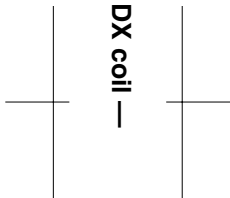


Service Manual

Heat Reclaim Ventilator - with DX coil -

**[Applied Models]**

VKM 50GBV1
VKM 80GBV1
VKM 100GBV1
VKM 50GBMV1
VKM 80GBMV1
VKM100GBMV1



Because page size under 60 mm cannot be set with Frame Maker, the data is made like this. When you print it out, adjust the width of the spine of the book as necessary.

Revision History

Month / Year	Version	Revised contents
11 / 2013	SiBE711307E	First edition
10 / 2018	SiBE711307EA	Correction of model name of high efficiency filter

Warning

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

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

Cautions on product corrosion

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

Dealer**DAIKIN INDUSTRIES, LTD.**

Head Office:
Umeda Center Bldg., 2-4-12, Nakazaki-Nishi,
Kita-ku, Osaka, 530-8323 Japan

Tokyo Office:
JR Shinagawa East Bldg., 2-18-1, Konan,
Minato-ku, Tokyo, 108-0075 Japan

<http://www.daikin.com/products/ac/>

©All rights reserved

Heat Reclaim Ventilator - with DX coil -



VKM 50GBV1
VKM 80GBV1
VKM 100GBV1
VKM 50GBMV1
VKM 80GBMV1
VKM100GBMV1

1. Safety Cautions	iv
1.1 Warnings and Cautions Regarding Safety of Workers	iv
1.2 Warnings and Cautions Regarding Safety of Users	vi
2. Icons Used	ix

Part 1 General Information 1

1. General Information	2
1.1 Features	2

Part 2 Product Specification 5

1. Product Specification	6
1.1 With DX coil & Humidifier	6
1.2 With DX coil	8
1.3 Humidifier	10

Part 3 Operation 11

1. Operation	12
1.1 Explanation for Systems	12
1.2 Features of VKM-GB(M)	15
1.3 Centralised Control System	17
1.4 Restrictions to Control System	18
1.5 Operation	19

Part 4 Maintenance 32

1. Maintenance	33
1.1 When to Perform Maintenance of the Air Filter	33
1.2 Seasonal Maintenance <VKM-GBMV1 Series Only>	33
1.3 Inspection of the Fan Motor	34
1.4 Replacing the Humidifier Element <VKM-GBMV1 Series Only>	34

Part 5 Control Functions	35
1. Control Functions	36
1.1 Explanation of Individual Functions	36
1.2 Layout of Switches on PCB	42
Part 6 Troubleshooting	44
1. Troubleshooting by Remote Controller	45
1.1 The INSPECTION / TEST Button	45
1.2 Self-diagnosis by Wired Remote Controller	45
2. Troubleshooting	46
2.1 Error Code Indication	46
2.2 Operation of the Remote Controller's Inspection / Test Operation Button	47
2.3 Indoor Air Thermistor (R1T) Error	48
2.4 Outdoor Air Thermistor (R2T) Error	49
2.5 Damper System Error (Alarm)	50
2.6 Damper System Error (Alarm)	51
2.7 PCB Defect	52
2.8 Fan Motor (M1F) (M2F) Lock, Overload	53
2.9 Power Supply Voltage Abnormality	56
2.10 Electronic Expansion Valve Coil (20E) Abnormality	57
2.11 Transmission Error (Between Indoor unit PCB and Fan PCB)	58
2.12 Heat Exchanger Thermistor (R5T) Abnormality	60
2.13 Gas Pipes Thermistor (R6T) Abnormality	61
2.14 Suction Air Thermistor (R7T) Abnormality	62
2.15 Coil Indoor Air Thermistor (R4T) Abnormality	63
2.16 Check Operation not Executed	64
2.17 Dedicated LCD Remote Controller	65
2.18 Data Transmission Error (between LCD Remote Controller and Master Unit)	66
2.19 Transmission Error between Remote Controller and Indoor Unit	67
2.20 Transmission Error between Main and Sub Remote Controllers	68
2.21 Excessive Number of Indoor Units	69
2.22 Address Duplication of Central Remote Controller	70
2.23 Transmission Error between Central Remote Controller and Indoor Unit	71
2.24 Transmission Error between Central Remote Controller and Indoor Unit	72
2.25 Master Unit PCB Assembly	73
2.26 Thermistor	74
2.27 Power Transformer	76
2.28 Damper Motor	77
Part 7 Field Setting	78
1. Field Setting	79
1.1 Field Setting and Test Run	79

Part 8 Appendix..... 83

1. Appendix 84

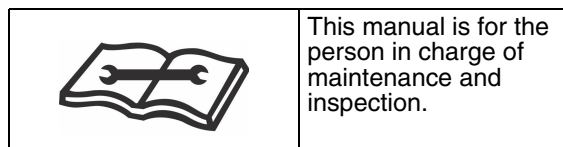
1.1 Wiring Diagram.....84

1.2 Piping Diagram.....86

1. Safety Cautions

Be sure to read the following safety cautions before conducting repair work.

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.



Caution Items

The caution items are classified into  **Warning** and  **Caution**. The  **Warning** items are especially important since death or serious injury can result 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.

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

1.1 Warnings and Cautions Regarding Safety of Workers

 Warning	
Do not store equipment in a room with fire sources (e.g. naked flames, gas appliances, electric heaters).	
Be sure to disconnect the power cable from the socket before disassembling equipment for repair. Working on equipment that is connected to the power supply may cause an electrical shock. If it is necessary to supply power to the equipment to conduct the repair or inspect the circuits, do not touch any electrically charged sections of the equipment.	
If refrigerant gas is discharged during repair work, do not touch the discharged refrigerant gas. Refrigerant gas may cause frostbite.	
When disconnecting the suction or discharge pipe of the compressor at the welded section, evacuate the refrigerant gas completely at a well-ventilated place first. If there is gas remaining inside the compressor, the refrigerant gas or refrigerating machine oil discharges when the pipe is disconnected, and it may cause injury.	
If refrigerant gas leaks during repair work, ventilate the area. Refrigerant gas may generate toxic gases when it contacts flames.	

 Warning	
Be sure to discharge the capacitor completely before conducting repair work. The step-up capacitor supplies high-voltage electricity to the electrical components of the outdoor unit. A charged capacitor may cause an electrical shock.	
Do not turn the air conditioner on or off by plugging in or unplugging the power cable. Plugging in or unplugging the power cable to operate the equipment may cause an electrical shock or fire.	
Be sure to wear a safety helmet, gloves, and a safety belt when working in a high place (more than 2 m). Insufficient safety measures may cause a fall.	
In case of R-32 and R-410A refrigerant models, be sure to use pipes, flare nuts and tools intended for exclusive use with R-32 and R-410A refrigerant. The use of materials for R-22 refrigerant models may cause a serious accident, such as a damage of refrigerant cycle or equipment failure.	
Do not mix air or gas other than the specified refrigerant (R-32, R-410A, R-22) in the refrigerant system. If air enters the refrigerant system, excessively high pressure results, causing equipment damage and injury.	

 Caution	
Do not repair electrical components with wet hands. Working on the equipment with wet hands may cause an electrical shock.	
Do not clean the air conditioner with water. Washing the unit with water may cause an electrical shock.	
Be sure to provide an earth/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 may cause injury.	
Be sure to conduct repair work with appropriate tools. The use of inappropriate tools may cause injury.	

 Caution	
Be sure to check that the refrigerating cycle section has cooled down enough before conducting repair work. Working on the unit when the refrigerating cycle section is hot may cause burns.	
Conduct welding work in a well-ventilated place. Using a welder in an enclosed room may cause oxygen deficiency.	

1.2 Warnings and Cautions Regarding Safety of Users

 Warning	
Do not store the equipment in a room with fire sources (e.g. naked flames, gas appliances, electric heaters).	
Be sure to use parts listed in the service parts list of the applicable model and appropriate tools to conduct repair work. Never attempt to modify the equipment. The use of inappropriate parts or tools may cause an electrical shock, excessive heat generation or fire.	
If the power cable and lead wires are scratched or have deteriorated, be sure to replace them. Damaged cable and wires may cause an electrical shock, excessive heat generation or fire.	
Do not use a joined power cable or extension cable, or share the same power outlet with other electrical appliances, since it may cause an electrical shock, excessive heat generation or fire.	
Be sure to use an exclusive power circuit for the equipment, and follow the local technical standards related to the electrical equipment, the internal wiring regulations, and the instruction manual for installation when conducting electrical work. Insufficient power circuit capacity and improper electrical work may cause an electrical shock or fire.	
Be sure to use the specified cable for wiring between the indoor and outdoor units. Make the connections securely and route the cable properly so that there is no force pulling the cable at the connection terminals. Improper connections may cause excessive heat generation or fire.	
When wiring between the indoor and outdoor units, make sure that the terminal cover does not lift off or dismount because of the cable. If the cover is not mounted properly, the terminal connection section may cause an electrical shock, excessive heat generation or fire.	

 Warning	
Do not damage or modify the power cable. Damaged or modified power cables may cause an electrical shock or fire. Placing heavy items on the power cable, or heating or pulling the power cable may damage it.	
Do not mix air or gas other than the specified refrigerant (R-32, R-410A, R-22) in the refrigerant system. If air enters the refrigerant system, excessively high pressure results, causing equipment damage and injury.	
If the refrigerant gas leaks, be sure to locate the leakage and repair it before charging the refrigerant. After charging the refrigerant, make sure that there is no leakage. If the leakage cannot be located and the repair work must be stopped, be sure to pump-down, and close the service valve, to prevent refrigerant gas from leaking into the room. Refrigerant gas itself is harmless, but it may generate toxic gases when it contacts flames, such as those from fan type and other heaters, stoves and ranges.	
When relocating the equipment, make sure that the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength or the installation work is not conducted securely, the equipment may fall and cause injury.	
Check to make sure that the power cable plug is not dirty or loose, then insert the plug into a power outlet securely. If the plug is dusty or has a loose connection, it may cause an electrical shock or fire.	
When replacing the coin battery in the remote controller, be sure to dispose 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 combustible gas leaks and remains around the unit, it may cause a fire.	
Check to see if parts and wires are mounted and connected properly, and if connections at the soldered or crimped terminals are secure. Improper installation and connections may cause excessive heat generation, fire or an electrical shock.	

 Caution	
If the installation platform or frame has corroded, replace it. A corroded installation platform or frame may cause the unit to fall, resulting in injury.	
Check the earth/grounding, and repair it if the equipment is not properly earthed/grounded. Improper earth/grounding may cause an electrical shock.	
Be sure to measure insulation resistance after the repair, and make sure that the resistance is 1 MΩ or higher. Faulty insulation may cause an electrical shock.	
Be sure to check the drainage of the indoor unit after the repair. Faulty drainage may cause water to enter the room and wet the furniture and floor.	
Do not tilt the unit when removing it. The water inside the unit may spill and wet the furniture and floor.	

2. Icons Used

The following icons are used to attract the attention of the reader to specific information.

Icon	Type of Information	Description
 Warning	Warning	A Warning is used when there is danger of personal injury.
 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 have to restart (part of) a procedure.
 Note:	Note	A Note provides information that is not indispensable, but may nevertheless be valuable to the reader, such as tips and tricks.
	Reference	A Reference guides the reader to other places in this binder or in this manual, where he/she will find additional information on a specific topic.

Part 1

General Information

1. General Information 2

1.1 Features 2

1. General Information

1.1 Features

1.1.1 External Appearance

VKM50GBMV1

VKM50GBV1



VKM80GBMV1

VKM100GBMV1

VKM80GBV1

VKM100GBV1



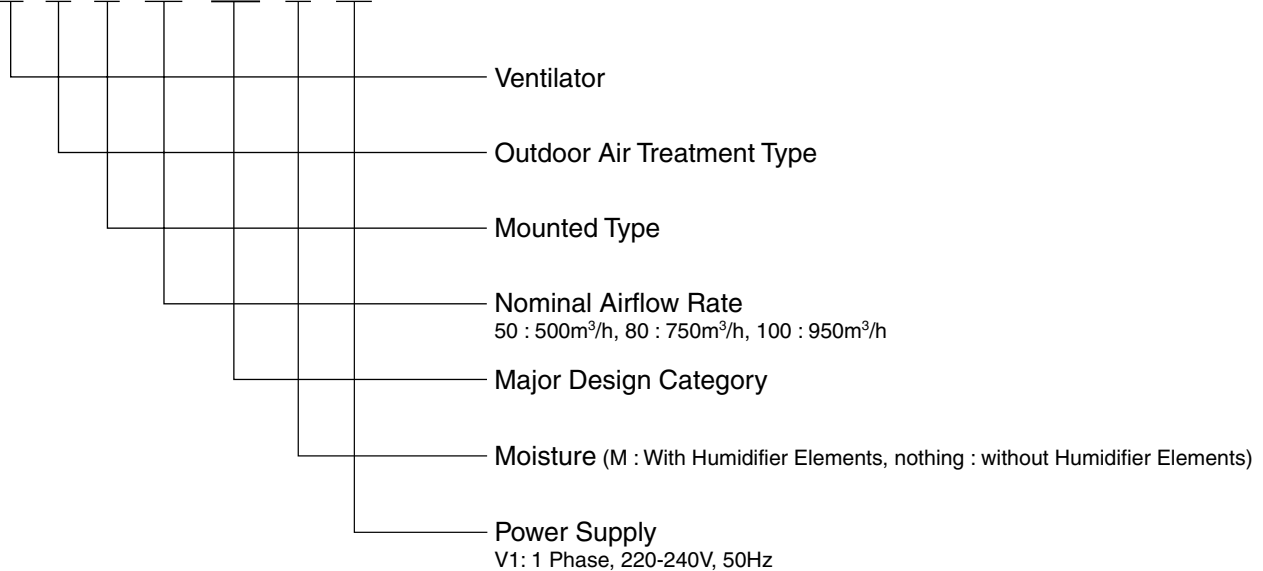
1.1.2 Model Series

Type	500	800	1000
DX Coil and Humidifier	VKM50GBMV1	VKM80GBMV1	VKM100GBMV1
DX Coil	VKM50GBV1	VKM80GBV1	VKM100GBV1

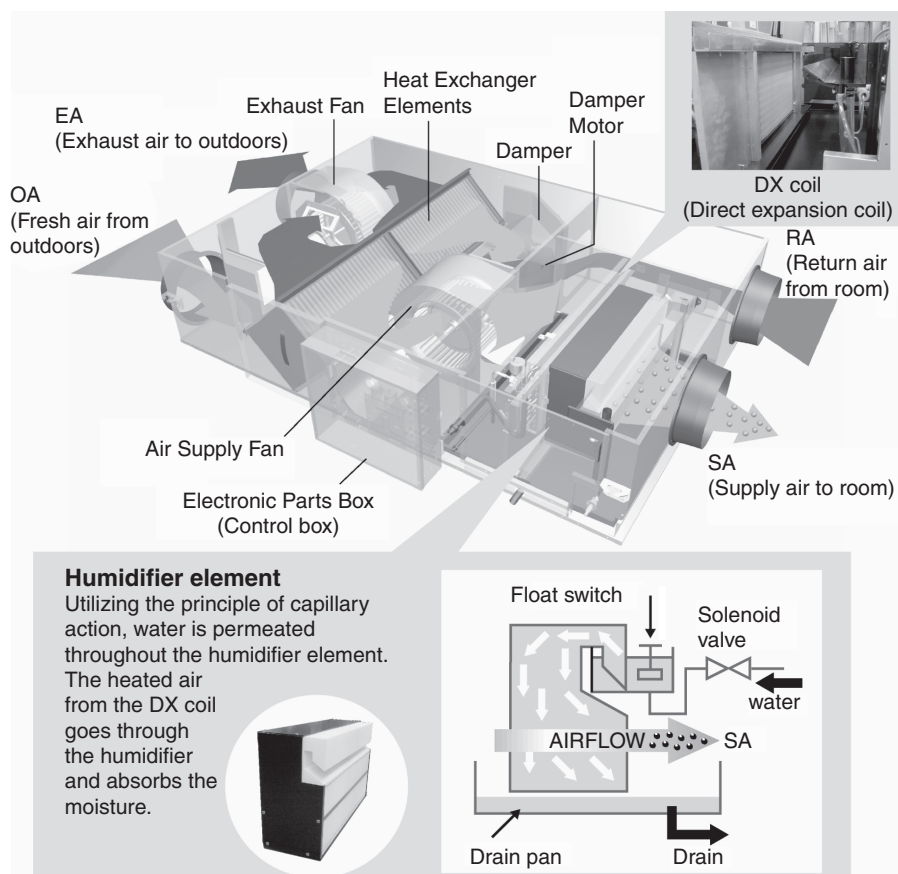
These units are applied only for CE regulation.

1.1.3 Nomenclature

V K M 50 GB M V1

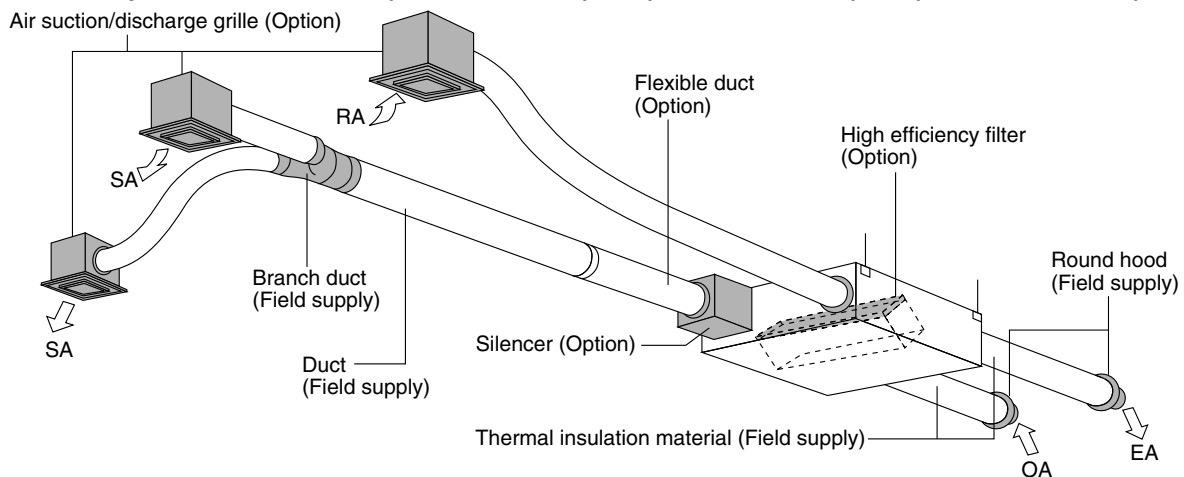


1.1.4 Structures



1.1.5 Optional Accessories

Installation of Optional Accessories (For VKM50GB (GBM) V1, VKM80GB (GBM) V1, VKM100GB (GBM) V1)



Optional Accessories

Applicable model			VKM50/80/100GB(GBM)V1											
Member														
Controlling device	Remote controller		BRC1D52 / BRC1E52 Note.6.											
	Centralised controlling device	Central remote controller	DCS302CA51 / DCS302CA61											
		Unified ON/OFF controller	DCS301BA51 / DCS301BA61											
		Schedule timer	DST301BA51 / DST301BA61											
	PCB Adaptor	Wiring adaptor for electrical appendices		BRP4A50A										
		For ON signal output		BRP4A50A										
		For heater control kit		BRP4A50A										
		For wiring	Type (indoor unit of VRV)	FXFQ-P	FXZQ-M	FXCQ-M	FXKQ-MA	FXDQ-PB FXDQ-NB	FXMQ-P	FXMQ-MA	FXHQ-MA	FXAQ-P	FXLQ-MA FXNQ-MA	FXUQ-MA
				★KRP1C63	★KRP1BA57	★KRP1B61	KRP1B61	★KRP1B56	★KRP1C64	KRP1B61	KRP1BA54	—	KRP1B61	—
	Installation box for adaptor PCB☆		Note2, 3 KRP1H98	Note4, 5 KRP1BA101	Note2, 3 KRP1B96	—	Note4, 5 KRP1BA101	Note2, 3 KRP4A96	—	Note3 KRP1CA93	Note2, 3 KRP4AA93	—	KRP1BA97	

Note: 1. Installation box ☆ is necessary for each adaptor marked ★.

2. Up to 2 adaptors can be fixed for each installation box.

3. Only one installation box can be installed for each indoor unit.

4. Up to 2 installation boxes can be installed for each indoor unit.

5. Installation box ☆ is necessary for each adaptor.

6. Necessary when operating Heat Reclaim Ventilator (VKM) independently. When operating interlocked with other air conditioners, use the remote controllers of the air conditioners.

Member		Applicable model		
		VKM50GB(GBM)V1		
		VKM80GB(GBM)V1		
		VKM100GB(GBM)V1		
Additional function	Silencer	—		
	Nominal pipe diameter (mm)	—		
	Air suction/Discharge grille	White		
	Nominal pipe diameter (mm)	K-DGL200C		
	High efficiency filter	KAF242H80M		
	Air filter for replacement *	KAF241H80M		
	CO ₂ sensor	BRYMA65		
	Flexible duct (1 m)	K-FDS201C		
	Flexible duct (2 m)	K-FDS202C		
Drawing No.		C: 3D083750C		

* Including 2 sheets per unit.



Remote Controller



Navigation remote controller



Central remote controller



Unified ON/OFF controller



Schedule timer



Silencer



Air suction/discharge grille
(Noise suppression type)



Flexible duct
(Noise suppression type)

Part 2

Product Specification

1. Product Specification 6

 1.1 With DX coil & Humidifier 6

 1.2 With DX coil 8

 1.3 Humidifier 10

1. Product Specification

1.1 With DX coil & Humidifier

Type				VKM50GBMV1		VKM80GBMV1		VKM100GBMV1		
Refrigerant				R-410A						
Power Supply				220-240V, 1ph., 50Hz						
Airflow Rate & External Static Pressure (Note 7)	Ultra-high	Airflow Rate heat exchange mode bypass mode		Airflow rate (m³/h)	500	500	750	750	950	950
	High			Static pressure (Pa)	200		205		110	
				Airflow rate (m³/h)	500	500	750	750	950	950
				Static pressure (Pa)	150		155		70	
				Low	Airflow rate (m³/h)	440	440	640	640	820
	Static pressure (Pa)			120		105		60		
Normal Amp. (Note 8)	Ultra-high	Heat exchange mode	Bypass mode	A	1.66	1.73	1.90	2.17	2.43	2.43
	High			A	1.43	1.46	1.63	1.81	2.21	2.21
	Low			A	1.07	1.10	1.16	1.29	1.48	1.48
Normal Input (Note 8)	Ultra-high	Heat exchange mode	Bypass mode	W	270	270	330	330	410	410
	High			W	230	230	280	280	365	365
	Low			W	170	170	192	192	230	230
Fan				Type	Sirocco Fan					
Motor Output				kW	0.21×2		0.21×2		0.21×2	
Operating Sound (Note 5, 6) (220/230/240V)	Ultra-high	Heat exchange mode	Bypass mode	(dB)	38	39	40	41	40	41
	High			(dB)	36	36	37.5	38	38	39
	Low			(dB)	34	34.5	35.5	36	35.5	35.5
Humidifier	System			Natural Evaporating Type						
	Elements quantity			1				2		
	Amount (Note. 4)			(kg/h)	2.7		4.0		5.4	
	Pressure Feed Water			(MPa)	0.02-0.49					
Temp. Exchange Efficiency (Note 8, 12, 13)	Ultra-high			(%)	76		78		74	
	High			(%)	76		78		74	
	Low			(%)	77.5		79		76.5	
Enthalpy Exchange Efficiency (Cooling) (Note 8, 13)	Ultra-high			(%)	64		66		62	
	High			(%)	64		66		62	
	Low			(%)	67		68		66	
Enthalpy Exchange Efficiency (Heating) (Note 8, 13)	Ultra-high			(%)	67		71		65	
	High			(%)	67		71		65	
	Low			(%)	69		73		69	
Casing				Galvanized Steel Plate						
Insulation Material				Self-Extinguishable Urethane Foam						
Heat Exchange System				Air to Air Cross Flow Total Heat (Sensible + Latent Heat) Exchange						
Heat Exchanging Element				Specially Processed Nonflammable Paper						
Air Filter				Multidirectional Fibrous Fleeces						
Coil (Cross Fin Coil)	Rows × Stages × Fin Pitch			(mm)	2 × 12 × 2.2					
	Face Area			(m²)	0.078		0.118		0.165	
Cooling Capacity (Note 2)				(kW)	4.71 (1.91)		7.46 (2.96)		9.12 (3.52)	
Heating Capacity (Note 3)				(kW)	5.58 (2.38)		8.79 (3.79)		10.69 (4.39)	
Dimensions	Height × Width × Depth			(mm)	387 × 1,764 × 832		387 × 1,764 × 1,214		387 × 1,764 × 1,214	
Connection Duct Diameter				(mm)	φ200		φ250			
Piping Connection	Liquid			(mm)	φ6.4 C1220T (Flare Connection)					
	Gas			(mm)	φ12.7 C1220T (Flare Connection)					
	Water Supply			(mm)	φ6.4 C1220T					
	Drain				PT3/4 External Thread					
Refrigerant Control				Electronic Expansion Valve						
Connectable Outdoor Unit				VRV Outdoor Unit (Exclusively for R-410A)						
Mass	Net			(kg)	100		119		123	
	Gross (Note 9)			(kg)	107		129		134	
Unit Ambient Condition	Around Unit			0°C~40°CDB 80%RH or Less						
	OA (Note 10)			-15°C~40°CDB 80%RH or Less						
	RA (Note 10)			0°C~40°CDB 80%RH or Less						
Operation Mode				Heat Exchange Mode, Bypass Mode, Freshup Mode						
Accessories				Operation Manual, Installation Manual, Duct Connecting Flange, M4 Tapping Screw (for Connecting Duct), Water Supply Piping with Strainer, Half-Union Joint (Copper Piping Joint), Flare Nut (Copper Piping Joint), Refrigerant Piping Insulation Cover, Water Supply Piping Insulation Cover, Sealing Material, Clamp						
Drawing Number				C: 4D082841		C: 4D082842		C: 4D082843		

Note:

1. Cooling and heating capacities are based on the following conditions. Fan is based on High and Ultra-high.
The figures in the parenthesis indicate the heat reclaimed from the Heat Recovery Ventilator.
When calculating the capacity as indoor units, use the following figures : 3.5kW
2. Indoor temperature : 27°C DB, 19°C WB, Outdoor temperature : 35°C DB.
3. Indoor temperature : 20°C DB , Outdoor temperature : 7°C DB, 6°C WB.
4. Humidifying capacity is based on the following condition : Indoor temperature : 20°C DB, 15°C WB, Outdoor temperature : 7°C DB, 6°C WB.
5. The operating sound measured at the point 1.5m below the center of the unit is converted to that measured at an anechoic chamber built in accordance with the JIS C 1502 condition. The actual operating sound varies depending on the surrounding conditions (near running unit's sound, reflected sound and so on) and is normally higher than this value.
For operation in a quiet room, it is required to take measures to lower the sound. In details, refer to engineering data.
6. The noise level at the air discharge port is about 8-11 dB higher than the unit's operating sound.
For operation in a quiet room, it is required to take measures to lower the sound for example install more than 2m soft duct near the air discharge grille.
7. Airflow rate can be changed over to Low mode or High mode.
8. Normal Amp., input, efficiency depend on the above airflow rate value.
9. In case of holding full water in humidifier
- 10.OA : fresh air from outdoor, RA : return air from room
- 11.The specifications, designs and information here are subject to change without notice.
- 12.Temperature Exchange Efficiency is a mean value in cooling and heating.
- 13.Efficiency is measured under the following conditions. Ratio of rated external static pressure has been kept as follows. Outdoor side to indoor side = 7 to 1
- 14.Feed clean water. If the supply water is hard water, use a water softener because of short life.
Life of humidifying element is about 3 years (4,000 hours), under the supply water conditions of hardness : 150mg/l.
(Life of humidifying element is about 1 years (1500 hours), under the supply water conditions of hardness : 400mg/l.)
Annual operating hours : 10hours/day × 26days/month × 5months = 1300hours
- 15.In heating, freezing of the outdoor unit's coil increases. Heating capability decreases and the system goes into defrost operation.
During defrost operation, the fans of the unit continues driving (factory setting). The purpose of this is to maintain the amount of ventilation and humidifying.
- 16.When connecting with a VRV Heat Recovery type outdoor unit and bringing the RA (exhaust air to outdoors) of this unit directly in from the ceiling, connect to a BS unit identical to the VRV indoor unit (master unit), and use group-linked operation. See the Engineering Data for details.
- 17.When connecting the indoor unit directly to the duct, always use the same system on the indoor unit as with the outdoor unit, perform group-linked operation, and make the direct duct connection settings from the remote controller. (Mode No. "17 (27)" - FIRST code No. "5" - Second code No. "6")
Also, do not connect to the outlet side of the indoor unit. Depending on the fan strength and static pressure, the unit might back up.

1.2 With DX coil

Type					VKM50GBV1		VKM80GBV1		VKM100GBV1	
Refrigerant					R-410A					
Power Supply					220-240V, 1ph., 50Hz					
Airflow Rate & External Static Pressure (Note 6)	Ultra-high	Airflow Rate heat exchange mode bypass mode		Airflow rate (m³/h)	500	500	750	750	950	950
	High			Static pressure (Pa)	210		210		150	
				Airflow rate (m³/h)	500	500	750	750	950	950
				Static pressure (Pa)	170		160		100	
				Low	Airflow rate (m³/h)	440	440	640	640	820
	Static pressure (Pa)				140		110		70	
Normal Amp. (Note 7)	Ultra-high	Heat exchange mode	Bypass mode	A	1.65	1.64	2.12	2.12	2.57	2.57
	High			A	1.42	1.51	1.79	1.81	2.08	2.08
	Low			A	1.08	0.89	1.29	1.29	1.44	1.44
Normal Input (Note 7)	Ultra-high	Heat exchange mode	Bypass mode	W	270	270	330	330	410	410
	High			W	230	230	280	280	365	365
	Low			W	170	140	192	192	230	230
Fan				Type	Sirocco Fan					
Motor Output				kW	0.21x2		0.21x2		0.21x2	
Operating Sound (Note 4, 5) (220/230/240V)	Ultra-high	Heat exchange mode	Bypass mode	(dB)	39	40	41.5	41.5	41	41
	High			(dB)	37	38	39	39	39	39
	Low			(dB)	35.5	35.5	37	37	36.5	36.5
Temp. Exchange Efficiency (Note 7, 10, 11)	Ultra-high			(%)	76		78		74	
	High			(%)	76		78		74	
	Low			(%)	77.5		79		76.5	
Enthalpy Exchange Efficiency (Cooling) (Note 7)	Ultra-high			(%)	64		66		62	
	High			(%)	64		66		62	
	Low			(%)	67		68		66	
Enthalpy Exchange Efficiency (Heating) (Note 7)	Ultra-high			(%)	67		71		65	
	High			(%)	67		71		65	
	Low			(%)	69		73		69	
Casing	Ultra-high			Galvanized Steel Plate						
Insulation Material					Self-Extinguishable Urethane Foam					
Heat Exchange System					Air to Air Cross Flow Total Heat (Sensible + Latent Heat) Exchange					
Heat Exchanging Element					Specially Processed Nonflammable Paper					
Air Filter					Multidirectional Fibrous Fleeces					
Coil (Cross Fin Coil)	Rows × Stages × Fin Pitch			(mm)	2 × 12 × 2.2					
	Face Area			(m²)	0.078		0.118		0.165	
Cooling Capacity (Note 2)				(kW)	4.71 (1.91)		7.46 (2.96)		9.12 (3.52)	
Heating Capacity (Note 3)				(kW)	5.58 (2.38)		8.79 (3.79)		10.69 (4.39)	
Dimensions	Height × Width × Depth			(mm)	387 × 1,764 × 832		387 × 1,764 × 1,214		387 × 1,764 × 1,214	
Connection Duct Diameter				(mm)	φ200		φ250			
Piping Connection	Liquid			(mm)	φ6.4 C1220T (Flare Connection)					
	Gas			(mm)	φ12.7 C1220T (Flare Connection)					
	Drain				PT3/4 External Thread					
Refrigerant Control					Electronic Expansion Valve					
Connectable Outdoor Unit					VRV Outdoor Unit (Exclusively for R-410A)					
Mass				(kg)	94		110		112	
Unit Ambient Condition	Around Unit				0°C~40°CDB 80%RH or Less					
	OA (Note 8)				-15°C~40°CDB 80%RH or Less					
	RA (Note 8)				0°C~40°CDB 80%RH or Less					
Operation Mode					Heat Exchange Mode, Bypass Mode, Fresh up Mode					
Accessories					Operation Manual, Installation Manual, Duct Connecting Flange, M4 Tapping Screw (for Connecting Duct), Refrigerant Piping Insulation Cover, Clamp					
Drawing Number					C: 4D082838A		C: 4D082839		C: 4D082840	

Note:

1. Cooling and heating capacities are based on the following conditions. Fan is based on High and Ultra-high.
The figures in the parenthesis indicate the heat reclaimed from the Heat Recovery Ventilator.
When calculating the capacity as indoor units, use the following figures : 7.0kW
2. Indoor temperature : 27°C DB, 19°C WB, Outdoor temperature : 35°C DB.
3. Indoor temperature : 20°C DB , Outdoor temperature : 7°C DB, 6°C WB.
4. The operating sound measured at the point 1.5m below the center of the unit is converted to that measured at an anechoic chamber built in accordance with the JIS C 1502 condition. The actual operating sound varies depending on the surrounding conditions (near running unit's sound, reflected sound and so on) and is normally higher than this value.
For operation in a quiet room, it is required to take measures to lower the sound. In details, refer to engineering data.
5. The noise level at the air discharge port is about 8-11 dB higher than the unit's operating sound.
For operation in a quiet room, it is required to take measures to lower the sound for example install more than 2m soft duct near the air discharge grille.
6. Airflow rate can be changed over to Low mode or High mode.
7. Normal Amp., input, efficiency depend on the above airflow rate value.
8. OA : fresh air from outdoor, RA : return air from room
9. The specifications, designs and information here are subject to change without notice.
10. Temperature Exchange Efficiency is a mean value in cooling and heating.
11. Efficiency is measured under the following conditions. Ratio of rated external static pressure has been kept as follows. Outdoor side to indoor side = 7 to 1
12. In heating, freezing of the outdoor unit's coil increases. Heating capability decreases and the system goes into defrost operation.
During defrost operation, the fans of the unit continues driving (factory setting).
The purpose of this is to maintain the amount of ventilation and humidifying.
13. When connecting with a VRV Heat Recovery type outdoor unit and bringing the RA (exhaust air to outdoors) of this unit directly in from the ceiling, connect to a BS unit identical to the VRV indoor unit (master unit), and use group-linked operation. See the Engineering Data for details.
14. When connecting the indoor unit directly to the duct, always use the same system on the indoor unit as with the outdoor unit, perform group-linked operation, and make the direct duct connection settings from the remote controller.
(Mode No."17 (27)" -First code No."5" -Second code No."6")
Also, do not connect to the outlet side of the indoor unit. Depending on the fan strength and static pressure, the unit might back up.

1.3 Humidifier

	VKM50GBMV1	VKM80GBMV1	VKM100GBMV1
Humidifier type	Natural evaporating type humidifier		
Wetted element	Porosity plate 60 pcs.	Porosity plate 90 pcs.	Porosity plate 120 pcs. (60×2 pcs.)
Water inlet port	φ6.4 C1220T (Flare Connection)		
Water outlet port	PT3/4		
Supply water pressure	kPa	20 (Min.) ~ 490 (Max.)	

- Note:**
1. Feed clean water (city water, tap water or equivalent) Dirty water may clog the valve or cause dirt deposits in the water container, resulting in poor humidifier performance. (Never use any cooling tower water and heating - purpose water.)
Also, if the supply water is hard water, use a water softener because of short life.
*Life of humidifying element is about 3 years (4,000 hours), under the supply water conditions of hardness: 150 mg/l. (Life of humidifying element is about 1 year (1,500 hours) under the supply water conditions of hardness: 400 mg/l.)
Annual operating hours: 10 hours / day × 26 days / month × 5 month = 1,300 hours
 2. Maintain the supply water temperature at 5 ~ 50°C and its pressure at 20 ~ 490 kPa (0.2 ~ 5.0 kg/cm²). If the water pressure is above 490 kPa (5.0 kg/cm²), add pressure reducing valve in between the kit and the supply water stop valve.
 3. The supply water line cannot be directly connected with a utility water tap. To unavoidably take water from such line, employ a CISTERN (gotten configuration authorization).
 4. Be sure to provide thermal insulation around the indoor piping as well as the shut - off valves.
 5. In order to prevent harmful bacteria from generating, do maintenance on humidifying unit portion at the beginning and the end of the heating season according to the operation manual.

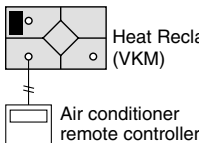
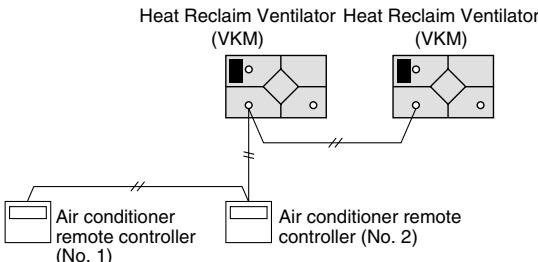
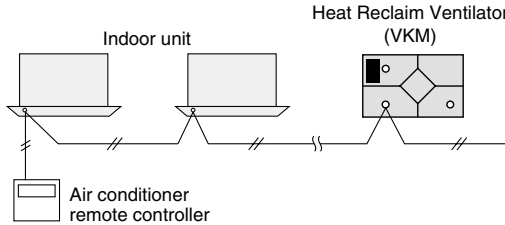
Part 3

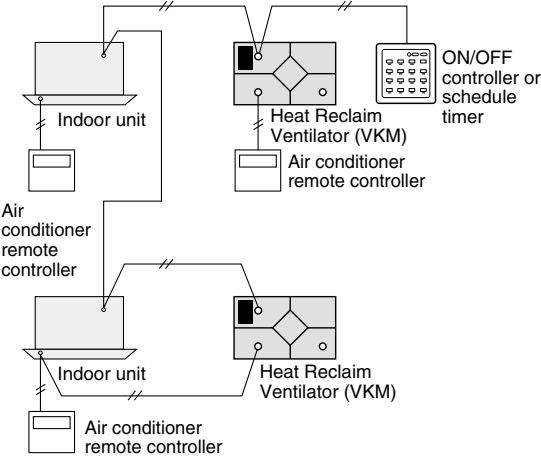
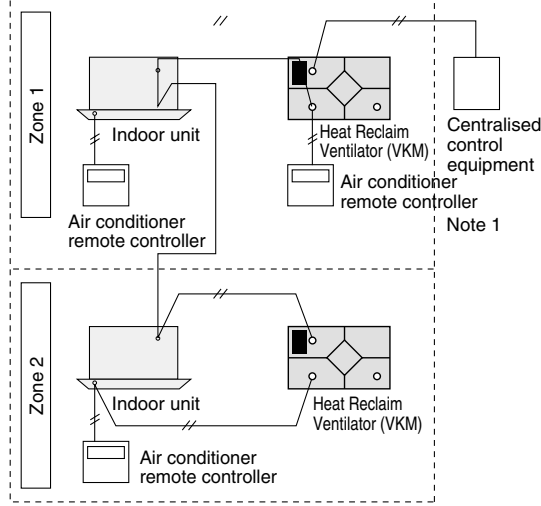
Operation

1. Operation	12
1.1 Explanation for Systems.....	12
1.2 Features of VKM-GB(M).....	15
1.3 Centralised Control System.....	17
1.4 Restrictions to Control System	18
1.5 Operation.....	19

1. Operation

1.1 Explanation for Systems

System Construction		System Characteristics	Necessary Accessories																				
Independent Operation System	Independent Operation	 - Independent operation of Heat Reclaim Ventilator (VKM) is possible. - VRV remote controller can be used.	VRV remote controller																				
	Simultaneous Operation of Multiple Units	 - Operation is possible using 2 remote controllers. - Multiple Heat Reclaim Ventilator (VKM) units can be simultaneously controlled in batch. [Up to 8 Heat Reclaim Ventilator (VKM) units can be connected.]	VRV remote controller																				
Air Conditioning Interlocked Control (VRV, SkyAir) System	Standard System	 <table><caption>Table 1 Connectable indoor units</caption><tr><td>Heat Reclaim Ventilator (VKM)</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>VRV</td><td>Up to 16</td><td>Up to 14</td><td>Up to 12</td><td>Up to 10</td></tr><tr><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr><tr><td>Up to 8</td><td>Up to 6</td><td>Up to 4</td><td>Up to 2</td><td>0</td></tr></table> Note: The Heat Reclaim Ventilator (VKM) uses 2 remote control addresses per unit, and the number of units that can be group controlled are shown above. - Multiple VRV indoor units or Heat Reclaim Ventilator (VKM) units can be connected and controlled in batch, with interlocked operation of Heat Reclaim Ventilator (VKM)s and air conditioners by using the air conditioner remote controller. - The Heat Reclaim Ventilator (VKM) unit can also be operated independently using the remote controller for the indoor unit, even if the indoor unit is not in operation.	Heat Reclaim Ventilator (VKM)	0	1	2	3	VRV	Up to 16	Up to 14	Up to 12	Up to 10	4	5	6	7	8	Up to 8	Up to 6	Up to 4	Up to 2	0	VRV remote controller
Heat Reclaim Ventilator (VKM)	0	1	2	3																			
VRV	Up to 16	Up to 14	Up to 12	Up to 10																			
4	5	6	7	8																			
Up to 8	Up to 6	Up to 4	Up to 2	0																			

System Construction		System Characteristics	Necessary Accessories
Air Conditioning Interlocked Centralised Control System	Batch/Individual Control System	 [Unified ON/OFF Controller] • 1 controller can control the “ON/OFF” operation of 16 groups of units collectively or individually. • Up to 8 controllers can be installed in one centralised transmission line (in one system), which enables control of up to 128 groups. (16 groups x 8 = 128 groups) [Schedule Timer] • 1 schedule timer can control the weekly schedule of up to 128 units.	Unified ON/OFF controller or schedule timer, VRV remote controller When necessary, centralised control equipment
	Zone Control System	 [Centralised control equipment] • The centralised control equipment provides setting and monitoring functions, and can control up to 128 VRV and Heat Reclaim Ventilator (VKM) units collectively or individually. • Multiple groups can be controlled within the same zone.	Centralised control equipment, VRV remote controller When necessary, unified ON/OFF controller or schedule timer

Note 1: Heat Reclaim Ventilator remote controller cannot be used.

Recommended Systems

1. System with a remote sensor connected to each indoor unit

On the ceiling chamber system with which generated heat loads are treated in the ceiling space, the suction thermistor (body thermistor) mounted to the indoor unit alone cannot ensure the detection of room temperatures. Consequently, for the indoor unit, in order to ensure the detection of the room temperatures, it is recommended to change to the remote sensor system.

2. Connection of refrigerant piping

For the connection of refrigerant piping on the ceiling chamber system, it is recommended to provide a system preventing the cool/heat changeover while in automatic mode on the VKM through connecting a base indoor unit in the same duct system and the VKM to the same BS unit to interlock between the VKM and the indoor unit (*).

* In order to interlock between the VKM and the indoor unit, the group control of remote controllers should be provided.

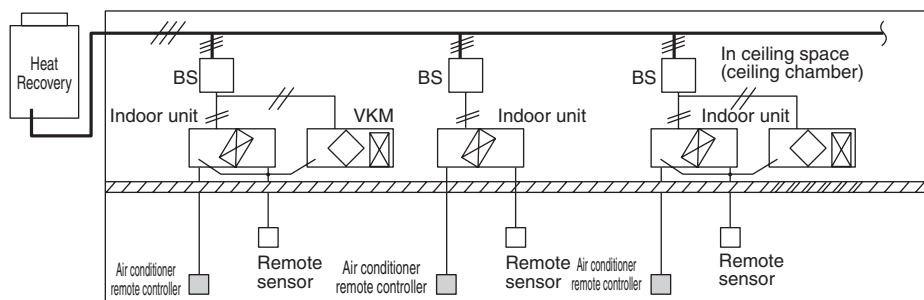


Fig. 1 When interlocking between the base indoor unit and the VKM:
(Connect multiple indoor units and VKM to a single BS unit.)

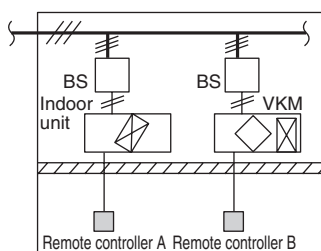


Fig. 2 When connecting a single indoor unit or a single VKM to a single BS unit:
(If this is the case, use the VKM in fixed cooling or heating mode.)

3. Measures against inadequate humidification

When operating the system at a temperature in the ceiling space set higher than the initial setting, the heating thermostat on the VKM may turn OFF to disable humidification. In this case, according to the field setting on the remote controller, raise the heating set temperature. For details, refer to information on P. 81.

1.2 Features of VKM-GB(M)

Basic control of VKM

VKM sucks the air after OA has subjected to total heat exchange with RA, detects the air temperature by means of the thermistor for inlet air (R7T) into DX coil (R4T) to make a judgement on operation mode, cooling or heating and exercises the control on the capacity of air heat exchanger.

■ Sensor position and its function

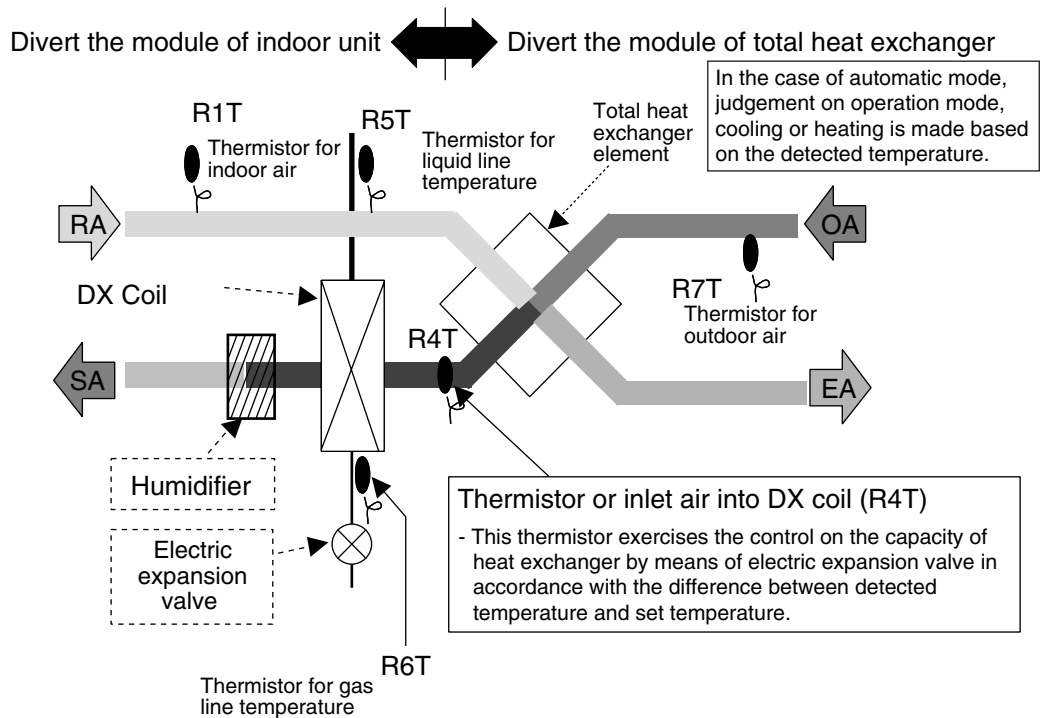
VKM consists of indoor unit + total heat exchanger portion.

Dissimilarities with normal indoor unit are:

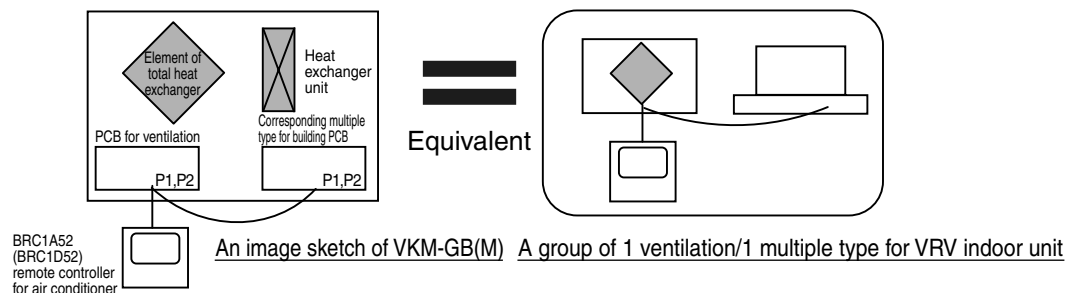
- Position of thermostat in the normal indoor unit: Position to detect RA temperature
- Position of thermostat in VKM: Position to detect the air subjected to total heat exchange between OA and RA.

Therefore, the temperature detected by VKM gets lower than that of the indoor unit thermostat.

Doing so allows VKM to perform treatment of outside air with stability even as the indoor unit stays thermostat OFF state because of big difference between the set temperature and suction air temperature even though the set temperature of VKM and indoor unit are the same.



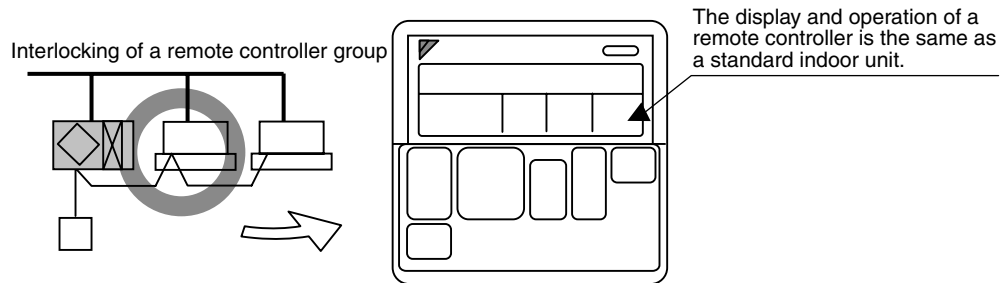
Because VKM-GB(M) model is equipped with a heat exchanger unit, a PCB (corresponding to VRV air conditioner's PCB) for controlling the heat exchanger has been built-in in addition to a PCB for ventilation. These 2 PCBs are connected via remote controller line (P1, P2) to perform an interlocked control. Its control system provides the same condition when 1 ventilation and 1 VRV air conditioner have been remotely controlled. No air conditioning (temperature controlling) function has been equipped. Therefore, it is necessary to prepare separately an indoor unit for air conditioning purpose.



[Points to be noted for VKM-GB(M)]

There are following restrictions with VKM-GB(M) model due to its own controlling structure.

1. Stand alone system: No address setting is required because of its automatic addressing function (corresponding to VRV air conditioner PCB : Master).
Because it is under a group control, it is always required to connect to a remote controller. The structure does not permit if no remote controller is connected. A direct connection to a duct is also prohibited.
2. Interlock system: No address setting is required because of its automatic addressing function (Indoor unit: Master).
 - Basically, the interlocking with an air-conditioner is only made via connection to a remote controller line (P1, P2).



- Number of units connectable in case of a remote controller group
Because 2 pieces of controlling PCB have been built in a VKM-GBM model, count the remote controller group as: 1 set = 2 units. The maximum number of units connectable to a remote controller group is 16.

<Example>

How many units of VKM-GBM model can be connected within a single group?

In case of a group composed of (10 × indoor units + VKM-GBM), the maximum number of VKM-GBM is 3.

$$10 + 3 \times 2 = 16 \text{ units} \quad \text{OK}$$

In case of 4 units ;

$$10 + 4 \times 2 = 18 \text{ units} \quad \text{NG (2 units are in excess)}$$

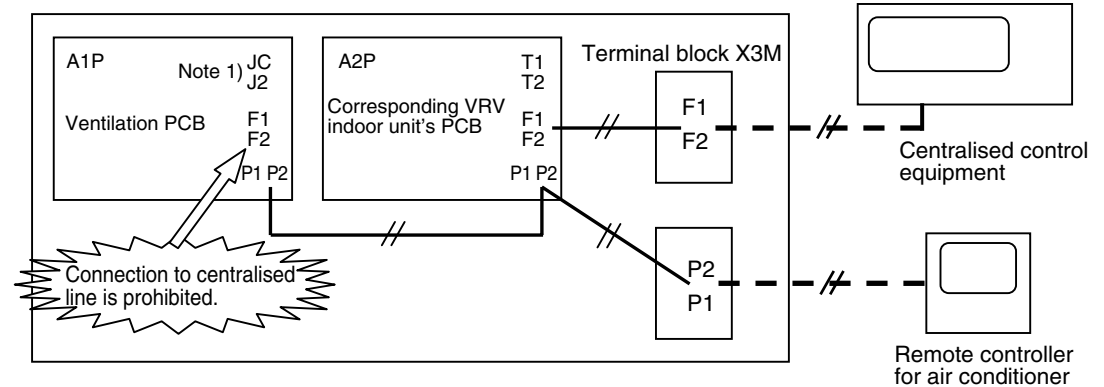
- External contact point
If you want to start/stop through an external contact point, use external input terminals (T1 and T2).
* If you start/stop using T1 and T2 terminals, the entire remote controller group makes a start/stop.

Note 1) JC/J2 of ventilation PCB cannot be used. (Because only the ventilation PCB makes a ON/OFF, no synchronized movement with the corresponding VRV indoor unit's PCB is assured.)

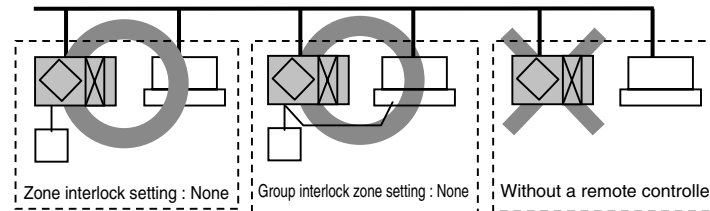
1.3 Centralised Control System

- When carrying out a centralised connection, connect the centralised line to F1 and F2 only on the corresponding VRV indoor unit's PCB. Do not connect to F1 and F2 on the ventilation side. (= Connect to the terminal block X3M.)

An image sketch of internal wiring on the ventilation side



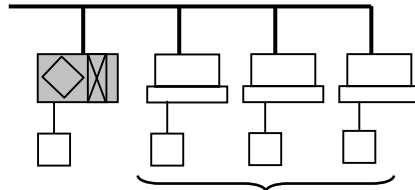
- In case of a centralised control, operation ON/OFF can be done separately by each zone. (In this case, zone interlocked setting must be kept as the factory setting (17.08.01).)
- Structure without a remote controller cannot be accepted because the remote controller group is controlled within a VKM-GB(M) model. (i-Touch controller and central remote controller)



* Alteration of set temperature and independent ventilation operation cannot be performed from a centralised control equipment.

1.4 Restrictions to Control System

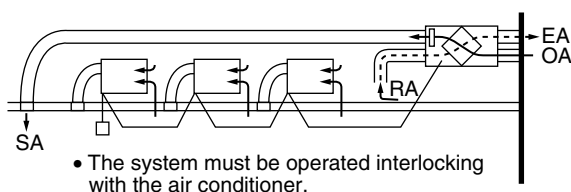
1.4.1 Do not Give VKM-GB(M) Model a Function to Select Cooling/Heating. (This is because the operation mode switches automatically depending on the outdoor conditions regardless of the indoor temperature when set to "Automatic".)



Give a function to select cooling/heating to either one of these.

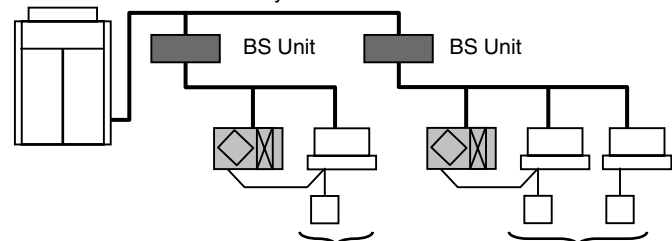
1.4.2 Caution when Connecting with a VRV System, Heat Recovery Type

When bringing the RA (exhaust gas intake) of this unit directly in from the ceiling, connect to a BS unit identical to the VRV indoor unit (master unit), and use group-linked operation.



- The system must be operated interlocking with the air conditioner.

Outdoor unit for Heat Recovery



Give a function to select cooling/heating to either one of these.



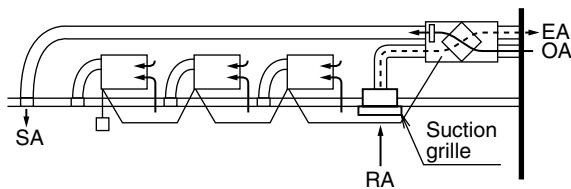
Caution

If above setting is not made, the detection of correct temperature is not available and automatic judgement on proper cooling or heating can not be made when the temperature in the ceiling gets higher than indoor temperature.

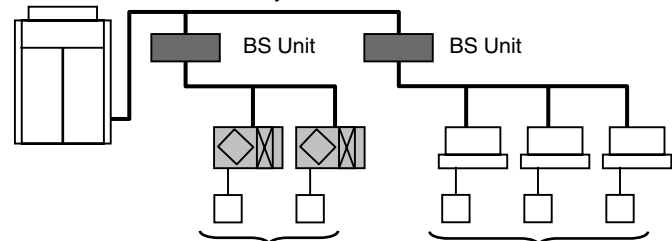
Poor heating or shortage of the amount of humidification may result.

If the indoor unit and this unit are installed with different BS system inevitably, always take following remedies (1) and (2).

- (1) RA (Exhaust and suction) of this unit is not taken directly from inside of the ceiling, connect the suction duct and suction grille to the fitting port of RA duct to suck the indoor air.



Outdoor unit for Heat Recovery



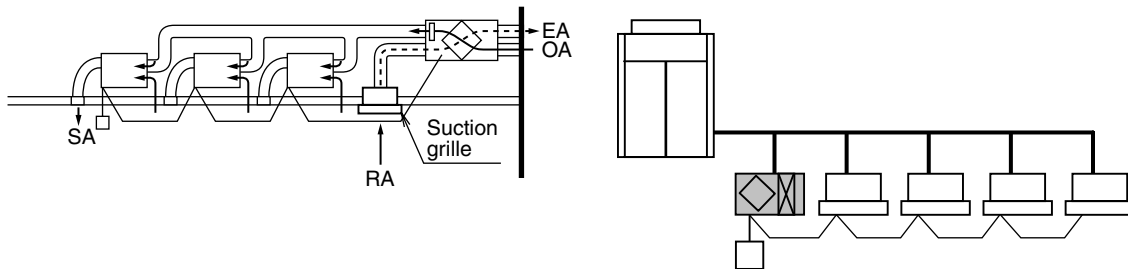
Give a function to select cooling/heating to either one of these.

- (2) Do not make the selection of heating or cooling in automatic mode and it shall be made by manual selection from remote controller or centralised control equipment.

1.4.3 Caution when Connecting the Indoor Unit Directly to the Duct

Follow the indications described below

- a) When connecting the indoor unit directly to the duct, always use the same system on the indoor unit as with the outdoor unit, perform group-linked operation, and make the direct duct connection settings from the remote controller. (Mode No. "17 (27)" – First code No. "5" – Second code No. "6".) Refer to information (P. 79) concerning setting method.



- b) Do not connect to the outlet side of the indoor unit. Depending on the fan strength and static pressure, the unit might back up.
- c) When it is connected to the suction side of indoor unit as a direct duct connection system, etc., since there is a possibility that the body thermostat of the indoor unit detects erroneously SA discharge from this unit as indoor air, use the remote sensor (Optional).

1.5 Operation

Heat Reclaim Ventilator

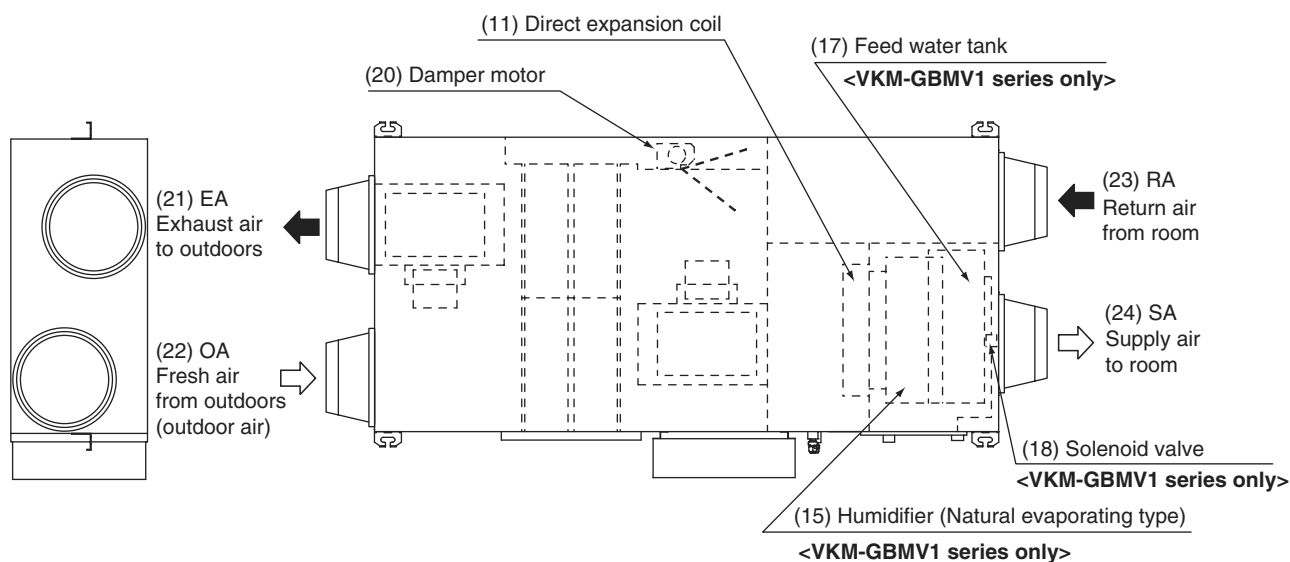
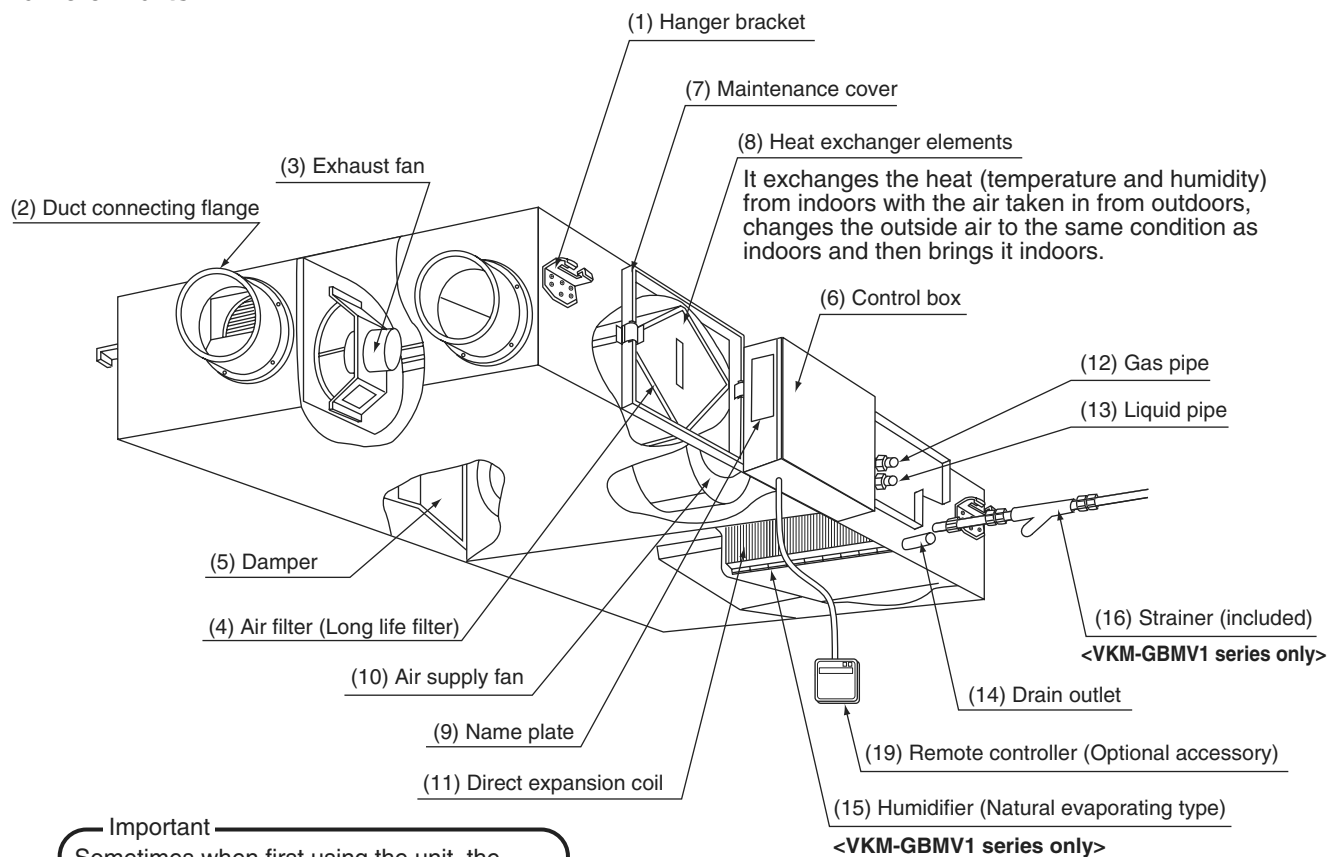
- Carefully read this operation manual before using the total heat exchanger. It will tell you how to use the unit properly and help you if any trouble occurs. This manual explains about the indoor unit only. Use it along with the operation manual for the outdoor unit. After reading the manual, file it away for future reference.
- This unit is an option type for the VRV system air conditioner.
It should normally be used in combination with the P(A)-type VRV system indoor air conditioner. (RXYQ, REYQ, RXQ)
It is also possible to use this unit as an independent system.
- This unit cannot control room temperature.
If this is needed, do not install the Heat Reclaim Ventilator alone, but rather install another indoor unit.
- Use the remote controller of the VRV system indoor air conditioner to control the unit.

1.5.1 What to do before Operation

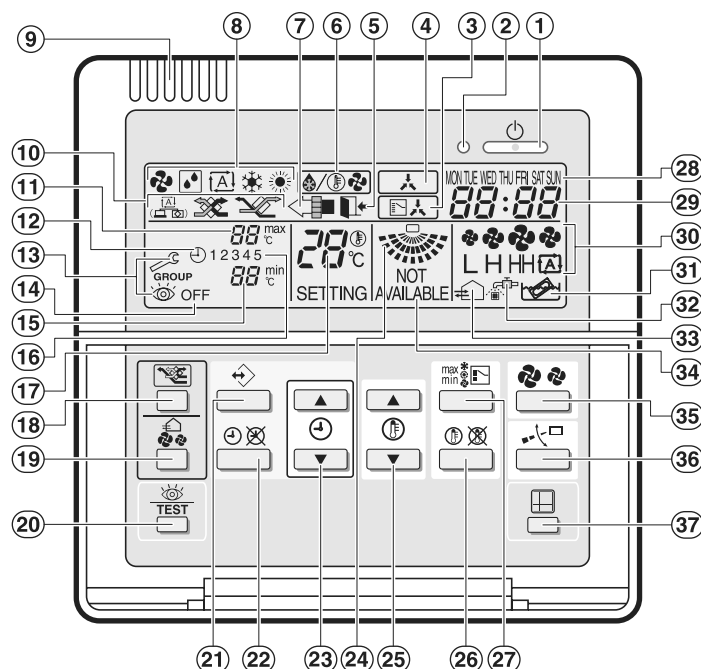
This operation manual is for the following systems with standard control. Before initiating operation, contact your local dealer for the operation that corresponds to your system type and mark.

If your installation has a customized control system, ask your local dealer for the operation that corresponds to your system.

Name of Parts



Remote Controller and Changeover Switch: Name and Function of Each Switch and Display



Remote controller for VKM BRC1D52

- Only the items marked with an asterisk (*mark) are explanation relating to the functions and display of the unit.

Unmarked items are functions of the combined air conditioners. When using buttons for functions which are not available (buttons which are not described in the text) will cause "NOT AVAILABLE" to be displayed. Contact your local dealer for more detailed descriptions of those functions (buttons).

***1 ON/OFF button**

Press the button and the system will start. Press the button again and the system will stop.

***2 Operation lamp (red)**

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

***3 Display " " (changeover under control)**

May be displayed when combined with a VRV system air conditioner.

It is impossible to changeover heat/cool with the remote controller when this icon is displayed.

4 Display " " (under centralised control)

When this display shows, the system is under centralised control. (This is not a standard specification.)

5 LEAVE HOME ICON " "

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

ON	Leave home is enabled.
FLASHING	Leave home is active.
OFF	Leave home is disabled.

***6 Display " " (defrost/hot start)**

It may be displayed when freezing of outdoor unit's coil increases in heating mode.

7 Display " " (air purifier)

This display shows that the air cleaning unit is in operation.

8 Display " " " " " " " " (operation mode: "FAN, DRY, AUTOMATIC, COOLING, HEATING")

This displays the operating status of the combined air conditioner.

- There is no "heating" for the VRVIII system (Cooling only type).

- " " is only available for systems operating in cooling and heating at the same time.

9 Remote controller thermostat

This detects the temperature around the remote controller.

This is not the same as the temperature of return air from room (RA) by heat exchanger unit.

- * **10 Display** “  ” “  ” “  ”
This displays the ventilation mode.
- 11 MAXIMUM SET TEMPERATURE** “  ”
The maximum set temperature indicates the maximum set temperature when in limit operation.
- * **12 SCHEDULE TIMER ICON** “  ”
This icon indicates that the schedule timer is enabled.
- 13 Display** “  ” (inspection/test operation)
When the inspection/test operation button is pressed, the display shows the mode in which the system actually is.
• Do not use under usual use (service person/installer only).
- * **14 OFF ICON** “OFF”
This icon indicates that the OFF action is selected when programming the schedule timer.
- 15 MINIMUM SET TEMPERATURE** “  ”
The minimum set temperature indicates the minimum set temperature when in limit operation.
- * **16 ACTION ICONS** “1 2 3 4 5”
These icons indicate the actions for each day of the schedule timer.
- 17 Display** “  ” (set temperature)
This displays the set temperature of the combined air conditioner.
It is not displayed when the unit is used as an independent system.
- * **18 Ventilation mode selector button**
This is pressed to switch the ventilation mode.
- * **19 Fan speed control button**
This is pressed to control the fan speed.
(Refer to item 30)
- * **20 Inspection/test operation button**
Not used, for service purpose only.
- * **21 PROGRAMMING BUTTON** “  ”
This button is a multi-purpose button.
Depending on the previous manipulations of the user, the programming button can have various functions.
- * **22 SCHEDULE TIMER BUTTON** “  ”
This button enables or disables the schedule timer.
- * **23 Programming time button**
Use this button for programming start and/or stop time.
- 24 Display** “  ” (airflow flap)
This displays the direction and mode of the airflow flap of the combined air conditioner.
- 25 Temperature setting button**
Use this button for setting the desired temperature of air conditioner combined with this unit.
This button can't use for this unit.
This unit can't change temperature setting.
- 26 SETPOINT/LIMIT BUTTON** “  ”
This button toggles between setpoint, limit operation or OFF (programming mode only).
- 27 OPERATION CHANGE/MIN-MAX BUTTON** “  ”
This button is a multi-purpose button. Depending on the previous manipulations of the user, it can have following functions:
1 Select the operation mode of the installation (FAN, DRY, AUTOMATIC, COOLING, HEATING).
2 Toggle between minimum temperature and maximum temperature when in limit operation.
- * **28 DAY OF THE WEEK INDICATOR** “ MON TUE WED THU FRI SAT SUN ”
The day of the week indicator shows the current week day (or the set day when reading or programming the schedule timer).
- * **29 CLOCK DISPLAY** “  ”
The clock display indicates the current time (or the action time when reading or programming the schedule timer).

***30 Display “ L H H H ” (fan speed)**

This display shows the fan speed you have selected.

*This is only displayed when the fan speed selection button is pressed. It normally displays the set fan strength of the combined air conditioner.

***31 ELEMENT CLEANING TIME ICON “ ”**

This icon indicates the element must be cleaned.

***32 Display “ ” (time to clean air filter)**

Refer to **When to Perform Maintenance of the Air Filter** on page 33.

33 Display “ ” (ventilation)

This display shows that the total heat exchange is in operation.

***34 Display “NOT AVAILABLE”**

- “NOT AVAILABLE” may be displayed for a few seconds if the function for the button pressed is not available for the unit or the air conditioner.
- “NOT AVAILABLE” is only displayed when none of the indoor units is equipped with the function in question when running several units simultaneously. It is not displayed if the function is available on even one of the units.

35 Air conditioner fan speed control button

Press this button to select the fan speed of air conditioner combined with this unit.

36 Airflow direction adjust button

Press this button to select the airflow direction of air conditioner combined with this unit.

***37 Filter sign reset button**

Refer to **When to Perform Maintenance of the Air Filter** on page 33.

**NOTE **

- In contradistinction to actual operating situations, the display on **figure** shows all possible indications.
- If the filter sign lamp lights up, clean the air filter. Refer to **Maintenance** on page 33. After cleaning and reinstalling the air filter: press the filter sign reset button on the remote controller. The filter sign lamp on the display will go out.
- Only the items marked with an asterisk (*mark) are explanation relating to the functions and display of the unit.
Unmarked items are functions of the combined air conditioners.

Explanation for Systems

This unit can be made a part of 2 different systems: as part of the combined operation system used together with VRVlll SYSTEM Air Conditioners and as the independent system using only the Heat Reclaim Ventilator. An operating remote controller is required when using the unit as an independent system.

Ask your local dealer for what kind of your system is set up before operation.

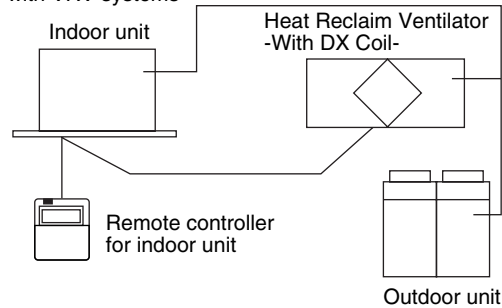
For the operation of the remote controller for indoor unit and centralised control equipment, refer to the operation manual provided with each unit.

See the included operating manuals for details on how to operate each remote control.

■ Operation for Each System

Sample system

- Combined operation system with VRV systems



Combined operation system with VRVlll systems

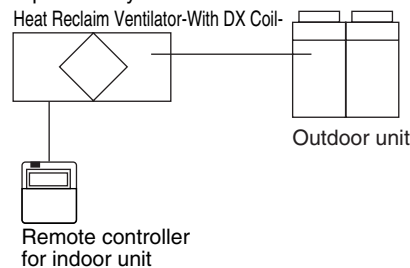
[Operation]

The air conditioner remote controller starts and stops the air conditioner and the Heat Reclaim Ventilator. You can also select the ventilation amount and the ventilation mode.

During intermediate periods when only the Heat Reclaim Ventilator is used without the air conditioner, select "ventilation" with the operation selection button.

Sample system

- Independent system



Independent system

[Operation]

The Heat Reclaim Ventilator can be started and stopped using the remote controller.

You can also select the ventilation amount and the ventilation mode.

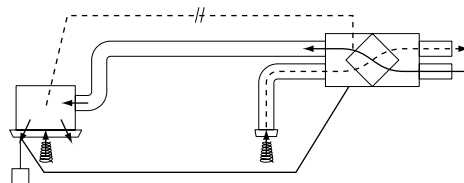
Note

- This unit cannot control room temperature. If this is needed, do not install the Heat Reclaim Ventilator alone, but rather install another indoor unit.

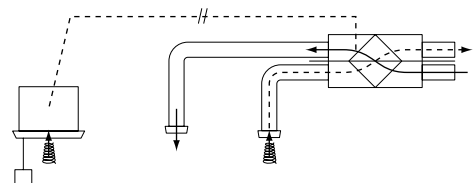
About Direct Duct Connection System

Installation Examples

- Direct duct connection system



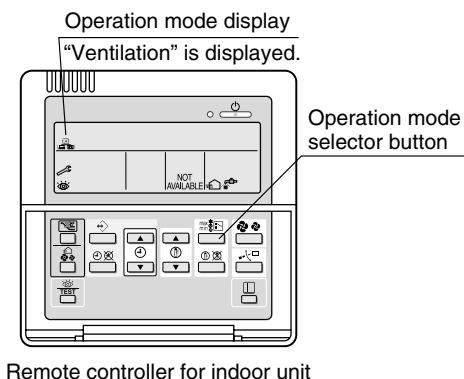
- Independent duct system



Note

- The system must be operated interlocking with the air conditioner.
- Do not connect to the outlet side of the indoor unit.

The Heat Reclaim Ventilator cannot be operated independently when the air conditioner is connected to the Heat Reclaim Ventilator via a duct. When using the Heat Reclaim Ventilator, set the air conditioner to “fan” mode on weak fan strength.

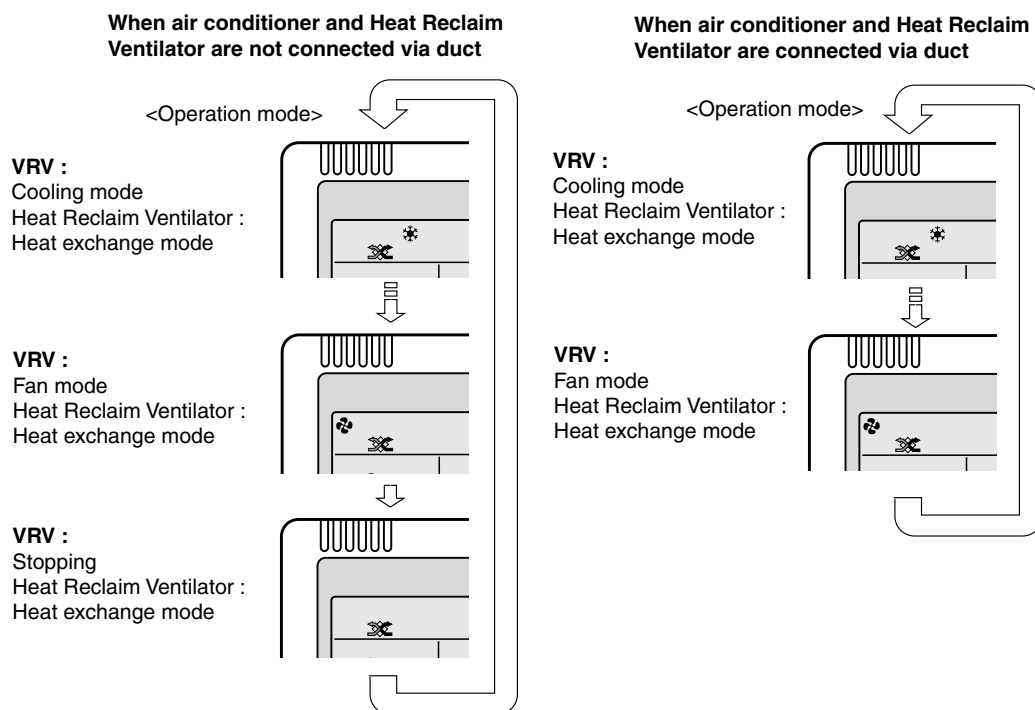


- Each time you press the operation selection button, the operation mode display will change as shown in the figure below.

Example 1 :

In case of the remote controller “BRC1D52” and as equivalent.

Display changes as below.



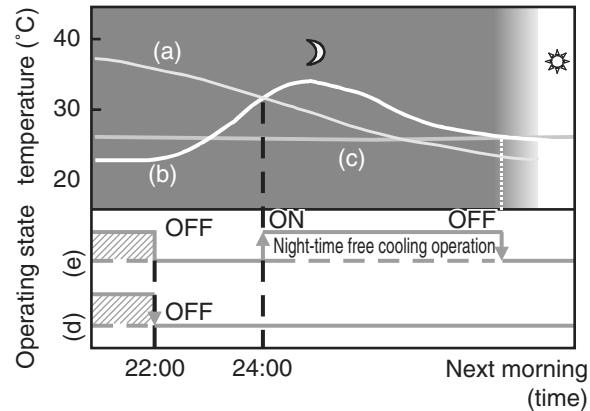
Note) Current Ventilation mode can be visible and selected on the remote controller.

Night-time Free Cooling Operation <Automatic Heat Purge Function at Night>

The night-time free cooling is an energy-conserving function which works at night when the air conditioners is OFF, reducing the cooling load in the morning when the air conditioner is turned on by ventilating rooms which contain office equipment which raises the room temperature.

- Night-time free cooling only works during cooling and when connected to or VRV systems.
- Night-time free cooling is set to “OFF” in the factory settings; so request your local dealer to turn it on if you intend to use it.

Operation image



- (a) Outdoor air temperature
- (b) Indoor temperature
- (c) Set temperature
- (d) Operating state of Air conditioner
- (e) Operating state of Total heat exchanger

■ EXPLANATION OF NIGHT-TIME FREE COOLING OPERATION IMAGE

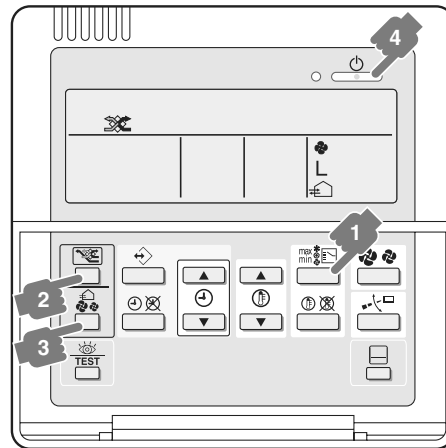
The unit compares the indoor and outdoor temperatures after the air conditioning operation stops for the night. If the following conditions are satisfied, the operation starts, and when the indoor temperature reaches the air conditioning setting, the operation stops.

<Conditions>

1. The indoor temperature is higher than the air conditioning setting and
 2. The outdoor air temperature is lower than the indoor temperature,
- If the above conditions are not satisfied, reevaluation is made every 60 minutes.

1.5.2 Operation Procedure

Cooling, Heating and Fan Only Operation



Remote controller for VKM BRC1D52

[PREPARATIONS]

- To protect the unit, turn on the main power switch 6 hours before operation.
Do not turn off the power during the heating or cooling season. This is to ensure smooth start-up.
 - 1 Press the operation mode selector button several times and select the operation mode of your choice;
 - “” Cooling operation
 - “” Heating operation
 - “” Fan only operation
- Note**
- “” can only be set for systems operating in cooling and heating at the same time.
 - “” is displayed on all remote controllers when using the VRV system cooling only type, but only “” and “” can be set.
 - Select the operating mode on a remote controller on which “” is not displayed.
 - “” “” and “” (only for simultaneous cooling/heating systems) cannot be selected on remote controllers on which it is displayed. Refer to P.29 if “” is displayed.

- 2 Press ventilation mode selector button if you wish to change the mode.
The display rotates through the following selections every time the button is pressed.



Note

- It is unnecessary to change ventilation mode because the mode is already set to “automatic mode”.

- 3 Press ventilation fan speed button if you wish to change the fan speed.
The display rotates through the following selections every time the button is pressed.

Low High

L H

After the selection, the ventilation fan speed display disappears.
And the fan speed of the combined air conditioner regularly displays.

Note

- It is unnecessary to change four speed mode because the mode is already set to “Low” or “High” mode by the installer.

-  Press the ON/OFF button.
The operation lamp lights up and the system starts operation.

Stopping the system

Press the ON/OFF button one more time. The operation lamp will go off. The unit will stop.

- After stopping operation, the fan may continue operating for up to a minute.
- The fan may stop, but this is not an error.

Note

- Do not turn off the power immediately after operation stops. Wait at least 5 minutes.
Not waiting may cause leaking or error.
- Do not change operations frequently in a short period of time.
It can result not only in error but also failure of switches or relays in the remote controller.
- Never press the button of the remote controller with a hard, pointed object.
The remote controller may be damaged.

■ EXPLANATION OF OPERATION MODE

Cooling mode 	Heating mode 	Automatic mode 
While operating in ventilation mode, the unit adjusts the outside air to the indoor temperature and then brings it into the room.		It automatically selects “  ” or “  .
		Fan mode  It only operates in ventilation mode. The unit processes outside air using the heat exchanger element, but not the DX expansion coil.

Note

- This unit cannot control room temperature. If this is needed, do not install the Heat Reclaim Ventilator alone, but rather install another indoor unit.

■ EXPLANATION OF VENTILATION MODE

Note

Automatic mode  : **Combined with a VRVlll system air conditioner**

The unit automatically switches between “” and “” based on information from the VRV systems air conditioner (heating, cooling, fan, and set temperature) and information from the Heat Reclaim Ventilator (indoor and outdoor temperatures).

Independent system

The unit automatically switches between “” and “” when it is combined with an air conditioner (Not produced by Daikin) and based on only the information from the Heat Reclaim Ventilator (indoor and outdoor temperatures) when the Heat Reclaim Ventilator is operating alone.

Total heat exchange mode  : Outdoor air passes through the heat exchange element and heat exchanged air is sent into the room.

Bypass mode  : In this mode outdoor air does not through the heat exchange element, but rather sent into the room as is.

■ EXPLANATION OF HEATING OPERATION

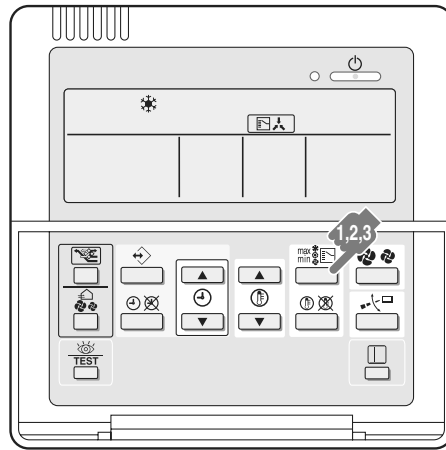
Defrost operation

- In heating operation, freezing of the outdoor unit's coil increases.
Heating capability decreases and the system goes into defrost operation.
- The remote controller will read “” until the hot air starts blowing.
- It returns to the heating operation again after 6 to 8 minutes (10 at the longest).
- During defrost operation, the fans of the unit continues operation (factory setting).
The purpose of this is to maintain the amount of ventilation and humidifying.
- The change of the layout in the room should be examined when the cold draft from air supplying opening is feared.
- Though the fan can be stopped by the setting of remote controller.
Do not stop the fan in the place where no ventilation by stopping the fan may cause the influence of diffusion of air which it is dirty and moisture into another room, or the inflow from outside the room.
(outflow such as viruses from the sickroom, or smell leakage from the rest room, etc.)
Contact your local dealer for details.

Hot start

- The remote controller will read “” until the hot air starts blowing, e.g. at the start of heating operation.

Setting the Main Remote Controller

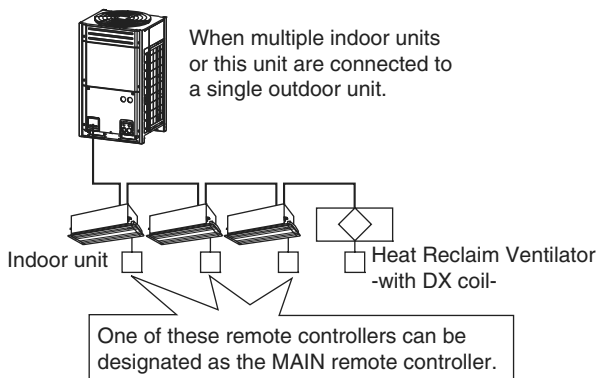


Remote controller for VKM BRC1D52

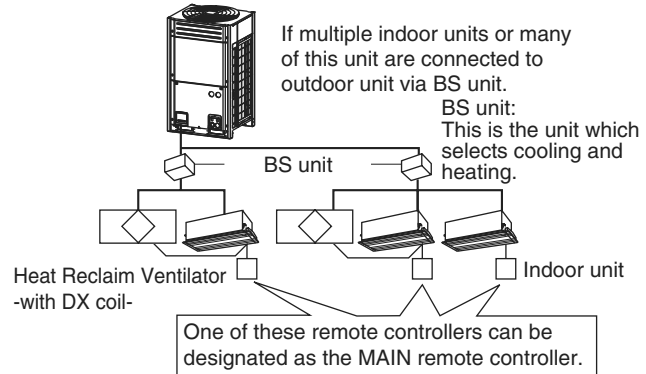
- When the system is installed as shown below it is necessary to designate one of the remote controllers as the MAIN remote controller.
- Only the MAIN remote controller can select cooling, heating, or automatic operation (the last only on simultaneous cooling/heating systems).
- The displays of SUB remote controllers show “” (changeover under control) and they automatically follow the operation mode directed by the MAIN remote controller.

However, it is possible to changeover to program dry with SUB remote controllers if the system is in cooling operation set by the MAIN remote controller.

(Cooling/heating selection operation systems)



(Simultaneous cooling/heating systems)



■ HOW TO DESIGNATE THE MASTER REMOTE CONTROLLER

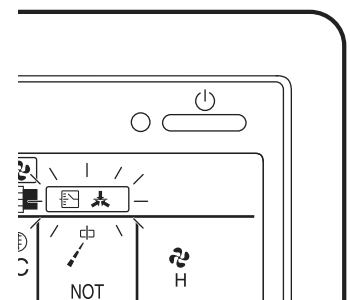
- 1 Press the operation mode selector button of the current MAIN remote controller for 4 seconds. The display showing “” (changeover under control) of all SUB remote controllers connected to the same outdoor unit or BS unit flashes on.

- “” flashes when the power is first turned ON.
- The ventilation mode can be changed regardless of the setting (MAIN or SUB).

Note

- This unit cannot control room temperature. If the unit is connected to the same system with other indoor units, set the MAIN remote controller on the other indoor units.

- 2 Press the operation mode selector button of the controller that you wish to designate as the MAIN remote controller. Then designation is completed. This remote controller is designated as the MAIN remote controller and the display showing “” (changeover under control) vanishes. The displays of other remote controller show “” (changeover under control).



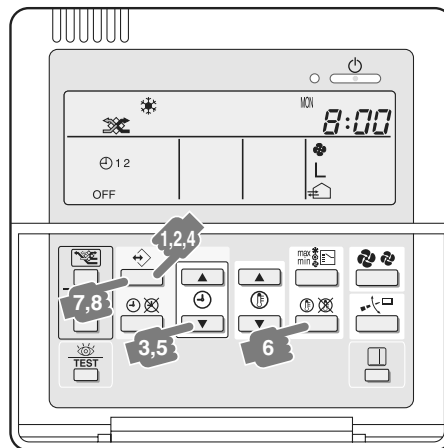
- 3 Press the operation mode selector button on the MAIN remote controller (i.e. a remote controller which does not display “”) to scroll through the modes. The display will scroll through “” – “” (only for simultaneous cooling/heating systems) – “” – “”.
- The display on SUB remote controllers will also change automatically.

■ DETAILS AND ACTIVITY OF OPERATION

- Setting the MAIN remote controller (without the “” display) to cooling/heating mode will make SUB remote controllers (with the “” display) to follow to the mode of the MAIN remote controller.
Selection of fan mode is possible, however.
- Setting the MAIN remote controller (without the “” display) to fan mode will make SUB remote controllers (with the “” display) any setting other than fan mode impossible.

Programming Start and Stop of the System with Timer

How to Program and Set the Timer with the Remote Controller



Remote controller for VKM BRC1D52

- The controller is equipped with a schedule timer that enables the user to operate the installation automatically; setting the clock and day of the week is required to be able to use the schedule timer.
- To set up clock, refer to the operation manual of the remote controller.
- 1 Browse to Monday by pressing the “” button.
The “” icon appears, “MON” will blink and one of the “”, “”, “”, “”, “” icons, one of the “”, “”, “” icons might be displayed but all other fields remain blank, indicating that no actions are programmed for Monday.
- 2 Enter the program mode by holding down the “” button for 5 seconds, the “” icon will now blink too.
Press the “” button to activate the first programmed action.
A blinking “1” is displayed indicating that the first programmed action for Monday is being programmed; The set temperature and clock display are blinking.
- 3 Enter the time when the action must start using the “” & “” buttons (min. step = 10 minutes).
- 4 Press the “” button to display the next programmed action. If a second action is programmed for Monday, “MON” will still be blinking and “1 2” will appear.
Assuming that 5 actions were programmed for Monday, a total of 5 presses will be required to display all programmed actions.
- 5 Enter the time when the action must stop using the “” & “” buttons (min. step = 10 minutes).
- 6 Press the “” button. “OFF” icon displays.
This icon means the unit will stop at the set time.
When all data for the schedule timer actions for Monday are entered, you must confirm the programmed actions.
Make sure the last schedule timer action you want to keep is selected (schedule timer actions with a higher number will be deleted).

Now you must choose between 2 options:**1. CONFIRM AND COPY TO NEXT DAY**

-  The schedule timer action programmed for the current day are also valid for the next day: use the “confirm last action and copy actions to next day” function by pressing the “” and “” buttons simultaneously for 5 seconds. “DAY OF THE WEEK INDICATOR” will change blinking from “MON” to “SUN”.

2. CONFIRM ONLY

-  The schedule timer action programmed for the current day are only valid for the selected day: use the “confirm last action and go to next day” function by pressing the “” button for 5 seconds. Program mode is quit and depending on the choice made, the programmed actions are saved for Monday (and possibly Tuesday).

PROGRAMMING THE OTHER DAYS OF THE WEEK

Programming the other days of the week is identical to programming the first day of the week. “TUE” is blinking to indicate the selected day, “” and “1” are steady if actions were copied from Monday to Tuesday, only “” is displayed if no actions were copied from Monday to Tuesday.

Note

The schedule timer will not :

- control fan speed,
- control airflow direction,
- control ventilation mode,
- control ventilation amount,
- change the operation mode for a scheduled setpoint.

The parameters listed above can be set manually, without interfering with the schedule timer.

■ OPTIMUM OPERATION

Observe the following precautions to ensure the system operates.

- **When the display shows “”, ask a qualified service person to clean the filters**
(Refer to Maintenance on page 33).
- **Do not operate the Heat Reclaim Ventilator in Bypass mode when the room air is under heating in winter or when the outdoor air temperature is 30°C or more.**
This may cause condensation to form on the main unit or on discharge grille, or around air supply opening.
- **Keep the indoor unit and the remote controller at least 1 m away from televisions, radios, stereos, and other similar equipments.**
This may cause distorted picture or noise.
- **Turn off the main power supply switch when it is not used for long periods of time. When the main power switch is turned on, some watts of electricity is being used even if the system is not operating.**
Turn OFF the main power supply switch for saving energy. When reoperating, turn ON the main power supply switch 6 hours before operation for smooth running.
- **Use city water or clean water and take steps to prevent condensation from forming. (VKM-GBMV1 series only)**
- **The life of humidifier become shorter when the supply water is hard water. (VKM-GBMV1 series only)**
Use a water softener.
- **Do not install the remote controller where the indoor temperature and humidity, respectively, are out of the range of 0-35°C and RH 40-80%.**
This may cause malfunction.
- **Do not install the remote controller where direct sunlight may fall on it.**
This may cause discoloration or deformation.

Note

- When the solenoid valve fails, the remote controller does not display any error code.
Usage under that status will lead to insufficient humidification and increased tap water consumption. The solenoid valve should be checked at the beginning of the heating season. (VKM-GBMV1 series only)

Part 4

Maintenance

1. Maintenance.....	33
1.1 When to Perform Maintenance of the Air Filter	33
1.2 Seasonal Maintenance <VKM-GBMV1 Series Only>	33
1.3 Inspection of the Fan Motor.....	34
1.4 Replacing the Humidifier Element <VKM-GBMV1 Series Only>.....	34

1. Maintenance

ONLY A QUALIFIED SERVICE PERSON IS ALLOWED TO PERFORM MAINTENANCE
DO NOT CHECK OPENING INSIDE THE UNIT BY YOURSELF.

- Working at high places can cause accidents. Ask your local dealer for maintenance.

1.1 When to Perform Maintenance of the Air Filter

Clean the air filter when the display shows “” (TIME TO CLEAN AIR FILTER). It will display that it will operate for a set amount of time.

AT LEAST ONCE EVERY YEARS (FOR GENERAL OFFICE USE)
(CLEAN THE AIR FILTER MORE FREQUENTLY IF NECESSARY.)

- Ask your local dealer to clean the air filter.
- Increase the frequency of cleaning if the unit is installed in a room where the air is extremely contaminated.

For remote controllers which display the filter sign, turn on the power after maintenance, and press the filter sign reset button.

*Consult your local dealer if you want to change the time setting for when the filter sign goes on.



Caution

- **Always use the air filter.**
If the air filter is not used, heat exchange elements will be clogged, possibly causing poor performance and subsequent failure.

WHEN TO CLEAN THE HEAT EXCHANGE ELEMENT

AT LEAST ONCE EVERY TWO YEARS
(FOR GENERAL OFFICE USE)
(CLEAN THE ELEMENT MORE FREQUENTLY IF NECESSARY.)

1.2 Seasonal Maintenance <VKM-GBMV1 Series Only>

1.2.1 At the Beginning of the Season

- Ask your local dealer for inspection at the beginning and the end of the humidify season.

For dealers

Inspected part	Content of maintenance		Problems if maintenance is not carried out
	Items to be inspected	Solution	
Strainer (80-mesh)	Check for clogging	Clean if clogged.	Insufficient humidifying.
	Check o-ring for cracks	Replace if cracked.	Leaking.
Feed water tank	Check for operation of float switch	Clean if it does not work properly due to buildup.	Insufficient humidifying. Overflowed feed water tank.
	Check for dirt	Clean if very dirty.	Weak fan strength. Reduced humidifying capacity.
Solenoid valve	Check for shutting and opening. Check in a similar fashion when checking the float switch operation.	Replace if it doesn't work.	Insufficient humidifying. Overflowed feed water tank. (Increased tap water consumption)

1.3 Inspection of the Fan Motor

**Note**

- When the fan fails, the remote controller displays error code.
Usage under that status will lead to insufficient ventilation.
The air supply and exhaust fans should be checked once every one or two months.
You can make a simple check such as below way.
To check the wind flow, hold a bar of which the end has a string or other similar lightweight item over the supply grille and exhaust grille.

1.4 Replacing the Humidifier Element <VKM-GBMV1 Series Only>

- The humidifier element needs to be replaced regularly.
The humidifier element should in general be replaced once every three years when supply water is soft water, but outside factors (If the water quality is hard water, etc.) as well as operating conditions (24-hour-a-day air conditioning, etc.) may shorten its productive life.
- Contact your local dealer if you have any questions.

Part 5

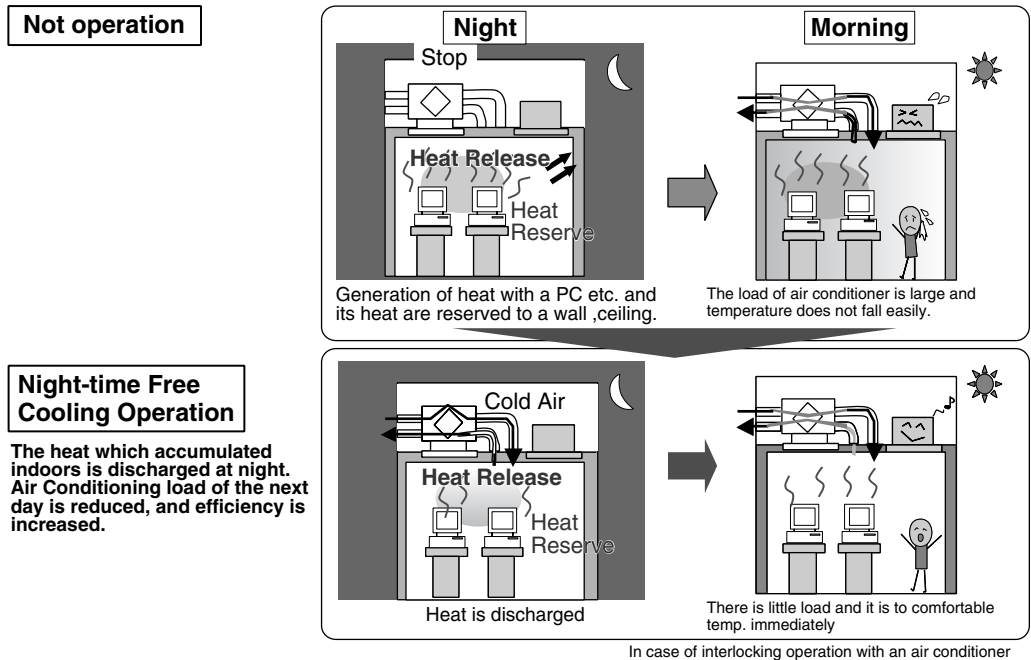
Control Functions

- 1. Control Functions 36
 - 1.1 Explanation of Individual Functions 36
 - 1.2 Layout of Switches on PCB 42

1. Control Functions

1.1 Explanation of Individual Functions

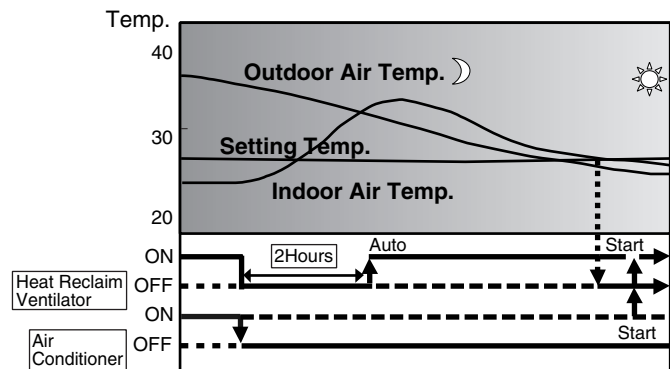
1.1.1 Night-time Free Cooling Operation



■ Mechanism

<Operation>

1. Interlocking operation is carried out with the air conditioning machine, and the time of 2 hours passing after an operation stop is judged to be night. (The same judgement as the present preparatory operation)
2. After 2-hour progress, when indoor temperature is higher than the set temperature of an air conditioning machine and higher than outdoor air temperature, operation is started.
3. Operation will be stopped if indoor air temperature falls to air conditioning machine set temperature.



■ Effect (Field Setting by remote controller)

It is reduction of about 5% of air conditioning load at the time of cooling operation.

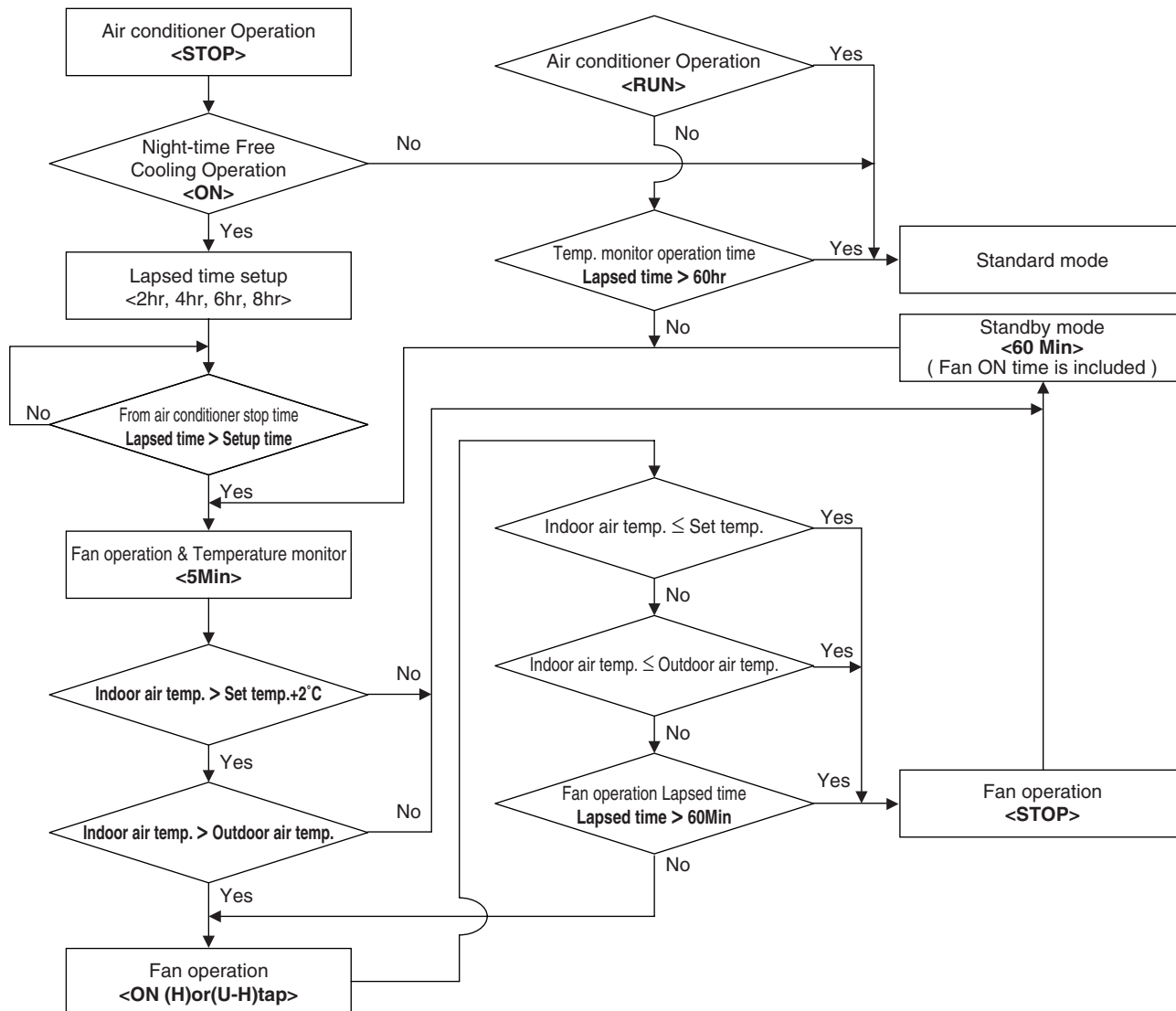
Air conditioning operation carries out to April to October, and air conditioning load is calculated only with sensible heat load.



Note: Night-time free cooling operation setting can be set using field setting mode remote controller. In detail, refer to P.80.

Night-time Free Cooling Operation <Flow Chart>

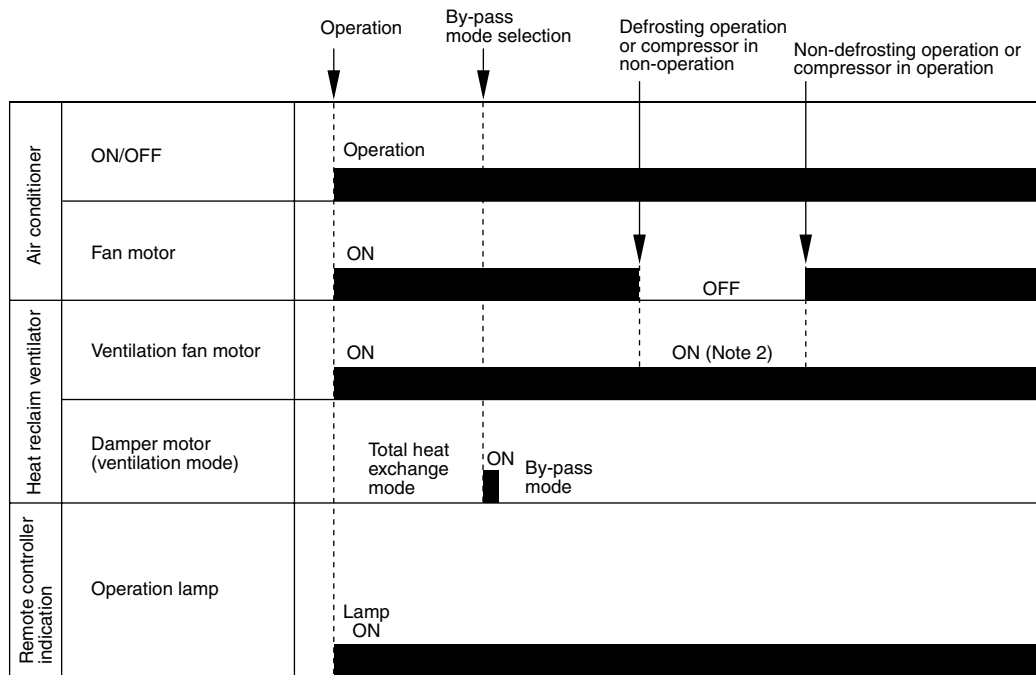
Night-time Free Cooling Operating Condition



1.1.2 Cold Area Mode

Stops or lowers ventilation airflow during defrosting operation and compressor non-operating condition when equipment in heating mode, thus reducing heating load and cold air draft.

Operation chart (in heating only)



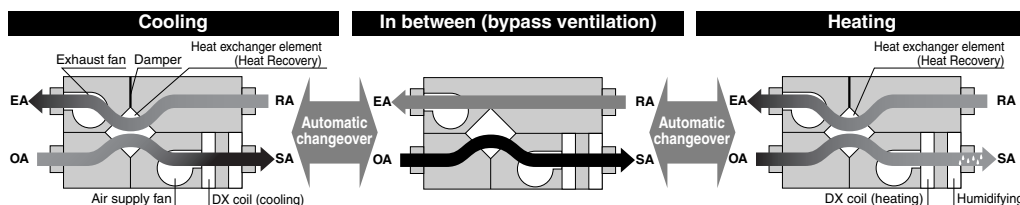
i Note1: Cold area mode can set using field setting mode of remote controller. In detail, refer to P.80.

i Note2: During defrost operation, the fans of the unit continues driving (factory setting). The purpose of this is to maintain the amount of ventilation and humidifying. Though the fan can be stopped by the setting of the remote controller. In detail, refer to P.80.

1.1.3 Automatic Selection of Ventilation Mode

Unlike the conventional total heat exchanger that only collects the heat on the exhaust air side to the air supply side, the VKM unit monitors the cooling/heating operation mode and the set temperature of air conditioners using micro-computer under the interlock control, and detects indoor and outdoor temperatures under the independent control. In other words, the VKM unit employs the automatic selection of the ventilation mode that automatically selects the total heat exchanger ventilation mode or the normal (bypass) ventilation, according to the monitoring aforementioned.

Operation automatically changes to the optimum pattern to suit conditions.



1.1.4 FRESH-UP Operation

Both the excessive supply mode and the excessive exhaust mode are selectable. This function creates a more comfortable air environment.

	Supply Fresh-up (Excessive outdoor air supply)	Exhaust Fresh-up (Excessive exhaust air supply)
Detail	Supply air volume can be set at a higher level than the exhaust air by the remote controller.	Exhaust air volume can be set at a higher level than the supply air by the remote controller.
Major effects	- Prevents inflow of toilet odor - Prevents inflow of outdoor air in winter	- Prevents outflow of airborne bacteria from rooms in a hospital - Prevents outflow of odors from rooms in a nursing home
Application	Offices, etc.	Hospitals, Nursing homes, etc.
Example		

Essential Setting Changes

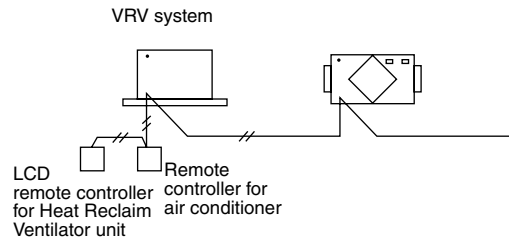
- Setting changes should be made in the following way.
 Mode No. : 18 (group tie up) or 28
 First code No.7
 Second code No.1~No.4
 Refer to P.80.

1.1.5 Air Conditioner Link Operation

Link system enables simultaneous ON/OFF operation of Heat Reclaim Ventilator unit and air conditioner (VRV system, SkyAir).

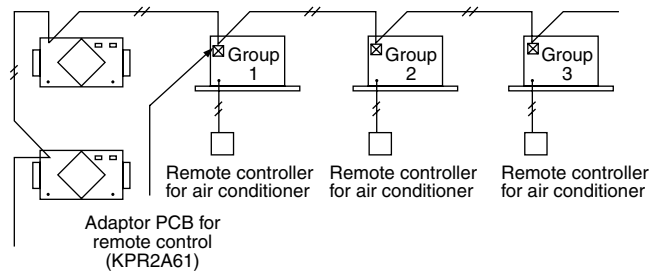
1) 1 group link control

- Allows simultaneous ON/OFF from remote controller for air conditioner.
- Allows independent operation of Heat Reclaim Ventilator unit from VRV system remote controller during interim periods (not possible when direct duct connection is used).
- ON/OFF operation is not possible from LCD remote controller of Heat Reclaim Ventilator unit.



2) Link control of 2 or more groups (zone link)

- Heat Reclaim Ventilator unit can be operated when 1 or more air conditioners are operating.
- Allows independent operation of Heat Reclaim Ventilator unit from VRV system remote controller during interim periods (direct duct connection is not allowed in this system).
- ON/OFF operation is not possible from LCD remote controller of Heat Reclaim Ventilator unit.



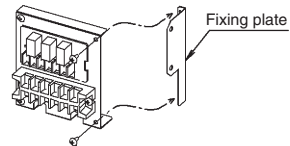
Note: With Super Wiring, units of different outdoor systems can be linked in operation.

1.1.6 Heater Control Operation (FIELD SUPPLY)

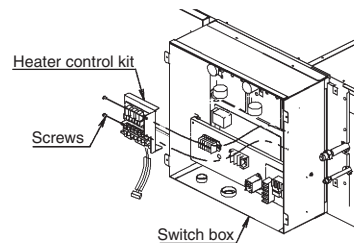
Installation

<VKM-GB(M)V1>

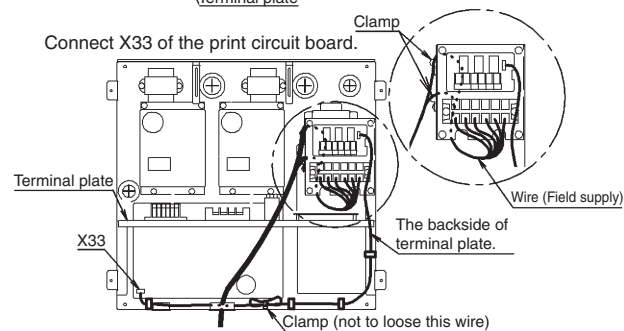
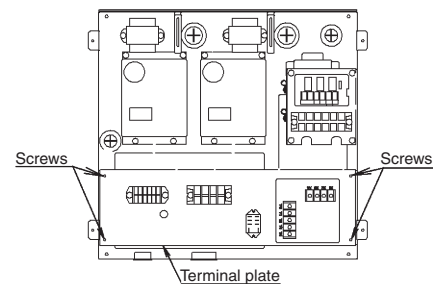
Before installation (box cover is unnecessary)
Assemble main kit and fixing plate as shown below.



Install the heater control kit to the inside of switch box as shown below.



Take off the screws on the terminal plate.
Turn up the terminal plate as shown below.



C: 3P343420E



Caution: The initial setting is required by remote controller for indoor unit or Heat Reclaim Ventilator unit. See the INSTALLATION MANUAL of Heat Reclaim Ventilator.

(Local setting)

Electric heater setting ON, OFF delay [19 (29) · 8 · 04]

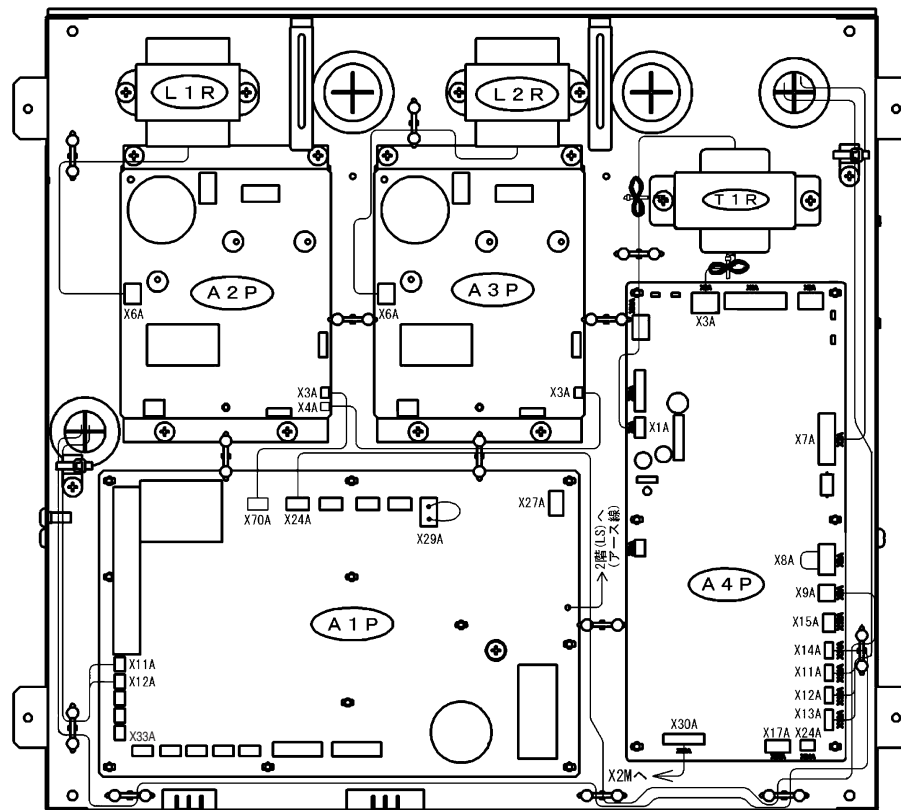
*The initial setting is necessary for safety.

1.2 Layout of Switches on PCB

1.2.1 PCB

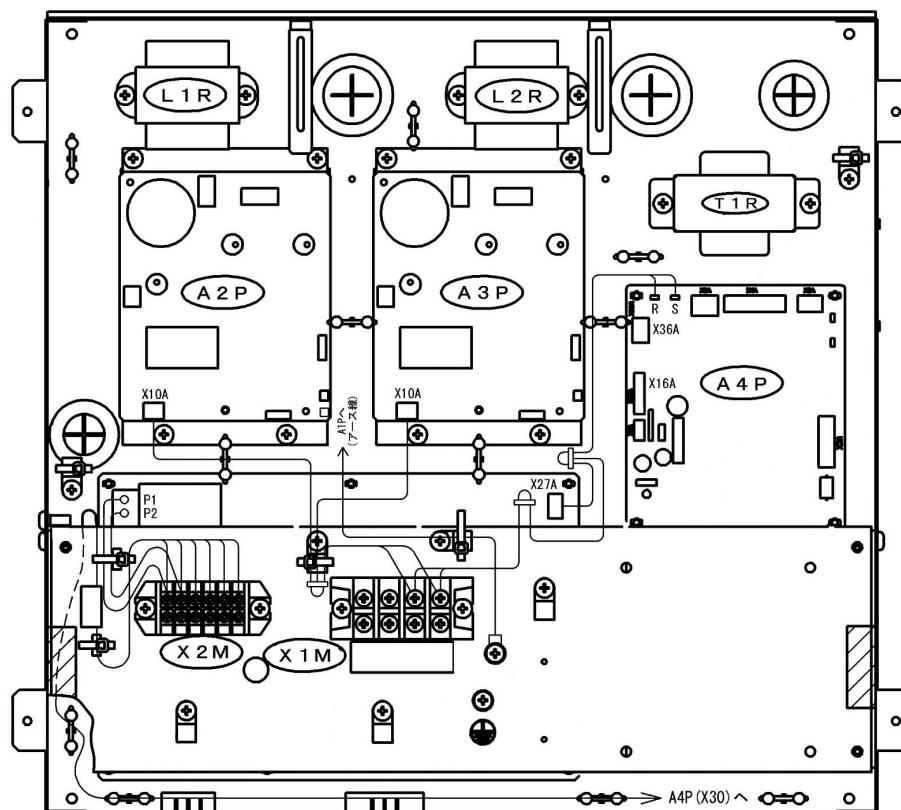
[A1P~A4P]

VKM-GBV1
VKM-GBMV1



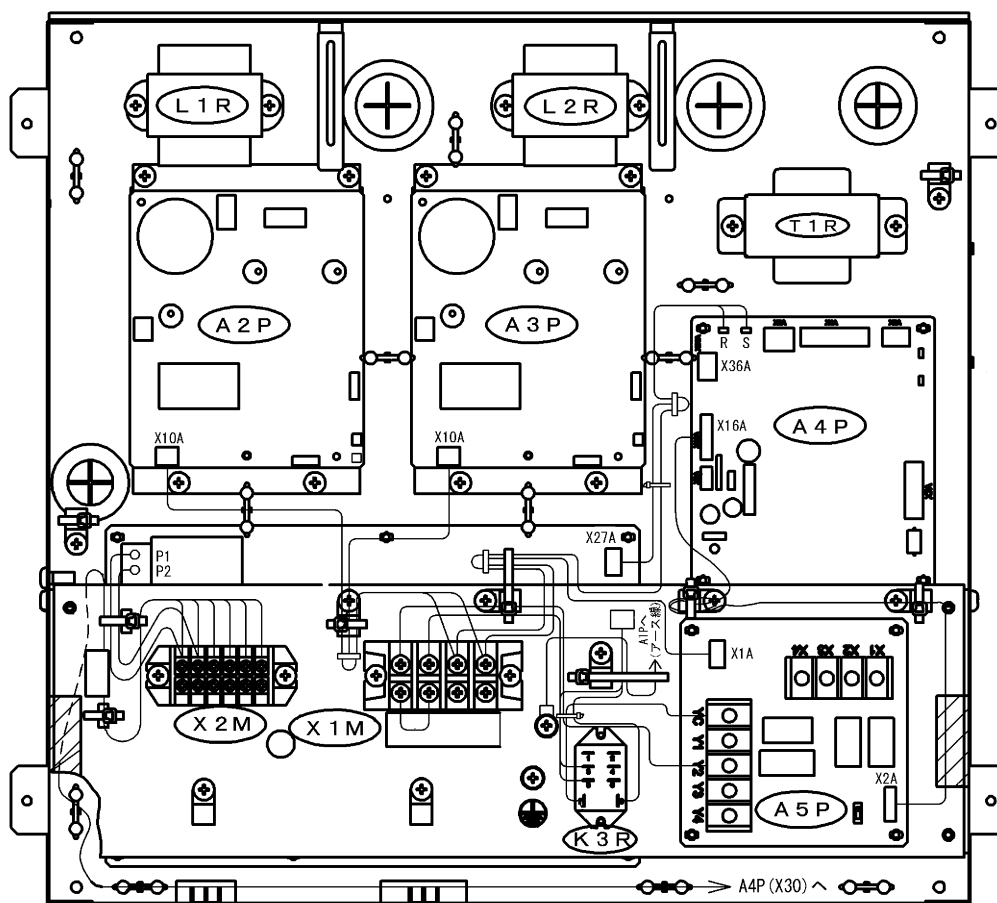
2P341992Q

VKM-GBV1



2P341992Q

VKM-GBMV1



2P341992Q

Part 6

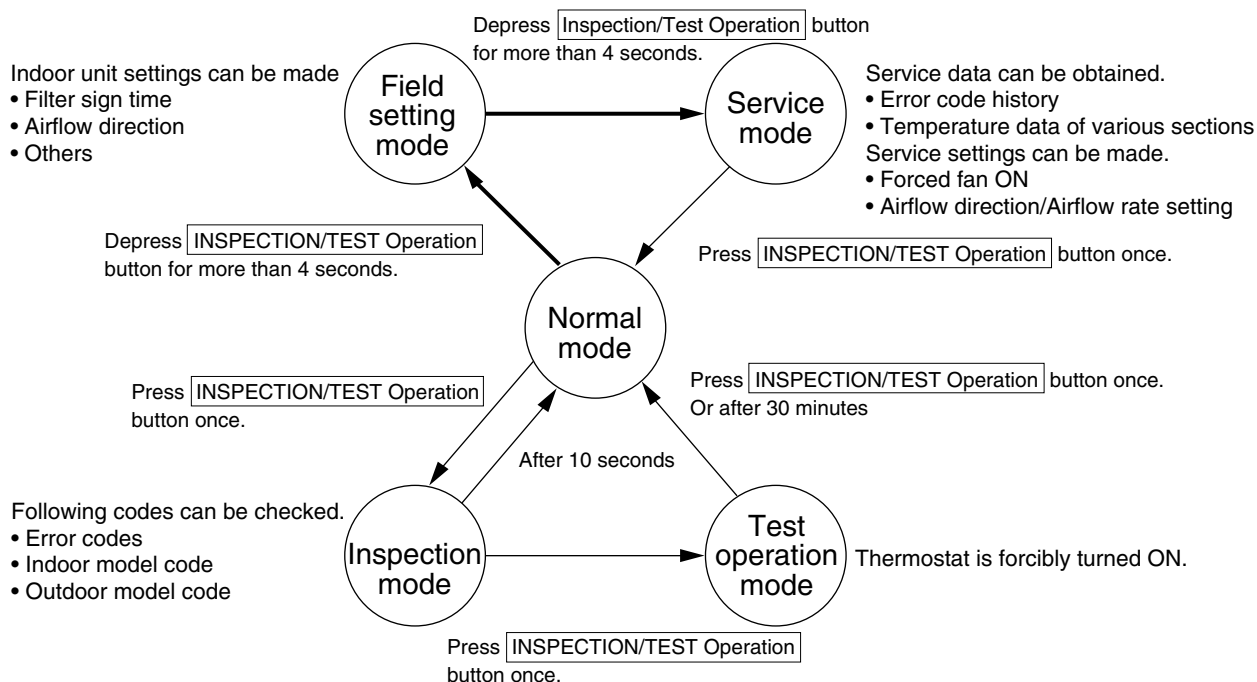
Troubleshooting

1. Troubleshooting by Remote Controller	45
1.1 The INSPECTION / TEST Button.....	45
1.2 Self-diagnosis by Wired Remote Controller	45
2. Troubleshooting	46
2.1 Error Code Indication	46
2.2 Operation of the Remote Controller's Inspection / Test Operation Button	47
2.3 Indoor Air Thermistor (R1T) Error	48
2.4 Outdoor Air Thermistor (R2T) Error.....	49
2.5 Damper System Error (Alarm).....	50
2.6 Damper System Error (Alarm).....	51
2.7 PCB Defect.....	52
2.8 Fan Motor (M1F) (M2F) Lock, Overload.....	53
2.9 Power Supply Voltage Abnormality	56
2.10 Electronic Expansion Valve Coil (20E) Abnormality	57
2.11 Transmission Error (Between Indoor unit PCB and Fan PCB).....	58
2.12 Heat Exchanger Thermistor (R5T) Abnormality	60
2.13 Gas Pipes Thermistor (R6T) Abnormality	61
2.14 Suction Air Thermistor (R7T) Abnormality.....	62
2.15 Coil Indoor Air Thermistor (R4T) Abnormality	63
2.16 Check Operation not Executed	64
2.17 Dedicated LCD Remote Controller.....	65
2.18 Data Transmission Error (between LCD Remote Controller and Master Unit).....	66
2.19 Transmission Error between Remote Controller and Indoor Unit.....	67
2.20 Transmission Error between Main and Sub Remote Controllers	68
2.21 Excessive Number of Indoor Units	69
2.22 Address Duplication of Central Remote Controller.....	70
2.23 Transmission Error between Central Remote Controller and Indoor Unit.....	71
2.24 Transmission Error between Central Remote Controller and Indoor Unit.....	72
2.25 Master Unit PCB Assembly	73
2.26 Thermistor	74
2.27 Power Transformer.....	76
2.28 Damper Motor	77

1. Troubleshooting by Remote Controller

1.1 The INSPECTION / TEST Button

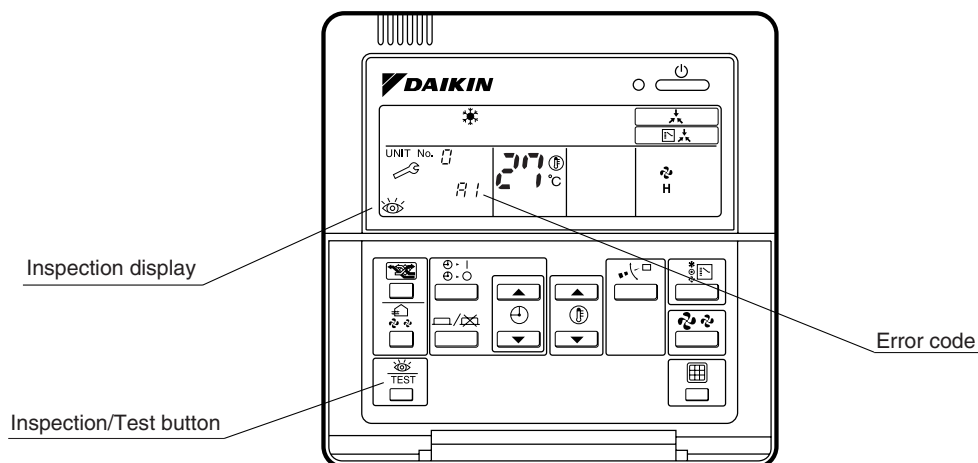
The following modes can be selected by using the [Inspection/Test Operation] button on the remote control.



1.2 Self-diagnosis by Wired Remote Controller

Explanation

If operation stops due to error, the remote controller's operation LED blinks, and error code is displayed. (Even if stop operation is carried out, error contents are displayed when the inspection mode is entered.) The error code enables you to tell what kind of error caused operation to stop. Refer to P.46 for error code and error contents.

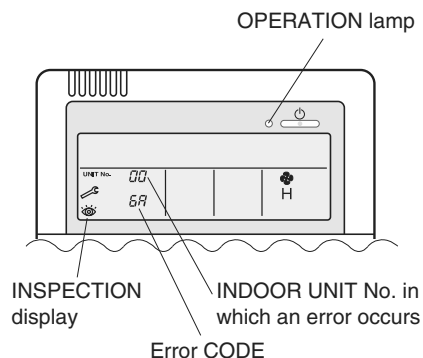


2. Troubleshooting

2.1 Error Code Indication

When an abnormality is generated, take necessary measures by referring to displayed error code.

After the cause of abnormality is removed, operate equipment and check proper functioning.



List of error codes of Remote controller of the Heat Reclaim Ventilator system

Operation lamp	Inspection indicator	Unit No.	Error code	Description	Page
ON	OFF	Blinking	64	Indoor air thermistor (R1T) error* ¹	48
ON	OFF	Blinking	65	Outdoor air thermistor (R2T) error* ¹	49
ON	OFF	Blinking	6A	Damper system error (alarm)	50
Blinking	Blinking	Blinking	6A	Damper system error (alarm)	51
Blinking	Blinking	Blinking	A1	PCB defect	52
ON	OFF	Blinking	A1	PCB defect	52
Blinking	Blinking	Blinking	A6	Fan motor (M1F) (M2F) lock, overload	53, 54
Blinking	Blinking	Blinking	A8	Power supply voltage abnormality	56
Blinking	Blinking	Blinking	A9	Electronic expansion valve coil (20E) abnormality	57
Blinking	Blinking	Blinking	C1	Transmission error (between indoor unit PCB and fan PCB)	58
Blinking	Blinking	Blinking	C4	Heat exchanger thermistor (R5T) abnormality* ¹	60
Blinking	Blinking	Blinking	C5	Gas pipes thermistor (R6T) abnormality* ¹	61
Blinking	Blinking	Blinking	C9	Suction air thermistor (R7T) abnormality* ¹	62
Blinking	Blinking	Blinking	CA	Coil indoor air thermistor (R4T) abnormality* ¹	63
Blinking	Blinking	Blinking	U3	Check operation not executed	64
Blinking	Blinking	Blinking	U5	Data transmission error (between LCD remote controller and master unit)	66
OFF	Blinking	OFF	U5	Transmission error between remote controller and indoor unit	67
OFF	Blinking	OFF	U8	Transmission error between main and sub remote controllers	68
OFF	Blinking	Blinking	UA	Excessive number of indoor units	69
ON	Blinking	ON	UC	Address duplication of central remote controller	70
Blinking	Blinking	Blinking	UE	Transmission error between central remote controller and indoor unit	71

White Error code is displayed but the system operates continuously.

However, be sure to have it inspected and repaired and as soon as possible.

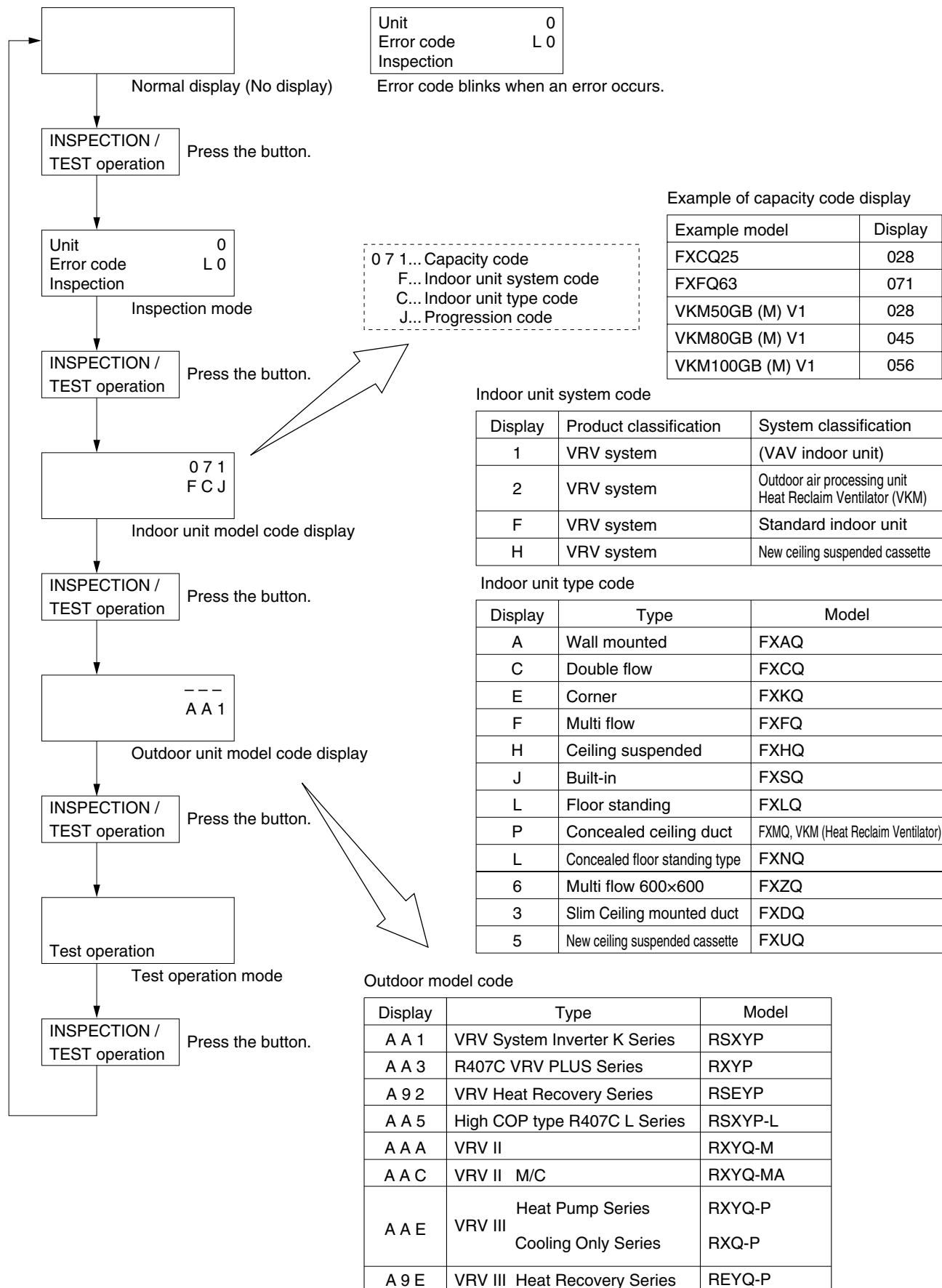
If other than above error codes are displayed, there is a possibility that the problem in question has occurred with a combined air conditioner or outdoor unit. See the operation manuals included with the air conditioners or outdoor units for details.



Note: *1. Thermistor and error code

Error code	Symbol	Thermistor
64	R1T	Indoor air thermistor
65	R2T	Outdoor air thermistor
—	R3T	PTC thermistor
CA	R4T	Coil indoor air thermistor
C4	R5T	Coil liquid pipe thermistor
C5	R6T	Coil gas pipe thermistor
C9	R7T	Coil outdoor air thermistor
—	R8T	NTC thermistor

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



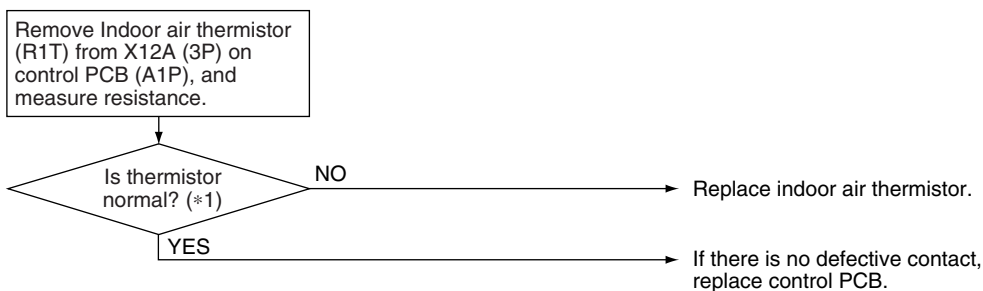
2.3 Indoor Air Thermistor (R1T) Error

Error Code	Error Code E4 Inspection — Unit No. 
LED Indication	Remote Controller  Main Unit 
Method of Error Detection	Temperature detected by inside air temperature sensor is used to detect errors.
Error Decision Conditions	When value detected by inside air temperature sensor is -40°C or below (open circuit) or 70°C or higher (short-circuit).
Supposed Causes	■ Defective sensor ■ Broken wire ■ Defective control PCB (A1P) ■ Defective contact in connector

Troubleshooting


Caution

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


Note:

*1.

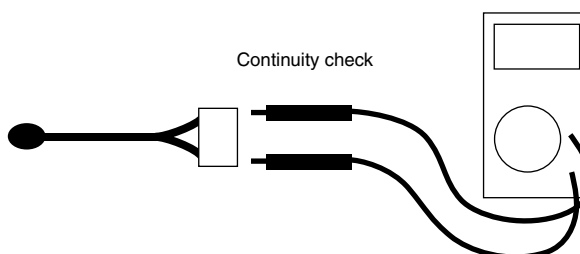
Refer to the thermistor temperature - resistance conversion table when measuring resistance.

Thermistor temperature - resistance conversion table

Thermistor temperature	Sensor resistance	Thermistor temperature	Sensor resistance
-10°C or less	108k Ω or more	22°C	Approx. 23k Ω
-5°C	Approx. 85k Ω	24°C	Approx. 21k Ω
0°C	Approx. 66k Ω	26°C	Approx. 19k Ω
5°C	Approx. 51k Ω	28°C	Approx. 18k Ω
10°C	Approx. 40k Ω	30°C	Approx. 16k Ω
14°C	Approx. 33k Ω	35°C	Approx. 13k Ω
16°C	Approx. 30k Ω	40°C	Approx. 11k Ω
18°C	Approx. 27k Ω	50°C or more	7k Ω or less
20°C	Approx. 25k Ω		

If measured value deviates significantly from above values, thermistor is defective.

Use tester to check resistance



2.4 Outdoor Air Thermistor (R2T) Error

Error Code	Error Code 55 Inspection — Unit No. 
LED Indication	Remote Controller  Main Unit 
Method of Error Detection	Temperature detected by outdoor air temperature sensor is used to detect errors.
Error Decision Conditions	When value detected by outdoor air temperature sensor is -40°C or below (open circuit) or 70°C or higher (short-circuit).
Supposed Causes	■ Defective sensor ■ Broken wire ■ Defective control PCB (A1P) ■ Defective contact in connector

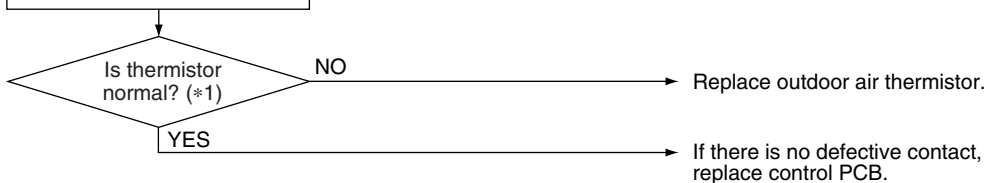
Troubleshooting



Caution

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

Remove outdoor air thermistor (R2T) from X11A (2P) on control PCB (A1P), and measure resistance.



Note:

*1.

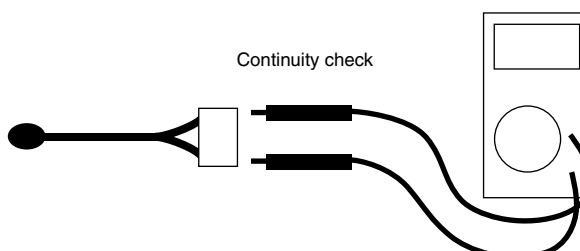
Refer to the thermistor temperature - resistance conversion table when measuring resistance.

Thermistor temperature - resistance conversion table

Thermistor temperature	Sensor resistance	Thermistor temperature	Sensor resistance
-10°C or less	108k Ω or more	22°C	Approx. 23k Ω
-5°C	Approx. 85k Ω	24°C	Approx. 21k Ω
0°C	Approx. 66k Ω	26°C	Approx. 19k Ω
5°C	Approx. 51k Ω	28°C	Approx. 18k Ω
10°C	Approx. 40k Ω	30°C	Approx. 16k Ω
14°C	Approx. 33k Ω	35°C	Approx. 13k Ω
16°C	Approx. 30k Ω	40°C	Approx. 11k Ω
18°C	Approx. 27k Ω	50°C or more	7k Ω or less
20°C	Approx. 25k Ω		

If measured value deviates significantly from above values, thermistor is defective.

Use tester to check resistance



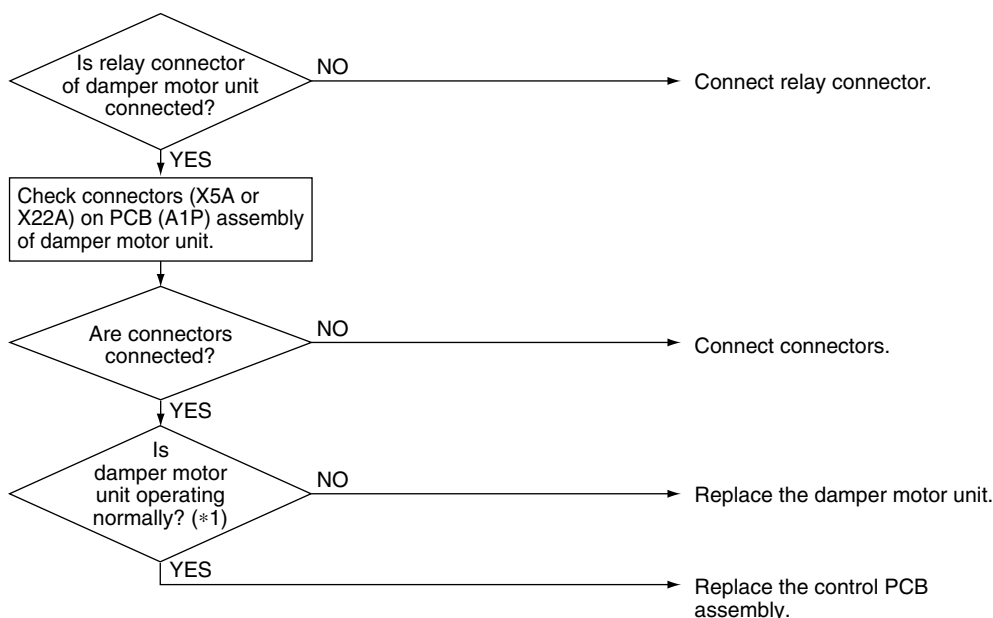
2.5 Damper System Error (Alarm)

Error Code	Error Code E8 Inspection — Unit No. 
LED Indication	Remote Controller  Main Unit 
Method of Error Detection	Measurement of damper motor limit ON/OFF time.
Error Decision Conditions	■ When damper motor limit switch 1 (or 2) remains ON (or OFF) for more than a certain time duration after ventilation mode is changed. ■ When damper motor limit switch 1 (or 2) repeats ON/OFF operations after damper motor 1 (or 2) stops.
Supposed Causes	■ Defective damper motor or limit switch ■ Broken wire in cable ■ Defective contact in connector (including relay connector) ■ Defective control PCB (A1P) assembly

Troubleshooting

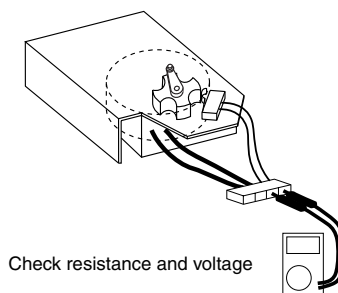

Caution

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



Note: *1.

- Place tester probes on connectors of limit switch. Move switch by hand and check continuity. If tester indicates 0Ω when limit switch turns on, and infinity when it turns off, limit switch is normal.
- Place tester probes on connectors of damper motor and check resistance. If tester indicates approx. 17 kΩ in 200-V model, damper motor is normal.



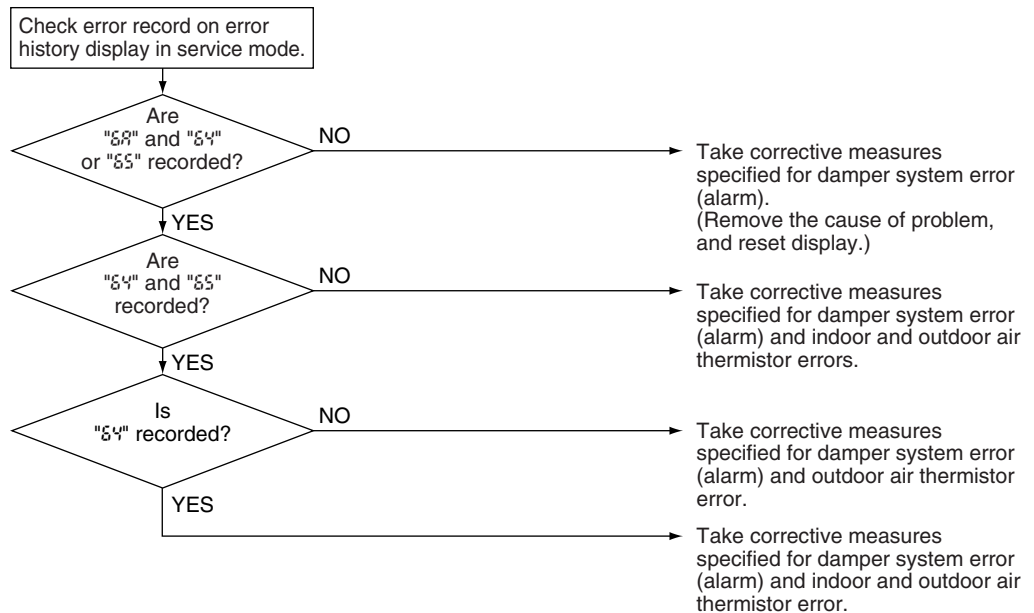
2.6 Damper System Error (Alarm)

Error Code	Error Code 58 Inspection Unit No.
LED Indication	Remote Controller Main Unit
Method of Error Detection	Measurement of damper motor limit switch ON/OFF time and temperatures detected by outdoor and indoor air thermistor.
Error Decision Conditions	■ When damper system error (alarm) and indoor (or outdoor) thermistor error are generated at the same time. ■ When damper system error (alarm) occurs and values of indoor and outdoor air thermistor meet frost conditions.
Supposed Causes	■ Defective damper motor or limit switch ■ Defective indoor air thermistor ■ Defective outdoor air thermistor ■ Frosting ■ Broken wire in cable ■ Defective contact in connector (including relay connector) ■ Defective control PCB (A1P) assembly

Troubleshooting


Caution

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

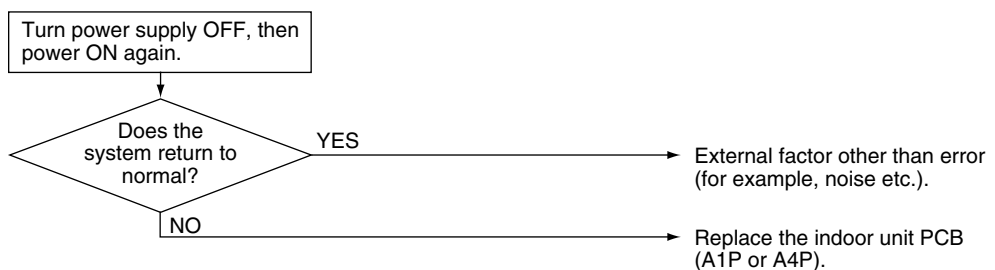


2.7 PCB Defect

Error Code	A1
Applicable Models	All indoor models
Method of Error Detection	Check data from E ² PROM.
Error Decision Conditions	When data could not be correctly received from the E ² PROM E ² PROM: Type of nonvolatile memory. Maintains memory contents even when the power supply is turned OFF.
Supposed Causes	Defective indoor unit PCB (A1P or A4P)
Troubleshooting	


Caution

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

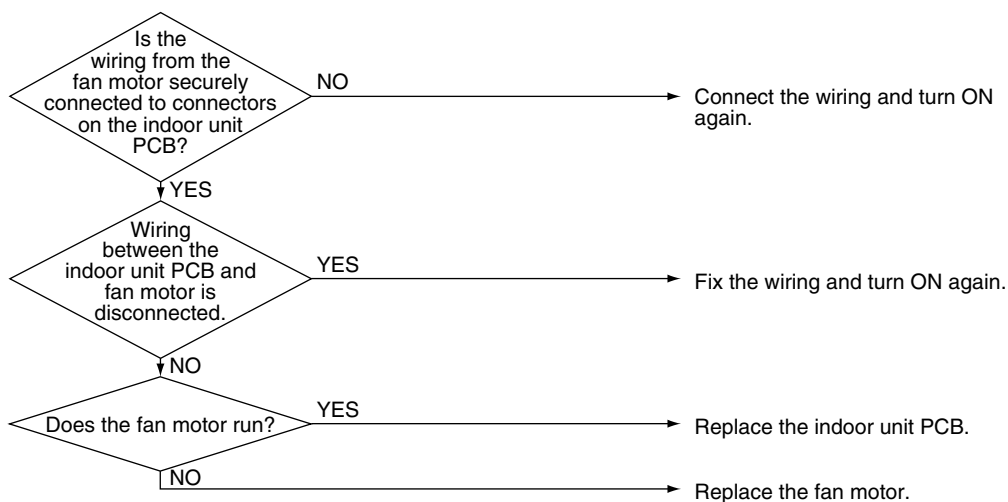


2.8 Fan Motor (M1F) (M2F) Lock, Overload

Error Code	A5 Sub code can be displayed. (01: Air supply fan, 02: Exhaust fan)
Applicable Models	All indoor models (except FXMQ-P)
Method of Error Detection	Detection by failure of signal for detecting number of turns to come from the fan motor
Error Decision Conditions	When number of turns can not be detected even when output voltage to the fan is maximum
Supposed Causes	■ Fan motor lock ■ Disconnected or defective wiring between fan motor and PCB
Troubleshooting	

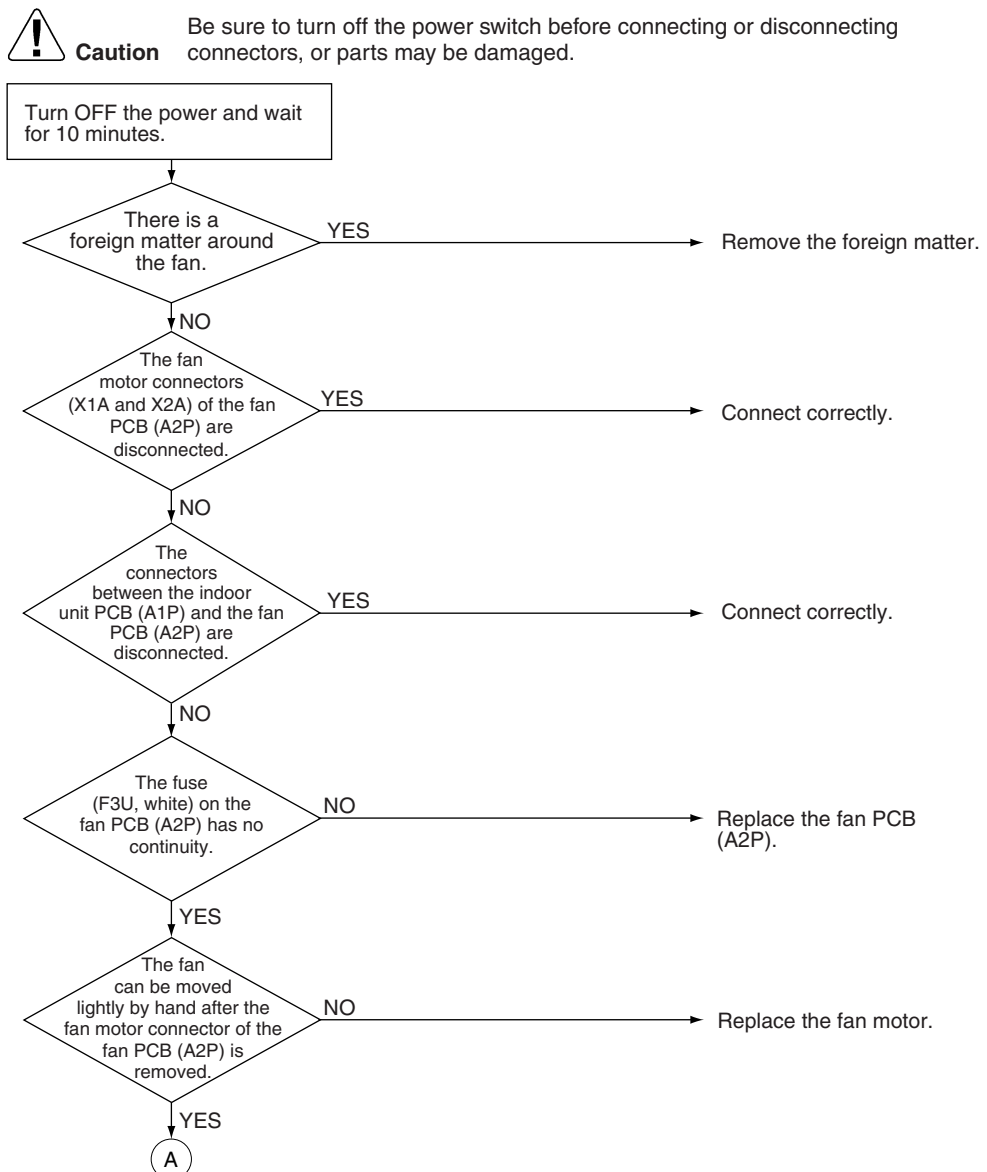

Caution

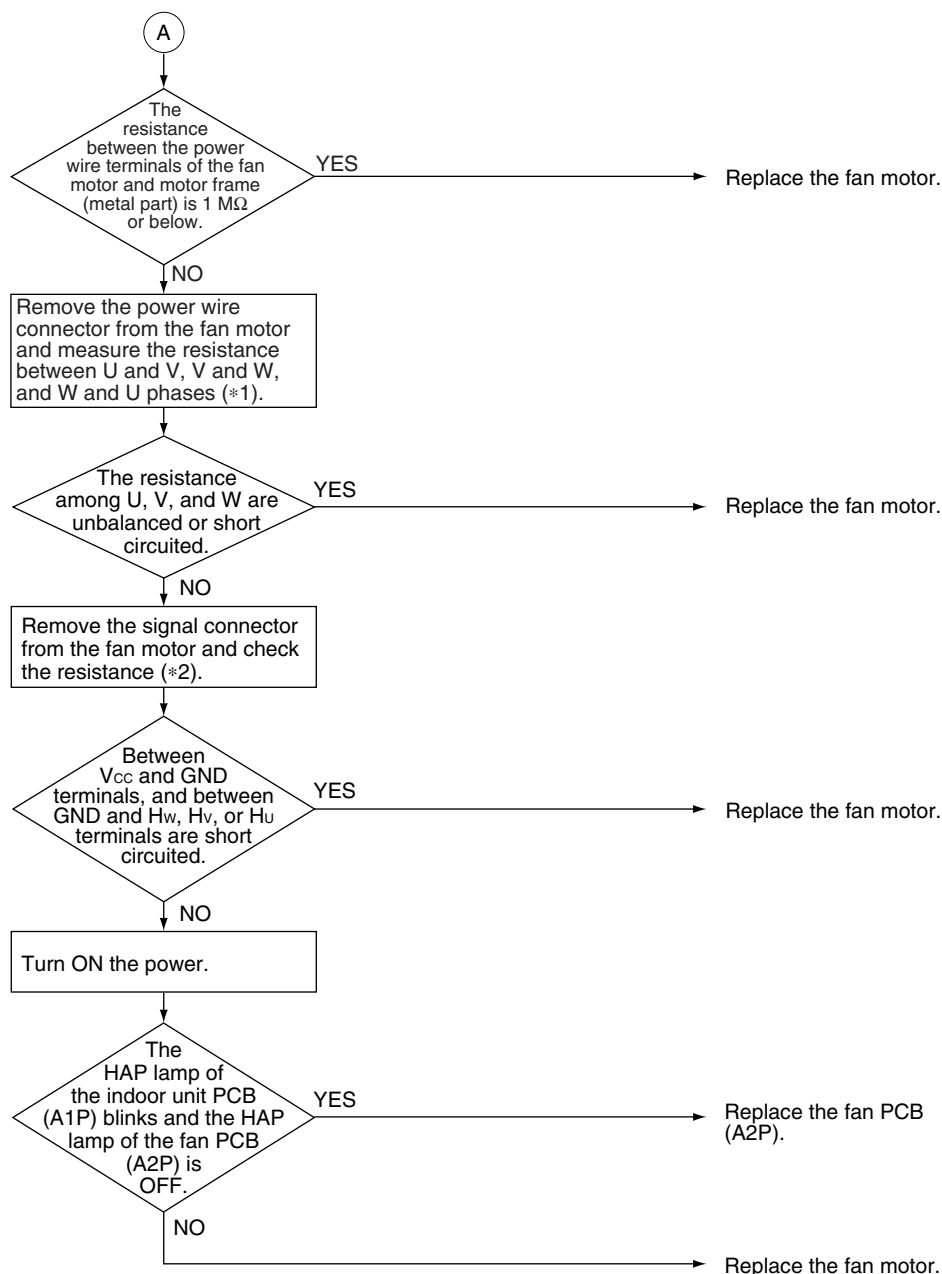
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Error Code	A5
Applicable Models	FXMQ50~140P
Method of Error Detection	Error from the current flow on the fan PCB Error from the RPM of the fan motor in operation Error from the position signal of the fan motor Error from the current flow on the fan PCB when the fan motor starting operation
Error Decision Conditions	■ An overcurrent flows. ■ The RPM is less than a certain level for 6 seconds. ■ A position error in the fan rotor continues for 5 seconds or more.
Supposed Causes	■ The clogging of a foreign matter ■ The disconnection of the fan motor connectors (X1A and X2A) ■ The disconnection of the connectors between the indoor unit PCB (A1P) and fan PCB (A2P) ■ Defective fan PCB (A2P) ■ Defective fan motor

Troubleshooting



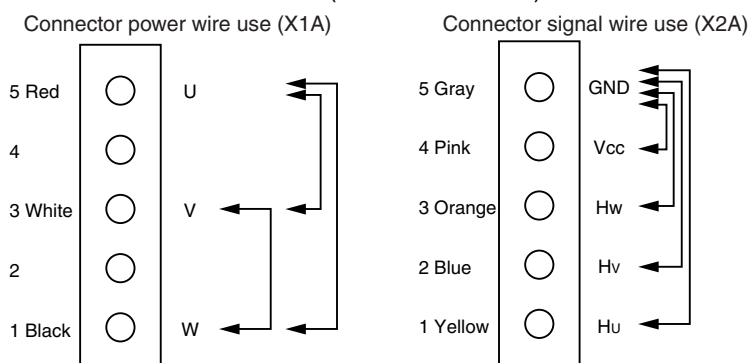


Note: *1. Measurement of power wire connector.

Remove the X1A connector from the fan PCB (A2P) and measure the resistance between the U and V, V and W, and W and U phases of the motor connector (with 5 conductors) and check that each phase are balanced (within a permissible dispersion range of $\pm 20\%$).

*2. Measurement of signal wire connector.

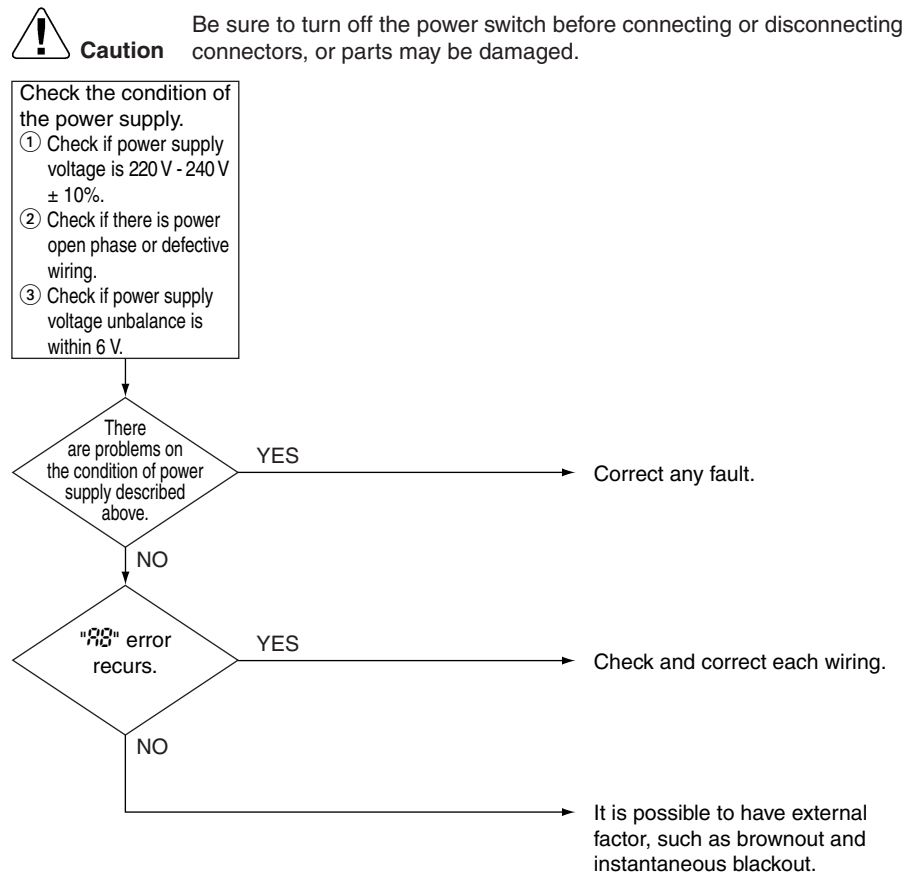
Remove the X2A connector and measure the resistance between GND and VCC, HW, HV, or HU terminals of the motor connector (with 5 conductors).



2.9 Power Supply Voltage Abnormality

Error Code	88
Applicable Models	FXMQ20~140P VKM50~100GBMV1, VKM50~100GBV1
Method of Error Detection	Detect error checking the input voltage of fan motor
Error Decision Conditions	When the input voltage of fan motor is 150 V or less, or 386V or more
Supposed Causes	■ Defective power supply voltage ■ Connection defect on signal line ■ Defective wiring ■ Instantaneous blackout, others

Troubleshooting

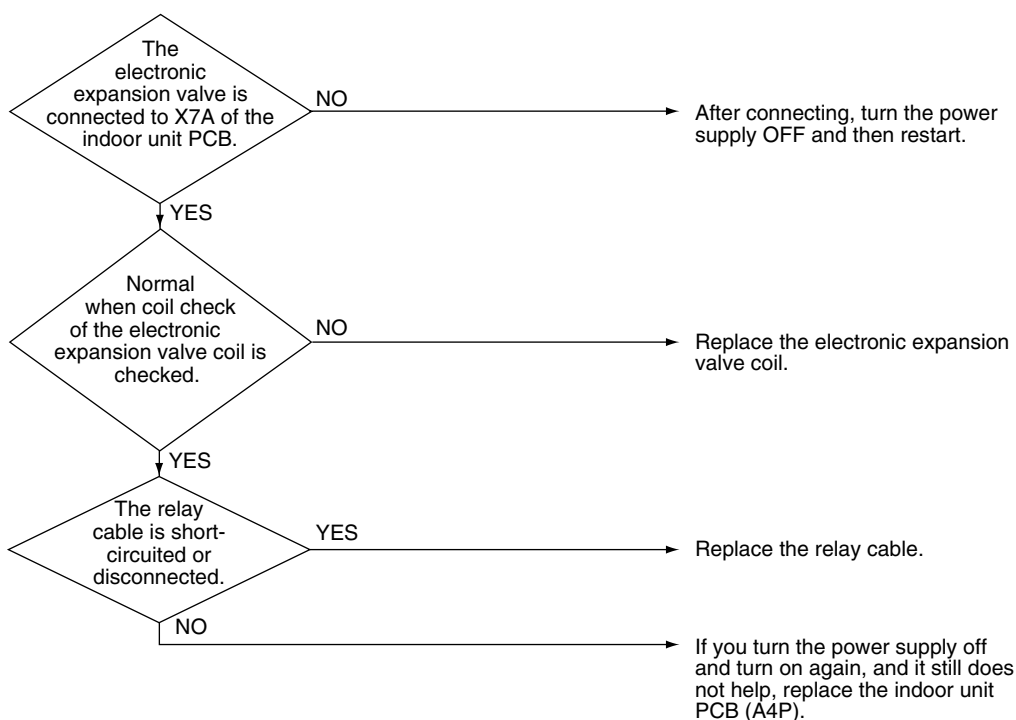


2.10 Electronic Expansion Valve Coil (20E) Abnormality

Error Code	89
Applicable Models	All indoor models
Method of Error Detection	Detection by failure of signal for detecting number of turns to come from the fan motor
Error Decision Conditions	When number of turns can not be detected even when output voltage to the fan is maximum
Supposed Causes	■ Defective moving part of electronic expansion valve ■ Defect of indoor unit PCB (A4P) ■ Defect of relay cable
Troubleshooting	


Caution

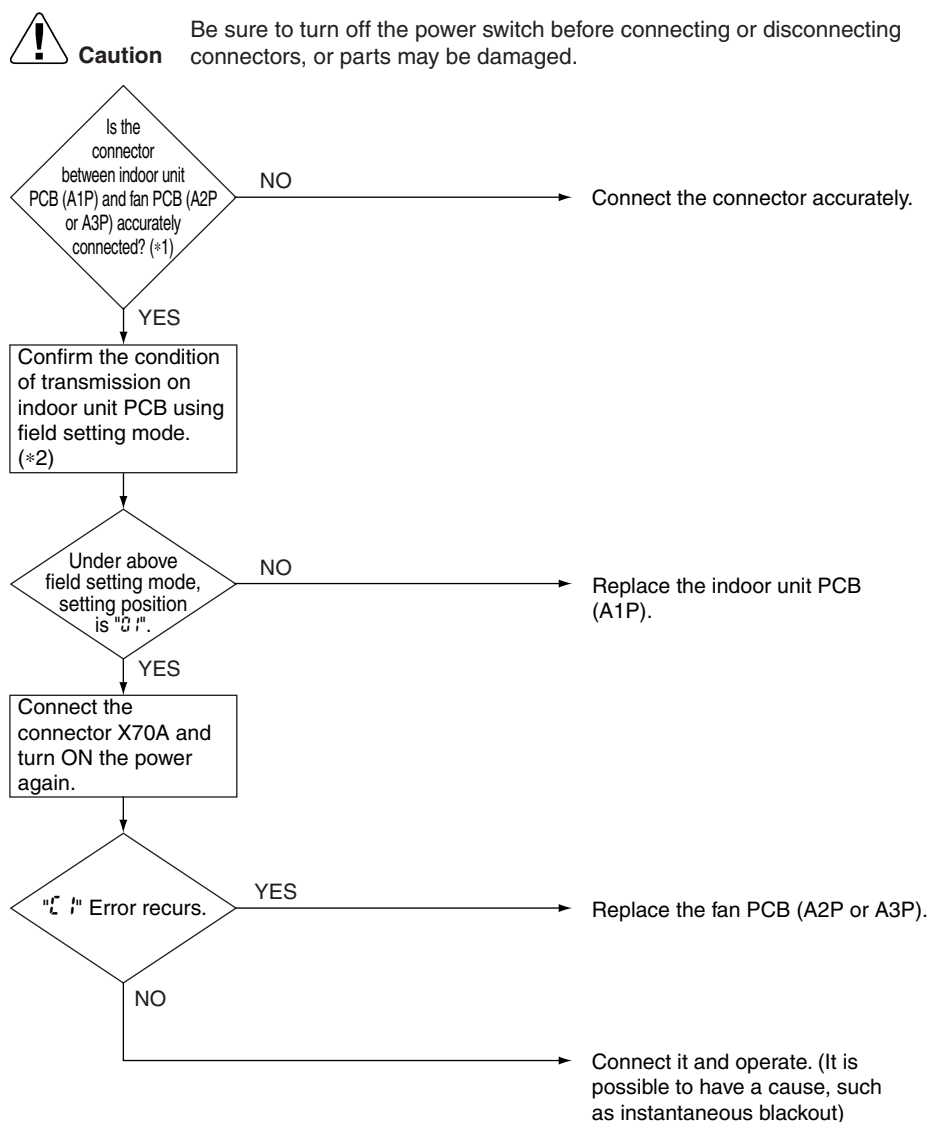
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.11 Transmission Error (Between Indoor unit PCB and Fan PCB)

Error Code	E1
Applicable Models	FXMQ20~140P VKM50~100GBMV1, VKM50~100GBV1
Method of Error Detection	Check the condition of transmission between indoor unit PCB (A1P) and fan PCB (A2P or A3P) using micro-computer.
Error Decision Conditions	When normal transmission is not conducted for certain duration
Supposed Causes	■ Connection defective connector between indoor unit PCB (A1P) and fan PCB (A2P or A3P) ■ Defective indoor unit PCB (A1P) ■ Defective fan PCB (A2P or A3P) ■ External factor, such as instantaneous blackout

Troubleshooting



Note:

- *1. Pull out and insert the connector once and check it is absolutely connected.
- *2. Method to check transmission part of indoor unit PCB.
 - ① Turn OFF the power and remove the connector X70A of indoor unit PCB (A1P).
 - ② Short circuit X70A.
 - ③ After turning ON the power, check below numbers under field setting remote control.
(Confirmation: Second code No. at the condition of first code No. 21 on mode No. 41)



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

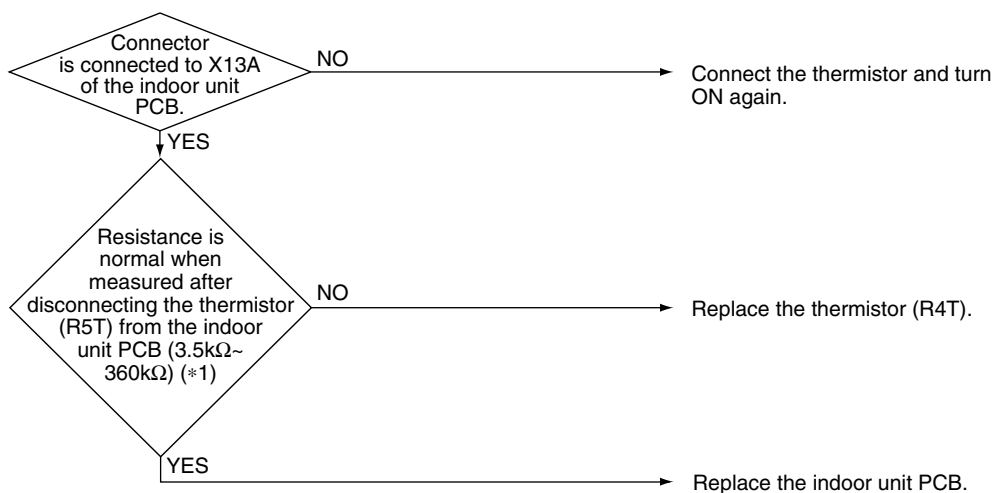
- * After confirmation, turn OFF the power, take off the short circuit and connect X70A back to original condition.

2.12 Heat Exchanger Thermistor (R5T) Abnormality

Error Code	E4
Applicable Models	VKM50~100GBMV1, VKM50~100GBV1
Method of Error Detection	Error detection is carried out by temperature detected by heat exchanger thermistor.
Error Decision Conditions	When the heat exchanger thermistor becomes disconnected or shorted while the unit is running.
Supposed Causes	■ Defective thermistor (R5T) for liquid pipe ■ Defective indoor unit PCB (A4P)
Troubleshooting	


Caution

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



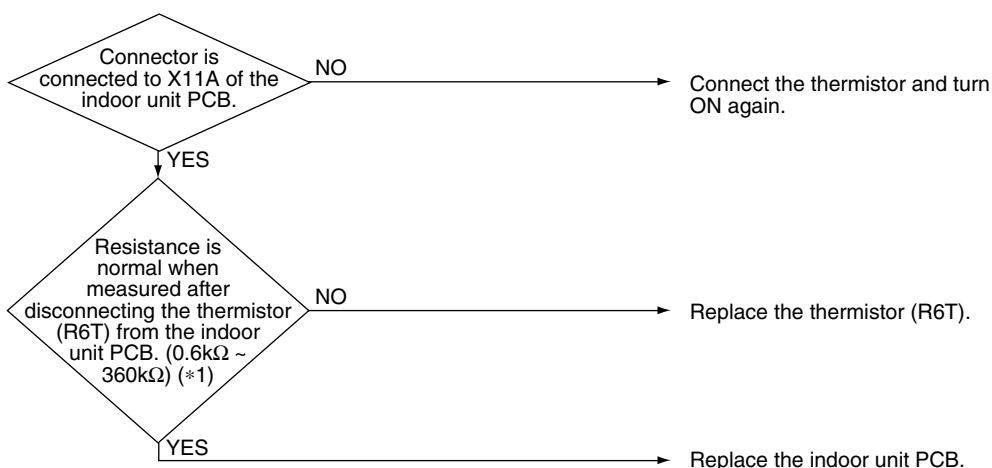
*1. Refer to thermistor resistance / temperature characteristics table on P.75.

2.13 Gas Pipes Thermistor (R6T) Abnormality

Error Code	E5
Applicable Models	VKM50~100GBMV1, VKM50~100GBV1
Method of Error Detection	Error detection is carried out by temperature detected by gas pipe thermistor.
Error Decision Conditions	When the gas pipe thermistor becomes disconnected or shorted while the unit is running
Supposed Causes	■ Defective indoor unit thermistor (R6T) for gas pipe ■ Defective indoor unit PCB (A4P)
Troubleshooting	


Caution

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



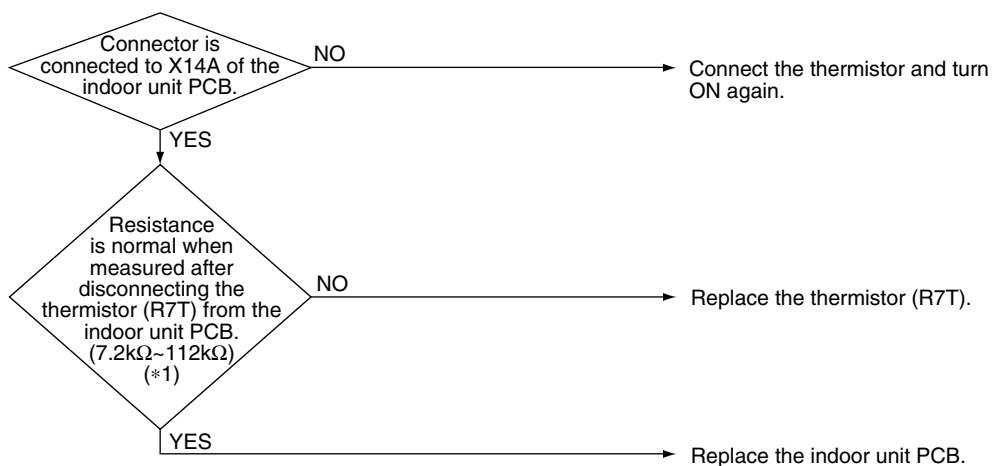
*1. Refer to thermistor resistance / temperature characteristics table on P.75.

2.14 Suction Air Thermistor (R7T) Abnormality

Error Code	C9
Applicable Models	VKM50~100GBMV1, VKM50~100GBV1
Method of Error Detection	Error detection is carried out by temperature detected by suction air thermistor.
Error Decision Conditions	When the suction air thermistor becomes disconnected or shorted while the unit is running
Supposed Causes	■ Defective indoor unit thermistor (R7T) for air inlet ■ Defective indoor unit PCB (A4P)
Troubleshooting	


Caution

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



*1. Refer to thermistor resistance / temperature characteristics table on P.75.

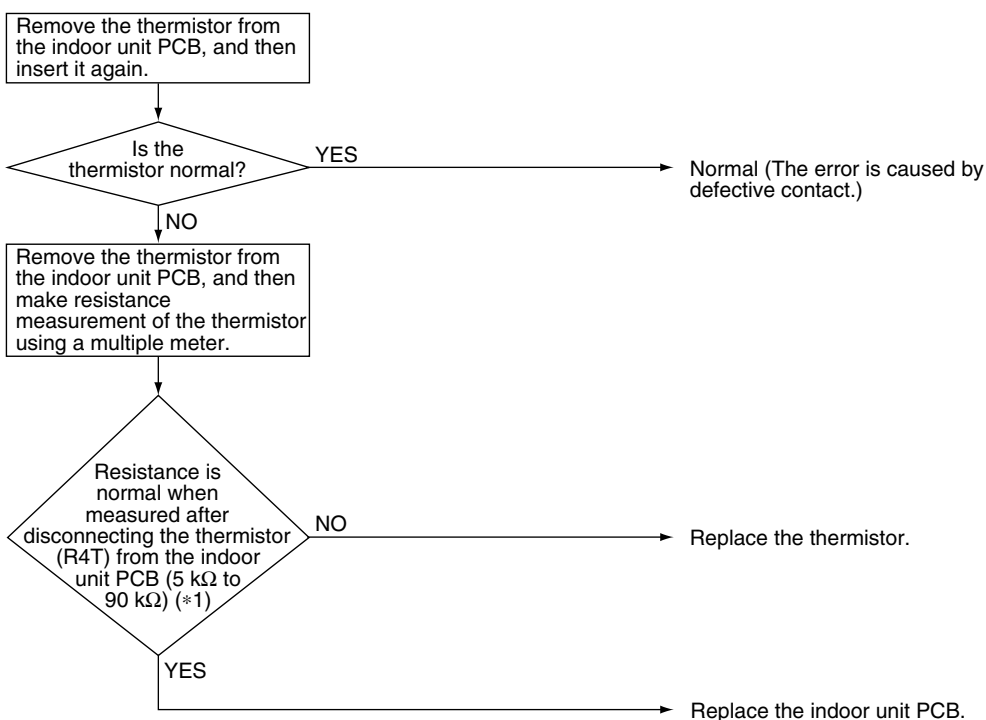
2.15 Coil Indoor Air Thermistor (R4T) Abnormality

Error Code	E8
Applicable Models	VKM50~100GBMV1, VKM50~100GBV1
Method of Error Detection	The error is detected by temperature detected by thermistor.
Error Decision Conditions	When the coil indoor unit thermistor becomes disconnected or short circuited while the unit is running.
Supposed Causes	■ Defective thermistor (R4T) for coil indoor air ■ Defective indoor unit PCB (A4P)
Troubleshooting	



Caution

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



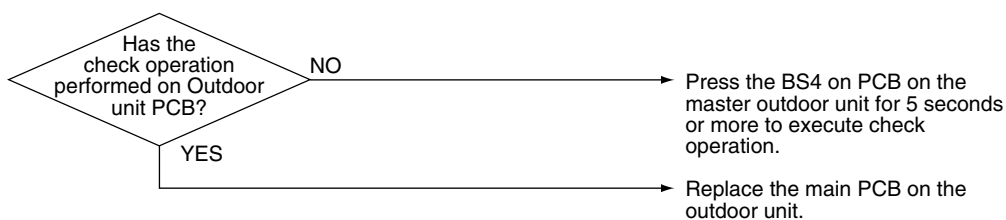
*1. Refer to thermistor resistance / temperature characteristics table on P. 75.

2.16 Check Operation not Executed

Error Code	U3
Method of Error Detection	Check operation is executed or not
Error Decision Conditions	Error is decided when the unit starts operation without check operation.
Supposed Causes	■ Check operation is not executed.
Troubleshooting	


Caution

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



2.17 Dedicated LCD Remote Controller

Method of Error Detection

When “88” remains on remote controller display.

Supposed Causes

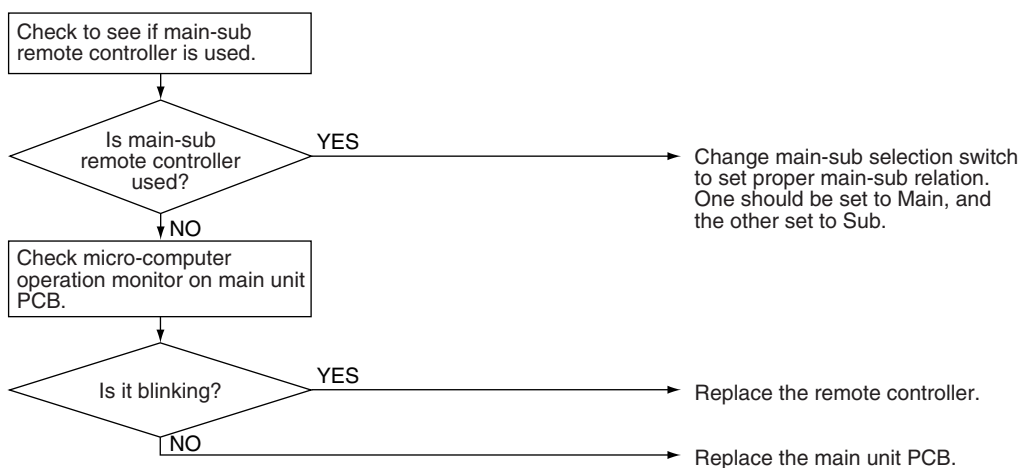
Main-sub setting of remote controller
Remote controller PCB assembly error
Main unit PCB assembly error

Troubleshooting

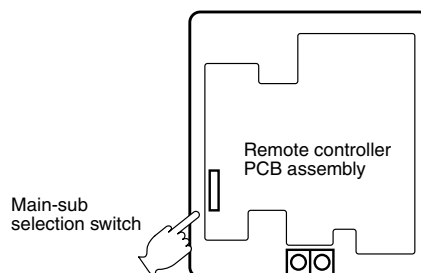


Caution

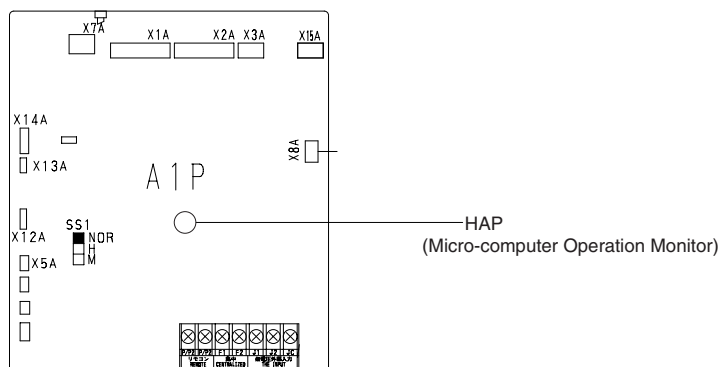
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Dedicated Remote Controller



Main Unit PCB (A1P)

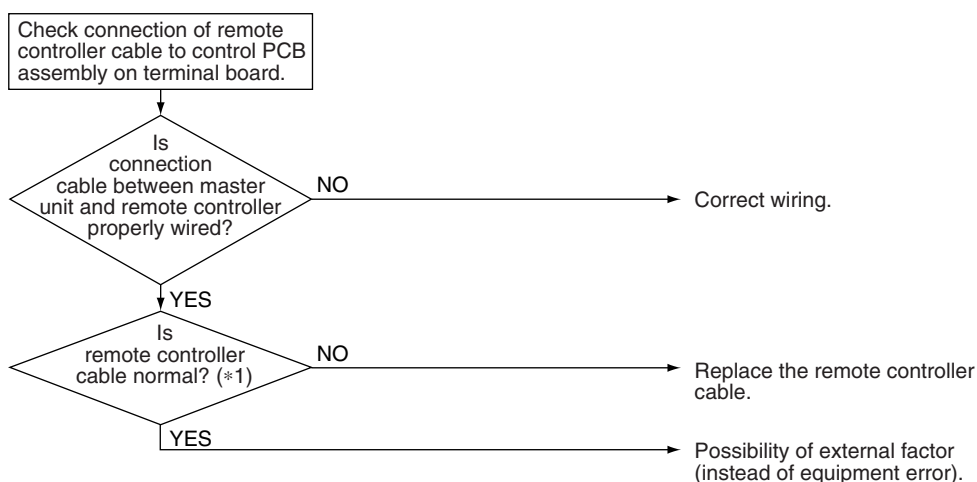


2.18 Data Transmission Error (between LCD Remote Controller and Master Unit)

Error Code	Error Code U5 Inspection ☼ Unit No. ☼
LED Indication	Remote Controller ☼ Master Unit ☼
Method of Error Detection	Micro-computer checks if data is transmitted properly between master unit and remote controller.
Error Decision Conditions	When data transmission is not performed correctly for a certain time period
Supposed Causes	■ Defective connection of remote controller cable ■ Defective remote controller cable ■ External factor (noise, etc.)
Troubleshooting	

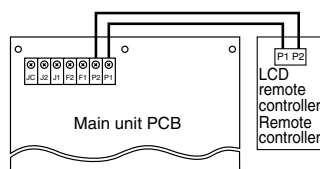

Caution

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


Note:

*1.

1. Use tester to check continuity of remote controller cable.
 - Disconnect cable from master unit terminal board and remote controller terminal board. Measure resistance between wires in cable. Resistance should be ∞ M Ω (infinity).
2. Use tester to check voltage at terminal board. Check with power turned ON.
 - With remote controller cable disconnected, voltage between P1 and P2 on terminal board should be approx. 16 VDC. If measured value is not approx. 16 VDC, PCB assembly is defective.
 - Connect remote controller cable and disconnect remote controller. Voltage at the end of remote controller cable should be approx. 16 VDC. If measured value is not 16 VDC, remote controller cable is defective.
 - Connect remote controller cable and remote controller. Voltage between P1 and P2 on remote controller terminal should be approx. 16 VDC. If measured value is not 16 VDC, remote controller is defective.



2.19 Transmission Error between Remote Controller and Indoor Unit

Error Code

U5

Applicable Models

All indoor models

Method of Error Detection

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

Error Decision Conditions

Normal transmission does not continue for specified period

Supposed Causes

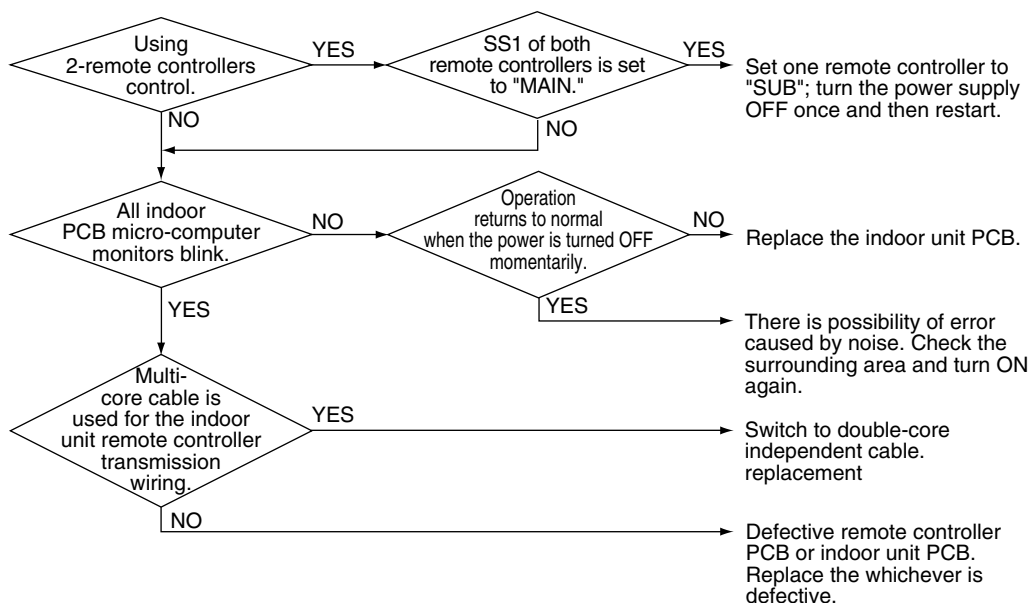
- Defective indoor unit remote controller transmission
- Connection of 2 main remote controllers (when using 2 remote controllers)
- Defective indoor unit PCB
- Defective remote controller PCB
- Defective transmission caused by noise

Troubleshooting



Caution

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



2.20 Transmission Error between Main and Sub Remote Controllers

Error Code

00

Applicable Models

All indoor models

Method of Error Detection

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

Error Decision Conditions

Normal transmission does not continue for specified period

Supposed Causes

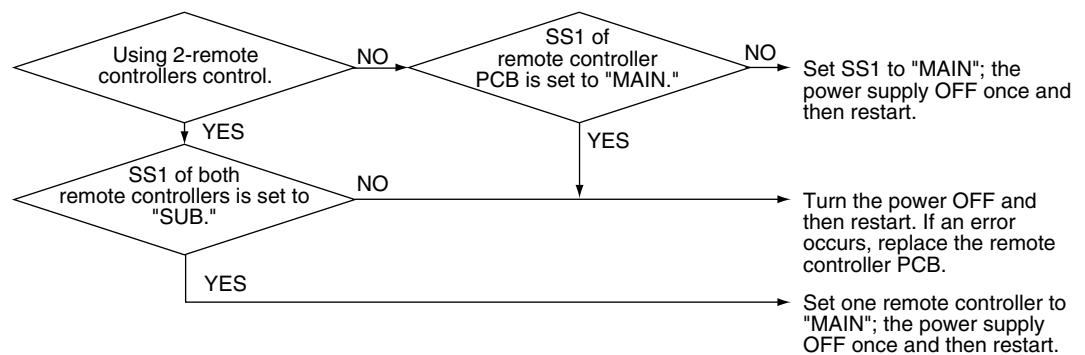
- Defective transmission between main and sub remote controller
- Connection between sub remote controllers
- Defective remote controller PCB

Troubleshooting



Caution

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



2.21 Excessive Number of Indoor Units

Error Code



Applicable Models

All indoor models

Supposed Causes

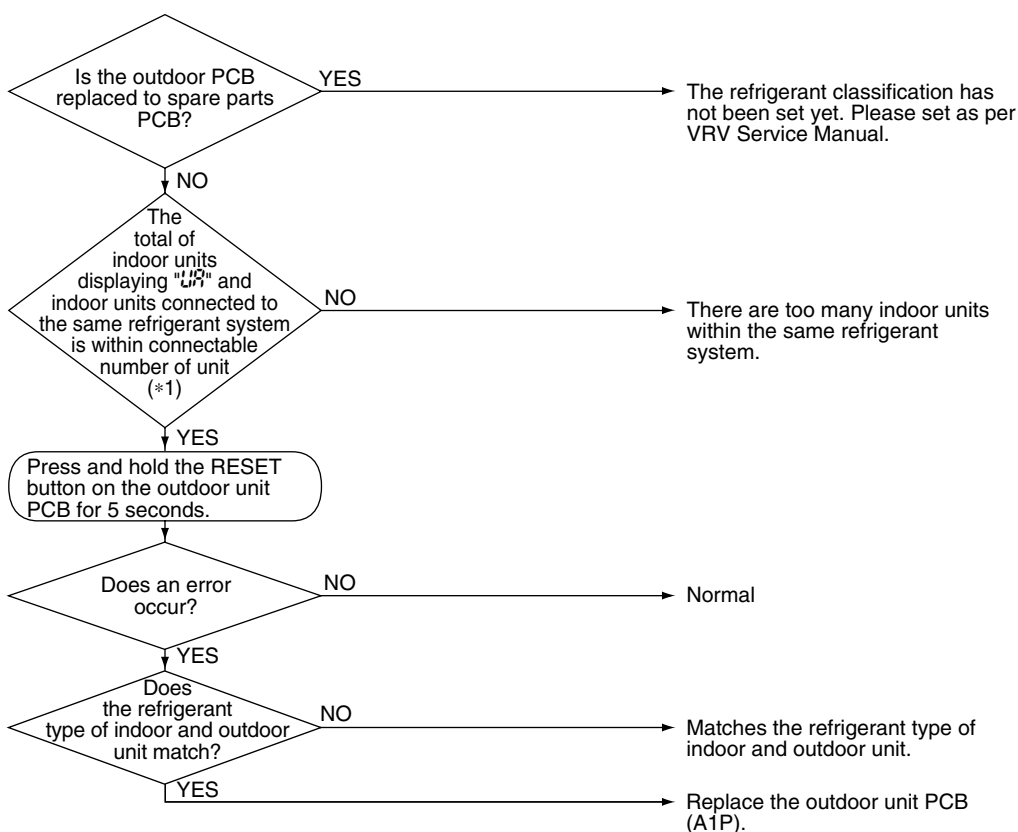
- Excess of connected indoor units
- Defective outdoor unit PCB (A1P)
- Mismatching of the refrigerant type of indoor and outdoor unit.
- Setting of outdoor PCB was not conducted after replacing to spare PCB.

Troubleshooting



Caution

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



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

2.22 Address Duplication of Central Remote Controller

Error Code



Applicable Models

All indoor models
Centralised controller

Supposed Causes

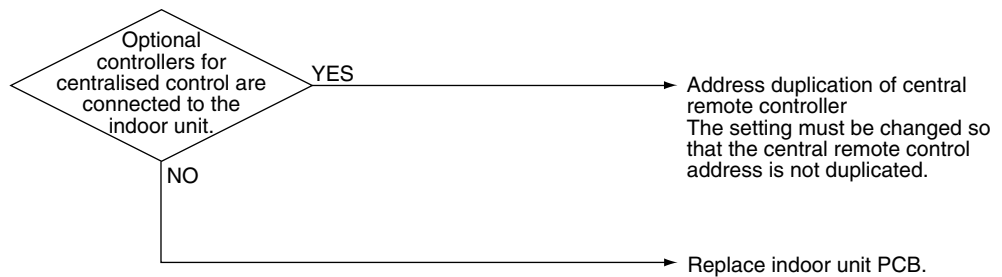
- Address duplication of central remote controller
- Defection indoor unit PCB

Troubleshooting



Caution

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



2.23 Transmission Error between Central Remote Controller and Indoor Unit

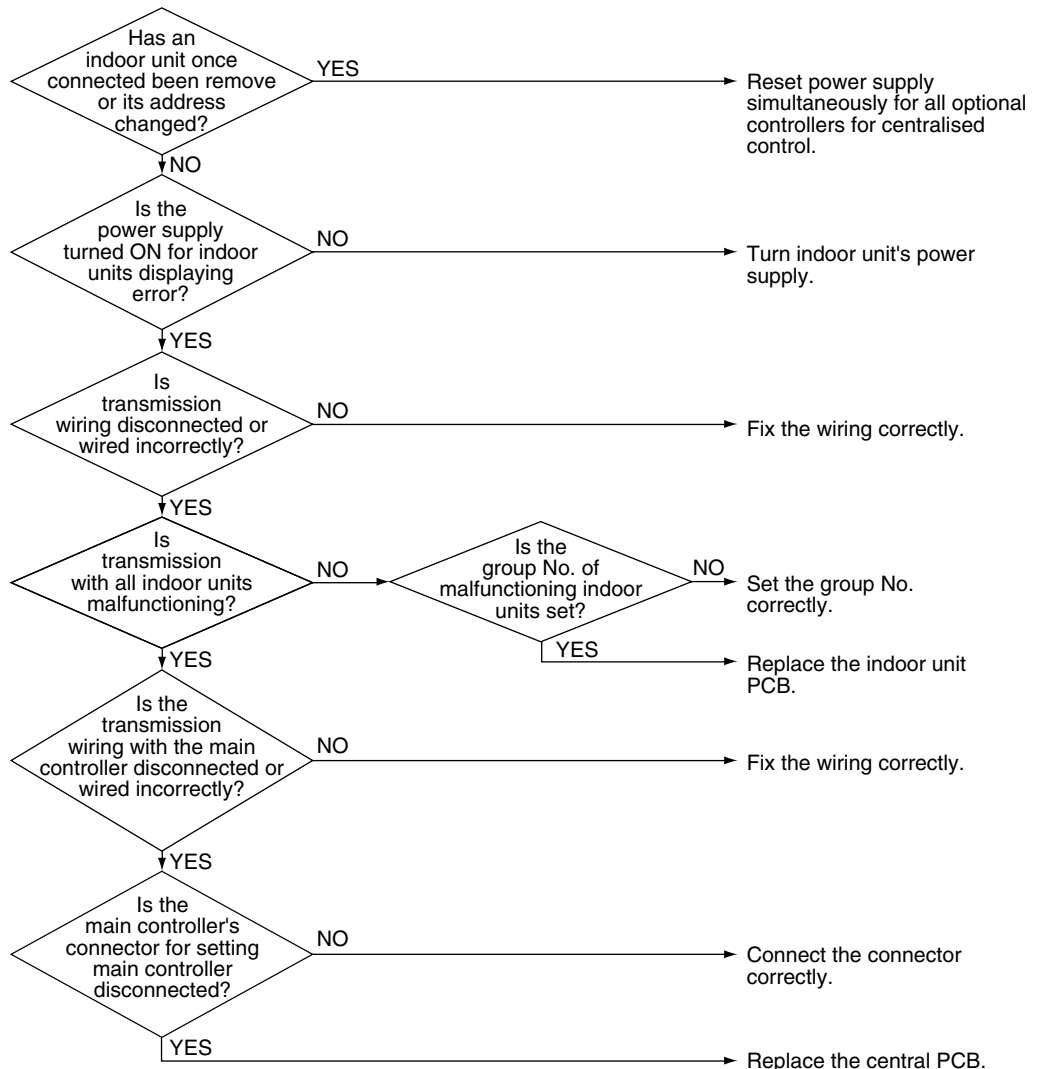
Error Code	UE
Applicable Models	All indoor models Central remote controller
Method of Error Detection	Micro-computer checks if transmission between indoor unit and central remote controller is normal.
Error Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	■ Defective transmission between optional controllers for central control and indoor unit ■ Connector for setting main controller is disconnected. ■ Failure of PCB for central remote controller ■ Defective indoor unit PCB

Troubleshooting



Caution

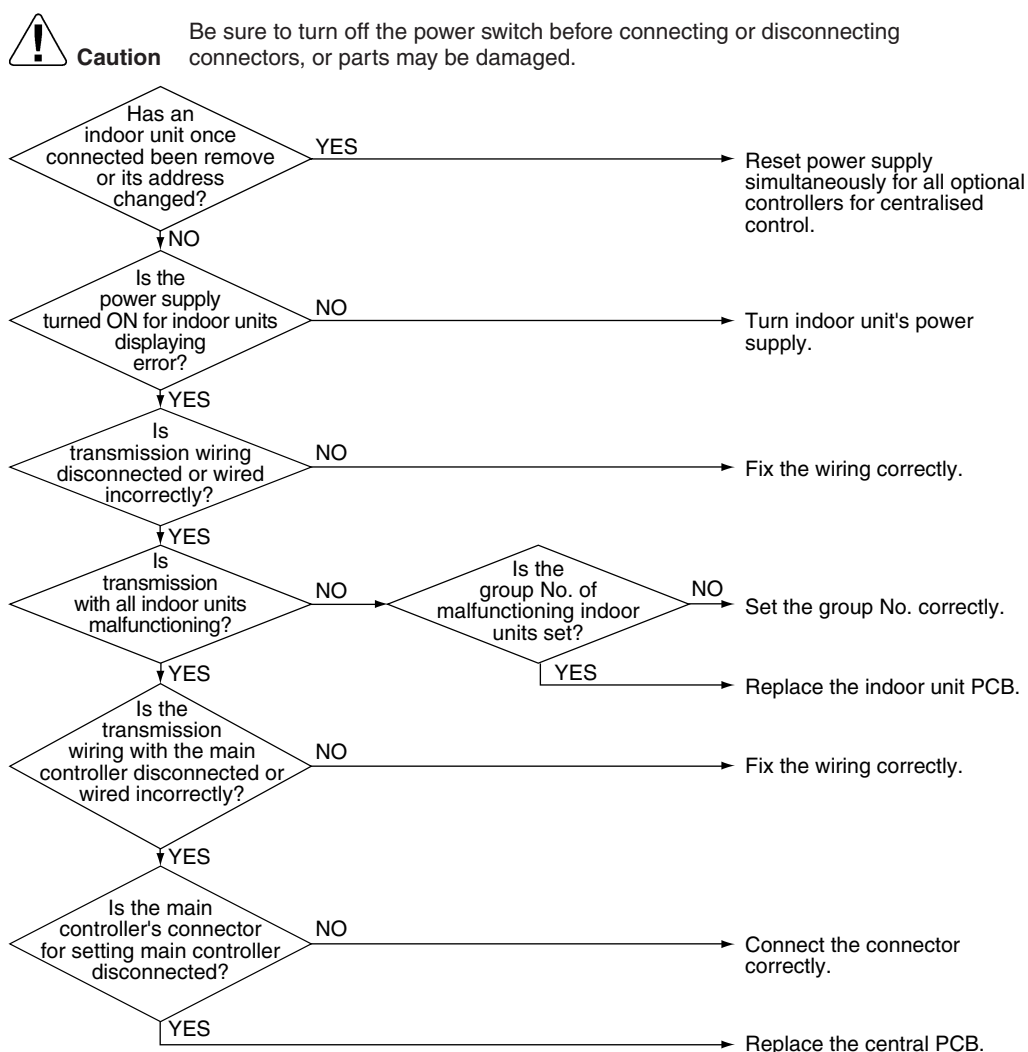
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.24 Transmission Error between Central Remote Controller and Indoor Unit

Error Code	UE
Applicable Models	All indoor models
Method of Error Detection	Micro-computer checks if transmission between indoor unit and central remote controller is normal.
Error Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	■ Defective transmission between optional controllers for centralised control and indoor unit ■ Connector for setting main controller is disconnected. ■ Failure of PCB for central remote controller ■ Defective indoor unit PCB

Troubleshooting



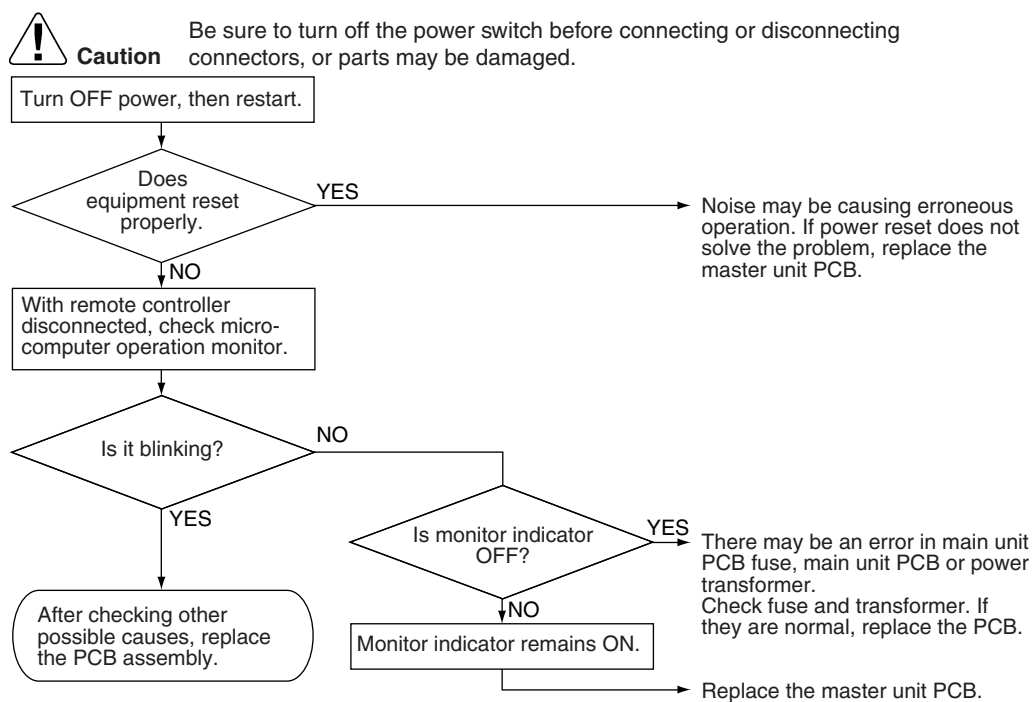
2.25 Master Unit PCB Assembly

Method of Error Detection Check micro-computer operation monitor.

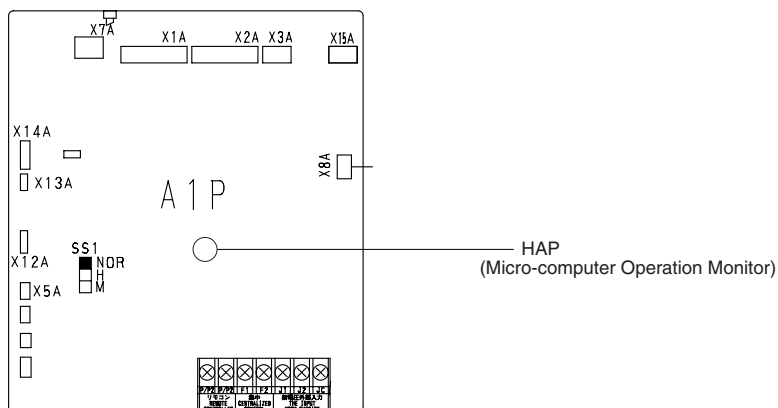
Error Decision Conditions When main unit PCB assembly does not operate
When communication circuit errors

Supposed Causes
Fuse (excess current)
Power transformer
Noise
Master unit PCB

Troubleshooting



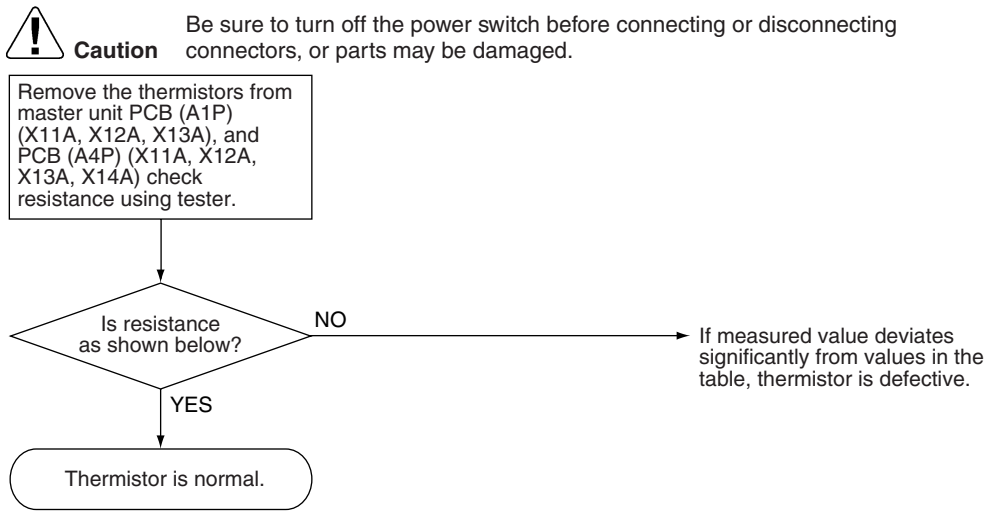
Master unit PCB (A1P)



2.26 Thermistor

Method of Error Detection	Remove thermistor and check resistance with tester.
Supposed Causes	■ Defective thermistor ■ Broken wire ■ Defective control PCB ■ Defective contact in connector

Troubleshooting



 **Note:** Refer to the thermistor temperature - resistance conversion table when measuring resistance.

For Thermistor of Indoor Air R1T
 For Thermistor of Outdoor Air R2T
 For coil indoor air
 For liquid pipe
 For gas pipe
 For air coil outdoor air

R4T
 R5T
 R6T
 R7T

R1T R2T R4T R7T	T°C	kΩ
	-30	361.7719
	-25	265.4704
	-20	196.9198
	-15	147.5687
	-10	111.6578
	-5	85.2610
	0	65.6705
	5	50.9947
	10	39.9149
	15	31.4796
	20	25.0060
	25	20.0000
	30	16.1008
	35	13.0426
	40	10.6281
	45	8.7097
	50	7.1764
	55	5.9407
	60	4.9439
	65	4.1352
	70	3.4757
	75	2.9349
	80	2.4894
	85	2.1205
	90	1.8138
	95	1.5575
	100	1.3425
	105	1.1614

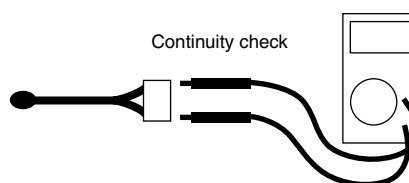
3SA48001 (AD87A001J)

R5T	T°C	kΩ
	-30.0	363.8
	-25.0	266.8
	-20.0	197.8
	-15.0	148.2
	-10.0	112.0
	-5.0	85.52
	0.0	65.84
	5.0	51.05
	10.0	39.91
	15.0	31.44
	20.0	24.95
	25.0	19.94
	30.0	16.04
	35.0	12.99
	40.0	10.58
	45.0	8.669
	50.0	7.143
	55.0	5.918
	60.0	4.928
	65.0	4.123
	70.0	3.467
	75.0	2.928
	80.0	2.484
	85.0	2.116
	90.0	1.810

(AD94A045H)

R6T	T°C	kΩ
	-30.0	359.85
	-25.0	265.07
	-20.0	197.15
	-15.0	147.74
	-10.0	111.80
	-5.0	85.39
	0.0	65.80
	5.0	51.13
	10.0	40.04
	15.0	31.60
	20.0	25.11
	25.0	20.10
	30.0	16.19
	35.0	13.12
	40.0	10.70
	45.0	8.78

3SA48005 (AD87A001J)

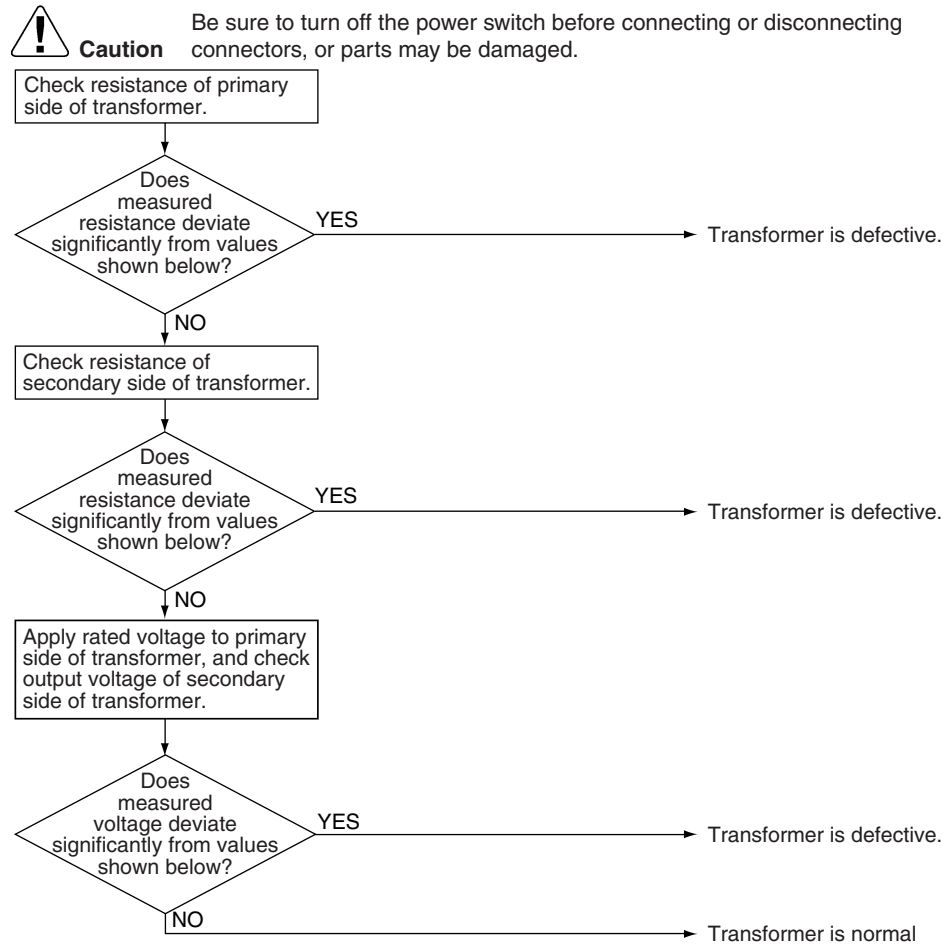


2.27 Power Transformer

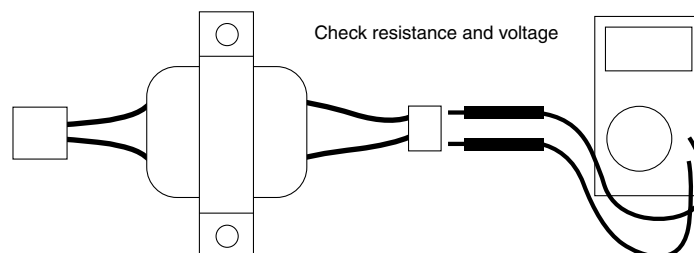
Method of Error Detection

Check resistance and voltage with tester, and insulation resistance with megger.

Troubleshooting



- Resistance of primary side of transformer: approx. 140Ω
- Resistance of secondary side of transformer: approx. 1.9Ω
- Voltage at secondary side of transformer when rated voltage is applied to primary side: approx. 26 VAC
- Insulation resistance between primary side of transformer and case: $100\text{ M}\Omega$ or higher
- Insulation resistance between secondary side of transformer and case: $100\text{ M}\Omega$ or higher
- Insulation resistance between primary side and secondary side of transformer: $100\text{ M}\Omega$ or higher

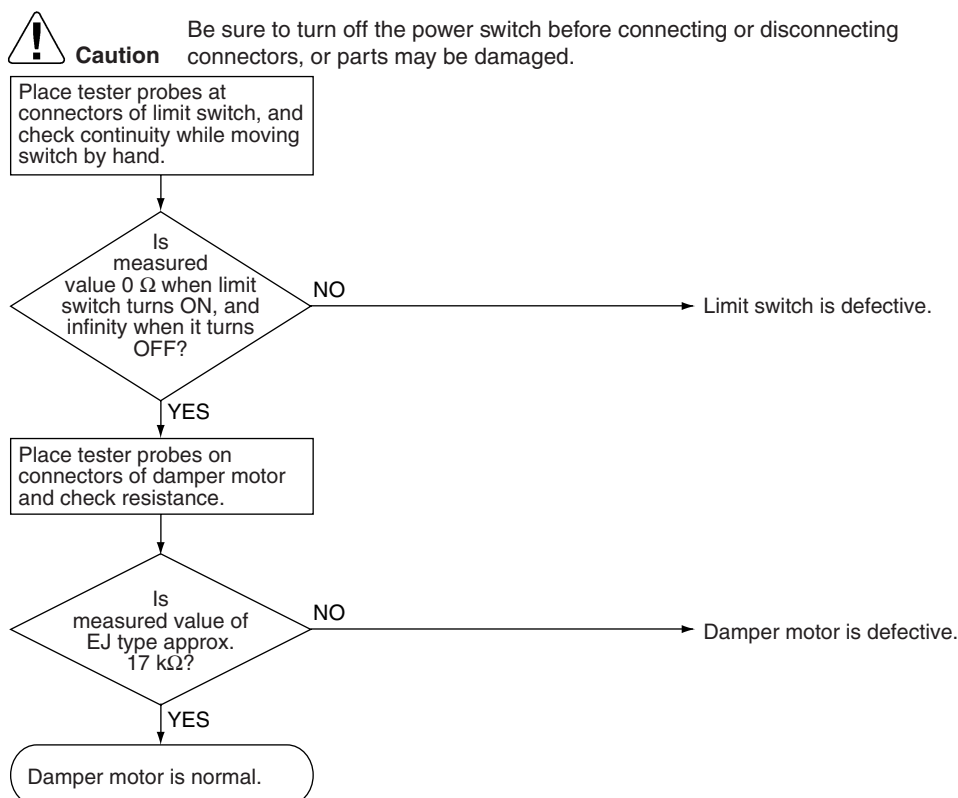


2.28 Damper Motor

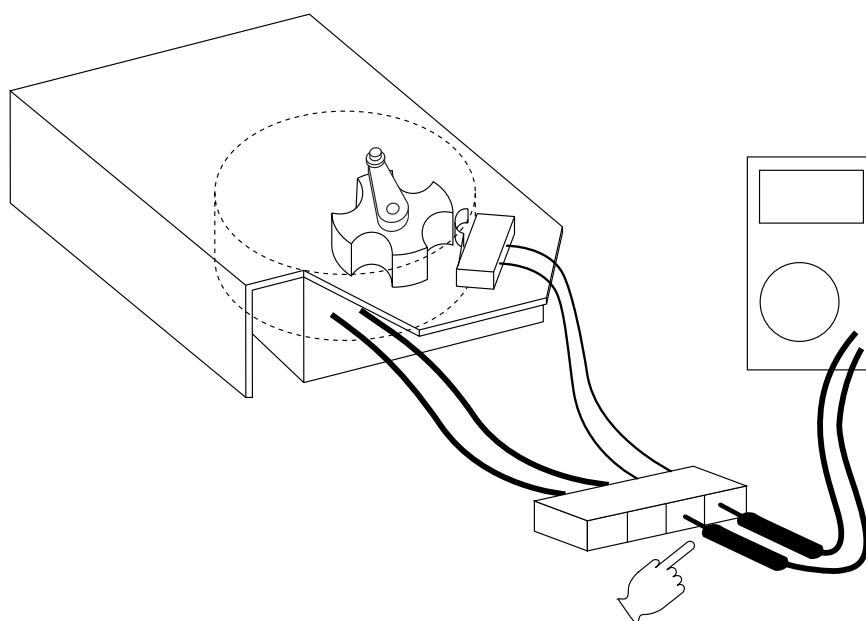
Method of Error Detection

Check damper motor and limit switch when damper motor does not operate.

Troubleshooting



Check resistance and voltage — DAMPER MOTOR



Part 7

Field Setting

1. Field Setting	79
1.1 Field Setting and Test Run	79

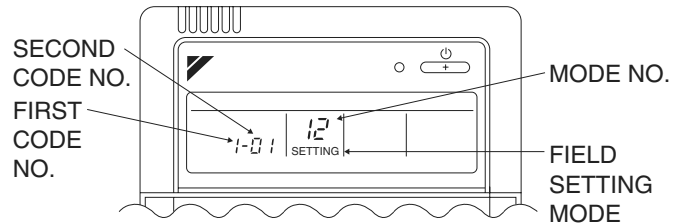
1. Field Setting

1.1 Field Setting and Test Run

1.1.1 Perform Field Settings with the Remote Controller

- (1) Make sure the El. compo. Box Lids are closed on the Indoor and Outdoor Units.
- (2) Depending on the Type of Installation, make the Field Settings from the Remote Controller after the Power is turned ON, following the “Field Settings” Manual which came with the Remote Controller.

Lastly, make sure the customer keeps the “Field Settings” manual, along with the operating manual, in a safe place.



Field setting

Using the remote controller of the VRV system air conditioner to make Heat Reclaim Ventilator settings

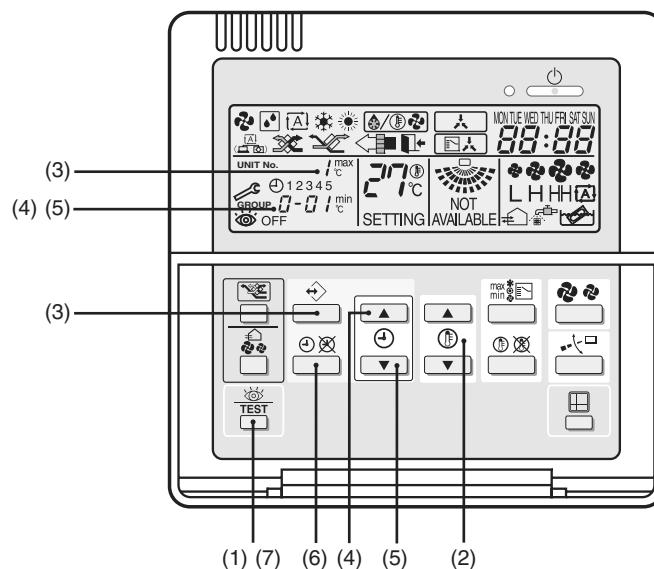
<Initial setting>

- Mode No. 17, 18 and 19: Group control of Heat Reclaim Ventilator.
- Mode No. 27, 28 and 29: individual control

<Operating procedure>

The following describes the operating procedure and settings.

- (1) Press the INSPECTION/TRIAL button for more than 4 seconds with the unit in the normal mode to enter the local setting mode.
- (2) Use the TEMPERATURE ADJUSTMENT button to select the desired “**Mode No.**” (The code display will blink.)
- (3) To make settings for individual units under group control (when mode No. 27, 28 or 29 is selected), press the TIMER SETTING ON/OFF button to select the “**unit No.**” for which the settings are to be made. (This process is not necessary when settings are made for the entire group.)
- (4) Press the top section of the TIMER button to select the “**FIRST CODE NO.**”
- (5) Press the lower section of the TIMER button to select “**SECOND CODE NO.**”.
- (6) Press the PROGRAM/CANCEL button once to enter the settings. (The code display will stop blinking and light up.)
- (7) Press the INSPECTION/TRIAL button to return to normal mode.



<Example>

When adjusting the ventilation airflow to low setting in the group setting mode, enter the mode No., "19" FIRST CODE NO., "0" and SECOND CODE NO., "01".

Settings and setting numbers

Description of setting	MODE NO.	FIRST CODE NO.	SECOND CODE NO.														
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
External ON/OFF input	12	1	Forced OFF	ON/OFF operation													
Interval time for filter sign indication	17 (27)	0	Approx. 2500 hours	Approx. 1250 hours	No counting												
Night-time free cooling operation ON/OFF and starting time		1	OFF	ON 2 hours later	ON 4 hours later	ON 6 hours later	ON 8 hours later										
Initial setting for ventilation fan		4	Normal	Ultra High	Normal	Ultra High											
Direct duct connection with VRV		5	Without duct (Setup air flow rate)	Direct duct (Fan off)	—	Without duct (Setup air flow rate)	—	Direct duct (Fan off)		Without duct (Fan off)							
Cold areas (Fan operation selection for heating thermostat off)			—	—	—	Thermostat OFF: L Defrost: OFF	—	Thermostat OFF: L Defrost: OFF		Thermostat OFF: - Defrost: OFF							
Fan for night-time free cooling operation		6	High	Ultra High													
Display for ventilation mode	18 (28)	4	Show	Hide													
Supply Fresh-up/ Exhaust Fresh-up		7	Supply	Exhaust	Supply	Exhaust											
Centralised interlock zone setting		8	01 Disable	02 Enable													
Low tap setting	19 (29)	1	No	—	—	—	—	—	—	Continuous running							
Fan step for supply (Airflow rate adjustment)		2	Less 01	02	03	04	05	06	07	Normal 08	09	10	11	12	13	14	Greater 15
Fan step for exhaust (Airflow rate adjustment)		3	Less 01	02	03	04	05	06	07	Normal 08	09	10	11	12	13	14	Greater 15
24-hours ventilation setting		4	No	—	—	—	—	—	—	Continuous running							
Fan residual operation when heater connected		8	Disable	Disable	Enable	Enable											
Fresh-up ON/OFF	1A	0	OFF	ON													

: Factory default setting

NOTE)

1. SECOND CODE NO. which are enclosed by bold lines are the factory settings.
2. The settings are applied to the entire group, but if the mode no. inside the parentheses is selected, the settings can be applied to individual indoor units. However, it is only possible to check any changes made to the settings inside the parentheses in individual mode. (For group batch operation, the changes are made but the display remains as a factory setting.)
3. Do not set anything not shown on the list. If the applicable functions are not available, they will not be displayed.
4. When returning to normal mode, the remote controller is initialised, so the display might show "88."
5. When "Filter sign indication setting" or "Night-time free cooling operation setting" is changed, explain set contents to the customer.
6. See below for details on the settings for cold areas.
— : operate at the set fan strength

	Air conditioner Fan	01	02	04	06	08
Heating thermostat off	Operation	—	—	Low	Low	—
Defrost	Stop	—	Stop	Stop	Stop	Stop
Oil return	Stop	—	Stop	Stop	Stop	Stop

In case of Independent operation

	Air conditioner Fan	01	02	04	06	08
Heating thermostat off	Operation	—	—	Low	Low	—
Defrost	Stop	—	—	Stop	Stop	Stop
Oil return	Stop	—	—	Stop	Stop	Stop

—: operate at the set fan strength

Low: operate at the weak fan strength

Defrost operation

- In heating operation, freezing of the outdoor unit's coil increases. Heating capability decreases and the system goes into defrost operation.
- The remote controller will read “ ” until the hot air starts blowing.
- It returns to the heating operation again after 6 to 8 minutes (10 at the longest).
- During defrost operation, the fans of the unit continues driving (factory setting). The purpose of this is to maintain the amount of ventilation and humidifying.
- The change of air discharge grille's location should be examined when the cold draft from air discharge grille is feared.
- Though the fan can be stopped by the setting of remote controller. Do not stop the fan in the place where no ventilation by stopping the fan may cause the influence of diffusion of air which it is dirty and moisture into another room, or the inflow from outside the room. (outflow such as viruses from the sickroom, or smell leakage from the rest room, etc.)

7. Adjustment set temperature for the local situation:

When the RA is not taken directly from the room (e.g. not connecting the RA duct), the temperature of RA might be higher than the set temperature of the standard indoor unit. In that case, be sure to adjust set temperatures of heating (humidification) and cooling in accordance with the local situation.

- Set temperature at factory setting: Heating (humidification) ...21°C, Cooling (suction temperature at refrigerant heat exchanger) ... 26°C
 - Configurable range of set temperature: Heating (humidification) ...14 to 26°C, Cooling ...18 to 33°C
- The correlation is as follows:
Cooling set temperature = Heating (humidification) set temperature + Temperature differential of cooling/heating thermostat changeover of thermostat off cooling/heating (ex. 26°C = 21°C + 5°C)

MODE NO.	FIRST CODE NO.	Description of setting	SECOND CODE NO.												
			01	02	03	04	05	06	07	08	09	10	11	12	13
12 (22)	4	Temperature range of cooling/heating thermostat changeover	0	1	2	3	4	5	6	7					
14 (24)	1	Heating (humidification) set temperature	14	15	16	17	18	19	20	21	22	23	24	25	26

In addition, when the VRV system Heat Recovery series is connected, adjust the temperature of cool/heat changeover at the automatic operation in accordance with the local situation.

- Changeover temperature at factory setting: Heating (humidification) ...15°C, Cooling (outdoor temperature) ... 25°C
- Configurable range of changeover temperature: Heating (humidification) ...10 to 18°C, Cooling ...19 to 30°C

The correlation is as follows:

Changeover temperature for cooling mode = Changeover temperature for heating mode + Temperature differential of cooling/heating mode changeover (ex. 25°C = 15°C + 10°C)

MODE NO.	FIRST CODE NO.	Description of setting	SECOND CODE NO.												
			01	02	03	04	05	06	07	08	09	10	11	12	13
14 (24)	3	Temperature differential of cooling/heating mode changeover	4	5	6	7	8	9	10	11	12	13	14	15	
	4	Changeover temperature for heating mode	10	11	12	13	14	15	16	17	18				

1.1.2 Perform a Test Run According to the Outdoor Unit's Installation Manual

1. Make sure the El. compo. Box of the unit is closed before turning ON power.
2. Make a test run following the operation manual of the outdoor unit.
 - The operation lamp of the remote controller will blink when an error occurs. Check the error code on the liquid crystal display to identify the point of trouble. An explanation of error codes and the corresponding trouble is provided in "CAUTION FOR SERVICING" of the outdoor unit.

If the display shows any of the following, there is a possibility that the wiring was done incorrectly or that the power is not on, so check again.

Remote controller display	Content
"  "	● There is a short circuit at the FORCED OFF terminals (T1, T2).
"  "	● The test run has not been performed.
"  " "  "	● The power on the outdoor unit is OFF. ● The outdoor unit has not been wired for power supply. ● Incorrect wiring for the transmission wiring and the wiring <the remote controller wiring or FORCED OFF wiring.> ● The transmission wiring is cut.
"  "	● Damper error. (Power voltage shortage)
"  "	● Fan driver error. (Power voltage shortage)
"  "	● "MAIN/SUB" setting of the remote controller is wrong.
No display	● The power ON the indoor unit and Heat Reclaim Ventilator is OFF. ● The indoor unit and Heat Reclaim Ventilator has not been wired for power supply. ● Incorrect wiring for the remote controller wiring and the wiring <the transmission wiring or the FORCED OFF wiring.> ● The remote controller wiring is cut.

1.1.3 Next, Run the Humidifier

<VKM-GBMV1 series only>

1. Check that the water supply piping is connected securely.
2. Open the water supply stop valve. (No water will be supplied at this time.)
3. Run the Heat Reclaim Ventilator in heating mode.
(See the operating manual included with the indoor unit for details on how to run the unit in heating mode.)
The water supply will start and the humidifier will begin operation.
4. After starting heating (humidifying), the sound of the water supply solenoid valve will be heard every 3 or 4 minutes (a clicking sound), so listening for that clicking sound let the unit run for 30 minutes to make sure that humidifying operation is normal.



CAUTION

If carpentry work is not completed when a test run is finished, tell the customer not to run the humidifier for the protection of indoor unit and Heat Reclaim Ventilator until it is completed. If the humidifier is run, paint, particles generated from adhesive and other materials used for carpentry work may cause Heat Reclaim Ventilator to get dirty, causing splash or leakage of water.

C : 3P130768-2E

Part 8

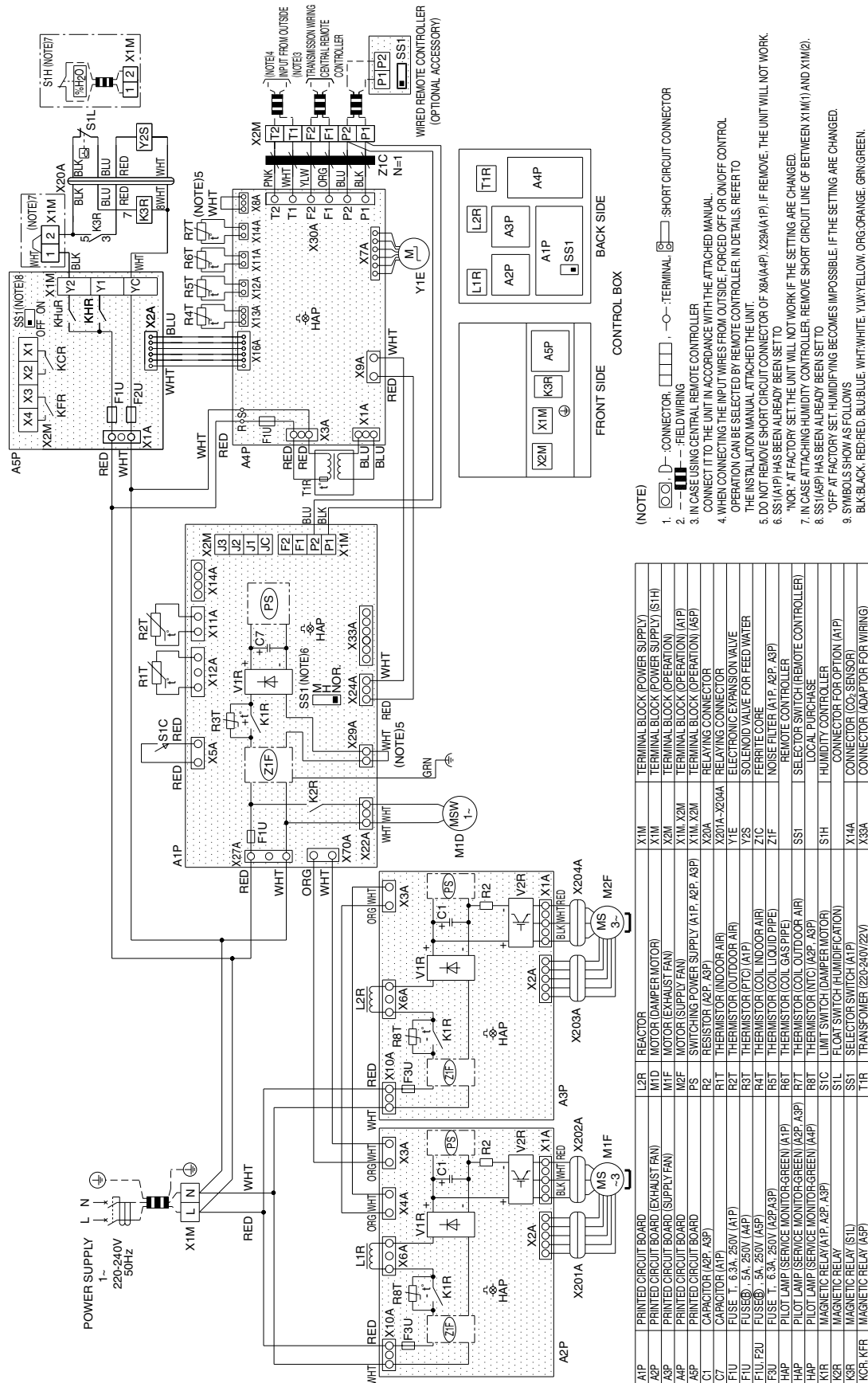
Appendix

- 1. Appendix 84
 - 1.1 Wiring Diagram.....84
 - 1.2 Piping Diagram.....86

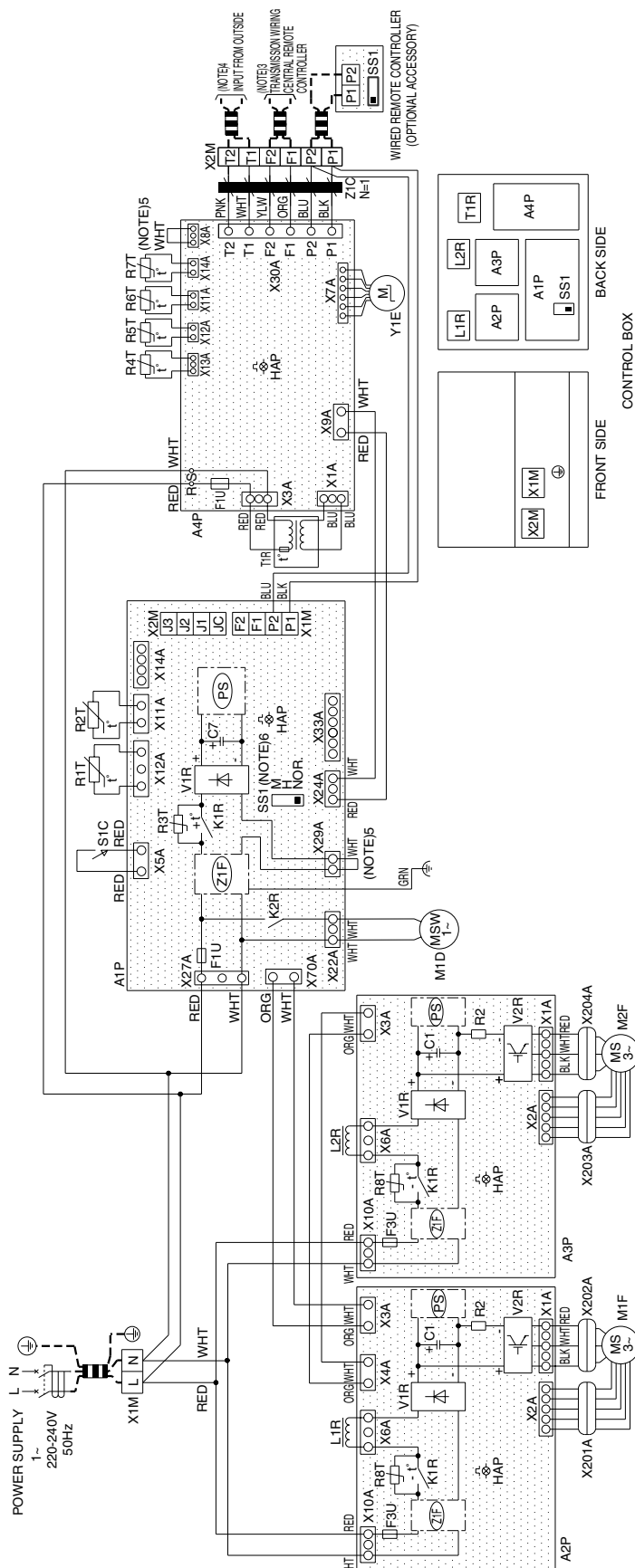
1. Appendix

1.1 Wiring Diagram

VKM50GBMV1
VKM80GBMV1
VKM100GBMV1



3D078296E

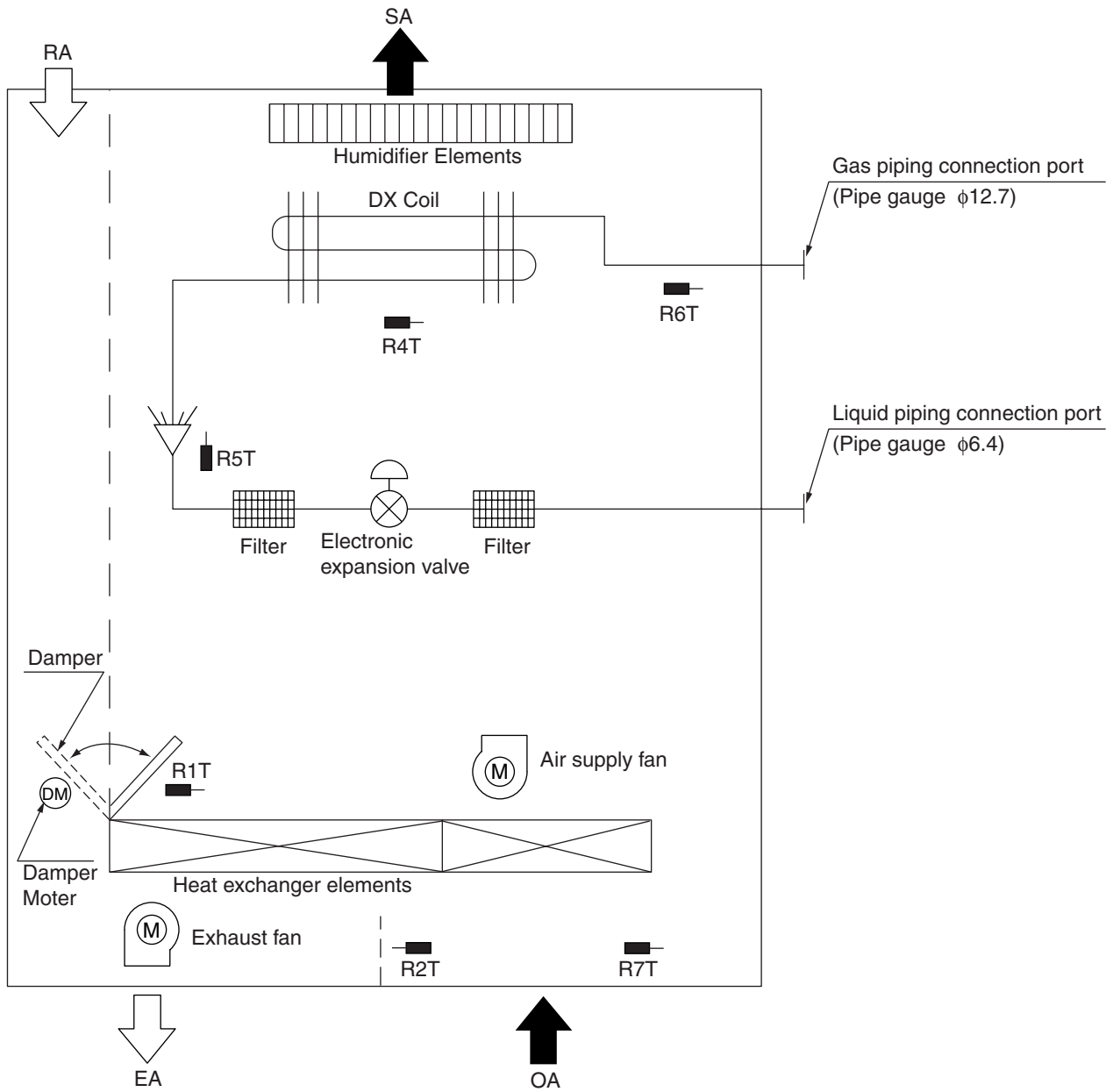


(NOTE)

1.  : CONNECTOR,  : FIELD WIRING
2.  : SHORT CIRCUIT CONNECTOR
3. IN CASE USING CENTRAL REMOTE CONTROLLER
CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED MANUAL.
4. WHEN CONNECTING THE IN PUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED TO THE UNIT.
5. DO NOT REMOVE SHORT CIRCUIT CONNECTOR OF X8(A4P), X29A(1P). IF REMOVE, THE UNIT WILL L.A.S.S.I (A1P) HAS BEEN ALREADY BEEN SET TO
6. S.S.I (A1P) HAS BEEN ALREADY BEEN SET TO
7. NOR : AT FACTORY SET. THE UNIT WILL NOT WORK IF THE SETTING ARE CHANGED.
8. SYMBOLS SHOW AS FOLLOWS
9. BLK: BLACK, RED: RED, BLU: BLUE, WHT: WHITE, YLW: YELLOW, ORG: ORANGE, GRN: GREEN

A1P	PRINTED CIRCUIT BOARD	M1F	MOTOR (EXHAUST FAN)	X1M	TERMINAL BLOCK (POWER SUPPLY)
A2P	PRINTED CIRCUIT BOARD (EXHAUST FAN)	M2F	MOTOR (SUPPLY FAN)	X2M	TERMINAL BLOCK (OPERATION)
A3P	PRINTED CIRCUIT BOARD (SUPPLY FAN)	P5	SWITCHING POWER SUPPLY (A1P, A2P, A3P)	X1M, X2M	TERMINAL BLOCK (OPERATION) (A1P)
A4P	PRINTED CIRCUIT BOARD	R2	RESISTOR (A2P, A3P)	X201A-X204A	RELAYING CONNECTOR
C1	CAPACITOR (A2P, A3P)	R1T	RESISTOR (INDOOR AIR)	Y1E	ELECTRONIC EXPANSION VALVE
C7	CAPACITOR (A1P)	R2T	TERMINATOR (OUTDOOR AIR)	Z1C	FERRITE CORE
F1U	FUSE T. 6.3A, 250V (A1P)	R3T	TERMINATOR (PTC) (A1P)	Z1F	NOISE FILTER (A1P, A2P, A3P)
F3U	FUSE @ 5A, 250V (A2P)	R4T	TERMINATOR (COIL INDOOR AIR)		REMOTE CONTROLLER
F3U	FUSE T. 6.3A, 250V (A2P, A3P)	R5T	TERMINATOR (COIL INDOOR PIPE)	S5I	SELECTOR SWITCH (REMOTE CONTROLLER)
H4P	PILOT LAMP (SERVICE MONITOR GREEN) (A1P)	R6T	TERMINATOR (COIL GAS PIPE)		CONNECTOR FOR OPTION (A1P)
H4P	PILOT LAMP (SERVICE MONITOR GREEN) (A2P, A3P)	R7T	TERMINATOR (COIL OUTDOOR AIR)	X14A	CONNECTOR (CO-SENSOR)
H4P	PILOT LAMP (SERVICE MONITOR-GREEN) (A4P)	R8T	TERMINATOR (N/C) (A2P, A3P)	X33A	CONNECTOR (ADAPTOR FOR WIRING)
K1R	MAGNETIC RELAY (A1P, A2P, A3P)	S1C	LIMIT SWITCH (DAMPEN MOTOR)		
K2R	MAGNETIC RELAY	S5I	SELECTOR SWITCH (A1P)		
L1R	REACTOR	T1R	TRANSFORMER (220-240V/22V)		
L2R	REACTOR	V1R	DIODE BRIDGE (A1P, A2P, A3P)		

1.2 Piping Diagram



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