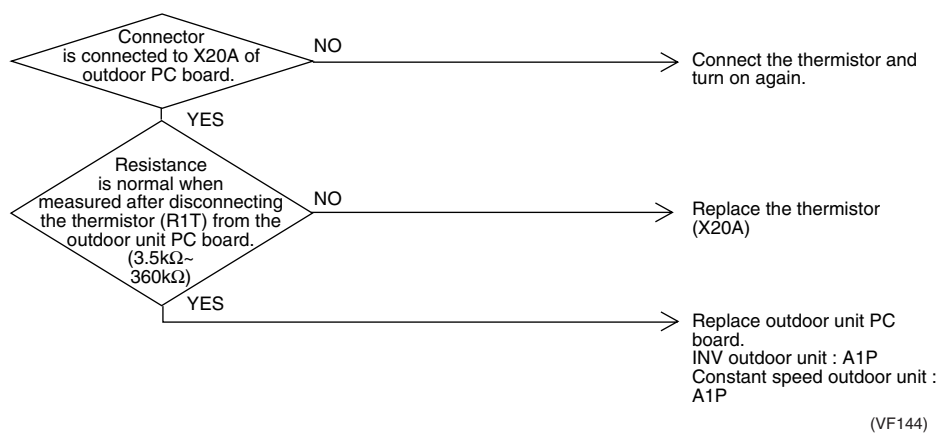


3.10 Outdoor Unit: Malfunction of Thermistor for Outdoor Air (R1T)

Remote Controller Display **H9**

- Supposed Causes**
- Defect of thermistor (R1T) for outdoor unit outdoor air intake
 - Defect of outdoor unit PC board

Troubleshooting Troubleshoot the outdoor unit for which the HWL is lit in accordance with the following flow chart.



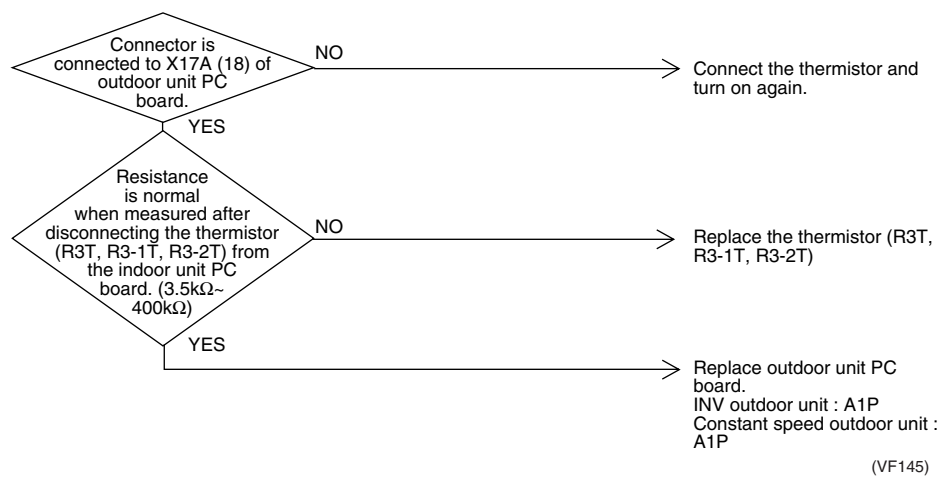
The alarm indicator is displayed when the fan is being used also.

3.11 Outdoor Unit: Malfunction of Discharge Pipe Thermistor (R3T)

Remote Controller Display **J3**

- Supposed Causes**
- Defect of thermistor (R3T, R3-1T, R3-2T) for outdoor unit discharge pipe
 - Defect of outdoor unit PC board

Troubleshooting Troubleshoot the outdoor unit for which the HWL is lit in accordance with the following flow chart.



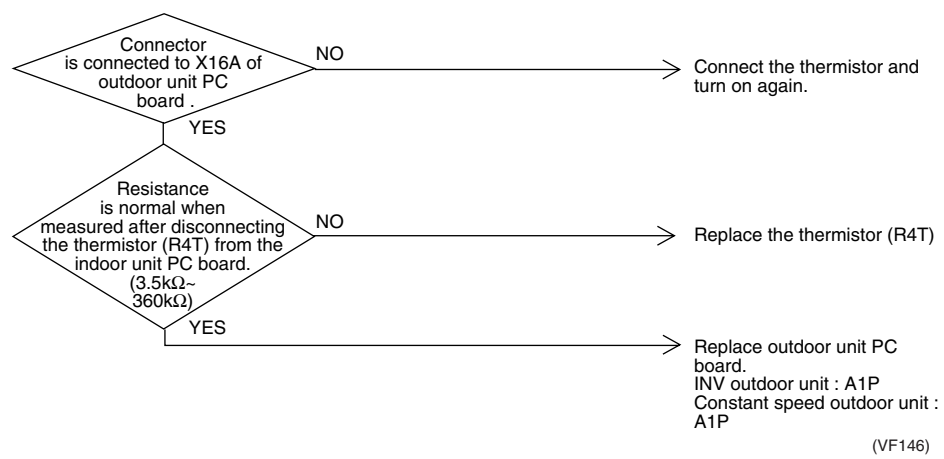
The alarm indicator is displayed when the fan is being used also.

3.12 Outdoor Unit: Malfunction of Thermistor (R4T) for Suction Pipe

Remote Controller Display **J5**

- Supposed Causes**
- Defect of thermistor (R4T) for outdoor unit suction pipe
 - Defect of outdoor unit PC board

Troubleshooting Troubleshoot the outdoor unit for which the HWL is lit in accordance with the following flow chart.



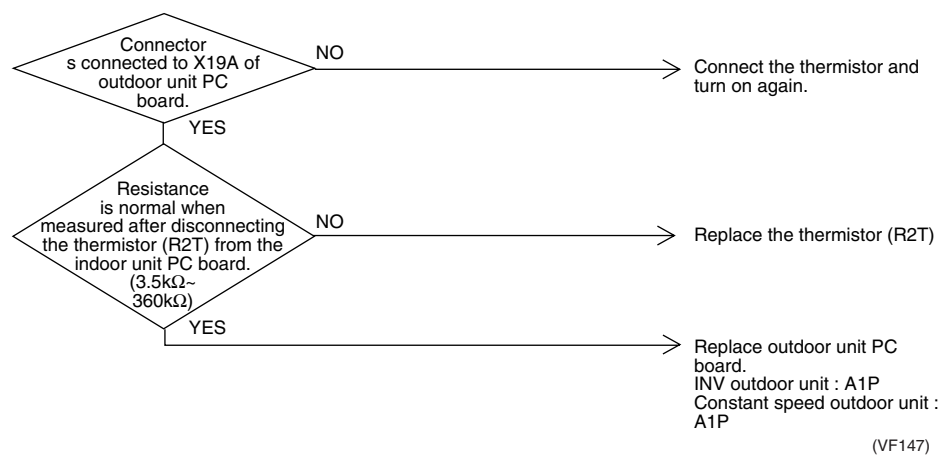
The alarm indicator is displayed when the fan is being used also.

3.13 Outdoor Unit: Malfunction of Thermistor (R2T) for Heat Exchanger

Remote Controller Display **J6**

- Supposed Causes**
- Defect of thermistor (R2T) for outdoor unit coil
 - Defect of outdoor unit PC board

Troubleshooting Troubleshoot the outdoor unit for which the HWL is lit in accordance with the following flow chart.



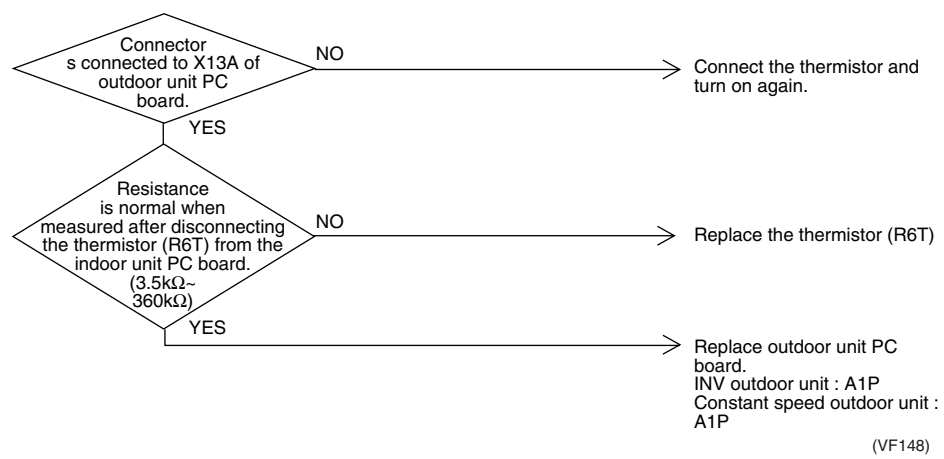
The alarm indicator is displayed when the fan is being used also.

3.14 Outdoor Unit: Malfunction of Thermistor (R6T) for Header

Remote Controller Display **J7**

- Supposed Causes**
- Defect of thermistor (R6T) for outdoor unit header
 - Defect of outdoor unit PC board

Troubleshooting Troubleshoot the outdoor unit for which the HWL is lit in accordance with the following flow chart.



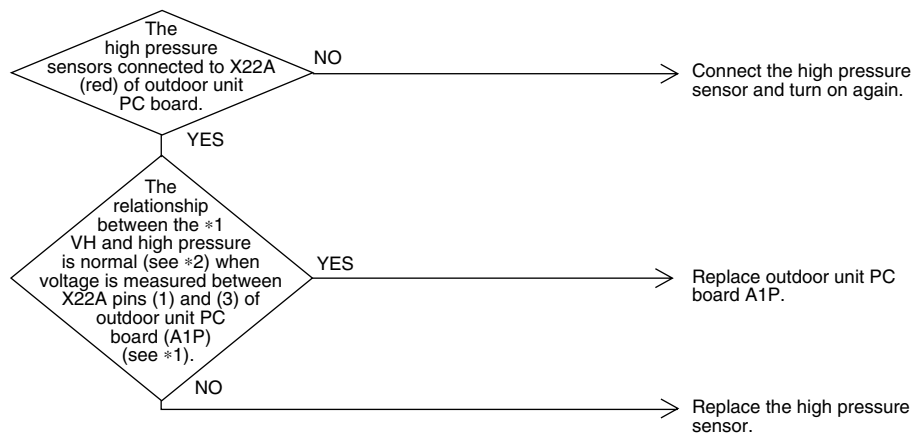
The alarm indicator is displayed when the fan is being used also.

3.15 Outdoor Unit: Malfunction of Discharge Pipe Pressure Sensor

Remote Controller Display **JA**

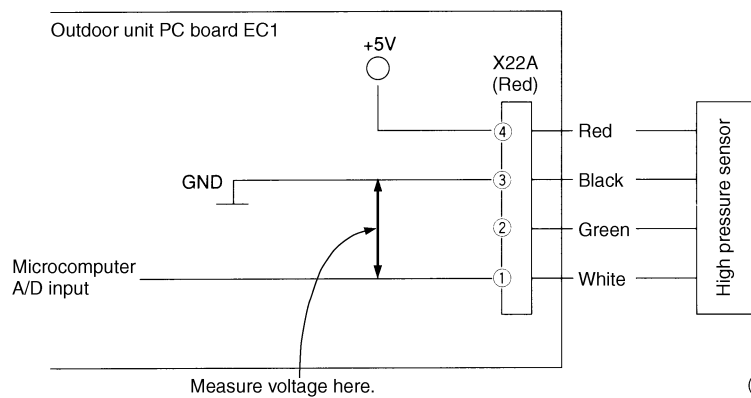
- Supposed Causes**
- Defect of high pressure sensor system
 - Connection of low pressure sensor with wrong connection.
 - Defect of outdoor unit PC board.

Troubleshooting



(VF149)

*1: Voltage measurement point



(VL137)

*2: Refer to pressure sensor, pressure / voltage characteristics table.



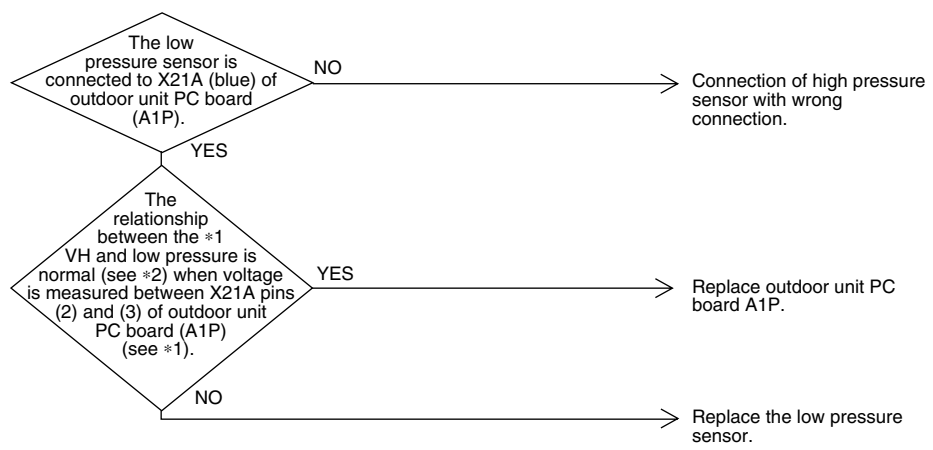
Refer to Pressure Sensor Voltage Output / Detected Pressure Characteristics on P366

3.16 Outdoor Unit: Malfunction of Suction Pipe Pressure Sensor

Remote Controller Display **JC**

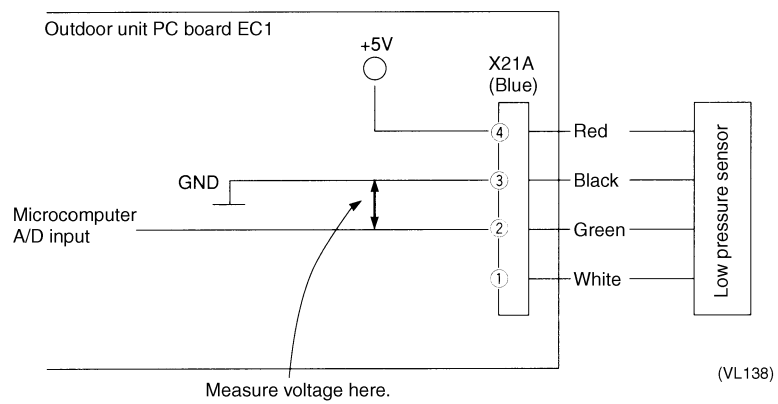
- Supposed Causes**
- Defect of low pressure sensor system
 - Connection of high pressure sensor with wrong connection.
 - Defect of outdoor unit PC board.

Troubleshooting



(VF150)

*1: Voltage measurement point



(VL138)

*2: Refer to pressure sensor, pressure/voltage characteristics table.



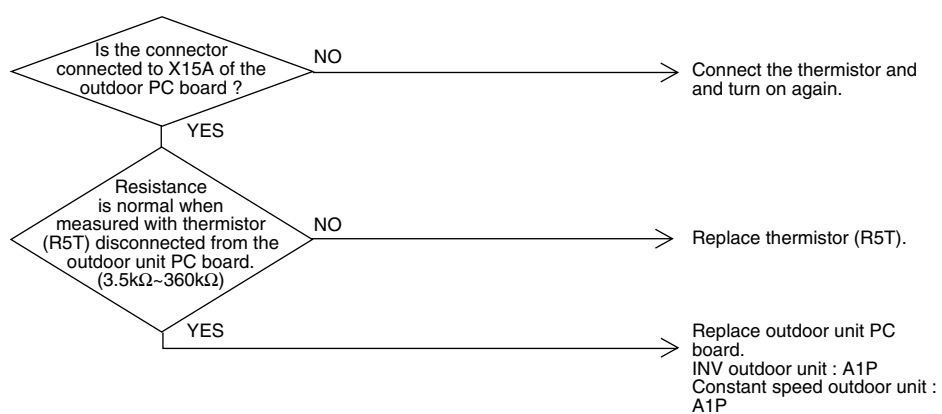
Refer to Pressure Sensor Voltage Output / Detected Pressure Characteristics on P366.

3.17 Outdoor Unit: Malfunction of Oil Temperature Thermistor (R5T)

Remote Controller Display **JH**

- Supposed Causes**
- Defect of oil temperature thermistor (R5T)
 - Defect of outdoor unit PC board (A1P)

Troubleshooting Troubleshoot the outdoor unit for which the HWL is lit in accordance with the following flow chart.



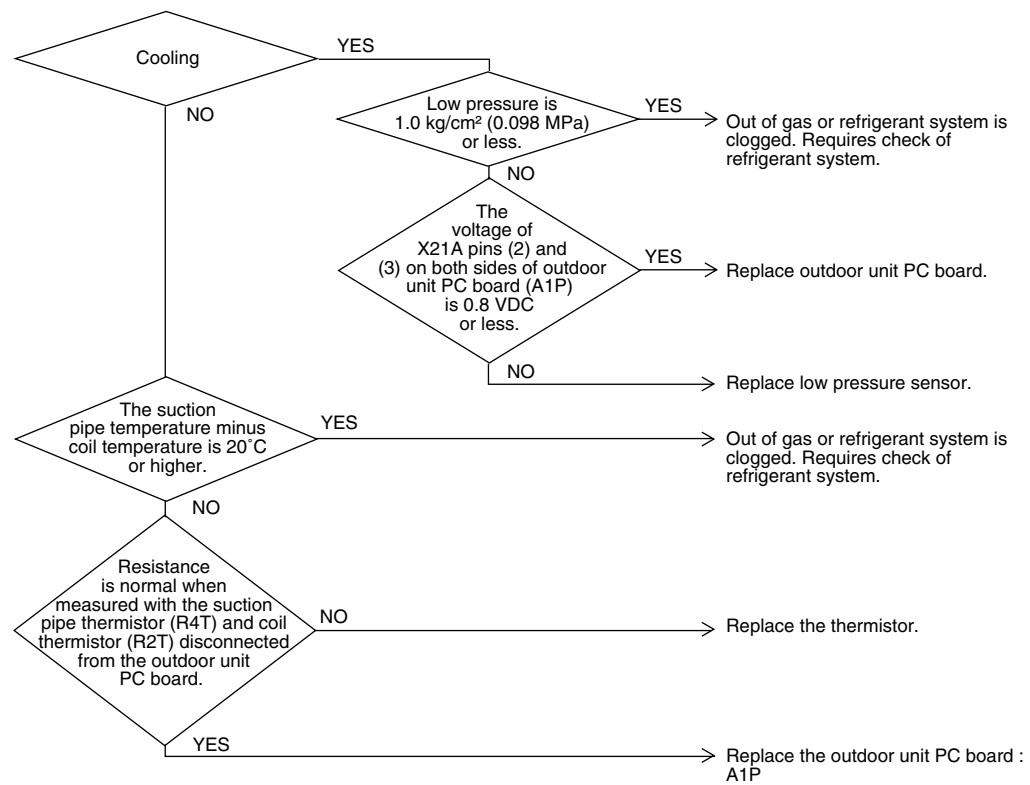
(VF151)

3.18 Low Pressure Drop Due to Refrigerant Shortage or Electronic Expansion Valve Failure

Remote Controller Display **U0**

- Supposed Causes**
- Out of gas or refrigerant system clogging (incorrect piping)
 - Defect of thermistor (R2T, R4T) of INV outdoor unit
 - Defect of low pressure sensor of INV outdoor unit
 - Defect of outdoor unit PC board of INV outdoor unit

Troubleshooting Troubleshoot the outdoor unit for which the HWL is lit in accordance with the following flow chart.



(VF152)



SiE-05C

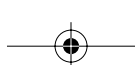
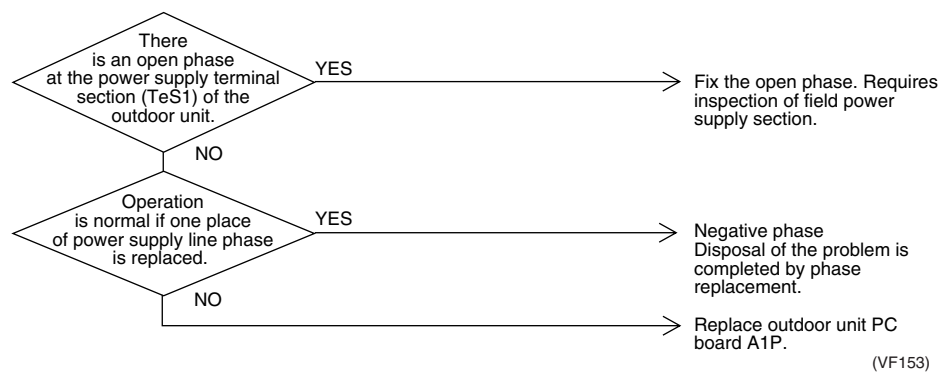
Troubleshooting

3.19 Negative Phase, Open Phase

Remote Controller Display **U1**

- Supposed Causes**
- Power supply negative phase
 - Power supply open phase
 - Defect of outdoor PC board A1P

Troubleshooting

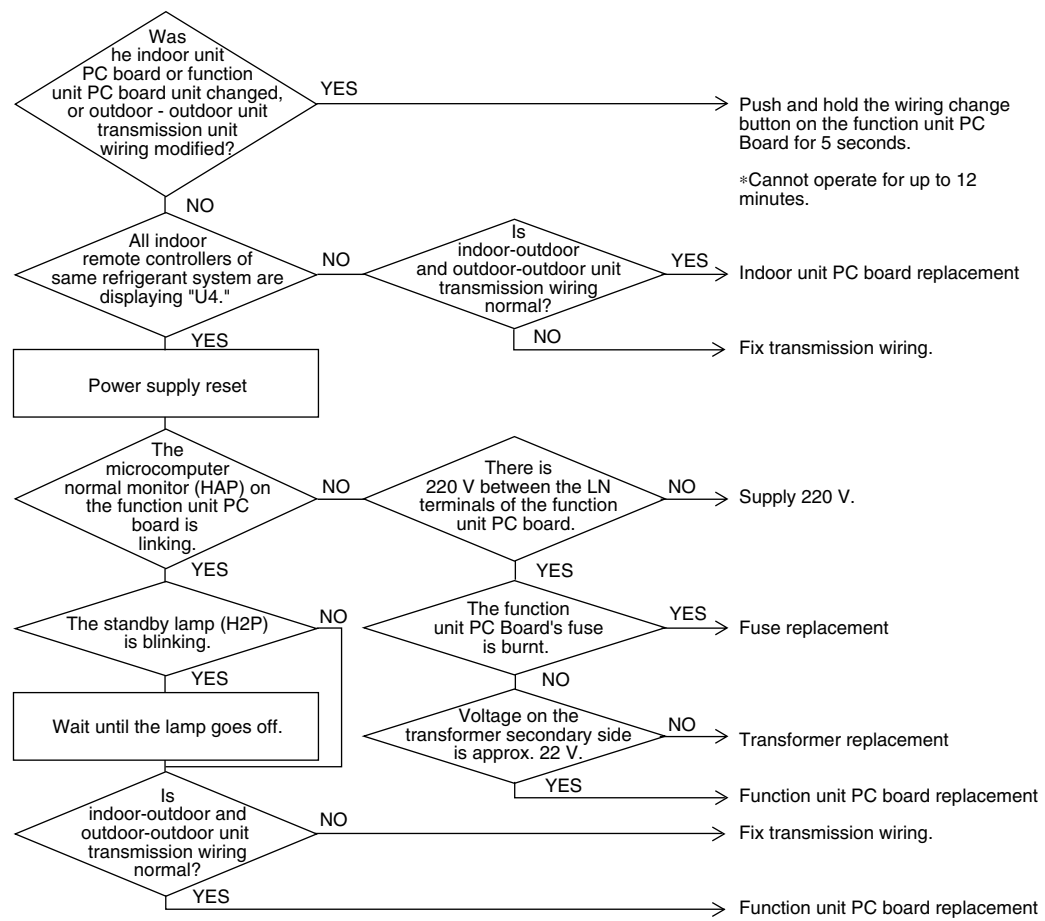


3.20 Malfunction of Transmission Between Indoor Units

Remote Controller Display **U4**

- Supposed Causes**
- Short circuited indoor or outdoor unit transmission wiring (F1, F2) or wiring mistake
 - Function unit power supply OFF
 - Incorrect system address
 - Faulty function unit PC board
 - Faulty indoor unit PC board

Troubleshooting



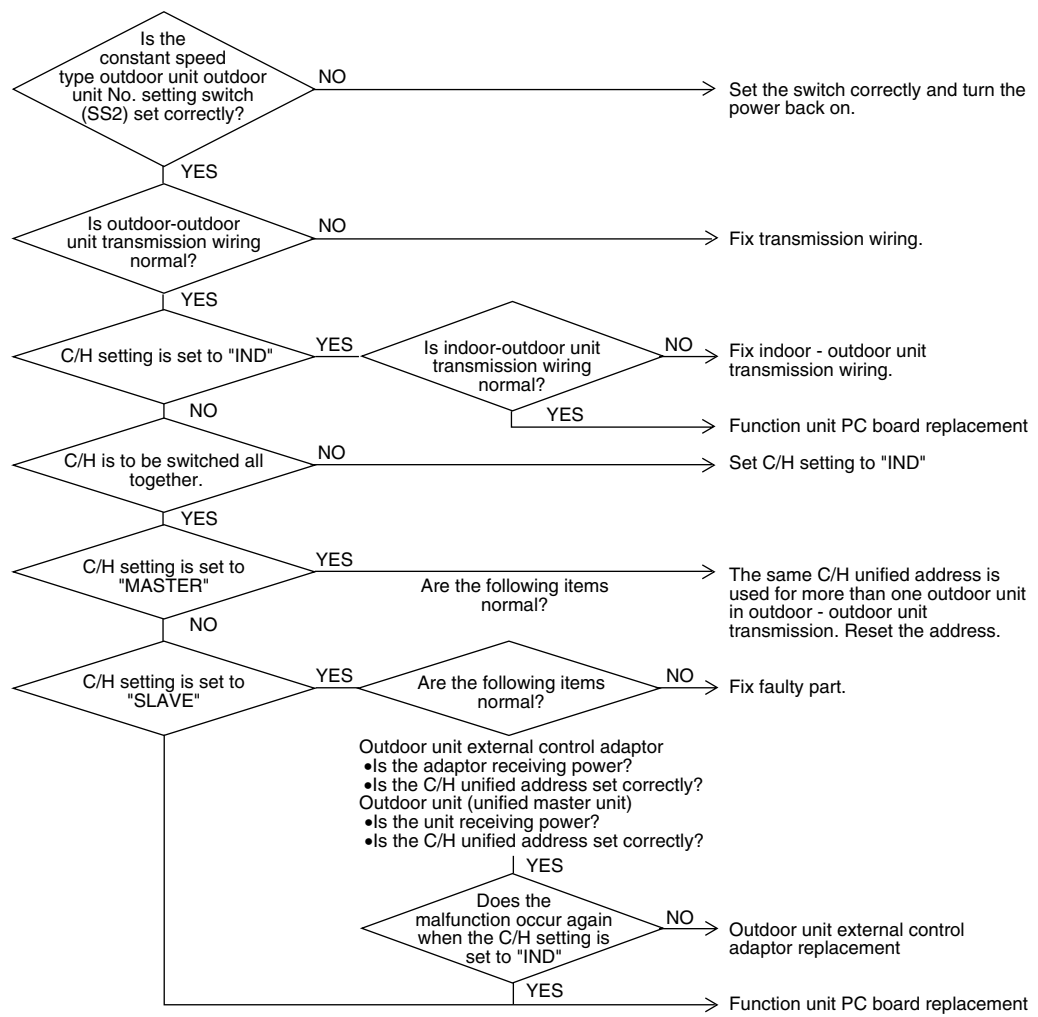
(VF154)

3.21 Malfunction of Transmission Between Outdoor Units

Remote Controller Display **U7**

- Supposed Causes**
- Incorrect outdoor unit No. setting for constant speed type outdoor unit
 - Incorrect outdoor - outdoor unit transmission wiring connection (Q1Q2)
 - Incorrect function unit - outdoor unit external control adaptor transmission wiring connection
 - Incorrect C/H setting
 - Incorrect C/H unified address setting (function unit, outdoor unit external control adaptor)
 - Faulty function unit PC board
 - Faulty outdoor unit external control adaptor

Troubleshooting



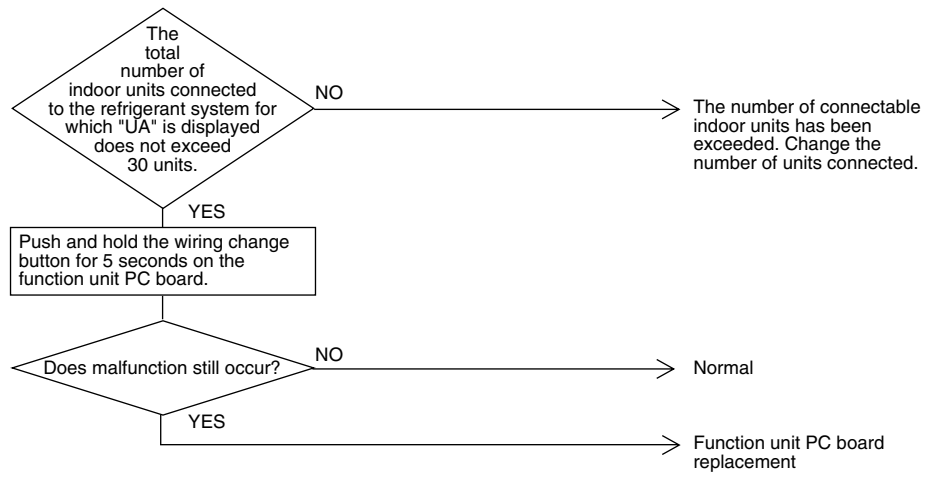
(VF155)

3.22 Excessive Number of Indoor Units

Remote Controller Display **UA**

- Supposed Causes**
- The number of connectable indoor units has been exceeded.
 - Function unit PC board

Troubleshooting



(VF156)

*The number of indoor units that can be connected to outdoor unit 1 system differs according to outdoor unit model.

RXY16K, RXY18K, RXY20K: Max. 20 units

RXY24K, 26K, 28K, 30K: 30 units



Refer to Indoor / Outdoor Unit Combinations on P197



SiE-05C

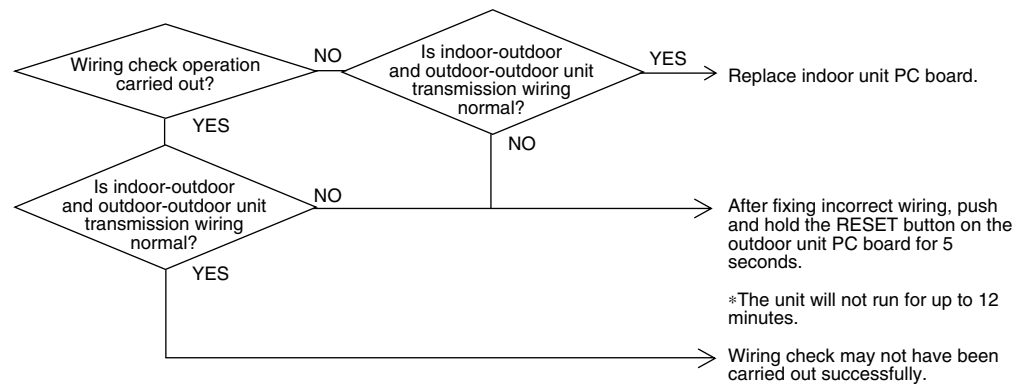
Troubleshooting

3.23 Refrigerant System not set, Incompatible Wiring/Piping

Remote Controller Display **UF**

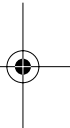
- Supposed Causes**
- Improper connection of transmission wiring between indoor unit and outdoor unit, or outdoor and outdoor unit
 - Failure to execute wiring check operation
 - Defect of indoor unit PC board

Troubleshooting



(VF157)

Wiring check may not be successful if carried out after the outdoor unit has been off for more than 12 hours, or if it is not carried out after running all connected indoor units in the fan mode for at least an hour.



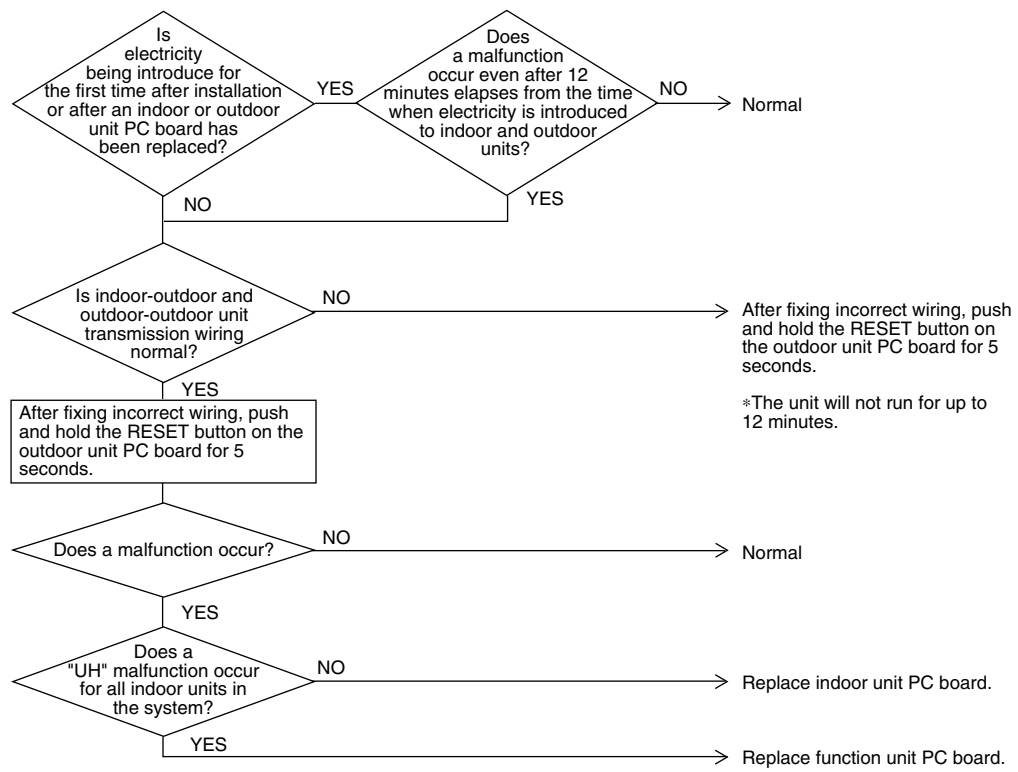


3.24 Malfunction of System, Refrigerant System Address Undefined

Remote Controller Display **UH**

- Supposed Causes**
- Improper connection of transmission wiring between indoor unit and outdoor unit, or outdoor and outdoor unit
 - Defect of indoor unit PC board
 - Defect of function unit PC board

Troubleshooting



(VF158)



4. Failure Diagnosis for Inverter System

4.1 Points of Diagnosis

The main causes for each malfunction code are given in the table below. (For details refer to the next page and those following.)

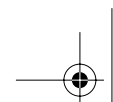
⊙ : Failure is probable

○ : Failure is possible

□ : Failure is improbable

— : Failure is impossible

Malfunction Code	Contents of Malfunction	Location of Failure							Point of Diagnosis
		Inverter		Compressor	Refrigerant System	Outdoor Unit PC Board	Other	Field Cause	
		PC Board Power Unit	Other						
L4	Radiator fin temperature rise	□	⊙	—	—	—	—	□	Is the intake port of the radiator fin clogged?
L5	Instantaneous over-current	○	—	⊙	□	—	—	—	Inspect the compressor.
L8	Electronic thermostat	□	—	⊙	○	—	—	—	Inspect the compressor and refrigerant system.
L9	Stall prevention	□	—	○	⊙	—	—	—	Inspect the compressor and refrigerant system.
LC	Malfunction of transmission between inverter PC board and outdoor unit PC board	○	⊙	—	—	□	—	—	Inspect the connection between the inverter PC board and outdoor unit PC board. Next, inspect the inverter PC board.
U2	Abnormal current/voltage	○	○	—	—	—	□	⊙	<ul style="list-style-type: none"> •Inspect the fuse on the inverter PC board. •Check the DC voltage.
P1	Over-ripple protection	○	○	—	—	—	—	○	<ul style="list-style-type: none"> •Open phase •Current/voltage imbalance •Defect of main circuit wiring"
P4	Defect of radiator fin temperature sensor	○	□	—	—	—	—	—	Inspect the radiator fin thermistor.



5. How to Use The Monitor Switch On The Inverter PC Board

5.1 How to Use The Monitor Switch On The Inverter PC Board

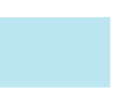
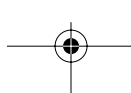
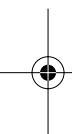
The monitor lets you know the contents of the latest stop due to malfunction by LED display on the inverter PC Board. The inverter is equipped with a retry function that retries operation each time stop due to malfunction occurs, and malfunction is therefore not ascertained by merely entering the five minutes standby while retry is attempted the prescribed number of times. If the number of retry times is exceeded within 60 minutes, malfunction is ascertained, and the corresponding malfunction code is displayed on the indoor unit remote controller.

LED	A	1	2	3	4	Malfunction Contents	Retry Times
	●	●	●	●	●	Normal	
	●	●	●	●	○	Malfunction of fin thermistor	3
	●	○	○	●	●	Sensor malfunction	0
	●	○	●	●	○	Insufficient voltage	3
	●	●	●	○	●	Instantaneous over-current	3
	●	●	○	○	○	Electronic thermistor	3
	●	○	○	○	○	Stall prevention	3
	●	●	○	●	●	Open phase detection	3
	●	●	●	●	●	Malfunction of microcomputer	Unlimited

● : Blink

○ : On

● : Off





SiE-05C

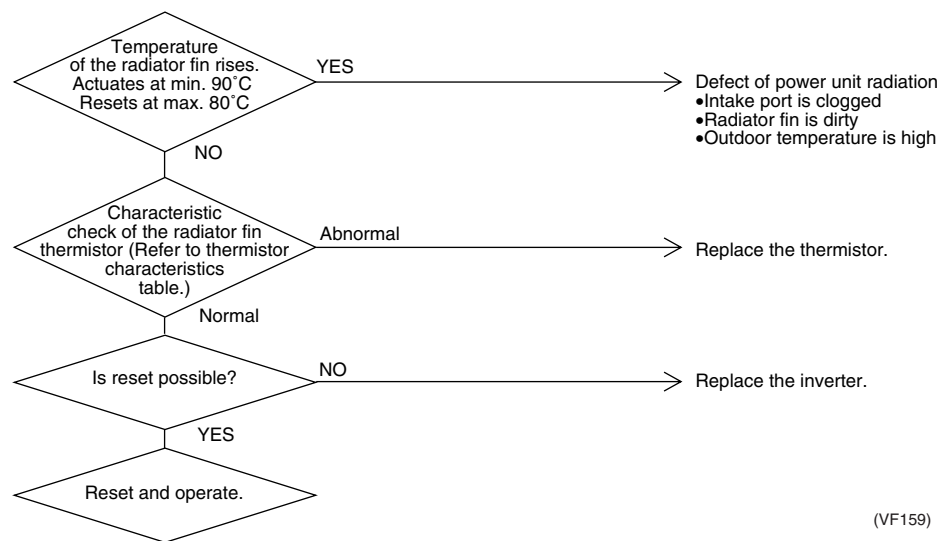
How to Use The Monitor Switch On The Inverter PC Board

5.2 Actuation of Fin Thermal

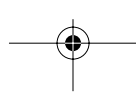
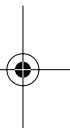
Remote Controller Display **L4**

- Supposed Causes**
- Actuation of fin thermal (Actuates at min. 90°C and resets at max. 80°C)
 - Defect of inverter PC board
 - Defect of fin thermistor

Troubleshooting



(VF159)



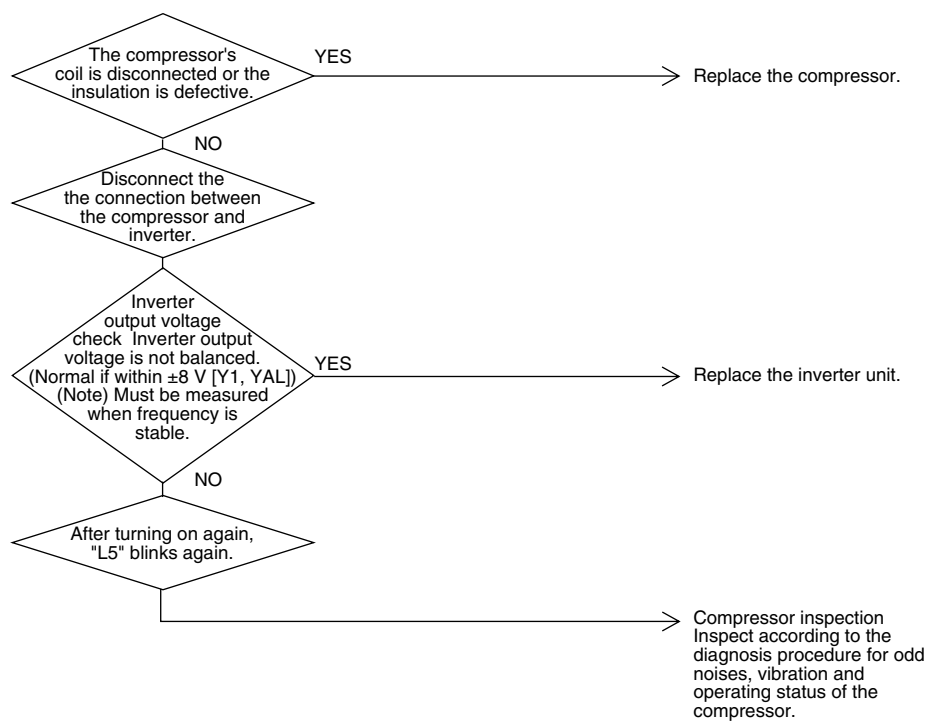


5.3 Defect of Compressor Coil

Remote Controller Display **L5**

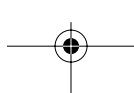
- Supposed Causes**
- Defect of compressor coil (disconnected, defective insulation)
 - Compressor start-up malfunction (mechanical lock)
 - Defect of inverter unit

Troubleshooting



(VF160)

When you measure output voltage of an inverter, the reading is higher than the actual voltage.

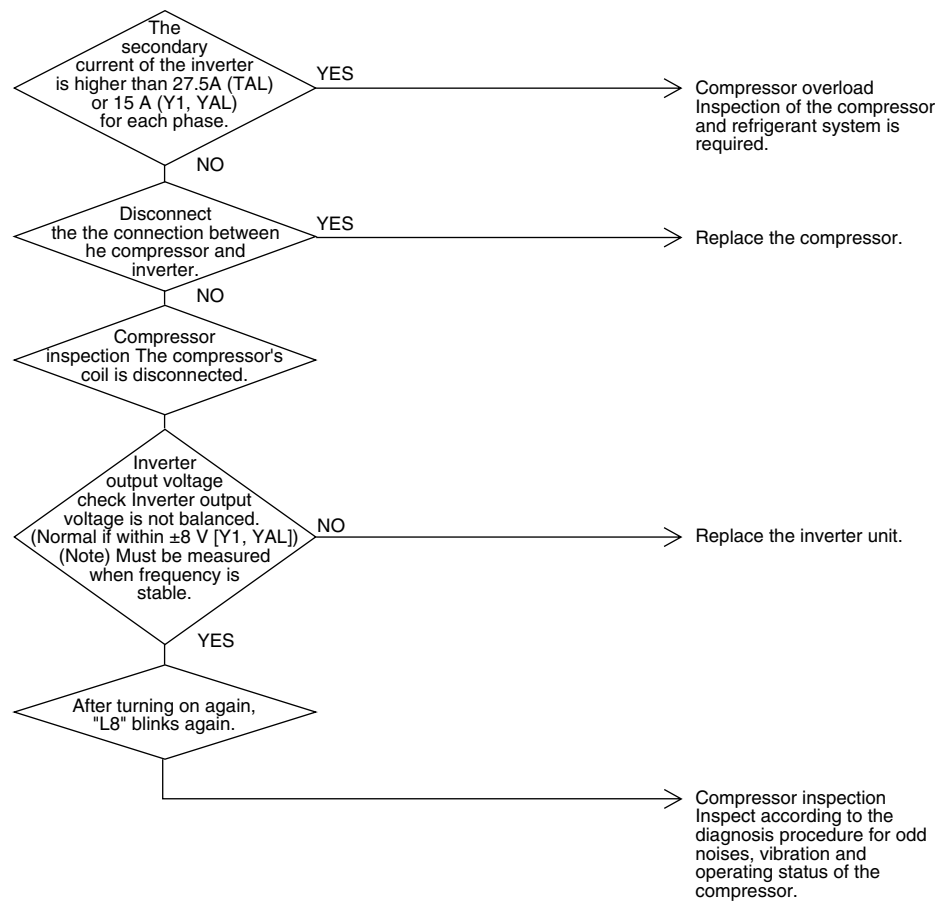


5.4 Compressor Overload

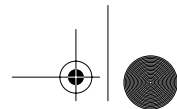
Remote Controller Display **L8**

- Supposed Causes**
- Compressor overload
 - Compressor coil disconnected
 - Defect of inverter unit

Troubleshooting Output current check



(VF161)

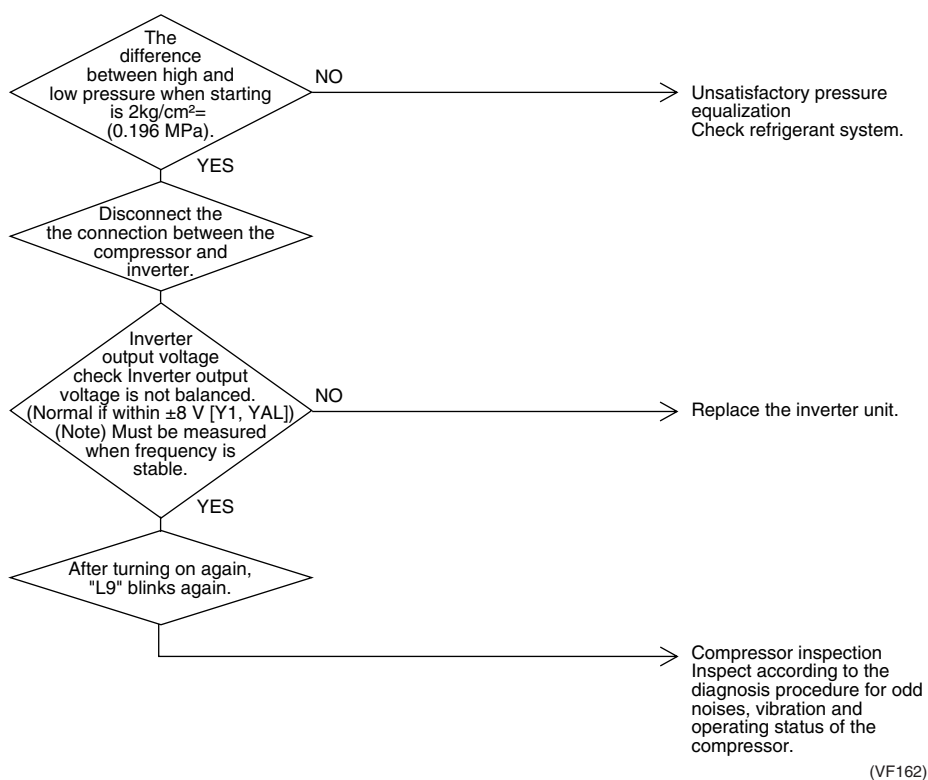


5.5 Defect of Compressor

Remote Controller Display **L9**

- Supposed Causes
- Defect of compressor
 - Pressure differential start
 - Defect of inverter unit

Troubleshooting



(VF162)



5.6 Malfunction of Connection Between The Inverter Unit and Outdoor Unit PC Board

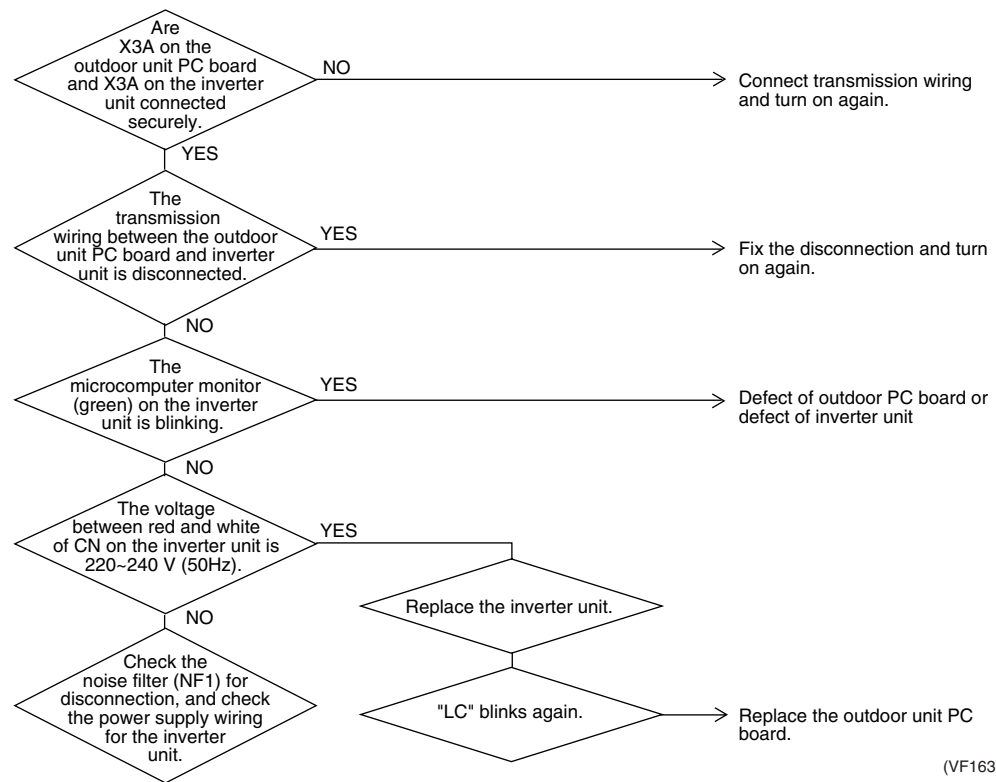
Remote Controller Display

LC

Supposed Causes

- Malfunction of connection between the inverter unit and outdoor unit PC board
- Defect of outdoor unit PC board (transmission section)
- Defect of inverter unit
- Defect of noise filter (NF1)

Troubleshooting



(VF163)

5.7 Power Supply Insufficient

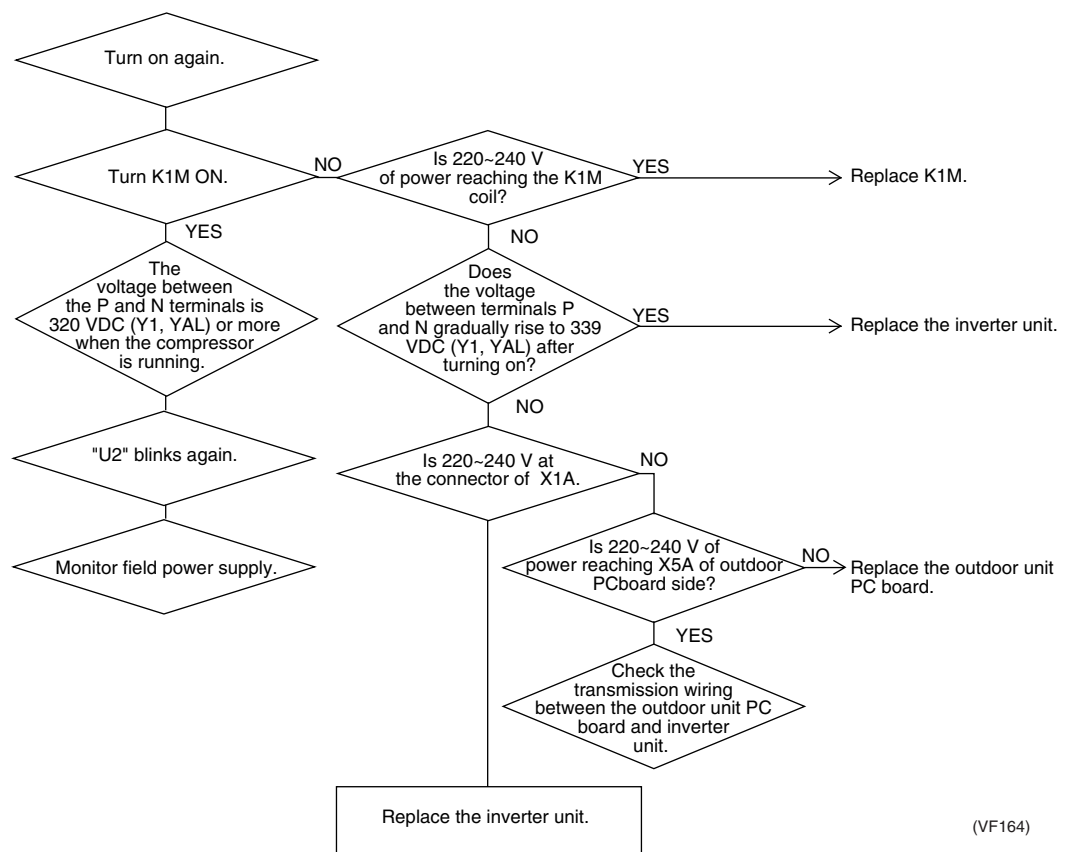
Remote Controller Display

U2

Supposed Causes

- Power supply insufficient
- Instantaneous failure
- Open phase
- Defect of inverter unit
- Defect of outdoor PC board
- Defect of K1M.
- Main circuit wiring defect

Troubleshooting



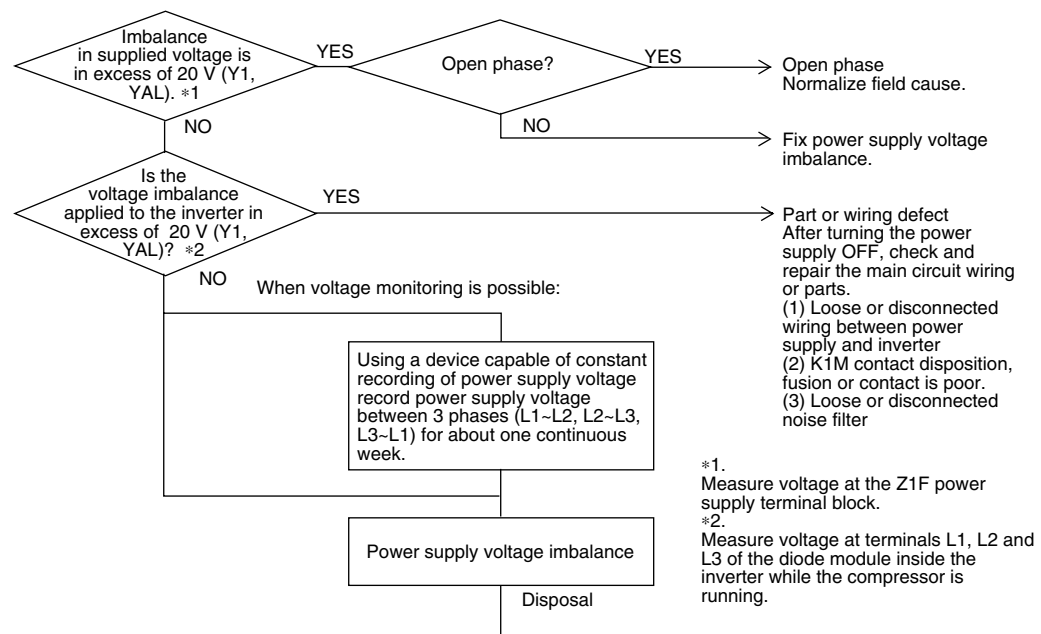
5.8 Open Phase

Remote Controller Display **P1**

Supposed Causes

- Open phase
- Voltage imbalance between phases
- Defect of main circuit capacitor
- Defect of inverter unit
- Defect of K1M
- Improper main circuit wiring

Troubleshooting



Explanation for users	*In accordance with "notification of inspection results" accompanying spare parts.
Give the user a copy of "notification of inspection results" and leave it up to him to improve the imbalance.	Be sure to explain to the user that there is a "power supply imbalance" for which DAIKIN is not responsible.
Contact QC div.	
Be sure to send a product report of the imbalance.	

(VF165)

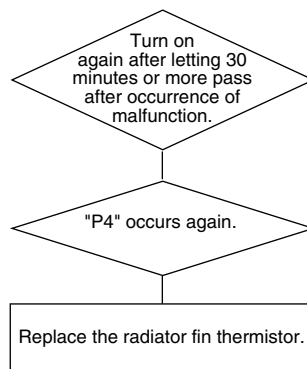


5.9 Defect of Radiator Fin Temperature Sensor

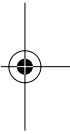
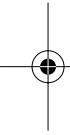
Remote Controller Display **P4**

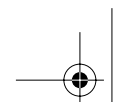
- Supposed Causes
- Defect of radiator fin temperature sensor
 - Defect of inverter unit

Troubleshooting



(VF166)





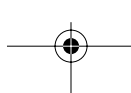
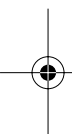
SiE-05C

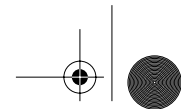
Part 9

Special Service Mode

PLUS Series

1. Backup and Emergency Operation	332
1.1 Backup and Emergency Operation.....	332
2. Pump Down Operation when Replacing The Compressor	336
2.1 Pump Down Operation when Replacing The Compressor.....	336





1. Backup and Emergency Operation

1.1 Backup and Emergency Operation

The PLUS Series is equipped with a function whereby, if one outdoor unit becomes unable to operate, the system continues to operate without the faulty unit. You should note that this is accomplished by other methods for other VRV Series.

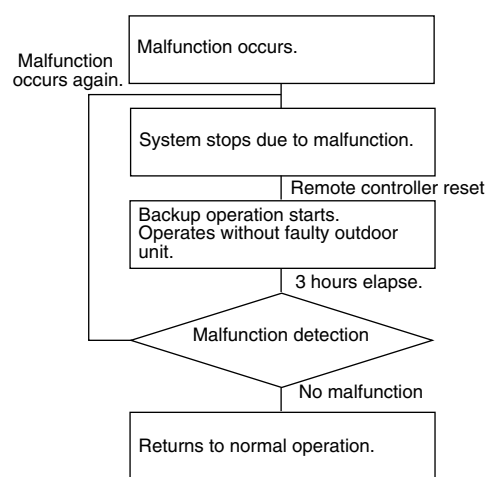
1.1.1 Backup Operation:

Lets you operate by remote controller when a constant speed type outdoor unit malfunctions.

If a constant speed type outdoor unit malfunctions, if you restart operation by remote controller after the unit stops due to malfunction, you can continue to operate the system minus the faulty constant speed type outdoor unit. Operation however cannot be continued for some error types. (See the table below.)

The system can run by backup operation for up to 3 hours of total indoor unit operating time. When 3 hours is exceeded and the malfunction still remains, the system once again stops due to malfunction. If the malfunction returns to normal, the system continues to operate as is.

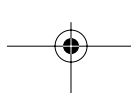
Backup Operation Control Flow

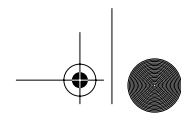


(MF168)

After the system briefly stops due malfunction in order to call attention to the problem, backup operation is started by remote controller.

For the reason described above, after about 3 hours of backup operation, the system again carries out malfunction detection, and the system once again stops due to malfunction if an error is detected.



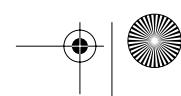
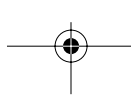
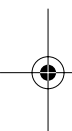


SiE-05C

Backup and Emergency Operation

Malfunctions for which Backup Operation can or cannot Be Executed

Malfunction	Malfunction Code	PC Board Type	
		EB9446-9A	EB9446-9B (Applies to items manufactured from June on.)
Tripped Safety Device	E0	Cannot Operate	Can Operate
Faulty PC Board	E1	Cannot Operate	Cannot Operate
Tripped LPS	E4	Cannot Operate	Can Operate
Solenoid Valve Malfunction	E9	Cannot Operate	Can Operate
Discharge Pipe Temperature Malfunction	F3	Cannot Operate	Can Operate
Faulty Control HPS	H3	Cannot Operate	Cannot Operate
Faulty Control LPS	H4	Cannot Operate	Cannot Operate
Air Thermistor Malfunction	H9	Can Operate	Can Operate
Discharge Pipe Thermistor Malfunction	J3	Cannot Operate	Can Operate
Suction Pipe Thermistor Malfunction	J5	Can Operate	Can Operate
Heat Exchange Thermistor Malfunction	J6	Can Operate	Can Operate
Oil Temperature Thermistor Malfunction	JH	Can Operate	Can Operate
Header Thermistor Malfunction	J7	Can Operate	Can Operate
Reverse Phase / Negative Phase	U1	Cannot Operate	Cannot Operate
Outdoor - L Transmission Malfunction	U7	Cannot Operate	Cannot Operate



1.1.2 Emergency Operation:

Set in setting mode 2. Operates the system when an outdoor unit malfunctions.

1. When an inverter type outdoor unit malfunctions (with exception of 13 HP)

When an inverter type outdoor unit malfunctions, you can continue operation using constant speed type outdoor units only. (Emergency operation cannot be carried out if the inverter type outdoor unit's PC board or pressure sensor is malfunctioning.)

Emergency Operation Method

When cooling:

1. Shut the stop valves of the pressure equalizing and liquid pipe of inverter type outdoor unit.
2. Set to "EMG" in setting mode 2.
3. The indoor unit is turned by thermostat at the following minimum capacities:
BL2K, BC2K -- 16.8 kW
BL3K, BC3K -- 33.6 kW
BR2K, BR3K -- All indoor units cool on by thermostat

When heating:

1. Shut the stop valves of the gas and liquid pipes of inverter type outdoor unit. (Pressure equalizing pipe open)
2. Set to "EMG" in setting mode 2.
3. The indoor unit is turned by thermostat at the following minimum capacities:
BL2K ----- 16.8 kW
BL3K ----- 33.6 kW
BR2K, BR3K -- All indoor units cool on by thermostat

**Note:**

- Operating range
When cooling: Outdoor temp. 10°C or higher
When heating: Outdoor temp. -5°C or higher
(Safety devices may trip when the outdoor temperature is high.)
- Do not perform emergency operation for 24 hours or more.
- In some cases the indoor unit fan may be L tap when cooling.

Malfunctions for which emergency operation can or cannot be executed when an inverter type outdoor unit malfunctions

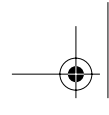
Malfunction	Malfunction Code	Emergency Operation
Tripped Safety Device	E0	Can Operate
Faulty PC Board	E1	Cannot Operate
Tripped HPS	E3	Can Operate
Tripped LPS	E4	Can Operate
Solenoid Valve Malfunction	E9	Can Operate
Discharge Pipe Temperature Malfunction	F3	Can Operate
Air Thermistor Malfunction	H9	Can Operate
Discharge Pipe Thermistor Malfunction	J3	Can Operate
Suction Pipe Thermistor Malfunction	J5	Can Operate
Heat Exchange Thermistor Malfunction	J6	Can Operate
Oil Temperature Thermistor Malfunction	JH	Can Operate
Header Thermistor Malfunction	J7	Can Operate
High Pressure Sensor Malfunction	JA	Cannot Operate
Low Pressure Sensor Malfunction	JC	Cannot Operate
Faulty Inverter System	L0	Can Operate
Faulty Inverter Cooling	L4	Can Operate
Compressor Motor Ground Fault	L5	Can Operate
Compressor Overload, Disconnection	L8	Can Operate
Compressor Lock	L9	Can Operate
Inverter → Outdoor Unit PC Board Transmission Malfunction	LC	Can Operate
Power Supply Voltage Imbalance	P1	Can Operate
Power Unit Temperature Sensor Malfunction	P4	Can Operate
Reverse Phase / Negative Phase	U1	Cannot Operate
"Power Supply Voltage Malfunction, Instantaneous Failure"	U2	Can Operate
Indoor - Outdoor Unit Transmission Failure	U4	Cannot Operate
Outdoor ↔ L Transmission Malfunction	U7	Cannot Operate

2. When a constant speed type outdoor unit malfunctions

When a constant speed type outdoor unit malfunctions, you can continue to operate by setting to forced backup operation in setting mode 2. With backup operation, you can continue to operate for up to 3 hours, but there is no time restriction for this mode.

Malfunctions for which emergency operation can or cannot be executed when a constant speed type outdoor unit malfunctions

Malfunction	Malfunction Code	Emergency Operation
Tripped Safety Device	E0	Can Operate
Faulty PC Board	E1	Cannot Operate
Tripped LPS	E4	Can Operate
Solenoid Valve Malfunction	E9	Can Operate
Discharge Pipe Temperature Malfunction	F3	Can Operate
Faulty Control HPS	H3	Cannot Operate
Faulty Control LPS	H4	Cannot Operate
Air Thermistor Malfunction	H9	Can Operate
Discharge Pipe Thermistor Malfunction	J3	Can Operate
Suction Pipe Thermistor Malfunction	J5	Can Operate
Heat Exchange Thermistor Malfunction	J6	Can Operate
Oil Temperature Thermistor Malfunction	JH	Can Operate
Header Thermistor Malfunction	J7	Can Operate
Reverse Phase / Negative Phase	U1	Cannot Operate
Outdoor ↔ L Transmission Malfunction	U7	Cannot Operate



2. Pump Down Operation when Replacing The Compressor

2.1 Pump Down Operation when Replacing The Compressor

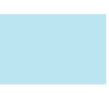
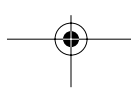
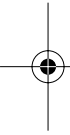
Pump down operation is when refrigerant is removed from an outdoor unit if it malfunctions. In this case, outdoor units operate in the cooling mode and indoor units are automatically turned on by thermostat.

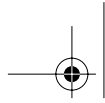
2.1.1 Method

1. Fully shut stop valves of the liquid and pressure equalizing pipes of the unit from which you want to pump down refrigerant.
(Pressure equalizing pipe open for simultaneous cool/heat type)
2. Set to pump down mode in setting mode 2 and execute pump down operation.
(See the following page for details.)
 - For the simultaneous cool/heat type, it takes 3~10 minutes for the compressor to start operating.
 - LED 23~26 are for monitoring low pressure during operation.
 - Outdoor units stop for approximately 1 hour.
3. After about 50 minutes, shut the stop valve of the gas pipe. (Outdoor units stop for approximately 1 hour.)
4. Operation is complete if after 10 minutes elapse the pressure of the pumped down outdoor unit is ambient temperature equivalent saturation pressure or lower. If not, repeat steps 1~4.
5. Purge the remaining pressure and perform servicing.
6. After sealing and vacuum drying, fill with gas until ambient temperature equivalent saturation pressure is reached.
7. Shut the stop valve.



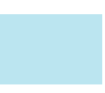
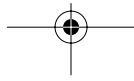
Note: Perform the procedure when outdoor temperature is in the range of 10°C~35°C.

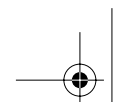




Pump Down Operation when Replacing The Compressor

SI-E-05C





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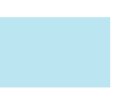
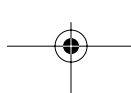
Part 10

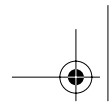
Appendix

Inverter K Series

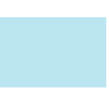
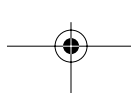
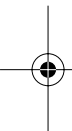
PLUS Series

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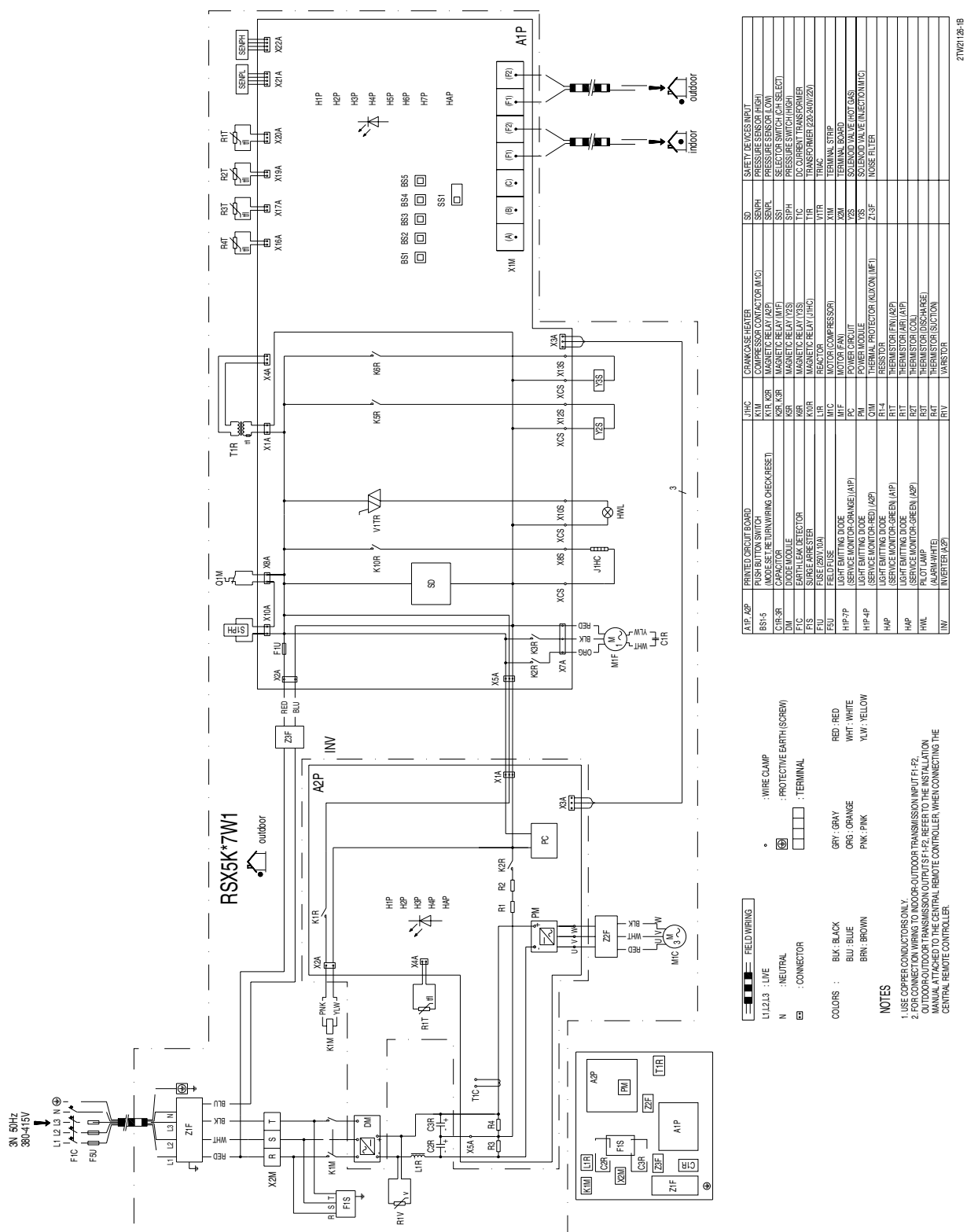
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1. Wiring Diagrams - Outdoor Unit

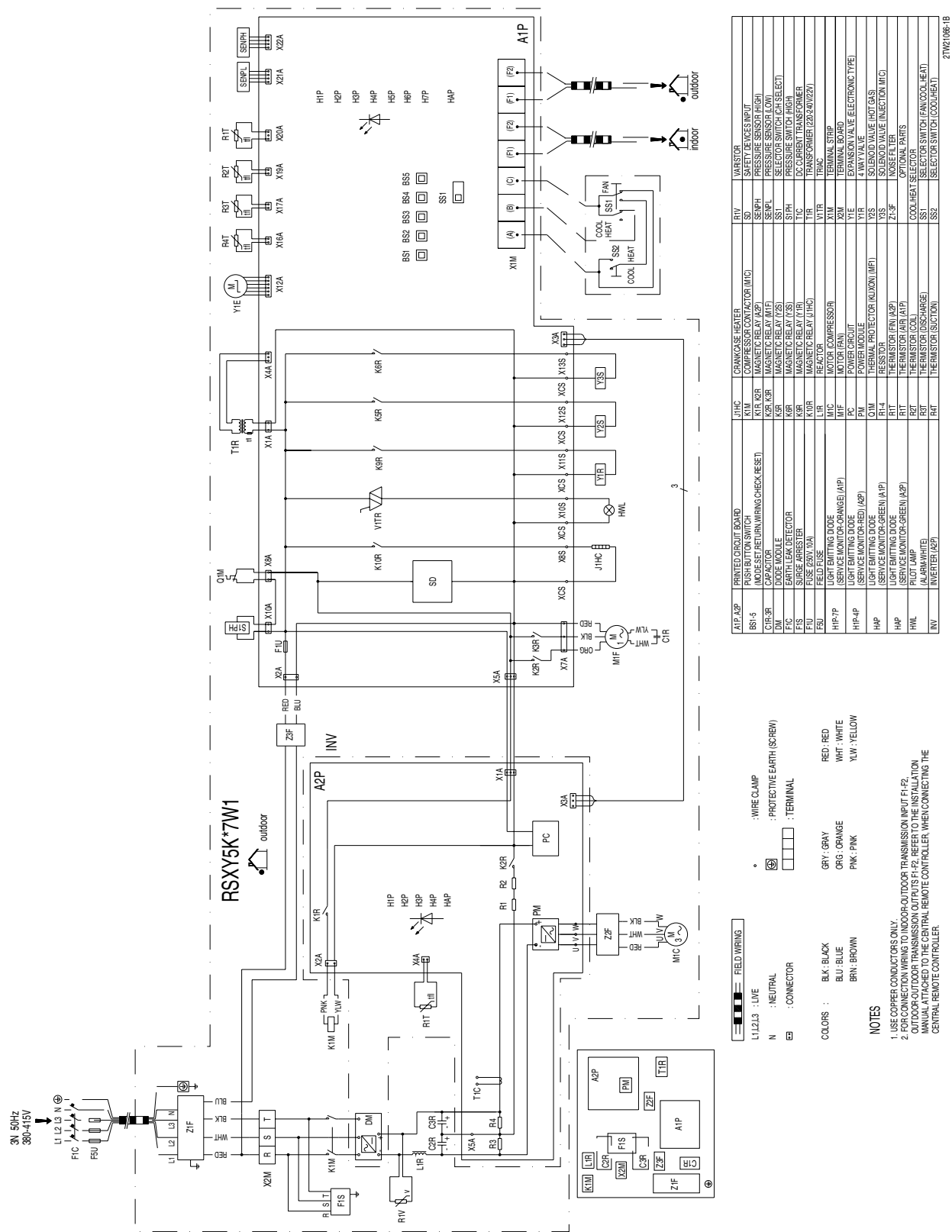
1.1 Inverter K Series - cooling only

RSX5KA7W1



1.2 Inverter K Series - Heat Pump

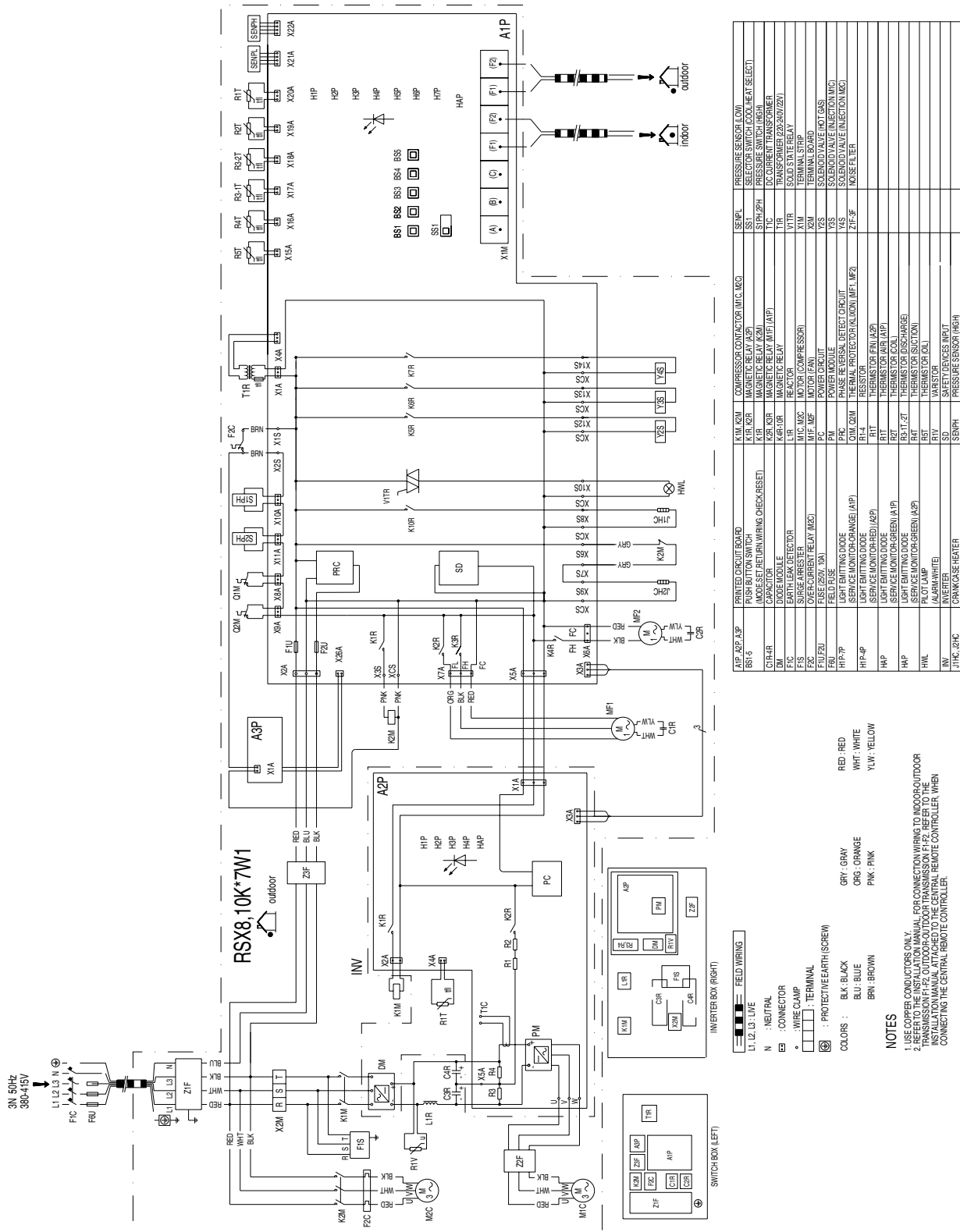
RSXY5KA7W1



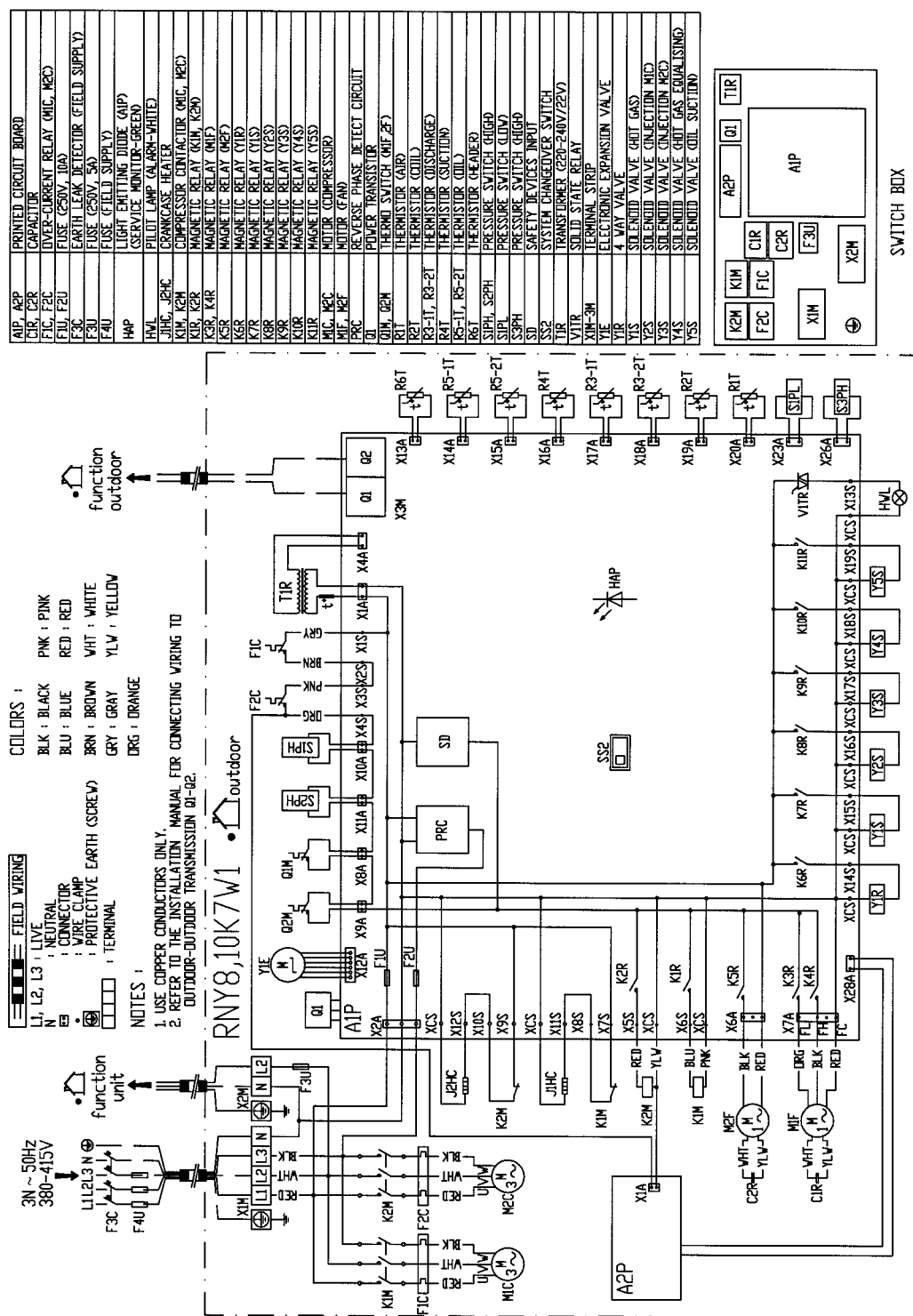
Wiring Diagrams - Outdoor Unit

SI-E-05C

RSXY8,10KA7W1

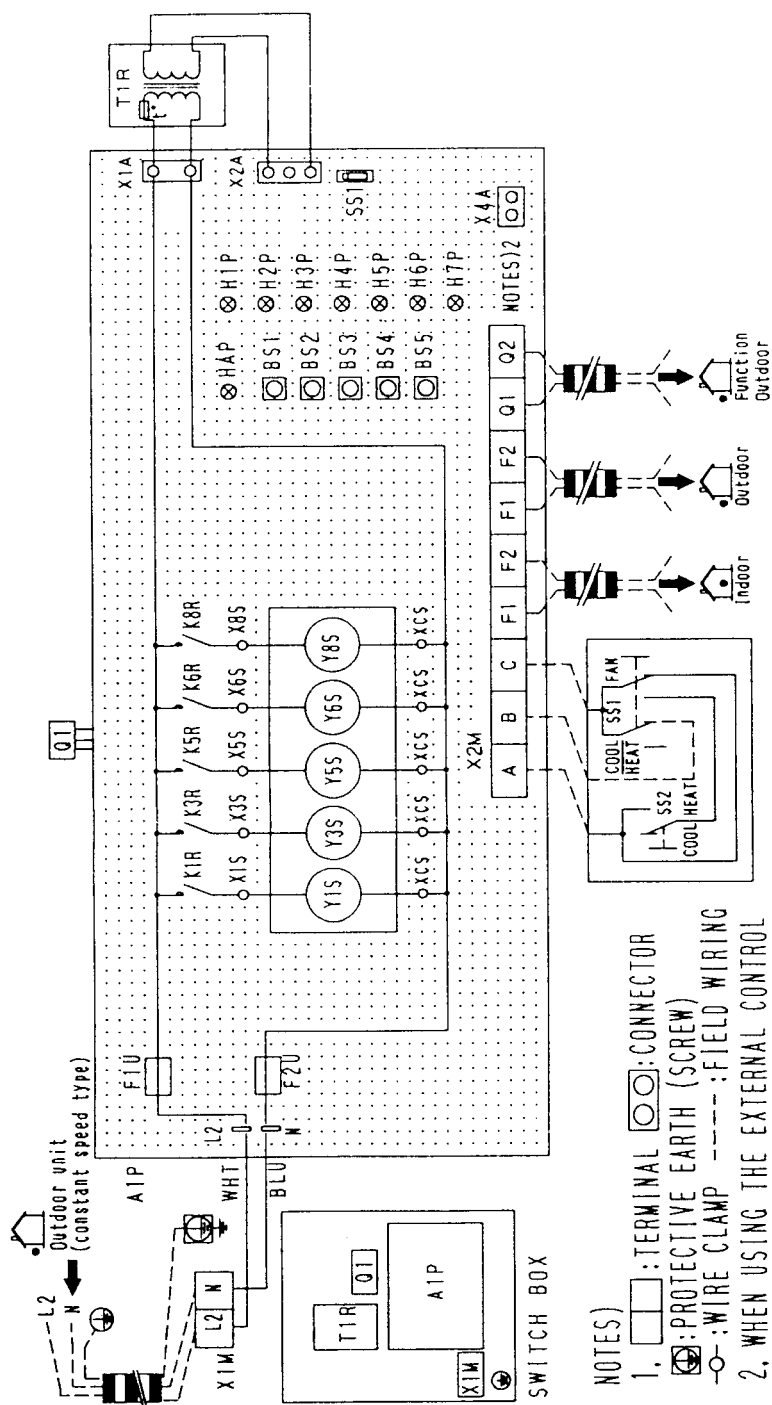


RNY8,10K7W1



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BL2KV1



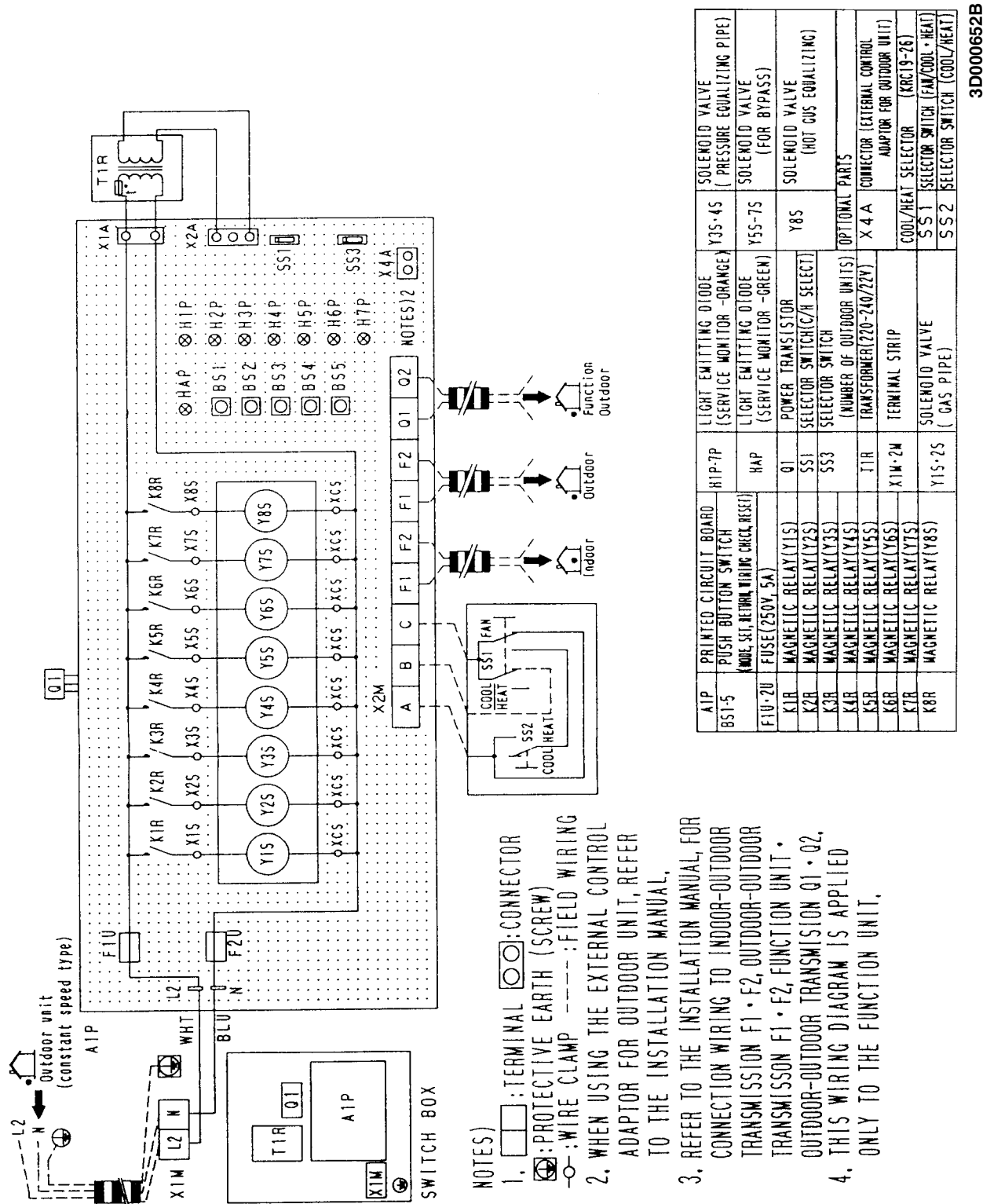
NOTES)

1. : TERMINAL CONNECTOR
 : PROTECTIVE EARTH (SCREW)
 : WIRE CLAMP : FIELD WIRING
2. WHEN USING THE EXTERNAL CONTROL ADAPTOR FOR OUTDOOR UNIT, REFER TO THE INSTALLATION MANUAL.
3. REFER TO THE INSTALLATION MANUAL FOR CONNECTION WIRING TO INDOOR-OUTDOOR TRANSMISSION F1 • F2, OUTDOOR-OUTDOOR TRANSMISSION F1 • F2, FUNCTION UNIT • OUTDOOR-OUTDOOR TRANSMISSION Q1 • Q2. THIS WIRING DIAGRAM IS APPLIED ONLY TO THE FUNCTION UNIT.

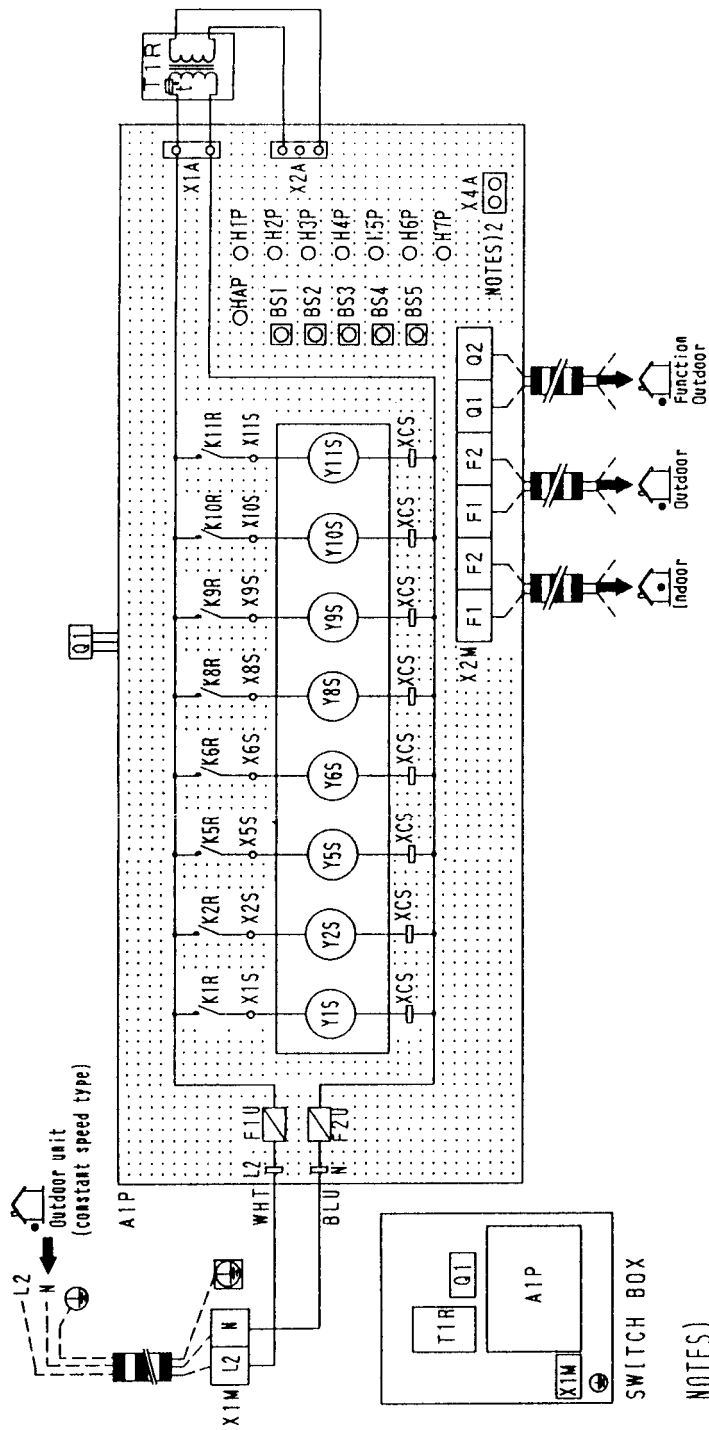
A1P	PRINTED CIRCUIT BOARD	HAP	LIGHT EMITTING DIODE (SERVICE MONITOR -GREEN)	Y3S	SOLENOID VALVE (PRESSURE EQUALIZING PIPE)
BS1-5	PUSH BUTTON SWITCH (NOV. SET, RETURN WIRING, CHECK, RESET)	Q1	POWER TRANSISTOR	Y5S-6S	SOLENOID VALVE (BYPASS)
F1U-2U	FUSE (250V, 5A)	SS1	SELECTOR SWITCH (C/N SELECT)	Y8S	SOLENOID VALVE (HOTGAS EQUILIZING)
K3R	MAGNETIC RELAY (Y1S)	T1R	TRANSFORMER (220V-240V/22V)	OPTIONAL PARTS	
K5R	MAGNETIC RELAY (Y3S)	X1M-2M	TERMINAL STRIP	X 4 A	CONNECTOR (EXTERNAL CONTROL ADAPTOR FOR OUTDOOR UNIT)
K6R	MAGNETIC RELAY (Y6S)	Y1S	SOLENOID VALVE (GAS PIPE)	COOL/HEAT SELECTOR (KRC19-26)	COOL/HEAT SELECTOR (FAM/COOL-HEAT)
K8R	MAGNETIC RELAY (Y8S)			SS1	SELECTOR SWITCH (FAM/COOL-HEAT)
H1P-7P	LIGHT EMITTING DIODE (SERVICE MONITOR -ORANGE)			SS2	SELECTOR SWITCH (COOL/HEAT)

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BL3KV1



BR2KV1



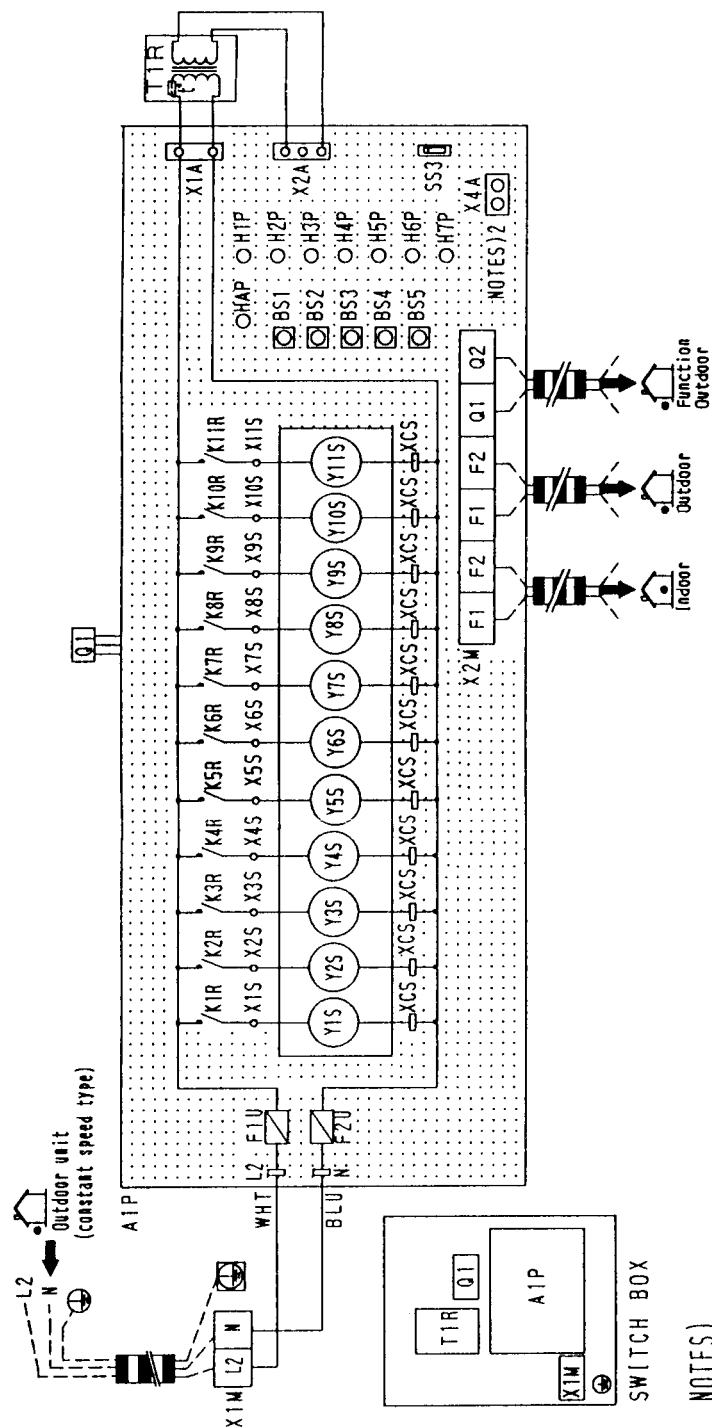
NOTES)

1. : TERMINAL : CONNECTOR
 : PROTECTIVE EARTH (SCREW)
 : WIRE CLAMP --- : FIELD WIRING
2. WHEN USING THE EXTERNAL CONTROL ADAPTOR FOR OUTDOOR UNIT, REFER TO THE INSTALLATION MANUAL.
3. REFER TO THE INSTALLATION MANUAL, FOR CONNECTION WIRING TO INDOOR-OUTDOOR TRANSMISSION F1 • F2, OUTDOOR-OUTDOOR TRANSMISSION F1 • F2, FUNCTION UNIT • OUTDOOR-OUTDOOR TRANSMISSION Q1 • Q2. THIS WIRING DIAGRAM IS APPLIED ONLY TO THE FUNCTION UNIT.

A1P	PRINTED CIRCUIT BOARD	H1P-7P	LIGHT EMITTING DIODE (SERVICE MONITOR -ORANGE)	Y5S	SOLENOID VALVE (OIL EQUALIZING-1)
BS1-5	PUSH BUTTON SWITCH (NOV. SET/RESET, HUIRE CTR, RESET)		LIGHT EMITTING DIODE (SERVICE MONITOR -GREEN)	Y6S	SOLENOID VALVE (OIL EQUALIZING-2)
F1U-2U	FUSE (250V, 5A)	HAP	POWER TRANSISTOR	Y9S	SOLENOID VALVE (HOT GAS EQUALIZING)
K1R	MAGNETIC RELAY (Y1S)	Q1	TRANSFORMER (220-240/22V)	Y10S	SOLENOID VALVE (PRESS. EQUALIZING PIPE)
K2R	MAGNETIC RELAY (Y2S)	X1M-2M	TERMINAL STRIP	Y11S	SOLENOID VALVE (PRESS. EQUALIZING)
K5R	MAGNETIC RELAY (Y5S)	Y1S	SOLENOID VALVE (PRESS. EQUALIZING PIPE FOR BYPASS)	X4A	CONNECTOR (EXTERNAL CONTROL ADAPTOR FOR OUTDOOR UNIT)
K6R	MAGNETIC RELAY (Y6S)	Y2S	SOLENOID VALVE (GAS PIPE-PRESS. EQUALIZING PIPE)		
K8R	MAGNETIC RELAY (Y8S)				
K9R	MAGNETIC RELAY (Y9S)				
K10R	MAGNETIC RELAY (Y10S)				
K11R	MAGNETIC RELAY (Y11S)				

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BR3KV1



NOTES)

1. : TERMINAL : CONNECTOR
2. : PROTECTIVE EARTH (SCREW)
3. : WIRE CLAMP : FIELD WIRING
4. WHEN USING THE EXTERNAL CONTROL ADAPTOR FOR OUTDOOR UNIT, REFER TO THE INSTALLATION MANUAL.
5. REFER TO THE INSTALLATION MANUAL, FOR CONNECTION WIRING TO INDOOR-OUTDOOR TRANSMISSION F1 • F2, OUTDOOR-OUTDOOR TRANSMISSION F1 • F2, FUNCTION UNIT • OUTDOOR-OUTDOOR TRANSMISSION Q1 • Q2.
6. THIS WIRING DIAGRAM IS APPLIED ONLY TO THE FUNCTION UNIT.

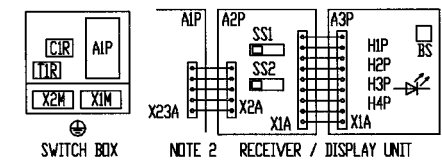
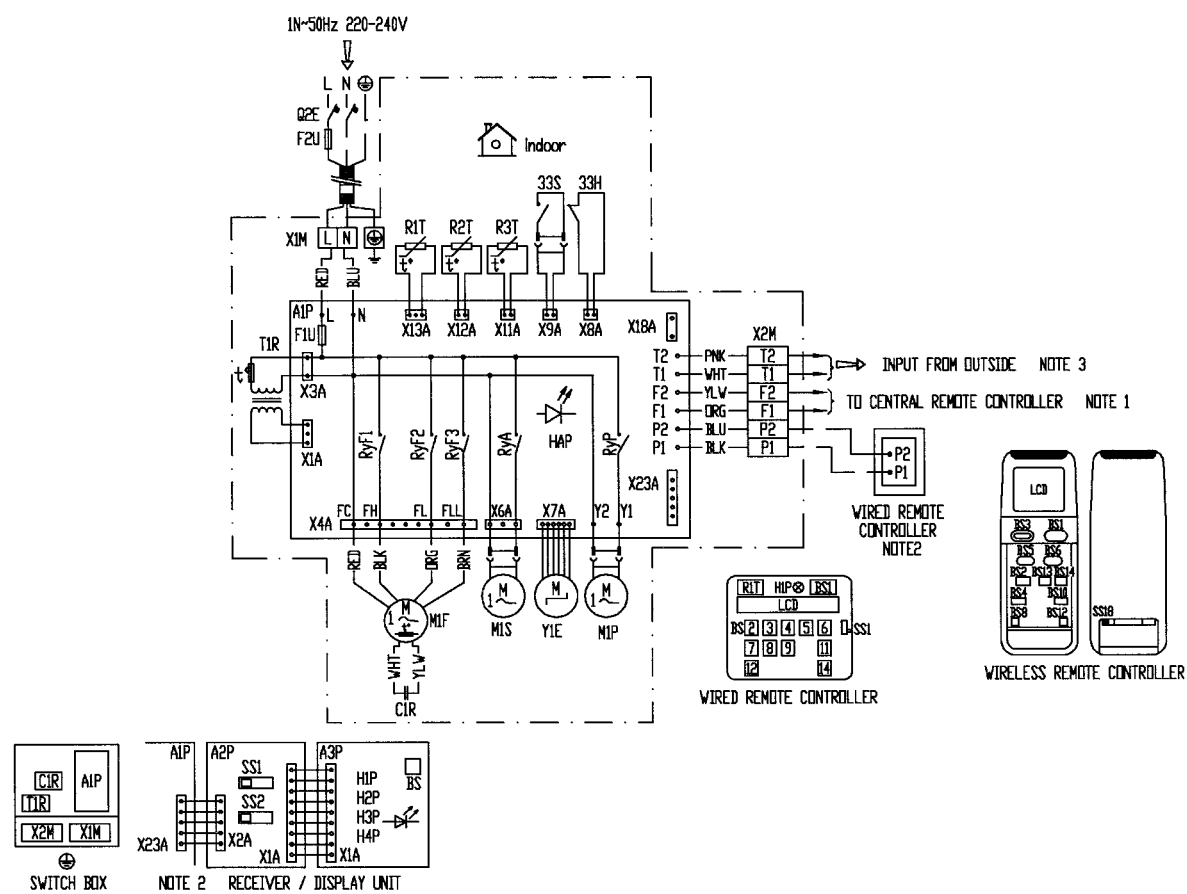
A1P	PRINTED CIRCUIT BOARD	H1P-7P	LIGHT EMITTING DIODE (SERVICE MONITOR -ORANGE)	Y4S	SOLENOID VALVE (GAS PIPE -PRESS. EQUALIZING PIPE 2)
BS1-5	PUSH BUTTON SWITCH (LONG SET, RETRACTION, WIRING CHECK, RESET)	HAP	LIGHT EMITTING DIODE (SERVICE MONITOR -GREEN)	Y5S	SOLENOID VALVE (OIL EQUALIZING 1)
F1U-2U	FUSE(250V, 5A)	Q1	POWER TRANSISTOR	Y6S	SOLENOID VALVE (OIL EQUALIZING 2)
K1R	MAGNETIC RELAY(Y1S)	SS3	SELECTOR SWITCH (NUMBER OF OUTDOOR UNITS)	Y7S	SOLENOID VALVE (OIL EQUALIZING 3)
K2R	MAGNETIC RELAY(Y2S)	T1R	TRANSFORMER(220-240/22V)	Y8S	SOLENOID VALVE (OUT GAS EQUALIZING)
K3R	MAGNETIC RELAY(Y3S)	X1M-2M	TERMINAL STRIP	Y9S	SOLENOID VALVE (INSURANCE PIPE -PRESS. EQUALIZING PIPE 1)
K4R	MAGNETIC RELAY(Y4S)	Y1S	SOLENOID VALVE (PRESS. EQUALIZING PIPE 1 FOR BYPASS)	Y10S	SOLENOID VALVE (GAS PIPE -PRESS. EQUALIZING PIPE 2)
K5R	MAGNETIC RELAY(Y5S)	Y2S	SOLENOID VALVE (GAS PIPE -PRESS. EQUALIZING PIPE 1)	Y11S	SOLENOID VALVE (PRESS. EQUALIZING)
K6R	MAGNETIC RELAY(Y6S)	Y3S	SOLENOID VALVE (PRESS. EQUALIZING PIPE 2 FOR BYPASS)	X4-A	CONNECTOR (EXTERNAL CONTROL ADAPTOR FOR OUTDOOR UNIT)
K7R	MAGNETIC RELAY(Y7S)				
K8R	MAGNETIC RELAY(Y8S)				
K9R	MAGNETIC RELAY(Y9S)				
K10R	MAGNETIC RELAY(Y10S)				
K11R	MAGNETIC RELAY(Y11S)				

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2. Wiring Diagrams - Indoor Unit

2.1 2-way blow ceiling mounted cassette

FXYC20,25,32,63K7V1



FIELD WIRING		COLORS :	
L	: LIVE	BLK	: BLACK
N	: NEUTRAL	RED	: RED
□	: CONNECTOR	BLU	: BLUE
•	: WIRE CLAMP	BRN	: BROWN
⊕	: PROTECTIVE EARTH (SCREW)	ORG	: ORANGE
		PNK	: PINK
		WHT	: WHITE
		YLV	: YELLOW

- NOTES :
1. WHEN USING A CENTRAL REMOTE CONTROLLER, SEE MANUAL FOR CONNECTION TO THE UNIT.
 2. X23A IS CONNECTED WHEN THE WIRELESS REMOTE CONTROLLER KIT IS USED.
 3. WHEN CONNECTING THE INPUT WIRES FROM THE OUTDOOR UNIT, "FORCED OFF" OR "ON/OFF" OPERATION CAN BE SELECTED BY THE REMOTE CONTROLLER. FOR MORE DETAILS SEE INSTALLATION MANUAL.
 4. USE COPPER CONDUCTORS ONLY.

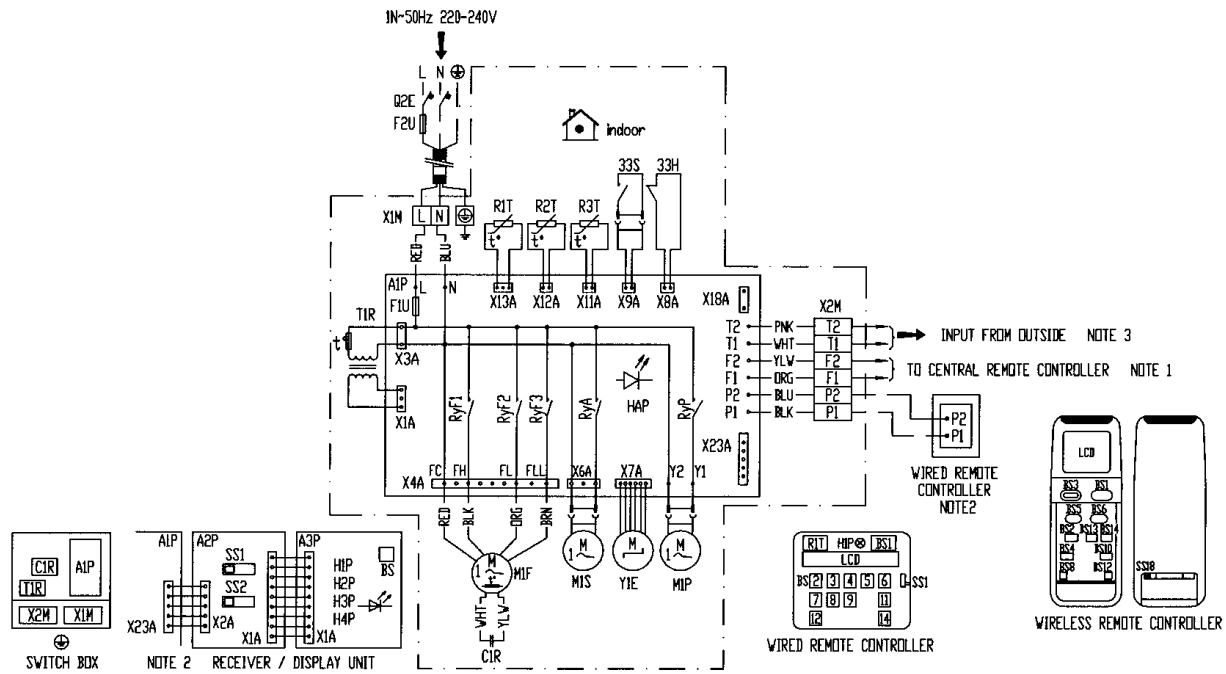
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33H	FLAOT SWITCH	SSI	SELECTOR SWITCH (MAIN/SUB)
33S	LIMIT SWITCH (SWING FLAP)	SS1	WIRELESS REMOTE CONTROLLER
AIP	PRINTED CIRCUIT BOARD	BS1	ON/OFF BUTTON
CIR	CAPACITOR (OHF)	BS2	TIMER MODE START/STOP BUTTON
FLT	THERMAL FUSE (152°C) (OHF EMBEDDED)	BS3	FAN SPEED CONTROL BUTTON
FIU	FUSE (250V, 5A)	BS4	ADJUSTEMENT OF AIR FLOW DIRECTION
F2U	FIELD FUSE	BS5, BS6	TIME/TEMPERATURE SET BUTTON
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	BS8	INSPECTION/TEST OPERATION BUTTON
MIF	MOTOR (INDOOR FAN)	BS10	OPERATION MODE SELECTOR BUTTON
MIS	MOTOR (SWING FLAP)	BS12	FILTER SIGN RESET BUTTON
MIP	MOTOR (DRAIN PUMP)	BS13	TIMER ON BUTTON
RIT	THERMISTOR (AIR)	BS14	TIMER OFF BUTTON
R2T, R3T	THERMISTOR (COIL)	LCD	LIQUID CRYSTAL DISPLAY
RVA	MAGNETIC RELAY (OHF)	SS1B	SELECTOR SWITCH (WIRELESS ADDRESS SET)
RVF1-3	MAGNETIC RELAY (OHF)	A2P, A3P	PRINTED CIRCUIT BOARD
RYP	MAGNETIC RELAY (OHF)	BS	ON/OFF BUTTON
T1R	TRANSFORMER (220-240V/22V)	HIP	LIGHT EMITTING DIODE (ON-RED)
X1M	TERMINAL STRIP (POWER)	H2P	LIGHT EMITTING DIODE (TIMER-GREEN)
X2M	TERMINAL STRIP (CONTROL)	H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
Y1E	ELECTRONIC EXPANSION VALVE	H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
	WIRED REMOTE CONTROLLER	SSI	SELECTOR SWITCH (MAIN/SUB)
BS1	ON/OFF BUTTON	SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
BS2	TIMER MODE START/STOP BUTTON		CONNECTOR FOR OPTIONAL PARTS
BS3, BS8	PROGRAMMING TIME BUTTON	X18A	CONNECTOR (WIRING, ADAPTOR FOR ELECTRICAL APPENDICES)
BS4, BS9	TEMPERATURE SETTING BUTTON	X23A	CONNECTOR (WIRELESS REMOTE CONTROLLER)
BS5	ADJUSTEMENT OF AIR FLOW DIRECTION		
BS6	OPERATION MODE SELECTOR BUTTON		
BS7	TIMER ON/OFF BUTTON		
BS11	FAN SPEED CONTROL BUTTON		
BS12	INSPECTION/TEST OPERATION BUTTON		
BS14	FILTER SIGN RESET BUTTON		
HIP	LIGHT EMITTING DIODE (ON-RED)		
LCD	LIQUID CRYSTAL DISPLAY		
RIT	THERMISTOR (AIR)		

Wiring Diagrams - Indoor Unit

SI-05C

FXYC40,50,80,125K7V1



33H	FLOAT SWITCH	SSI	SELECTOR SWITCH (MAIN/SUB)
33S	LIMIT SWITCH (SWING FLAP)	SS1	WIRELESS REMOTE CONTROLLER
AIP	PRINTED CIRCUIT BOARD	BS1	ON/OFF BUTTON
CIR	CAPACITOR (MIF)	BS2	TIMER MODE START/STOP BUTTON
FIT	THERMAL FUSE (152°C) (MIF EMBEDDED)	BS2	FAN SPEED CONTROL BUTTON
FIU	FUSE (250V, 5A)	BS4	ADJUSTMENT OF AIR FLOW DIRECTION
F2U	FIELD FUSE	BS5, BS6	TIME/TEMPERATURE SET BUTTON
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	BS8	INSPECTION/TEST OPERATION BUTTON
MIF	MOTOR (INDOOR FAN)	BS10	OPERATION MODE SELECTOR BUTTON
MIS	MOTOR (SWING FLAP)	BS12	FILTER SIGN RESET BUTTON
MIP	MOTOR (DRAIN PUMP)	BS13	TIMER ON BUTTON
R1T	THERMISTOR (AIR)	BS14	TIMER OFF BUTTON
R2T, R3T	THERMISTOR (COIL)	LCD	LIQUID CRYSTAL DISPLAY
Q2E	EARTH LEAK DETECTOR	SS1B	SELECTOR SWITCH (WIRELESS ADDRESS SET)
RyA	MAGNETIC RELAY (MIS)		RECEIVER/DISPLAY UNIT (ATTACHED TO WIRELESS REMOTE CONTROLLER)
RyF1-3	MAGNETIC RELAY (MIF)	A2P, A3P	PRINTED CIRCUIT BOARD
RyP	MAGNETIC RELAY (MIP)	BS	ON/OFF BUTTON
T1R	TRANSFORMER (220-240V/22V)	H1P	LIGHT EMITTING DIODE (ON-RED)
X1M	TERMINAL STRIP (POWER)	H2P	LIGHT EMITTING DIODE (TIMER-GREEN)
X2M	TERMINAL STRIP (CONTROL)	H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
Y1E	ELECTRONIC EXPANSION VALVE	H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
	WIRELESS REMOTE CONTROLLER	SS1	SELECTOR SWITCH (MAIN/SUB)
BS1	ON/OFF BUTTON	SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
BS2	TIMER MODE START/STOP BUTTON		CONNECTOR FOR OPTIONAL PARTS
BS3, BS8	PROGRAMMING TIME BUTTON	X18A	CONNECTOR (WIRING, ADAPTOR FOR ELECTRICAL APPENDICES)
BS4, BS9	TEMPERATURE SETTING BUTTON	X23A	CONNECTOR (WIRELESS REMOTE CONTROLLER)
BS5	ADJUSTMENT OF AIR FLOW DIRECTION		
BS6	OPERATION MODE SELECTOR BUTTON		
BS7	TIMER ON/OFF BUTTON		
BS11	FAN SPEED CONTROL BUTTON		
BS12	INSPECTION/TEST OPERATION BUTTON		
BS14	FILTER SIGN RESET BUTTON		
H1P	LIGHT EMITTING DIODE (ON-RED)		
LCD	LIQUID CRYSTAL DISPLAY		
R1T	THERMISTOR (AIR)		

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FIELD WIRING

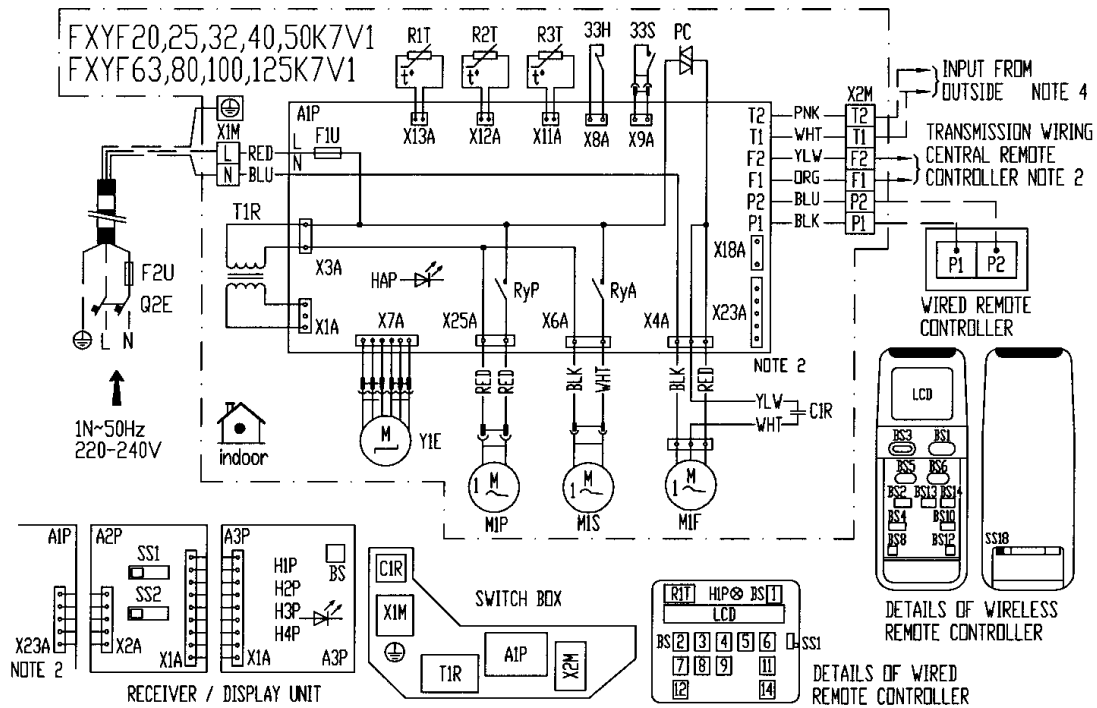
L	: LIVE	COLORS :	BLK : BLACK	PNK : PINK
N	: NEUTRAL		BLU : BLUE	RED : RED
⊕	: CONNECTOR		BRN : BROWN	WHT : WHITE
⊙	: WIRE CLAMP		DRG : ORANGE	YLW : YELLOW
⊠	: PROTECTIVE EARTH (SCREW)			

NOTES :

1. WHEN USING A CENTRAL REMOTE CONTROLLER, SEE MANUAL FOR CONNECTION TO THE UNIT.
2. X23A IS CONNECTED WHEN THE WIRELESS REMOTE CONTROLLER KIT IS USED.
3. WHEN CONNECTING THE INPUT WIRES FROM THE OUTDOOR UNIT, 'FORCED OFF' OR 'ON/OFF' OPERATION CAN BE SELECTED BY THE REMOTE CONTROLLER. FOR MORE DETAILS SEE INSTALLATION MANUAL.
4. USE COPPER CONDUCTORS ONLY.

2.2 4-way blow ceiling mounted cassette

FXYF20,25,32,40,50,63,80,100,125K7V1



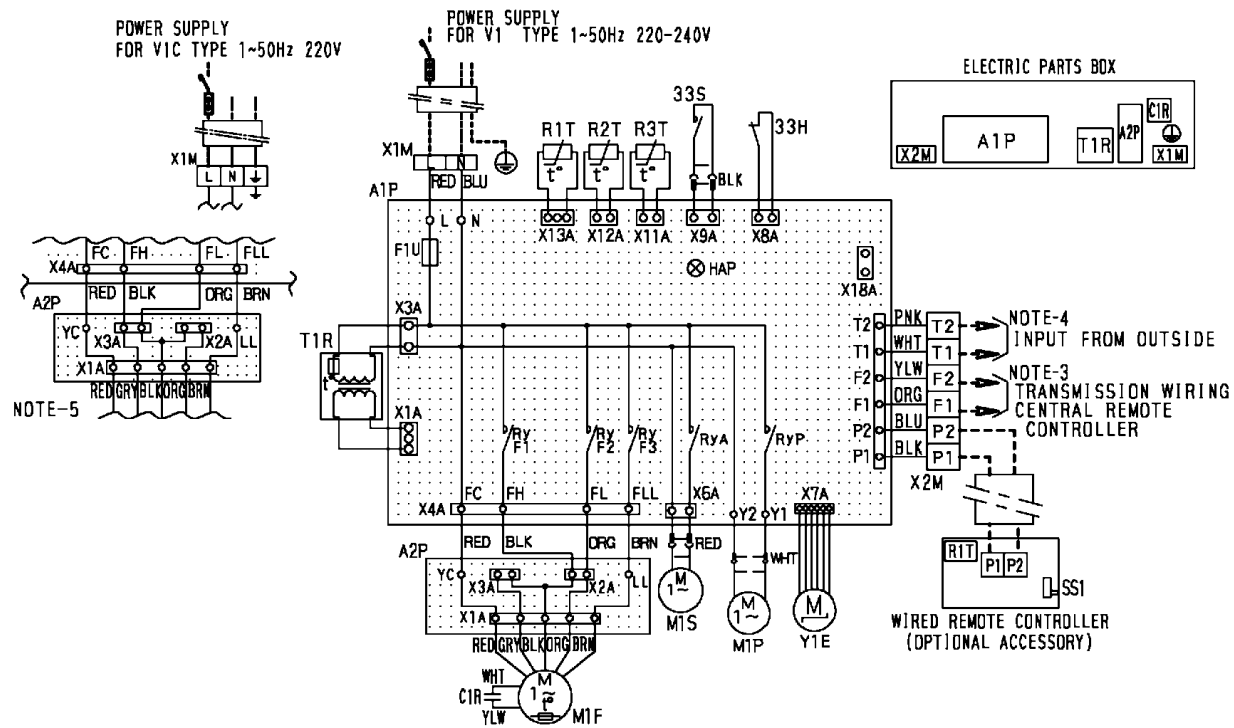
33H	FLOAT SWITCH	BS2	TIMER MODE START/STOP BUTTON	LCD	LIQUID CRYSTAL DISPLAY
33S	LIMIT SWITCH (SWING FLAP)	BS3, BS8	PROGRAMMING TIME BUTTON	SS1B	SELECTOR SWITCH (WIRELESS ADDRESS SET)
AIP	PRINTED CIRCUIT BOARD	BS4, BS9	TEMPERATURE SETTING BUTTON		RECEIVER/DISPLAY UNIT (ATTACHED TO WIRELESS REMOTE CONTROLLER)
CIR	CAPACITOR (MIF)	BS5	AIR FLOW DIRECTION ADJUST BUTTON		
F1U	FUSE (250V, 5A)	BS6	OPERATION MODE SELECTOR BUTTON		
F2U	FIELD FUSE	BS7	TIMER ON/OFF BUTTON	A2P, A3P	PRINTED CIRCUIT BOARD
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	BS11	FAN SPEED BUTTON	BS	ON/OFF BUTTON
MIF	MOTOR (INDOOR FAN)	BS12	INSPECTION/TEST BUTTON	H1P	LIGHT EMITTING DIODE (ON-RED)
MIP	MOTOR (DRAIN PUMP)	BS14	FILTER SIGN RESET BUTTON	H2P	LIGHT EMITTING DIODE (TIMER-GREEN)
MIS	MOTOR (SWING FLAP)	HIP	LIGHT EMITTING DIODE (SERVICE MONITOR-RED)	H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
Q1F	THERMOSWITCH (MIF EMBEDDED)	LCD	LIQUID CRYSTAL DISPLAY	H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
Q2E	EARTH LEAK DETECTOR	SS1	SELECTOR SWITCH (MAIN/SUB)	SS1	SELECTOR SWITCH (MAIN/SUB)
R1T	THERMISTOR (AIR)		WIRELESS REMOTE CONTROLLER	SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
R2T, R3T	THERMISTOR (COIL)	BS1	ON/OFF BUTTON		
RyA	MAGNETIC RELAY (MIS)	BS2	TIMER MODE START/STOP BUTTON		
RyP	MAGNETIC RELAY (MIP)	BS3	PUSH BUTTON (FAN SPEED)		
T1R	TRANSFORMER (220V-240V/27V)	BS4	AIR FLOW DIRECTION ADJUST BUTTON		
X1M	TERMINAL STRIP (POWER)	BS5, BS6	TIME/TEMPERATURE SET BUTTON		CONNECTOR FOR OPTIONAL PARTS
X2M	TERMINAL STRIP (CONTROL)	BS8	INSPECTION/TEST BUTTON		
PC	PHASE CONTROL CIRCUIT	BS10	OPERATION MODE SELECTOR BUTTON	X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRICAL APPENDICES)
Y1E	ELECTRONIC EXPANSION VALVE	BS12	FILTER SIGN RESET BUTTON	X23A	CONNECTOR (WIRELESS REMOTE CONTROLLER)
	WIRED REMOTE CONTROLLER	BS13	TIMER ON BUTTON		
		BS14	TIMER OFF BUTTON		

■■■ FIELD WIRING ⊕ : WIRE CLAMP COLORS : BLU : BLUE PNK : PINK
 □ : CONNECTOR ⊕ : PROTECTIVE EARTH (SCREW) BLK : BLACK RED : RED
 NOTES ⊕ : TERMINAL GRN : GREEN WHT : WHITE
 1. USE COPPER CONDUCTORS ONLY. ORG : ORANGE YLW : YELLOW
 2. WHEN USING THE CENTRAL REMOTE CONTROLLER, SEE MANUAL FOR CONNECTION TO THE UNIT.
 3. X23A IS CONNECTED WHEN THE WIRELESS REMOTE CONTROLLER KIT IS USED.
 4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY THE REMOTE CONTROLLER MANUAL. SEE INSTALLATION MANUAL FOR MORE DETAILS.

2TW21266-1B

2.3 ceiling mounted corner cassette

FXKY25,32,40,63KJV1



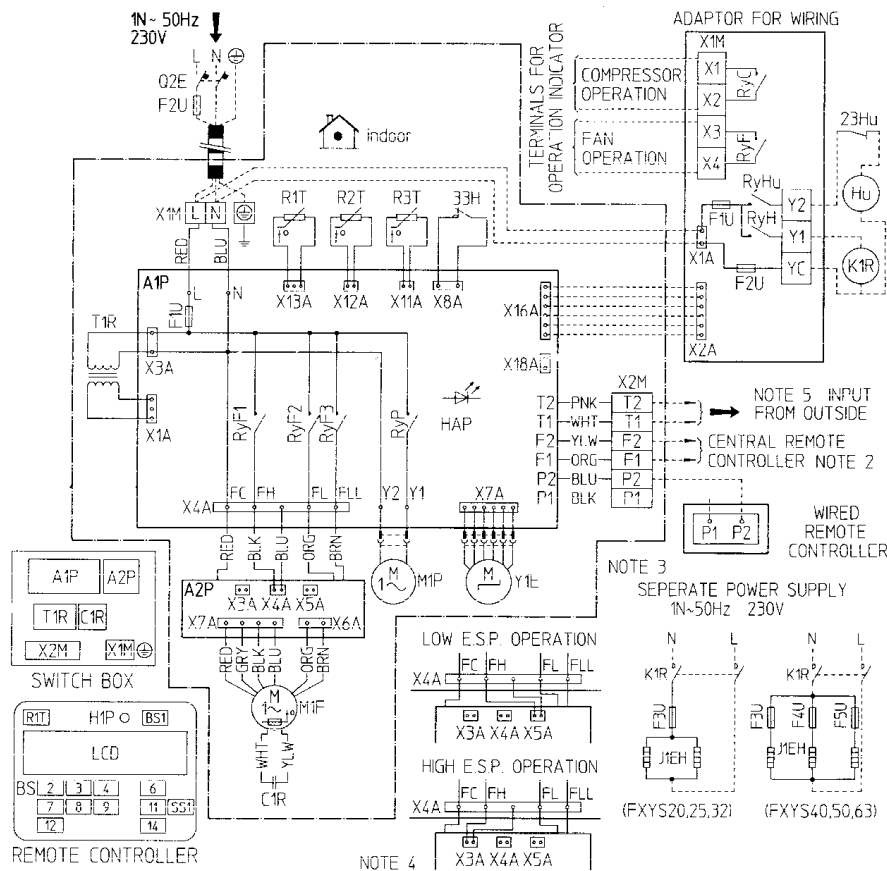
- NOTES) 1. □□□□: TERMINAL, ○□□□: CONNECTOR, ○—○: WIRE CLAMP
 2. ---- : FIELD WIRING
 3. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
 4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
 5. IN CASE HIGH E.S.P. OPERATION, CHANGE OVER THE WIRING CONNECTION FROM X2A TO X3A.
 6. SYMBOLS SHDW AS FOLLOWS, (PNK:PINK WHT:WHITE YLW:YELLOW ORG:ORANGE BLU:BLUE BLK:BLACK RED:RED BRN:BROWN GRY:GRAY)
 7. USE COPPER CONDUCTORS ONLY.

33H	FLOAT SWITCH	RYA	MAGNETIC RELAY(M1S)
33S	LIMIT SWITCH(SWING FLAP)	RYF1-3	MAGNETIC RELAY(M1F)
A1P	PRINTED CIRCUIT BOARD	RYP	MAGNETIC RELAY(M1P)
A2P	TERMINAL BOARD	T1R	TRANSFORMER(220-240V/22V)
C1R	CAPACITOR (M1F)	X1M	TERMINAL STRIP(POWER)
F1T	THERMAL FUSE(105℃ (M1F EMBEDDED)	X2M	TERMINAL STRIP(CONTROL)
F1U	FUSE (250V,5A)	Y1E	ELECTRONIC EXPANSION VALVE
HAP	LIGHT EMISSION DIODE (SERVICE MONITOR-GREEN)		WIRED REMOTE CONTROLLER
M1F	MOTOR (INDOOR FAN)	R1T	THERMISTOR(AIR)
M1P	MOTOR (DRAIN PUMP)	SS1	SELECTOR SWITCH (MAIN/SUB)
M1S	MOTOR (SWING FLAP)		CONNECTOR FOR OPTIONAL PARTS
R1T	THERMISTOR(AIR)	X18A	CONNECTOR(WIRING ADAPTOR FOR ELECTRICAL APPENDICES)
R2T-3T	THERMISTOR(COIL)		
L-RED		N-BLU	

DU227-544C

2.4 concealed ceiling unit

FXYS20,25,32,40,50,63KA7V1



33H	FLOAT SWITCH	K1R	MAGNETIC RELAY (J1EH)
A1P	PRINTED CIRCUIT BOARD		ADAPTOR FOR WIRING
A2P	TERMINAL BOARD	RyC, RyF	MAGNETIC RELAY
C1R	CAPACITOR (FAN)	RyH, RyHu	MAGNETIC RELAY (J1EH, Hu)
F1U	FUSE (250V, 10A)	F1U, F2U	FUSE (250V, 5A)
F2U	FIELD FUSE	X1A, X2A	CONNECTOR (WIRING ADAPTOR)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	X1M	TERMINAL STRIP
M1F	MOTOR (FAN)		CONNECTOR FOR OPTIONAL PARTS
M1P	MOTOR (DRAIN PUMP)	X16A	CONNECTOR (WIRING ADAPTOR)
Q1	POWER TRANSISTOR	X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRONICAL APPENDICES)
Q2E	EARTH LEAK DETECTOR		WIRED REMOTE CONTROLLER
R1T	THERMISTOR (AIR)	BS1	ON/OFF BUTTON
R2T, R3T	THERMISTOR (REFRIGERANT)	BS2	TIMER MODE START/STOP BUTTON
RyF1-3	MAGNETIC RELAY (FAN)	BS3, BS8	PROGRAMMING TIME BUTTON
RyP	MAGNETIC RELAY (DRAIN PUMP)	BS4, BS9	TEMPERATURE SETTING BUTTON
T1R	TRANSFORMER (220V/27V)	BS6	OPERATION MODE SELECTOR BUTTON
X1M	TERMINAL STRIP (POWER)	BS7	TIMER ON/OFF BUTTON
X2M	TERMINAL STRIP (CONTROL)	BS11	FAN SPEED CONTROL BUTTON
Y1F	ELECTRONIC EXPANSION VALVE	BS12	INSPECTION/TEST OPERATION BUTTON
OPTIONAL PARTS		BS14	FILTER SIGN RESET BUTTON
23Hu	HUMIDISTAT	LCD	LIQUID CRISTAL DISPLAY
F3-5U	FUSE (250V, 16A)	H1P	LIGHT EMITTING DIODE (ON-RED)
Hu	HUMIDIFIER	R1T	THERMISTOR (AIR)
J1EH	ELECTRIC HEATER	SS1	SELECTOR SWITCH (MAIN/SUB)

FIELD WIRING

L : LIVE
N : NEUTRAL
C : CONNECTOR
W : WIRE CLAMP
PE : PROTECTIVE EARTH (SCREW)

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

NOTES :

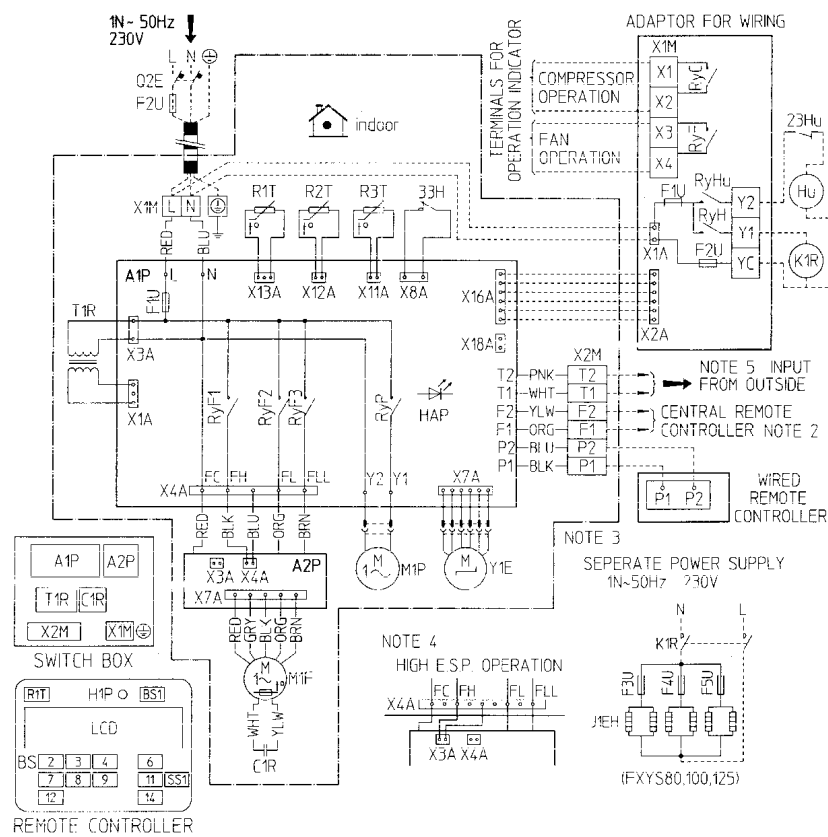
- 1 USE COPPER CONDUCTORS ONLY.
- 2 WHEN USING THE CENTRAL REMOTE CONTROLLER, SEE MANUAL FOR CONNECTION TO THE UNIT.
- 3 WHEN INSTALLING THE ELECTRIC HEATER, CHANGE THE WIRING FOR THE HEATER CIRCUIT. THE MAIN POWER SUPPLY HAS TO BE SUPPLIED INDEPENDENTLY.
- 4 FOR HIGH OR LOW E.S.P. OPERATION, CHANGE THE WIRING CONNECTION OF X4A AS SHOWN ON THE WIRING DIAGRAM.
- 5 WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, "FORCED OFF" OR "ON/OFF" OPERATION CAN BE SELECTED BY THE REMOTE CONTROLLER. SEE INSTALLATION MANUAL FOR MORE DETAILS.

2TW22196-1A

Wiring Diagrams - Indoor Unit

SI-05C

FXYS80,100,125KA7V1



33H	FLOAT SWITCH	K1R	MAGNETIC RELAY (11EH)
A1P	PRINTED CIRCUIT BOARD		ADAPTOR FOR WIRING
A2P	TERMINAL BOARD	RvC, RvF	MAGNETIC RELAY
C1R	CAPACITOR (FAN)	RvH, RvHu	MAGNETIC RELAY
F1U	FUSE (250V, 10A)	F1U, F2U	FUSE (250V, 5A)
F2U	FIELD FUSE	X1A, X2A	CONNECTOR (WIRING ADAPTOR)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	X1M	TERMINAL STRIP
M1F	MOTOR (FAN)		CONNECTOR FOR OPTIONAL PARTS
M1P	MOTOR (DRAIN PUMP)	X16A	CONNECTOR (WIRING ADAPTOR)
Q1	POWER TRANSISTOR	X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRONICAL APPENDICES)
Q2E	EARTH LEAK DETECTOR		WIRED REMOTE CONTROLLER
R1T, R3T	THERMISTOR (AIR)	BS1	ON/OFF BUTTON
R2T, R3T	THERMISTOR (REFRIGERANT)	BS2	TIMER MODE START/STOP BUTTON
RvF1-3	MAGNETIC RELAY (FAN)	BS3, BS8	PROGRAMMING TIME BUTTON
RvP	MAGNETIC RELAY (DRAIN PUMP)	BS4, BS9	TEMPERATURE SETTING BUTTON
T1R	TRANSFORMER (220V/27V)	BS6	OPERATION MODE SELECTOR BUTTON
X1M	TERMINAL STRIP (POWER)	BS7	TIMER ON/OFF BUTTON
X2M	TERMINAL STRIP (CONTROL)	BS11	FAN SPEED CONTROL BUTTON
Y1F	ELECTRONIC EXPANSION VALVE	BS12	INSPECTION/TEST OPERATION BUTTON
	OPTIONAL PARTS	BS14	FILTER SIGN RESET BUTTON
Z3Hu	HUMIDISTAT	LCD	LIQUID CRYSTAL DISPLAY
F3-SU	FUSE (250V, 16A)	H1P	LIGHT EMITTING DIODE (ON-RED)
Hu	HUMIDIFIER	R1T	THERMISTOR (AIR)
11EH	ELECTRIC HEATER	SS1	SELECTOR SWITCH (MAIN/SUB)

FIELD WIRING

L : LIVE
 N : NEUTRAL
 C → : CONNECTOR
 * : WIRE CLAMP
 ⊕ : PROTECTIVE EARTH (SCREW)

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

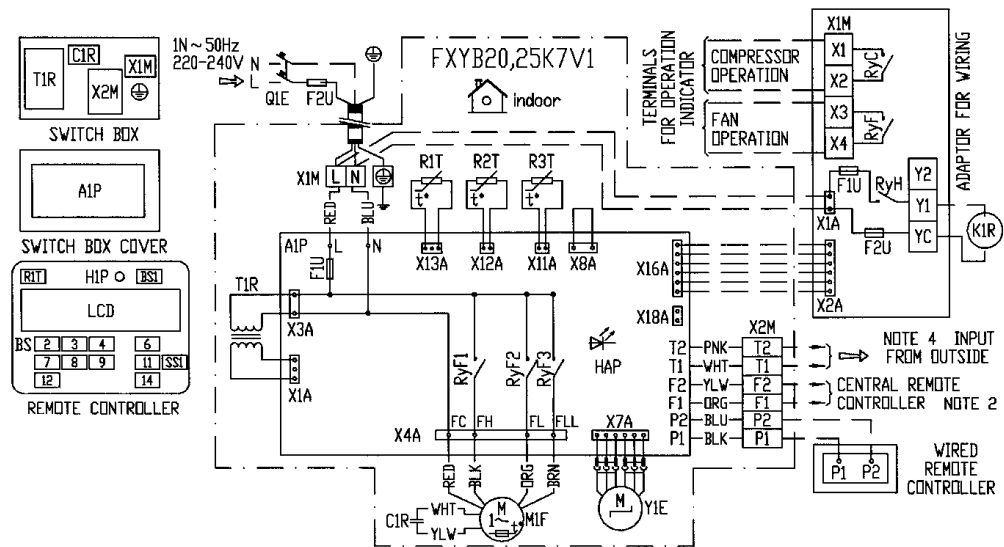
NOTES :

- USE COPPER CONDUCTORS ONLY.
- WHEN USING THE CENTRAL REMOTE CONTROLLER, SEE MANUAL FOR CONNECTION TO THE UNIT.
- WHEN INSTALLING THE ELECTRIC HEATER, CHANGE THE WIRING FOR THE HEATER CIRCUIT. THE MAIN POWER SUPPLY HAS TO BE SUPPLIED INDEPENDENTLY.
- FOR HIGH E.S.P. OPERATION, CHANGE THE WIRING CONNECTION OF X4A AS SHOWN ON THE WIRING DIAGRAM.
- WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FOR 'OFF' OR 'ON/OFF' OPERATION CAN BE SELECTED BY THE REMOTE CONTROLLER. SEE INSTALLATION MANUAL FOR MORE DETAILS.

2TW22256-1A

2.5 concealed ceiling unit (small)

FXYP20,25K7V1



AIP	PRINTED CIRCUIT BOARD	F1U, F2U	FUSE (250V, 5A)
CIR	CAPACITOR (FAN)	X1A, X2A	CONNECTOR (WIRING ADAPTOR)
F1U	FUSE (250V, 10A)	X1M	TERMINAL STRIP
F2U	FIELD FUSE		CONNECTOR FOR OPTIONAL PARTS
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	X16A	CONNECTOR (WIRING ADAPTOR)
MIF	MOTOR (FAN)	X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRONICAL APPENDICES)
QIE	EARTH LEAK DETECTOR		WIRED REMOTE CONTROLLER
R1T	THERMISTOR (AIR)	BS1	ON/OFF BUTTON
R2T, R3T	THERMISTOR (REFRIGERANT)	BS2	TIMER MODE START/STOP BUTTON
RyF1-3	MAGNETIC RELAY (FAN)	BS3, BS8	PROGRAMMING TIME BUTTON
T1R	TRANSFORMER (220V/27V)	BS4, BS9	TEMPERATURE SETTING BUTTON
X1M	TERMINAL STRIP (POWER)	BS6	OPERATION MODE SELECTOR BUTTON
X2M	TERMINAL STRIP (CONTROL)	BS7	TIMER ON/OFF BUTTON
Y1E	ELECTRONIC EXPANSION VALVE	BS11	FAN SPEED CONTROL BUTTON
	OPTIONAL PARTS	BS12	INSPECTION/TEST OPERATION BUTTON
JIEH	ELECTRIC HEATER	BS14	FILTER SIGN RESET BUTTON
KIR	MAGNETIC RELAY (JIEH)	LCD	LIQUID CRISTAL DISPLAY
	ADAPTOR FOR WIRING	HIP	LIGHT EMITTING DIODE (ON-RED)
RyC, RyF	MAGNETIC RELAY	R1T	THERMISTOR (AIR)
RyH	MAGNETIC RELAY (JIEH)	SSI	SELECTOR SWITCH (MAIN/SUB)

FIELD WIRING
 L : LIVE
 N : NEUTRAL
 □ : CONNECTOR
 ○ : WIRE CLAMP
 ⊕ : PROTECTIVE EARTH (SCREW)
 COLORS : BLK : BLACK
 BLU : BLUE
 BRN : BROWN
 DRG : DRANGE
 PNK : PINK
 RED : RED
 WHI : WHITE
 YLW : YELLOW

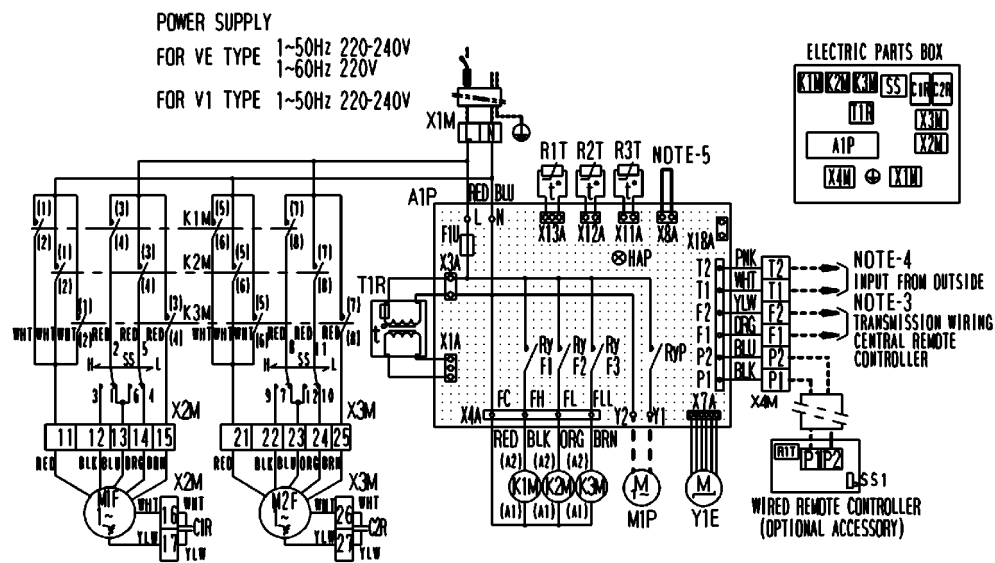
NOTES :

1. USE COPPER CONDUCTORS ONLY.
2. WHEN USING THE CENTRAL REMOTE CONTROLLER, SEE MANUAL FOR CONNECTION TO THE UNIT.
3. WHEN INSTALLING THE ELECTRIC HEATER, CHANGE THE WIRING FOR THE HEATER CIRCUIT. THE MAIN POWER SUPPLY HAS TO BE SUPPLIED INDEPENDENTLY.
4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, "FORCED OFF" OR "ON/OFF" OPERATION CAN BE SELECTED BY THE REMOTE CONTROLLER. SEE INSTALLATION MANUAL FOR MORE DETAILS.

2TW21466-1

2.6 concealed ceiling unit (large)

FXYM40,50,63,80,100,125KJV1



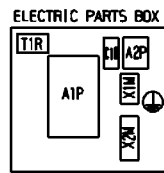
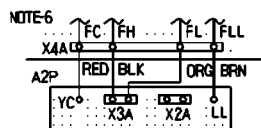
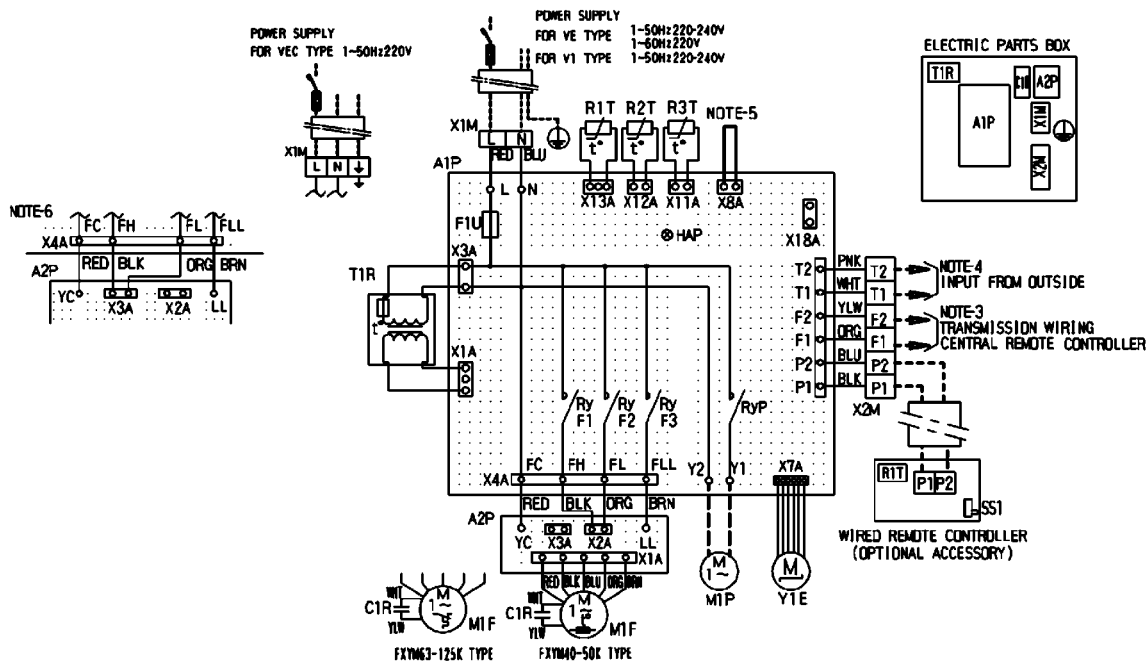
A1P	PRINTED CIRCUIT BOARD	SS	SELECTOR SWITCH (STATIC PRESSURE)
C1R-2R	CAPACITOR (MIF-2F)	T1R	TRANSFORMER(220-240V/22V)
F1U	FUSE (250V,10A)	X1M	TERMINAL STRIP(POWER)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	X2M-4M	TERMINAL STRIP(CONTROL)
K1M	MAGNETIC CONTACTOR(MIF-2F)	Y1E	ELECTRONIC EXPANSION VALVE
K2M	MAGNETIC CONTACTOR(MIF-2F)		OPTIONAL PARTS
K3M	MAGNETIC CONTACTOR(MIF-2F)	M1P	MOTOR (DRAIN PUMP)
MIF-2F	MOTOR (INDOOR FAN)		WIRED REMOTE CONTROLLER
Q1F	THERMO SWITCH (MIF-2F EMBEDDED)	R1T	THERMISTOR(AIR)
R1T	THERMISTOR(AIR)	SS1	SELECTOR SWITCH(MAIN/SUB)
R2T-3T	THERMISTOR(COIL)		CONNECTOR FOR OPTIONAL PARTS
RYF1-F3	MAGNETIC RELAY(MIF-2F)	X8A	CONNECTOR(FLOAT SWITCH)
RYP	MAGNETIC RELAY(MIP)	X18A	CONNECTOR(WIRING ADAPTOR FOR ELECTRICAL APPENDICES)
L-RED	N-BLUE		

NOTES)

1. : TERMINAL : CONNECTOR : WIRE CLAMP : JUMPER CONNECTOR
2. -----:FIELD WIRING
3. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
5. IN CASE INSTALLING THE DRAIN PUMP, REMOVE THE JUMPER AND EXECUTE 33H. THE ADDITIONAL WIRING FOR FLOAT SWITCH(33H).
6. SYMBOLS SHOW AS FOLLOWS, (PNK:PINK WHT:WHITE YLW:YELLOW ORG:ORANGE BLU:BLUE BLK:BLACK RED:RED BRN:BRONN)
7. USE COPPER CONDUCTORS ONLY.
8. IN CASE HIGH E.S.P. OPERATION , CHANGE THE SWITCH(SS) FOR "H" .

DU229-5140C

FXYM200,250KJVE



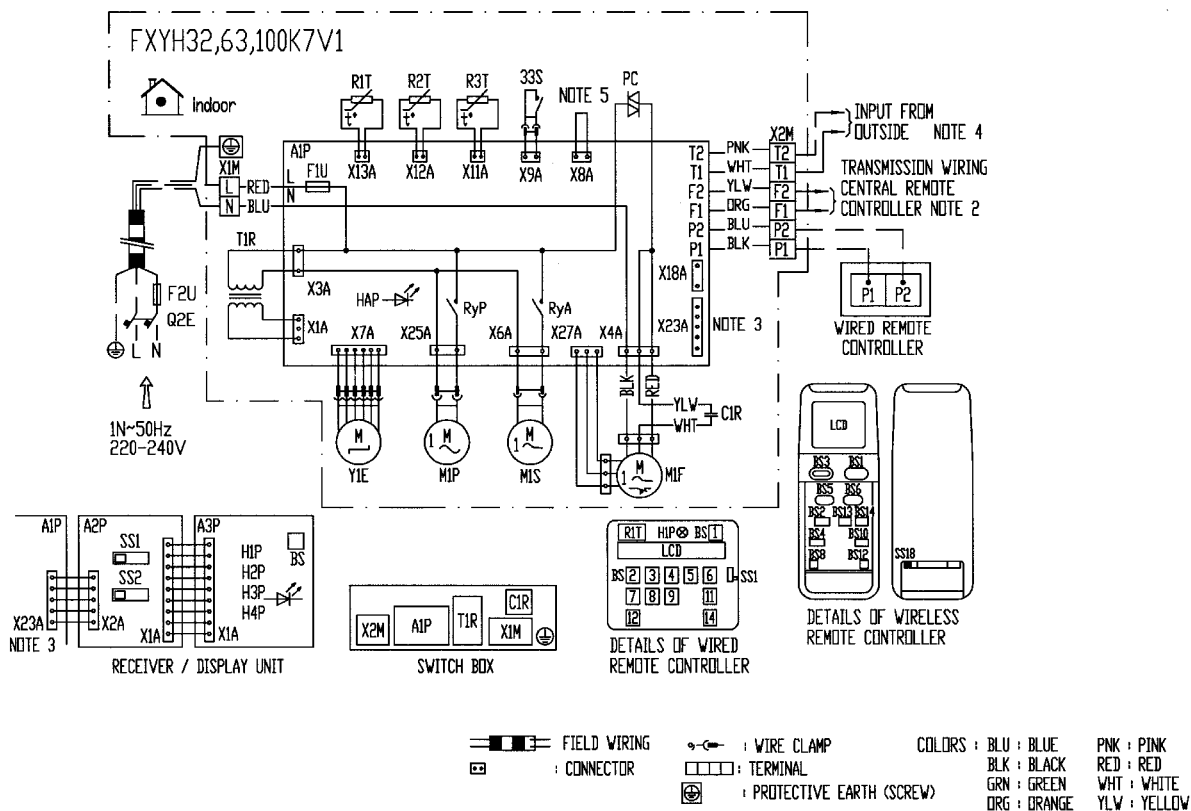
A1P	PRINTED CIRCUIT BOARD	X2M	TERMINAL STRIP/CONTROL
A2P	TERMINAL BOARD	Y1E	ELECTRONIC EXPANSION VALVE
C1R	CAPACITOR (M1F)		
F1T	THERMAL FUSE (153R) (M1F EMBEDDED ONLY 40-50 TYPE)		OPTIONAL PARTS
F1U	FUSE (250V, 10A)		WIRED REMOTE CONTROLLER
HAP	LIGHT EMISSION DIODE (SERVICE MONITOR-GREEN)	SS1	SELECTOR SWITCH (MAIN/SUB)
M1F	MOTOR (INDOOR FAN)		CONNECTOR FOR OPTIONAL PARTS
Q1F	THERMO SWITCH (M1F EMBEDDED ONLY 63-125 TYPE)	X3A	CONNECTOR (FLOAT SWITCH)
R1T	THERMISTOR (AIR)	X18A	CONNECTOR/WIRING ADAPTOR FOR ELECTRONIC APPENDICES
R2T-3T	THERMISTOR (COIL)		
RYF1-3	MAGNETIC RELAY (M1F)		
RYP	MAGNETIC RELAY (M1P)		
T1R	TRANSFORMER (220-240V/220V)		
X1M	TERMINAL STRIP (POWER)		
L-RED	N-BLUE		

- NOTES)
1. □ : TERMINAL, ⊙ : CONNECTOR, ○ : WIRE CLAMP, ⊠ : CONNECTOR
 2. ---- : FIELD WIRING
 3. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
 4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
 5. IN CASE INSTALLING THE DRAIN PUMP, REMOVE THE JUMPER AND EXECUTE THE ADDITIONAL WIRING FOR FLOAT SWITCH (33H).
 6. IN CASE HIGH E.S.P. OPERATION, CHANGE THE WIRING CONNECTION OF X2A AS SHOWN UPPER FIGURE.
 7. SYMBOLS SHOW AS FOLLOWS, (PNK: PINK WHI: WHITE YLW: YELLOW ORG: ORANGE BLU: BLUE BLK: BLACK RED: RED BRN: BROWN)
 8. USE COPPER CONDUCTORS ONLY.

3D011012B

2.7 ceiling suspended unit

FXYPH32,63,100K7V1



NOTES

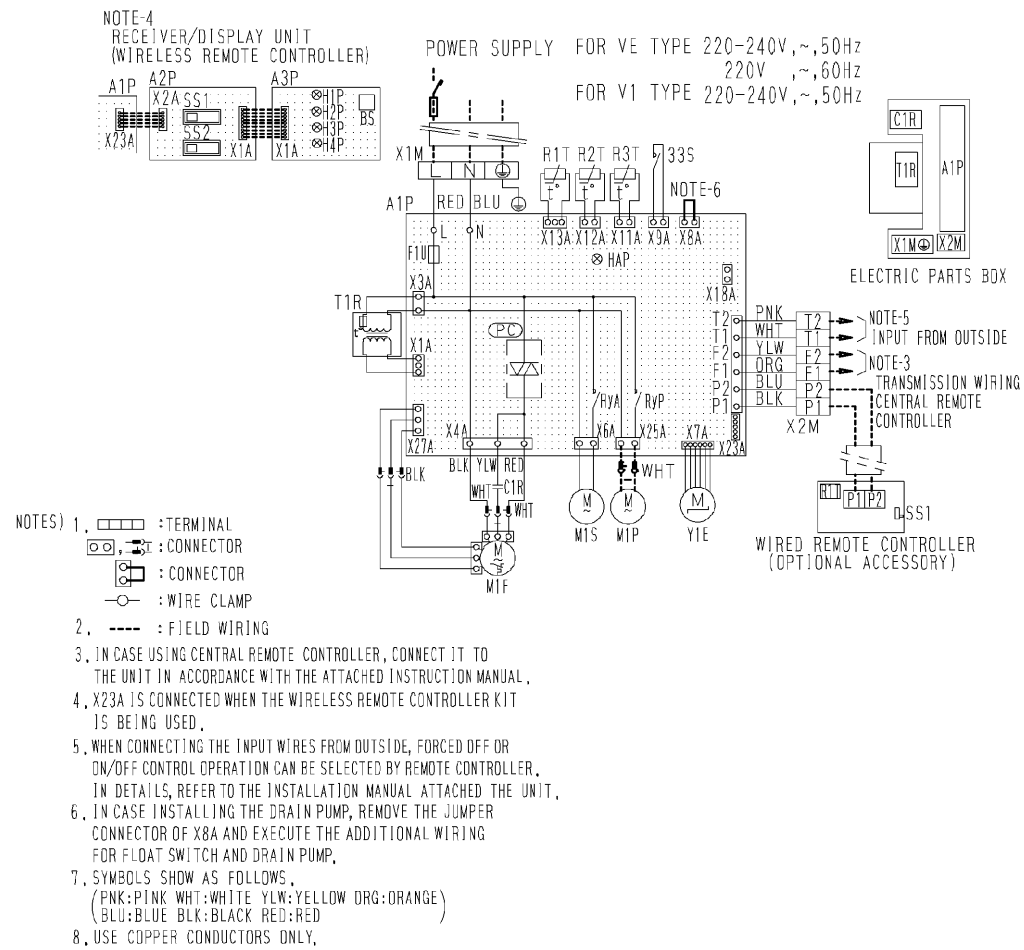
1. USE COPPER CONDUCTORS ONLY.
2. WHEN USING THE CENTRAL REMOTE CONTROLLER, SEE MANUAL FOR CONNECTION TO THE UNIT.
3. X23A IS CONNECTED WHEN THE WIRELESS REMOTE CONTROLLER KIT IS USED.
4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, "FORCED OFF" OR "ON/OFF" CONTROL OPERATION CAN BE SELECTED BY THE REMOTE CONTROLLER MANUAL. SEE INSTALLATION MANUAL FOR MORE DETAILS.
5. WHEN INSTALLING THE DRAIN PUMP, REMOVE THE JUMPER OF CONNECTOR X8A AND EXECUTE THE ADDITIONAL WIRING FOR THE FLOAT SWITCH AND DRAIN PUMP.

33S	LIMIT SWITCH (SWING FLAP)	BS2	TIMER MODE START/STOP BUTTON	LCD	LIQUID CRYSTAL DISPLAY
AIP	PRINTED CIRCUIT BOARD	BS3, BS8	PROGRAMMING TIME BUTTON	SS1B	SELECTOR SWITCH (WIRELESS ADDRESS SET)
CIR	CAPACITOR (MIF)	BS4, BS9	TEMPERATURE SETTING BUTTON		
F1U	FUSE (250V, 5A)	BS5	AIR FLOW DIRECTION ADJUST BUTTON		RECEIVER/DISPLAY UNIT (ATTACHED TO WIRELESS REMOTE CONTROLLER)
F2U	FIELD FUSE	BS6	OPERATION MODE SELECTOR BUTTON	A2P, A3P	PRINTED CIRCUIT BOARD
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	BS7	TIMER ON/OFF BUTTON	BS	ON/OFF BUTTON
MIF	MOTOR (INDOOR FAN)	BS12	INSPECTION/TEST BUTTON	HIP	LIGHT EMITTING DIODE (ON-RED)
MIS	MOTOR (SWING FLAP)	BS14	FILTER SIGN RESET BUTTON	H2P	LIGHT EMITTING DIODE (TIMER-GREEN)
PC	PHASE CONTROL CIRCUIT	HIP	LIGHT EMITTING DIODE (SERVICE MONITOR-RED)	H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
Q2E	THERMOSWITCH (MIF EMBEDDED)	LCD	LIQUID CRYSTAL DISPLAY	H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
RIT	THERMISTOR (AIR)	SS1	SELECTOR SWITCH (MAIN/SUB)	SS1	SELECTOR SWITCH (MAIN/SUB)
R2T, R3T	THERMISTOR (COIL)		WIRELESS REMOTE CONTROLLER	SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
RyA	MAGNETIC RELAY (MIS)	BS1	ON/OFF BUTTON		
RyP	MAGNETIC RELAY (MIF)	BS2	TIMER MODE START/STOP BUTTON		
T1R	TRANSFORMER (220V-240V/27V)	BS3	PUSH BUTTON (FAN SPEED)		
X1M	TERMINAL STRIP (POWER)	BS4	AIR FLOW DIRECTION ADJUST BUTTON		
X2M	TERMINAL STRIP (CONTROL)	BS5, BS6	TIME/TEMPERATURE SET BUTTON		CONNECTOR FOR OPTIONAL PARTS
Y1E	ELECTRONIC EXPANSION VALVE	BS8	INSPECTION/TEST BUTTON	X8A	CONNECTOR (FLOAT SWITCH)
	OPTIONAL PARTS	BS10	OPERATION MODE SELECTOR BUTTON	X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRICAL APPENDICES)
MIP	MOTOR (DRAIN PUMP)	BS12	FILTER SIGN RESET BUTTON	X23A	CONNECTOR (WIRELESS REMOTE CONTROLLER)
	WIRELESS REMOTE CONTROLLER	BS13	TIMER ON BUTTON		
BS1	ON/OFF BUTTON	BS14	TIMER OFF BUTTON		

2TW21356-1

2.8 wall mounted unit

FXYA25,32,40,50,63KJV1

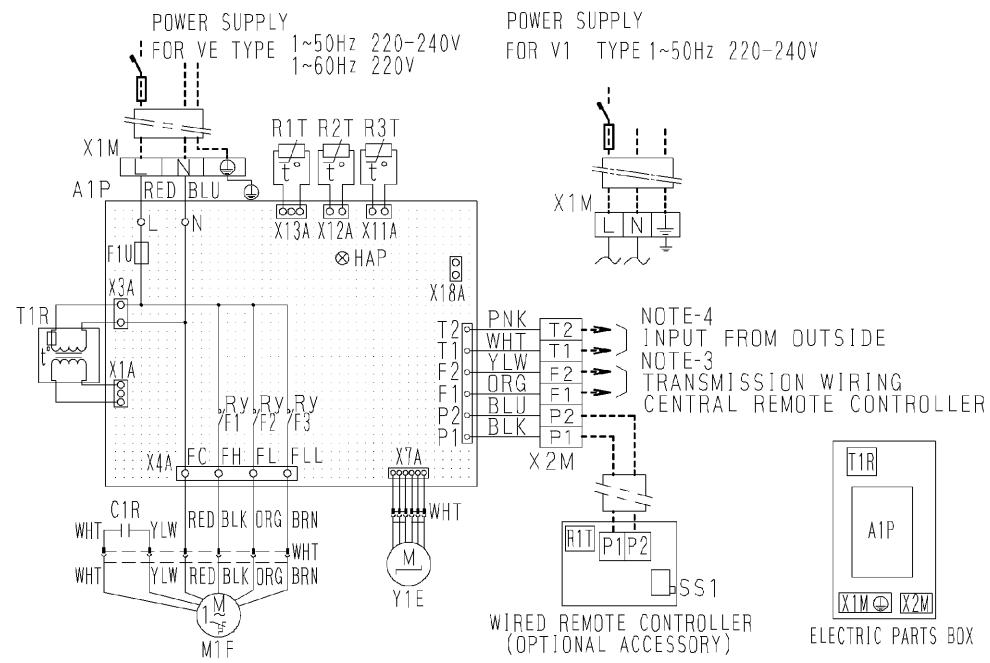


33S	LIMIT SWITCH(SWING FLAP)	H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
A1P	PRINTED CIRCUIT BOARD	H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
CTR	CAPACITOR (M1F)	SS1	SELECTOR SWITCH(MAIN/SUB)
F1U	FUSE(250V,5A)	SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)		
M1F	MOTOR (INDOOR FAN)		
Q1F	THERMO SWITCH (M1F EMBEDDED)		
M1S	MOTOR(SWING FLAP)		
R1T	THERMISTOR(AIR)		
R2T-3T	THERMISTOR(COIL)		
RVA	MAGNETIC RELAY(M1S)		
RVP	MAGNETIC RELAY(M1P)		
T1R	TRANSFORMER(220-240V/22V)		
X1M	TERMINAL STRIP(POWER)		
X2M	TERMINAL STRIP(CONTROL)		
Y1E	ELECTRONIC EXPANSION VALVE		
	PHASE CONTROL CIRCUIT		
	OPTIONAL PARTS		
	M1P MOTOR (DRAIN PUMP)		
	WIRED REMOTE CONTROLLER		
	R1T THERMISTOR(AIR)		
	SS1 SELECTOR SWITCH(MAIN/SUB)		
	RECEIVER/DISPLAY UNIT(ATTACHED TO WIRELESS REMOTE CONTROLLER)		
	A2P PRINTED CIRCUIT BOARD		
	A3P PRINTED CIRCUIT BOARD		
	BS PUSH BUTTON(ON/OFF)		
	H1P LIGHT EMITTING DIODE (ON-RED)		
	H2P LIGHT EMITTING DIODE (TIMER-GREEN)		

DU221-561F

2.9 floor standing unit

FXYL20,25,40,50,63KJVE



NOTES)

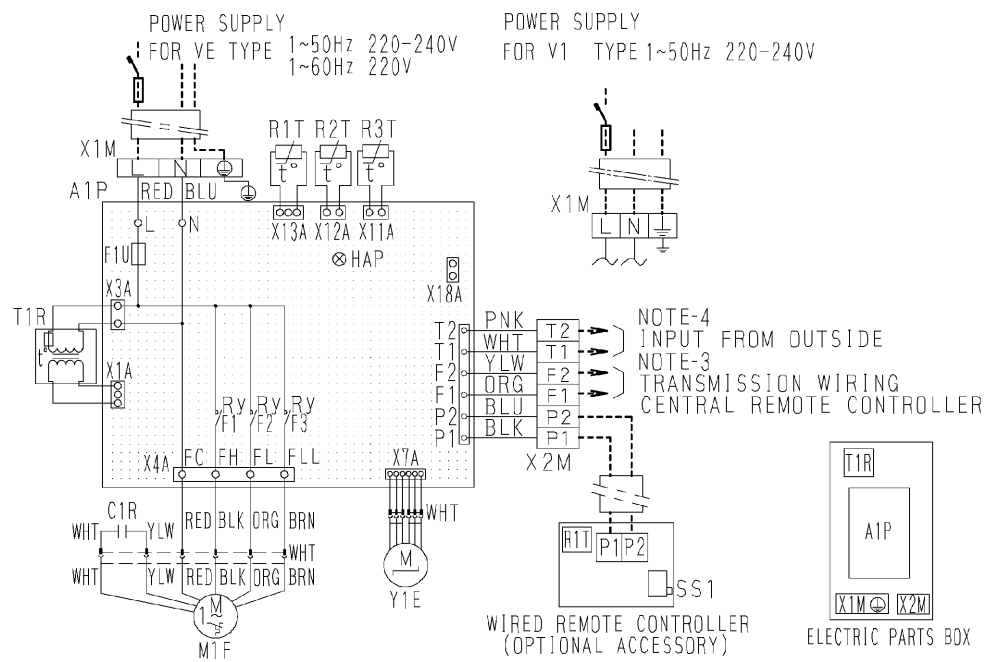
1. □: TERMINAL, ⊞: CONNECTOR, ○: WIRE CLAMP
2. ----: FIELD WIRING
3. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER, IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
5. SYMBOLS SHOW AS FOLLOWS, (PNK: PINK WHT: WHITE YLW: YELLOW ORG: ORANGE BLU: BLUE BLK: BLACK RED: RED BRN: BROWN)
6. USE COPPER CONDUCTORS ONLY.

A1P	PRINTED CIRCUIT BOARD	WIRING REMOTE CONTROLLER	
C1R	CAPACITOR (M1F)	R1T	THERMISTOR(AIR)
F1U	FUSE (250V, 10A)	SS1	SELECTOR SWITCH(MAIN/SUB)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	X18A	CONNECTOR WIRING ADAPTOR FOR ELECTRICAL APPENDICES)
M1F	MOTOR (INDOOR FAN)		
Q1F	THERMO SWITCH (M1F EMBEDDED)		
R1T	THERMISTOR(AIR)		
R2T-3T	THERMISTOR(COIL)		
RYF1-3	MAGNETIC RELAY(M1F)		
T1R	TRANSFORMER(220-240V/22V)		
X1M	TERMINAL STRIP(POWER)		
X2M	TERMINAL STRIP(CONTROL)		
Y1E	ELECTRONIC EXPANSION VALVE		
L	RED	N	BLUE

3D003923E

2.10 concealed floor standing unit

FXYLM20,25,40,50,63KJVE

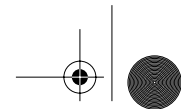


NOTES)

1. □: TERMINAL, ⊞: CONNECTOR, ○: WIRE CLAMP
2. ----: FIELD WIRING
3. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER, IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
5. SYMBOLS SHOW AS FOLLOWS, (PNK: PINK WHT: WHITE YLW: YELLOW ORG: ORANGE BLU: BLUE BLK: BLACK RED: RED BRN: BROWN)
6. USE COPPER CONDUCTORS ONLY.

A1P	PRINTED CIRCUIT BOARD	WIRED REMOTE CONTROLLER	
C1R	CAPACITOR (M1F)	R1T	THERMISTOR(AIR)
F1U	FUSE (250V, 10A)	SS1	SELECTOR SWITCH(MAIN/SUB)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	X1M	CONNECTOR FOR OPTIONAL PARTS
M1F	MOTOR (INDOOR FAN)	X18A	CONNECTOR WIRING ADAPTOR FOR ELECTRICAL APPENDICES)
Q1F	THERMO SWITCH (M1F EMBEDDED)		
R1T	THERMISTOR(AIR)		
R2T-3T	THERMISTOR(COIL)		
RYF1-3	MAGNETIC RELAY(M1F)		
T1R	TRANSFORMER(220-240V/22V)		
X1M	TERMINAL STRIP(POWER)		
X2M	TERMINAL STRIP(CONTROL)		
Y1E	ELECTRONIC EXPANSION VALVE		
L	RED	N	BLUE

3D003923E



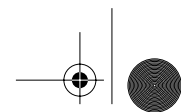
3. Characteristics

3.1 Thermistor Resistance / Temperature Characteristics

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

Outdoor unit For coil R2T
 For suction pipe R4T
 For oil R5T
 For header R6T

T°C	(kΩ)		T°C	(kΩ)	
	0.0	0.05		0.0	0.05
-20	197.81	192.08	30	16.10	15.76
-19	186.53	181.16	31	15.43	15.10
-18	175.97	170.94	32	14.79	14.48
-17	166.07	161.36	33	14.18	13.88
-16	156.80	152.38	34	13.59	13.31
-15	148.10	143.96	35	13.04	12.77
-14	139.94	136.05	36	12.51	12.25
-13	132.28	128.63	37	12.01	11.76
-12	125.09	121.66	38	11.52	11.29
-11	118.34	115.12	39	11.06	10.84
-10	111.99	108.96	40	10.63	10.41
-9	106.03	103.18	41	10.21	10.00
-8	100.41	97.73	42	9.81	9.61
-7	95.14	92.61	43	9.42	9.24
-6	90.17	87.79	44	9.06	8.88
-5	85.49	83.25	45	8.71	8.54
-4	81.08	78.97	46	8.37	8.21
-3	76.93	74.94	47	8.05	7.90
-2	73.01	71.14	48	7.75	7.60
-1	69.32	67.56	49	7.46	7.31
0	65.84	64.17	50	7.18	7.04
1	62.54	60.96	51	6.91	6.78
2	59.43	57.94	52	6.65	6.53
3	56.49	55.08	53	6.41	6.33
4	53.71	52.38	54	6.65	6.53
5	51.09	49.83	55	6.41	6.53
6	48.61	47.42	56	6.18	6.06
7	46.26	45.14	57	5.95	5.84
8	44.05	42.98	58	5.74	5.43
9	41.95	40.94	59	5.14	5.05
10	39.96	39.01	60	4.96	4.87
11	38.08	37.18	61	4.79	4.70
12	36.30	35.45	62	4.62	4.54
13	34.62	33.81	63	4.46	4.38
14	33.02	32.25	64	4.30	4.23
15	31.50	30.77	65	4.16	4.08
16	30.06	29.37	66	4.01	3.94
17	28.70	28.05	67	3.88	3.81
18	27.41	26.78	68	3.75	3.68
19	26.18	25.59	69	3.62	3.56
20	25.01	24.45	70	3.50	3.44
21	23.91	23.37	71	3.38	3.32
22	22.85	22.35	72	3.27	3.21
23	21.85	21.37	73	3.16	3.11
24	20.90	20.45	74	3.06	3.01
25	20.00	19.56	75	2.96	2.91
26	19.14	18.73	76	2.86	2.82
27	18.32	17.93	77	2.77	2.72
28	17.54	17.17	78	2.68	2.64
29	16.80	16.45	79	2.60	2.55
30	16.10	15.76	80	2.51	2.47

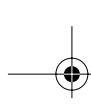


SiE-05C

Characteristics

**Outdoor
Thermistors for
Discharge Pipe
(R3T, R3-1T, R3-2T)**

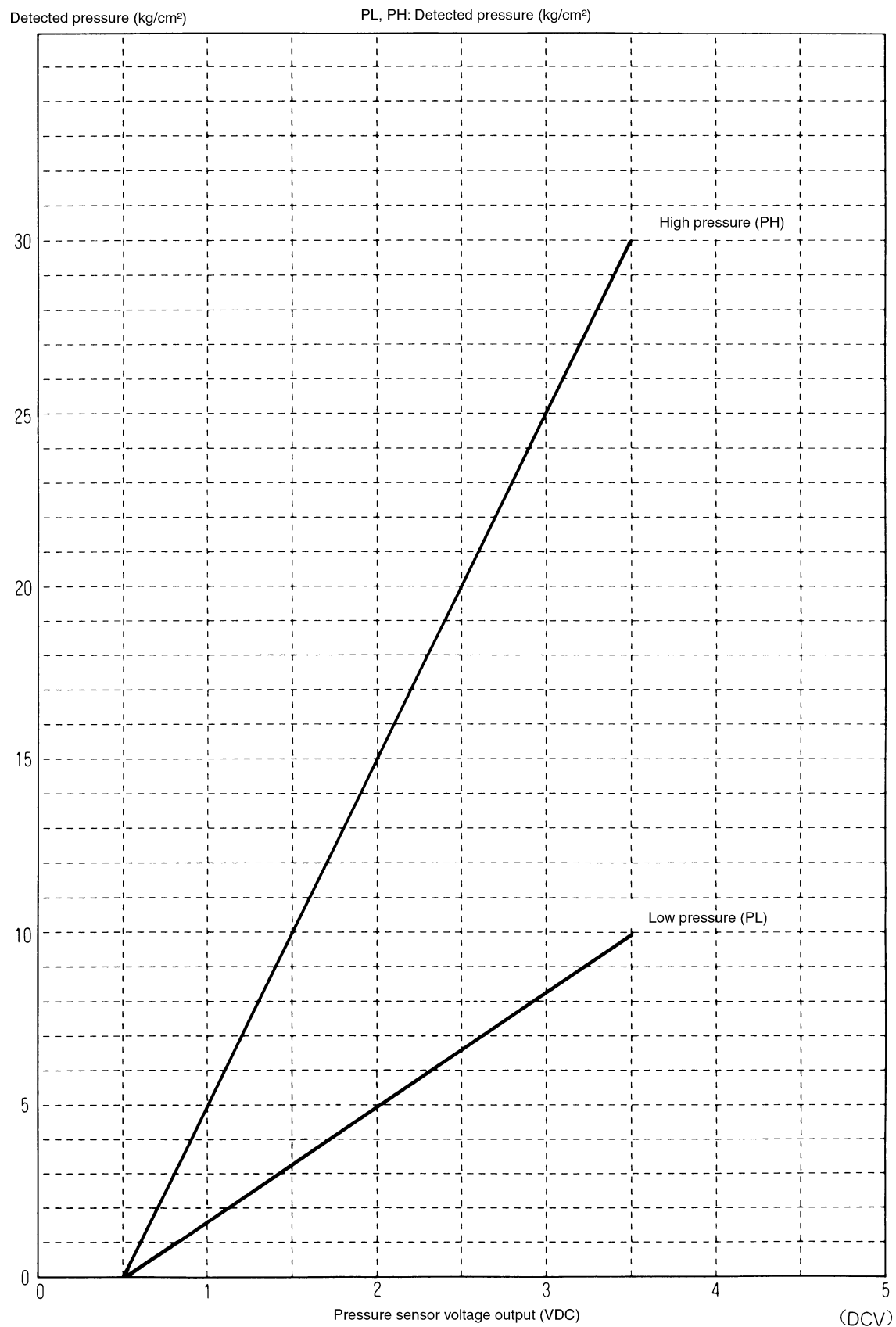
						(kΩ)		
T°C	0.0	0.5	T°C	0.0	0.5	T°C	0.0	0.5
0	640.44	624.65	50	72.32	70.96	100	13.35	13.15
1	609.31	594.43	51	69.64	68.34	101	12.95	12.76
2	579.96	565.78	52	67.06	65.82	102	12.57	12.38
3	552.00	538.63	53	64.60	63.41	103	12.20	12.01
4	525.63	512.97	54	62.24	61.09	104	11.84	11.66
5	500.66	488.67	55	59.97	58.87	105	11.49	11.32
6	477.01	465.65	56	57.80	56.75	106	11.15	10.99
7	454.60	443.84	57	55.72	54.70	107	10.83	10.67
8	433.37	423.17	58	53.72	52.84	108	10.52	10.36
9	413.24	403.57	59	51.98	50.96	109	10.21	10.06
10	394.16	384.98	60	49.96	49.06	110	9.92	9.78
11	376.05	367.35	61	48.19	47.33	111	9.64	9.50
12	358.88	350.62	62	46.49	45.67	112	9.36	9.23
13	342.58	334.74	63	44.86	44.07	113	9.10	8.97
14	327.10	319.66	64	43.30	42.54	114	8.84	8.71
15	312.41	305.33	65	41.79	41.06	115	8.59	8.47
16	298.45	291.73	66	40.35	39.65	116	8.35	8.23
17	285.18	278.80	67	38.96	38.29	117	8.12	8.01
18	272.58	266.51	68	37.63	36.98	118	7.89	7.78
19	260.60	254.72	69	36.34	35.72	119	7.68	7.57
20	249.00	243.61	70	35.11	34.51	120	7.47	7.36
21	238.36	233.14	71	33.92	33.35	121	7.26	7.16
22	228.05	223.08	72	32.78	32.23	122	7.06	6.97
23	218.24	213.51	73	31.69	31.15	123	6.87	6.78
24	208.90	204.39	74	30.63	30.12	124	6.69	6.59
25	200.00	195.71	75	29.61	29.12	125	6.51	6.42
26	191.53	187.44	76	28.64	28.16	126	6.33	6.25
27	183.46	179.57	77	27.69	27.24	127	6.16	6.08
28	175.77	172.06	78	26.79	26.35	128	6.00	5.92
29	168.44	164.90	79	25.91	25.49	129	5.84	5.76
30	161.45	158.08	80	25.07	24.66	130	5.69	5.61
31	154.79	151.57	81	24.26	23.87	131	5.54	5.46
32	148.43	145.37	82	23.48	23.10	132	5.39	5.32
33	142.37	139.44	83	22.73	22.36	133	5.25	5.18
34	136.59	133.79	84	22.01	21.65	134	5.12	5.05
35	131.06	128.39	85	21.31	20.97	135	4.98	4.92
36	125.79	123.24	86	20.63	20.31	136	4.86	4.79
37	120.76	118.32	87	19.98	19.67	137	4.73	4.67
38	115.95	113.62	88	19.36	19.05	138	4.61	4.55
39	111.35	109.13	89	18.75	18.46	139	4.49	4.44
40	106.96	104.84	90	18.17	17.89	140	4.38	4.32
41	102.76	100.73	91	17.61	17.34	141	4.27	4.22
42	98.75	96.81	92	17.07	16.80	142	4.16	4.11
43	94.92	93.06	93	16.54	16.29	143	4.06	4.01
44	91.25	89.47	94	16.04	15.79	144	3.96	3.91
45	87.74	86.04	95	15.55	15.31	145	3.86	3.81
46	84.38	82.75	96	15.08	14.85	146	3.76	3.72
47	81.16	79.61	97	14.62	14.40	147	3.67	3.62
48	78.09	76.60	98	14.18	13.97	148	3.58	3.54
49	75.14	73.71	99	13.76	13.55	149	3.49	3.45
50	72.32	70.96	100	13.35	13.15	150	3.41	3.37



3.2 Pressure Sensor Voltage Output / Detected Pressure Characteristics

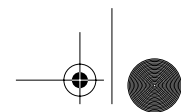
Low pressure $P_L = (V_L - 0.5) \times \frac{10}{3}$

High pressure $P_H = (V_H - 0.5) \times 10$



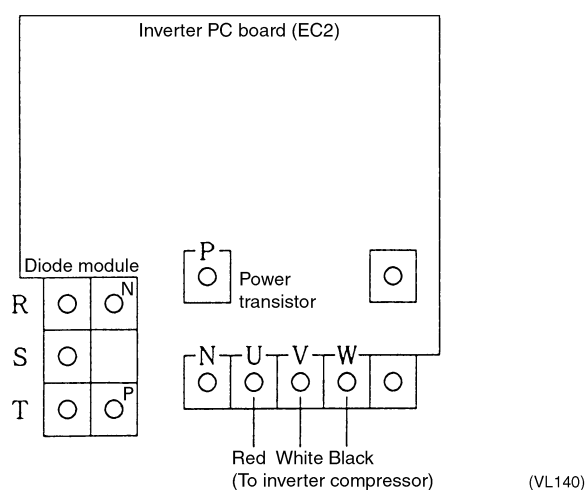
(VG102)





4. Method of Replacing The Inverter's Power Transistors and Diode Modules

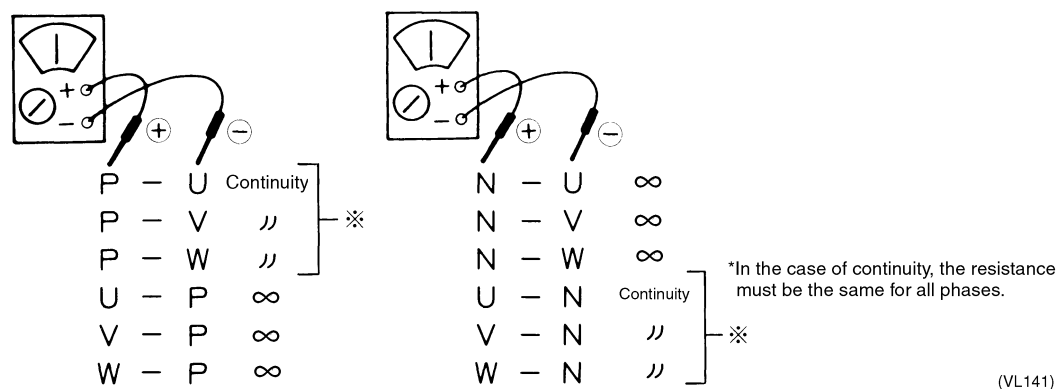
4.1 Method of Replacing The Inverter's Power Transistors and Diode Modules



[Decision according to continuity check by analog tester]

- Before checking, disconnect the electric wiring connected to the power transistor and diode module.

4.1.1 Power Transistor (On Inverter PC Board)

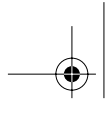


(Decision)

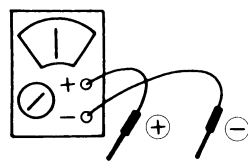
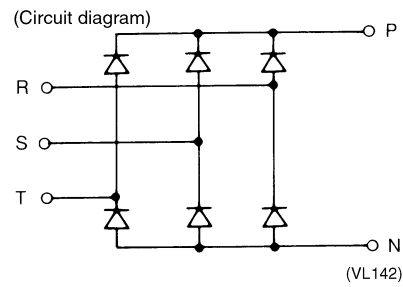
If other than given above, the power unit is defective and must be replaced.

i Note: If using a digital tester, ∞ and continuity may be reversed.

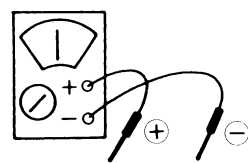




4.1.2 Diode Module



P - R	Continuity
P - S	∞
P - T	∞
R - P	∞
S - P	∞
T - P	∞



N - R	∞
N - S	∞
N - T	∞
R - N	Continuity
S - N	∞
T - N	∞

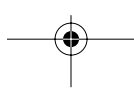
(VL143)

(Decision)

If other than given above, the diode module is defective and must be replaced.



Note: If using a digital tester, ∞ and continuity may be reversed.



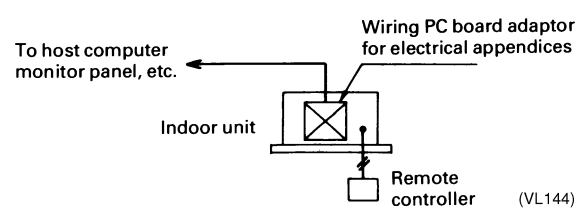
5. Wiring Adaptor

5.1 Wiring Adaptor for Electrical Appendices (KRP2A61-62)

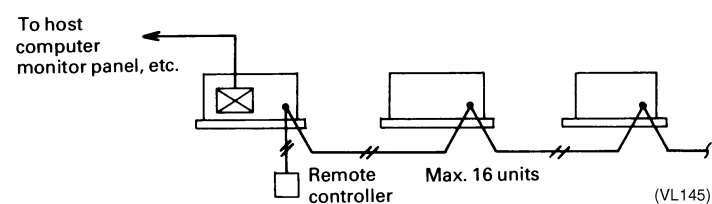
Various remote control (remote control mode, remote temperature setting, display of operation, display of malfunction) can be carried out by mounting this optional accessory in the indoor unit. Up to 64 groups of indoor units can be monitored and controlled all at once by one adaptor PC board. The wiring adaptor for electrical appendices cannot however be used in combination with other optional controllers for centralized control (central remote controller, unified on/off controller, schedule timer, DDS, etc.).

5.1.1 Outline of System

1. Individual control (controls indoor units individually)



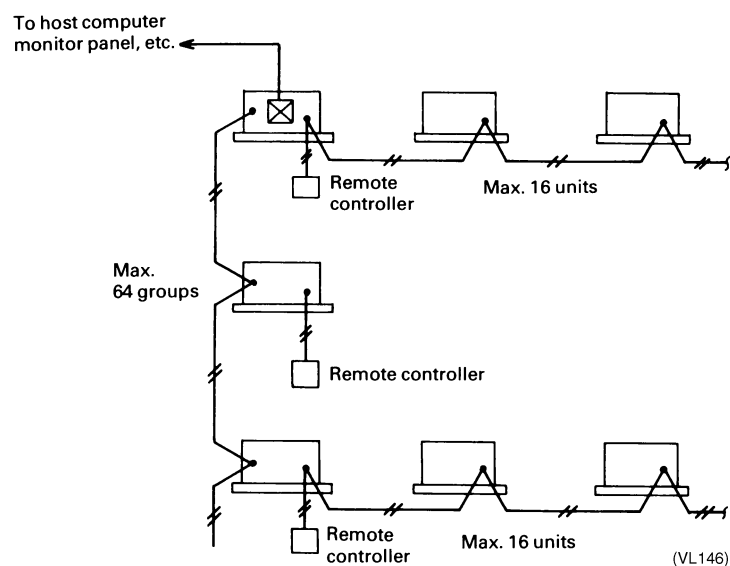
2. Group control (Simultaneously controls group-controlled indoor units [max. 16 units] all together)



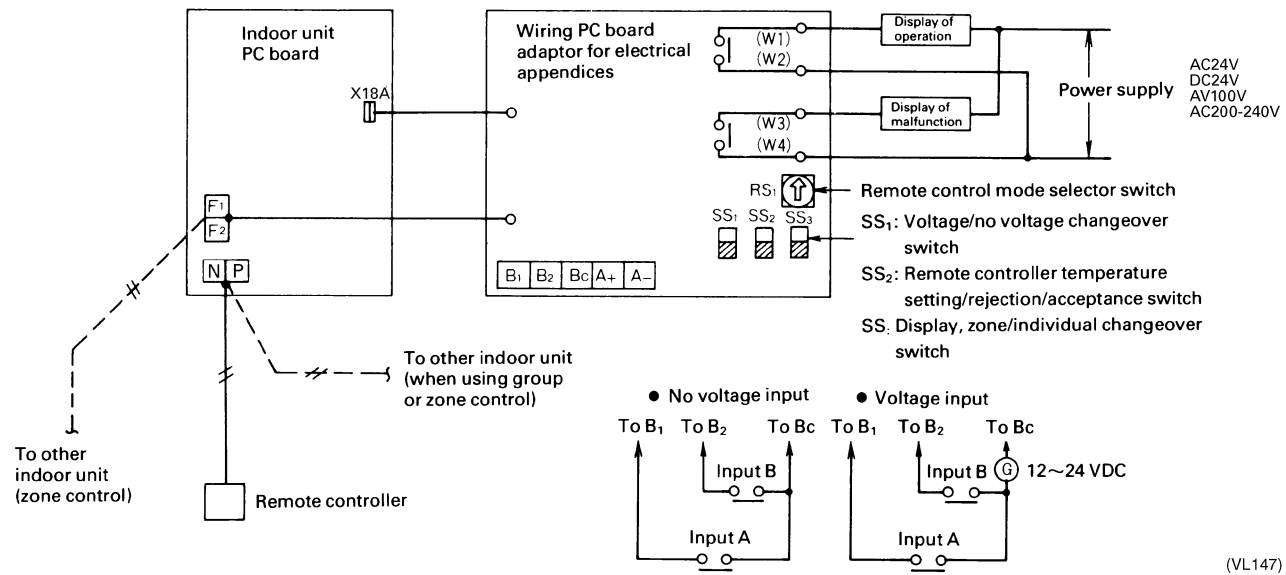
- ◆ In the case of individual display, install a wiring PC board adaptor for electrical appendices in the indoor unit.

3. Zone control

Simultaneously controls up to 64 groups consisting of up to 16 group-controlled indoor units each all together (max. 64 groups × 16 units = 1,024 units).



5.1.2 Wiring



Operation Signal

- Combined use of constant contact (a) and instantaneous contact (a)
- Combined use of voltage 12~24 VDC, no voltage

Control Mode

- Remote control mode selector switch (Control contents differ according to input mode. See the following page for details.)

Display Signal Fetch

- Display of malfunction signal (no voltage contact [a])
 - Display of operation (no voltage contact [a])
- Remote temperature setting (Can be set from 16~32°C.)



Note:

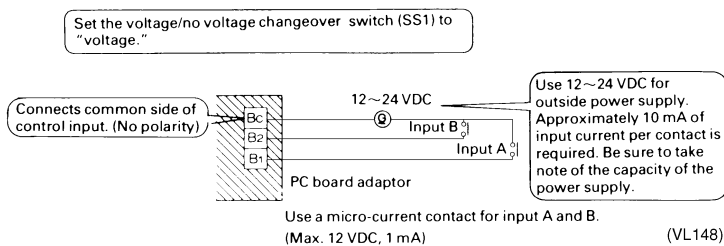
- ◆ For voltage input, approximately 10 mA of input current per contact is required.
- ◆ In the case of input, use a micro-current contact as the input contact.
- ◆ There is no polarity for voltage input.
- ◆ Temperature input is resistance value input of 0~135Ω.

5.1.3 Wiring to Outside (Host Computer Monitor Panel, Etc.)

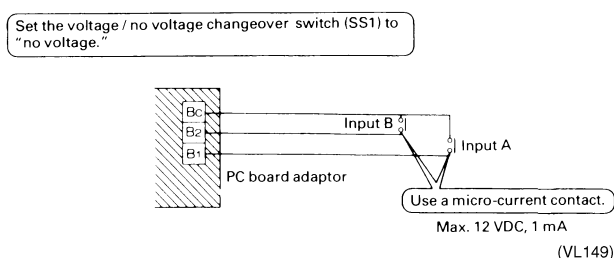
Input for Remote Control (Control Mode)

Wire according to the following procedure depending on whether input is "voltage input" or "no voltage input."

■ Voltage input

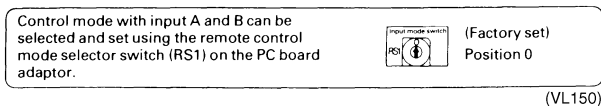


■ No voltage input



Wiring specifications: Min. 0.18 mm² sheathed vinyl cord, length within 150 m

■ Setting of remote control mode selector switch (RS1)



A) Set to position 0 (direction of arrow) if input is to be disregarded for connection check, etc., or if using as dedicated display function for individual display (connected to any unit other than unit No. 0).

B) If controlling operation using constant input for input A:

Position	Function	Contents of input A when ON	Contents of input A when OFF
1	Remote controller inhibit	ON (remote controller normally inhibited)	OFF + remote controller inhibited
2	Centralized priority	ON + remote controller inhibited	
3	OFF by remote controller enabled	ON + OFF by remote controller only enabled (ON by remote controller inhibited)	
4	Remote controller enabled / OFF	Remote controller only enabled (ON by remote controller inhibited)	

* Input B is for forced OFF. When ON, contents become OFF + ON/OFF control impossible by remote controller, and input A is disregarded. When OFF, even when input A is ON, the contents when input A are not achieved; input A must be input over again.

C) If controlling operation using instantaneous input for input A:
(Use instantaneous input of min. 200 msec ON time.)

Position	Function	Contents of input A
5	Remote controller inhibit	(When ON) Operation stops when input A is ON (When OFF) Runs when input A is ON
6	Individual	(When ON) Operation stops when input A is ON (When OFF) Runs when input A is ON (Remote controller normally enabled)

* Input B has a forced OFF function (when input B is ON, operation stops and input A is disregarded). When input B is OFF, function of input A is restored.)

Wiring Adaptor

SI-E-05C

* If demand controlling using input B:

Position	Function of input A	Function of input B
C	Remote controller inhibit (Same as position 5)	Forced thermostat OFF command
D		Forced temperature shift
E	Individual (Same as position 6)	Forced thermostat OFF command
F		Forced temperature shift

* Forced thermostat OFF command

Forces indoor unit to run the fan only.

* Forced temperature shift

Raises preset temperature 2°C when cooling, and lowers 2°C when heating.



Note:

For zone control, because the units run when RY1 is ON and go off when RY1 is OFF, when in the last command priority mode, some units remain off during operation. At this time even if input A is ON, operation goes off and all units stop running.

D) If operating by two inputs using instantaneous input for input A and B (Use instantaneous input of min. 200 msec ON time.):

Position	Function	Contents of input A when ON	Contents of input B when ON
7	Remote controller inhibit	ON (remote controller normally inhibited)	OFF + remote controller inhibited
8	Centralized priority	ON + remote controller enabled	
9	OFF by remote controller enabled	ON + OFF by remote controller only enabled (ON by remote controller inhibited)	
A	Remote controller enabled / OFF	Remote controller only enabled (ON by remote controller inhibited)	
B	Individual	ON (remote controller normally enabled)	OFF (remote controller normally enabled)



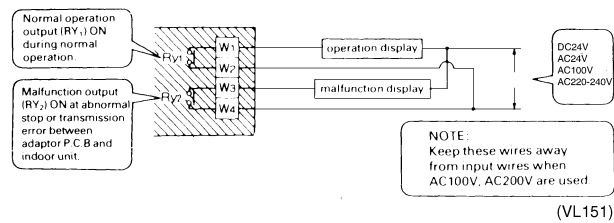
Note:

With positions 7~A, if constant input is used there is a forced OFF function (input A disregarded). With position B, constant input cannot be used for input B.

Display Signal Fetch

Normal operation output terminals (W1, W2) and malfunction output terminals (W3, W4) are no voltage, constant contact output.

(Allowable current is 10 mA~3 A per contact.)

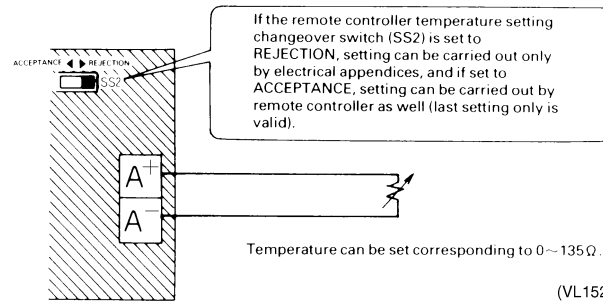


Output for each system is as given in the table below.

System	Output	Both RY1 and RY2 OFF	Only RY1 ON	Only RY2 ON
Individual control or individual display	OFF	OFF	Normal operation	Stop due to malfunction or transmission malfunction between adaptor PC board and indoor unit
Group control	OFF	OFF	All normal operation	Even one unit stopped due to malfunction or transmission malfunction between adaptor PC board and indoor unit
Zone control	All OFF	All OFF	Even one unit operating normally without malfunction	Even one unit stopped due to malfunction or transmission malfunction between adaptor PC board and indoor unit

Temperature Setting Input

For wiring specifications, we recommend a min. 1.25 mm² sheathed vinyl cord, length within 70 m.



The relationship of preset temperature and resistance is as given in the table below.

Preset temperature (°C)	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Resistance (Ω)	0 3.4	5 11.6	13.8 20	22.4 28.4	31 36.4	39.4 44.8	48.2 52.8	56.6 61.2	65.2 69.4	73.8 77.8	82.4 85.8	91 94	99.4 102.2	108.6 110.4	117.2 119.2	125.8 127	134.2 140

i Note: Resistance given in the table includes resistance of the wiring.

5.1.4 Wiring Adaptor PC Board for Electrical Appendices Optional Accessories and Mounting Position

(See adaptor for wiring for details on mounting position.)

Model name	FXYC-K	FXYK-K FXYS-K FXYA-K FXYL-K FXYM-K	FXYF-K	FXYH-K
Adaptor PC board optional accessories name	KRP2A61	KRP2A61	KRP2A62	KRP2A62
Adaptor PC board mounting box optional accessories name	KRP1896	—	KRP1A90	
Adaptor PC board and mounting box storage position				KRP1B93

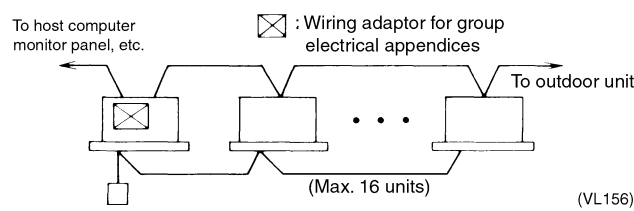
i Note: The mounting position of mounting boxes FXYF-H is inside the unit if using one adaptor PC board. If equipped with an air cleaner unit, however, the mounting box is mounted on the side of the main body. If using two types of adaptor PC boards, two mounting boxes must be mounted on the side of the main body.

5.2 Wiring Adaptor for Group Electrical Appendices (KRP4A51 / KRP4A52 / KRP4A53)

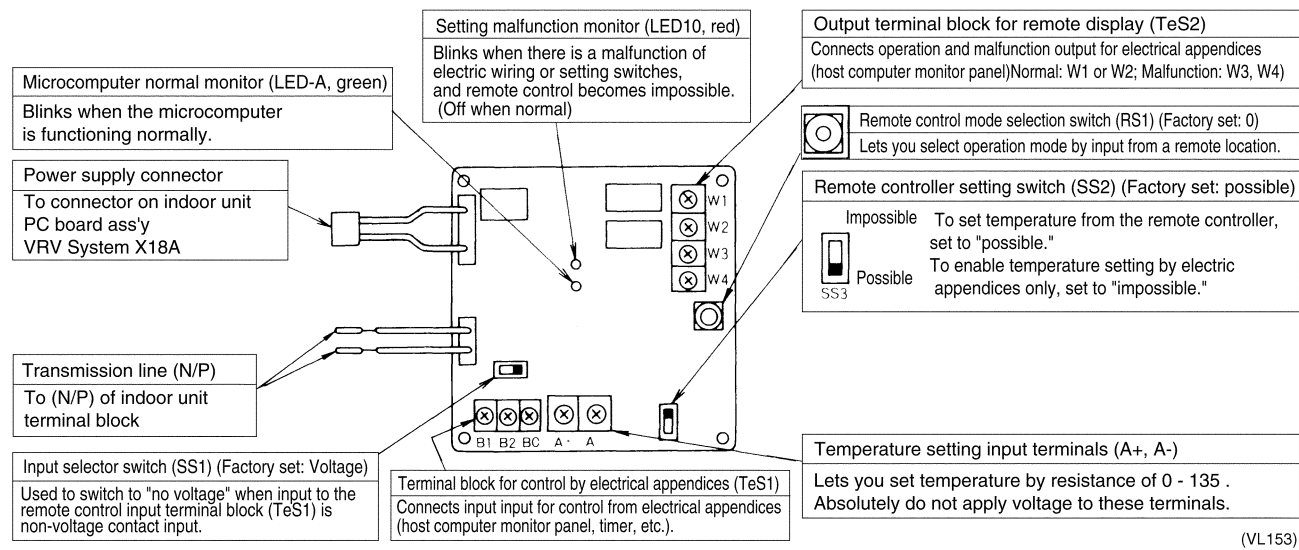
The wiring adaptor for group electrical appendices cannot be used in combination with a central remote controller, unified ON/OFF controller, schedule timer, data station, etc.

<Objective / use>

The wiring adaptor for group electrical appendices is used for turning units on/off and setting temperature from a remote location, display of operation, and invoking display of malfunction. A single adaptor enables unified control of groups connected to the remote controller transmission line (N/P).



5.2.1 Part Names and Functions

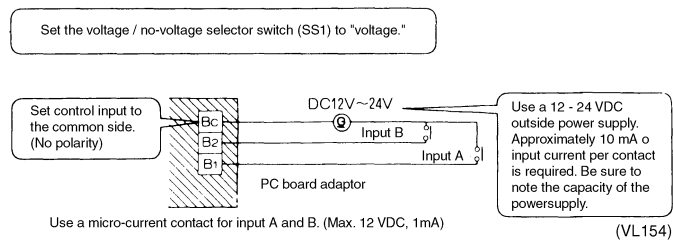


5.2.2 Wiring to Outside (Host Computer Monitor Panel, Etc.)

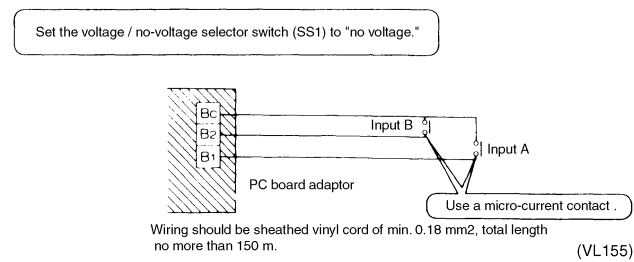
Input for Control by Electric Appendices (On/Off Control)

Wire as described below depending on whether input is "voltage input" or "non-voltage input."

■ Voltage input



■ No-voltage input



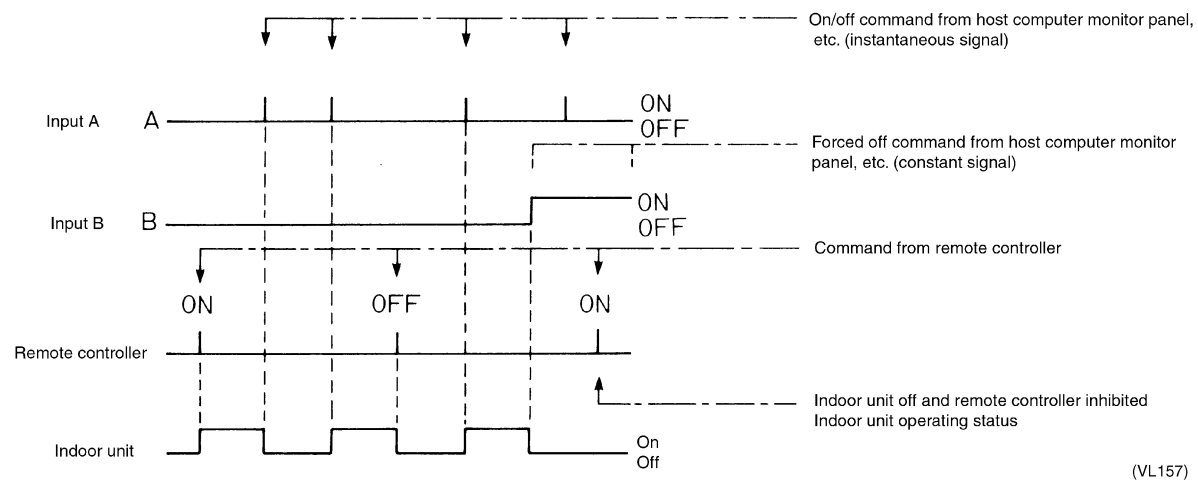
■ Remote control mode selector switch (RS1) setting

Position	Function	Operation by input mode A and B	
		Input A (between B1~Bc)	Input B (between B2~Bc)
0	Disregard input	—	—
1	Remote controller inhibited	Operates by ON and stops by OFF	Stops by ON, remote controller inhibited Disregard input A Input A permitted by OFF
2	Central priority	Operates by ON (remote controller permitted) and stops by OFF (remote controller inhibited)	
3	Remote controller permitted / inhibited	Same as mode 1 (OFF by remote controller always permitted)	
4	Remote controller permitted / inhibited / OFF	ON by remote controller permitted, stops by OFF (remote controller inhibited)	
5	Remote controller inhibited	ON / OFF (cyclic)	
6	Individual	Same as mode 5 (only OFF by remote controller always permitted)	*Stops by ON, remote controller inhibited Remote controller permitted by OFF
7	Remote controller inhibited	Operates by ON	Stops by ON
8	Central priority	Operates by ON (remote controller permitted)	Inhibited by ON (remote controller inhibited)
9	OFF by remote controller permitted	Same as mode 7 (OFF by remote controller always permitted)	Same as mode 7
A	Remote controller permitted / inhibited / OFF	ON by remote controller permitted	Remote controller inhibited by ON
B	Individual	Same as mode 7 (remote controller always permitted)	Same as mode 7
C	Mode 5 + energy efficiency control	Same as mode 5	Forced OFF by thermostat by ON
D	Mode 5 + room temperature setting shift		Room temperature shift operation by ON
E	Mode 6 + energy efficiency control	Same as mode 6	Forced OFF by thermostat by ON
F	Mode 6 + room temperature setting shift		Room temperature shift operation by ON

i Note: Forced off (disregard input A) is effected when using input B constant input at positions 7~A. Input B constant input cannot be used by B.

◆ Example of when the remote control selector switch (RS1) is set to No. 6

Below are remote control commands relative to input signal and indoor unit time chart

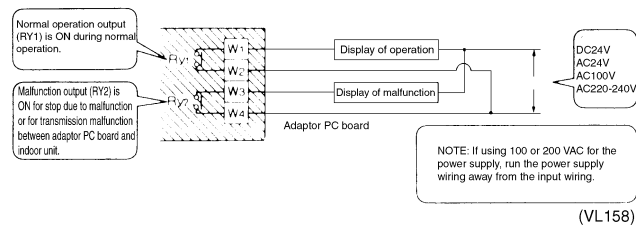


Wiring Adaptor

SI-E-05C

Display Signal Fetch

Normal operation output terminals (W1, W2) and malfunction output terminals (W3, W4) are no voltage, constant contact output.
(Allowable current is 10 mA~3 A per contact.)

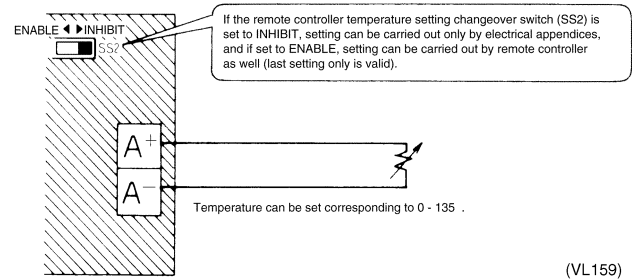


Output for each system is as given in the table below.

Output	Both RY1 and RY2 OFF	Only RY1 ON	Only RY2 ON
System			
Individual control or individual display Group control	OFF	All normal operation	Even one unit stopped due to malfunction or transmission malfunction between adaptor PC board and indoor unit

Temperature Setting Input

For wiring specifications, we recommend a min. 1.25 mm² sheathed vinyl cord, length within 70 m.



The relationship of preset temperature and resistance is as given in the table below.

Preset temperature (°C)	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Resistance (Ω)	0 ~3.4	5 ~11.6	13.8 ~20	22.4 ~28.4	31 ~36.4	39.4 ~44.8	48.2 ~52.8	56.6 ~61.2	65.2 ~69.4	73.8 ~77.8	82.4 ~85.8	91 ~94	99.4 ~102.2	108.6 ~110.4	117.2 ~119.2	125.8 ~127	134.2 ~140

i Note: Resistance given in the table includes resistance of the wiring.

5.2.3 Applicable Models and Whether Mounting Box is Required or Not

Model name	Adaptor	Mounting box / plate	Mounting position
FXYC-K FXYK-K FXYM-K FXYL(M)-K FXYA-K	KRP4A51	Not required	Mounted inside electrical parts box of main unit
FXYH-K	KRP4A52	KRP1B93	Mounted outside main unit
FXYF-K	KRP4A53	KRP1A90	Mounted outside main unit

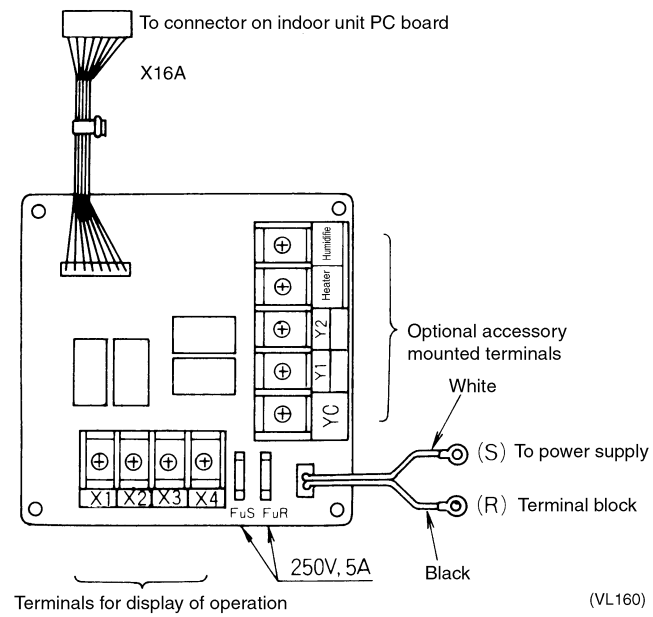
5.3 Adaptor for Wiring (KRP1B61 / KRP1B2 / KRP1B3)

<Objective / use>

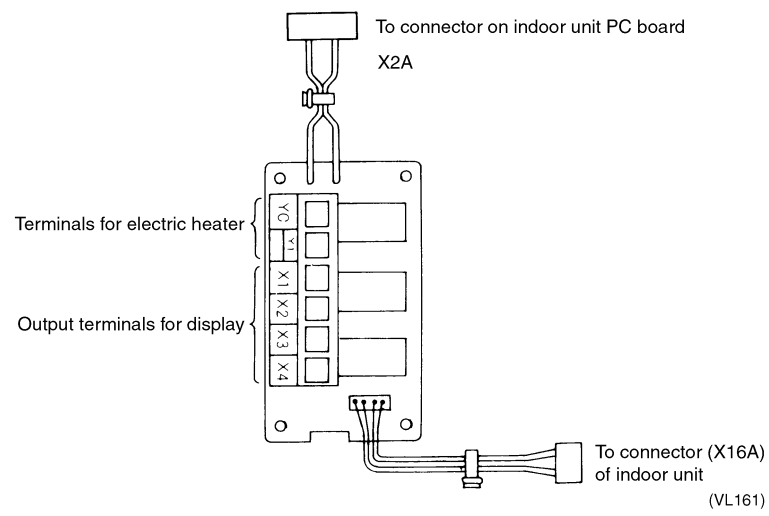
Enables you to fetch compressor and fan operation output when optional accessories (auxiliary electric heater, humidifier, fresh air intake kit [with fan duct]) are installed.

5.3.1 Part Names and Functions

KRP1B61-KRP1B2



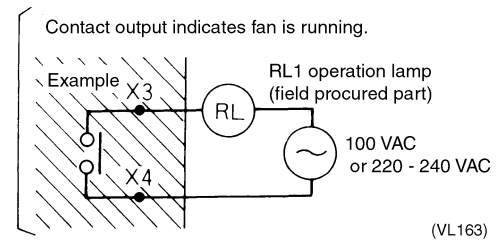
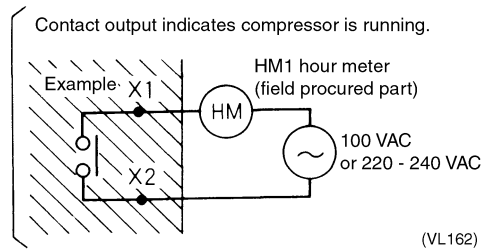
KRP1B3



5.3.2 Applicable Models and Whether Optional Accessories are Required or Not

Model name	Adaptor	Mounting box / plate	Electric heater	Natural evaporation humidifier	Ultrasonic humidifier	Other required optional accessories	Mounting position
FXYC-K	KRP1B61	Not required	○	○	—	—	Mounted inside electrical parts box of main unit
FXYK-K			○	○	—	—	
FXYC-K			○	○	○	Hot water heater	
FXYM-K			○	○	○	Hot water heater	
FXYL(M)-K			○	—	—	—	
FXYH-K			○	—	—	—	
FXYF-K	KRP1B2	KRP1A90	○	○	—	Duct fan	Mounted inside main unit
FXYA-K	KRP1B3	Not required	○	—	—	—	Mounted inside electrical parts box of main unit

5.3.3 Operation Display Fetch

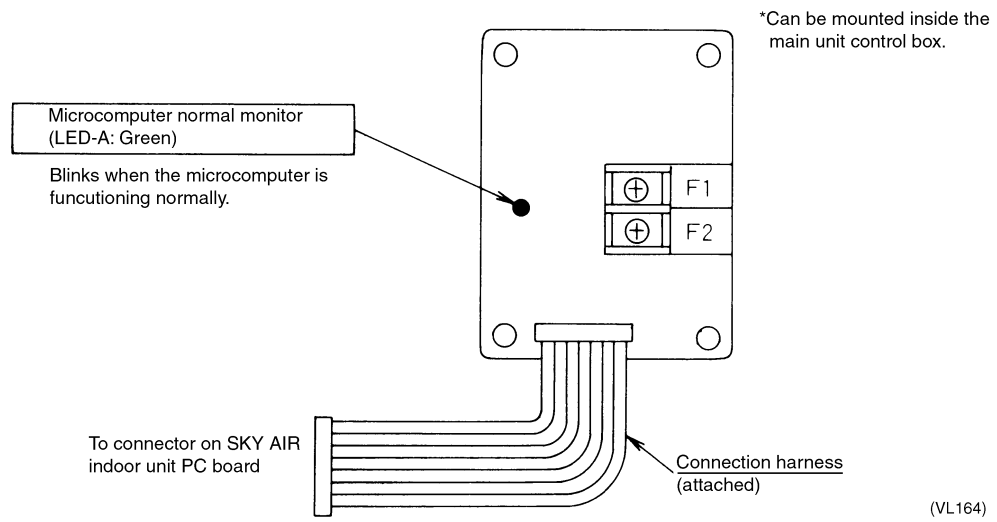


5.4 Interface Adaptor for Skyair Series (DTA102A52)

<Objective / use>

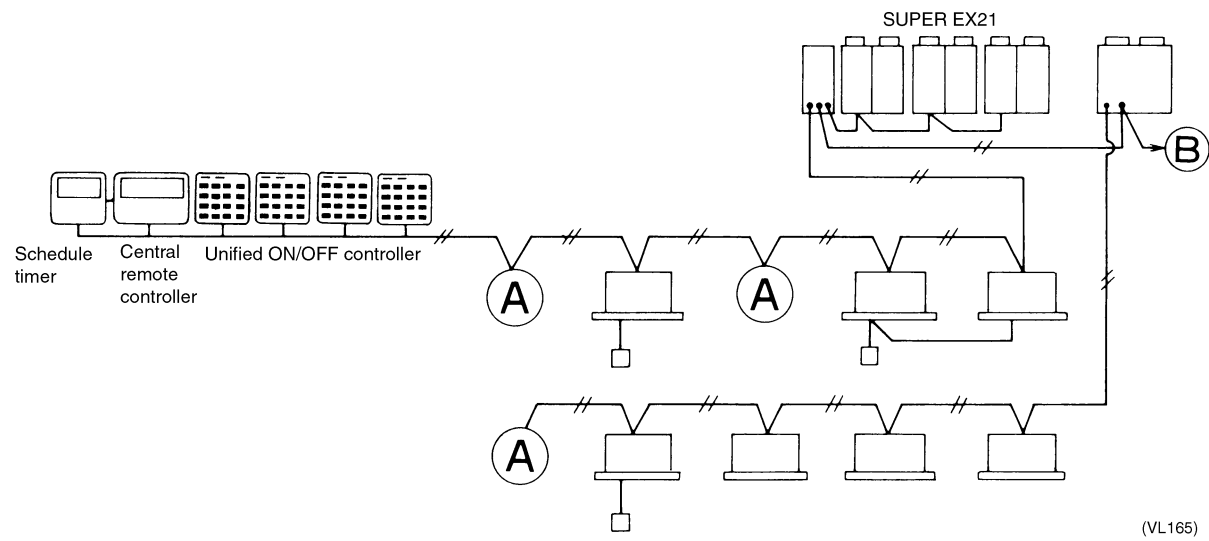
The interface adaptor for SKY AIR series lets you connect optional controllers for centralized control (central remote controller, unified ON/OFF controller, schedule timer) with SKY AIR.

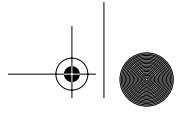
■ Part Names and Functions



<System Outline>

If using VRV System Inverter in common with transmission line, connect either A indoor-to-outdoor unit transmission wiring or B outdoor-to-outdoor unit transmission wiring.





Wiring Adaptor

SI-E-05C

5.4.1 Connection

Interface adaptor for SKY AIR series

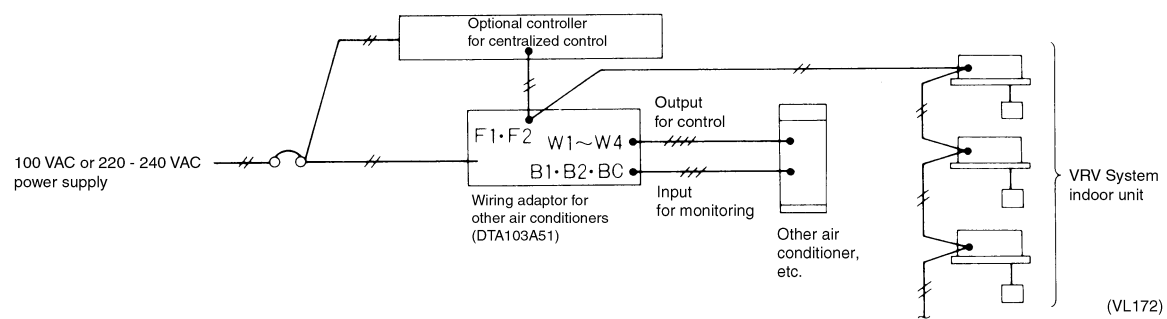
	Independent control	Group control	HRV energy efficient operation
Pair	<p>Wired remote controller Wireless remote controller (VL166)</p>	<p>Max. 16 units (VL167)</p>	<p>(VL168)</p>
Multi	<p>Individual operation Simultaneous operation Required for each indoor unit (VL169)</p>	<p>Individual operation Simultaneous operation Max. 16 units with simultaneous operation type counted as one unit (VL170)</p>	<p>Simultaneous operation (VL171)</p>



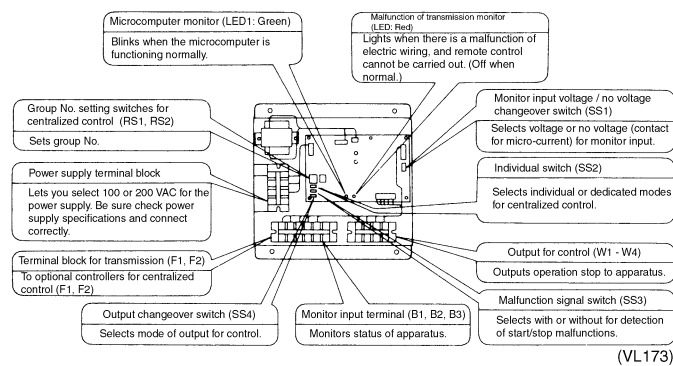
5.5 Wiring Adaptor for Other Air Conditioners (DTA103A51)

This optional accessory is a contact input/output interface adaptor for optional controllers for centralized control and apparatus that cannot be directly connected to them. Connecting this optional accessory to an optional controller for centralized control lets you turn the apparatus on/off by optional remote controller for centralized control and monitor normal operation and malfunctions. This optional accessory can be connected with a power consumption counting unit or data station.

5.5.1 Outline of System



5.5.2 Wiring



- Setting of group No. for centralized control
Set from among 1~4 with setting switch RS1.
Set from among 0~9 and A~F with RS2.
Be careful not to duplicate a group No. of other apparatus when setting.

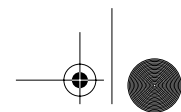
Output for Control

- ON output terminals (W1, W2) and OFF output terminals (W3, W4) are no voltage contact output.
- Contact specifications are 2 A~1 mA for 220~240VAC, and 3 A~1 mA for 5~24 VDC.

Output mode changeover switch SW3		Ry1	Ry2
Constant	Instruction from optional controller for centralized control is ON.	ON	OFF
	Instruction from optional controller for centralized control is OFF.	OFF	ON
Instantaneous	Instruction from optional controller for centralized control is ON.	(ON)	OFF
	Instruction from optional controller for centralized control is OFF.	OFF	(ON)

(ON): Instantaneous output of 1 second ON

- An adaptor for wiring is required for remote control in order to receive output for control of wiring adaptor for other air conditioners such as ordinary air conditioner, etc.

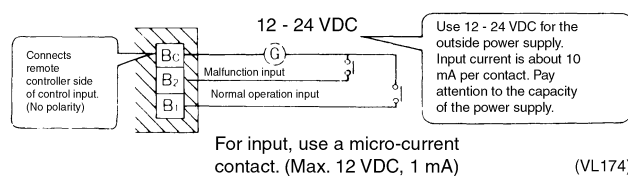


Wiring Adaptor

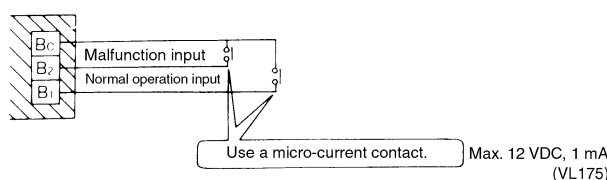
SI-E-05C

Input for Monitoring Wire according to the following procedure depending on whether input is “voltage” or “no voltage.”

- For voltage input:
Set the voltage / no voltage changeover switch (SS1) to “voltage.” (Factory set setting complete)



- For no voltage input:
Set the voltage / no voltage changeover switch (SS1) to “no voltage.”



- If you want to connect output which is to be ON when apparatus is operating normally, disconnect the short circuit wire between B1 and BC and connect output of the apparatus here.
- Connect output which is to be ON when apparatus is malfunctioning between B2 and BC. (You can fetch stop malfunction in the case of stop malfunction.)
- When operating from optional controllers for centralized control, if between B2 and BC is ON or stop malfunction with / without switch (SS3) is set to “with,” in the case of between B1 - BC being ON, optional controllers for centralized control display a malfunction (malfunction code A1).
- After switching from OFF to ON with an optional controller for centralized control, it takes 10 - 30 for the monitor to display a malfunction.

Individual Changeover Switch (SS2)

Switch for toggling between individual mode and dedicated central mode (stop cannot be effected from other air conditioner).
For “without individual,” stop can be effected from optional central controller only.
For “with individual,” stop can be effected from other air conditioner as well.
(Factory set is “without individual.”)

Malfunction Signal Switch (SS3)

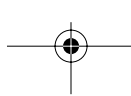
Switch for carrying out malfunction detection for stop operation from optional central controller.
In the case of “with stop malfunction,” if operation concerning stop does not follow, the optional central controller carries out display of malfunction.
In the case of “without stop malfunction,” even if operation concerning stop does not follow, the optional central controller does not carry out display of malfunction.
(If SS2 is set to “with last command priority,” this switch becomes inoperable.)
(Factory set is “without stop malfunction.”)

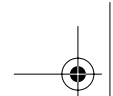
Output Changeover Switch (SS4)

Switch for toggling relay output between constant and instantaneous.
(Factory set is “instantaneous.”)

- Display of optional controllers for centralized control that make monitor input status by combination of various switches

Combination	Setting	Individual	Stop malfunction	Central display when there is an ON instruction from optional controller for centralized control		
				With ON input	Without ON input	With malfunction input
1	With	With	With	ON	OFF	Malfunction
2			Without			
3	Without	With	With	ON	Malfunction	Malfunction
4			Without	ON	ON	Malfunction





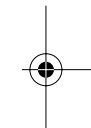
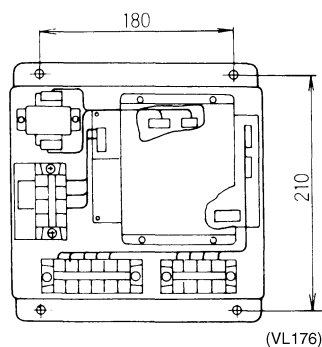
SiE-05C

Wiring Adaptor



5.5.3 Mounting of DTA103A51

- Storage box is field supplied.
- Outer dimensions: 230(W)x230(D)x60(H)

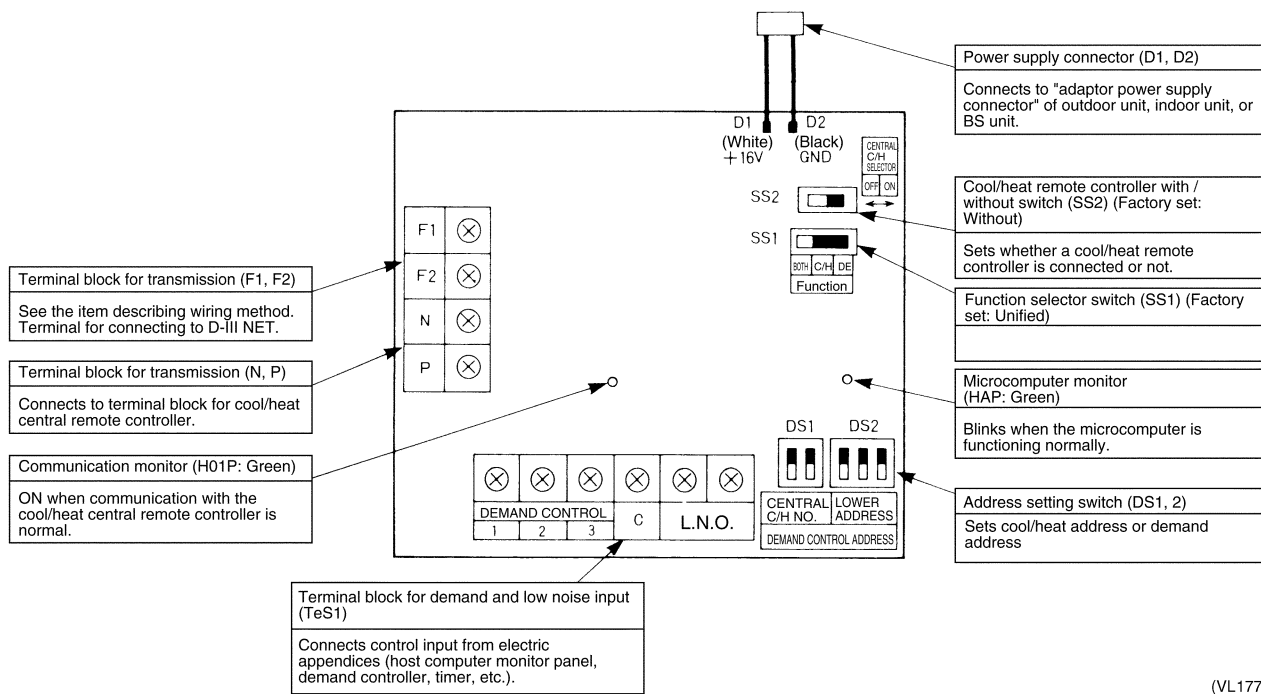


5.6 External Control Adaptor for Outdoor Units (DTA104A61 · DTA104A62)

Objective/use

By adding an adaptor for outside control of outdoor units to BS units or indoor units connected in a DIII-NET, you can simultaneously select cool/heat mode for several outdoor units in the system, and it enables demand control and low noise control.

5.6.1 Part Names and Functions



(VL177)

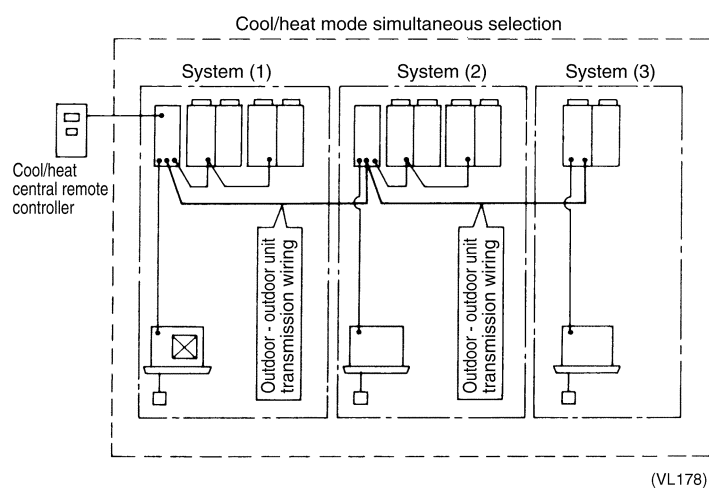
5.6.2 Cool/Heat Mode Unified Selection

(For Detailed Example of Wiring, See the Page Describing Cool/Heat Mode Control.)



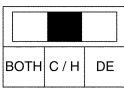

Refer to "Cool/Heat Mode Switching" on P290.

<System Outline>



(VL178)

<Settings of Switches on The PC Board Adaptor>

- ◆ SS1  C / H "BOTH" is selected when demand control is carried out at the same time.
- ◆ SS2  OFF
- ◆ DS1-2 Set the same address as the cool/heat mode address of the function unit. (VL179)

i Note: For PLUS Series
Set the SS1 cool/heat selector switch on the function unit to "outdoor." You must also set cool/heat selector "master" or "slave" by pushbutton switch.

5.6.3 Demand / Low Noise Control

Connecting control input to the adaptor for outside control of outdoor units enables demand and low noise control.

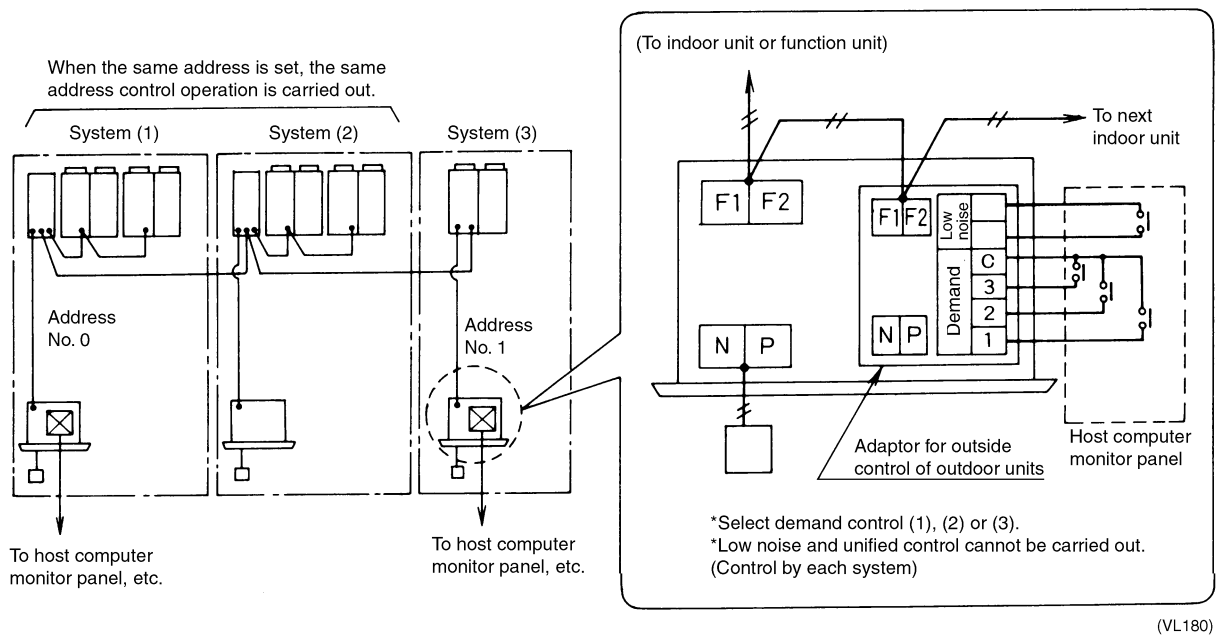
Demand Control (Figures Indicate Demand Rate)

When short circuit between (1) and (C): Approx. 70% as a guideline
When short circuit between (2) and (C): Approx. 40% as a guideline
When short circuit between (3) and (C): Forced fan operation

Low Noise Control (Outdoor Unit)

Running noise can be reduced by 2~3dB by controlling capacity of outdoor unit.

<System Outline>

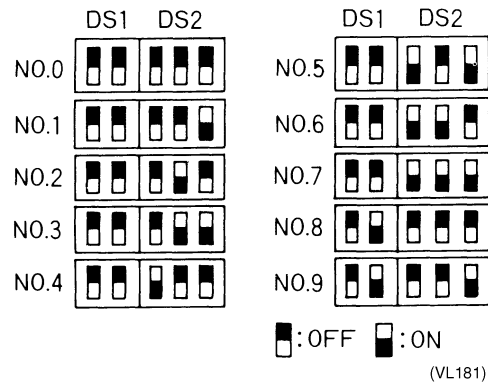


Wiring Adaptor

SI-E-05C

Common Address Setting (DS1 / DS2)

Decide the address for each control unit from 0~9 and set.



Note:

1. Setting is within 8 groups when using a cool/heat central remote controller. Set from No. 0~No. 7.
2. Be sure to make the address No. of the PC board adaptor described above match the address No. of function unit or outdoor unit (BS unit if using cool/heat simultaneous selection type).
(For detailed settings, see the installation manual.)



Refer to the INSTALLATION INSTRUCTION.

Common Control Input Specifications

- Input signal
Constant contact a
Input current is approx. 12 - 24 VDC, 10 mA per contact.
Use a micro-current contact for the relay contact.
(Max. 12 VDC, 1 mA)
- Outside wiring specifications
Recommended electric wiring: Sheathed vinyl cord or cable 0.75~1.25 mm² (double core)
Wiring length: Max. 150 m
Run separate from power line in order to prevent malfunction.

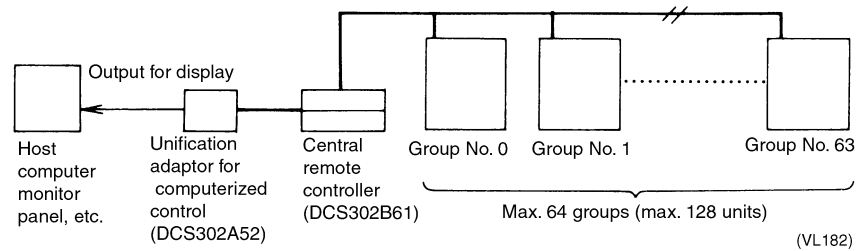
5.7 Unification Adaptor for Computerized Control (DCS302A52)

Connecting a unification adaptor for computerized control to the central remote controller enables unified display on the host computer monitor panel (display of operation and malfunction), and unified control from the host computer monitor panel (on/off commands).

5.7.1 System Outline

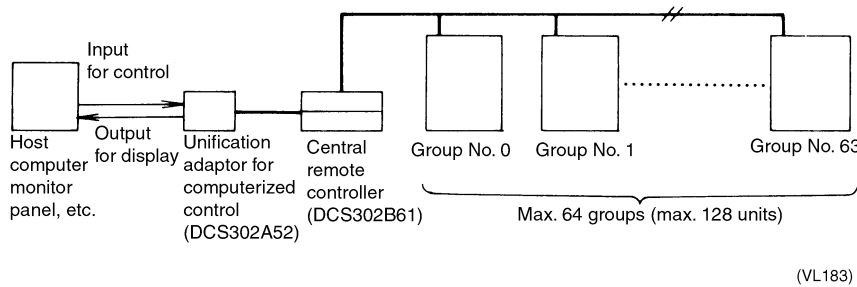
Unified Display

Displays operation and malfunctions of all indoor units controlled by central remote controller on a host computer monitor panel.

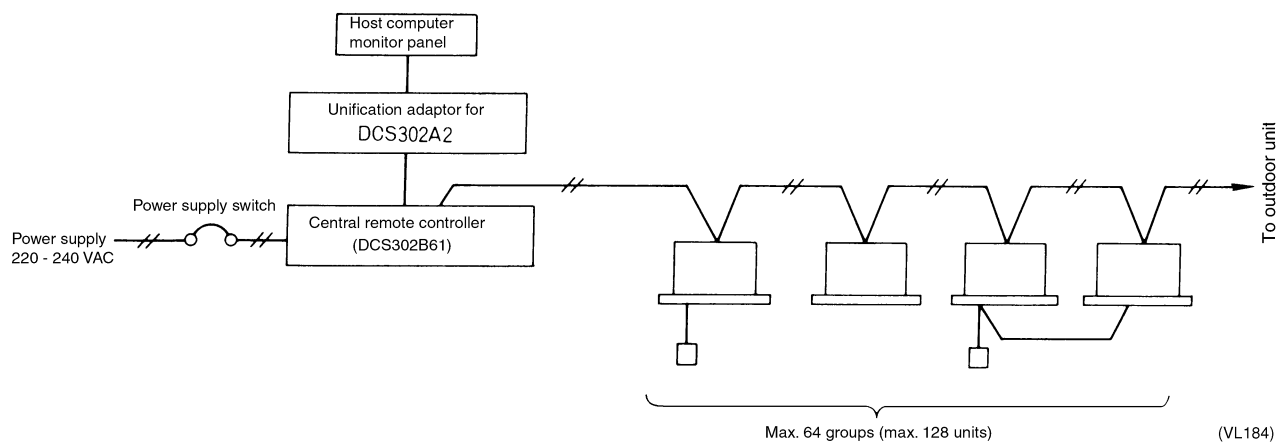


Unified Control

Enables unified display of all indoor units controlled by central remote controller and unified ON/OFF control from a host computer monitor panel.



5.7.2 Wiring General

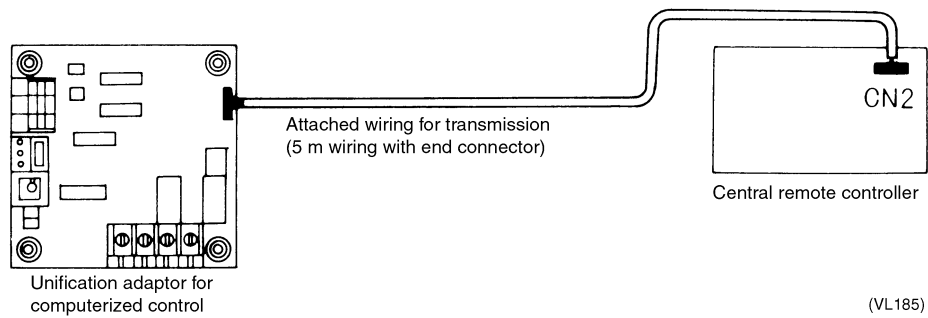


Wiring Adaptor

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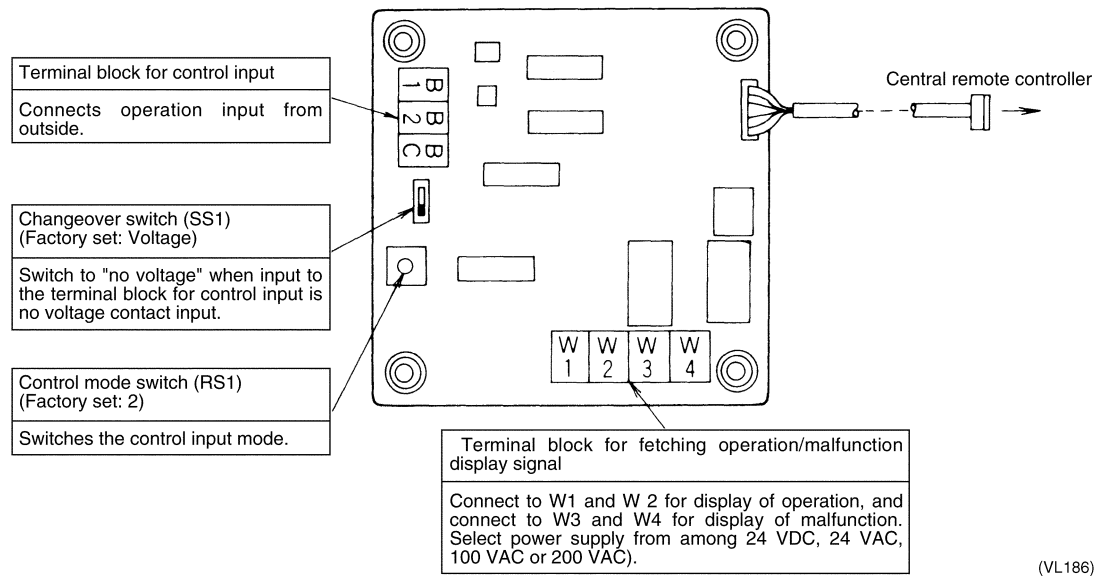
Wiring to Central Remote Controller

Connect the unification adaptor for computerized control to connector No. CN2 of the central remote controller with the attached wiring for transmission.



5.7.3 Wiring

Part Names and Functions



External Control Input (Wiring to Host Computer Monitor Panel, Etc.)

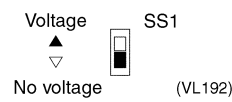
Specifications of wiring for transmission
◆ 0.75~1.25 mm² sheathed vinyl cord or cable (double core), Max. length 150 m

5.7.4 Control Input (Unified ON/OFF Control)

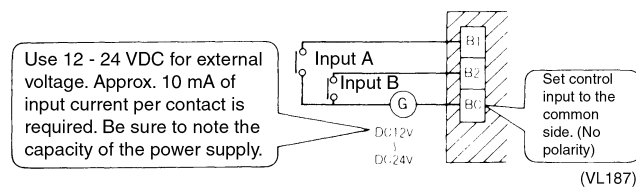
Wire as described below according to whether input is "voltage" or "no voltage."

Contact a Input for Both Input A and B (Voltage)

Set the changeover switch (SS1) to "voltage."
(Factory set: Voltage)

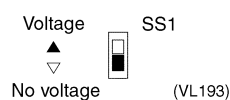


■ The black part shows the position of the switch.

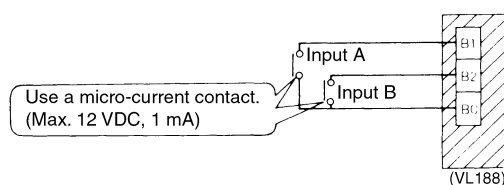


Contact a Input for Both Input A and B (No Voltage)

- Set the changeover switch (SS1) to "no voltage."
(Factory set: Voltage)

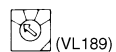


- The black part shows the position of the switch.



5.7.5 Control Mode Switch (RS) Setting

You can select control mode at input A and B with the control mode switch on the PC board adaptor.
(Factory set: 2)



1. If you want to disregard input for wiring check, set to position 1 (direction of arrow).
2. If operating using input A for constant input:

Position	Input A
2	Unified ON by switching from OFF to ON
	Unified OFF by switching from ON to OFF

* Input B is disregarded.

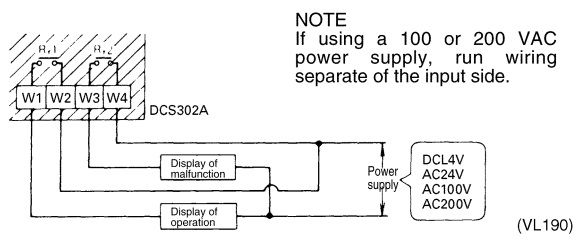
3. If operating using instantaneous input for input A and input B, use instantaneous input of at least 400 msec ON time.

Position	Input A	Input B
3	ON: Unified ON	ON: Unified OFF

Set all switches before turning on the power supply.

External Control Input (Wiring to Host Computer Monitor Panel, Etc.)

- Fetching the display signal
Normal operation output terminals (W1, W2) and malfunction output terminals (W3, W4) are for contact output with no voltage. (Allowable current per contact is 10 mA~3 A.)



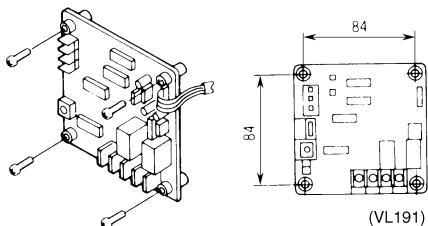
Output is as described below.

RY1 and RY2 both OFF	RY1 only ON	RY2 only ON
All indoor units are stopped.	No malfunction has occurred and at least one unit is operating.	At least 1 unit has stopped due to malfunction, or a malfunction of transmission has occurred between central remote controller and indoor unit.



5.7.6 Installation of DCS302A2

- Install inside the control panel in the same place as the central remote controller in the field. (Length of attached wiring is approx. 5 m.)
- Fasten securely with the attached screws.



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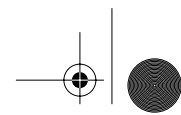
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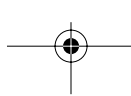
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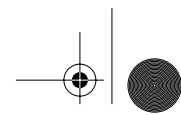
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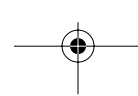
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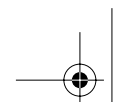
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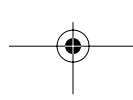
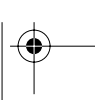
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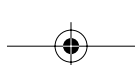
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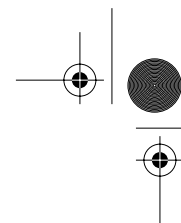
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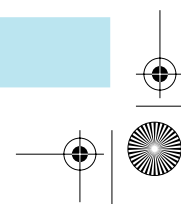
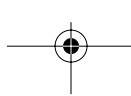
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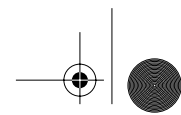
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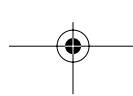
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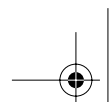
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