DAIKIN

SiBE711307EA

Service Manual

Heat Reclaim Ventilator
- with DX coil -

[Applied Models]
VKM 50GBV1
VKM 80GBV1
VKM 100GBV1
VKM 50GBMV1
VKM 80GBMV1
VKM100GBMV1

Service Manual / Heat Reclaim Ventilator — with DX coil —

SiBE711307EA

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

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●Specifications, designs and other content appearing in this brochure are current as of October 2018 but subject to change without notice.

SiBE711307EA
10/2018 AK.K

Heat Reclaim Ventilator - with DX coil -

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

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.

	This manual is for the person in charge of maintenance and inspection.

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

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

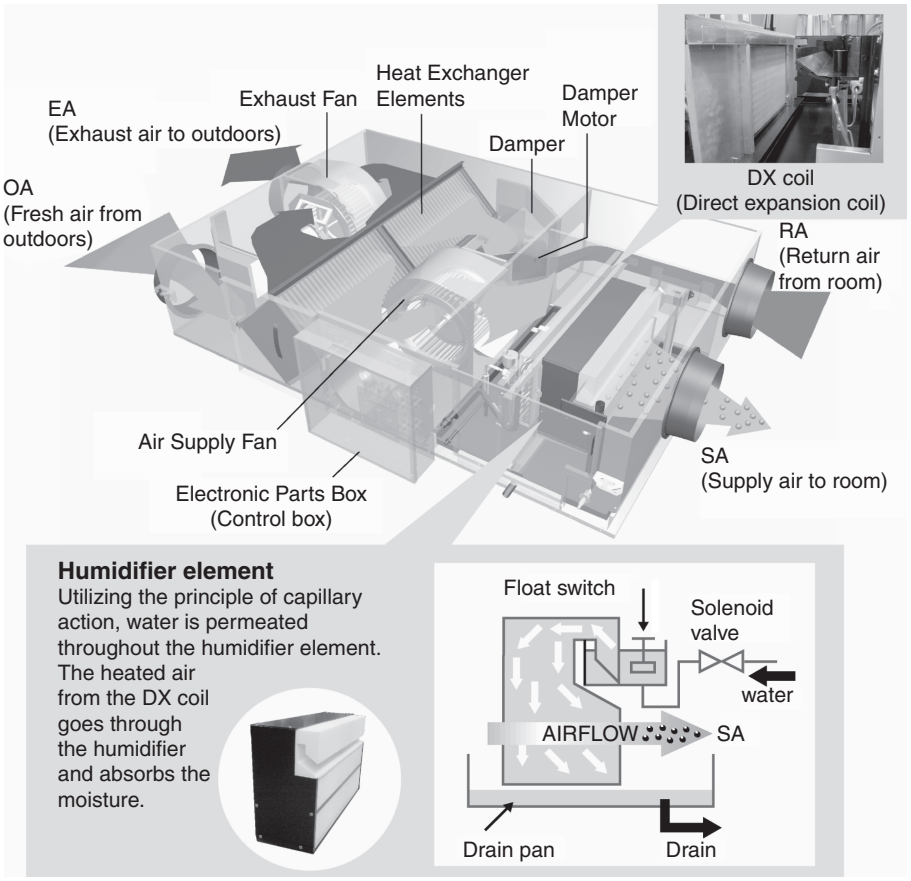
These units are applied only for CE regulation.

1.1.3 Nomenclature

V K M 50 GB M V1

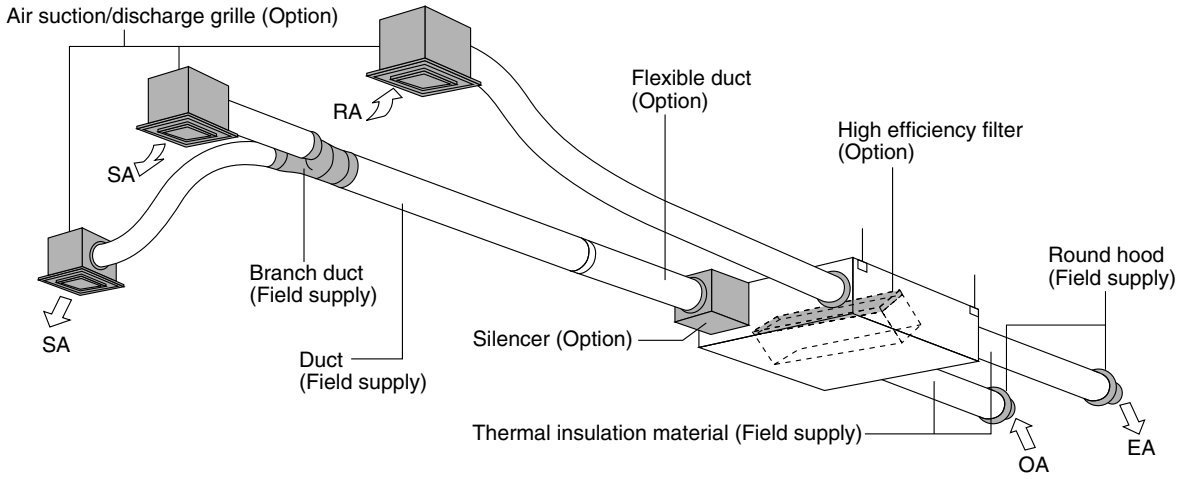
- Ventilator
- Outdoor Air Treatment Type
- Mounted Type
- Nominal Airflow Rate
  50 : 500m^3/h, 80 : 750m^3/h, 100 : 950m^3/h
- Major Design Category
- Moisture (M : With Humidifier Elements, nothing : without Humidifier Elements)
- Power Supply
  V1: 1 Phase, 220-240V, 50Hz

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

Member \ Applicable model			VKM50/80/100GB(GBM)V1										
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		—	KDDM24B100	
		Nominal pipe diameter (mm)	—	ϕ 250 mm	
	Air suction/ Discharge grille	White	K-DGL200C	K-DGL250C	
		Nominal pipe diameter (mm)	ϕ 200	ϕ 250	
	High efficiency filter		KAF242H80M	KAF242H100M	
	Air filter for replacement *		KAF241H80M	KAF241H100M	
	CO_2 sensor		BRYMA65	BRYMA100	
Flexible duct (1 m)			K-FDS201C	K-FDS251C	
Flexible duct (2 m)			K-FDS202C	K-FDS252C	
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

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 (m^3/h)	500	500	750	750	950	950
				Static pressure (Pa)	200		205		110	
	High			Airflow rate (m^3/h)	500	500	750	750	950	950
				Static pressure (Pa)	150		155		70	
	Low			Airflow rate (m^3/h)	440	440	640	640	820	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			(m^2)	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 (m^3/h)	500	500	750	750	950	950
				Static pressure (Pa)	210		210		150	
	High			Airflow rate (m^3/h)	500	500	750	750	950	950
				Static pressure (Pa)	170		160		100	
	Low			Airflow rate (m^3/h)	440	440	640	640	820	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	0.21×2		0.21×2		0.21×2	
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			(m^2)	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	Net			(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/cm^2). If the water pressure is above 490 kPa (5.0 kg/cm^2), 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

1.1 Explanation for Systems

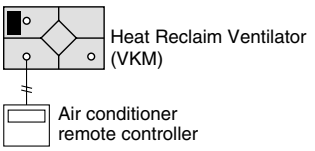
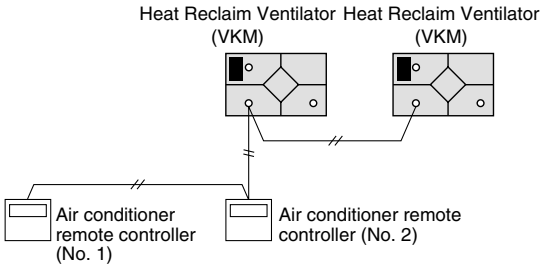
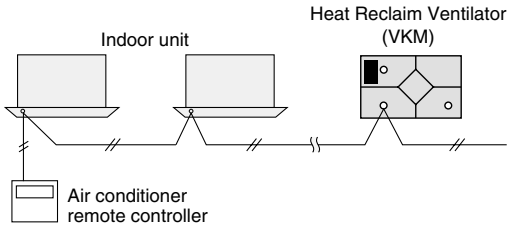
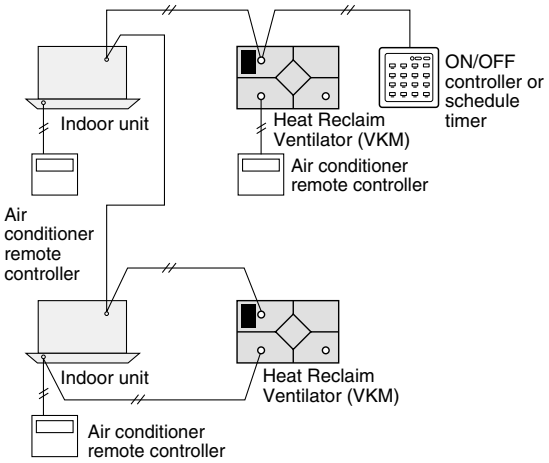
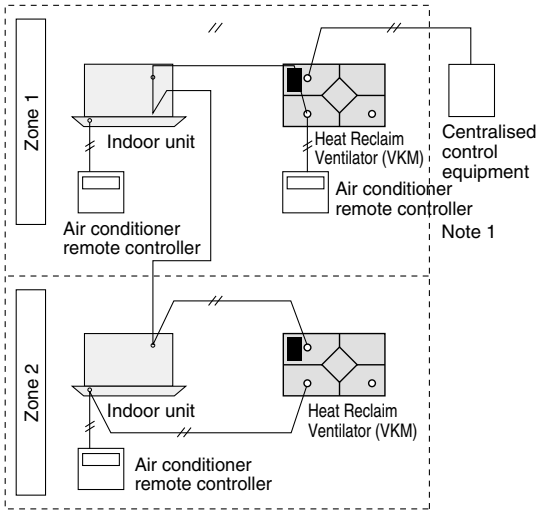
<table>
<tr><th colspan="2">System Construction</th><th>System Characteristics</th><th>Necessary Accessories</th></tr>
<tr><td rowspan="2">Independent Operation System</td><td>Independent Operation</td><td> 
</td><td>• Independent operation of Heat Reclaim Ventilator (VKM) is possible.
• VRV remote controller can be used.</td><td>VRV remote controller</td></tr>
<tr><td>Simultaneous Operation of Multiple Units</td><td> 
</td><td>• 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.]</td><td>VRV remote controller</td></tr>
<tr><td>Air Conditioning Interlocked Control (VRV, SkyAir) System</td><td>Standard System</td><td> 

Table 1 Connectable indoor units
<table>
<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.</td><td>• 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.</td><td>VRV remote controller</td></tr>
</table>

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.

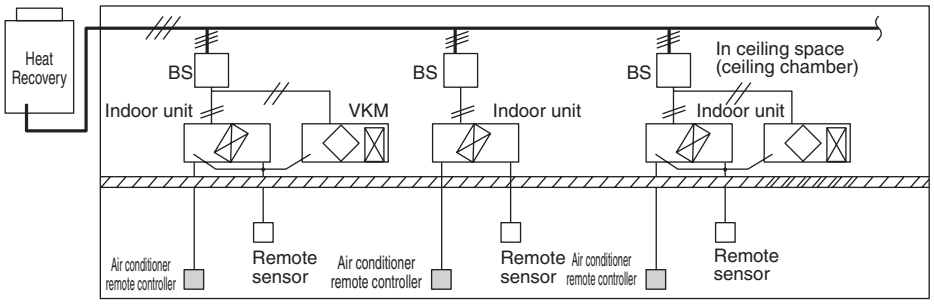


Fig. 1 When interlocking between the base indoor unit and the VKM:
(Connect multiple indoor units and VKM to a single BS unit.)

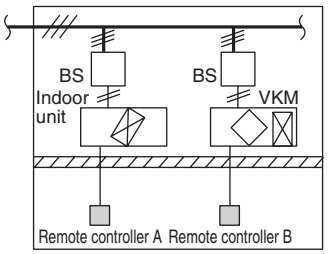


Fig. 2 When connecting a single indoor unit or a single VKM to a single BS unit:
(If this is the case, use the VKM in fixed cooling or heating mode.)

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

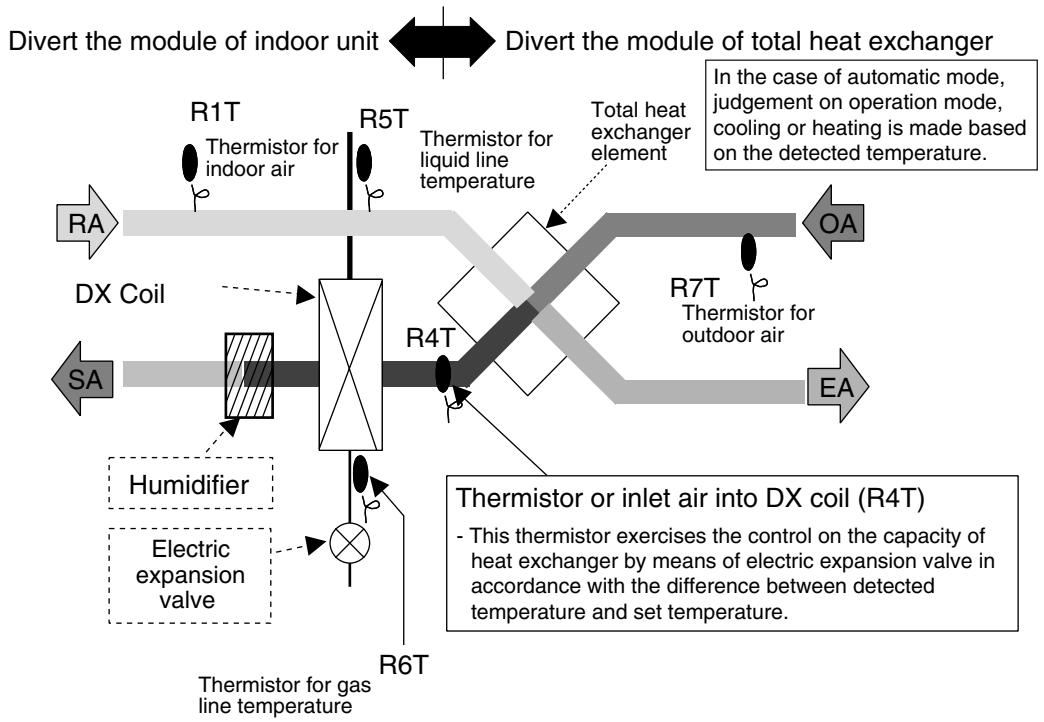
VKM sucks the air after OA has subjected to total heat exchange with RA, detects the air temperature by means of the thermistor for inlet air (R7T) into DX coil (R4T) to make a judgement on operation mode, cooling or heating and exercises the control on the capacity of air heat exchanger.

■ **Sensor position and its function**

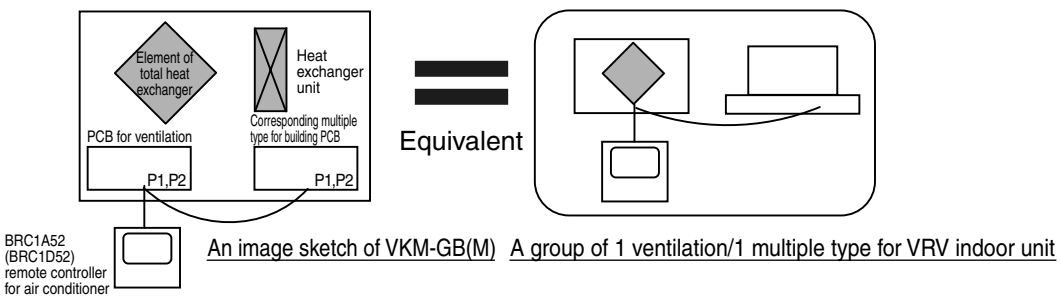
VKM consists of indoor unit + total heat exchanger portion.
Dissimilarities with normal indoor unit are:

- 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.



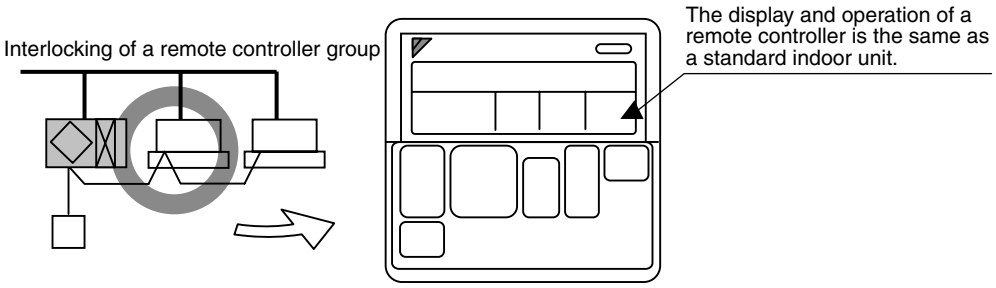
Because VKM-GB(M) model is equipped with a heat exchanger unit, a PCB (corresponding to VRV air conditioner's PCB) for controlling the heat exchanger has been built-in in addition to a PCB for ventilation. These 2 PCBs are connected via remote controller line (P1, P2) to perform an interlocked control. 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 × 2 = 16 units OK
In case of 4 units ;
10 + 4 × 2 = 18 units NG (2 units are in excess)

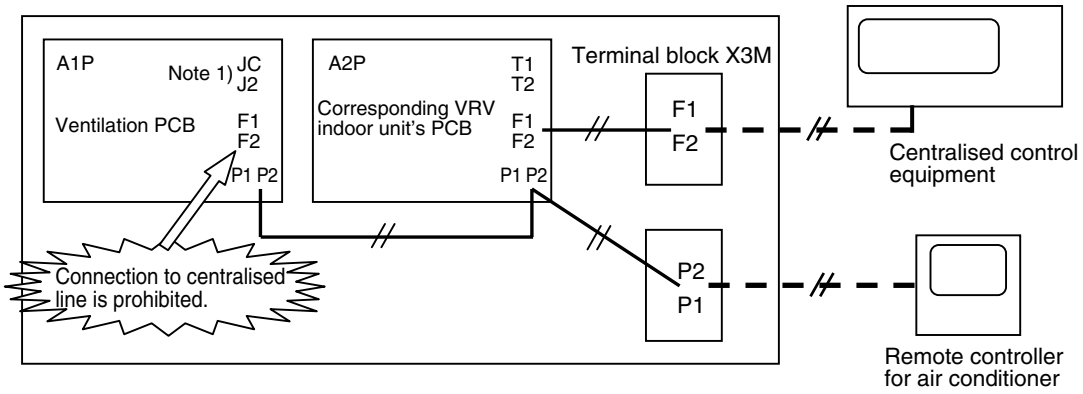
   - External contact point
     If you want to start/stop through an external contact point, use external input terminals (T1 and T2).
     ∗ If you start/stop using T1 and T2 terminals, the entire remote controller group makes a start/stop.

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.)

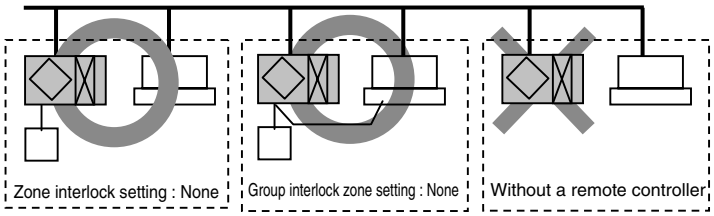
1.3 Centralised Control System

- 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



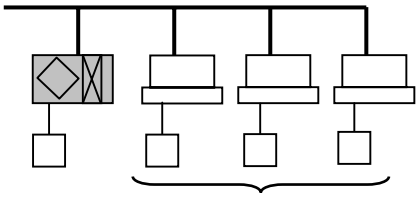
- In case of a centralised control, operation ON/OFF can be done separately by each zone. (In this case, zone interlocked setting must be kept as the factory setting (17.08.01).)
- Structure without a remote controller cannot be accepted because the remote controller group is controlled within a VKM-GB(M)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

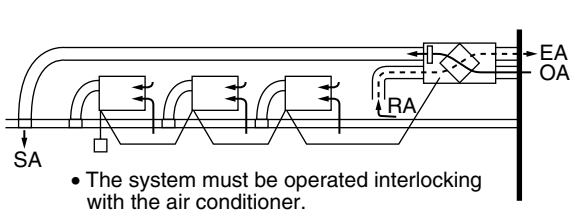
1.4.1 Do not Give VKM-GB(M) Model a Function to Select Cooling/Heating. (This is because the operation mode switches automatically depending on the outdoor conditions regardless of the indoor temperature when set to "Automatic".)

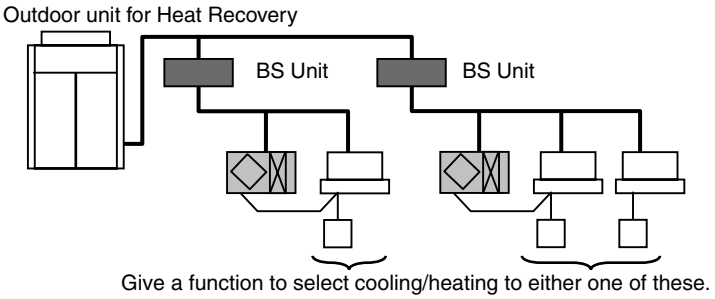


Give a function to select cooling/heating to either one of these.

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.

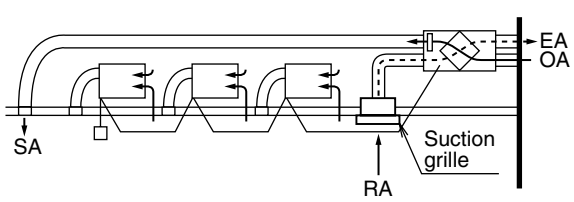


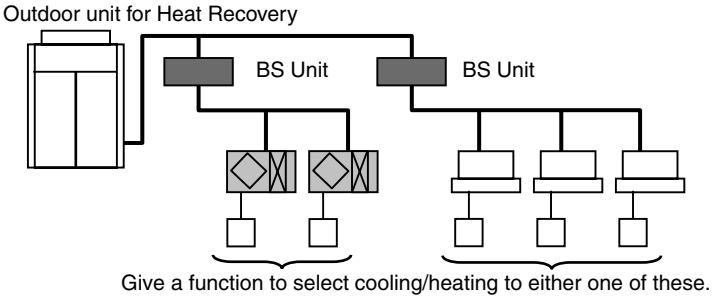


Caution If above setting is not made, the detection of correct temperature is not available and automatic judgement on proper cooling or heating can not be made when the temperature in the ceiling gets higher than indoor temperature.
Poor heating or shortage of the amount of humidification may result.

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.



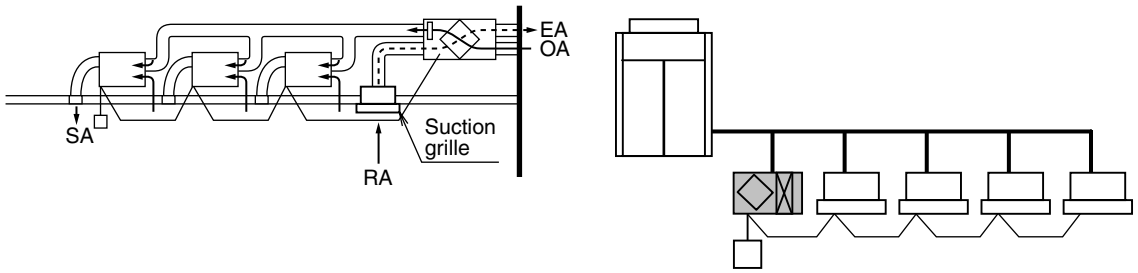


(2) Do not make the selection of heating or cooling in automatic mode and it shall be made by manual selection from remote controller or centralised control equipment.

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

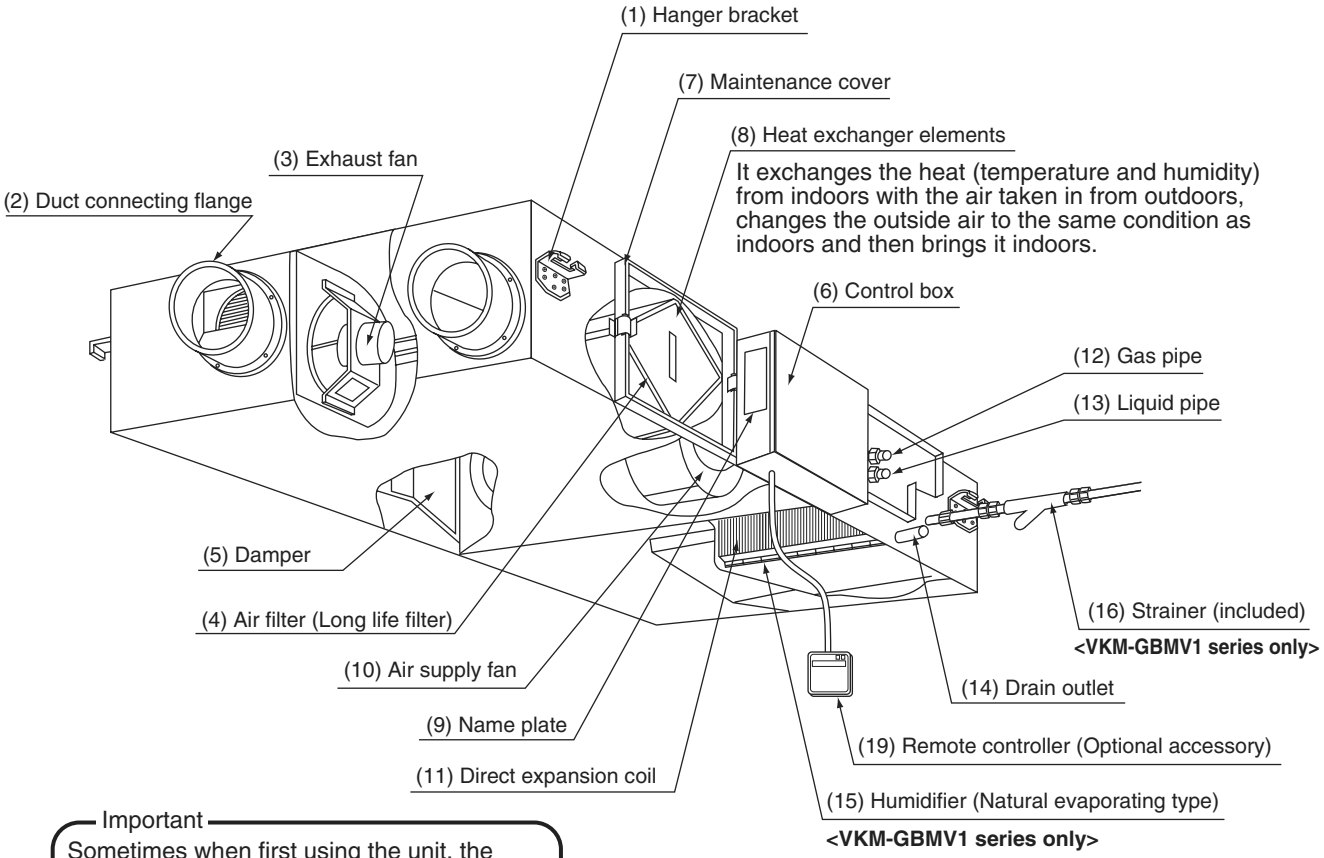
Heat Reclaim Ventilator

- 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

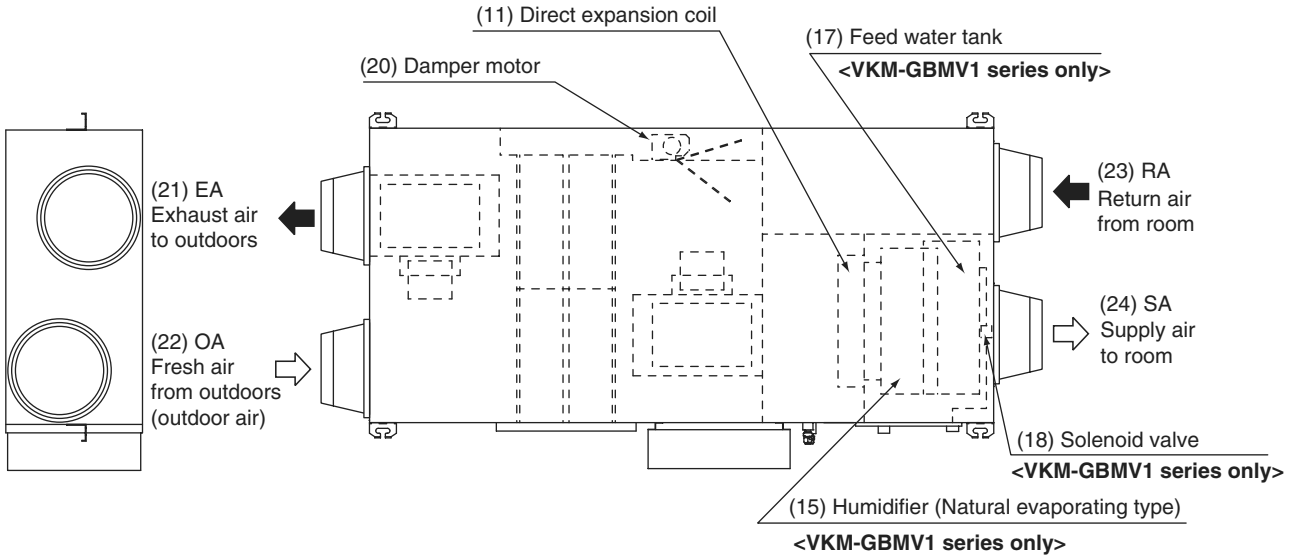
This operation manual is for the following systems with standard control. Before initiating operation, contact your local dealer for the operation that corresponds to your system type and mark.
If your installation has a customized control system, ask your local dealer for the operation that corresponds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

Name of Parts

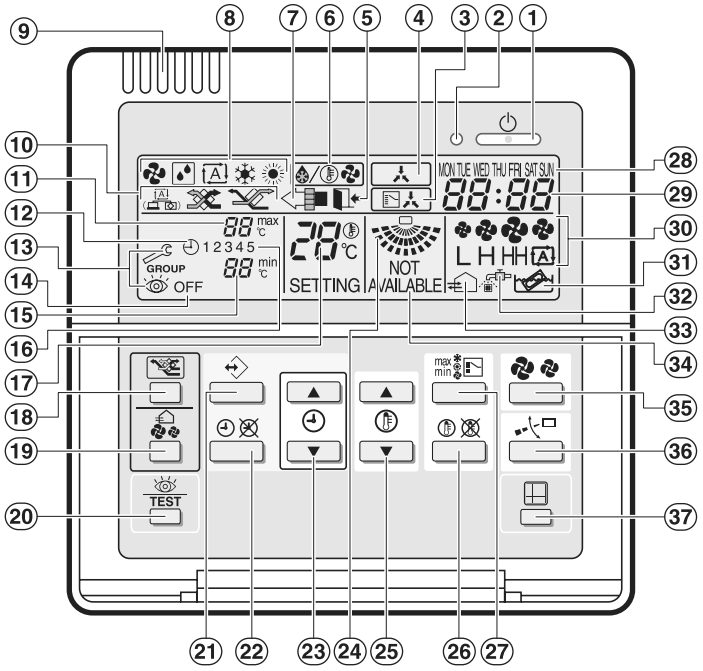


Important

Sometimes when first using the unit, the smell of the heat exchanging element may be noticeable, but it is not harmful. The smell will gradually go away as the unit is used.



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 “ 88 max ℃ ”
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 “ 88 min ℃ ”
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 “ 28 ℃ ” (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 “ max min ”
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 “** 88:88 **”**
The clock display indicates the current time (or the action time when reading or programming the schedule timer).

∗**30 Display “ L H HH A ” (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.

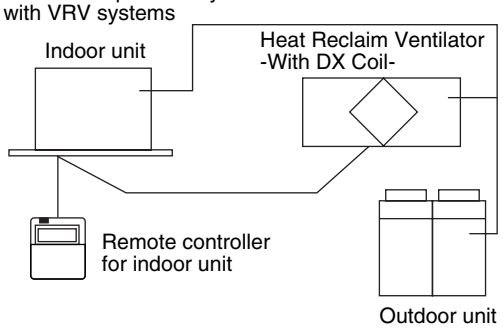
Explanation for Systems

This unit can be made a part of 2 different systems: as part of the combined operation system used together with VRVIII 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

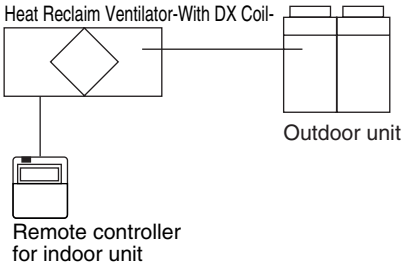


Combined operation system with VRVIII systems

[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.

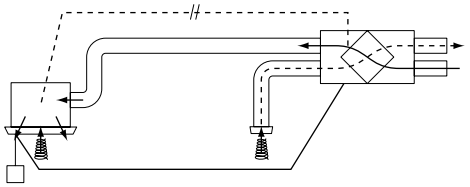
Note

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

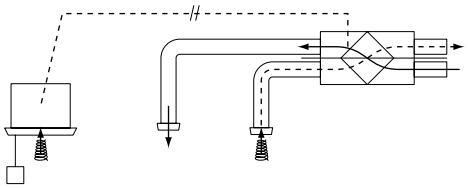
About Direct Duct Connection System

Installation Examples

• Direct duct connection system



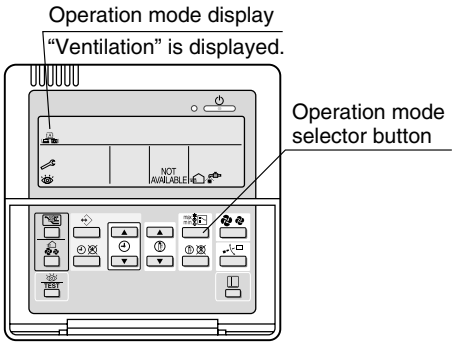
• Independent duct system



Note

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

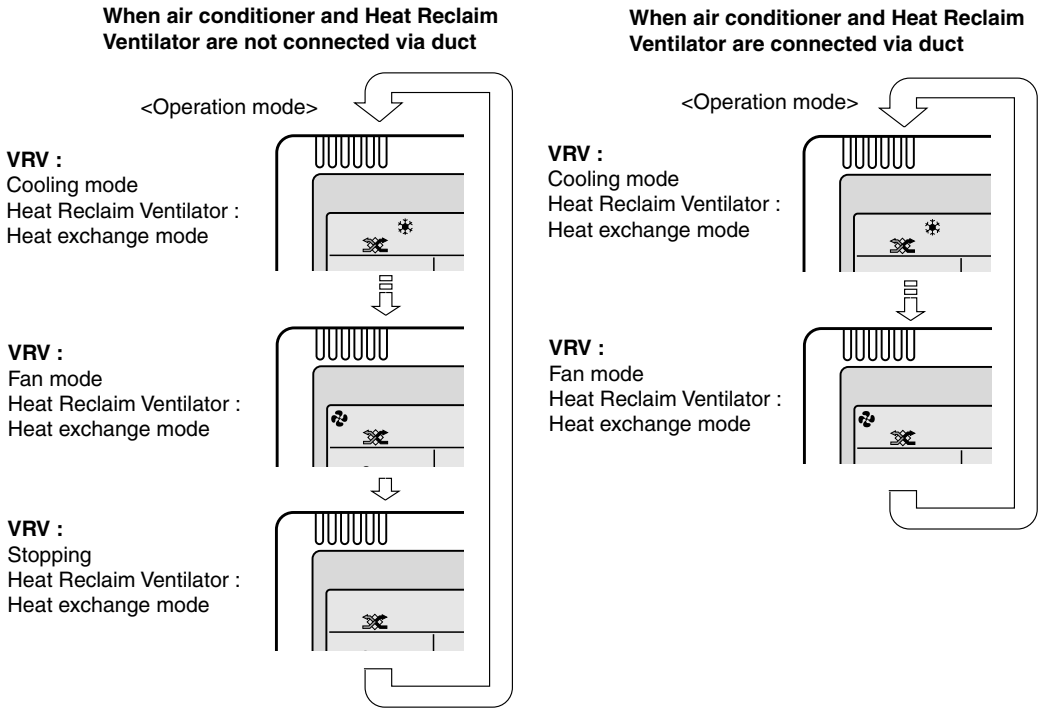
The Heat Reclaim Ventilator cannot be operated independently when the air conditioner is connected to the Heat Reclaim Ventilator via a duct. When using the Heat Reclaim Ventilator, set the air conditioner to "fan" mode on weak fan strength.



Remote controller for indoor unit

- 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.



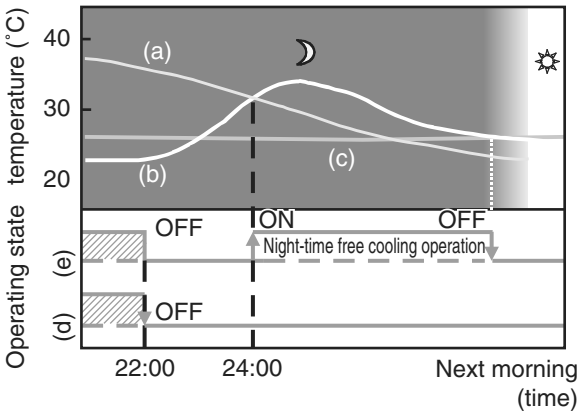
Note) Current Ventilation mode can be visible and selected on the remote controller.

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.

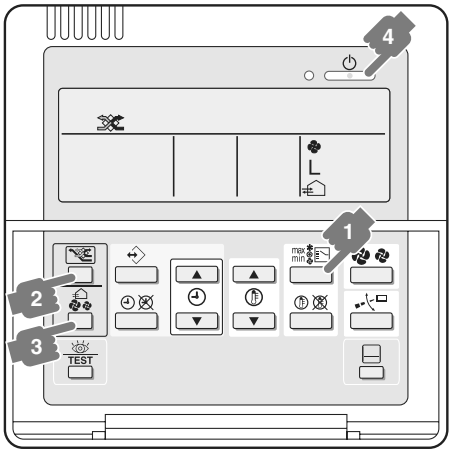
<Conditions>

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 🌀 L ⇨ High 🌀 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.

4 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 VRVIII 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

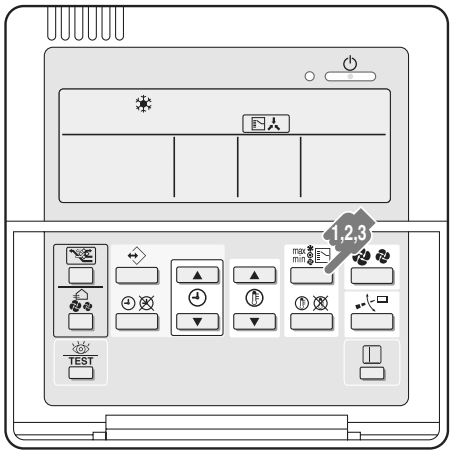
Defrost operation

- 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

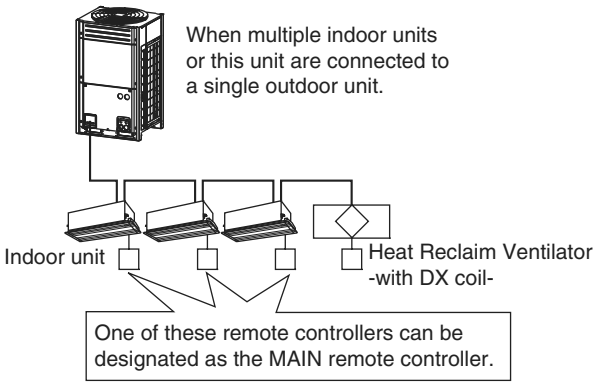


Remote controller for VKM BRC1D52

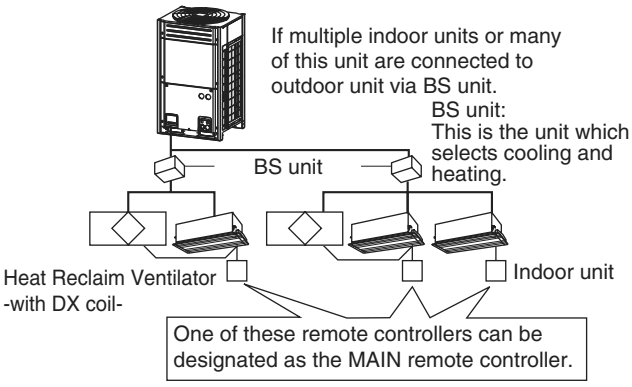
- When the system is installed as shown bellow it is necessary to designate one of the remote controllers as the MAIN remote controller.
- Only the MAIN remote controller can select cooling, heating, or automatic operation (the last only on simultaneous cooling/heating systems).
- The displays of SUB 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)

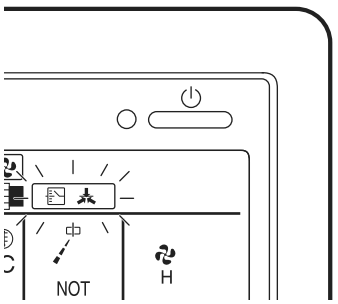


(Simultaneous cooling/heating systems)



■ 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).

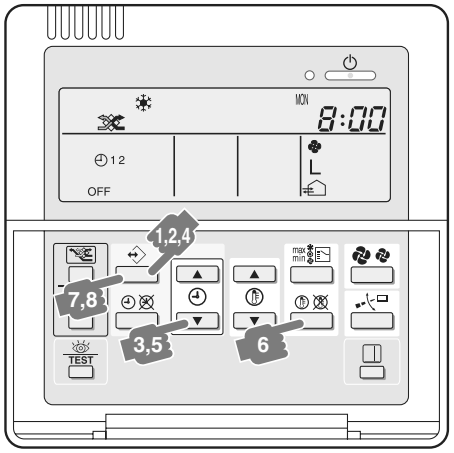
3 Press the operation mode selector button on the MAIN remote controller (i.e. a remote controller which does not display " ") to scroll through the modes. The display will scroll through " " – " " – " " (only for simultaneous cooling/heating systems) – " " – " ".
The display on SUB remote controllers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

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.

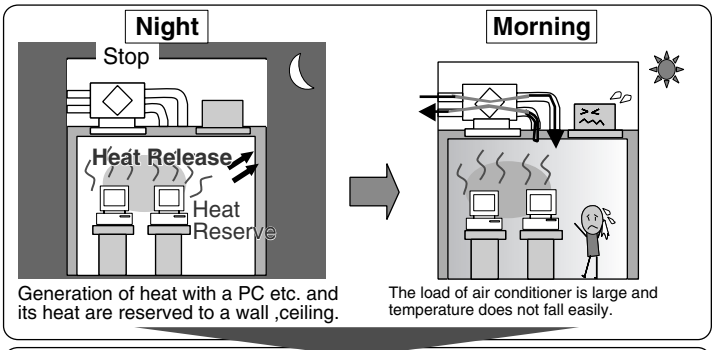
Part 5
Control Functions

1. Control Functions

1.1 Explanation of Individual Functions

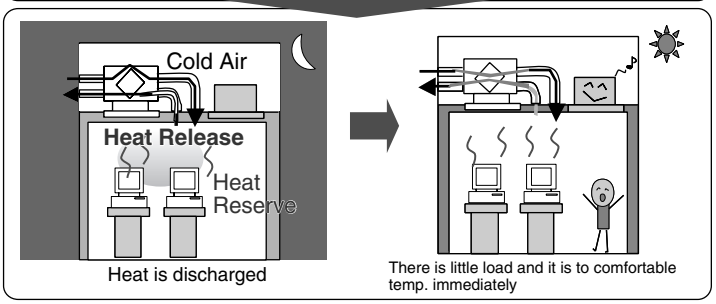
1.1.1 Night-time Free Cooling Operation

Not operation



Night-time Free Cooling Operation

The heat which accumulated indoors is discharged at night. Air Conditioning load of the next day is reduced, and efficiency is increased.

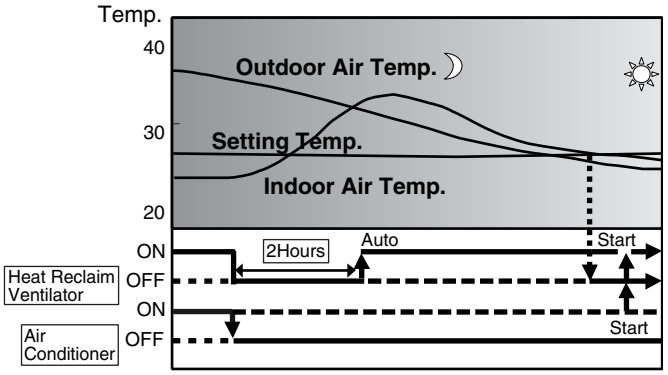


In case of interlocking operation with an air conditioner

■ **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)

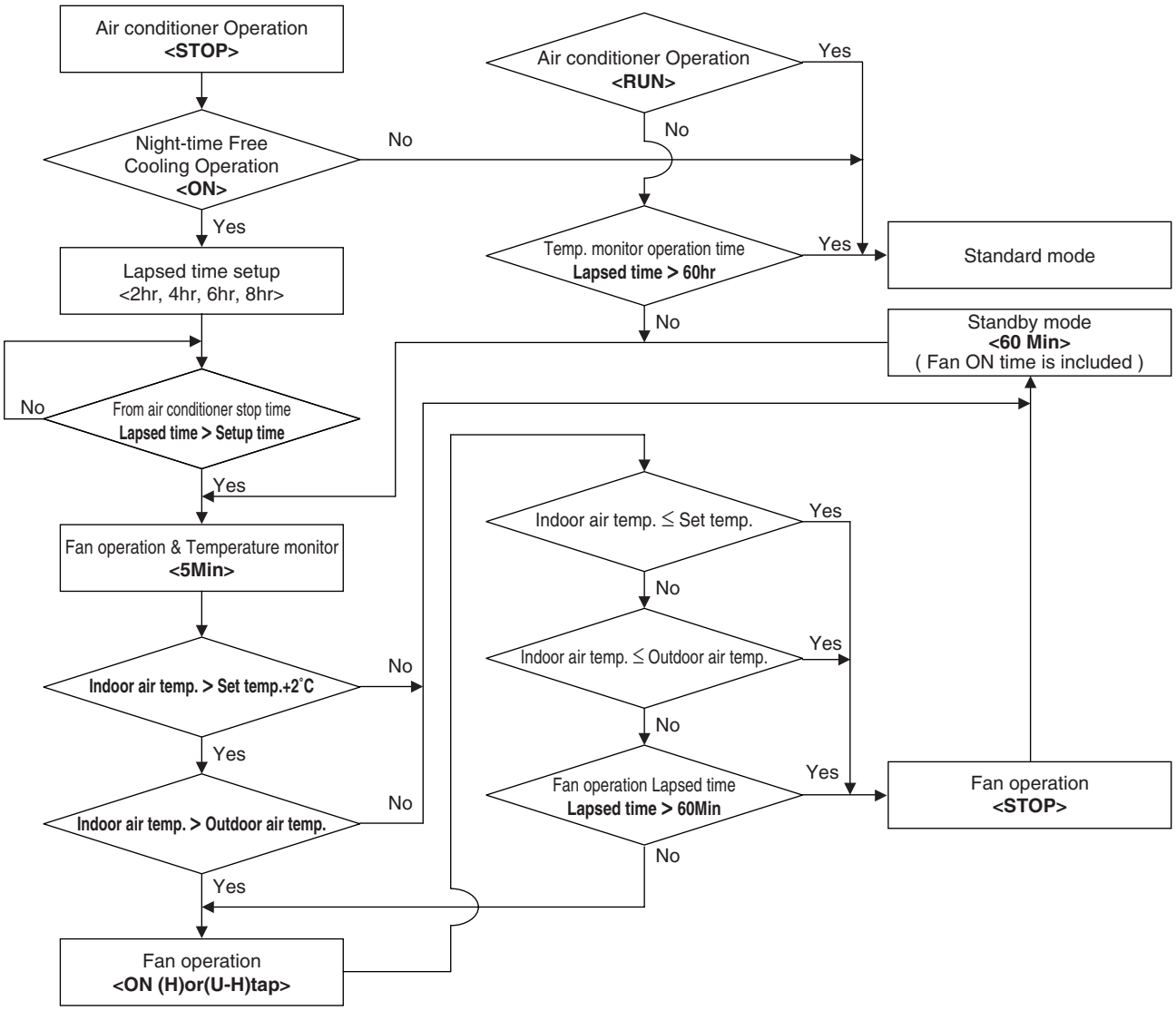
It is reduction of about 5% of air conditioning load at the time of cooling operation.

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>

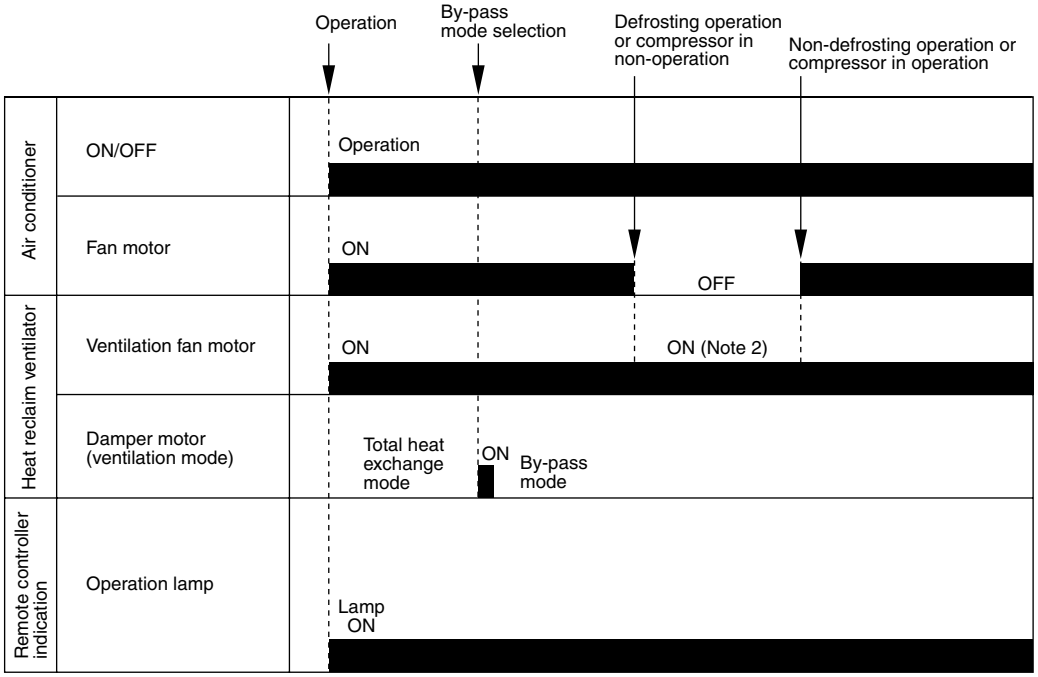
Night-time Free Cooling Operating Condition



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)



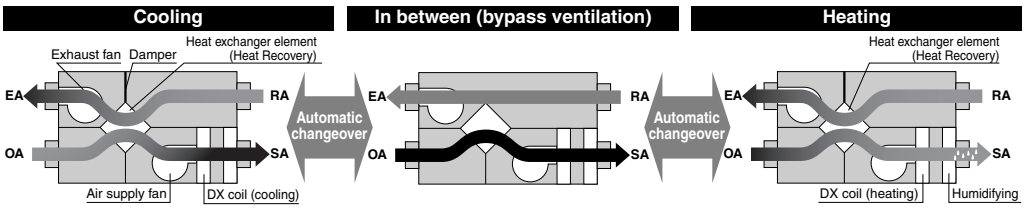
Note1: Cold area mode can set using field setting mode of remote controller.
In detail, refer to P.80.

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

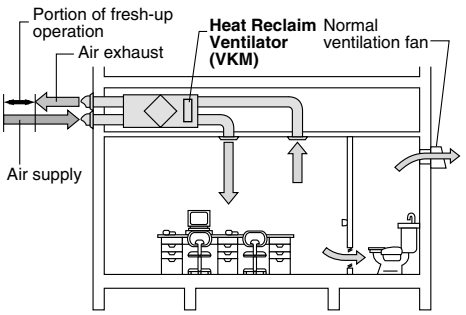
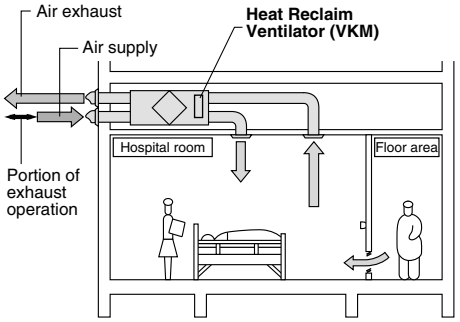
Unlike the conventional total heat exchanger that only collects the heat on the exhaust air side to the air supply side, the VKM unit monitors the cooling/heating operation mode and the set temperature of air conditioners using micro-computer under the interlock control, and detects indoor and outdoor 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

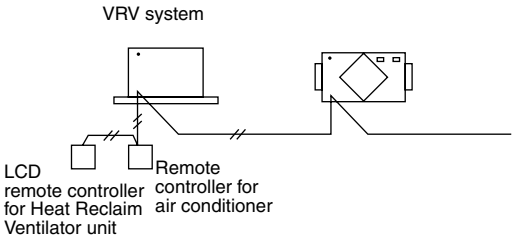
■ Setting changes should be made in the following way.
Mode No. : 18 (group tie up) or 28
First code No.7
Second code No.1~No.4
Refer to P.80.

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).

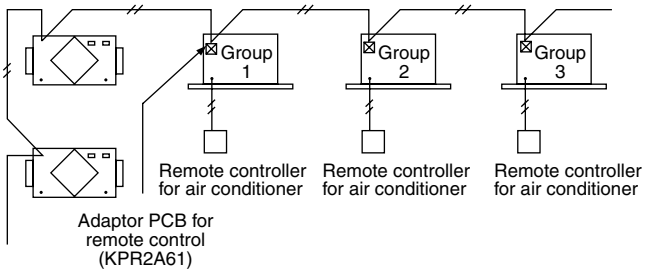
1) 1 group link control

- 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.

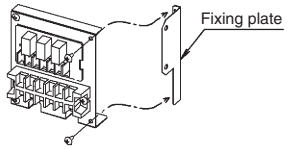


Note: With Super Wiring, units of different outdoor systems can be linked in operation.

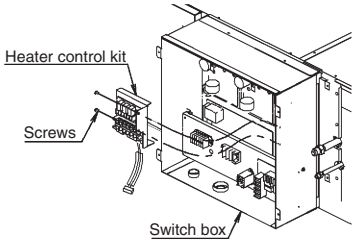
1.1.6 Heater Control Operation (FIELD SUPPLY)

Installation

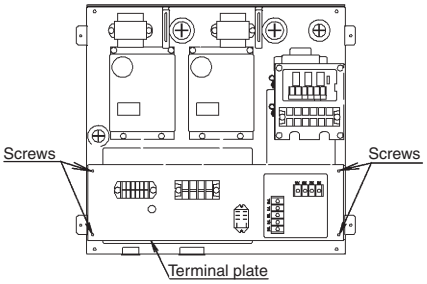
<VKM-GB(M)V1>
Before installation (box cover is unnecessary)
Assemble main kit and fixing plate as shown below.



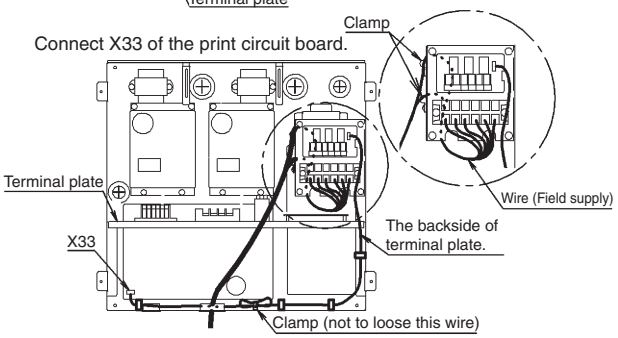
Install the heater control kit to the inside of switch box as shown below.



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



Connect X33 of the print circuit board.



C: 3P343420E

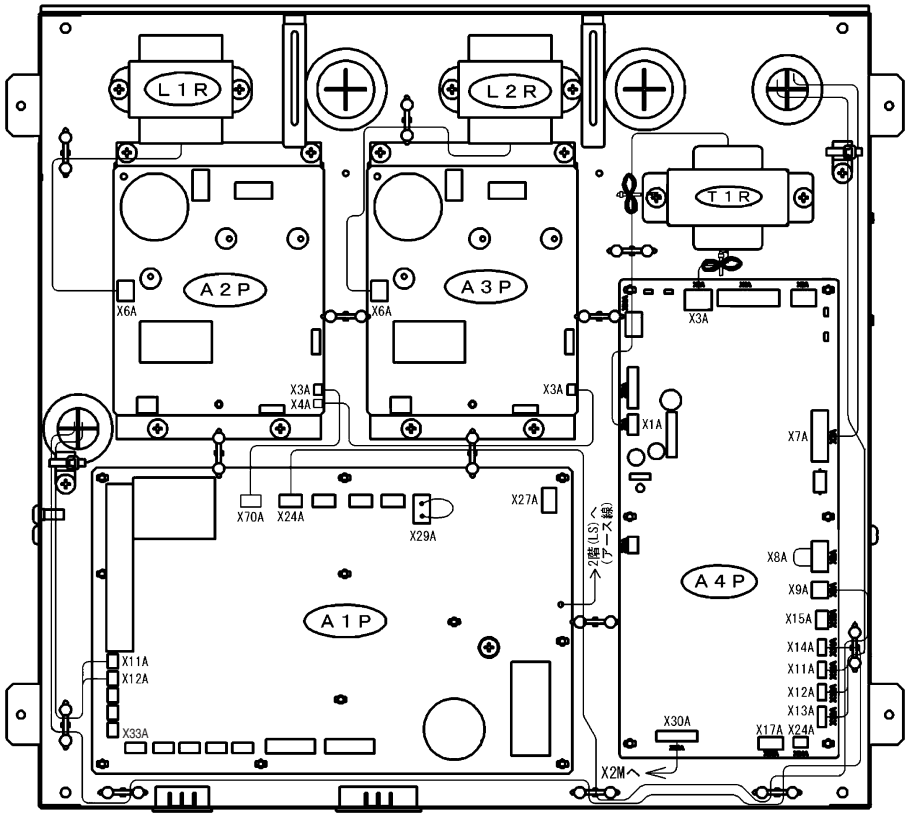
Caution: The initial setting is required by remote controller for indoor unit or Heat Reclaim Ventilator unit.
See the INSTALLATION MANUAL of Heat Reclaim Ventilator.
(Local setting)
Electric heater setting ON, OFF delay [19 (29) · 8 · 04]
∗The initial setting is necessary for safety.

1.2 Layout of Switches on PCB

1.2.1 PCB

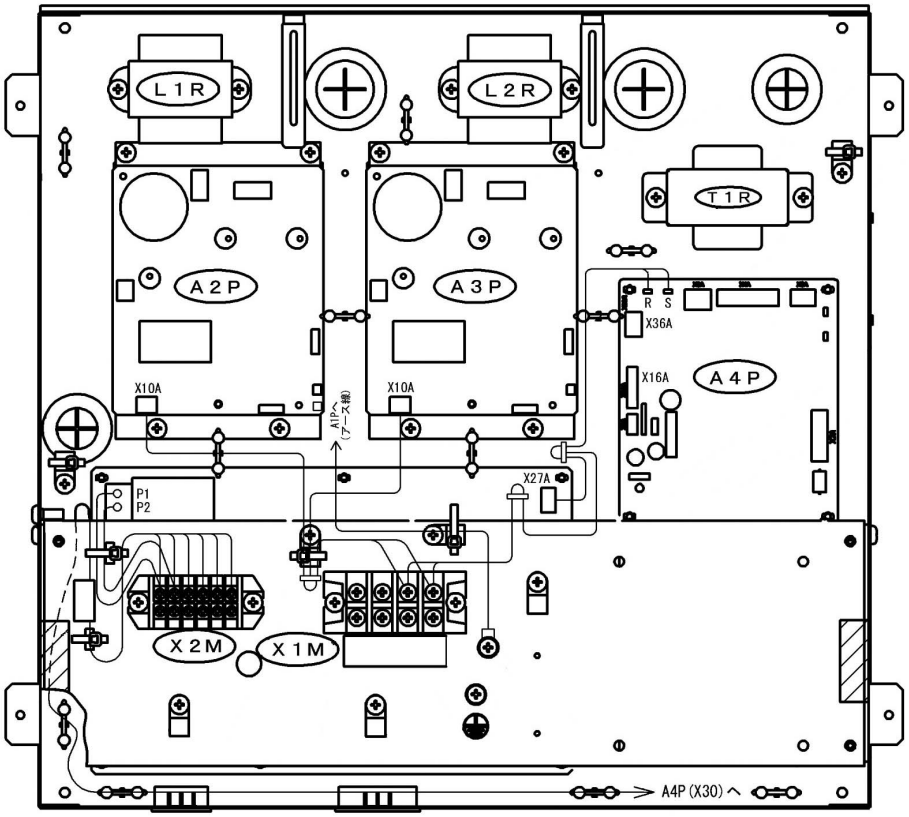
[A1P~A4P]

VKM-GBV1
VKM-GBMV1



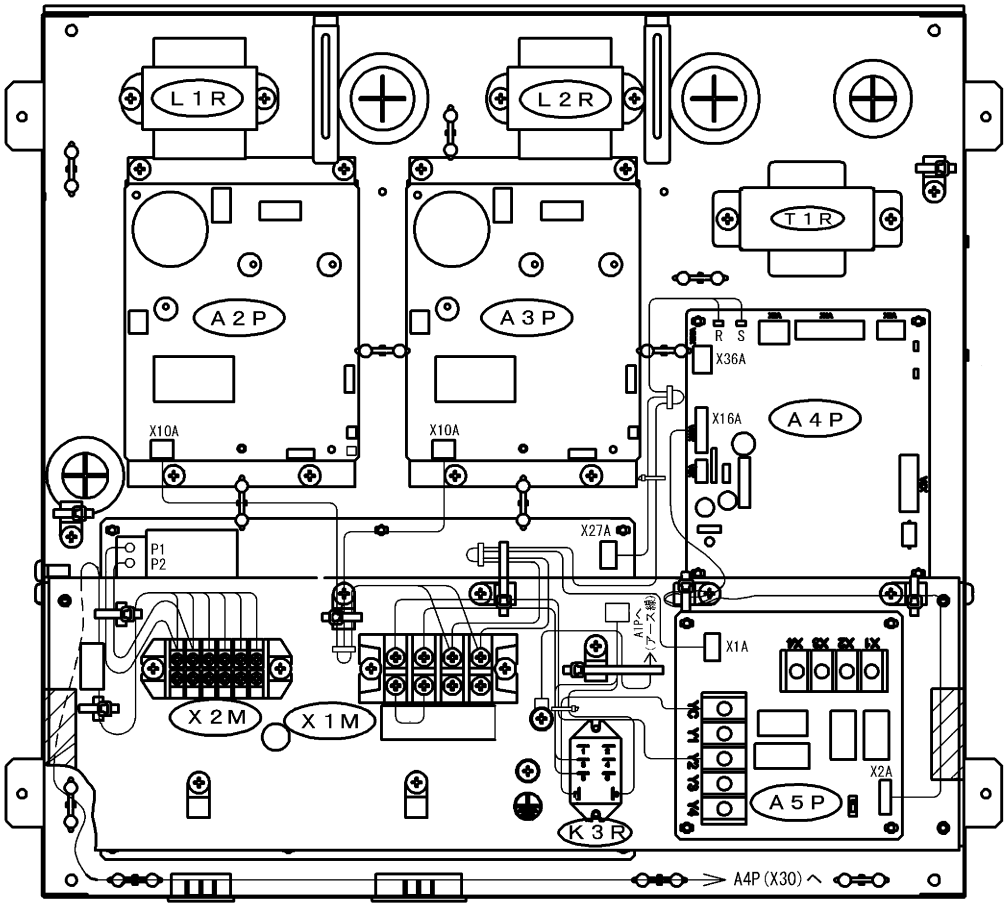
2P341992Q

VKM-GBV1



2P341992Q

VKM-GBMV1



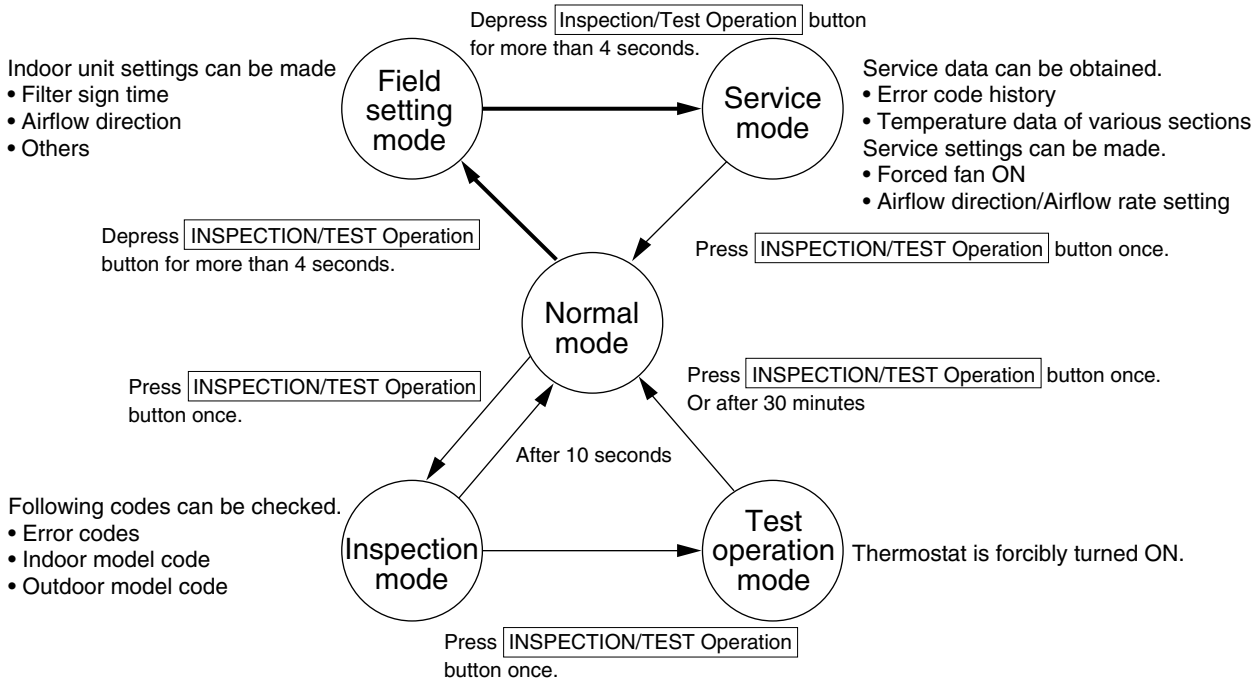
2P341992Q

Part 6
Troubleshooting

1. Troubleshooting by Remote Controller

1.1 The INSPECTION / TEST Button

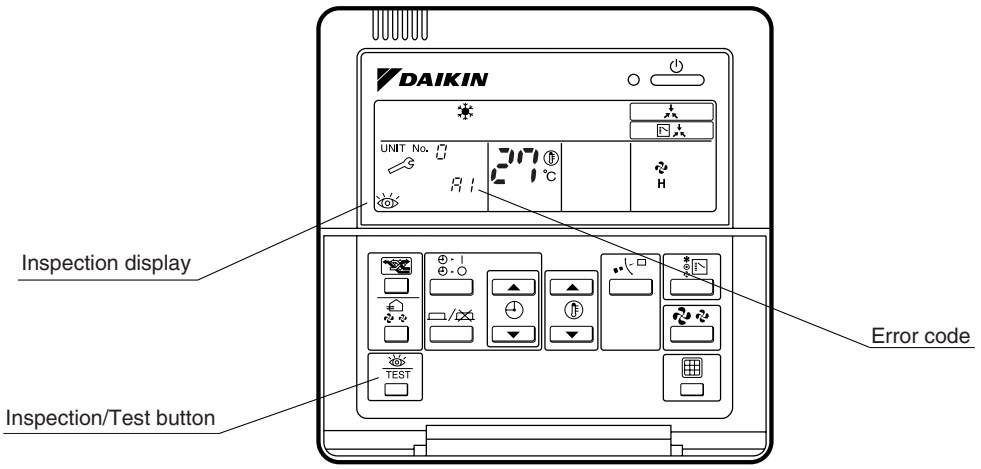
The following modes can be selected by using the [Inspection/Test Operation] button on the remote control.



1.2 Self-diagnosis by Wired Remote Controller

Explanation

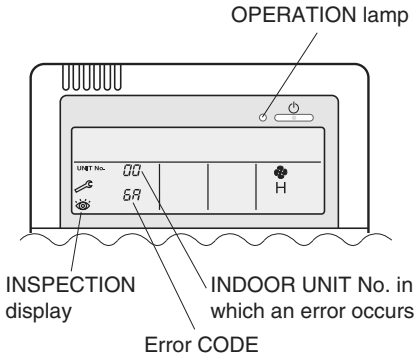
If operation stops due to error, the remote controller's operation LED blinks, and error code is displayed. (Even if stop operation is carried out, error contents are displayed when the inspection mode is entered.) The error code enables you to tell what kind of error caused operation to stop. Refer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

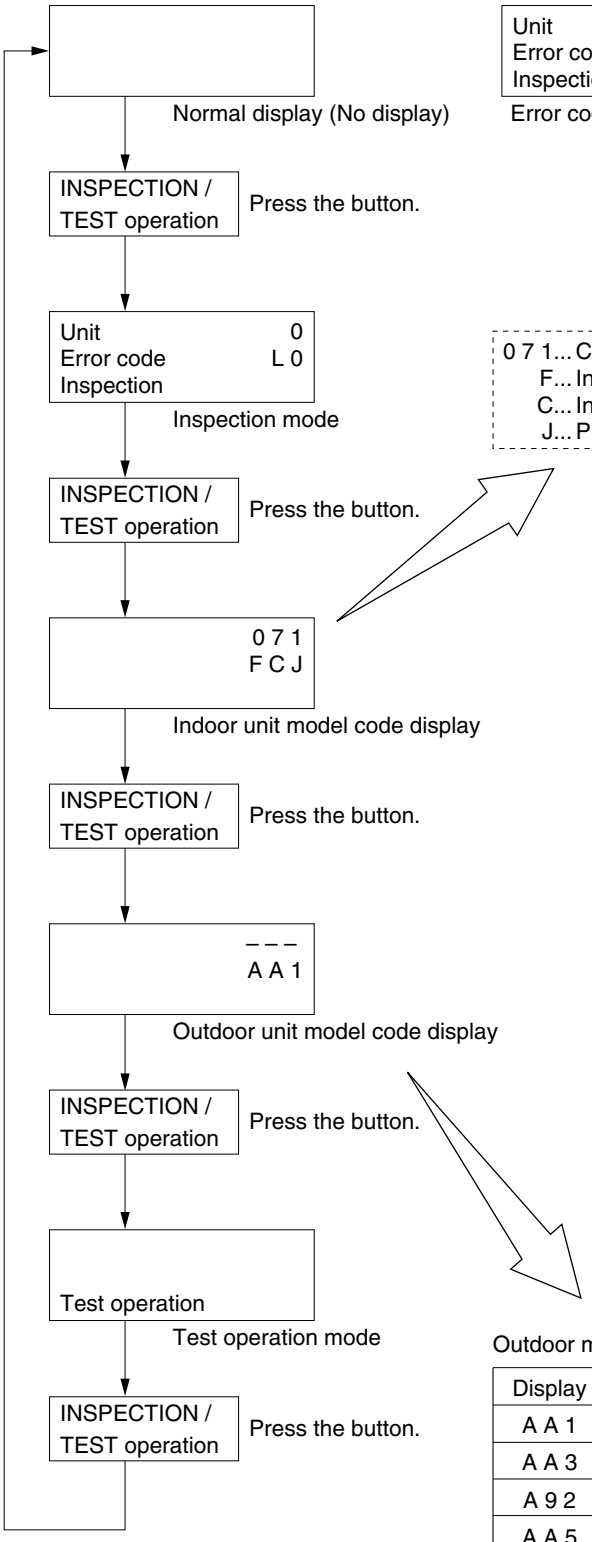
Operation lamp	Inspection indicator	Unit No.	Error code	Description	Page
ON	OFF	Blinking	64	Indoor air thermistor (R1T) error*1	48
ON	OFF	Blinking	65	Outdoor air thermistor (R2T) error*1	49
ON	OFF	Blinking	6A	Damper system error (alarm)	50
Blinking	Blinking	Blinking	6A	Damper system error (alarm)	51
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



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

Example of capacity code display

Example model	Display
FXCQ25	028
FXFQ63	071
VKM50GB (M) V1	028
VKM80GB (M) V1	045
VKM100GB (M) V1	056

Indoor unit system code

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

Indoor unit type code

Display	Type	Model
A	Wall mounted	FXAQ
C	Double flow	FXCQ
E	Corner	FXKQ
F	Multi flow	FXFQ
H	Ceiling suspended	FXHQ
J	Built-in	FXSQ
L	Floor standing	FXLQ
P	Concealed ceiling duct	FXMQ, VKM (Heat Reclaim Ventilator)
L	Concealed floor standing type	FXNQ
6	Multi flow 600×600	FXZQ
3	Slim Ceiling mounted duct	FXDQ
5	New ceiling suspended cassette	FXUQ

Outdoor model code

Display	Type	Model
A A 1	VRV System Inverter K Series	RSXYP
A A 3	R407C VRV PLUS Series	RXYP
A 9 2	VRV Heat Recovery Series	RSEYP
A A 5	High COP type R407C L Series	RSXYP-L
A A A	VRV II	RXYQ-M
A A C	VRV II M/C	RXYQ-MA
A A E	VRV III Heat Pump Series	RXYQ-P
	VRV III Cooling Only Series	RXQ-P
A 9 E	VRV III Heat Recovery Series	REYQ-P

2.3 Indoor Air Thermistor (R1T) Error

Error Code

Error Code 64 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

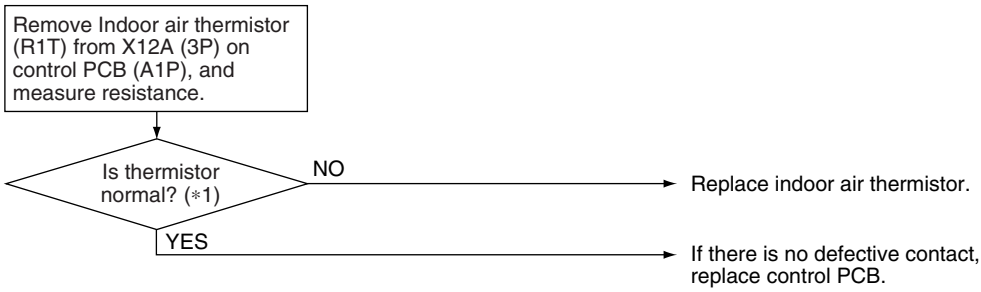
When value detected by inside air temperature sensor is -40°C or below (open circuit) or 70°C or higher (short-circuit).

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.



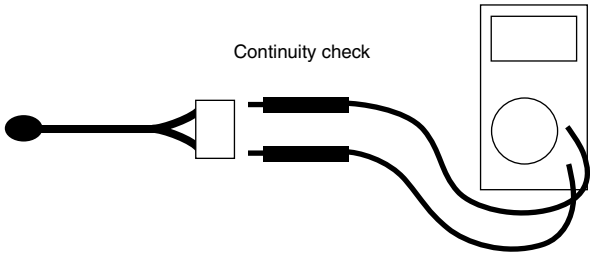
Note: ∗1.
Refer to the thermistor temperature - resistance conversion table when measuring resistance.

Thermistor temperature - resistance conversion table

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

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 65 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

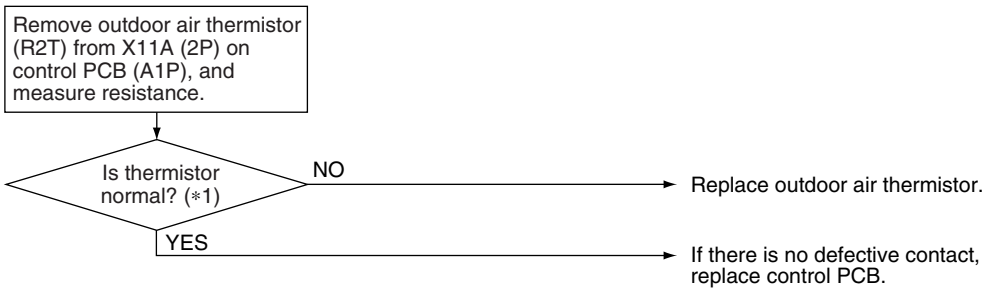
When value detected by outdoor air temperature sensor is -40°C or below (open circuit) or 70°C or higher (short-circuit).

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.



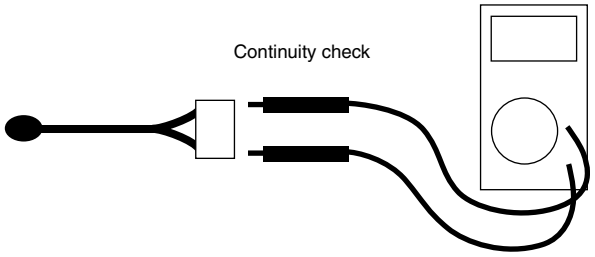
Note: ∗1.
Refer to the thermistor temperature - resistance conversion table when measuring resistance.

Thermistor temperature - resistance conversion table

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

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 6A Inspection — Unit No.

LED Indication

Remote Controller ☼ Main Unit ◑

Method of Error Detection

Measurement of damper motor limit ON/OFF time.

Error Decision Conditions

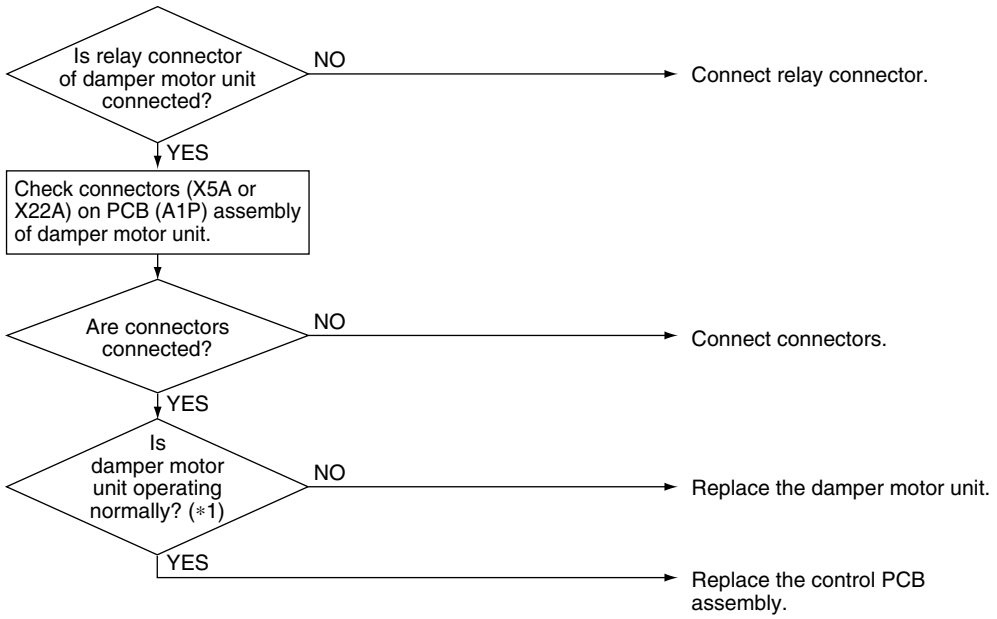
- When damper motor limit switch 1 (or 2) remains ON (or OFF) for more than a certain time duration after ventilation mode is changed.
- When damper motor limit switch 1 (or 2) repeats ON/OFF operations after damper motor 1 (or 2) stops.

Supposed Causes

- Defective damper motor or limit switch
- Broken wire in cable
- Defective contact in connector (including relay connector)
- Defective control PCB (A1P) assembly

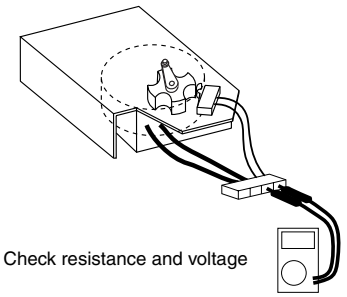
Troubleshooting

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 6A 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

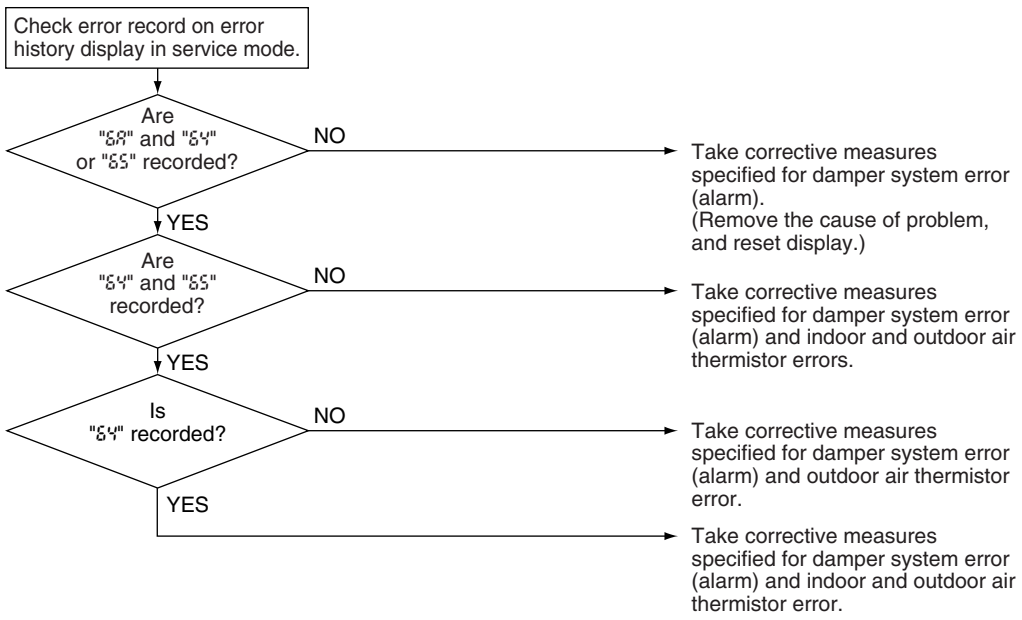
- When damper system error (alarm) and indoor (or outdoor) thermistor error are generated at the same time.
- When damper system error (alarm) occurs and values of indoor and outdoor air thermistor meet frost conditions.

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 E²PROM.

Error Decision Conditions

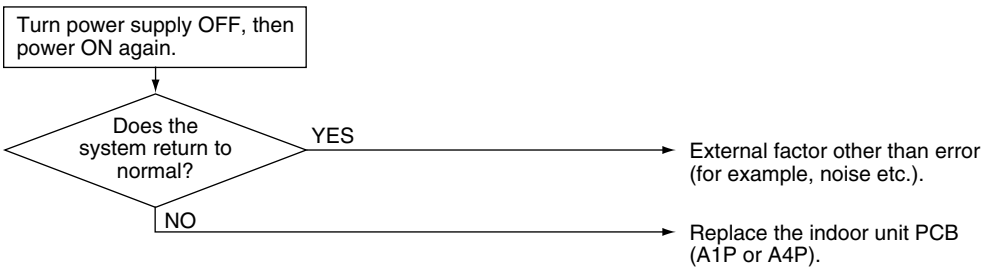
When data could not be correctly received from the E²PROM
E²PROM: Type of nonvolatile memory. Maintains memory contents even when the power supply is turned OFF.

Supposed Causes

- 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

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

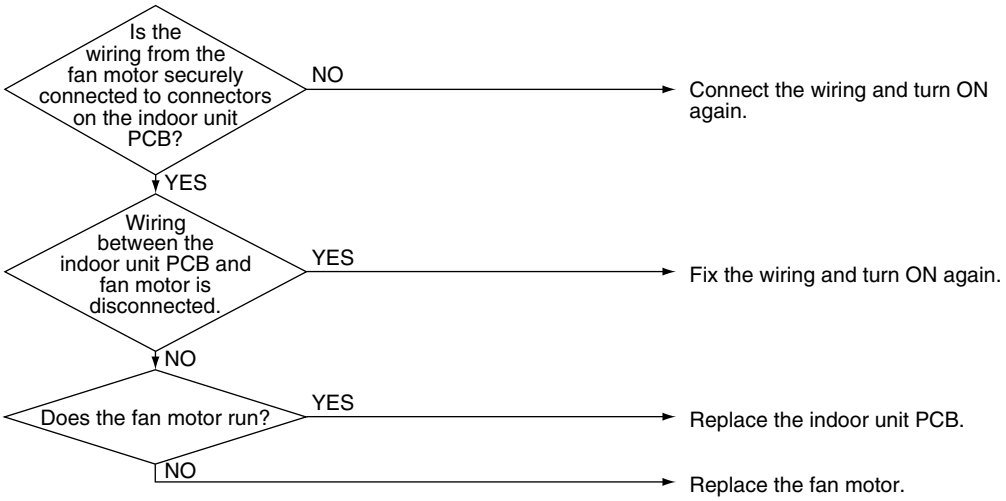
When number of turns can not be detected even when output voltage to the fan is maximum

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 A6

Applicable Models FXMQ50~140P

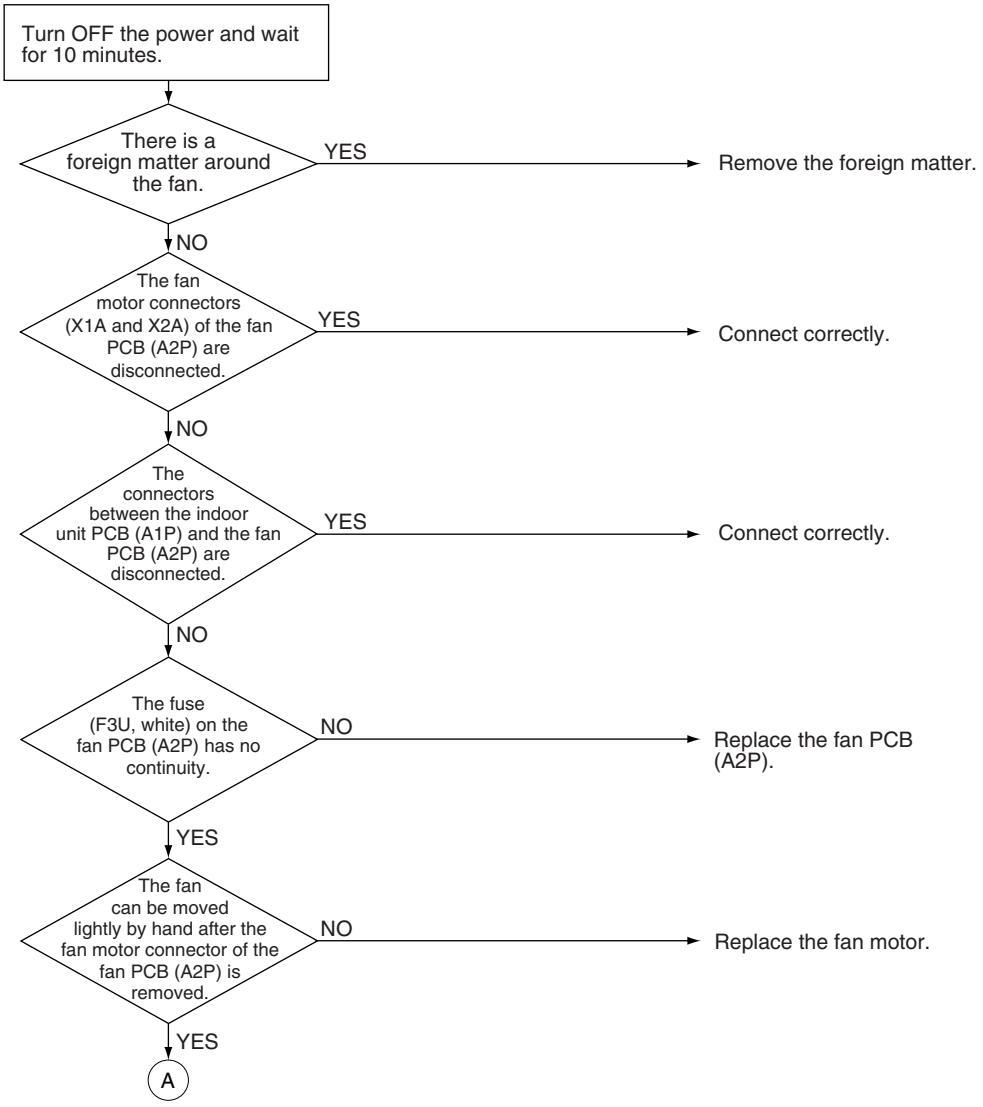
Method of Error Detection
Error from the current flow on the fan PCB
Error from the RPM of the fan motor in operation
Error from the position signal of the fan motor
Error from the current flow on the fan PCB when the fan motor starting operation

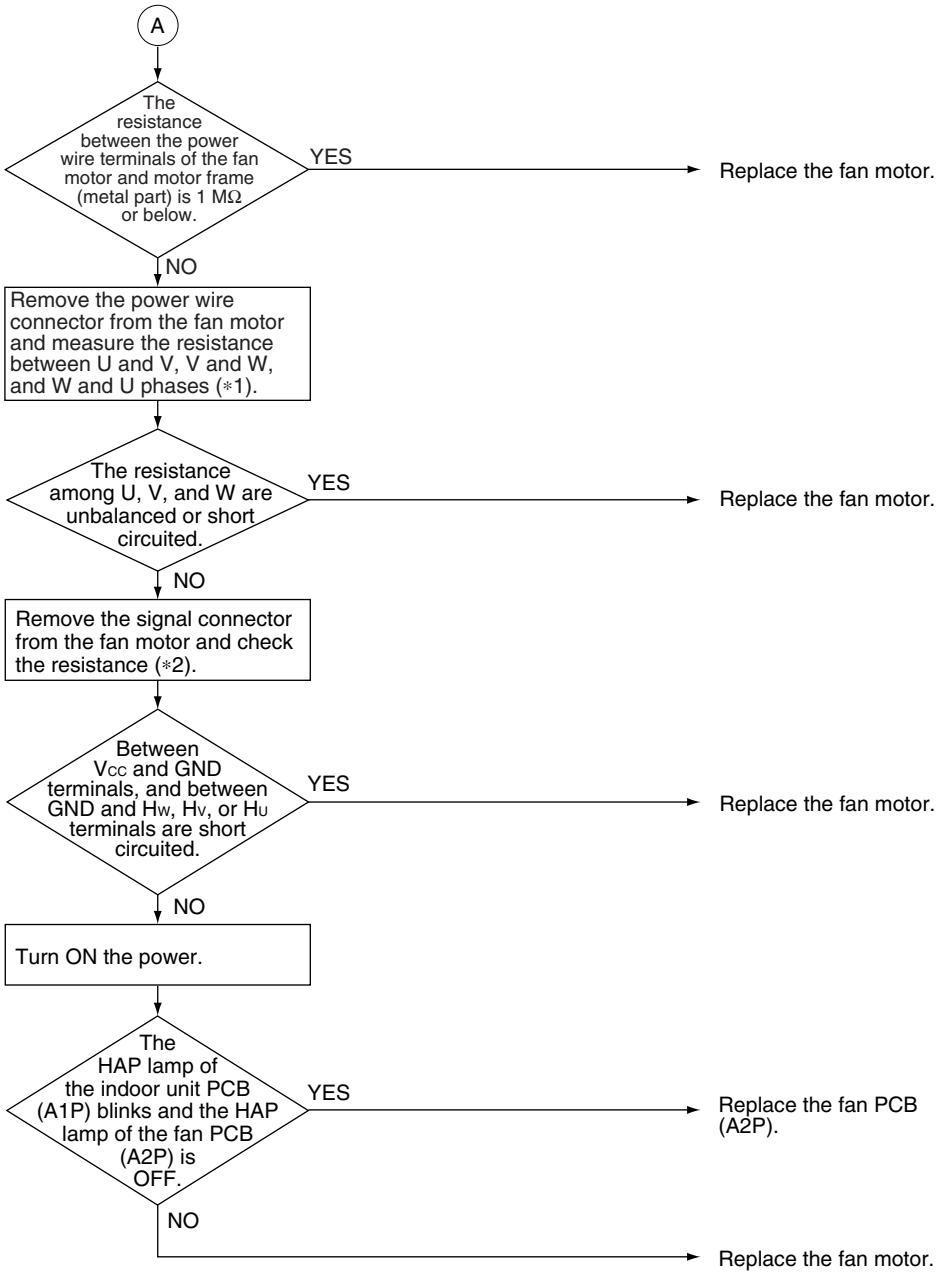
Error Decision Conditions
- An overcurrent flows.
- The RPM is less than a certain level for 6 seconds.
- A position error in the fan rotor continues for 5 seconds or more.

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

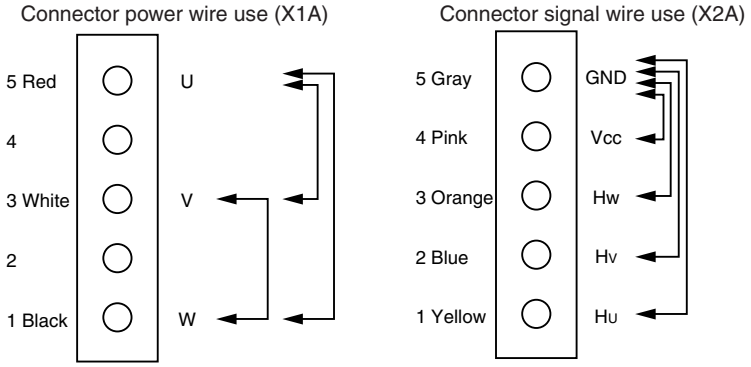
Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.





Note: ∗1. Measurement of power wire connector.
Remove the X1A connector from the fan PCB (A2P) and measure the resistance between the U and V, V and W, and W and U phases of the motor connector (with 5 conductors) and check that each phase are balanced (within a permissible dispersion range of ±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 A9

Applicable Models FXMQ20~140P
VKM50~100GBMV1, VKM50~100GBV1

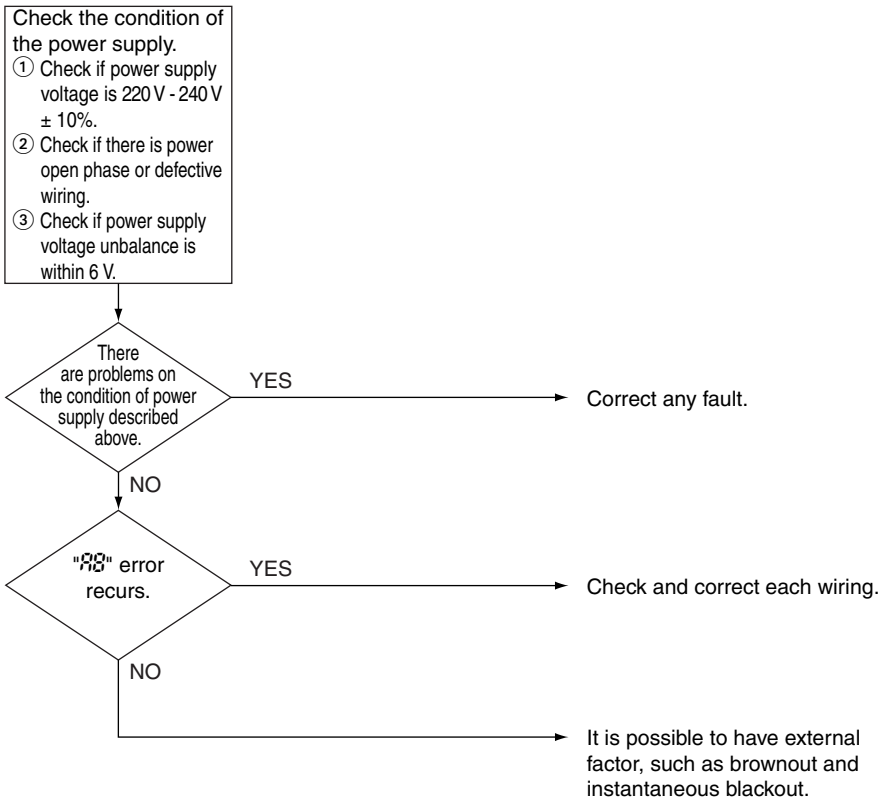
Method of Error Detection Detect error checking the input voltage of fan motor

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

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



2.10 Electronic Expansion Valve Coil (20E) Abnormality

Error Code A9

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

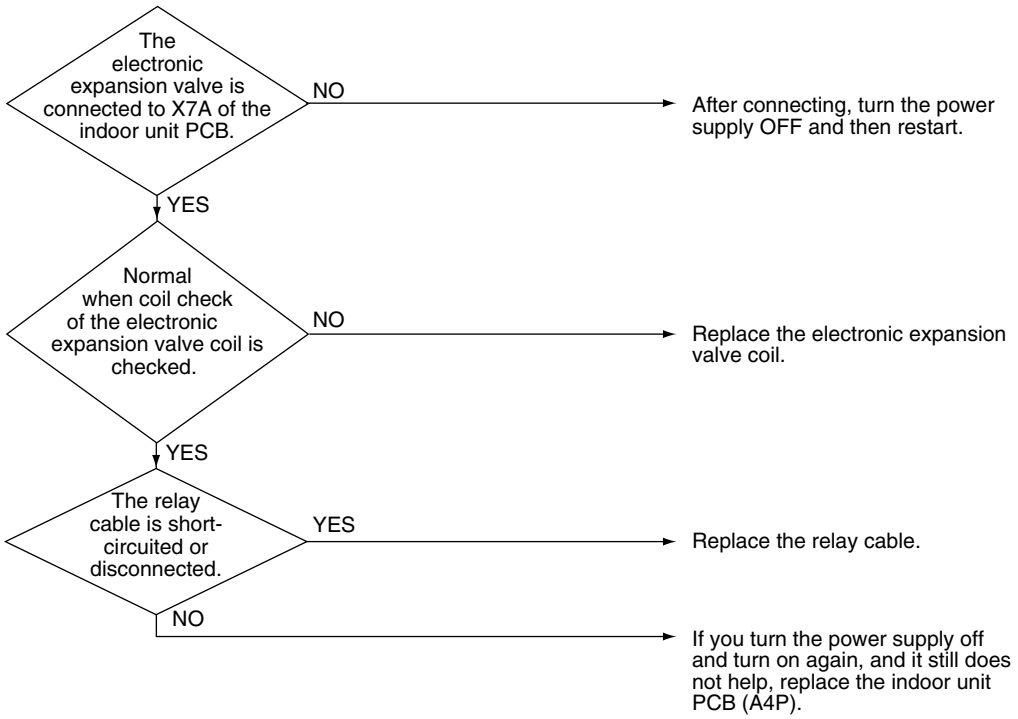
Error Decision Conditions When number of turns can not be detected even when output voltage to the fan is maximum

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.

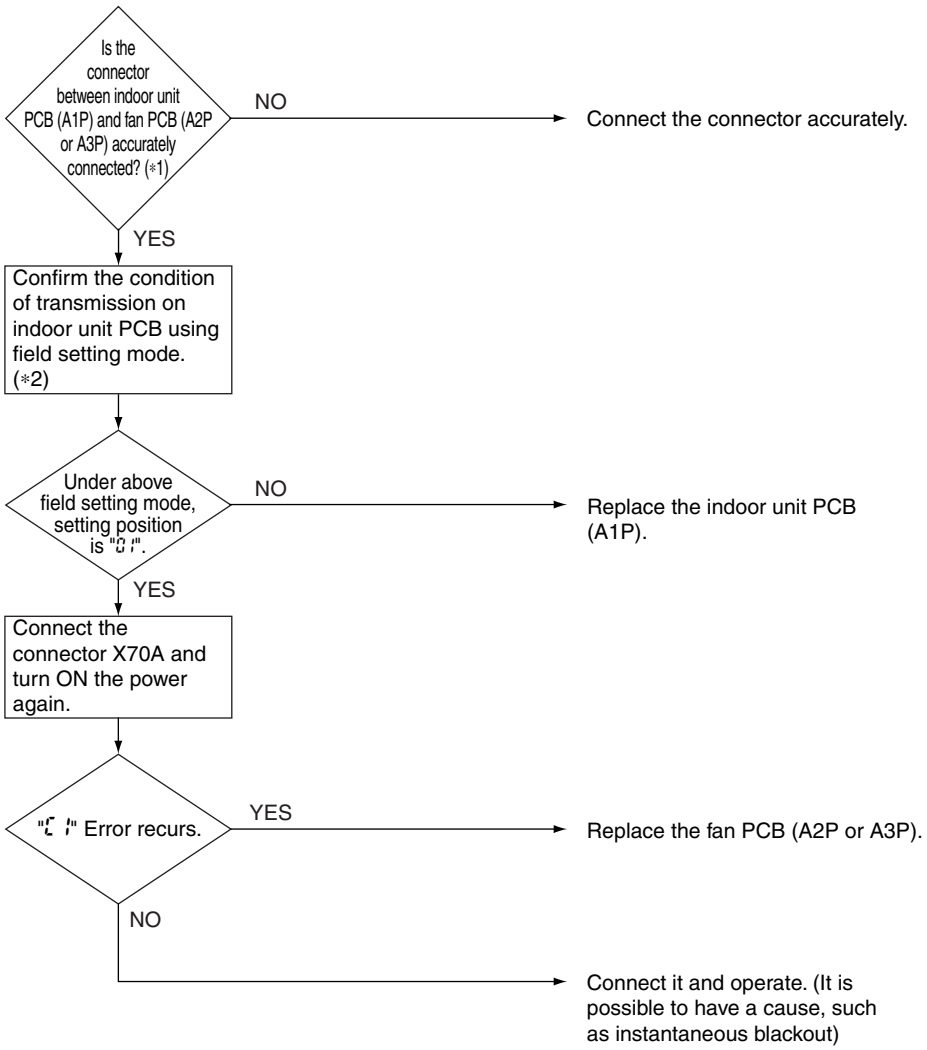


2.11 Transmission Error (Between Indoor unit PCB and Fan PCB)

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

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



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 C4

Applicable Models VKM50~100GBMV1, VKM50~100GBV1

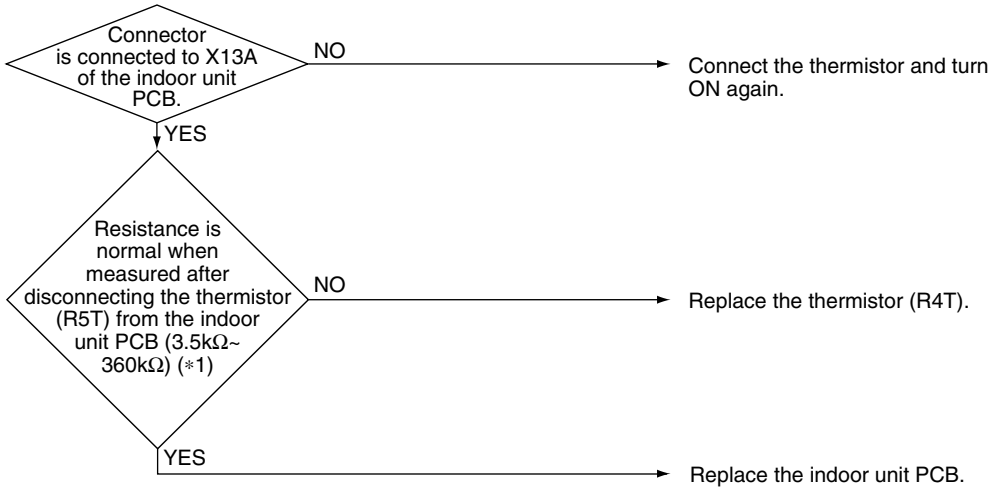
Method of Error Detection Error detection is carried out by temperature detected by heat exchanger thermistor.

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 C5

Applicable Models VKM50~100GBMV1, VKM50~100GBV1

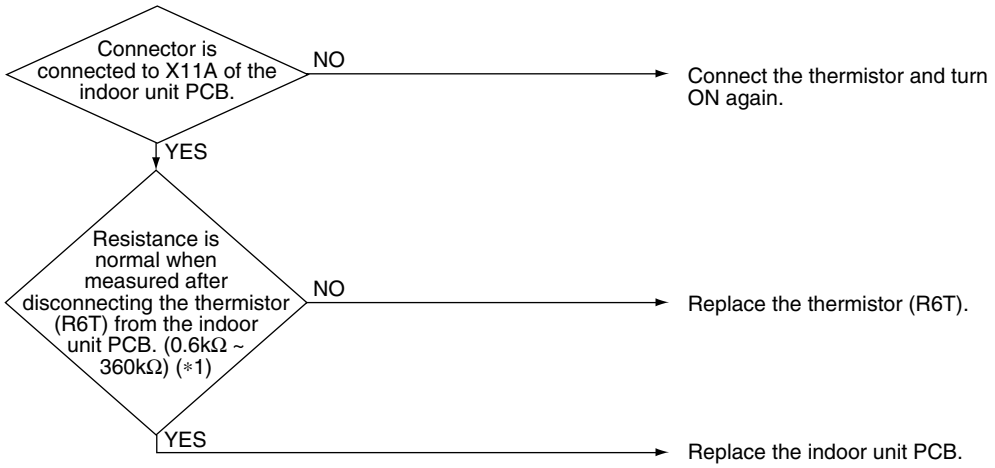
Method of Error Detection Error detection is carried out by temperature detected by gas pipe thermistor.

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

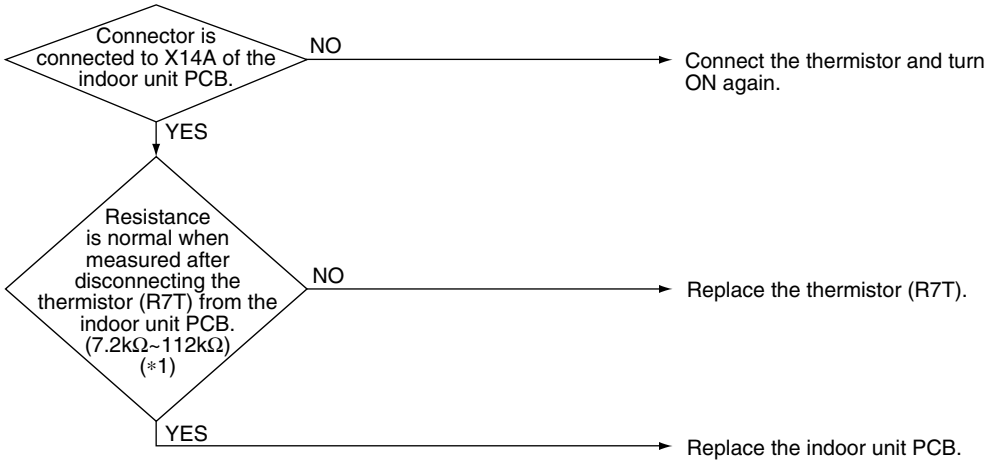
Method of Error Detection Error detection is carried out by temperature detected by suction air thermistor.

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 C9

Applicable Models VKM50~100GBMV1, VKM50~100GBV1

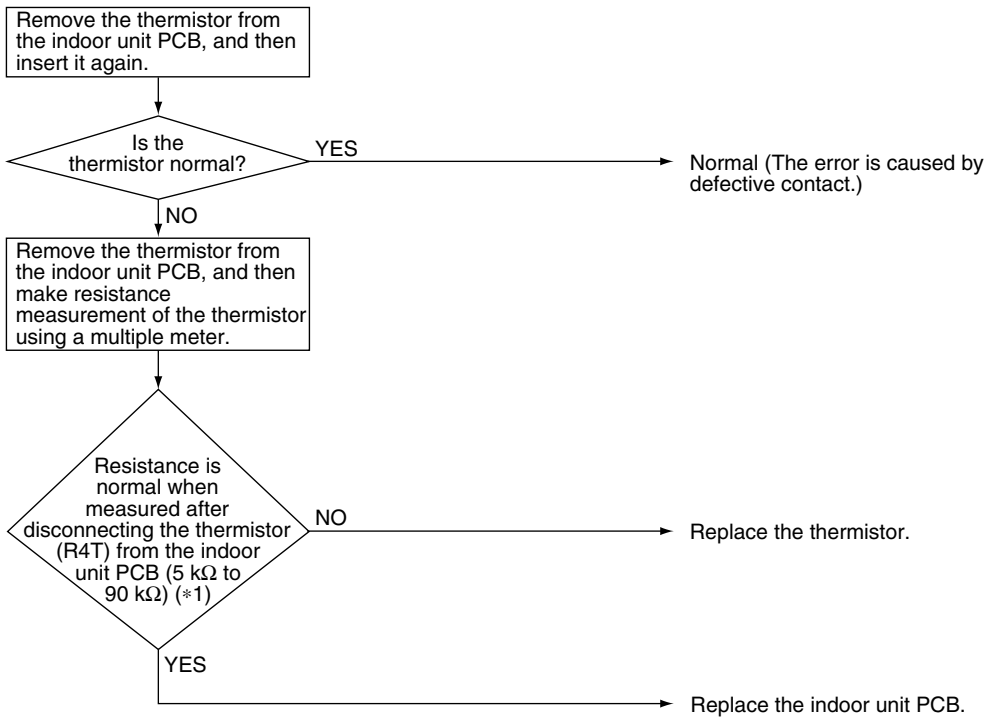
Method of Error Detection The error is detected by temperature detected by thermistor.

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

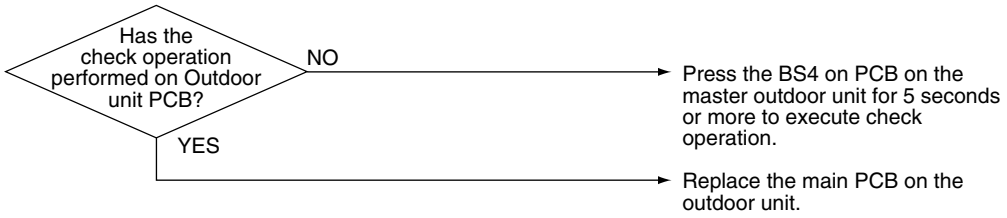
Error is decided when the unit starts operation without check operation.

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

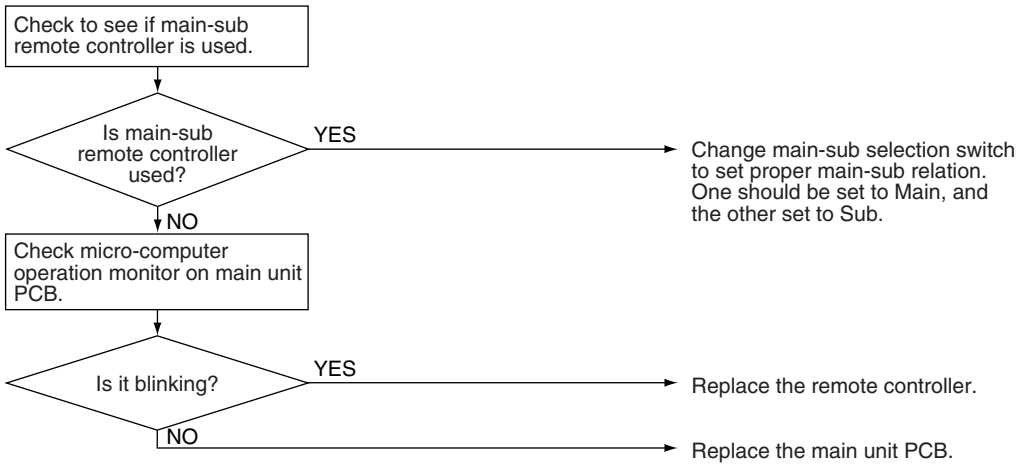
When "88" remains on remote controller display.

Supposed Causes

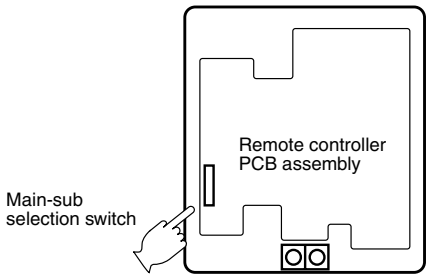
Main-sub setting of remote controller
Remote controller PCB assembly error
Main unit PCB assembly error

Troubleshooting

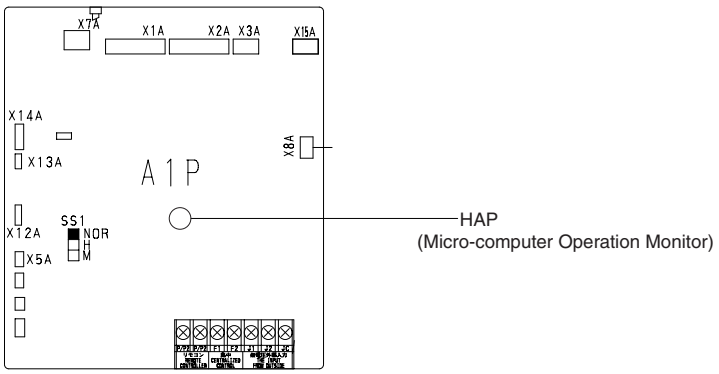
Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Dedicated Remote Controller



Main Unit PCB (A1P)

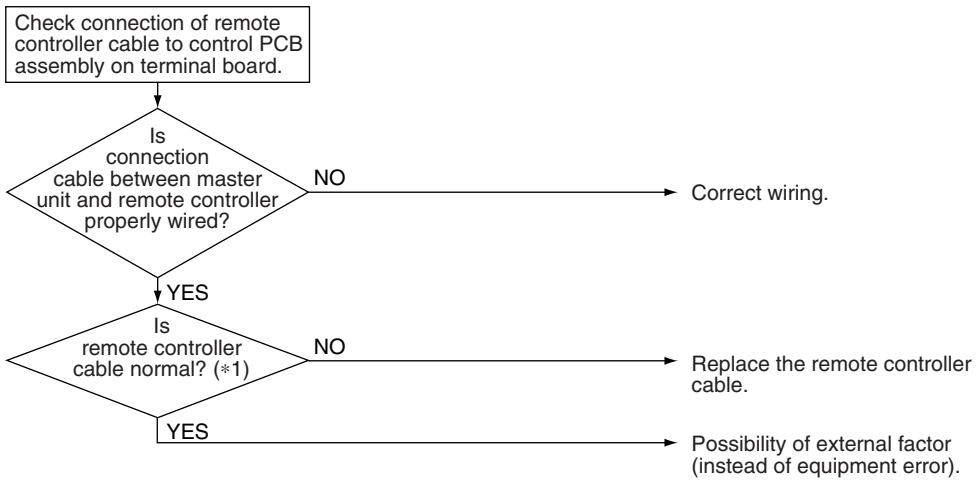


2.18 Data Transmission Error (between LCD Remote Controller and Master Unit)

Error Code	Error Code 05 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.)

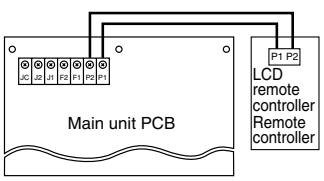
Troubleshooting

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 ∞ MΩ (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 valued 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

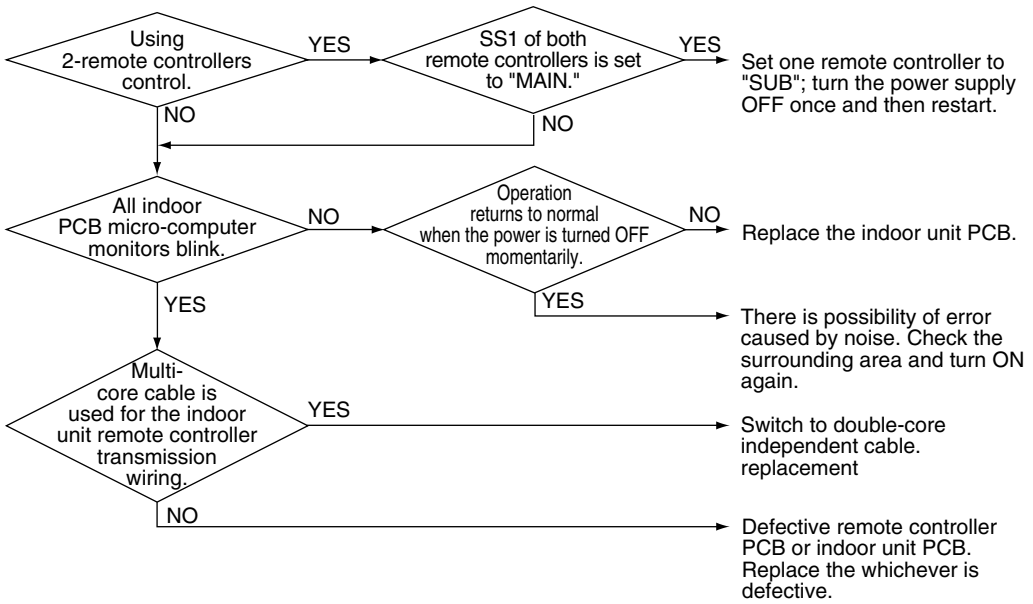
Normal transmission does not continue for specified period

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

U8

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

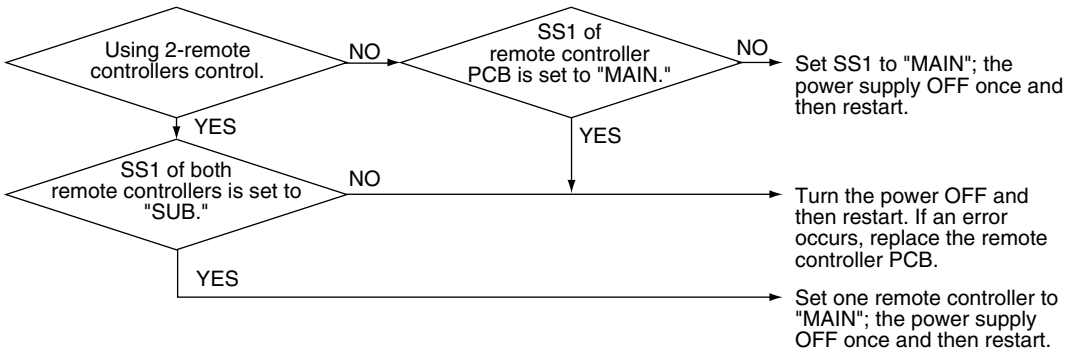
Normal transmission does not continue for specified period

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

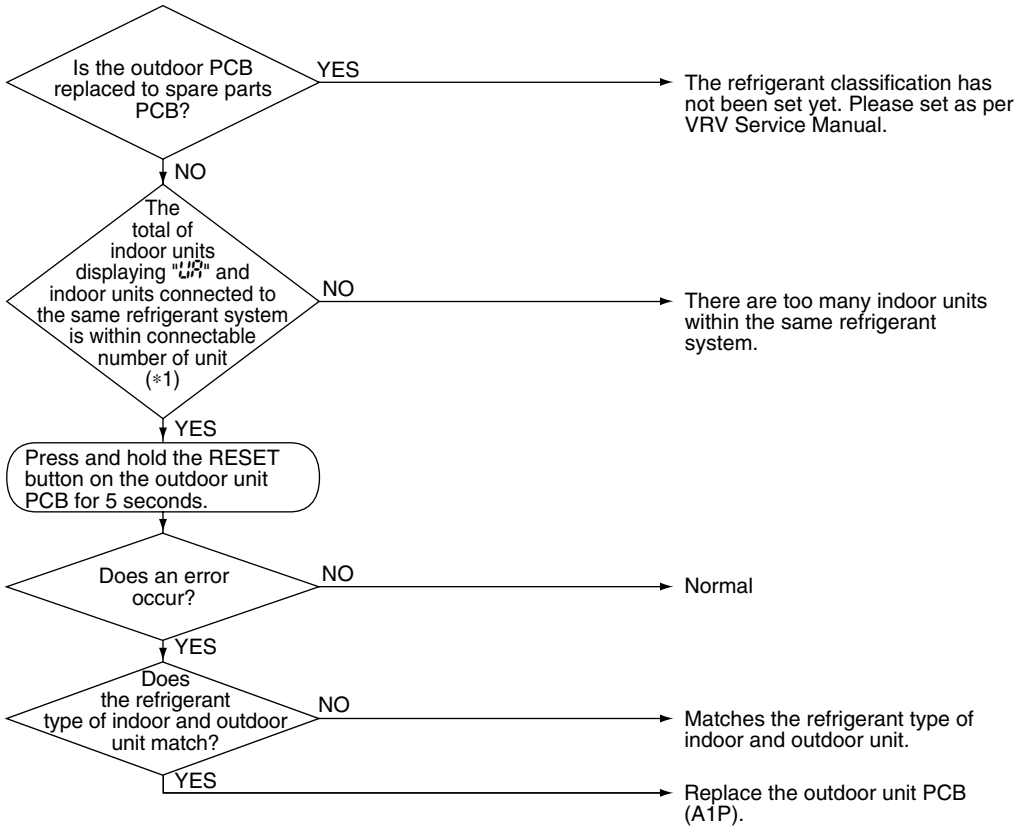
Error Code U9

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

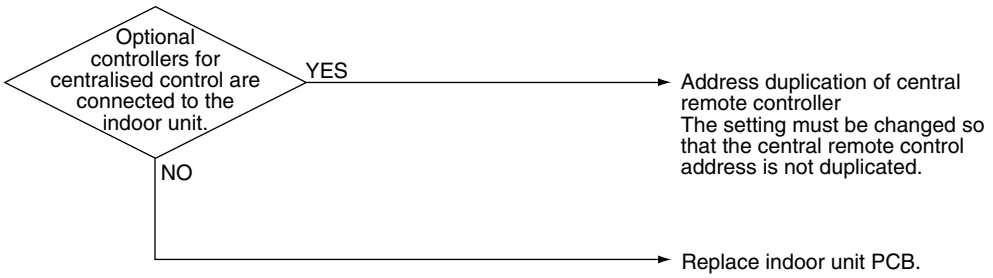
Error Code UE

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

LIE

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

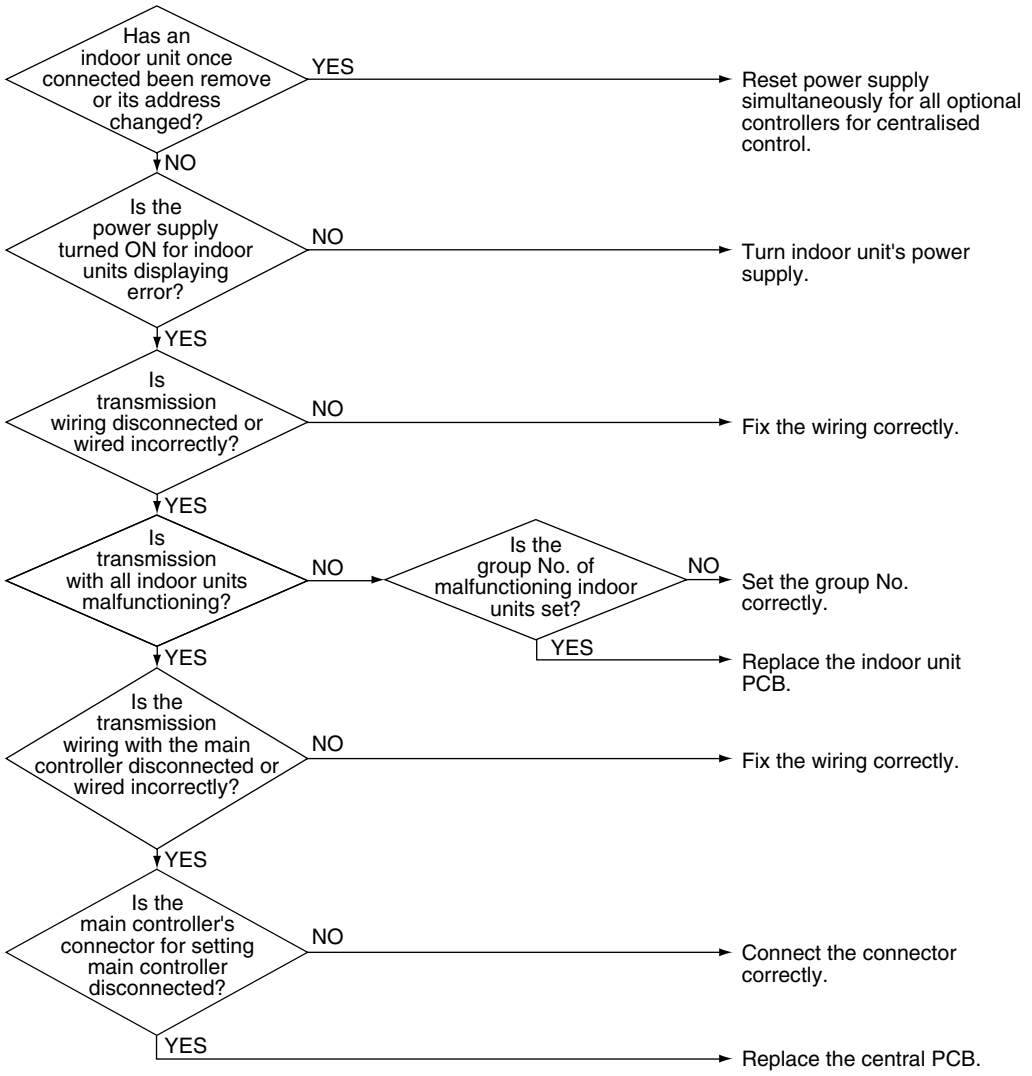
When transmission is not carried out normally for a certain amount of time

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

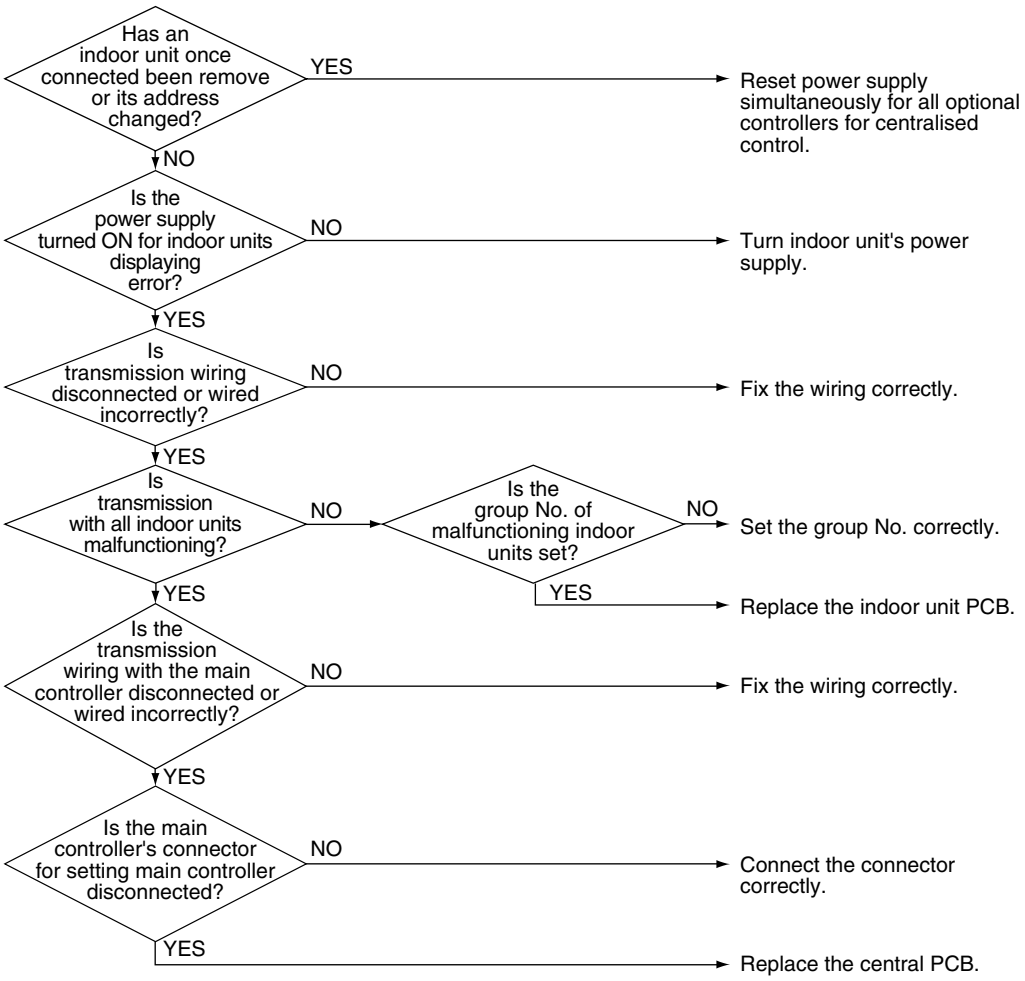
When transmission is not carried out normally for a certain amount of time

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

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



2.25 Master Unit PCB Assembly

Method of Error Detection

Check micro-computer operation monitor.

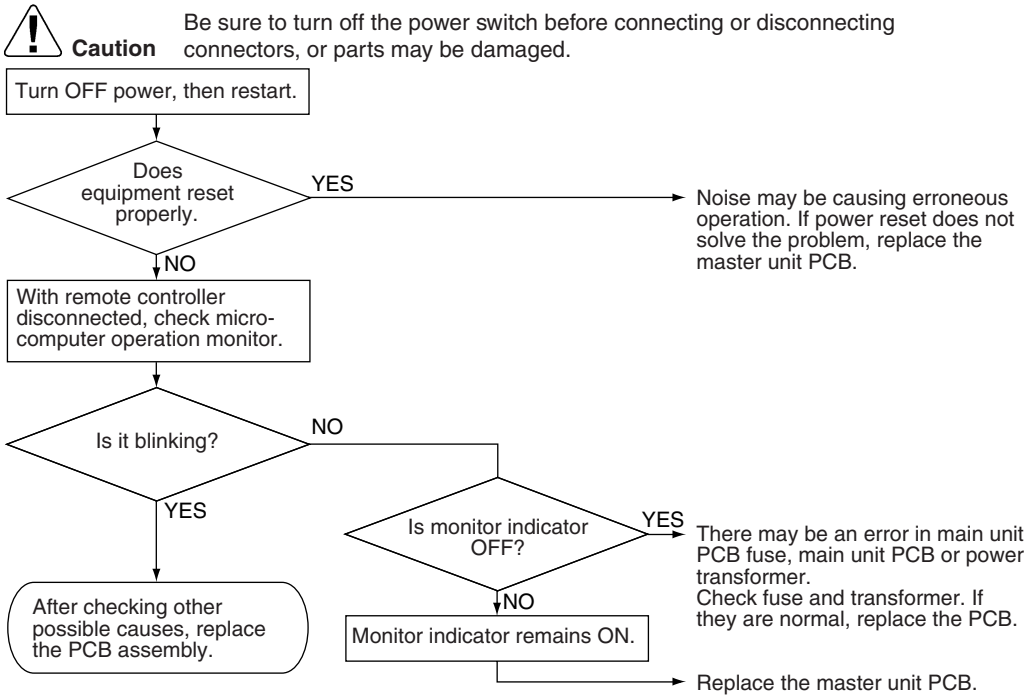
Error Decision Conditions

When main unit PCB assembly does not operate
When communication circuit errors

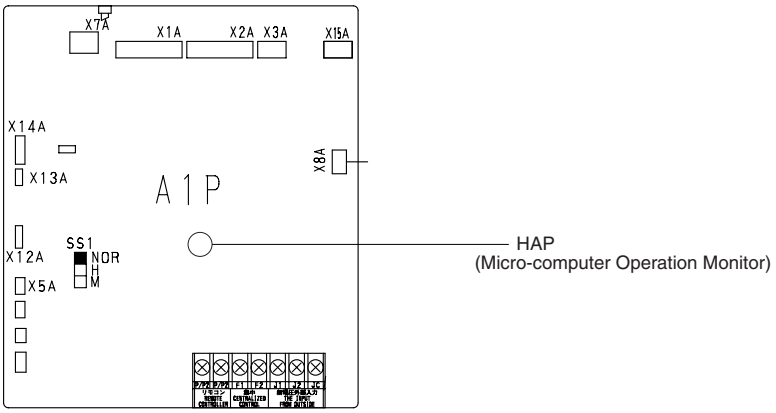
Supposed Causes

Fuse (excess current)
Power transformer
Noise
Master unit PCB

Troubleshooting



Master unit PCB (A1P)



2.26 Thermistor

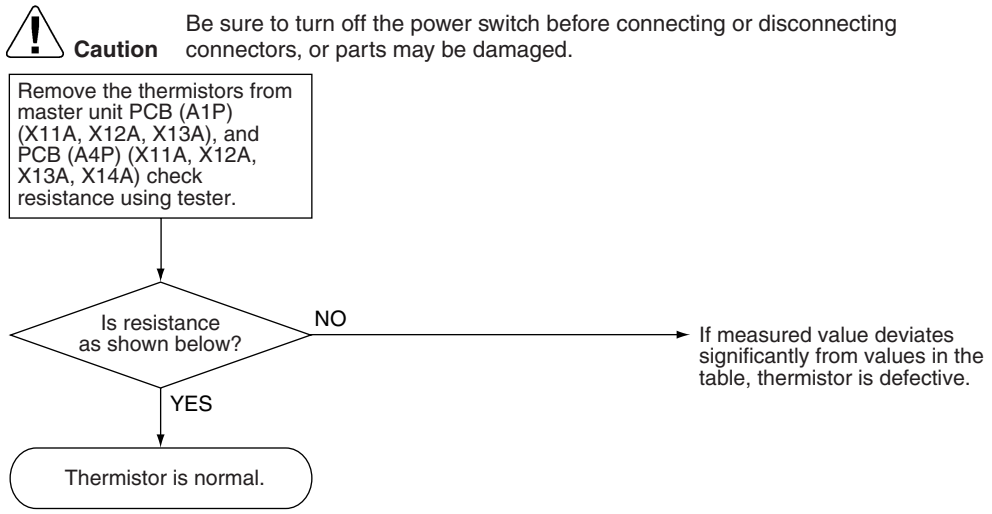
Method of Error Detection

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 R4T
For liquid pipe R5T
For gas pipe R6T
For air coil outdoor air 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

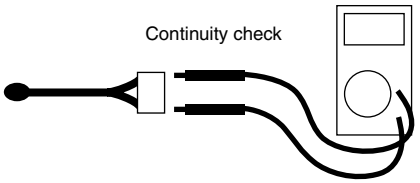
T°C	kΩ
-30.0	363.8
-25.0	266.8
-20.0	197.8
-15.0	148.2
-10.0	112.0
-5.0	85.52
0.0	65.84
5.0	51.05
10.0	39.91
15.0	31.44
20.0	24.95
25.0	19.94
30.0	16.04
35.0	12.99
40.0	10.58
45.0	8.669
50.0	7.143
55.0	5.918
60.0	4.928
65.0	4.123
70.0	3.467
75.0	2.928
80.0	2.484
85.0	2.116
90.0	1.810

(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)

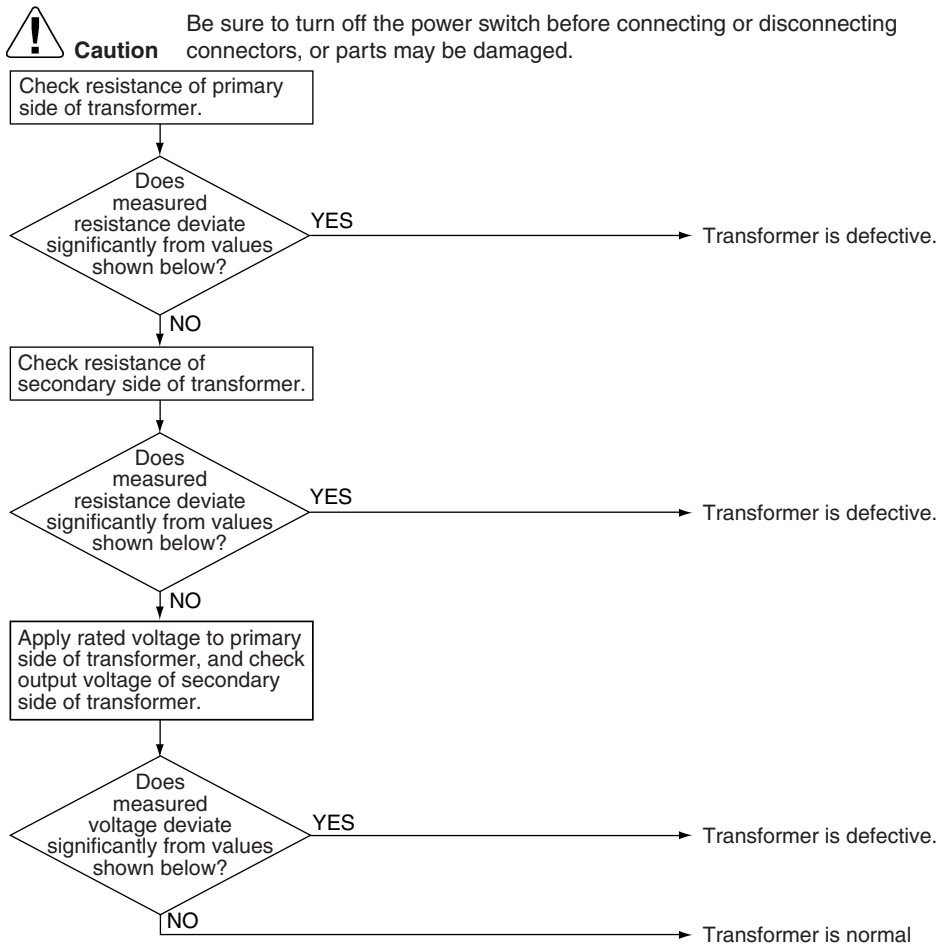


2.27 Power Transformer

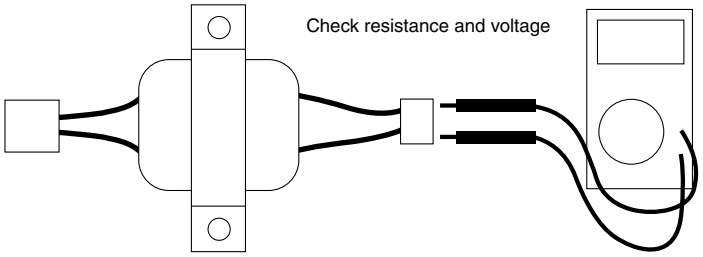
Method of Error Detection

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 MΩ or higher
- Insulation resistance between secondary side of transformer and case: 100 MΩ or higher
- Insulation resistance between primary side and secondary side of transformer: 100 MΩ or higher

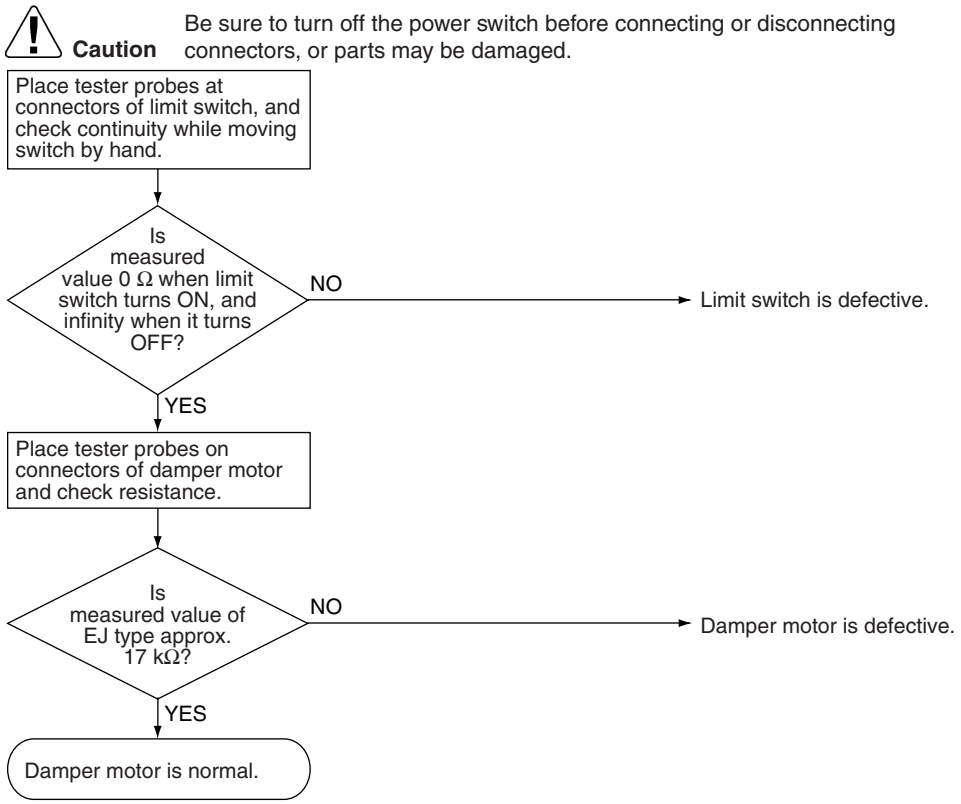


2.28 Damper Motor

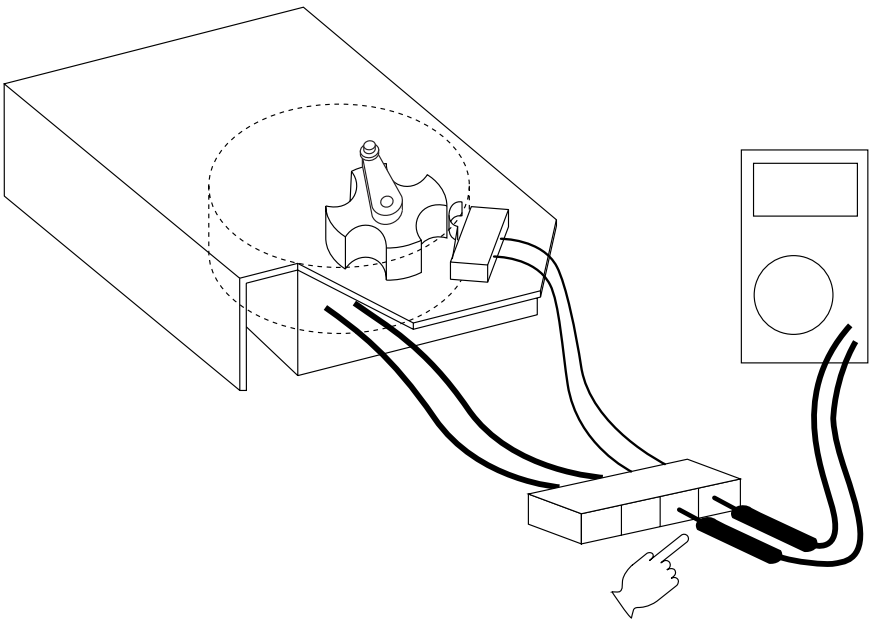
Method of Error Detection

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

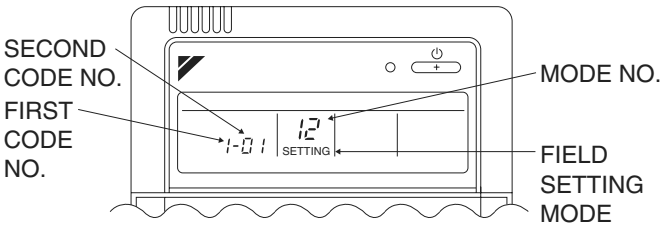
1.1 Field Setting and Test Run

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.)

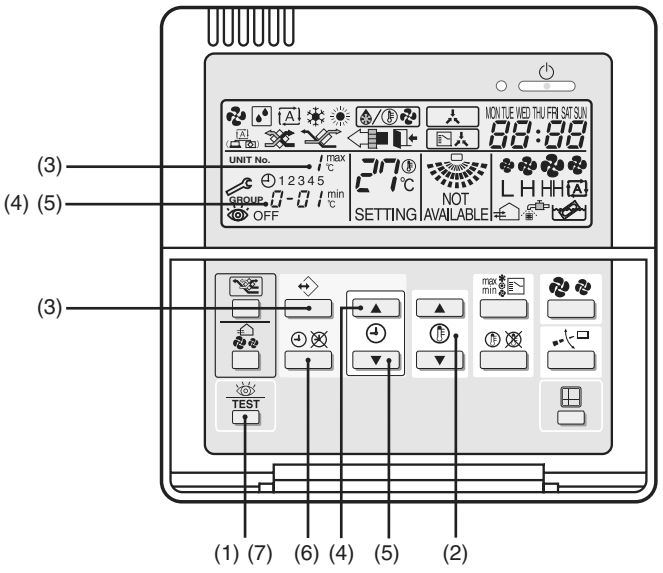
(3) To make settings for individual units under group control (when mode No. 27, 28 or 29 is selected), press the TIMER SETTING ON/OFF button to select the "**unit No.**" for which the settings are to be made. (This process is not necessary when settings are made for the entire group.)

(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 ◄ Less							Normal
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 ◄ Less							Normal
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
"⚠" is displayed.	● There is a short circuit at the FORCED OFF terminals (T1, T2).
"U3" is displayed.	● The test run has not been performed.
"U4" is displayed. "UH" is displayed.	● 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.
"6A" is displayed.	● Damper error. (Power voltage shortage)
"A8" is displayed.	● Fan driver error. (Power voltage shortage)
"U8" is displayed.	● "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.

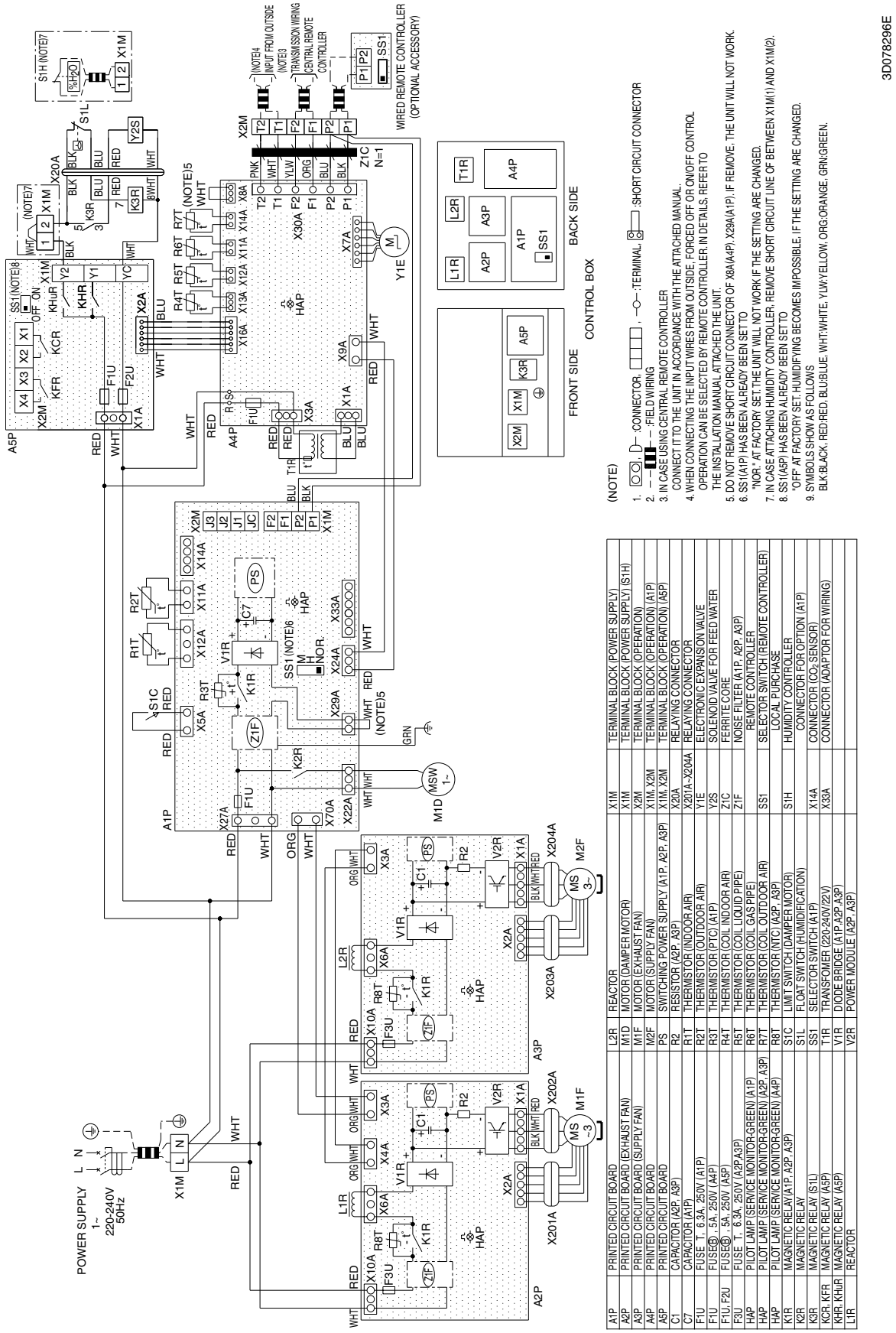
C : 3P130768-2E

Part 8
Appendix

1. Appendix

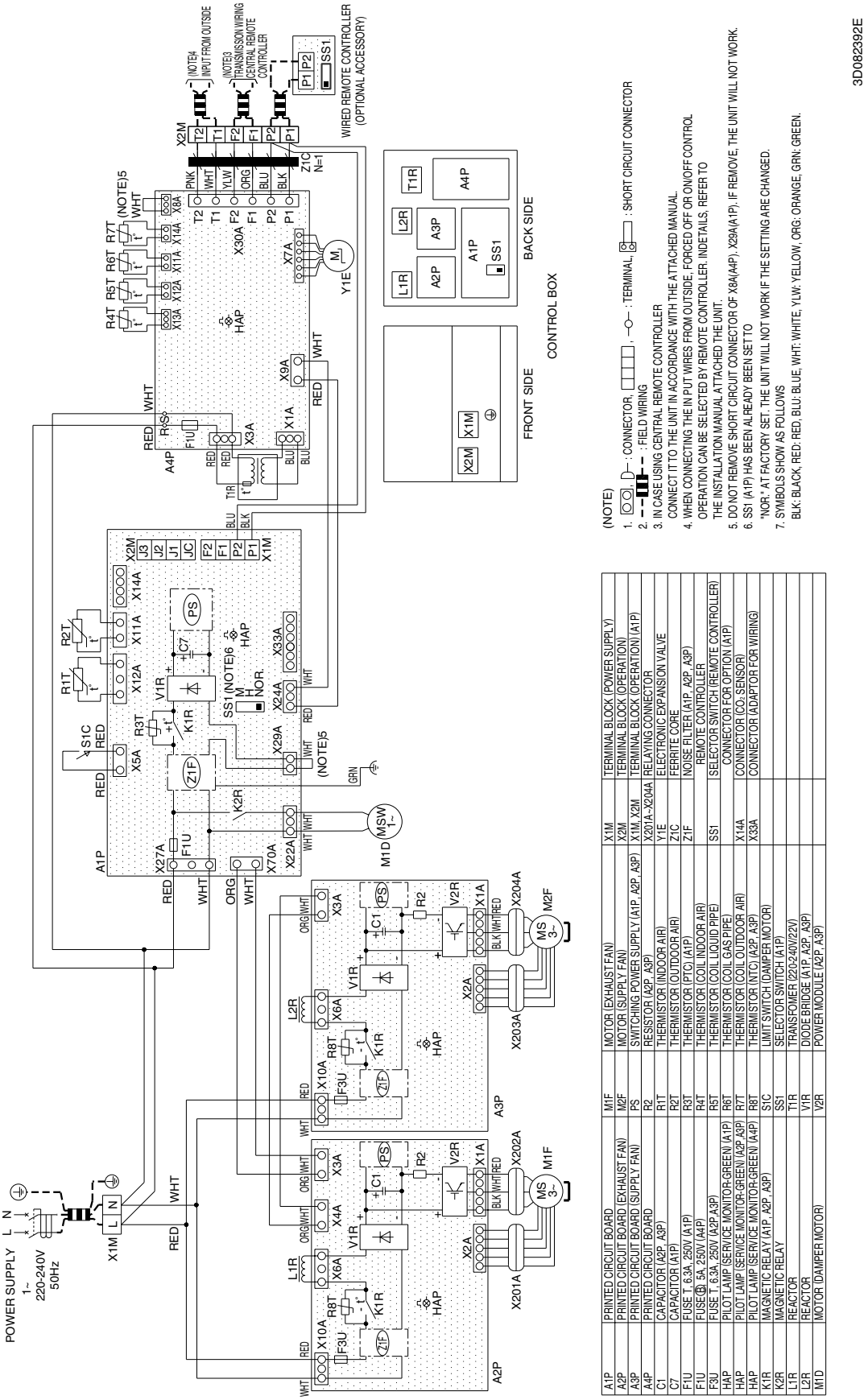
1.1 Wiring Diagram

VKM50GBMV1
VKM80GBMV1
VKM100GBMV1



A1P	PRINTED CIRCUIT BOARD	L2R	REACTOR	X1M	TERMINAL BLOCK (POWER SUPPLY)
A2P	PRINTED CIRCUIT BOARD (EXHAUST FAN)	M1D	MOTOR (DAMPER MOTOR)	X1M	TERMINAL BLOCK (POWER SUPPLY) (S1H)
A3P	PRINTED CIRCUIT BOARD (SUPPLY FAN)	M1F	MOTOR (EXHAUST FAN)	X2M	TERMINAL BLOCK (OPERATION)
A4P	PRINTED CIRCUIT BOARD	M2F	MOTOR (SUPPLY FAN)	X1M, X2M	TERMINAL BLOCK (OPERATION) (A1P)
A5P	PRINTED CIRCUIT BOARD	PS	SWITCHING POWER SUPPLY (A1P, A2P, A3P)	X1M, X2M	TERMINAL BLOCK (OPERATION) (A5P)
C1	CAPACITOR (A2P, A3P)	R2	RESISTOR (A2P, A3P)	X20A	RELAYING CONNECTOR
C7	CAPACITOR (A1P)	R1T	THERMISTOR (INDOOR AIR)	X201A-X204A	RELAYING CONNECTOR
F1U	FUSE T, 6.3A, 250V (A1P)	R2T	THERMISTOR (OUTDOOR AIR)	Y1E	ELECTRONIC EXPANSION VALVE
F1U	FUSE(⊘), 5A, 250V (A4P)	R3T	THERMISTOR (PTC) (A1P)	Y2S	SOLENOID VALVE FOR FEED WATER
F1U, F2U	FUSE(⊘), 5A, 250V (A5P)	R4T	THERMISTOR (COIL INDOOR AIR)	Z1C	FERRITE CORE
F3U	FUSE T, 6.3A, 250V (A2P,A3P)	R5T	THERMISTOR (COIL LIQUID PIPE)	Z1F	NOISE FILTER (A1P, A2P, A3P)
HAP	PILOT LAMP (SERVICE MONITOR-GREEN) (A1P)	R6T	THERMISTOR (COIL GAS PIPE)		REMOTE CONTROLLER
HAP	PILOT LAMP (SERVICE MONITOR-GREEN) (A2P, A3P)	R7T	THERMISTOR (COIL OUTDOOR AIR)	SS1	SELECTOR SWITCH (REMOTE CONTROLLER)
HAP	PILOT LAMP (SERVICE MONITOR-GREEN) (A4P)	R8T	THERMISTOR (NTC) (A2P, A3P)		LOCAL PURCHASE
K1R	MAGNETIC RELAY (A1P, A2P, A3P)	S1C	LIMIT SWITCH (DAMPER MOTOR)	S1H	HUMIDITY CONTROLLER
K2R	MAGNETIC RELAY	S1L	FLOAT SWITCH (HUMIDIFICATION)		CONNECTOR FOR OPTION (A1P)
K3R	MAGNETIC RELAY (S1L)	SS1	SELECTOR SWITCH (A1P)	X14A	CONNECTOR (CO_2 SENSOR)
KCR, KFR	MAGNETIC RELAY (A5P)	T1R	TRANSFOMER (220-240V/22V)	X33A	CONNECTOR (ADAPTOR FOR WIRING)
KHR, KHuR	MAGNETIC RELAY (A3P)	V1R	DIODE BRIDGE (A1P, A2P, A3P)		
L1R	REACTOR	V2R	POWER MODULE (A2P, A3P)		

VKM50GBV1
VKM80GBV1
VKM100GBV1



(NOTE)
1. ○○, ▷: CONNECTOR, □□□□, —○—: TERMINAL, ○□: SHORT CIRCUIT CONNECTOR
2. ▬ ▮▮▮ ▬ : FIELD WIRING
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. INDETAILS, REFER TO
   THE INSTALLATION MANUAL ATTACHED THE UNIT.
5. DO NOT REMOVE SHORT CIRCUIT CONNECTOR OF X8A(A4P), X29A(A1P). IF REMOVE, THE UNIT WILL NOT WORK.
6. SS1 (A1P) HAS BEEN ALREADY BEEN SET TO
   "NOR." AT FACTORY SET. THE UNIT WILL NOT WORK IF THE SETTING ARE CHANGED.
7. SYMBOLS SHOW AS FOLLOWS
   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)	PS	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	THERMISTOR (INDOOR AIR)	Y1E	ELECTRONIC EXPANSION VALVE
C7	CAPACITOR (A1P)	R2T	THERMISTOR (OUTDOOR AIR)	Z1C	FERRITE CORE
F1U	FUSE T, 6.3A, 250V (A1P)	R3T	THERMISTOR (PTC) (A1P)	Z1F	NOISE FILTER (A1P, A2P, A3P)
F1U	FUSE(B), 5A, 250V (A4P)	R4T	THERMISTOR (COIL INDOOR AIR)		REMOTE CONTROLLER
F3U	FUSE T, 6.3A, 250V (A2P, A3P)	R5T	THERMISTOR (COIL LIQUID PIPE)	SS1	SELECTOR SWITCH (REMOTE CONTROLLER)
HAP	PILOT LAMP (SERVICE MONITOR-GREEN) (A1P)	R6T	THERMISTOR (COIL GAS PIPE)		CONNECTOR FOR OPTION (A1P)
HAP	PILOT LAMP (SERVICE MONITOR-GREEN) (A2P,A3P)	R7T	THERMISTOR (COIL OUTDOOR AIR)	X14A	CONNECTOR (CO2 SENSOR)
HAP	PILOT LAMP (SERVICE MONITOR-GREEN) (A4P)	R8T	THERMISTOR (NTC) (A2P, A3P)	X39A	CONNECTOR (ADAPTOR FOR WIRING)
K1R	MAGNETIC RELAY (A1P, A2P, A3P)	S1C	LIMIT SWITCH (DAMPER MOTOR)		
K2R	MAGNETIC RELAY	SS1	SELECTOR SWITCH (A1P)		
L1R	REACTOR	T1R	TRANSFORMER (220-240V/22V)		
L2R	REACTOR	V1R	DIODE BRIDGE (A1P, A2P, A3P)		
M1D	MOTOR (DAMPER MOTOR)	V2R	POWER MODULE (A2P, A3P)		

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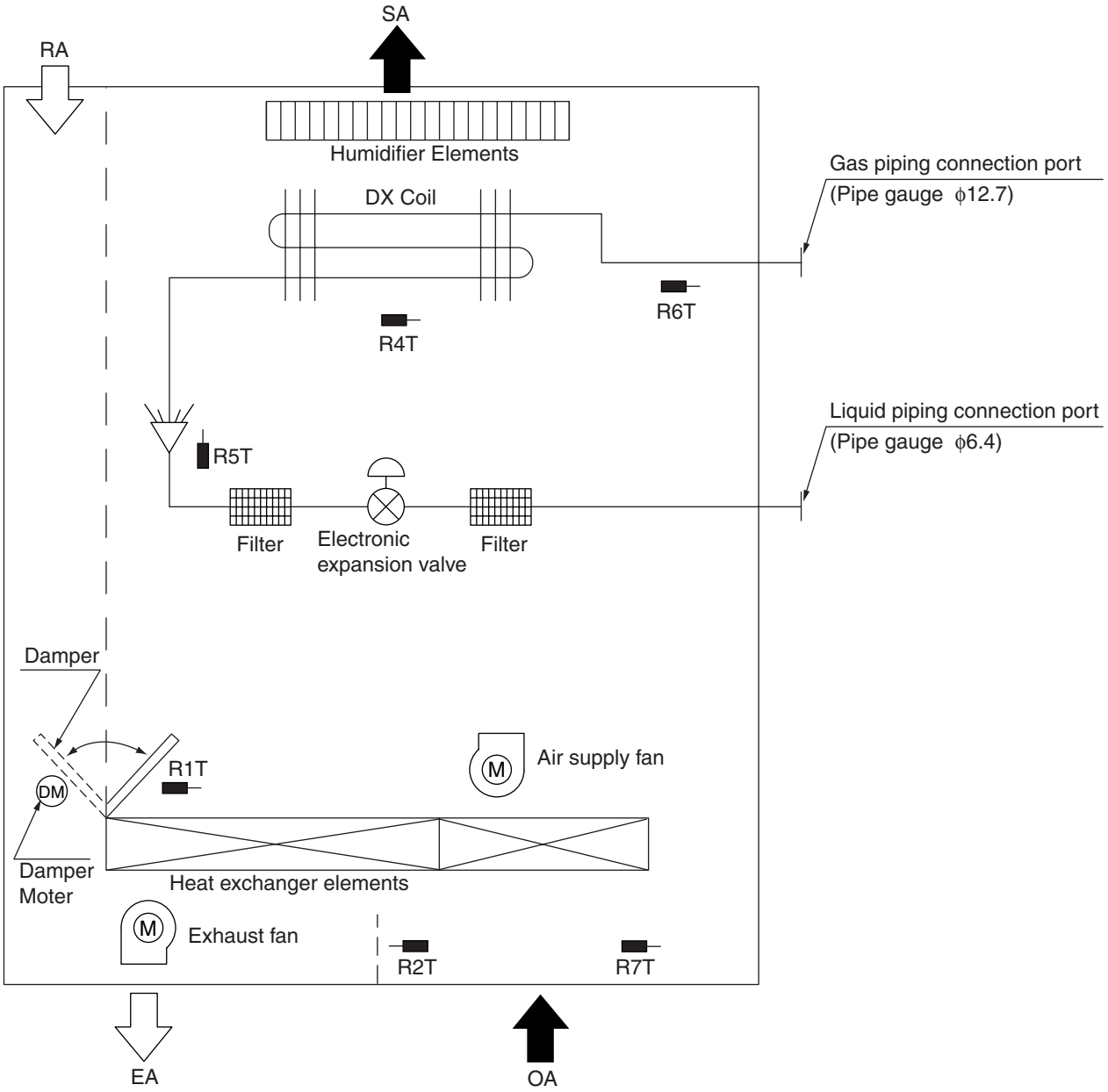
1.2 Piping Diagram



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