

# Service Manual

# SUPER MULTI *PLUS*E-Series





[Applied Models]

Super Multi Plus : Heat Pump

# SUPER MULTI PLUS E-Series

# Heat PumpIndoor Unit

FTXG25EV1BW(S)	FDXS50CVMB	FLXS25BAVMB	FFQ25B8V1B
FTXG35EV1BW(S)	FDXS60CVMB	FLXS35BAVMB	FFQ35B8V1B
CTXG50EV1BW(S)	FDXS25EAVMB	FLXS50BAVMB	FFQ50B8V1B
FTXS20G2V1B `	FDXS35EAVMB	FLXS60BAVMB	FFQ60B8V1B
FTXS25G2V1B	FVXS25FV1B	FHQ35BVV1B	
FTXS35G2V1B	FVXS35FV1B	FHQ50BVV1B	
FTXS42G2V1B	FVXS50FV1B	FHQ60BVV1B	

#### **Outdoor Unit**

FTXS50G2V1B FTXS60FV1B FTXS71FV1B

RMXS112E8V1B BPMKS967B2B RMXS140E8V1B BPMKS967B3B RMXS160E8V1B

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## 1. Introduction

## 1.1 Safety Cautions

# Cautions and Warnings

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

#### 1.1.1 Cautions Regarding Safety of Workers

<b>∕ !</b> Warning	
Be sure to disconnect the power cable plug from the plug socket before disassembling the equipment for repair.  Working on the equipment that is connected to the power supply may cause an electrical shook.  If it is necessary to supply power to the equipment to conduct the repair or inspecting the circuits, do not touch any electrically charged sections of the equipment.	8-5-
If the refrigerant gas is discharged during the repair work, do not touch the discharged refrigerant gas. The refrigerant gas may cause frostbite.	$\bigcirc$
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 a gas remaining inside the compressor, the refrigerant gas or refrigerating machine oil discharges when the pipe is disconnected, and it may cause injury.	0
If the refrigerant gas leaks during the repair work, ventilate the area. The refrigerant gas may generate toxic gases when it contacts flames.	0
The step-up capacitor supplies high-voltage electricity to the electrical components of the outdoor unit.  Be sure to discharge the capacitor completely before conducting repair work. A charged capacitor may cause an electrical shock.	A
Do not start or stop the air conditioner operation by plugging or unplugging the power cable plug. Plugging or unplugging the power cable plug to operate the equipment may cause an electrical shock or fire.	$\bigcirc$

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(I) Warning	
Be sure to wear a safety helmet, gloves, and a safety belt when working at a high place (more than 2m). Insufficient safety measures may cause a fall accident.	
In case of R410A refrigerant models, be sure to use pipes, flare nuts and tools for the exclusive use of the R410A refrigerant.  The use of materials for R22 refrigerant models may cause a serious accident such as a damage of refrigerant cycle as well as an equipment failure.	$\bigcirc$

<u>İ</u> Caution	
Do not repair the electrical components with wet hands. Working on the equipment with wet hands may cause an electrical shock.	
Do not clean the air conditioner by splashing water. Washing the unit with water may cause an electrical shock.	
Be sure to provide the grounding when repairing the equipment in a humid or wet place, to avoid electrical shocks.	
Be sure to turn off the power switch and unplug the power cable when cleaning the equipment.  The internal fan rotates at a high speed, and cause injury.	B - C
Be sure to conduct repair work with appropriate tools. The use of inappropriate tools may cause injury.	0
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.	
Use the welder in a well-ventilated place. Using the welder in an enclosed room may cause oxygen deficiency.	0

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# 1.1.2 Cautions Regarding Safety of Users

<b>Warning</b>	
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.	0
If the power cable and lead wires have scratches or deteriorated, be sure to replace them.  Damaged cable and wires may cause an electrical shock, excessive heat generation or fire.	0
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.	0
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.	•
Do not damage or modify the power cable.  Damaged or modified power cable may cause an electrical shock or fire.  Placing heavy items on the power cable, and heating or pulling the power cable may damage the cable.	$\bigcirc$
Do not mix air or gas other than the specified refrigerant (R410A / R22) in the refrigerant system.  If air enters the refrigerating system, an excessively high pressure results, causing equipment damage and injury.	$\bigcirc$
If the refrigerant gas leaks, be sure to locate the leaking point and repair it before charging the refrigerant. After charging refrigerant, make sure that there is no refrigerant leak.  If the leaking point cannot be located and the repair work must be stopped, be sure to perform pump-down and close the service valve, to prevent the refrigerant gas from leaking into the room. The refrigerant gas itself is harmless, but it may generate toxic gases when it contacts flames, such as fan and other heaters, stoves and ranges.	0
When relocating the equipment, make sure that the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength and if the installation work is not conducted securely, the equipment may fall and cause injury.	0

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<b>N</b> Warning	
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 has dust or loose connection, it may cause an electrical shock or fire.	0
Be sure to install the product correctly by using the provided standard installation frame. Incorrect use of the installation frame and improper installation may cause the equipment to fall, resulting in injury.	For unitary type only
Be sure to install the product securely in the installation frame mounted on the window frame.  If the unit is not securely mounted, it may fall and cause injury.	For unitary type only
When replacing the coin battery in the remote controller, be sure to disposed of the old battery to prevent children from swallowing it. If a child swallows the coin battery, see a doctor immediately.	0

<u>İ</u> Caution	
Installation of a leakage breaker is necessary in some cases depending on the conditions of the installation site, to prevent electrical shocks.	0
Do not install the equipment in a place where there is a possibility of combustible gas leaks.  If the combustible gas leaks and remains around the unit, it may cause a fire.	
Check to see if the parts and wires are mounted and connected properly, and if the connections at the soldered or crimped terminals are secure. Improper installation and connections may cause excessive heat generation, fire or an electrical shock.	0
If the installation platform or frame has corroded, replace it. Corroded installation platform or frame may cause the unit to fall, resulting in injury.	0
Check the grounding, and repair it if the equipment is not properly grounded. Improper grounding may cause an electrical shock.	

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/I Caution	
Be sure to measure the insulation resistance after the repair, and make sure that the resistance is 1 M $\Omega$ or higher. Faulty insulation may cause an electrical shock.	0
Be sure to check the drainage of the indoor unit after the repair. Faulty drainage may cause the water to enter the room and wet the furniture and floor.	0
Do not tilt the unit when removing it. The water inside the unit may spill and wet the furniture and floor.	$\bigcirc$
Be sure to install the packing and seal on the installation frame properly. If the packing and seal are not installed properly, water may enter the room and wet the furniture and floor.	For unitary type only

# 1.2 Used Icons

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

Icon	Type of Information	Description
Note:	Note	A "note" provides information that is not indispensable, but may nevertheless be valuable to the reader, such as tips and tricks.
Caution	Caution	A "caution" is used when there is danger that the reader, through incorrect manipulation, may damage equipment, loose data, get an unexpected result or has to restart (part of) a procedure.
Warning	Warning	A "warning" is used when there is danger of personal injury.
G	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.

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# Part 1 List of Functions

1. List of Functions	2
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List of Functions SiBE18-821

# 1. List of Functions

Category	Functions	RMXS112/140/160E8V1B	Category	Functions	RMXS112/140/160E8V1B
Basic	Inverter (with Inverter Power Control)	0	Health &	Air Purifying Filter	_
Function		<b>-</b> 5	Clean		
	Operation Limit for Cooling (°CDB)	~ 46		Photocatalytic Deodorizing Filter	_
			-		
	Operation Limit for Heating (°CWB)	~		Air Purifying Filter with Photocatalytic Deodorizing Function	_
		15.5		Doddonzing Function	
	PAM Control	_		Titanium Apatite Photocatalytic	_
	Standby Electricity Saving	_		Air-Purifying Filter	
Compressor	Oval Scroll Compressor	0		Longlife Filter (Option)	_
	Swing Compressor	_		Air Filter	_
	Rotary Compressor	_		Wipe-clean Flat Panel	_
	Reluctance DC Motor	0		Washable Grille	_
Comfortable	Power-Airflow Flap	_		Filter Cleaning Indicator	_
Airflow	Power-Airflow Dual Flaps	_		Mold Proof Operation	_
	Power-Airflow Diffuser	_		Heating Dry Operation	_
	Wide-Angle Louvers	_		Good-Sleep Cooling Operation	_
	Vertical Auto-Swing (Up and Down)	_	Timer	Weekly Timer	_
	Horizontal Auto-Swing (Right and Left)	_		24-Hour On/Off Timer	_
	3-D Airflow	_		72-Hour On/Off Timer	_
	Comfort Airflow Mode	_		Night Set Mode	_
	3-Step Airflow (H/P Only)	_	Worry Free	Auto-Restart (after Power Failure)	_
Comfort	Auto Fan Speed	_	"Reliability & Durability"	Self-Diagnosis (Digital, LED) Display	0
Control	Indoor Unit Quiet Operation	_	Durability	Wiring-Error Check	_
	Night Quiet Mode (Automatic)	0		Automatic Test Operation	0
	Outdoor Unit Quiet Operation (Manual)	0	1	Memory Function	0
	INTELLIGENT EYE	_	1	Anticorrosion Treatment of Outdoor	_
	2 Area INTELLIGENT EYE	_		Heat Exchanger	0
	Quick Warming Function	0	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	_
	Hot-Start Function	_		Flexible Voltage Correspondence	_
	Automatic Defrosting	0		High Ceiling Application	_
Operation	Automatic Operation		1	Chargeless	_
ļ .	Programme Dry Function	_	-	Either Side Drain (Right or Left)	_
	Fan Only	_	-	Power-Selection	_
Lifestyle Convenience	New POWERFUL Operation (Non-Inverter)	_	Remote Control	5-Rooms Centralized Controller (Option)	_
	Inverter POWERFUL Operation	_		Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	_
	Priority-Room Setting	_		Remote Control Adaptor (Normal Open Contact) (Option)	_
	Cooling / Heating Mode Lock	_		DIII-NET Compatible (Adaptor) (Option)	_
	HOME LEAVE Operation	_	Remote	Wireless	_
	ECONO Mode	_	Controller	Wired	_
	Indoor Unit On/Off Switch	_			
	Signal Reception Indicator	_			
	Temperature Display	_			
	Another Room Operation	_			
	O : Holding Functions		1	1	

Note: O: Holding Functions

—: No Functions

SiBE18-821 List of Functions

Category	Functions	FTXG25/35EV1BW(S)	CTXG50EV1BW(S)	FTXS20-50G2V1B	Category	Functions	FTXG25/35EV1BW(S)	CTXG50EV1BW(S)	FTXS20-50G2V1B
Function	Inverter (with Inverter Power Control)  Operation Limit for Cooling (°CDB)	0	0	0	Health & Clean	Air Purifying Filter	_	_	_
-	Operation Limit for Heating (°CWB)	_				Photocatalytic Deodorizing Filter			
	PAM Control	_	_	_		Air Purifying Filter with Photocatalytic Deodorizing Function	_	_	_
	Standby Electricity Saving Oval Scroll Compressor	_	_	_		Titanium Apatite Photocatalytic Air-Purifying Filter	0	0	0
· -	Swing Compressor					Longlife Filter (Option)			
<u> </u>	Rotary Compressor					Air Filter	0	0	0
L	Reluctance DC Motor	_				Wipe-clean Flat Panel	0	0	0
+		_	_	_		•	0	0	0
Airflow	Power-Airflow Flap Power-Airflow Dual Flaps	_	_	_		Washable Grille	_	_	_
L		0	0	0		Filter Cleaning Indicator	_	_	_
⊨	Power-Airflow Diffuser	_	_	_		Mold Proof Operation	_	_	_
	Wide-Angle Louvers	0	0	0		Heating Dry Operation	_	_	_
	Vertical Auto-Swing (Up and Down)	0	0	0		Good-Sleep Cooling Operation	_	_	_
	Horizontal Auto-Swing (Right and Left)	0	0	0	Timer	Weekly Timer	_	_	0
<u> </u>	3-D Airflow	0	0	0		24-Hour On/Off Timer	0	0	0
L	Comfort Airflow Mode	0	0	0		72-Hour On/Off Timer	_	_	_
	3-Step Airflow (H/P Only)	_	_	_		Night Set Mode	0	0	0
Comfort Control	Auto Fan Speed	0	0	0	Worry Free	Auto-Restart (after Power Failure)	0	0	0
Control	Indoor Unit Quiet Operation	0	0	0	"Reliability & Durability"	Self-Diagnosis (Digital, LED) Display	0	0	0
ı L	Night Quiet Mode (Automatic)	_	_	_	-	Wiring Error Check	_	_	_
l [	Outdoor Unit Quiet Operation (Manual)	_		_		Automatic Test Operation	_		_
ı	INTELLIGENT EYE	0	0	_		Memory Function	_		_
ı	2 Area INTELLIGENT EYE	_	_	0		Anticorrosion Treatment of Outdoor			
ı	Quick Warming Function	_	_	_		Heat Exchanger	_		_
⊨	Hot-Start Function	0	0	0	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	0	_	0
+	Automatic Defrosting	_	_	_					
-	Automatic Operation	0	0	0		H/P, C/O Compatible Indoor Unit	_	_	0
-	Programme Dry Function	0	0	0		Flexible Voltage Correspondence	_	_	_
	Fan Only	0	0	0		High Ceiling Application	_	_	_
Convenience	New POWERFUL Operation (Non-Inverter)	_	_	_		Chargeless	_	_	_
<u> </u>	Inverter POWERFUL Operation	0	0	0		Either Side Drain (Right or Left)	0	0	0
L	Priority-Room Setting	_	_	_		Power Selection	_	_	_
	Cooling / Heating Mode Lock	_	_	_	Remote Control	5-Rooms Centralized Controller (Option)	0	0	0
	HOME LEAVE Operation	_				Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	0	0	0
Ī	ECONO Mode	_	_	0		Remote Control Adaptor	0	0	0
ıΓ	Indoor Unit On/Off Switch	0	0	0		(Normal Open Contact) (Option)			
1	C:	0	0			DIII-NET Compatible (Adaptor) (Option)	0	0	0
<u> </u>	Signal Reception Indicator	$\circ$	_			z rt=r compansio (rtaaptor) (opiiori)	_	_	
<u> </u>	Temperature Display	_	_	_	Remote Controller	Wireless	0	0	0

Note: O : Holding Functions

— : No Functions

List of Functions SiBE18-821

Category	Functions	FTXS60/71FV1B	Category	Functions	FTXS60/71FV1B
Basic	Inverter (with Inverter Power Control)	0	Health &	Air Purifying Filter	_
Function	Operation Limit for Cooling (°CDB)	_	Clean	Photocatalytic Deodorizing Filter	_
	Operation Limit for Heating (°CWB)	_		Air Purifying Filter with Photocatalytic Deodorizing Function	_
	PAM Control	_		Titanium Apatite Photocatalytic	0
	Standby Electricity Saving			Air-Purifying Filter	
Compressor	Oval Scroll Compressor			Longlife Filter (Option)	_
	Swing Compressor			Air Filter	0
	Rotary Compressor			Wipe-clean Flat Panel	0
	Reluctance DC Motor	_		Washable Grille	_
Comfortable Airflow	Power-Airflow Flap	_		Filter Cleaning Indicator	_
Alfilow	Power-Airflow Dual Flaps	0		Mold Proof Operation	_
	Power-Airflow Diffuser	_		Heating Dry Operation	_
	Wide-Angle Louvers	0		Good-Sleep Cooling Operation	_
	Vertical Auto-Swing (Up and Down)	0	Timer	Weekly Timer	_
	Horizontal Auto-Swing (Right and Left)	0		24-Hour On/Off Timer	0
	3-D Airflow	0		72-Hour On/Off Timer	_
	Comfort Airflow Mode	_		Night Set Mode	0
	3-Step Airflow (H/P Only)	_	Worry Free "Reliability &	Auto-Restart (after Power Failure)	0
Comfort Control	Auto Fan Speed	0	Durability"	Self-Diagnosis (Digital, LED) Display	0
Control	Indoor Unit Quiet Operation	0		Wiring-Error Check	_
	Night Quiet Mode (Automatic)	_		Automatic Test Operation	_
	Outdoor Unit Quiet Operation (Manual)	_	_	Memory Function	_
	INTELLIGENT EYE	0		Anticorrosion Treatment of Outdoor Heat Exchanger	_
	2 Area INTELLIGENT EYE	Flexibility		Multi-Split / Split Type Compatible Indoor Unit	0
	Quick Warming Function	_		H/P, C/O Compatible Indoor Unit	_
	Hot-Start Function	0		Flexible Voltage Correspondence	
	Automatic Defrosting			High Ceiling Application	
Operation	Automatic Operation	0		Chargeless	_
	Programme Dry Function	0		Either Side Drain (Right or Left)	0
	Fan Only	0		Power-Selection	_
Lifestyle Convenience	New POWERFUL Operation (Non-Inverter)	_	Remote Control	5-Rooms Centralized Controller (Option)	0
	Inverter POWERFUL Operation	0		Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	0
	Priority-Room Setting	_		Remote Control Adaptor (Normal Open Contact) (Option)	0
	Cooling / Heating Mode Lock	_		DIII-NET Compatible (Adaptor) (Option)	0
	HOME LEAVE Operation	0	Remote Controller	Wireless	0
	ECONO Mode		30111131101	Wired	_
	Indoor Unit On/Off Switch	0			
	Signal Reception Indicator	0			
	Temperature Display				
	Another Room Operation	_			

Note: O: Holding Functions
—: No Functions

**List of Functions** SiBE18-821

		NMB	AVMB			NMB	AVMB
Category	Functions	FDXS50/60CVMB	FDXS25/35EAVMB	Category	Functions	FDXS50/60CVMB	FDXS25/35EAVMB
Basic	Inverter (with Inverter Power Control)	0	0	Health &	Air Purifying Filter		_
Function	Operation Limit for Cooling (°CDB)	_	_	Clean	Photocatalytic Deodorizing Filter		_
	Operation Limit for Heating (°CWB)	_	_		Air Purifying Filter with Photocatalytic Deodorizing Function		_
	PAM Control		_		Titanium Apatite Photocatalytic	_	_
	Standby Electricity Saving		_		Air-Purifying Filter		
Compressor	Oval Scroll Compressor	_	_		Longlife Filter (Option)		_
	Swing Compressor	_	_		Air Filter	0	0
	Rotary Compressor	_			Wipe-clean Flat Panel	_	_
	Reluctance DC Motor	_			Washable Grille	_	_
Comfortable	Power-Airflow Flap	_	_		Filter Cleaning Indicator	_	_
Airflow	Power-Airflow Dual Flaps	_	_		Mold Proof Operation		_
	Power-Airflow Diffuser	_			Heating Dry Operation	_	_
	Wide-Angle Louvers	_	_		Good-Sleep Cooling Operation	_	_
	Vertical Auto-Swing (Up and Down)	_	_	Timer	Weekly Timer	_	_
	Horizontal Auto-Swing (Right and Left)	_	_		24-Hour On/Off Timer	0	0
	3-D Airflow	_	_		72-Hour On/Off Timer		_
	3-Step Airflow (H/P Only)	_	_		Night Set Mode	0	0
Comfort	Auto Fan Speed	0	0	Worry Free	Auto-Restart (after Power Failure)	0	0
Control	Indoor Unit Quiet Operation	0	0	"Reliability & Durability"	Self-Diagnosis (Digital, LED) Display	0	0
	Night Quiet Mode (Automatic)	_	_	Burdomity	Wiring-Error Check	_	_
	Outdoor Unit Quiet Operation (Manual)	_	_		Automatic Test Operation	_	_
	INTELLIGENT EYE	_	_		Memory Function	_	_
	2 Area INTELLIGENT EYE	_	_		Anticorrosion Treatment of Outdoor Heat Exchanger	1	_
	Quick Warming Function	_	_	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	0	0
	Hot-Start Function	0	0		H/P, C/O Compatible Indoor Unit	_	_
	Automatic Defrosting	_	_		Flexible Voltage Correspondence	0	0
Operation	Automatic Operation	0	0		High Ceiling Application	1	_
	Programme Dry Function	0	0		Chargeless	l	_
	Fan Only	0	0		Either Side Drain (Right or Left)	İ	_
Lifestyle Convenience	New POWERFUL Operation (Non-Inverter)	_	_		Power-Selection		_
	Inverter POWERFUL Operation	0	0	Remote Control	5-Rooms Centralized Controller (Option)	0	0
	Priority-Room Setting	_	_		Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	0	0
	Cooling / Heating Mode Lock	_	_		Remote Control Adaptor (Normal Open Contact) (Option)	0	0
	HOME LEAVE Operation	0	0		DIII-NET Compatible (Adaptor) (Option)	0	0
	ECONO Mode	_	_	Remote Controller	Wireless	0	0
	Indoor Unit On/Off Switch	0	0	Johnsoner	Wired		_
	Signal Reception Indicator	0	0				
	Temperature Display		_				
	Another Room Operation		_				
Note:	O: Holding Functions						

Note: O: Holding Functions
—: No Functions

List of Functions SiBE18-821

Category	Functions	FLXS25-60BAVMB	FVXS25-50FV1B	Category	Functions	FLXS25-60BAVMB	FVXS25-50FV1B
Basic Function	Inverter (with Inverter Power Control)	0	0	Health & Clean	Air Purifying Filter	0	_
Function	Operation Limit for Cooling (°CDB)	_	_	Clean	Photocatalytic Deodorizing Filter	0	_
	Operation Limit for Heating (°CWB)		_		Air Purifying Filter with Photocatalytic Deodorizing Function	_	_
	PAM Control		_		Titanium Apatite Photocatalytic	_	0
	Standby Electricity Saving	_	_		Air-Purifying Filter		
Compressor	Oval Scroll Compressor	_	_		Longlife Filter (Option)	_	_
	Swing Compressor	_	_		Air Filter	0	0
	Rotary Compressor	_	_		Wipe-clean Flat Panel	_	0
	Reluctance DC Motor		_		Washable Grille		_
Comfortable Airflow	Power-Airflow Flap	_	_		Filter Cleaning Indicator	_	_
Allilow	Power-Airflow Dual Flaps	_	_		Mold Proof Operation	_	_
	Power-Airflow Diffuser	_	_		Heating Dry Operation	_	_
	Wide-Angle Louvers	_	0		Good-Sleep Cooling Operation	_	_
	Vertical Auto-Swing (Up and Down)	0	0	Timer	Weekly Timer	_	0
	Horizontal Auto-Swing (Right and Left)	_	_		24-Hour On/Off Timer	0	0
	3-D Airflow	_	_		72-Hour On/Off Timer	_	_
	Comfort Airflow Mode	_			Night Set Mode	0	0
	3-Step Airflow (H/P Only)	_		Worry Free	Auto-Restart (after Power Failure)	0	0
Comfort Control	Auto Fan Speed	0	0	"Reliability & Durability"	Self-Diagnosis (Digital, LED) Display	0	0
	Indoor Unit Quiet Operation	0	0	]	Wiring-Error Check	_	_
	Night Quiet Mode (Automatic)	_	_	1	Automatic Test Operation	_	_
	Outdoor Unit Quiet Operation (Manual)	_	_	1	Memory Function	_	_
	INTELLIGENT EYE	_	_		Anticorrosion Treatment of Outdoor Heat Exchanger	_	_
	2 Area INTELLIGENT EYE	_	_	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	0	0
	Quick Warming Function	_	_		H/P, C/O Compatible Indoor Unit	_	_
	Hot-Start Function	0	0		Flexible Voltage Correspondence	0	_
	Automatic Defrosting	_	_		High Ceiling Application	_	_
Operation	Automatic Operation	0	0		Chargeless	_	_
	Programme Dry Function	0	0		Either Side Drain (Right or Left)	_	_
	Fan Only	0	0		Power-Selection	_	_
Lifestyle Convenience	New POWERFUL Operation (Non-Inverter)	_	_	Remote Control	5-Rooms Centralized Controller (Option)	0	0
	Inverter POWERFUL Operation	0	0		Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	0	0
	Priority-Room Setting	_	_		Remote Control Adaptor (Normal Open Contact) (Option)	0	0
	Cooling / Heating Mode Lock	_	_		DIII-NET Compatible (Adaptor) (Option)	0	0
	HOME LEAVE Operation	0		Remote Controller	Wireless	0	0
	ECONO Mode		0	Controller	Wired	_	
	Indoor Unit On/Off Switch	0	0				
	Signal Reception Indicator	0	0				
	Temperature Display	_					
	Another Room Operation	_					
Note:	<ul><li>: Holding Functions</li></ul>						

Note: O: Holding Functions
—: No Functions

SiBE18-821 List of Functions

	I I		1	1	1	1	1
Category	Functions	FFQ25-60B8V1B	FHQ35-60BVV1B	Category	Functions	FFQ25-60B8V1B	FHQ35-60BVV1B
Pagia	Inverter (with Inverter Power Central)	0	0	Hoolth 9	Air Burifying Filter	Щ	ш
Basic Function	Inverter (with Inverter Power Control)	0	O	Health & Clean	Air Purifying Filter	_	_
	Operation Limit for Cooling (°CDB)		_	1	Photocatalytic Deodorizing Filter  Air Purifying Filter with Photocatalytic		_
	Operation Limit for Heating (°CWB)	_	_		Deodorizing Function	_	_
	PAM Control		_		Titanium Apatite Photocatalytic	_	_
	Standby Electricity Saving		_		Deodorizing Function		
Compressor	Oval Scroll Compressor	_	_		Longlife Filter (Option)	0	0
	Swing Compressor	_	_		Air Filter	0	0
	Rotary Compressor	_	_		Wipe-clean Flat Panel	_	_
	Reluctance DC Motor	_	_		Washable Grille	0	0
Comfortable	Power-Airflow Flap	_	_		Filter Cleaning Indicator	0	0
Airflow	Power-Airflow Dual Flaps	_	_		Mold Proof Operation	_	_
	Power-Airflow Diffuser	_	_		Heating Dry Operation	_	_
	Wide-Angle Louvers	_	_		Good-Sleep Cooling Operation	_	_
	Vertical Auto-Swing (Up and Down)	0	0	Timer	Weekly Timer	_	_
	Horizontal Auto-Swing (Right and Left)	_	_		24-Hour On/Off Timer	_	_
	3-D Airflow	_	_		72-Hour On/Off Timer	0	0
	Comfort Airflow Mode	_	_		Night Set Mode	_	_
	3-Step Airflow (H/P Only)	_	_	Worry Free	Auto-Restart (after Power Failure)	0	0
Comfort	Auto Fan Speed	_	_	"Reliábility & Durability"	Self-Diagnosis (Digital, LED) Display	0	0
Control	Indoor Unit Quiet Operation		_	Durability	Wiring-Error Check	_	_
	Night Quiet Mode (Automatic)		_	-	Automatic Test Operation	_	_
	Outdoor Unit Quiet Operation (Manual)		_	-	Memory Function	_	_
	INTELLIGENT EYE	_	_		Anticorrosion Treatment of Outdoor Heat Exchanger		_
	2 Area INTELLIGENT EYE	_	_	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	0	0
	Quick Warming Function	_	_	1	Flexible Voltage Correspondence	_	_
	Hot-Start Function	0	0	-	High Ceiling Application	_	0
	Automatic Defrosting	_	_	-	Chargeless	_	_
Operation	Automatic Operation	0	0	-	Either Side Drain (Right or Left)	_	_
'	Programme Dry Function	0	0	-	Power-Selection	_	_
	Fan Only	0	0	Remote Control	5-Rooms Centralized Controller (Option)		_
Lifestyle Convenience	New POWERFUL Operation (Non-Inverter)				Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	_	_
	Inverter POWERFUL Operation	_	_		Remote Control Adaptor (Normal Open Contact) (Option)	_	_
	Priority-Room Setting	_	_		DIII-NET Compatible (Adaptor) (Option)	0	0
	Cooling / Heating Mode Lock	_	_	Remote	Wireless	0	0
	HOME LEAVE Operation	_	_	Controller	Wired	0	0
	ECONO Mode	_	_				
	Indoor Unit On/Off Switch	_	_				
	Signal Reception Indicator		_				
	Temperature Display		_				
	Another Room Operation	_	_				
Note:	O : Holding Functions		1	1		i .	1

Note: O: Holding Functions
—: No Functions

List of Functions SiBE18-821

# Part 2 Specifications

1.	Spe	cifications	
	•	Outdoor Units	
	1.2	BP Unit	11
	1.3	Indoor Units	12

Specifications SiBE18-821

# 1. Specifications

### 1.1 Outdoor Units

#### 50Hz 230V

Model			RMXS112E8V1B	RMXS140E8V1B	RMXS160E8V1B				
			4HP	5HP	6HP				
Cooling Capac	city	kW	11.2	14.0	15.5				
Heating Capa	•	kW	12.5	16.0	17.5				
EER	Cooling		3.20	2.75	2.87				
COP	Heating		3.18	3.07	3.22				
	loor Unit Capacity Index		130	162.5	182				
	oor Unit Capacity Index		50	62.5	70				
Power Consur		W		_					
Running Curre	ent .	Α		_					
Casing Color		1		Daikin White					
	Туре			Hermetically Sealed Scroll Type					
Compressor	Model			JT100G-VDL					
	Motor Output	kW	2.5	3.0	3.5				
Refrigerant	Model			DAPHNE FVC68D					
Oil	Charge	L		1.5					
Defrieserant	Туре			R-410A					
Refrigerant	Charge	kg		4.0					
Airflow Rate	Cooling	m³/min		106					
(H)	Heating	m³/min	102 105 105						
Туре			Propeller						
Fan	Motor Output	W	70						
Starting Curre	nt	Α	15.9	20.2	22.2				
Dimensions (H		mm	1,345×900×320						
Packaged Dim	nensions (H×W×D)	mm		1,524×980×420					
Weight		kg	120						
Gross Weight		kg		130					
Operation	Cooling	dBA	51	52	54				
Sound	Heating	dBA	53	54	55				
Sound Power	Cooling	dBA	67	68	70				
Dining	Liquid	mm		φ9.52 (Flare Connection)					
Piping Connection	Gas	mm	φ19.1 (Brazing Connection)						
	Drain	mm		ф26					
Heat Insulation				Both Liquid and Gas Pipes					
No. of Wiring			3 For Power Supply (	Including Earth Wiring), 2 For Interunit Wirir	ng (Outdoor Unit-BP)				
Total piping	O.U BP	m		55					
length	BP - I.U.	m	60	80	90				
	System Total	m	115	115 135 145					
Max. piping length	BP - I.U.	m		15					
lerigiri	1st Branch - I.U.	m		40					
Max. level	O.U BP	m		30					
difference	O.U I.U.	m		30					
	BP - BP, I.U I.U.	m	15						
Necessity of A	Additional Charge ★	kg/m		Necessary					

#### Note:

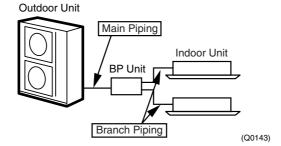
1. ★ Refrigerant charge is required. (Chargeless piping length 0m) Formula for calculation charge: R (kg)

R = Total length (m) of liquid pipe size at φ9.5×0.054 + Total length (m) of liquid piping size at φ6.4×0.022

2. The data are based on the conditions shown in the table below.

Cooling	Heating	Piping Length
Indoor ; 27°CDB / 19°CWB Outdoor ; 35°CDB	Indoor; 20°CDB Outdoor; 7°CDB / 6°CWB	Main Piping : 5m Branch Piping : 3m Level difference : 0m

Conversion Formulae kcal/h=kWx860 Btu/h=kWx3414 cfm=m³/minx35.3



SiBE18-821 Specifications

#### 1.2 BP Unit

#### 50Hz 230V

Model				BPN	1KS967B2B	BPMKS967B3B			
Connectable II	ndoor Units			1	~2 Units	1~3 Units			
Casing Color					Painti	ngless			
Power Consur	mption	W	10			10			
Running Curre	Running Current				0.05	0.05			
Refrigerant Ty	rpe				R-4	110A			
Dimension (H		mm			180×294(	650)*×350			
	ension (H×W×D)	mm			257×7	38×427			
Machine Weig	ht	kg			7.5	8			
Gross Weight		kg			11	12			
Number of Wi	ring Connections				4 for Inter	unit Wiring			
Piping	Liquid	mm		Main : φ9.5>	<1 / Branch : φ6.4×2	Main : φ9.5×1 / Branch : φ6.4×3			
Piping Connection	Gas	mm	N	1ain : \$19.1>	<1 / Branch : φ15.9×2	Main : φ19.1×1 / Branch : φ15.9×3			
(Brazing)	Drain	mm	Drain Processingless						
Heat Insulation					Both Liquid a	and Gas Pipes			
Max. Piping Le	-	m				_			
	ditional Charge	g/m	_						
Max. Height D		m	<del>_</del>						
Max. Combina		kW			14.2	20.8			
Min. Combinat		kW			2.0	2.0			
	Installation Manual	pc.				1			
				Liquid		1 (For I.D. φ6.4)			
			For Main	Gas		1 (For I.D. φ12.7)			
	L Shape Reducer	pc.		Gas		1 (For I.D. φ15.9, 19.1)			
Accessories			For Branch	Gas	2 (For I.D. \phi12.7, 9.5)	3 (For I.D. φ12.7, 9.5)			
				Liquid		1 (For I.D. φ9.5)			
	Hanger Metal	pc.				4			
	Screws	pc.			· ·	14×8)			
	Heat Insulation (2pc. is	<del>- '</del>			3 Set	4 Set			
	Binding Band	pc.	2						
Drawing No.					C : 4D0	050058B			

#### Note:

 BP or Indoor Unit Max. Height - BP or Indoor Unit Min. Height → Max. 15m. Set up BP and indoor unit within 15m height difference.

The piping connection must be cut so as to suit the piping sizes of the indoor unit which will be connected.
 The same sizes should be used for the piping on the outdoor unit.

3. ( )\*: including auxiliary piping length

Conversion Formulae kcal/h=kW×860 Btu/h=kW×3414 cfm=m³/min×35.3

Specifications SiBE18-821

## 1.3 Indoor Units

#### **Wall Mounted Type**

50Hz 230V

Model				FTXG25	EV1BW	FTXG2	5EV1BS	
wodei				Cooling	Heating	Cooling	Heating	
Rated Capacity	,			2.5kW	Class	2.5kW Class		
Front Panel Co	lor			Mat Crys	tal White	Mat Crys	stal Silver	
			Н	7.7 (271)	9.0 (317)	7.7 (271)	9.0 (317)	
Airflow Rates		m³/min	M	6.1 (215)	7.9 (278)	6.1 (215)	7.9 (278)	
Allilow hates		(cfm)	L	4.7 (165)	6.7 (236)	4.7 (165)	6.7 (236)	
			SL	3.8 (134)	5.4 (190)	3.8 (134)	5.4 (190)	
	Type			Cross F	low Fan	Cross F	low Fan	
Fan	Motor Outpi	ut	W	4	0	4	.0	
	Speed		Steps	5 Steps, C	Quiet, Auto	5 Steps, C	Quiet, Auto	
Air Direction C	ontrol			Right, Left, Horiz	ontal, Downward		ontal, Downward	
Air Filter				Removable-Wash	able-Mildew Proof	Removable-Washable-Mildew Proof		
Running Curre	nt (Rated)		Α	0.15-0.14-0.13	0.15-0.14-0.13	0.15-0.14-0.13	0.15-0.14-0.13	
Power Consun	ption (Rated)		W	30-30-30	30-30-30	30-30-30	30-30-30	
Power Factor			%	90.9-93.2-96.2	90.9-93.2-96.2	90.9-93.2-96.2	90.9-93.2-96.2	
Temperature C	ontrol			Microcompu	uter Control	Microcomputer Control		
Dimensions (H	×W×D)		mm	275×84	10×150	275×840×150		
Packaged Dim	ensions (H×W	/×D)	mm	222×89	94×345	222×8	94×345	
Weight			kg	g	)	9		
Gross Weight			kg	1	3	1	3	
Operation Sound	H/M/L/SL		dBA	38/32/25/22	38/33/28/25	38/32/25/22	38/33/28/25	
Sound Power H dBA		dBA	56	56	56	56		
Heat Insulation			Both Liquid a	nd Gas Pipes	Both Liquid a	nd Gas Pipes		
Liquid		mm	φ 6	5.4	ф	6.4		
Piping Connec	ion	Gas	mm	φ (	9.5	φ:	9.5	
Drain		mm	φ18	3.0	ф1	8.0		
Drawing No.		•		3D05	1101	3D05	51102	

Model				FTXG35	EV1BW	FTXG35	5EV1BS	
Model				Cooling	Heating	Cooling	Heating	
Rated Capacity	,			3.5kW	Class	5.0kW Class		
Front Panel Co	lor			Mat Crys	tal White	Mat Crys	stal Silver	
			Н	8.1 (285)	9.6 (338)	8.1 (285)	9.6 (338)	
Airflow Rates		m³/min	M	6.5 (229)	8.2 (289)	6.5 (229)	8.2 (289)	
Allilow hates		(cfm)	L	4.9 (173)	6.7 (236)	4.9 (173)	6.7 (236)	
			SL	4.1 (144)	5.9 (208)	4.1 (144)	5.9 (208)	
	Type			Cross F	low Fan	Cross F	low Fan	
Fan	Motor Outp	out	W	4	•		0	
	Speed		Steps	5 Steps, C	Quiet, Auto	5 Steps, C	Quiet, Auto	
Air Direction Co	ntrol			Right, Left, Horiz		Right, Left, Horizontal, Downward		
Air Filter				Removable-Wash	able-Mildew Proof	Removable-Washable-Mildew Proof		
Running Currer	nt (Rated)		Α	0.15-0.14-0.13	0.15-0.14-0.13	0.15-0.14-0.13	0.15-0.14-0.13	
Power Consum	ption (Rated	)	W	30-30-30	30-30-30	30-30-30	30-30-30	
Power Factor			%	90.9-93.2-96.2	90.9-93.2-96.2	90.9-93.2-96.2	90.9-93.2-96.2	
Temperature C				Microcomp	uter Control	Microcomp	uter Control	
Dimensions (H:			mm	275×84	10×150	275×840×150		
Packaged Dime	ensions (H×V	V×D)	mm	222×894×345		222×894×345		
Weight			kg	Ş	9	9		
Gross Weight			kg	1	3	1	3	
Operation Sound	ion H/M/L/SL dB/		dBA	39/33/26/23	39/34/29/26	39/33/26/23	39/34/29/26	
Sound Power H dBA		dBA	57	57	57	57		
Heat Insulation			Both Liquid a	nd Gas Pipes	Both Liquid a	nd Gas Pipes		
Liquid		mm	φ (	-		6.4		
Piping Connection Gas		mm	φ 9		ф12.7			
		Drain	mm		8.0		8.0	
Drawing No.	· · · · · · · · · · · · · · · · · · ·			3D05	1103	3D05	51104	

Conversion Formulae kcal/h=kWx860 Btu/h=kWx3414 cfm=m³/minx35.3

SiBE18-821 Specifications

#### 50Hz 230V

Model				CTXG50	EV1BW	CTXG5	DEV1BS	
Model				Cooling	Heating	Cooling	Heating	
Rated Capacit	у			5.0kW	Class	5.0kW Class		
Front Panel Co	olor			Mat Crys	tal White	Mat Crys	tal Silver	
			Н	11.3 (398)	12.6 (444)	11.3 (398)	12.6 (444)	
Airflow Rates		m³/min		M	9.1 (320)	10.6 (373)	9.1 (320)	10.6 (373)
Allilow hates		(cfm)	L	7.1 (250)	8.7 (306)	7.1 (250)	8.7 (306)	
			SL	6.7 (236)	7.7 (271)	6.7 (236)	7.7 (271)	
	Type			Cross F	low Fan	Cross F	low Fan	
<del>-</del> an	Motor Output	t	W	4	0	4	0	
	Speed		Steps	5 Steps, C	Quiet, Auto	5 Steps, C	Quiet, Auto	
Air Direction C	ontrol			Right, Left, Horiz	ontal, Downward	Right, Left, Horizontal, Downward		
Air Filter				Removable-Wash	able-Mildew Proof	Removable-Washable-Mildew Proof		
Running Curre	ent (Rated)		Α	0.15-0.14-0.13	0.15-0.14-0.13	0.15-0.14-0.13	0.15-0.14-0.13	
Power Consun	nption (Rated)		W	30	30	30	30	
Power Factor			%	90.9-93.2-96.2	90.9-93.2-96.2	90.9-93.2-96.2	90.9-93.2-96.2	
Temperature C	Control			Microcomputer Control		Microcomputer Control		
Dimensions (H	l×W×D)		mm	275×84	40×150	275×840×150		
Packaged Dim	ensions (H×W)	×D)	mm	222×89	94×345	222×8	94×345	
<i>N</i> eight			kg	(	9	9		
Gross Weight			kg	1	3	13		
Operation Sound	H/M/L/SL		dBA	47/41/35/32	47/41/35/32	47/41/35/32	47/41/35/32	
Sound Power H dBA		dBA	64	64	64	64		
Heat Insulation			Both Liquid a	nd Gas Pipes	Both Liquid a	nd Gas Pipes		
Liquid		mm		6.4		6.4		
Piping Connec	tion (	Gas	mm	<b>ф</b> 1	2.7	φ 1	2.7	
Drain		mm	φ1	8.0	ф18.0			
Drawing No.				3D05	51105	3D05	51106	

Model				FTXS20	G2V1B	FTXS2	5G2V1B	
Wodei				Cooling	Heating	Cooling	Heating	
Rated Capacity	,			2.0kW	Class	2.5kW Class		
Front Panel Co	lor			Wh	nite	W	hite	
			Н	9.4 (332)	9.9 (350)	9.1 (321)	9.8 (346)	
Airflow Rates		m³/min	M	7.4 (262)	8.2 (290)	7.1 (252)	7.9 (280)	
Airilow hates		(cfm)	L	5.5 (193)	6.5 (228)	5.2 (182)	6.2 (217)	
			SL	4.0 (141)	5.5 (193)	3.7 (130)	5.2 (183)	
	Type			Cross F		Cross I	Flow Fan	
Fan	Motor Outpu	ut	W	2	•		23	
	Speed		Steps	5 Steps, C			Quiet, Auto	
Air Direction Co	ontrol			Right, Left, Horiz	*	Right, Left, Horizontal, Downward		
Air Filter				Removable / Wash	able / Mildew Proof	Removable / Washable / Mildew Proof		
Running Curre	nt (Rated)		Α	0.08	0.10	0.08	0.10	
Power Consum	ption (Rated)		W	18	21	18	21	
Power Factor			%	97.8	91.3	97.8	91.3	
Temperature C	ontrol			Microcomputer Control		Microcomputer Control		
Dimensions (H	×W×D)		mm	295×80	00×215	295×800×215		
Packaged Dime	ensions (H×W	/×D)	mm	274×87	70×366	274×8	70×366	
Weight			kg	g	9	9		
Gross Weight			kg	1	3	13		
Operation Sound	H/M/L/SL		dBA	38/32/25/22	38/33/28/25	38/32/25/22	39/34/28/25	
Sound Power H dBA		dBA	54	54	54	55		
Heat Insulation			Both Liquid a	nd Gas Pipes	Both Liquid a	and Gas Pipes		
Liquid		mm	φ 6			6.4		
Piping Connect	ion	Gas	mm	ф 9	9.5	φ	9.5	
		Drain	mm	φ18	8.0	φ18.0		
Drawing No.	-			3D05	9722	3D0	59723	

Conversion Formulae kcal/h=kWx860 Btu/h=kWx3414 cfm=m³/minx35.3

Specifications SiBE18-821

#### 50Hz 230V

Model				FTXS35	G2V1B	FTXS4	2G2V1B	
wodei				Cooling	Heating	Cooling	Heating	
Rated Capacity	'			3.5kW	Class	4.2kW Class		
Front Panel Co	Front Panel Color			Wh	nite	W	/hite	
			Н	Н	10.7 (367)	10.6 (374)	9.1 (321)	11.2 (395)
Airflow Rates		m³/min	M	7.7 (270)	8.5 (302)	7.7 (273)	9.4 (333)	
Airiow Hates		(cfm)	L	4.8 (170)	6.4 (226)	6.3 (221)	7.7 (271)	
			SL	3.5 (125)	5.4 (191)	5.4 (190)	6.8 (240)	
	Type			Cross F	low Fan	Cross I	Flow Fan	
Fan	Motor Output	t	W	2	*		23	
	Speed		Steps	5 Steps, C			Quiet, Auto	
Air Direction Co	ontrol			Right, Left, Horiz	ontal, Downward	Right, Left, Horizontal, Downward		
Air Filter				Removable / Wash	able / Mildew Proof	Removable / Washable / Mildew Proof		
Running Curre			Α	0.12	0.13	0.11	0.14	
Power Consum	ption (Rated)		W	26	28	24	30	
Power Factor			%	94.2	93.6	94.9	93.2	
Temperature C				Microcomputer Control		Microcomputer Control		
Dimensions (H			mm	295×80	00×215	295×800×215		
Packaged Dime	ensions (H×W>	×D)	mm	274×870×366		274×870×366		
Weight			kg	1	0	10		
Gross Weight			kg	13		13		
Operation Sound	H/M/L/SL		dBA	45/34/26/23	42/36/29/26	45/38/33/30	42/38/33/30	
Sound Power H dBA		dBA	58	58	58	58		
Heat Insulation			Both Liquid a	nd Gas Pipes	Both Liquid a	and Gas Pipes		
Liquid		mm	φ 6	6.4	ф	6.4		
Piping Connect	ion C	Gas	mm	φ (	9.5	ф	9.5	
		Drain	mm	φ18	8.0	φ-	18.0	
Drawing No.				3D05	9724	3D0	59725	

Model				FTXS50	G2V1B				
wodei				Cooling	Heating				
Rated Capacity	/			5.0kW	Class				
Front Panel Co	lor			White					
			Н	10.2 (360)	11.0 (388)				
Airflow Rates		m³/min				М	8.6 (305)	9.3 (330)	
Allilow hates		(cfm)	L	7.0 (246)	7.6 (267)				
			SL	6.0 (212)	6.7 (236)				
	Type			Cross Flow Fan					
Fan	Motor Outpu	ıt .	W	2	3				
	Speed		Steps	5 Steps, C					
Air Direction C	ontrol			Right, Left, Horiz					
Air Filter				Removable / Washable / Mildew Proof					
Running Curre	nt (Rated)		Α	0.12	0.14				
Power Consum	ption (Rated)		W	26	32				
Power Factor			%	94.2 99.4					
Temperature C				Microcomputer Control					
Dimensions (H			mm	295×80	00×215				
Packaged Dim	ensions (H×W	/×D)	mm	274×87	70×366				
Weight			kg	Ş	9				
Gross Weight			kg	1:	2				
Operation Sound	H/M/L/SL		dBA	43/39/34/31	44/39/34/31				
Sound Power	Н		dBA	59	60				
Heat Insulation			Both Liquid a	nd Gas Pipes					
Liquid m		mm	φ 6.4						
Piping Connection Gas		Gas	mm	φ 9	9.5				
		Drain	mm	φ18	8.0				
Drawing No.				3D05	9726				

Conversion Formulae kcal/h=kWx860 Btu/h=kWx3414 cfm=m³/minx35.3

SiBE18-821 Specifications

#### 50Hz 230V

Model				FTXS6	0FV1B	FTXS	71FV1B	
Model			_	Cooling	Heating	Cooling	Heating	
Rated Capacity	,			6.0kW	Class	7.1kW Class		
Front Panel Co	Front Panel Color			Wh	ite	W	hite	
			Н		16.2 (572)	17.4 (614)	17.4 (614)	19.7 (696)
Airflow Rates		m³/min	M	13.6 (480)	15.1 (533)	14.6 (516)	16.9 (597)	
Amownates		(cfm)	L	11.4 (403)	12.7 (448)	11.6 (410)	14.3 (505)	
			SL	10.2 (360)	11.4 (403)	10.6 (374)	12.7 (448)	
	Type			Cross F	low Fan	Cross F	low Fan	
Fan	Motor Outpu	ut	W	4	•		13	
	Speed		Steps	5 Steps, C	Quiet, Auto	5 Steps, 0	Quiet, Auto	
Air Direction Co	ontrol			Right, Left, Horize	*	Right, Left, Horizontal, Downward		
Air Filter				Removable-Wash	able-Mildew Proof	Removable-Washable-Mildew Proof		
Running Curre			Α	0.18	0.20	0.20	0.27	
Power Consum	ption (Rated)		W	40	45	45	60	
Power Factor			%	96.6	97.8	97.8	96.6	
Temperature C				Microcomputer Control		Microcomputer Control		
Dimensions (H	×W×D)		mm	290×1,0	50×238	290×1,050×238		
Packaged Dime	ensions (H×W	/xD)	mm	337×1,147×366		337×1,147×366		
Weight			kg	1:	2	12		
Gross Weight			kg	1	7	17		
Operation Sound	ion H/M/L/SL		dBA	45/41/36/33	44/40/35/32	46/42/37/34	46/42/37/34	
Sound Power H dBA		dBA	61	60	62	62		
Heat Insulation			Both Liquid ar	nd Gas Pipes	Both Liquid a	ind Gas Pipes		
Piping Connection Liquid Gas		mm	φ 6	5.4	ф	6.4		
		Gas	mm	φ12	2.7	φ1	5.9	
		Drain	mm	φ18	3.0	ф18.0		
Drawing No.				3D05	6020	3D05	6021A	

Conversion Formulae kcal/h=kWx860 Btu/h=kWx3414 cfm=m³/minx35.3

Specifications SiBE18-821

#### **Duct Connected Type**

#### 50Hz 230V

Model				FDXS5	OCVMB	FDXS6	OCVMB	
wodei				Cooling	Heating	Cooling	Heating	
Rated Capacit	у			5.0kW	/ Class	6.0kW Class		
Front Panel Co	olor			_	_	-	_	
			Н	Н	12.0 (424)	12.0 (424)	16.0 (565)	16.0 (565)
Airflow Rates		m³/min	M	11.0 (388)	11.0 (388)	14.8 (523)	14.8 (523)	
Alliow hates		(cfm)	L	10.0 (353)	10.0 (353)	13.5 (477)	13.5 (477)	
			SL	8.4 (297)	8.4 (297)	11.2 (395)	11.2 (395)	
	Type			Siroco	co Fan	Siroco	o Fan	
Fan	Motor Outp	ut	W	1	30	10	30	
	Speed		Steps		Quiet, Auto	5 Steps, C	Quiet, Auto	
Air Filter				Removable-Washable-Mildew Proof		Removable-Washable-Mildew Proof		
Running Curre	nt (Rated)		Α	0.64	0.64	0.74	0.74	
Power Consun	nption (Rated)		W	140	140	160	160	
Power Factor			%	95.1	95.1	94.0	94.0	
Temperature C	Control			Microcomputer Control		Microcomp	uter Control	
Dimensions (H	×W×D)		mm	200×900×620		200×1,100×620		
Packaged Dim	ensions (H×V	V×D)	mm	266×1,106×751		266×1,306×751		
Weight			kg	2	27	30		
Gross Weight			kg	3	34	3	7	
Operation Sound	H/M/L/SL		dBA	37/35/33/31	37/35/33/31	38/36/34/32	38/36/34/32	
External Static Pressure		Pa		10	4	0		
Heat Insulation			Both Liquid a	and Gas Pipes	Both Liquid a	nd Gas Pipes		
Liquid			mm		6.4		6.4	
Piping Connec	tion	Gas	mm	φ1	2.7	φ1.	2.7	
Drain		Drain	mm	VP20 (O.D. ф	26 / I.D. ф 20)	VP20 (O.D. φ 26 / I.D. φ 20)		
Drawing No.		•		3D05	52132	3D05	2133	

Model				FDXS2	5EAVMB	FDXS35	EAVMB	
iviodei				Cooling	Heating	Cooling	Heating	
Rated Capacity	1			2.5kV	V Class	3.5kW Class		
Front Panel Co	Front Panel Color			-	<u> </u>	-	_	
			Н	8.7 (307)	8.7 (307)	8.7 (307)	8.7 (307)	
Airflow Rates		m³/min	M	8.0 (282)	8.0 (282)	8.0 (282)	8.0 (282)	
Alliow hates		(cfm)	L	7.3 (258)	7.3 (258)	7.3 (258)	7.3 (258)	
			SL	6.2 (219)	6.2 (219)	6.2 (219)	6.2 (219)	
	Type			Siroc	co Fan	Siroco	co Fan	
Fan	Motor Outp	out	W	(	62	6	52	
	Speed		Steps	5 Steps, 0	Quiet, Auto	5 Steps, C	Quiet, Auto	
Air Filter	•			Removable-Wash	nable-Mildew Proof	Removable-Washable-Mildew Proof		
Running Currer	nt (Rated)		Α	0.48	0.48	0.48	0.48	
Power Consum	ption (Rated	)	W	71	71	71	71	
Power Factor			%	64.3	64.3	64.3	64.3	
Temperature C	ontrol			Microcomputer Control		Microcomp	uter Control	
Dimensions (H	×W×D)		mm	200×700×620		200×700×620		
Packaged Dime	ensions (H×V	V×D)	mm	274×9	06×751	274×906×751		
Weight			kg	2	21	21		
Gross Weight			kg	2	29	2	9	
Operation Sound	H/M/L/SL		dBA	35/33/31/29	35/33/31/29	35/33/31/29	35/33/31/29	
External Static Pressure P		Pa	;	30	3	60		
Heat Insulation			Both Liquid a	and Gas Pipes	Both Liquid a	nd Gas Pipes		
Liquid		mm	ф	6.4	ф	6.4		
Piping Connect	ion	Gas	mm	ф	9.5	φ:	9.5	
	Drain		mm	VP20 (O.D. ¢	26 / I.D. φ 20)	VP20 (O.D. φ	26 / I.D. φ 20)	
Drawing No.				3D05	51881A	3D05	1883A	

Note:

Conversion Formulae kcal/h=kWx860 Btu/h=kWx3414 cfm=m³/minx35.3

The operating sound is based on the rear side suction inlet and the external static pressure 30 Pa.
 Operating sound for under side suction inlet: [operating sound for rear side suction inlet] +6 dB.
 However, when installation to which the external static pressure becomes low is carried out, 6 dB or more may go up.

SiBE18-821 Specifications

#### Floor / Ceiling Suspended Dual Type

#### 50Hz 230V

Model				FLXS25	BAVMB	FLXS35BAVMB		
wodei				Cooling	Heating	Cooling	Heating	
Rated Capacity	1			2.5kW	Class	3.5kW Class		
Front Panel Co	lor			Almono	d White	Almon	d White	
			Н	7.6 (268)	9.2 (325)	8.6 (304)	9.8 (346)	
Airflow Rates		m³/min	M	6.8 (240)	8.3 (293)	7.6 (268)	8.9 (314)	
Allilow hates		(cfm)	L	6.0 (212)	7.4 (261)	6.6 (233)	8.0 (282)	
			SL	5.2 (184)	6.6 (233)	5.6 (198)	7.2 (254)	
	Type			Siroco	o Fan	Siroc	co Fan	
Fan	Motor Out	out	W	3	4	3	34	
	Speed		Steps	5 Steps, C	Quiet, Auto	5 Steps, 0	Quiet, Auto	
Air Direction Co	ontrol			Right, Left, Horize	ontal, Downward	Right, Left, Horiz	zontal, Downward	
Air Filter				Removable-Wash	able-Mildew Proof	Removable-Wash	nable-Mildew Proof	
Running Currer	nt (Rated)		Α	0.32	0.34	0.36	0.36	
Power Consum	ption (Rated	d)	W	70	74	78	78	
Power Factor			%	95.1	94.6	94.2	94.2	
Temperature C	ontrol			Microcompu	uter Control	Microcomp	uter Control	
Dimensions (H:	<w×d)< td=""><td></td><td>mm</td><td>490×1,0</td><td>50×200</td><td colspan="3">490×1,050×200</td></w×d)<>		mm	490×1,0	50×200	490×1,050×200		
Packaged Dime	ensions (H×\	N×D)	mm	566×1,1	00×280	566×1,	100×280	
Weight			kg	1	6	16		
Gross Weight			kg	2	2	2	22	
Operation Sound	H/M/L/SL		dBA	37/34/31/28	37/34/31/29	38/35/32/29	39/36/33/30	
Sound Power H dBA		dBA	53	_	54	_		
Heat Insulation			Both Liquid ar	nd Gas Pipes	Both Liquid a	ınd Gas Pipes		
Liquid		mm	φ 6	6.4	ф	6.4		
Piping Connect	ion	Gas	mm	φ 9	9.5	ф	9.5	
		Drain	mm	φ18	8.0	φ1	8.0	
Drawing No.			•	3D05	0866	3D05	50868	

Model				FLXS50	BAVMB	FLXS60	DBAVMB	
Wodei				Cooling	Heating	Cooling	Heating	
Rated Capacity	1			5.0kW	Class	6.0kW Class		
Front Panel Co	lor			Almond	White	Almon	d White	
			Н	11.4 (402)	12.1 (427)	12.0 (424)	12.8 (452)	
Airflow Rates		m³/min	M	10.0 (353)	9.8 (346)	10.7 (378)	10.6 (374)	
Alliow hates		(cfm)	L	8.5 (300)	7.5 (265)	9.3 (328)	8.4 (297)	
			SL	7.5 (265)	6.8 (240)	8.3 (293)	7.5 (265)	
	Type			Sirocci	o Fan	Siroc	co Fan	
Fan	Motor Outpo	ut	W	34	4	;	34	
	Speed		Steps	5 Steps, Q	uiet, Auto	5 Steps, 0	Quiet, Auto	
Air Direction Co	ontrol			Right, Left, Horizo		Right, Left, Horiz	zontal, Downward	
Air Filter				Removable-Washa	able-Mildew Proof	Removable-Washable-Mildew Proof		
Running Currer	nt (Rated)		Α	0.45	0.45	0.47	0.45	
Power Consum	ption (Rated)		W	96	96	98	96	
Power Factor			%	92.8	92.8	90.7	92.8	
Temperature C	ontrol			Microcomputer Control		Microcomputer Control		
Dimensions (H	×W×D)		mm	490×1,0	50×200	490×1,050×200		
Packaged Dime	ensions (H×W	/xD)	mm	280×1,10	00×566	280×1,	100×566	
Weight			kg	17	7	17		
Gross Weight			kg	24	4	24		
Operation Sound	H/M/L/SL		dBA	47/43/39/36	46/41/35/33	48/45/41/39	47/42/37/34	
Sound Power H dBA		dBA	63	32	64	63		
Heat Insulation			Both Liquid ar	nd Gas Pipes	Both Liquid a	and Gas Pipes		
Liquid		mm	ф 6	6.4	ф	6.4		
Piping Connect	ion	Gas	mm	ф12	2.7	φ1	2.7	
		Drain	mm	φ18	3.0	φ18.0		
Drawing No.				3D050	0897	3D0:	50882	

Conversion Formulae kcal/h=kW×860 Btu/h=kW×3414 cfm=m³/min×35.3

Specifications SiBE18-821

#### Floor Standing Type

#### 50Hz 230V

Model				FVXS2	5FV1B	FVXS35FV1B						
Wodei				Cooling	Heating	Cooling	Heating					
Rated Capacity	1			2.5kW Class		3.5kW Class						
Front Panel Co	lor			Wr	nite	White						
Airflow Rates								Н	8.2 (290)	8.8 (311)	8.5 (300)	9.4 (332)
		m³/min	M	6.5 (229)	6.9 (244)	6.7 (237)	7.3 (258)					
		(cfm)	L	4.8 (169)	5.0 (178)	4.9 (174)	5.2 (184)					
			SL	4.1 (146)	4.4 (155)	4.5 (158)	4.7 (168)					
	Type			Turbo	o Fan	Turb	o Fan					
Fan	Motor Outpu	ut	W	4	8	48						
	Speed		Steps		Quiet, Auto		Quiet, Auto					
Air Direction Co	ontrol			3 , ,	ontal, Downward	Right, Left, Horizontal, Downward						
Air Filter				Removable-Wash	able-Mildew Proof	Removable-Washable-Mildew Proof						
Running Currer			Α	0.13	0.14	0.13	0.14					
Power Consum	ption (Rated)		W	15	17	15	17					
Power Factor			%	50.2	52.8	50.2	52.8					
Temperature C				Microcomp	uter Control	Microcomputer Control						
Dimensions (H:			mm	600×700×210		600×700×210						
Packaged Dime	ensions (H×W	/xD)	mm	696×786×286		696×786×286						
Weight			kg	14		14						
Gross Weight			kg	18		18						
Operation Sound	H/M/L/SL		dBA	38/32/26/23	38/32/26/23	39/33/27/24	39/33/27/24					
Sound Power H		dBA	54	54	55	55						
Heat Insulation				Both Liquid and Gas Pipes		Both Liquid and Gas Pipes						
Piping Connection Liquid Gas		mm	ф 6.4		ф 6.4							
		mm	φ 9.5		φ 9.5							
		Drain	mm	φ 20.0		ф 20.0						
Drawing No.				3D056274A		3D056275A						

Model				FVXS50FV1B			
Model				Cooling	Heating		
Rated Capacity				5.0kW Class			
Front Panel Col	or			W	nite		
			Н	10.7 (378)	11.8 (417)		
Airflow Rates		m³/min	M	9.2 (326)	10.1 (358)		
Airiow riales		(cfm)	L	7.8 (274)	8.5 (300)		
			SL	6.6 (233)	7.1 (250)		
	Type			Turbo	Fan		
Fan	Motor Outp	ut	W	4	-		
	Speed		Steps		Quiet, Auto		
Air Direction Co	ntrol			Right, Left, Horizontal, Downward			
Air Filter				Removable-Washable-Mildew Proof			
Running Currer			Α	0.17	0.19		
Power Consum	ption (Rated)		W	27	34		
Power Factor			%	69.1 77.8			
Temperature Control				Microcomputer Control			
Dimensions (H>			mm	600×700×210			
Packaged Dime	ensions (H×W	/xD)	mm	696×786×286			
Weight			kg	14			
Gross Weight			kg	18			
Operation Sound	Operation H/M/L/SL		dBA	44/40/36/32	45/40/36/32		
Sound Power H		dBA	56 57				
Heat Insulation				Both Liquid and Gas Pipes			
Piping Connection Liquid Gas		Liquid	mm	φ 6.4			
		Gas	mm	ф12.7			
	Drain		mm	φ20.0			
Drawing No.				3D056276			

Conversion Formulae kcal/h=kW×860 Btu/h=kW×3414 cfm=m³/min×35.3

SiBE18-821 Specifications

#### **Ceiling Mounted Cassette Type**

#### 50Hz 230V

Model				FFQ2	5B8V1B	FFQ35B8V1B		
wodei				Cooling	Heating	Cooling	Heating	
Rated Capacity					V Class	3.5kW Class		
Decoration	Color			White		White		
Panel	Dimensions (HxWxD)			55×700×700		55×700×700		
			Н	9.0 (318)	9.0 (318)	10.0 (353)	10.0 (353)	
Airflow Rates		m³/min	М	_		_	_	
Alliow hates		(cfm)	L	6.5 (230)	6.5 (230)	6.5 (230)	6.5 (230)	
			SL	_	_	_	_	
	Type			Turk	oo Fan	Turb	o Fan	
Fan	Motor Output		W	55		55		
	Speed		Steps	2 Steps		2 Steps		
Air Direction Co	ontrol			Horizontal	, Downward	Horizontal, Downward		
Air Filter					_	_		
Running Currer	nt (Rated)		Α	0.37	0.32	0.40	0.36	
Power Consum	ption (Rated	d)	W	73	64	84	76	
Power Factor			%	85.8	87.0	91.3	91.8	
Temperature C	ontrol			Microcomputer Control		Microcomputer Control		
Dimensions (H			mm	260(286)×575×575		260(286)×575×575		
Packaged Dime	ensions (H×	W×D)	mm	370×687×674		370×687×674		
Weight			kg	17.5		17.5		
Gross Weight			kg	21		21		
Operation Sound	H/L		dBA	29.5/24.5	29.5/24.5	32.0/25.0	32.0/25.0	
Sound Power	Н		dBA	46.5	_	49.0	_	
Heat Insulation				Both Liquid and Gas Pipes		Both Liquid and Gas Pipes		
Liquid mm		mm	φ 6.4		ф 6.4			
Piping Connect	Piping Connection Gas		mm	ф	9.5	φ 9.5		
Drain mm			mm	VP20 (O.D φ 26 / I.D φ 20)		VP20 (O.D φ 26 / I.D φ 20)		
Drawing No.		•		3D040445		3D040443		

Madal				FFQ50	B8V1B	FFQ60B8V1B		
Model				Cooling	Heating	Cooling	Heating	
Rated Capacity				5.0kW	Class	6.0kW Class		
Decoration	Color			Wh	nite	White		
Panel	Dimension	s (H×W×D)		55×700×700		55×700×700		
	ļ		Н	12.0 (424)	12.0 (424)	15.0 (530)	15.0 (530)	
Airflow Rates	ļ	m³/min	M	_	_	_	_	
Allilow hates	ļ	(cfm)	L	8.0 (283)	8.0 (283)	10.0 (353)	10.0 (353)	
	ļ		SL	_	_	_	_	
	Туре	•		Turb	o Fan	Turb	o Fan	
Fan	Motor Outp	out	W	55		55		
	Speed		Steps	2 Steps		2 Steps		
Air Direction Co	ntrol			Horizontal,	Downward	Horizontal, Downward		
Air Filter				-	_	_		
Running Currer			Α	0.49	0.45	0.61	0.56	
Power Consum	ption (Rated	i)	W	97	89	120	111	
Power Factor			%	86.1	86.0	85.5	86.2	
Temperature Co	ontrol			Microcomputer Control		Microcomputer Control		
Dimensions (H)			mm		×575×575	260(286)×575×575		
Packaged Dime	nsions (H×\	N×D)	mm	370×687×674		370×687×674		
Weight			kg	17.5		17.5		
Gross Weight			kg	21		21		
Operation Sound	H/L		dBA	36.0/27.0	36.0/27.0	41.0/32.0	41.0/32.0	
Sound Power	ound Power H		dBA	53.0	_	58.0	_	
Heat Insulation				Both Liquid and Gas Pipes		Both Liquid and Gas Pipes		
Liquid		mm	φ 6.4		ф 6.4			
Piping Connect	Piping Connection Gas Drain		mm	Т :	2.7	φ 12.7		
			mm	VP20 (O.D φ 26 / I.D φ 20)		VP20 (O.D φ 26 / I.D φ 20)		
Drawing No.				3D040441		3D040436		

 $\star$  ( ) : dimension including control box

Conversion Formulae kcal/h=kWx860 Btu/h=kWx3414 cfm=m³/minx35.3

Specifications SiBE18-821

#### **Ceiling-suspended Type**

#### 50Hz 230V

Model				FHQ35BVV1B		FHQ50BVV1B		FHQ60BVV1B		
iviodei				Cooling	Heating	Cooling	Heating	Cooling	Heating	
Rated Capacity	/			3.5kW Class		5.0kW	5.0kW Class		6.0kW Class	
Decoration	Color			Wh	nite	W	hite	White		
Panel	Dimensions (H×W×D)			-	_	-	_	_		
			Н	13.0 (458)	13.0 (458)	13.0 (458)	13.0 (458)	17.0 (600)	16.0 (565)	
Airflow Rates		m³/min	М	_	_	-	_	-	_	
Alliow hates		(cfm)	L	10.0 (353)	10.0 (353)	10.0 (353)	10.0 (353)	13.0 (459)	13.0 (459)	
			SL	_	_	-	_	_	_	
	Type			Siroco	o Fan	Sirocco Fan		Sirocco Fan		
Fan	Motor Output		W	62		62		62		
	Speed		Steps	2 St	teps	2 Steps		2 Steps		
Air Direction C	ontrol			Right, Left, Horizontal, Downward		Right, Left, Horizontal, Downward		Right, Left, Horizontal, Downward		
Air Filter			Removable-Washable-Mildew Proof		Removable-Washable-Mildew Proof		Removable-Washable-Mildew Proof			
Temperature C	Control			Microcomputer Control		Microcomputer Control		Microcomputer Control		
Dimensions (H	×W×D)		mm	195×960×680		195×960×680		195×1,1	160×680	
Packaged Dim	ensions (H×	(W×D)	mm	279×1,046×818		279×1,046×818		279×1,246×818		
Weight			kg	24		25		27		
Gross Weight			kg	31		32		35		
Operation Sound	H/L		dBA	37/32		38/33		39/33		
Sound Power H/L		dBA	53/48		54/49		55/49			
Heat Insulation		Both Liquid and Gas Pipes		Both Liquid and Gas Pipes		Both Liquid and Gas Pipes				
		Liquid	mm	ф 6.4 (Flare)		ф 6.4 (Flare)		φ 6.4 (Flare)		
Piping Connec	tion	Gas	mm	ф 9.5	(Flare)	φ12.7 (Flare)		\$12.7 (Flare)		
	Drain		mm	VP20 (O.D.\(\phi\) 26 / I.D.\(\phi\) 20)		VP20 (O.D.\(\phi\) 26 / I.D.\(\phi\) 20)		VP20 (O.D.φ 26 / I.D.φ 20)		
Drawing No.			3D037992E		3D037992E		3D037992E			

Conversion Formulae kcal/h=kWx860 Btu/h=kWx3414 cfm=m³/minx35.3

# Part 3 Printed Circuit Board Connector Wiring Diagram

1.	Printe	ed Circuit Board Connector Wiring Diagram	22
	1.1	Outdoor Unit RMXS 112/140/160 E8V1B	22
		Branch Provider Unit	
	1.3	FTXG25~35E, CTXG50E	28
	1.4	Wall Mounted Type 20-50 Class - G Series	30
		Wall Mounted Type 60/71 Class - F Series	
	1.6	Duct Connected Type	34
		Floor / Ceiling Suspended Dual Type	
		Floor Standing Type	
		Ceiling Mounted Cassette 600×600 Type	
		Ceiling Suspended Type	

# 1. Printed Circuit Board Connector Wiring Diagram

## 1.1 Outdoor Unit RMXS 112/140/160 E8V1B

#### 1.1.1 Main PCB (A1P)

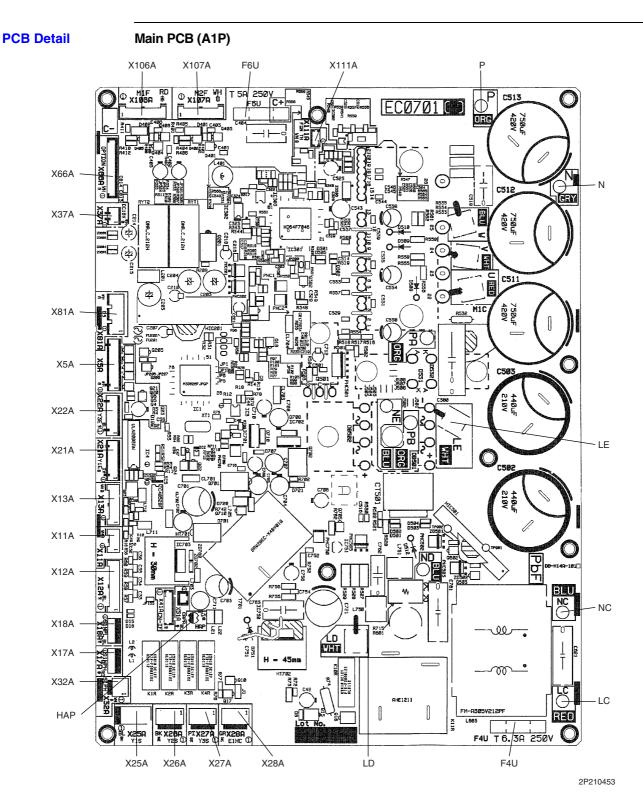
#### **Connectors**

1)	X5A	Connector to Service PCB (A2P)
2)	X11A	Connector for Outdoor Air Thermistor
3)	X12A	Connector for Thermistors
		(Suction Pipe1, 2, Heat Exchanger, Discharge Pipe)
4)	X13A	Connector for Thermistors (Subcool Outlet, Liquid Pipe)
5)	X17A	Connector for High Pressure Sensor
6)	X18A	Connector for Low Pressure Sensor
7)	X21A	Connector for Electronic Expansion Valve (Main)
8)	X22A	Connector for Electronic Expansion Valve (Sub Cool)
9)	X25A	Connector for Y1S (Four Way Valve)
10)	X26A	Connector for Y2S (Hot Gas Bypass Valve)
11)	X27A	Connector for Y3S (Unload)
12)	X28A	Connector for Crankcase Heater
13)	X32A	Connector for High Pressure Switch
14)	X37A	Connector for Power Supply for Optional PCB (DC16V)
15)	X66A	Connector for C/H Selector PCB (A4P)
16)	X81A	Connector for Terminal Strip
17)	X106A, X107A	Connector for Fan Motor (Upper, lower)
18)	X111A	Connector for Fin Thermistor
19)	LD, LE	Connector for Reactor
20)	LC, NC	Connector for Noise Filter PCB (A3P)
21)	Р	Connector for Capacitor C4 +
22)	N	Connector for Capacitor C4 –
23)	U, V, W	Connector for Compressor

## Note:

Other Designation

F4U Fuse (6.3A / 250V)
 F6U Fuse (5.0A / 250V)
 HAP Operation Pilot Lamp



# 1.1.2 Service PCB (A2P)

Connectors 1) X205A Connector for Main PCB (A1P)

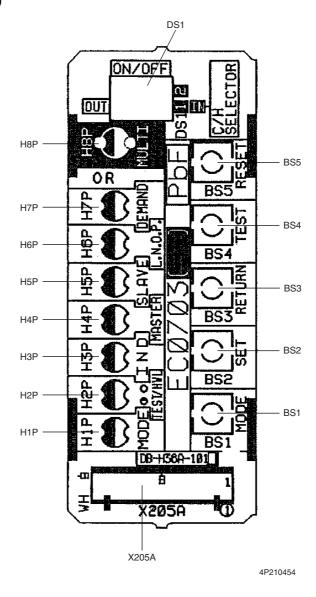
Note: Other Designation

1) H1P to H8P Service Monitor LED

2) BS1 to BS5 Push Button Switch (Mode, Set, Return, Test, Reset)

3) DS1 DIP Switch

# PCB Detail Service PCB (A2P)



# 1.1.3 Noise Filter PCB (A3P)

Connectors 1) LA, NA Terminal for X1M (Power Supply)

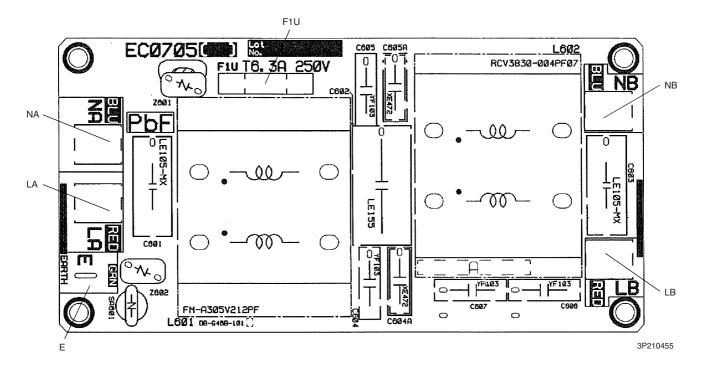
2) LB, NB Terminal for Main PCB (A1P)

3) E Terminal for Earth

Note: Other Designation

1) F1U Fuse (250V 6.3A)

PCB Detail Noise Filter PCB (A3P)



# 1.1.4 Cool / Heat Selector PCB (A4P)

**Connectors** 

1) X1A Connector for Main PCB (A1P)

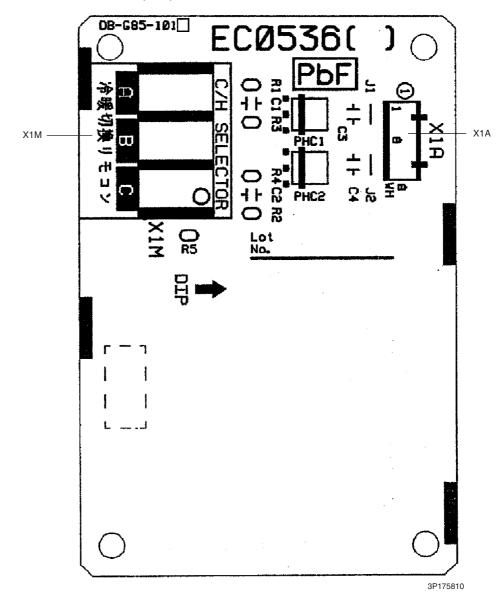
Note:

Other Designation

1) X1M Cool / Heat Selector

**PCB Detail** 

# Cool / Heat Selector PCB (A4P)



# 1.2 Branch Provider Unit

#### **Connectors**

1) X20A Connector for Bypass Electronic Expansion Valve

2) X21A to X23A Connector for Electronic Expansion Valve to Room A, B and C

3) X90A Connector for Thermistors

Note: Other Designations

1) F2U Fuse (AC250V 3.15A)

2) X3M Terminal for Inter Connecting Wire to Room A
3) X4M Terminal for Inter Connecting Wire to Room B
4) X5M Terminal for Inter Connecting Wire to Room C

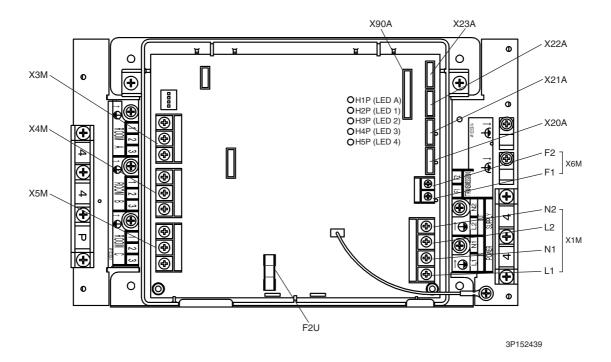
5) F1, F2 (on X6M) Terminal for Transmission to Outdoor Unit or Other BP units

6) L1, N1 (on X1M) Terminal for Power Supply (230V 50Hz)
7) L2, N2 (on X1M) Terminal for Power Supply to other BP units

8) H1P(LED-A) LED for Service Monitor 9) H2P~H5P (LED 1 to 4) LED for Fault Indication

X23A and X5M are not used for BPMKS967B2B.

# PCB Detail BP Unit PCB



# 1.3 FTXG25~35E, CTXG50E

#### **Connectors**

# PCB(1) (Control PCB)

1)	S1	Connector for fan motor		
2)	S21	Connector for centralized control (HA)		
3)	S32	Connector for heat exchanger thermistor		
4)	S36	Connector for INTELLIGENT EYE sensor PCB and control PCB		
5)	S41	Connector for swing motor		
6)	S46	Connector for signal receiver PCB		
7)	S49	Connector for reduction motor (front panel mechanism)		
8)	S51	Connector for front panel limit switch		

# PCB(2) (Signal Receiver PCB)

1) S47 Connector for control PCB

# PCB(3) (INTELLIGENT EYE sensor PCB)

1) S36 Connector for control PCB

# Note:

# Other designations

# PCB(1) (Control PCB)

1) V1	Varistor		
2) JA	Address setting jumper		
JB	Fan speed setting when compressor is OFF on thermostat		
JC	Power failure recovery function (auto-restart)		
	* Refer to page 168 for detail.		
3) FU1	Fuse (3.15A)		
4) LED A	LED for service monitor (green)		

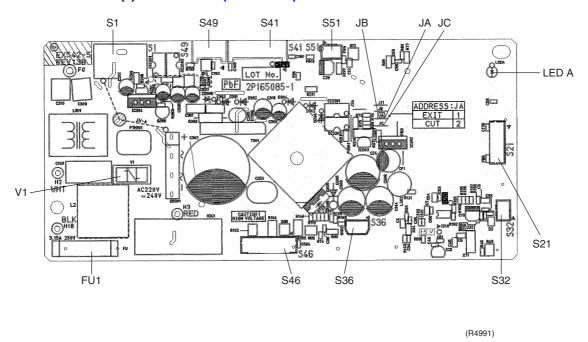
# PCB(2) (Signal Receiver PCB)

1) SW1	Forced operation ON / OFF switch
2) LED2	LED for INTELLIGENT EYE (green)
3) LED3	LED for timer (yellow)
4) LED4	LED for operation (green)
5) RTH1	Room temperature thermistor

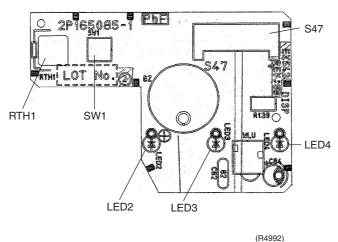
28

## **PCB Detail**

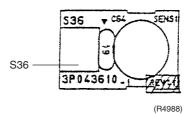
# PCB(1): Control PCB (indoor unit)



# PCB(2): Signal Receiver PCB



# PCB(3): INTELLIGENT EYE sensor PCB



# 1.4 Wall Mounted Type 20-50 Class - G Series

## **Connectors**

# PCB(1) (Control PCB)

1)	S1	Connector for DC fan motor
2)	S21	Connector for centralized control (HA)
3)	S25	Connector for INTELLIGENT EYE sensor PCB
4)	S32	Connector for heat exchanger thermistor
5)	S41	Connector for swing motor
6)	S46	Connector for display PCB
7)	S47	Connector for signal receiver PCB

# PCB(2) (Signal Receiver PCB)

1) S48 Connector for control PCB

## PCB(3) (Display PCB)

1) S49 Connector for control PCB

# PCB(4) (INTELLIGENT EYE sensor PCB)

1) S26 Connector for control PCB

# Note:

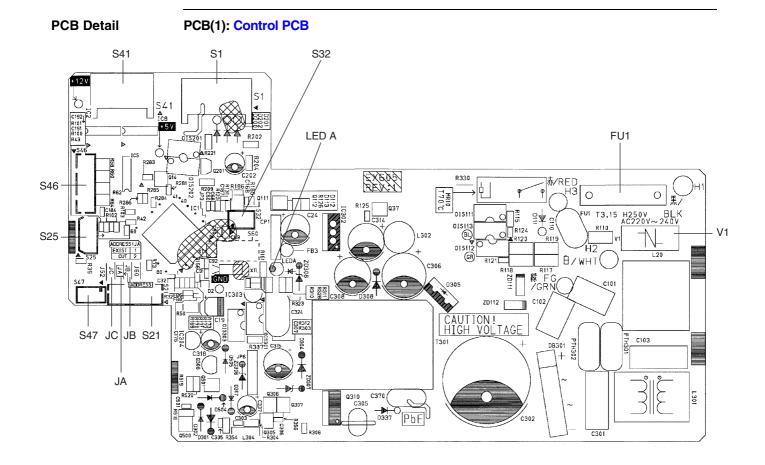
# Other designations

# PCB(1) (Control PCB)

1) V1	Varistor
2) JA	Address setting jumper
JB	Fan speed setting when compressor is OFF on thermostat
JC	Power failure recovery function (auto-restart)
	* Refer to page 168 for detail.
3) LED A	LED for service monitor (green)
4) FU1	Fuse (3.15A)

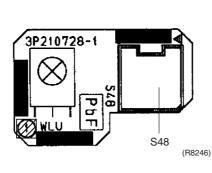
## PCB(3) (Display PCB)

1) SW1 (S1W)	Forced operation ON / OFF switch
2) LED1	LED for operation (green)
3) LED2	LED for timer (yellow)
4) LED3	LED for INTELLIGENT EYE (green)
5) RTH1 (R1T)	Room temperature thermistor

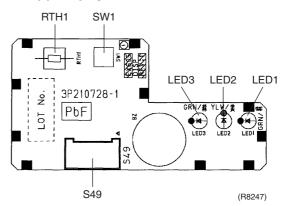


2P206687

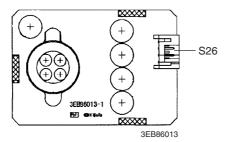




# PCB(3): Display PCB



PCB(4): INTELLIGENT EYE sensor PCB



# 1.5 Wall Mounted Type 60/71 Class - F Series

#### **Connectors**

## PCB(1) (Control PCB)

1) S1	Connector for DC fan motor
2) <mark>S6</mark>	Connector for swing motor (horizontal blades)
3) <mark>S8</mark>	Connector for swing motor (vertical blades)
4) 004	

4) S21 Connector for centralized control (HA)

5) S26 Connector for buzzer PCB

6) S28 Connector for signal receiver PCB
 7) S32 Connector for heat exchanger thermistor
 8) S35 Connector for Intelligent Eye sensor PCB

#### PCB(2) (Signal Receiver PCB)

1) S29 Connector for control PCB

#### PCB(3) (Buzzer PCB)

S27 Connector for control PCB
 S38 Connector for display PCB

# PCB(4) (Display PCB)

1) S37 Connector for buzzer PCB

## PCB(5) (INTELLIGENT EYE sensor PCB)

1) S36 Connector for control PCB

# Note:

#### Other designations

# PCB(1) (Control PCB)

1) V1 Varistor

2) JA Address setting jumper

JB Fan speed setting when compressor is OFF on thermostat

JC Power failure recovery function

\* Refer to page 168 for detail.

3) LED A LED A for service monitor (green)

4) FU1 Fuse (3.15A)

## PCB(2) (Signal Receiver PCB)

1) SW1 (S1W) Forced operation ON/OFF switch

#### PCB(3) (Buzzer PCB)

1) RTH1 (R1T) Room temperature thermistor

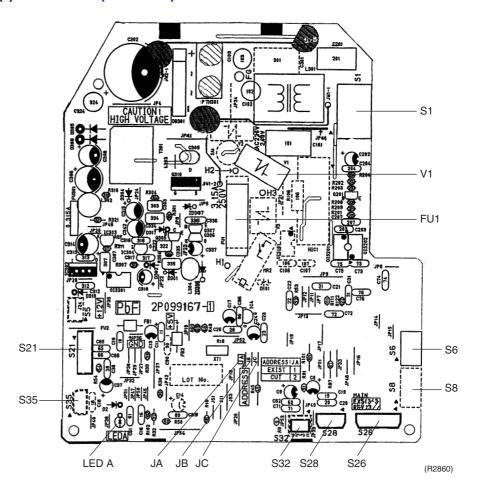
#### PCB(4) (Display PCB)

4) LED1 LED for operation (green)5) LED2 LED for timer (yellow)

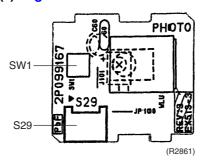
6) LED3 LED for HOME LEAVE operation (red)

## **PCB Detail**

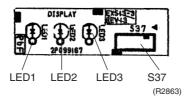
# PCB(1): Control PCB (indoor unit)



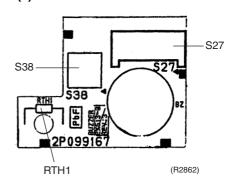
PCB(2): Signal Receiver PCB



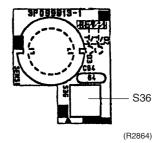
PCB(4): Display PCB



PCB(3): Buzzer PCB



PCB(5): INTELLIGENT EYE sensor PCB



# 1.6 Duct Connected Type

#### **Connectors**

#### PCB(1) (Control PCB)

S1 Connector for AC fan motor
 S7 Connector for AC fan motor

3) S21 Connector for centralized control to 5 rooms

4) S26 Connector for display PCB

5) S32 Connector for heat exchanger thermistor

#### PCB(2) (Display PCB)

1) S1 Connector for control PCB

# Note:

Other designations

# PCB(1) (Control PCB)

1) V1 Varistor

2) JA Address setting jumper

JB Fan speed setting when compressor is OFF on thermostat

JC Power failure recovery function

\* Refer to page 168 for more detail.

3) LED A LED for service monitor (green)

4) FU1 Fuse (3.15A)

# PCB(2) (Display PCB)

1) SW1 (S1W) Forced operation ON/OFF switch

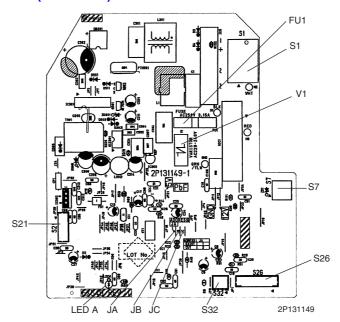
2) LED1 LED for operation (green)3) LED2 LED for timer (yellow)

4) LED3 LED for HOME LEAVE operation (red)

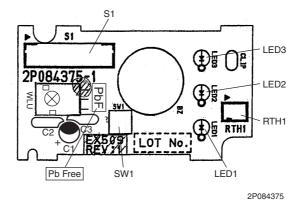
5) RTH1 (R1T) Room temperature thermistor

#### **PCB** Detail

## PCB (1): Control PCB (indoor unit)



# PCB Detail PCB (2): Display PCB



# 1.7 Floor / Ceiling Suspended Dual Type

#### **Connectors**

#### PCB(1) (Control PCB)

S6 Connector for swing motor (horizontal swing)
 S7 Connector for AC fan motor
 S21 Connector for centralized control
 S24 Connector for display PCB
 S26 Connector for signal receiver PCB
 S32 Connector for heat exchanger thermistor
 S37 Connector for power supply PCB

## PCB(2) (Power Supply PCB)

1) S36 Connector for control PCB

#### PCB(3) (Display PCB)

1) S25 Connector for control PCB

## PCB(4) (Signal Receiver PCB)

1) S27 Connector for control PCB

2) S31 Connector for room temperature thermistor

# Note:

#### Other designations

# PCB(1) (Control PCB)

1) JA Address setting jumper

JB Fan speed setting when compressor is OFF on thermostat

JC Power failure recovery function

\* Refer to page 168 for detail.

2) SW2 Select switch ceiling or floor3) LED A LED for service monitor (green)

## PCB(2) (Power Supply PCB)

V1 Varistor
 FU1 Fuse (3.15A)

#### PCB(3) (Display PCB)

LED1 LED for operation (green)
 LED2 LED for timer (yellow)

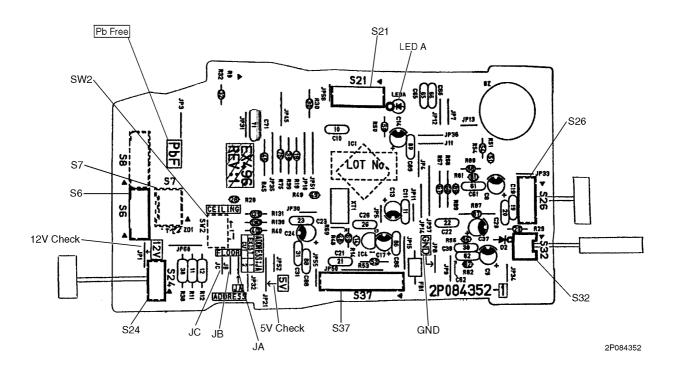
3) LED3 LED for HOME LEAVE operation (red)

#### PCB(4) (Signal Receiver PCB)

1) SW1 (S1W) Forced operation ON/OFF switch

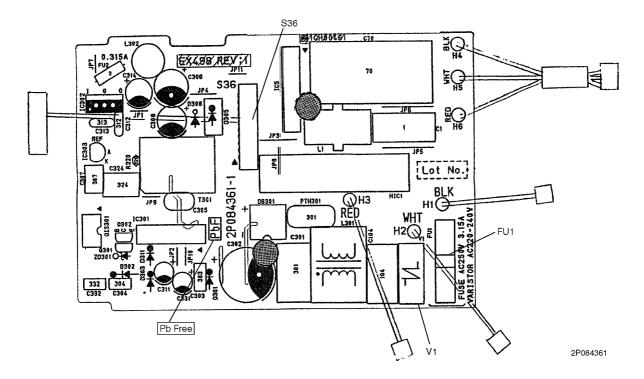
## **PCB Detail**

PCB (1): Control PCB (indoor unit)

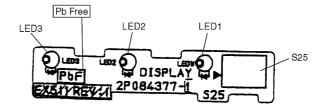


#### **PCB Detail**

PCB (2): Power Supply PCB

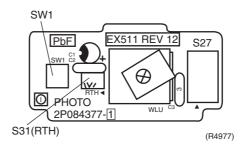


# PCB (3): Display PCB



2P084377

# PCB (4): Signal Receiver PCB



# 1.8 Floor Standing Type

#### Connectors

#### PCB(1) (Power Supply PCB)

1) S8, S202, Connector for control PCB S204

#### PCB(2) (Control PCB)

1) S6 Connector for swing motor and lower air outlet motor

2) S21 Connector for centralized control3) S23 Connector for display PCB

4) S31, S32 Connector for room temperature / heat exchanger thermistor

5) S7, S201, Connector for power supply PCB

S203

6) S25 Connector for Signal receiver PCB7) S301, S302 Connector for DC fan motors

## PCB(3) (Signal Receiver PCB)

1) S26 Connector for control PCB

#### PCB(4) (Display PCB)

1) S24 Connector for control PCB

# Note:

# Other Designations

# PCB(2) (Control PCB)

1) V1 Varistor

2) JA Address setting jumper

JB Fan speed setting when compressor is OFF on thermostat

JC Power failure recovery function 
\* Refer to page 168 for detail.

3) FU Fuse (3.15A)

4) LED A LED for service monitor (green)

#### PCB(3) (Signal Receiver PCB)

SW2 Changing upward airflow limit switch
 SW4 Discharge changeover switch

#### PCB(4) (Display PCB)

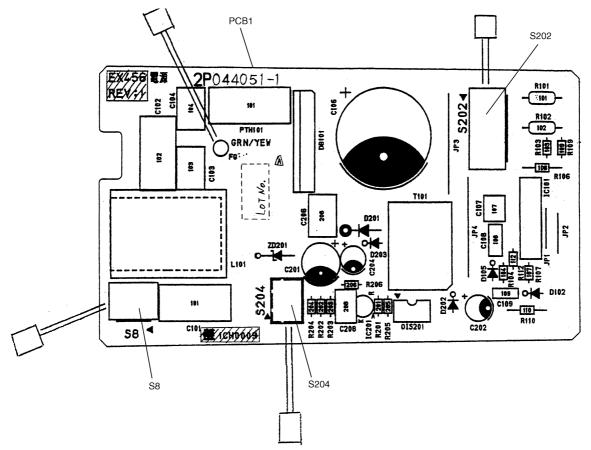
1) SW1 (S1W) Forced operation ON/OFF switch

2) LED11 LED for operation (green)3) LED12 LED for timer (yellow)

4) LED14 LED for HOME LEAVE operation (red)

**PCB Detail** 

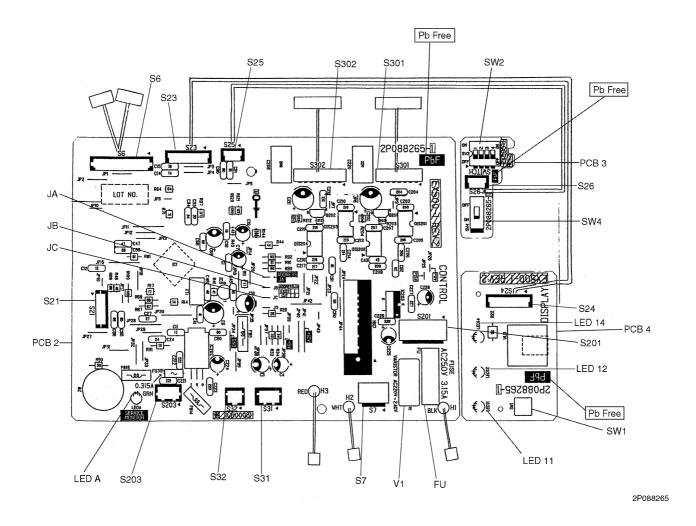
PCB (1): Power Supply PCB



PCB Detail PCB (2): Control PCB (indoor unit)

PCB (3): Display PCB

PCB (4): Signal Receiver PCB



#### 1.9 Ceiling Mounted Cassette 600×600 Type

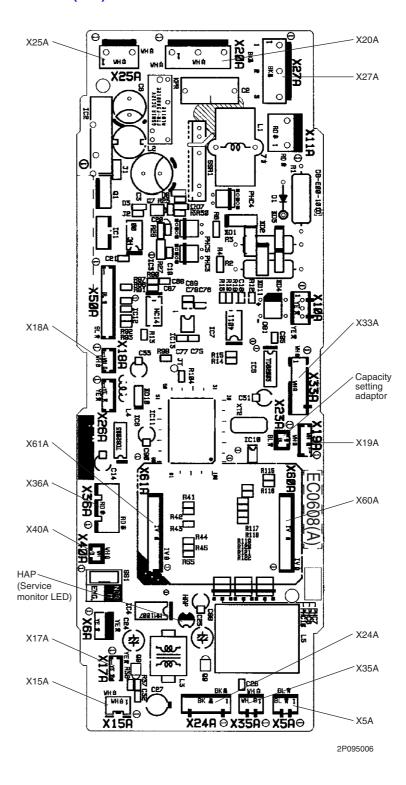
#### **Connectors** PCB (1) (Control PCB [A1P]) 1) X5A Connector for Terminal Strip (for Wired Remote Controller) 2) X15A Connector for Float Switch 3) X17A Connector for Heat Exchanger Thermistor (2) 4) X18A Connector for Heat Exchanger Thermistor (1) Connector for Room Temperature Thermistor 5) X19A 6) X20A Connector for Fan Motor 7) X24A Connector for Wireless Remote Controller Receiver Unit Connector for Drain Pump Motor 8) X25A 9) X27A Connector for Terminal Strip (for Inter Unit Wiring) 10) X33A Connector for Wring Adaptor PCB (Optional Accessory) 11) X35A Connector for Group Control Adaptor (Optional Accessory) 12) X36A Connector for Swing Motor 13) X40A Connector for ON/OFF Input from Outside (for Optional Accessory) 14) X60A, X61A Connector for Interface Adaptor (Optional Accessory) Other Designation

Note:

PCB (1) (Control PCB [A1P])

1) HAP Service Monitor LED

# PCB Detail PCB (1): Control PCB (A1P)



# 1.10 Ceiling Suspended Type

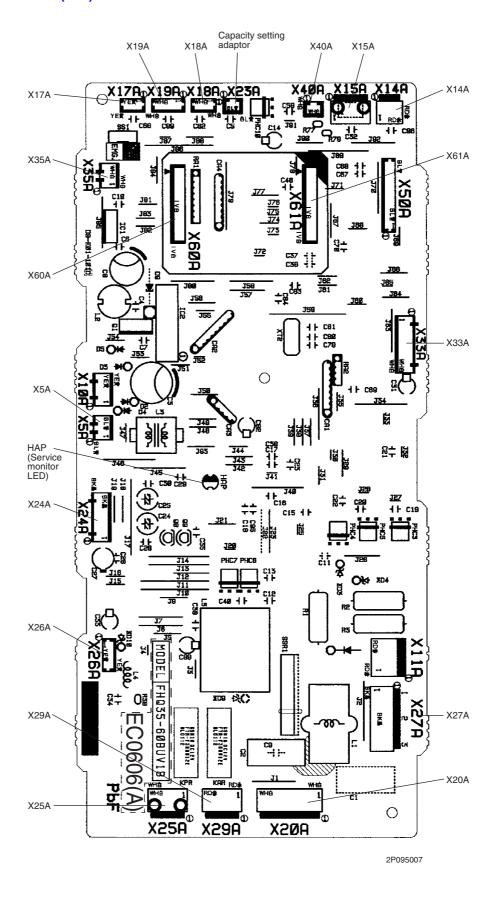
Connectors	(Control PCB [A1P])
Commectors	(Control FCD [A1F])

1)	X5A	Connector for Terminal Strip (for Wired Remote Controller)
2)	X14A	Connector for Limit Switch (for Swing Flap)
3)	X15A	Connector for Drain Pump (Optional Accessory)
4)	X17A	Connector for Heat Exchanger Thermistor (2)
5)	X18A	Connector for Heat Exchanger Thermistor (1)
6)	X19A	Connector for Room Temperature Thermistor
7)	X20A, X26A	Connector for Fan Motor
8)	X24A	Connector for Wireless Remote Controller Receiver Unit
9)	X25A	Connector for Drain Pump Motor (Optional Accessory)
10)	X27A	Connector for Terminal Strip (for Inter Unit Wiring)
11)	X29A	Connector for Swing Motor
12)	X33A	Connector for Wring Adaptor PCB (Optional Accessory)
13)	X35A	Connector for Group Control Adaptor (Optional Accessory)
14)	X40A	Connector for ON/OFF Input from Outside (for Optional Accessory)
15)	X60A, X61A	Connector for Interface Adaptor (Optional Accessory)

Note: Other Designation (Control PCB [A1P])

1) HAP Service Monitor LED

# PCB Detail Control PCB (A1P)



# Part 4 Refrigerant Circuit

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Refrigerant Circuit SiBE18-821

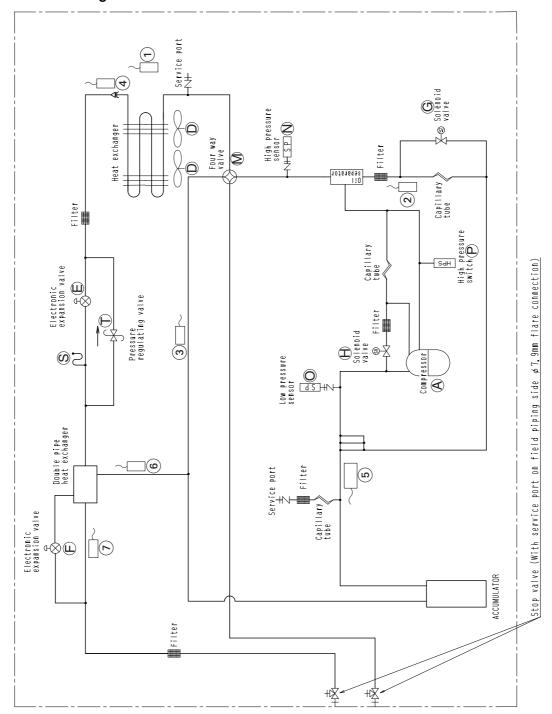
# 1. Refrigerant Circuit

# 1.1 Outdoor Units

No. in refrigerant system diagram	Symbol	Name	Major Function
А	M1C	Inverter compressor (INV)	Inverter compressor is operated on frequencies between 36 Hz and 195 Hz by using the inverter. 31 steps
D	M1F M2F	Inverter fan	Since the system is of air heat exchanging type, the fan is operated at 8-step rotation speed by using the inverter.
Е	Y1E	Electronic expansion valve (Main: EV1)	While in heating operation, PI control is applied to keep the outlet superheated degree of air heat exchanger constant.
F	Y3E	Electronic expansion valve (Subcool: EV3)	PI control is applied to keep the outlet superheated degree of subcooling heat exchanger constant.
G	Y2S	Solenoid valve (Hot gas: SVP)	Used to prevent the low pressure from transient falling.
Н	Y3S	Solenoid valve (Unload circuit SVUL)	Used to the unloading operation of compressor.
М	Y1S	Four way valve	Used to switch the operation mode between cooling and heating.
N	S1NPH	High pressure sensor	Used to detect high pressure.
0	S1NPL	Low pressure sensor	Used to detect low pressure.
Р	S1PH	HP pressure switch (For INV compressor)	In order to prevent the increase of high pressure when a malfunction occurs, this switch is activated at high pressure of 4.0 MPa or more to stop the compressor operation.
S	-	Fusible plug	In order to prevent the increase of pressure when abnormal heating is caused by fire or others, the fusible part of the plug is molten at a temperature of 70 to 75°C to release the pressure into the atmosphere.
Т		Pressure regulating valve 1 (Receiver to discharge pipe)	This valve opens at a pressure of 4.0 MPa for prevention of pressure increase, thus resulting in no damage of functional parts due to the increase of pressure in transportation or storage.
1	R1T	Thermistor (Outdoor air: Ta)	Used to detect outdoor temperature, correct discharge pipe temperature, and others.
2	R2T	Thermistor (INV discharge pipe: Tdi)	used to detect discharge pipe temperature, make the temperature protection control of compressor, and others.
3	R3T	Thermistor (Suction pipe1: Ts1)	used to detect suction pipe temperature, keep the suction superheated degree constant in heating operation, and others.
4	R4T	Thermistor (Heat exchanger deicer: Tb)	Used to detect liquid pipe temperature of air heat exchanger, determine defrosting operation, and others.
5	R5T	Thermistor (Suction pipe2: Ts2)	Used to the calculation of an internal temperature of compressor etc.
6	R6T	Thermistor (Subcooling heat exchanger gas pipe: Tsh)	Used to control of subcooling electronic expansion valve.
7	R7T	Thermistor (Liquid pipe: TI)	Used to detect refrigerant over charge in check operation, and others.

SiBE18-821 Refrigerant Circuit

# **Refrigerant Circuit Diagram**

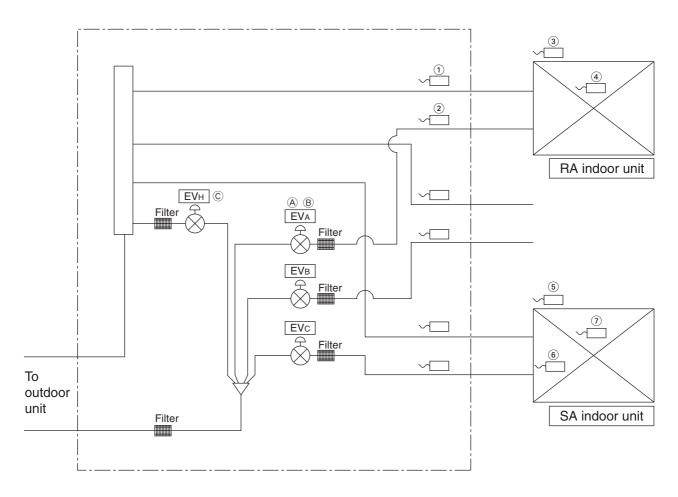


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Refrigerant Circuit SiBE18-821

# 1.2 BP Units

No. in refrigerant system diagram	Symbol	Name	Major Function
А	EVU	Electronic expansion valve (for operating room)	Among EVA, EVB and EVC, the electronic expansion valve of operating room is called EVU.
В	EVT	Electronic expansion valve (for stopping room)	Among EVA, EVB and EVC, the electronic expansion valve of stopping room is called EVT.
С	EVH	Electronic expansion valve (Bypass)	While in oil return operation, used to adjust the refrigerant circulating rate of indoor unit.
1	DGA ~ DGC	Thermistor (Gas pipe)	While in cooling operation, used to carry out the indoor unit SH control and cooling gas pipe isothermal control.
2	DLA ~ DLC	Thermistor (Liquid pipe)	While in heating operation, used to carry out the indoor unit SC control.
3	R1T	Thermistor (Room temp.)	Used to detect room air temperature and instructs the capacity supply to BP unit.
4	R2T	Thermistor (Heat exchanger)	Used to detect heat exchanger temperature and carry out various protection functions and controls of capacity.
5	R1T	Thermistor (Room temp.)	Used to detect room air temperature and instructs the capacity supply to BP unit.
6	R2T	Thermistor (Heat exchanger 1)	Used to detect heat exchanger temperature and carry out various protection functions and controls of capacity.
7	R3T	Thermistor (Heat exchanger 2)	Used to detect heat exchanger temperature and carry out various protection functions and controls of capacity.

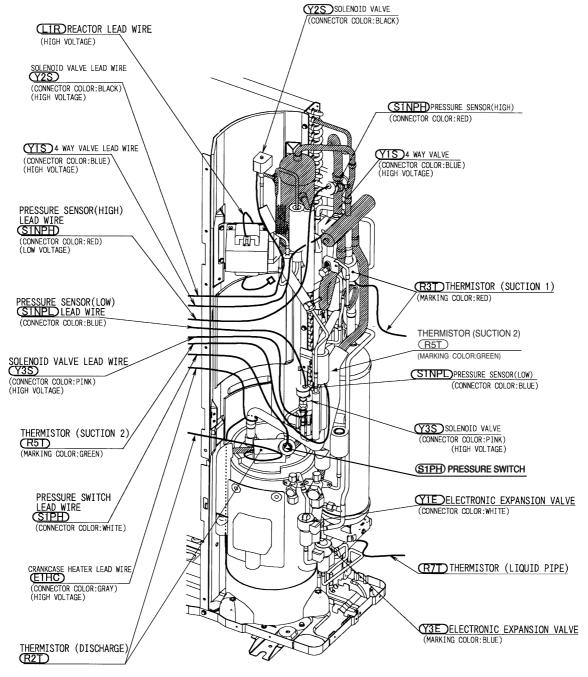


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# 2. Functional Parts Layout

# 2.1 Outdoor Units

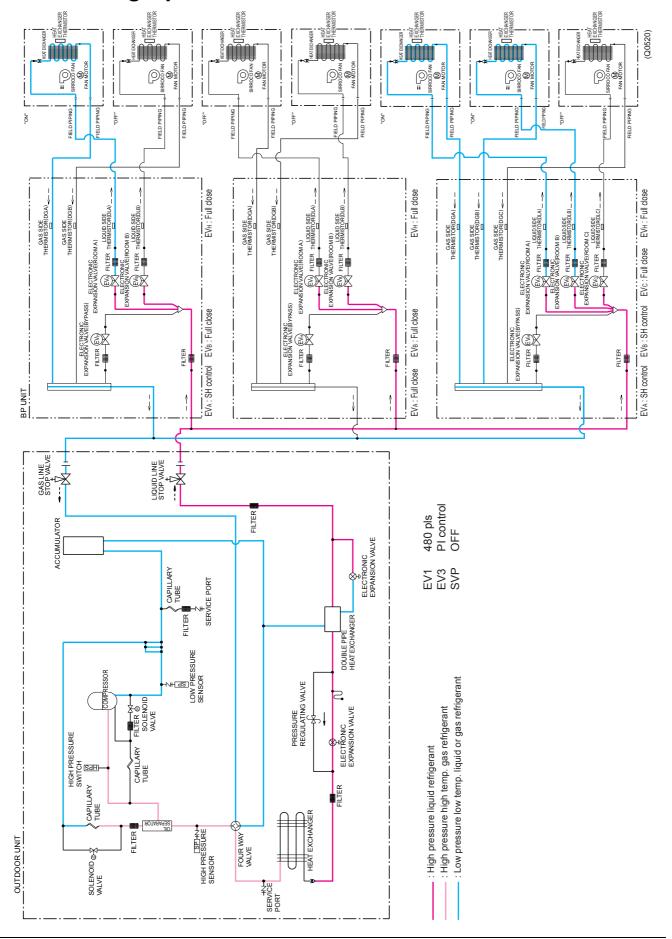
#### Birds-eye view



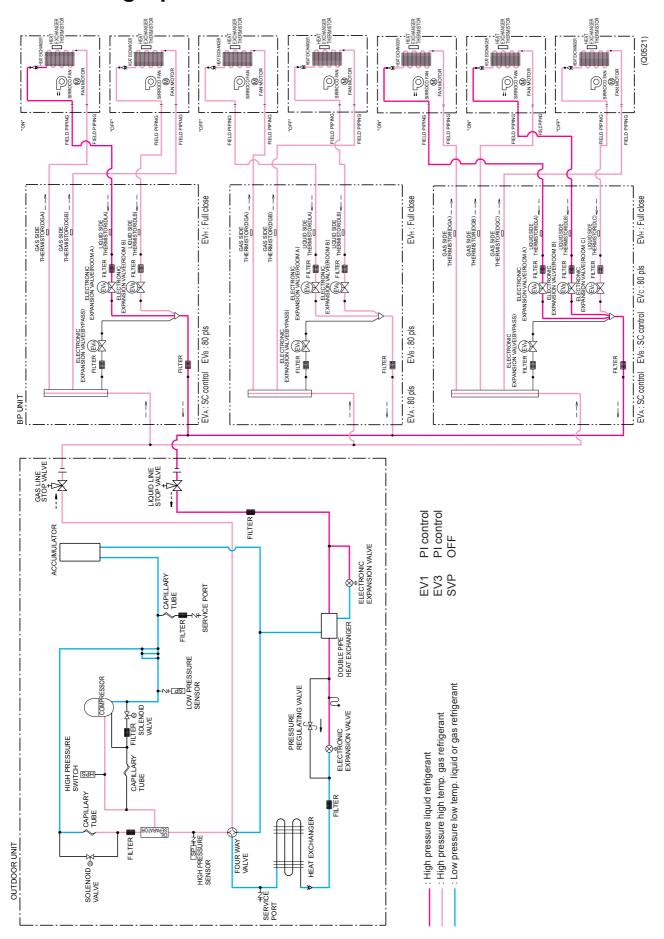
(Q0524)

# 3. Refrigerant Flow for Each Operation Mode

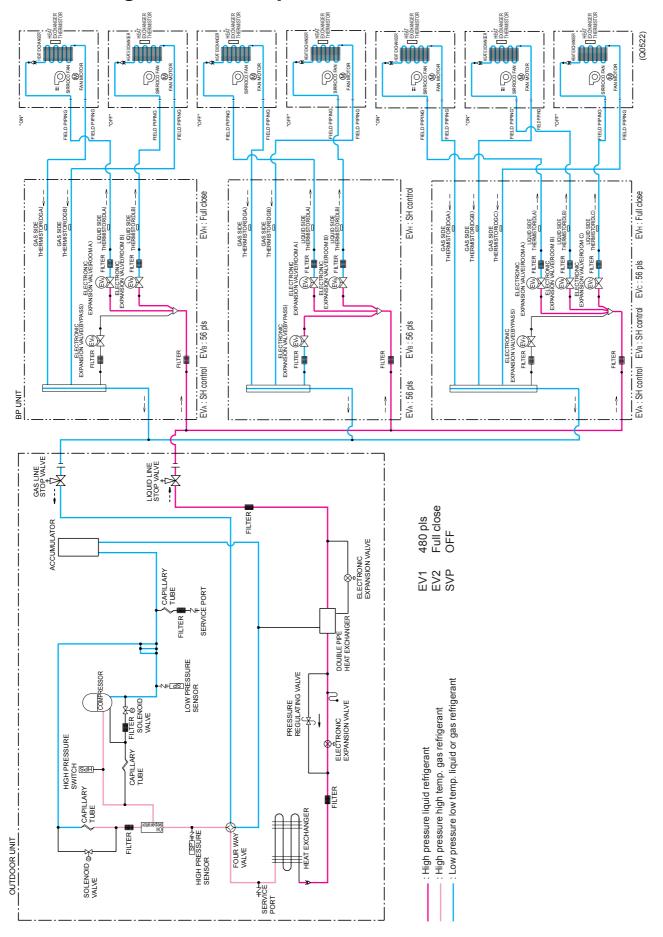
# 3.1 Cooling Operation



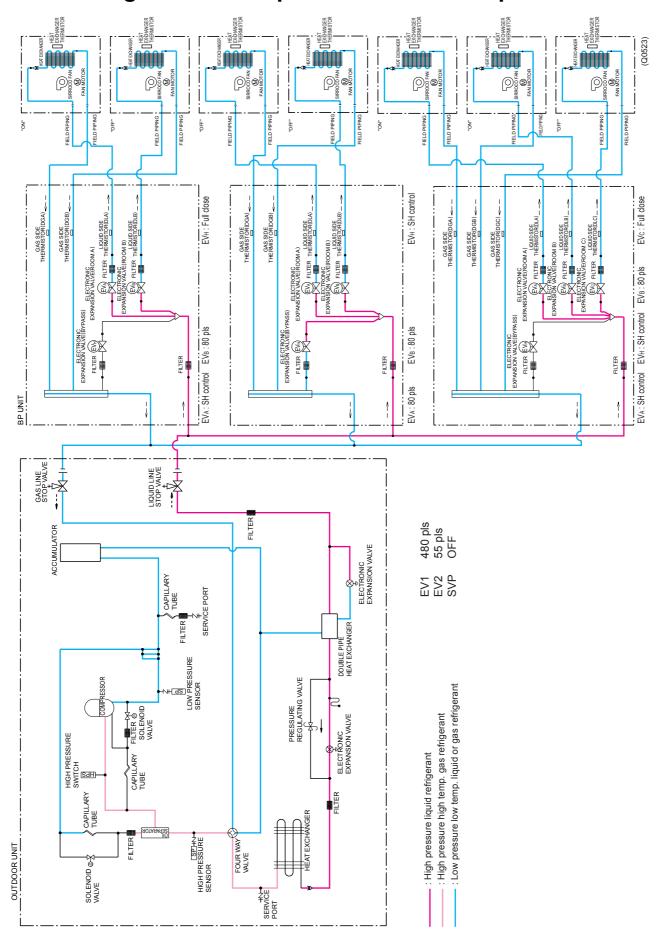
# 3.2 Heating Operation



# 3.3 Cooling Oil Return Operation



# 3.4 Heating Oil Return Operation & Defrost Operation

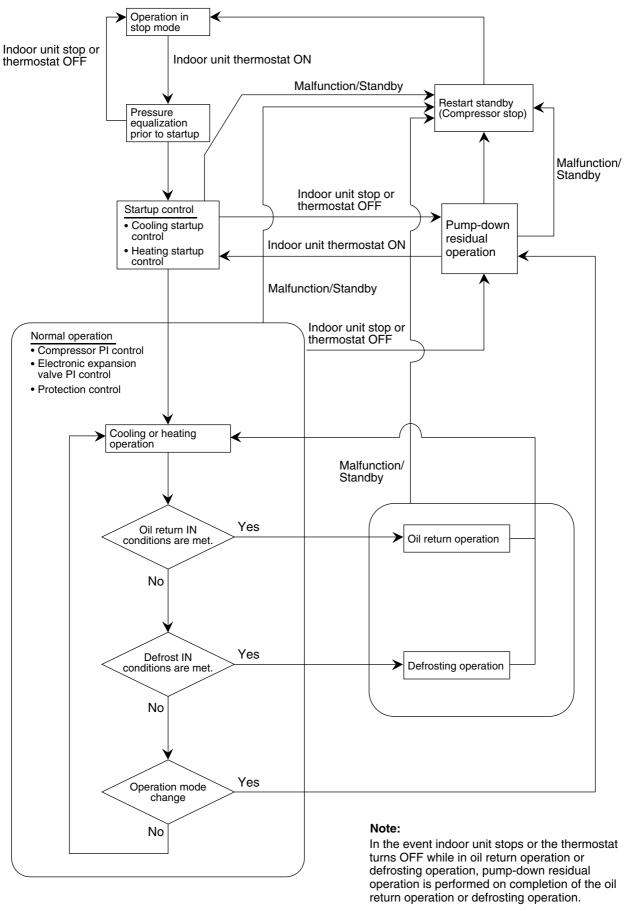


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# 1. Operation Mode



(Q0587)

58 Function

SiBE18-821 Basic Control

# 2. Basic Control

# 2.1 Normal Operation

**■** Cooling Operation

Actuator	Operation	Remarks
Compressor	Compressor PI control	Used for high pressure protection control, low pressure protection control, discharge pipe temperature protection control, and compressor operating frequency upper limit control with inverter protection control.
Outdoor unit fan	Cooling fan control	_
Four way valve	OFF	_
Main electronic expansion valve (EV1)	480 pls	_
Subcooling electronic expansion valve (EV3)	PI control	_
Hot gas bypass valve (SVP)	OFF	This valve turns on with low pressure protection control.

**■** Heating Operation

Actuator	Operation	Remarks
Compressor	Compressor PI control	Used for high pressure protection control, low pressure protection control, discharge pipe temperature protection control, and compressor operating frequency upper limit control with inverter protection control.
Outdoor unit fan	STEP 7 or 8	_
Four way valve	ON	_
Main electronic expansion valve (EV1)	PI control	_
Subcooling electronic expansion valve (EV3)	PI control	_
Hot gas bypass valve (SVP)	OFF	This valve turns on with low pressure protection control.

<sup>★</sup>Heating operation is not functional at an outdoor air temperature of 24°CDB or more.

Function 59

Basic Control SiBE18-821

## 2.2 Compressor PI Control

#### **Compressor PI Control**

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

#### [Cooling operation]

Controls compressor capacity to adjust Te to achieve target value (TeS).

#### TeS initial value

Condition	L	M (Normal) (factory setting)	Н
∆D up	3	6	9
∆D keep	12	12	12
ΔD down	12	12	13

Te : Low pressure equivalent saturation temperature (°C)

TeS: Target Te value (Varies depending on Te setting, operating frequency, etc.)

Te changes corresponding to the capacity which indoor units require the above as the initial value. (However  $-7 \le Te \le 15$ )

#### [Heating operation]

Controls compressor capacity to adjust Tc to achieve target value (TcS).

#### TcS initial value

L	M (Normal) (factory setting)	Н
43	46	49

Tc : High pressure equivalent saturation temperature (°C)

TcS: Target Tc value (Varies depending on Tc setting, operating frequency, etc.)

Tc changes corresponding to the capacity which indoor units require the above as the initial value. (However  $42 \le Tc \le 51$ )

#### RMXS112 · 140 · 160E

STn	INV(Fullload)	INV(Unload)
1		36.0Hz
2		39.0Hz
3		43.0Hz
4		47.0Hz
5		52.0Hz
6	52.0Hz	57.0Hz
7	57.0Hz	64.0Hz
8	62.0Hz	71.0Hz
9	68.0Hz	78.0Hz
10	74.0Hz	

STn	INV(Fullload)	INV(Unload)
11	80.0Hz	
12	86.0Hz	
13	92.0Hz	
14	98.0Hz	
15	104.0Hz	
16	110.0Hz	
17	116.0Hz	
18	122.0Hz	
19	128.0Hz	
20	134.0Hz	

STn	INV(Fullload)	INV(Unload)
21	140.0Hz	
22	146.0Hz	
23	152.0Hz	
24	158.0Hz	
25	164.0Hz	
26	170.0Hz	
27	175.0Hz	
28	180.0Hz	
29	185.0Hz	
30	190.0Hz	
31	195.0Hz	

Compressors may operate in a pattern other than those listed in above tables subject to the operating conditions. Selection of full load operation to/from unload operation is made with the unload circuit solenoid valve (Y3S=SVUL). The full load operation is performed with the SVUL set to OFF, while the unload operation is performed with the SVUL set to ON.

SiBE18-821 Basic Control

#### **△D Control**

Receiving the capacity request signal from the indoor unit, the outdoor unit corrects its target pressure for capacity control.

Controls  $\Delta D$  signal from indoor unit as follows.

UP control: When the UP command come from more than one indoor unit among

thermostat-ON indoor units.

Down control: When the down command come from all indoor units among thermostat-ON

indoor units.

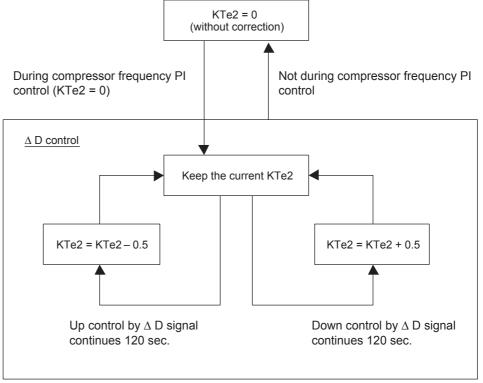
Keep control: Except for the above

About detail of  $\Delta D$  signal, refer to P78

#### **Cooling Operation**

TeS = TeS initial value + KTe2

KTe2 : Correction value by ΔD signal in cooling.



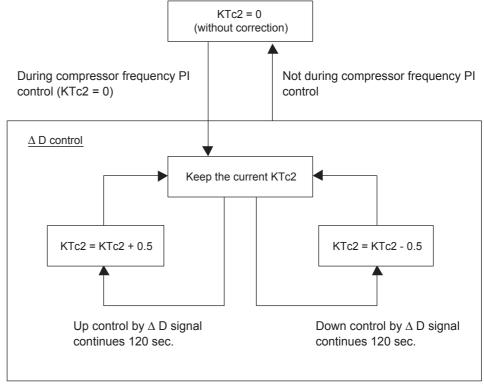
(Q0396)

Basic Control SiBE18-821

### **Heating Operation**

TcS = TcS initial value + KTc2

KTc2 : Correction value by  $\Delta D$  signal in heating.



(Q0397)

SiBE18-821 **Basic Control** 

#### **Electronic Expansion Valve PI Control** 2.3

#### **Main Electronic Expansion Valve EV1 Control**

Carries out the electronic expansion valve (Y1E) PI control to maintain the evaporator outlet superheated degree (SH) at constant during heating operation to make maximum use of the outdoor unit heat exchanger (evaporator).

SH = Ts1 - Te

SH: Evaporator outlet superheated degree (°C)

Ts1 : Suction pipe temperature detected by thermistor R3T (°C)

Te: Low pressure equivalent saturation temperature

(°C)

The optimum initial value of the evaporator outlet superheated degree is 3°C, but varies depending on the discharge pipe superheated degree of inverter compressor.

#### **Subcooling Electronic Expansion Valve EV3 Control**

Makes PI control of the electronic expansion valve (Y3E) to keep the superheated degree (SH) of the outlet gas pipe on the evaporator side for the full use of the subcooling heat exchanger. SH = Tsh -Te SH: Outlet superheated degree of evaporator (°C)

Tsh : Suction pipe temperature detected with the thermistor R6T (°C)

Te : Low pressure equivalent saturation temperature ( $^{\circ}$ C)

Basic Control SiBE18-821

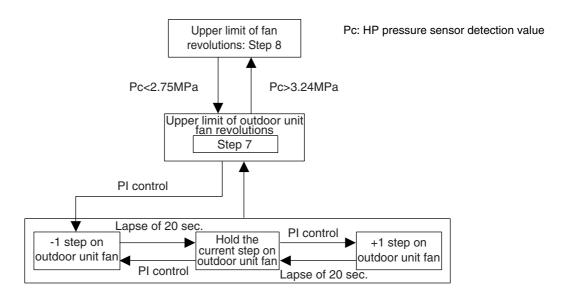
## 2.4 Cooling Operation Fan Control

In cooling operation with low outdoor air temperature, this control is used to provide the adequate amount of circulation air with liquid pressure secured by high pressure control using outdoor unit fan.

Furthermore, when outdoor temperature  $\geq 20^{\circ}C,$  the compressor will run in Step 7 or higher.

When outdoor temperature ≥ 18°C, it will run in Step 5 or higher.

When outdoor temperature ≥ 12°C, it will run in Step 1 or higher.



#### Fan Steps

Cooling	M1F	M2F
STEP0	0 rpm	0 rpm
STEP1	250 rpm	0 rpm
STEP2	400 rpm	0 rpm
STEP3	285 rpm	250 rpm
STEP4	360 rpm	325 rpm
STEP5	445 rpm	410 rpm
STEP6	580 rpm	545 rpm
STEP7	715 rpm	680 rpm
STEP8	850 rpm	815 rpm

SiBE18-821 Special Control

# 3. Special Control

## 3.1 Startup Control

This control is used to equalize the pressure in the front and back of the compressor prior to the startup of the compressor, thus reducing startup loads. Furthermore, the inverter is turned ON to charge the capacitor. In addition, to avoid stresses to the compressor due to oil return or else after the startup, the following control is made and the position of the four way valve is also determined. To position the four way valve, the master and slave units simultaneously start up.

### 3.1.1 Startup Control in Cooling Operation

√—Thermostat ON			
	Pressure equalization control	Startup control	
	prior to startup	STEP1	STEP2
Compressor	0 Hz	57 Hz Unload	57 Hz Unload +2 steps/20 sec. (until Pc - Pe>0.39MPa is achieved)
Outdoor unit fan	STEP7	Ta<20°C: OFF Ta≥20°C: STEP4	+1 step/15 sec. (when Pc>2.16MPa) -1 step/15 sec. (when Pc<1.77MPa)
Four way valve (20S1)	Holds	OFF	OFF
Main electronic expansion valve (EV1)	0 pls	480 pls	480 pls
Subcooling electronic expansion valve (EV3)	0 pls	0 pls	0 pls
Hot gas bypass valve (SVP)	OFF	OFF	OFF
Ending conditions	OR Pc - Pe<0.3MPa • A lapse of 1 to 5 min.	A lapse of 10 sec.	OR  • A lapse of 130 sec. • Pc - Pe>0.39MPa

## 3.1.2 Startup Control in Heating Operation

√—Thermostat ON			
	Pressure equalization control	Startup control	
	prior to startup	STEP1	STEP2
Compressor	0 Hz	57 Hz Unload	57 Hz Unload +2 steps/20 sec. (until Pc - Pe>0.39MPa is achieved)
Outdoor unit fan	From starting	STEP8	STEP8
Four way valve	Holds	ON	ON
Main electronic expansion valve (EV1)	0 pls	0 pls	0 pls
Subcooling electronic expansion valve (EV3)	0 pls	0 pls	0 pls
Hot gas bypass valve (SVP)	OFF	OFF	OFF
Ending conditions	OR  • Pc - Pe<0.3MPa • A lapse of 1 to 5 min.	A lapse of 10 sec.	• A lapse of 130 sec. • Pc>2.70MPa • Pc - Pe>0.39MPa

Special Control SiBE18-821

## 3.2 Oil Return Operation

Oil flown from the compressor to the side of system is collected by oil-returning operation, in case of that oil in the compressor runs down.

## 3.2.1 Oil Return Operation in Cooling Operation

#### [Conditions to start]

The cooling oil-returning operation is started referring following conditions.

- Integrated amount of displaced oil
- Timer

(After the power is turned on, integrated operating-time is 2 hours and subsequently every 8 hours.)

In addition, integrated amount of displaced oil is derived from Tc, Te, and the compressor load.

Outdoor unit actuator	Oil return preparation operation	Oil return operation	Post-oil-return operation
Compressor	Take the current step as the upper limit.  52 Hz Full load (→ Low pressure constant control)		Same as the "oil return operation" mode.
Outdoor unit fan	Fan control (Normal cooling)	Fan control (Normal cooling)	Fan control (Normal cooling)
Four way valve	OFF	OFF	OFF
Main electronic expansion valve (EV1)	480 pls	480 pls	480 pls
Subcooling electronic expansion valve (EV3)	SH control	0 pls	0 pls
Hot gas bypass valve (SVP)	OFF	OFF	OFF
Ending conditions	20 sec.	or • 3 min. • Ts - Te<5°C	• 3 min. • Pe<0.6MPa • HTdi>110°C

Indoor actuator		Cooling oil return operation
	Thermostat ON unit	Set Air Volume
Indoor unit fan	Stopping unit	OFF
	Thermostat OFF unit	Set Air Volume
55	Thermostat ON unit	SH control
BP unit electronic expansion valve	Stopping unit	77 pls
	Thermostat OFF unit	SH control

SiBE18-821 Special Control

### 3.2.2 Oil Return Operation in Heating Operation

#### [Conditions to start]

The heating oil-returning operation is started referring following conditions.

- Integrated amount of displaced oil
- Timer

(After the power is turned on, integrated operating-time is 2 hours and subsequently every 8 hours.)

In addition, integrated amount of displaced oil is derived from Tc, Te, and the compressor load.

Outdoor Unit Actuator	Oil return preparation operation	Oil return operation	Post-oil-return operation
Compressor	Upper limit control	124 Hz Full load	2-step increase from 36 Hz Unload to (Pc - Pe>0.4 MPa) every 20 sec.
Outdoor unit fan	STEP8	OFF	STEP8
Four way valve	ON	OFF	ON
Main electronic expansion valve (EV1)	SH control	480 pls	55 pls
Subcooling electronic expansion valve (EV3)	0 pls	0 pls	0 pls
Hot gas bypass valve (SVP)	OFF	OFF	OFF
Ending conditions	2 min.	or - 12 min. or - Ts1 - Te<5°C - Tb>11°C	or • 160 sec. • Pc - Pe>0.4MPa

<sup>\*</sup> From the preparing oil-returning operation to the oil-returning operation, and from the oil-returning operation to the operation after oil-returning, the compressor stops for 2 minute to reduce noise on changing of the four way valve.

Indoor actuator		Heating oil return operation
	Thermostat ON unit	OFF
Indoor unit fan	Stopping unit	OFF
	Thermostat OFF unit	OFF
DD wit alcotronic avecacion	Thermostat ON unit	SH control
BP unit electronic expansion valve	Stopping unit	80 pls
vaivo	Thermostat OFF unit	SH control

Special Control SiBE18-821

## 3.3 Defrosting Operation

The defrost operation is performed to solve frost on the outdoor unit heat exchanger when heating, and the heating capacity is recovered.

#### [Conditions to start]

The defrost operation is started referring following conditions.

- Outdoor heat exchanger heat transfer co-efficiency
- Temperature of heat-exchange (Tb)
- Low pressure equivalent saturation temperature (Te)
- Timer (2 hours at the minimum)
   In addition, outdoor heat-exchange co-efficiency is derived from Tc, Te, and the compressor load.

Outdoor unit actuator	Defrost preparation operation	Defrost operation	Post Defrost operation
Compressor	Upper limit control	124 Hz Full load	2-step increase from 36 Hz Unload to (Pc - Pe>0.4 MPa) every 20 sec.
Outdoor unit fan	STEP8	OFF	STEP8
Four way valve	ON	OFF	ON
Main electronic expansion valve (EV1)	SH control	480 pls	55 pls
Subcooling electronic expansion valve (EV3)	0 pls	0 pls	0 pls
Hot gas bypass valve (SVP)	OFF	ON	ON
Ending conditions	2 min.	or [ • 15 min. or [ • Tb>11°C • Ts1 - Te<5°C	or • 160 sec. • Pc - Pe>0.4MPa

<sup>\*</sup> From the preparing operation to the defrost operation, and from the defrost operation to the operation after defrost, the compressor stops for 2 min. to reduce noise on changing of the four way valve.

Indoor actuator		During defrost
	Thermostat ON unit	OFF
Indoor unit fan	Stopping unit	OFF
	Thermostat OFF unit	OFF
DD weit also transis averagion	Thermostat ON unit	SH control
BP unit electronic expansion valve	Stopping unit	80 pls
vaivo	Thermostat OFF unit	SH control

SiBE18-821 Special Control

## 3.4 Pump-down Residual Operation

When activating compressor, if the liquid refrigerant remains in the heat-exchanger, the liquid enters into the compressor and dilutes oil therein resulting in decrease of lubricity.

Therefore, the pump-down residual operation is performed to collect the refrigerant in the heat-exchanger when the compressor is down.

### 3.4.1 Pump-down Residual Operation in Cooling Operation

Actuator	Pump-down residual operation Step 1	Pump-down residual operation Step 2
Compressor	124 Hz Full load	52 Hz Full load
Outdoor unit fan	Fan control	Fan control
Four way valve	OFF	OFF
Main electronic expansion valve (EV1)	480 pls	240 pls
Subcooling electronic expansion valve (EV3)	0 pls	0 pls
Hot gas bypass valve (SVP)	OFF	OFF
Ending conditions	2 sec.	2 sec.

## 3.4.2 Pump-down Residual Operation in Heating Operation

Actuator	Pump-down residual operation
Compressor	124 Hz Full load
Outdoor unit fan	STEP7
Four way valve	ON
Main electronic expansion valve (EV1)	0 pls
Subcooling electronic expansion valve (EV3)	0 pls
Hot gas bypass valve (SVP)	OFF
Ending conditions	4 sec.

## 3.5 Restart Standby

Restart is stood by force to prevent frequent power-on/off and to equalize pressure in the refrigerant system.

Actuator	Operation	Remarks
Compressor	OFF	_
Outdoor unit fan	Ta>30°C: STEP4 Ta≤30°C: OFF	_
Four way valve	Keep former condition.	_
Main electronic expansion valve (EV1)	0 pls	_
Subcooling electronic expansion valve (EV3)	0 pls	
Hot gas bypass valve (SVP)	OFF	_
Ending conditions	2 min.	_

Special Control SiBE18-821

# 3.6 Stopping Operation

Operation of the actuator when the system is down, is cleared up.

## 3.6.1 When System is in Stop Mode

Actuator	Operation	
Compressor	OFF	
Outdoor unit fan	OFF	
Four way valve	Keep former condition.	
Main electronic expansion valve (EV1)	0 pls	
Subcooling electronic expansion valve (EV3)	0 pls	
Hot gas bypass valve (SVP)	OFF	
Ending conditions	Indoor unit thermostat is turned ON.	

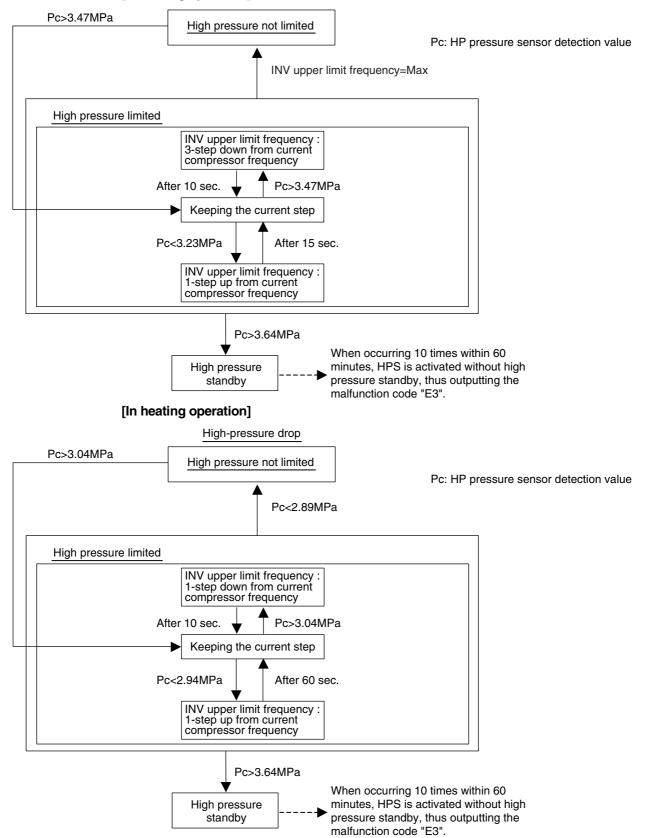
SiBE18-821 Protection Control

## 4. Protection Control

## 4.1 High Pressure Protection Control

This high pressure protection control is used to prevent the activation of protection devices due to abnormal increase of high pressure and to protect compressors against the transient increase of high pressure.

#### [In cooling operation]

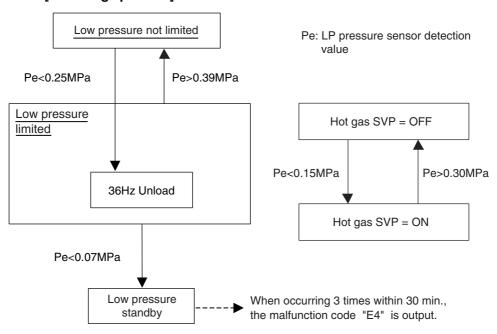


Protection Control SiBE18-821

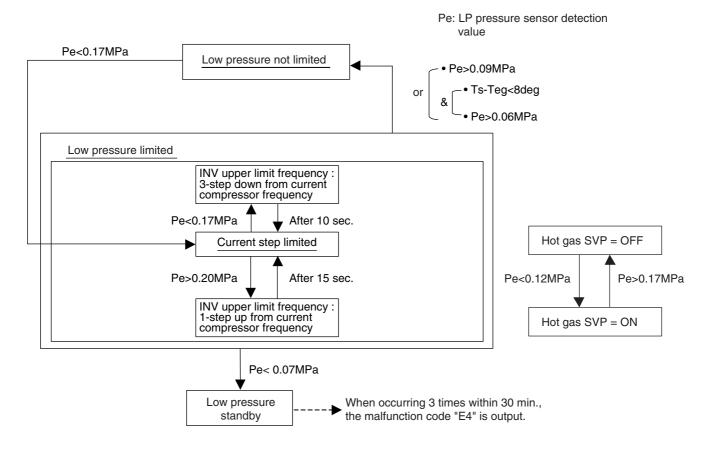
## 4.2 Low Pressure Protection Control

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

#### [In cooling operation]



#### [In heating operation]

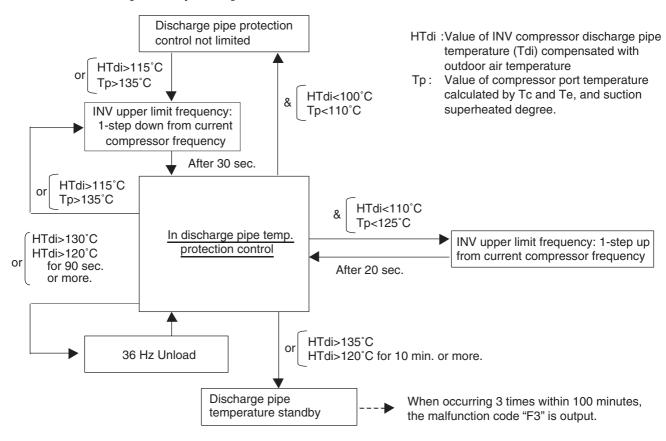


SiBE18-821 Protection Control

## 4.3 Discharge Pipe Protection Control

This discharge pipe protection control is used to protect the compressor internal temperature against a malfunction or transient increase of discharge pipe temperature.

#### [INV compressor]

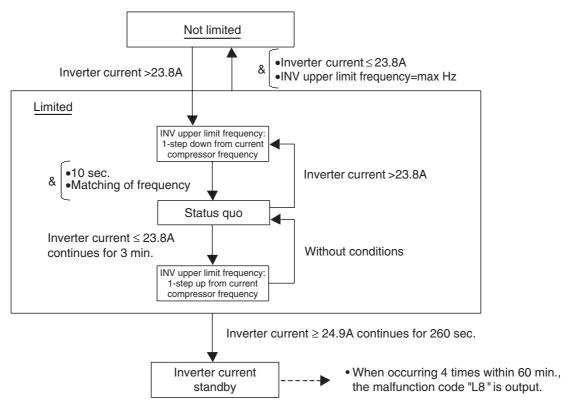


Protection Control SiBE18-821

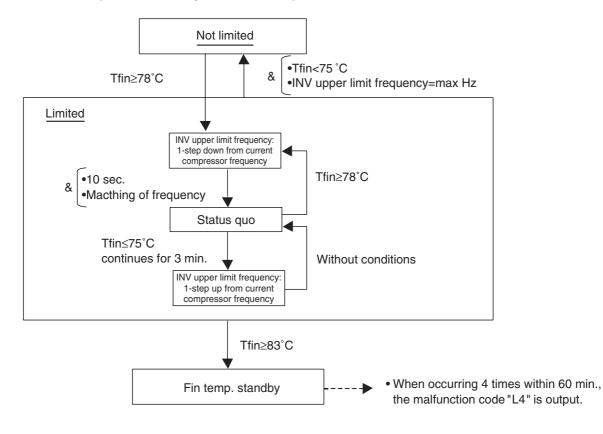
### 4.4 Inverter Protection Control

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

#### [Inverter overcurrent protection control]



#### [Inverter fin temperature control]



SiBE18-821 Protection Control

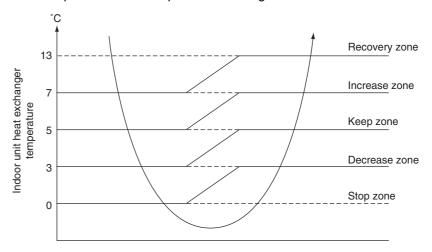
## 4.5 Freeze-up Protection Control

#### **Outline**

According to the freeze prevention status sent from the BP unit. The compressor output frequency is regulated to decrease the compressor capacity in order to prevent the indoor heat exchanger from freezing.

Detail

Zones are produced based on the freeze prevention status signal sent from the BP unit (Indoor unit), and the freeze prevention control prevents freezing of the indoor unit.



Recovery zone: Lift the control Increase zone: 1 step up/60sec.

Keep zone: Frequency is not controlled Decrease zone: 1 step down/60sec.

Stop zone: Thermostat-OFF (only the target indoor unit)

The temperature in above figure depends on models. (Reference value)

Protection Control SiBE18-821

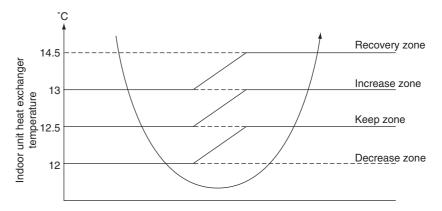
### 4.6 Dew Condensation Prevention Control

#### **Outline**

According to the dew condensation prevention status sent from the BP unit. The compressor output frequency is regulated to decrease the compressor capacity in order to prevent the indoor unit from dew condensation.

Detail

Zones are produced based on the dew condensation prevention status signal sent from the BP unit (Indoor unit), and the dew condensation prevention control prevents dew condensation of the indoor unit.



Recovery zone: Lift the control Increase zone: 1 step up/60sec. Keep zone: Frequency is not controlled

Decrease zone: 1 step down/60sec. SVG open at 52Hz

The temperature in above figure depends on models and actual room temperature. (Reference value)

SiBE18-821 Other Control

## 5. Other Control

## 5.1 **Demand Operation**

In order to save the power consumption, the capacity of outdoor unit is saved with control forcibly by using "Demand 1 Setting".

To operate the unit with this mode, additional setting of "Continuous Demand Setting" or external input by external control adaptor is required.

#### [Demand 1 setting]

Setting	Standard for upper limit of power consumption
Demand 1 setting 1	Approx. 60%
Demand 1 setting 2 (factory setting)	Approx. 70%
Demand 1 setting 3	Approx. 80%

# **5.2 Heating Operation Prohibition**

Heating operation is prohibited above 24°CDB outdoor air temperature.

BP Unit Control SiBE18-821

## 6. BP Unit Control

### 6.1 BP Unit Command Conversion

1.  $\Delta D$  (room temperature – temperature setting) signals from BP units are converted to capacity up / down signal.

 $\Delta D$  signals from BP units are used as the capacity up / down signal in frequency commands (excludes when Powerful function is in operation).

∆D Signal	Capacity up / down signal	
0	Thermostat OFF	
1	Down	
2	DOWII	
3	Keep	
4	Кеер	
5		
6		
7		
8		
9		
Α	Up	
В		
С		
D		
E		
F		

#### 2. Processing during Powerful operation mode

- (1) When Powerful command is received from indoor units (one or more units)
- (2) Thermostats are not OFF in room units from which Powerful commands are issued

When the above conditions are met, the Powerful operation mode is activated, and the Powerful operation signal is sent to outdoor unit.

SiBE18-821 BP Unit Control

## 6.2 BP Unit Electronic Expansion Valve Control

#### Purpose of the Function

This function provides instructions regarding the absolute flow rate, relative flow rate and fully closing from the outdoor unit to the BP unit in order to ensure outdoor unit compressor safety and optimum refrigerating cycle of the system.

With the transmission a permit/prohibit flag for each distribution control in the BP unit, the distribution control startup timing is controlled by the outdoor unit.

### 6.2.1 Electronic Expansion Valve Initial Opening Setting

#### **Outline**

This function improves stability of the system to set initial opening of electronic expansion valve at starting operation.

When the EV opening command from outdoor unit is lifted, the following opening setting is performed.

# **During Cooling Operation**

Target EV opening =  $2.5 \times (DA - 14) + P5 - KEVOPC \times (DOA - DA)$  pls DA: room temperature, DOA: outdoor air temperature

P5: KEVOPC:

Indoor unit capacity	P5
2.0 to 3.5 kW class	140
5.0 kW class	156
6.0, 7.1 kW class	170

	KEVOPC
DOA≤DA	0
DA <doa< td=""><td>2.5</td></doa<>	2.5

# During Heating Operation

Target EV opening = 350 pls

### 6.2.2 Electronic Expansion Valve Flow Rate Restriction

This function prevents the deviation from the electronic expansion valve specification range by restricting the electronic expansion valve flow rates of the operating and non-operating room units during compressor operation. It also prevents the generation of abnormal noise such as refrigerant flowing sound by restricting the circulation of refrigerant according to the operating conditions (unit ON/OFF) of room units.

#### **Outline**

Restriction of electronic expansion valve opening degrees of operating room units;

... Restriction of maximum and minimum flow rates based on constant

Restriction of electronic expansion valve opening degrees of non-heating room units;

- ... Restriction of minimum flow rate based on constant
- ... Maximum flow rate determined based on flow rates of operating room units

BP Unit Control SiBE18-821

### 6.2.3 Full Closing of Electronic Expansion Valves

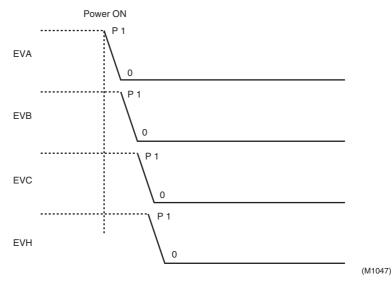
#### Purpose of the Function

The electronic expansion valves are initialized when the power is turned on.

#### **Details**

The following processes are conducted.

- 1. Conducts P1 pulses close when power is turned on, and sets current opening to 0 pulse (fully closing process).
- 2. Sends electronic expansion valve initialization signal to outdoor unit.
- 3. Closes the electronic expansion valve of each chamber (sets the electronic expansion valve pulse to 0).
- 4. Stops transmission of electronic expansion valve initialization signal when EVH retightening is completed.



### 6.2.4 Control Based on EV Opening Command from Outdoor Unit

### Purpose of the Function

This function operates the electronic expansion valve based on EV opening command sent from the outdoor unit.

#### **Outline**

The electronic expansion valve operation based on EV opening command provides the following functions.

- 1) Pressure equalization prior to startup
- 2) Startup control
- 3) Restart standby
- 4) Pump-down residual operation
- 5) Oil return operation
- 6) Defrost operation

SiBE18-821 BP Unit Control

## 6.3 SH Control in Cooling Operation

Purpose of the Function

This function ensures appropriate refrigerant distribution when many room units are operating in the cooling mode.

#### **Outline**

The heat exchanger temperatures and gas pipe temperatures of operating room units are detected by the gas pipe thermistors, and the electronic expansion valves' flow rates are corrected so as to adjust the difference between heat exchanger temperature and gas pipe temperature of each room unit (hereafter referred to as SH) close to the target values.

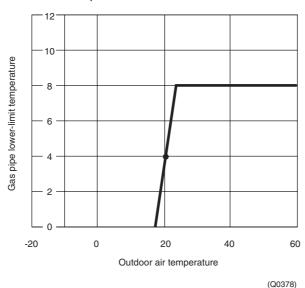
When SH is higher than target value  $\rightarrow$  Opens the valve of that room unit When SH is lower than target value  $\rightarrow$  Closes the valve of that room unit

When the liquid pipe temperature is lower than the heat exchanger temperature, the electronic expansion valve is opened more than normal opening. (Protection function to prevent rotor dew condensation)

The gas pipe temperature and indoor heat exchanger temperature are detected at the time of every sampling time of 40 sec for the cooling SH control.

In order to prevent dew condensation in connection pipe, gas pipe lower-limit temperature is set as follows.

Gas pipe lower-limit temperature =  $\frac{240}{256}$  × DOA - 17 (however 8°C or lower) DOA:Outdoor air temperature



Outdoor Temperature	Gas Pipe Lower-Limit Temperature
-5	-22
0	-17
5	-12
10	-6
15	-1
20	4
25	8
30	8
35	8
40	8
45	8

BP Unit Control SiBE18-821



1. In Sky Air models, the indoor units are equipped with distribution capillary tubes; therefore, the heat exchangers may superheat even when the condition is met.

2. In Sky Air models, the heat exchanger intermediate position is provided on the liquid connection pipe side; as a result, superheated condition is difficult to detect.

## 6.4 SC Control in Heating Operation

#### Purpose of the Function

This function ensures appropriate refrigerant distribution when many room units are operating in the heating mode.

#### **Outline**

The heat exchanger temperatures and liquid pipe temperatures of operating room units are detected by the liquid pipe thermistors, and the electronic expansion valves' flow rates are corrected so as to adjust the difference between heat exchanger temperature and liquid pipe temperature of each room unit (hereafter referred to as SC) close to the target values.

When SC is higher than target value  $\rightarrow$  Opens the valve of that room unit When SC is lower than target value  $\rightarrow$  Closes the valve of that room unit

The liquid pipe temperature and indoor heat exchanger temperature are detected at the time of every sampling time of 20 sec for the heating SC control.

## 6.5 Heat Exchanger Isothermal Control in Heating Operation

#### Purpose of the Function

This function ensures appropriate refrigerant distribution when room units are operating in the heating mode.

It prevents abnormal increase of the high pressure and operation with gas shortage due to uneven refrigerant distribution (Protection function).

#### **Outline**

The indoor unit heat exchanger thermistors (of all connected indoor units to the same BP unit including non-operating room units) in heating operation are detected. Then, the highest heat exchanger temperature is compared with the heat exchanger temperature of each room unit. If the temperature difference exceeds the predetermined value, it is judged that indoor unit heat exchanger thermistor position in subcooled zone, and the electronic expansion valves of room units with the temperature difference exceeding the predetermined level is opened to return to the saturation zone.

Since this is a protection function, it is effective for all connected room units in heating operation excluding those in defrosting operation. This function is inactive in room units with transmission problems.

#### **Details**

The heat exchanger temperature is detected at every sampling time of 20 sec of the heat exchanger isothermal control, and maximum value of each heat exchanger temperature is obtained.

If the temperature difference between the heat exchanger temperature and maximum heat exchanger temperature value exceeds 8°C, it is judged that the heat exchanger intermediate is in the subcooled zone, and the electronic expansion valve is opened.

## 7. Indoor Unit (RA Models)

# 7.1 Power-Airflow Dual Flaps, Wide Angle Louvers and Auto-Swing

# Power-airflow Dual Flaps

The large flaps send a large volume of air downwards to the floor. The flap provides an optimum control area in cooling, heating and dry mode.

#### **Heating Mode**

During heating mode, the large flap enables direct warm air straight downwards. The flap presses the warm air above the floor to reach the entire room.

#### **Cooling Mode**

During cooling mode, the flap retracts into the indoor unit. Then, cool air can be blown far and pervaded all over the room.

# Wide-Angle Louvers

The louvres, made of elastic synthetic resin, provide a wide range of airflow that guarantees a comfortable air distribution.

#### **Auto-Swing**

#### In case of FTXS20-50G

The following table explains the auto swing process for heating, cooling, dry and fan:

Vertical Swing (up and down)			Horizontal Swing (right and left: manual)
Cooling / Dry	Cooling / Dry Heating Fan		(right and left: manual)
15' 30' 55' (R8278)	30° — 30° — 65° — (R8279)	5°	(R8281)

#### 3-D Airflow

#### FTXS60/71F

- Alternative repetition of vertical and horizontal swing motions enables uniform airconditioning of the entire room. This function is effective for starting the air conditioner.
- When the horizontal swing and vertical swing are both set to auto mode, the airflow become 3-D airflow and the horizontal swing and vertical swing motions are alternated. The order of swing motion is such that it turns counterclockwise, starting from the right upper point as viewed to the front side of the indoor unit.



Indoor Unit (RA Models) SiBE18-821

# COMFORT AIRFLOW Mode

#### FTXS20-50G

The vertical swing flap is controlled not to blow the air directly on the person in the room.

■ The airflow rate is controlled automatically within the following steps. Cooling: L tap − MH tap (same as AUTOMATIC)

Heating: Equivalent to ML tap − MH tap

The latest command has the priority between POWERFUL and COMFORT AIRFLOW.

Heating	Cooling	
	5°	
80° (R8413)	(R4302)	

## 7.2 Fan Speed Control for Indoor Units

#### **Control Mode**

The airflow rate can be automatically controlled depending on the difference between the set temperature and the room temperature. This is done through phase control and Hall IC control.



For more information about Hall IC, refer to the troubleshooting for fan motor on page 268.

#### **Phase Steps**

Phase control and fan speed control contains 9 steps: LLL, LL, SL, L, ML, M, MH, H and HH. In automatic operation, the step "SL" is not available.

	FTXS20-50G FVXS25-50F		FTXS60/71F		FDXS25-35E FDXS50-60C FLXS25-60B	
Step	Cooling	Heating	Cooling	Heating	Cooling	Heating
LLL L ML M MH	(R6035)	(R6036)	(R6037)	(R6036)	(R6037)	(R6036)
HH (Powerful)	(FTXS20-50G) H+40 (FVXS25-50F)	H+40 (FVXS25- 50F)	H+90	H+90	H+50	H+50

= Within this range the airflow rate is automatically controlled when the FAN setting button is set to automatic.



- 1. Fan stops during defrost operation.
- 2. In time of thermostat OFF, the fan rotates at the following speed.

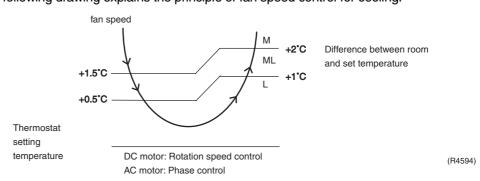
Cooling: The fan keeps rotating at the set tap.

Heating: The fan keeps rotating at LLL tap (FTXS, FVXS series) or stops (the other models).

Automatic Airflow Control for Heating On heating mode, the indoor fan speed will be regulated according to the indoor heat exchanger temperature and the difference between the room temperature and the required set point.

Automatic
Airflow Control
for Cooling

The following drawing explains the principle of fan speed control for cooling:



Indoor Unit (RA Models) SiBE18-821

## 7.3 Programme Dry Function

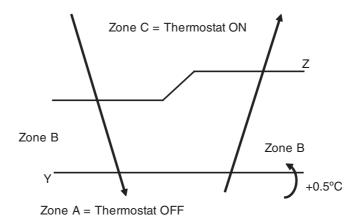
Programme dry function removes humidity while preventing the room temperature from lowering.

Since the microcomputer controls both the temperature and airflow volume, the temperature adjustment and fan adjustment buttons are inoperable in this mode.

# In Case of Inverter Units

The microcomputer automatically sets the temperature and fan settings. The difference between the room temperature at startup and the temperature set by the microcomputer is divided into two zones. Then, the unit operates in the dry mode with an appropriate capacity for each zone to maintain the temperature and humidity at a comfortable level.

Room temperature at startup	Set temperature X	Thermostat OFF point Y	Thermostat ON point Z
24°C or more	Room temperature at	X – 2.5°C	X – 0.5°C or Y + 0.5°C (zone B) continues for 10 min.
23.5°C	startup		X – 0.5°C
· ·		X – 2.0°C	or Y + 0.5°C (zone B) continues for 10 min.
18°C			continues for 10 min.
17.5°C ≀	18°C	X – 2.0°C	X - 0.5°C = 17.5°C or Y + 0.5°C (zone B) continues for 10 min.



(R6841)

SiBE18-821 Indoor Unit (RA Models)

## 7.4 Automatic Operation

#### **Automatic Cooling / Heating Function (Heat Pump Only)**

When the AUTO mode is selected with the remote controller, the microcomputer automatically determines the operation mode from cooling and heating according to the room temperature and setting temperature at the time of the operation startup, and automatically operates in that mode.

The unit automatically switches the operation mode to cooling or heating to maintain the room temperature at the main unit setting temperature.

#### Detailed Explanation of the Function

- 1. Remote controller setting temperature is set as automatic cooling / heating setting temperature (18 to 30°C).
- 2. Main unit setting temperature equals remote controller setting temperature plus correction value (correction value / cooling: 0 deg, heating: 2 deg.).
- 3. Operation ON / OFF point and mode switching point are as follows.
  - Heating → Cooling switching point:

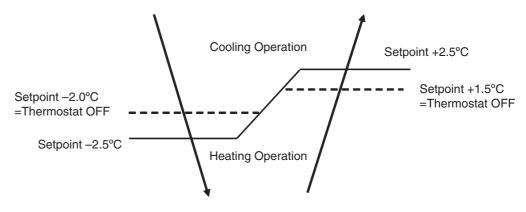
Room temperature ≥ Main unit setting temperature +2.5 deg.

(2) Cooling → Heating switching point:

Room temperature < Main unit setting temperature -2.5 deg.

- 4. During initial operation

Room temperature ≥ Remote controller setting temperature: Cooling operation Room temperature < Remote controller setting temperature: Heating operation



(R6842)

Ex: When the set point is 25°C

Cooling Operation  $\rightarrow$  23°C: Thermostat OFF  $\rightarrow$  22°C: Switch to Heating Operation Heating Operation  $\rightarrow$  26.5°C: Thermostat OFF  $\rightarrow$  27.5°C: Switch to Cooling Operation

Indoor Unit (RA Models) SiBE18-821

#### 7.5 **Thermostat Control**

Thermostat control is based on the difference between the room temperature and the setpoint.

#### **Thermostat OFF Condition**

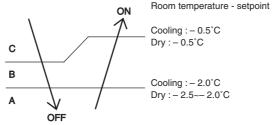
• The temperature difference is in the zone A.

#### **Thermostat ON Condition**

- The temperature difference is above the zone C after being in the zone A.
- The system resumes from defrost control in any zones except A.
- The operation turns on in any zones except A.
- The monitoring time has passed while the temperature difference is in the zone B. (Cooling / Dry: 10 minutes, Heating: 10 seconds)

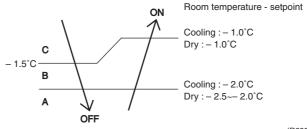
#### Cooling / Dry

- Wall Mounted Type
- Floor standing Type



(R4668)

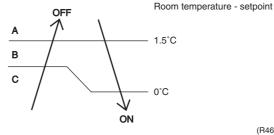
- Floor/Ceiling suspended Type
- **Duct Connected Type**



(R6032)

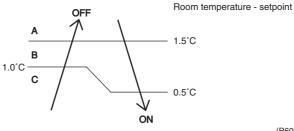
#### Heating

- Wall Mounted Type
- Floor standing Type



(R4669)

- Floor/Ceiling suspended Type
- **Duct Connected Type**



(R6033)

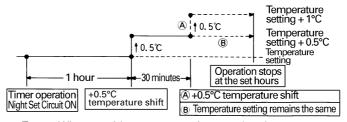
## 7.6 Night Set Mode

When the OFF timer is set, the Night Set circuit automatically activates. The Night Set circuit maintains the airflow setting made by users.

# The Night Set Circuit

The Night Set circuit continues heating or cooling the room at the set temperature for the first one hour, then automatically raises the temperature setting slightly in the case of cooling, or lowers it slightly in the case of heating, for economical operations. This prevents excessive heating in winter and excessive cooling in summer to ensure comfortable sleeping conditions, and also conserves electricity.

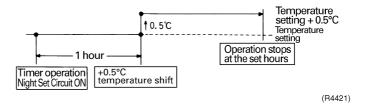
# Cooling Operation



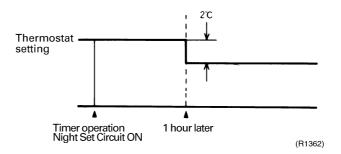
- When outside temperature is normal and room temperature is at set temperature.
- : When outside temperature is high (27°C or higher).

(R1361)

In case of FTXS20-50G, FVXS25-50F the temperature rises once.



# Heating Operation



Indoor Unit (RA Models) SiBE18-821

### 7.7 ECONO Mode

#### **Outline**

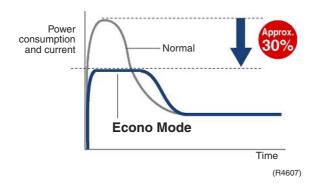
#### FTXS20-50G, FVXS25-50F

The "ECONO mode" reduces the maximum operating current and power consumption by approx. 30% during start up etc..

This mode is particularly convenient for energy-saving-oriented users. It is also a major bonus for those whose breaker capacities do not allow the use of multiple electrical devices and air conditioners.

It is easily activated from the wireless remote controller by pushing the ECONO button.

- When this function is ON, the maximum capacity is also down. (Approx. 20%)
- This function can only be set when the unit is running. Pressing the operation stop button causes the settings to be canceled.
- This function and POWERFUL operation cannot be used at the same time. The latest command has the priority.



#### **Details**

- ECONO mode can be activated while the unit is running. The remote controller can send the ECONO command when the unit is in COOL, HEAT, DRY, or AUTO operation.
- When the ECONO command is valid, the upper limit of frequency is restricted.

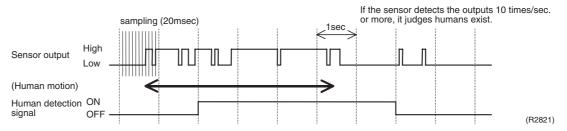
SiBE18-821 Indoor Unit (RA Models)

## 7.8 INTELLIGENT EYE (FTXS-F)

This is the function that detects existence of humans in the room by a human motion sensor (INTELLIGENT EYE) and reduces the capacity when there is no human in the room in order to save electricity.

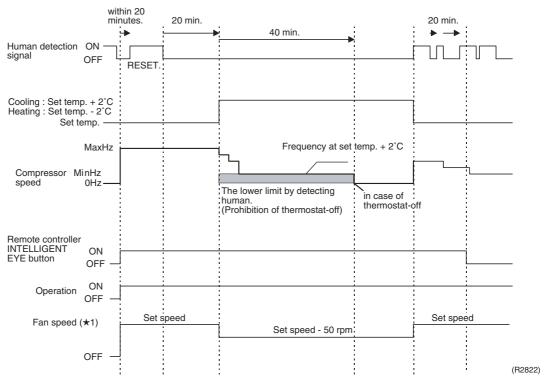
#### **Processing**

#### 1. Detection method by INTELLIGENT EYE



- This sensor detects human motion by receiving infrared rays and displays the pulse wave output.
- A microcomputer in an indoor unit carries out a sampling every 20 msec. and if it detects 10 cycles of the wave in one second in total (corresponding to 20msec.× 10 = 200msec.), it judges human is in the room as the motion signal is ON.

#### 2. The motions (for example: in cooling)



- When a microcomputer doesn't have a signal from the sensor in 20 minutes, it judges that nobody is in the room and operates the unit in temperature shifted 2°C from the set temperature. (Cooling/Dry: 2°C higher, Heating: 2°C lower and Auto: according to the operation mode at that time.)
- ★1 In case of Fan mode, the fan speed reduces by 50 rpm.

Indoor Unit (RA Models) SiBE18-821

■ Since the set temperature is shifted by 2°C higher for 40 minutes, compressor speed becomes low and can realize energy saving operation. But as thermostat is prone to be off by the fact that the set temperature has been shifted, the thermostat-off action is prohibited in 40 minutes so as to prevent this phenomena.

After this 40 minutes, the prohibition of the thermostat-off is cancelled and it can realize the conditions to conduct thermostat-off depending on the room temperature. In or after this 40 minutes, if the sensor detects human motion detection signal, it let the set temperature and the fan speed return to the original set point, keeping a normal operation.

#### **Others**

■ The dry operation can't command the setting temperature with a remote controller, but internally the set temperature is shifted by 1°C.

SiBE18-821 Indoor Unit (RA Models)

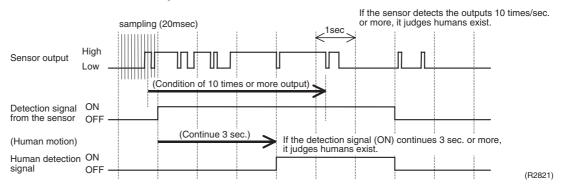
## 7.9 2 AREA INTELLIGENT EYE (FTXS-G)

The following functions can be performed by a human motion sensor (INTELLIGENT EYE).

- 1. Reduces the capacity when there is no human in the room in order to save electricity. (energy saving operation)
- Divides the room into plural areas and detects existence of humans in each area.Shifts the airflow direction to the area having no human automatically to avoid direct airflow on humans.

#### **Processing**

#### 1. Detection method by INTELLIGENT EYE



- This sensor detects human motion by receiving infrared rays and displays the pulse wave output.
- A microcomputer in an indoor unit carries out a sampling every 20 msec. and if it detects 10 cycles of the wave in one second in total (corresponding to 20msec.× 10 = 200msec.), and when the ON signal continues 3 sec., it judges human is in the room as the motion signal is ON
- INTELLIGENT EYE sensor is divided into 2 areas and detects humans in each area.

■ Image of 2 AREA INTELLIGENT EYE

Indoor unit Top view

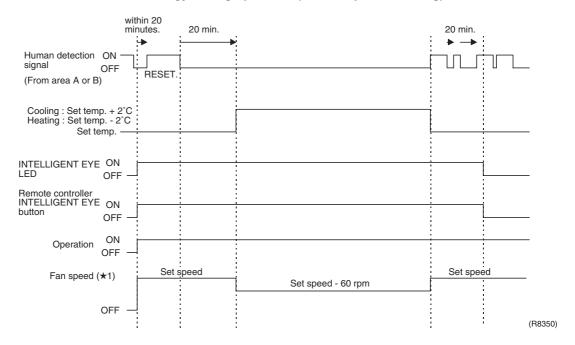
Area B Area A

 $\cdot$  A microcomputer judges human existence in area A and B by the sensor signal from each

(R3854)

Indoor Unit (RA Models) SiBE18-821

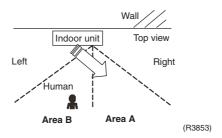
#### 2. The motions in energy saving operation (for example: in cooling)



- When a microcomputer doesn't have a signal from the sensor in 20 minutes, it judges that nobody is in the room and operates the unit in temperature shifted 2°C from the set temperature. (Cooling/Dry: 2°C higher, Heating: 2°C lower and AUTO: according to the operation mode at that time.)
- ★1 In case of FAN mode, the fan speed reduces by 60 rpm.

#### 3. Airflow direction in 2 AREA INTELLIGENT EYE operation

Detection method: The opposite area of detected area is set as the target direction.



- 1. Detection signal ON in both area A and B: Shift the airflow direction to area B (left side)
- 2. Detection signal ON in area A: Shift the airflow direction to area B (left side)
- 3. Detection signal ON in area B: Shift the airflow direction to area A (right side)
- 4. Detection signal OFF in both area A and B: No change

#### **Others**

The dry operation can't command the setting temperature with a remote controller, but internally the set temperature is shifted by 1°C.

<sup>\*</sup> When the detection signal OFF in both area A and B, the unit starts energy saving operation.

## 7.10 HOME LEAVE Operation

#### **Outline**

In order to respond to the customer's need for immediate heating and cooling of the room after returning home or for house care, a measure to switch the temperature and air volume from that for normal time over to outing time by one touch is provided. (This function responds also to the need for keeping up with weak cooling or heating.)

This time, we seek for simplicity of operation by providing the special temperature and air volume control for outing to be set by the exclusive button.

# Detail of the Control

#### Start of Function

The function starts when the [HOME LEAVE] button is pressed in cooling mode or heating mode (including stopping and powerful operation). If this button is pressed while the operation is stopped, the function becomes effective when the operation is started. If this button is pressed in powerful operation, the powerful operation is reset and this function becomes effective.

■ The [HOME LEAVE] button is ineffective in dry mode and fan mode.

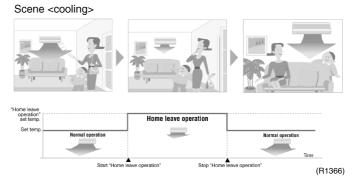
#### 2. Details of Function

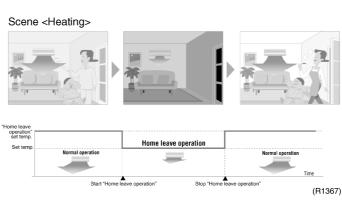
A mark representing [HOME LEAVE] is indicated on the liquid crystal display of the remote controller. The indoor unit is operated according to the set temperature and air volume for HOME LEAVE which were pre-set in the memory of the remote controller.

The LED (Red) of indoor unit representing [HOME LEAVE] lights up. (It goes out when the operation is stopped.)

#### 3. End of Function

The function ends when the [HOME LEAVE] button is pressed again during [HOME LEAVE] operation or when the powerful operation button is pressed.





Indoor Unit (RA Models) SiBE18-821

#### **Others**

The set temperature and set air volume are memorized in the remote controller. When the remote controller is reset due to replacement of battery, it is necessary to set the temperature and air volume again for [HOME LEAVE].

## 7.11 Inverter POWERFUL Operation

#### **Outline**

In order to exploit the cooling and heating capacity to full extent, operate the air conditioner by increasing the indoor fan rotating speed and the compressor frequency.

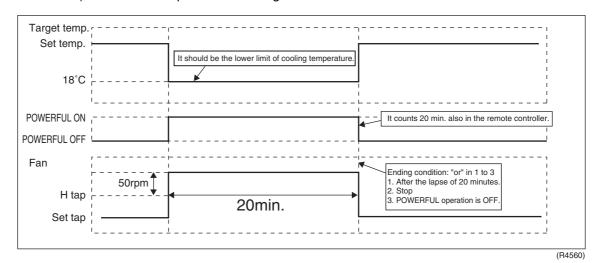
# Details of the Control

When POWERFUL button is pushed in each operation mode, the fan speed / setting temperature will be converted to the following states in a period of 20 minutes.

#### In case of FTXS20-50G

Operation mode	Fan speed	Target set temperature	
COOL	H tap + 50 rpm	18°C	
DRY	DRY Dry rotating speed + Norm temp operation		
HEAT	H tap + 50 rpm	30°C	
FAN	H tap + 50 rpm	_	
AUTO	Same as cooling / heating in POWERFUL operation	The target is kept unchanged	

#### Ex.): POWERFUL operation in cooling mode.



Indoor Unit (RA Models) SiBE18-821

#### 7.12 Other Functions

#### 7.12.1 Hot Start Function

#### **Heat Pump Only**

In order to prevent the cold air blast that normally comes when heating is started, the temperature of the heat exchanger of the indoor unit is detected, and either the airflow is stopped or is made very weak thereby carrying out comfortable heating of the room. \*The cold air blast is also prevented using a similar control when the defrosting operation is started or when the thermostat gets turned ON.

#### 7.12.2 Signal Receiving Sign

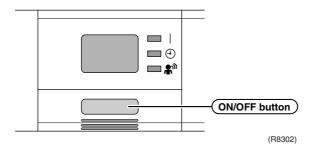
When the indoor unit receives a signal from the remote controller, the unit emits a signal receiving sound.

#### 7.12.3 ON/OFF Button on Indoor Unit

An ON/OFF button is provided on the front panel of the unit. Use this button when the remote controller is missing or if its battery has run out.

Every press of the button switches from ON to OFF or from OFF to ON.

#### In case of FTXS20-50G



- Push this button once to start operation. Push once again to stop it.
- This button is useful when the remote controller is missing.
- The operation mode refers to the following table.

	Mode	Temperature setting	Airflow rate
Cooling Only	COOL	22°C	AUTO
Heat Pump	AUTO	25°C	AUTO

<sup>■</sup> In the case of multi system operation, there are times when the unit does not activate with this button.

#### 7.12.4 Titanium Apatite Photocatalytic Air-Purifying Filter

#### FTXS20-50G, FTXS60/71F, FVXS25-50F

This filter combines the Air Purifying Filter and Titanium Apatite Photocatalytic Deodorizing Filter in a single highly effective unit. The filter traps microscopic particles, decompose odours and even deactivates bacteria and viruses. It lasts for three years without replacement if washed about once every six months.

SiBE18-821 Indoor Unit (RA Models)

#### 7.12.5 Photocatalytic Deodorizing Filter

#### FLXS25-60B

Photocatalytic Deodorizing Filter demonstrates powerful oxidation characteristics when subjected to harmless ultraviolet light. Photocatalytic deodorizing power is recovered simply by exposing the filter to the sun for 6 hours once every 6 months.

#### 7.12.6 Air-Purifying Filter

#### FLXS25-60B

A double structure made up of a bacteriostatic filter and an Air-Purifying Filter traps dust, mildew, mites, tobacco smoke, and allergy-causing pollen. Replace the Air-Purifying Filter once every 3 months.

#### 7.12.7 Mold Proof Air Filter (Prefilter)

#### All indoor units

The filter net is treated with mold resisting agent TBZ (harmless, colorless, and odorless). Due to this treatment, the amount of mold growth is much smaller than that of normal filters.

#### 7.12.8 Self-Diagnosis Digital Display

The microcomputer continuously monitors main operating conditions of the indoor unit, outdoor unit and the entire system. When an abnormality occur, the LCD remote controller displays error code. These indications allow prompt maintenance operations.

#### 7.12.9 Auto-restart Function

Even if a power failure (including one for just a moment) occurs during the operation, the operation restarts in the condition before power failure automatically when power is restored. (Note) It takes 3 minutes to restart the operation because the 3-minute standby function is activated.

#### 7.12.10WEEKLY TIMER Operation

Up to 4 timer settings can be saved for each day of the week (up to 28 settings in total). Those 3 items of "ON / OFF", "temperature" and "time" can be set.

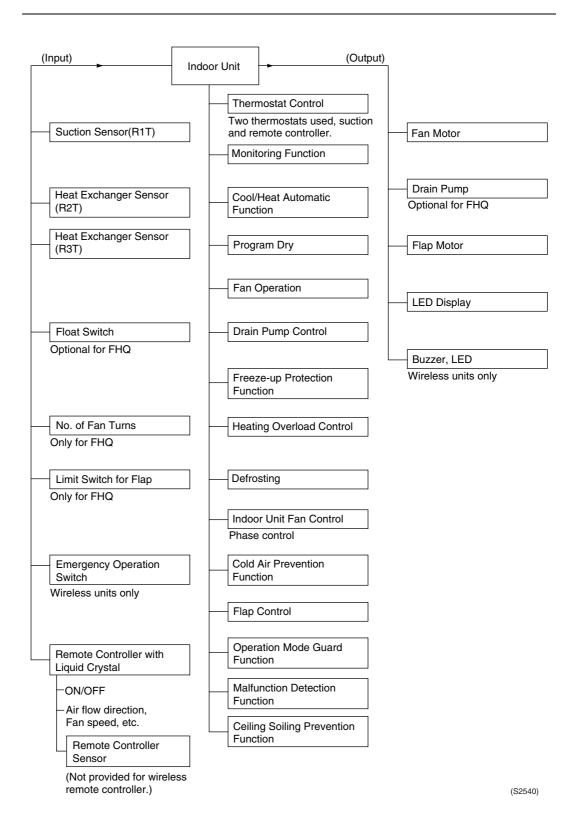


Refer to "WEEKLY TIMER Operation" on page 215 for detail.

# 8. Indoor Unit (SkyAir Models)

### 8.1 Function Outline

FFQ-B, FHQ-B



## 8.2 Electric Function Parts

#### FFQ - B8V1B

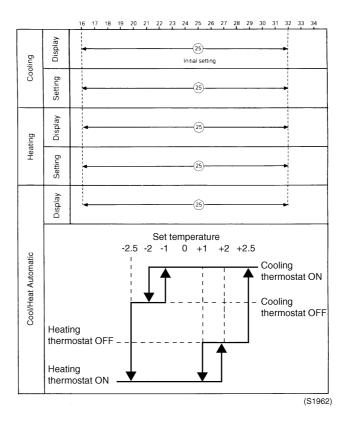
	Capacity	25	35	50	60	Remarks
Wired remote controlle		BRC1C517				
Wireless remote	Heat pump		BRC7EA530W			Optional
controller	Cooling only		Accessory			
Electronic control unit						
Fan motor		[3P104408-1] 4P 55W				
Fan motor capacitor						
Float switch	[4	В				
Drain pump		[3P103 PLD-122	3929-1] 30DM-17			

#### FHQ - BVV1B

	Capacity	35	50	60	Remarks	
Wired remote controller		BRC1D528			Optional Accessory	
Wireless remote	Heat pump	BRC7EA63W			Optional	
controller	Cooling only	BRC7EA66			Accessory	
Electronic Control Unit		[2P095007-7] EC0606				
Fan Motor		[3PN04213-1] 4P 62W				
Fan Motor Capacitor		3.0μF 440VAC				
Swing Motor		[3PN04208-1]				

#### 8.3 Function Details

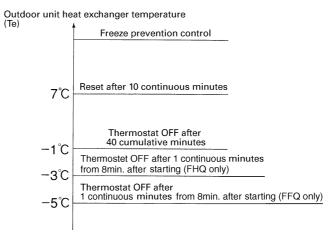
# Thermostat Control



#### Freeze-up Protection Control

The thermostat turns OFF under the following temperature conditions to prevent freezing of the indoor unit heat exchanger.

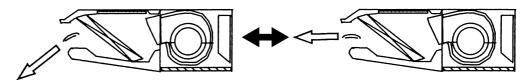
- The motorized valve is controlled to maintain the indoor unit heat exchanger temperature (Te) above 0°C.
- The outdoor unit fan speed is reduced to prevent freeze-up protection control from activating during cooling operation under low outside air temperature. (For details, see the section on cooling operation under low outside air temperature.)



(S1116)

#### Condensation Avoidance Control (FHQ Only)

Continuous 30 minutes operation of cooling One hour drying



After continuous 30 minutes of operation with downward horizontal blade position, change the blade position to level, and after one hour, the unit operation can be reset.

The unit operation can be reset with changing operation mode into "heating", changing air flow direction or turning "ON" or "OFF" the unit operation.

(S1117)



- 1. Regardless of thermostat ON or OFF, the control can be functioned with the operation mode of "cooling (automatic cooling)" or "programmed drying".
- 2. The function is not provided for models other than FHQ models.

# Outdoor Unit Identification Function

If the indoor unit is for both a heat pump and cooling only type, this function differentiates whether the outdoor unit is functioning as a heat pump or cooling only unit, and automatically decides the which operation modes can be set.

■ Operation modes which can be set Heat pump: Fan / cool / dry / auto / heat

#### **Drain Pump Control FFQ and FHQ (OPTION)**

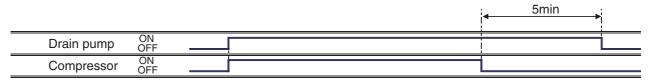
Time A shown in below diagram (Period from occurrence of drain water level abnormality to compressor stop)

	A [sec]
FHQ	10
Other than FHQ	0

#### 1 Cooling and dry operation

#### 1-1 Basic operation

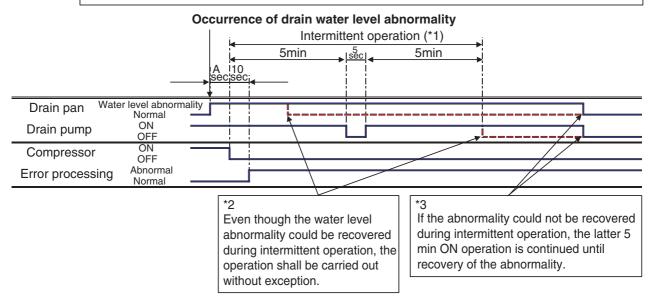
For cooling or dry operation mode, drain pump is turned ON on compressor starting while turned OFF when residual operation for 5 minutes is complete after compressor stopped.



#### 1-2 Operations when an occurrence of water level abnormality

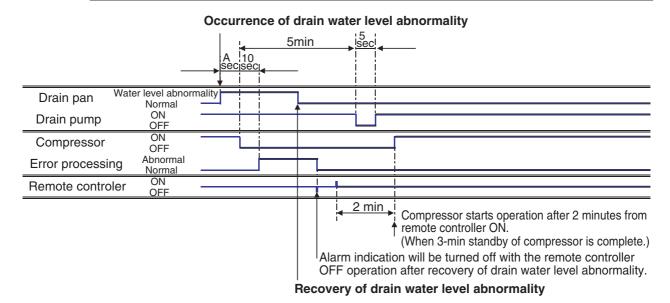
#### 1-2-a) Behavior between occurrence and recovery of water level abnormality

After compressor stops due to water level abnormality, drain pump is operated intermittently, i.e. 5 min ON, 5 sec OFF and 5 min ON. (\*1) The intermittent operation is executed regardless of recovery of water level abnormality during the intermittent operation. (\*2) When the water level abnormality can not be recovered, the latter 5 min ON operation is continued until recovery of the abnormality. (\*3)



#### 1-2-b) Behavior when the unit restarts by remote controller after the water level abnormality is recovered

Water level abnormality shall be cancelled simultaneausly when the unit is turned off with remote controller after recovery of the water level abnormality. When the unit is turned on with remote controller thereafter, compressor starts operation 2 minutes later from the remote controller ON. (Below diagram shows an example of the case that the water level abnormality is recovered during the former 5 min intermittent operation.)



Note: (1 On the whole of cooling and dry operation)

Recovery operation for drain water level abnormality does not activate when the water level can be returned normal within A + 10 seconds.

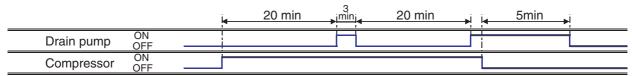
#### 2. Heating

#### 2-1 Basic operation

In heating operation of the unit equipped with a humidifier, when "Interlocking of drain pump / humidifier" (15(25)-3) is set to "yes" (02), the drain pump operates 20-min OFF and 3-min ON repeatedly during compressor is in operation.

After compressor stops, residual operation will be conducted for 5 minutes.

#### 2-1-1 When compressor stops during drain pump ON after compressor operation started



#### 2-1-2 When compressor stops during drain pump OFF after compressor operation started



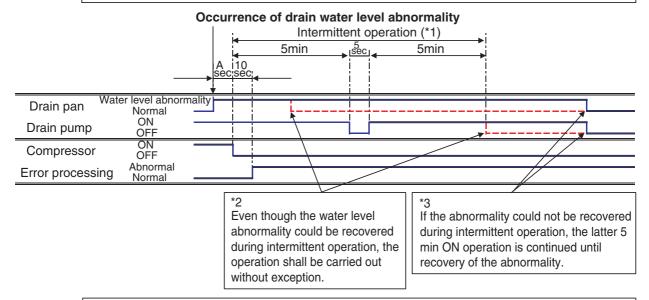
#### 2-2 Operations when an occurrence of drain water level abnormality

#### 2-2-a) Behavior between occurrence and recovery of drain water level abnormality

After compressor stops due to water level abnormality, drain pump is operated intermittenly, i.e. 5 min ON, 5 sec OFF and 5 min ON. (\*1) The intermittent operation is executed regardless of recovery of abn. Water level during the intermittent operation. (\*2) When the abn. water level can not be recovered, the latter 5 min ON operation is continued until recovery of the abnormality. (\*3) On above diagram, the system operation in the event of a water level abnormality occurrence differs between the drain pump ON and OFF. The details are as follows.

#### 2-2-a)-1 When a water level abnormality occurs during drain pump ON

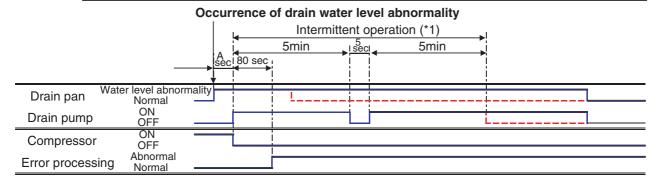
1 The same operation as 1-2-a) "Behavior between occurrence and recovery of drain water level abnormality" in the mode of cooling or dry.



Note : ((2-2-a)-1 When a water level abnormality occurs during drain pump ON) Recovery operation for drain water level abnormality does not activate when the water level can be returned normal within A + 10 seconds.

#### 2-2-a)-2 When a water level abnormality occurs during drain pump OFF

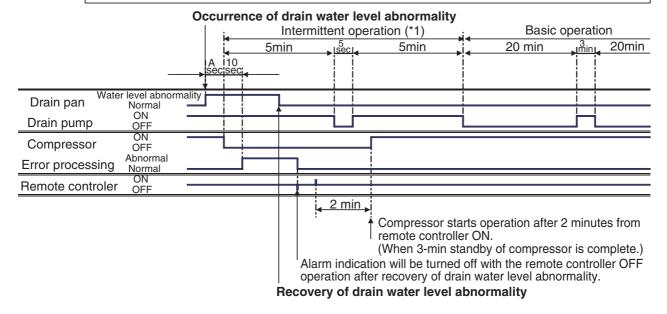
The abnormality is determined when 80 seconds elapse from compressor stop. Other than above, behavior is same as 2-2-a).



Note: ((2-2-a)-2 When a water level abnormality occurs during drain pump OFF) Recovery operation for drain water level abnormality does not activate when the water level can be returned normal within A + 80 seconds.

#### 2-2-b) Behavior when the unit restarts by remote controller after the water level abnormality is recovered

Abnormal water level shall be cancelled simultaneausly when the unit is turned off with remote controller after recovery of abnormal water level. When the unit is turned on with remote controller thereafter, compressor starts operation 2 minutes later from the remote controller ON. (Below diagram shows an example of the case that the water level abnormality is recovered during the former 5 min intermittent operation after the abnormality occurred during drain pump ON.)



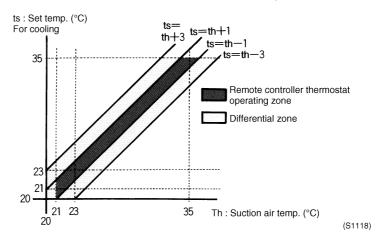
Using Conditions for Remote Controller Thermostat (Applicable models: FHQ & FFQ only)

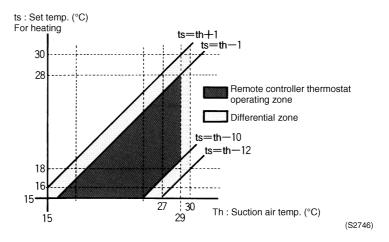
Remote controller thermostat is equipped only in wired remote controller.

Even when "use remote controller thermostat" is selected in service mode, the remote controller thermostat may not be used.

< Conditions not to use >

- 1. When the remote controller thermostat malfunctions.
- 2. When the one remote controller group control is applied. (Excluding simultaneous ON/OFF operation)
- 3. When conditions relating set temperature with remote controller and suction air temperature are out of the operating zone of remote controller thermostat shown in below diagram. (Excluding when automatic operation mode is selected. Whenever operation is in the automatic mode, remote controller thermostat can be used.)

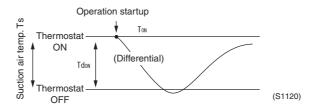




# Program Dry Operation Function

The points of thermostat ON or OFF are determined according to the suction air temperature at the startup of unit operation.

The set temperature and flow rate are not displayed on remote controller.



#### 1. Thermostat ON point (Ton) according to suction air temp. (Ts).

Suction air temp	Ton(°C)	Tdon(°C)
Ts>24°C	Ts	1.5
24°C≥ Ts>16°C	Ts	1.0
16°C≥ Ts	16°C	1.0

#### 2. Operation condition

Compressor condition	ON	OFF
Setting of flow rate Angle of flap Airflow direction set with remote controller		OFF Set angle Set angle

# Auto-restart Function

If there is a power cut when the unit is operating, it will automatically resume the same operating mode when the power is restored.



When performing maintenance and the power supply is to be shut off, be sure to turn the remote controller's ON/OFF switch OFF first.

Shutting the power supply switch off while the ON/OFF switch is still ON is dangerous because the "power failure automatic reset function" will cause the indoor fan to start turning immediately, or the outdoor unit fan to automatically start turning 3 minutes after the power supply is turned back on.

# Fan and Flap Operations

			Fan	Flap FHQ & FFQ	Remote Controller Indication
Heating Operation	Hot Start from Defrost	In Swing Operation	OFF	Horizontal	Swing
		In Airflow Direction Setting	OFF	Horizontal	Set Position
	Defrost	In Swing Operation	OFF	Horizontal	Swing
		In Airflow Direction Setting	OFF	Horizontal	Set Position
	Thermostat OFF	In Swing Operation	LL	Horizontal	Swing
		In Airflow Direction Setting	LL	Horizontal	Set Position
	Hot Start from Thermostat OFF	In Swing Operation	LL	Horizontal	Swing
	(Cold Air Prevention)	In Airflow Direction Setting	LL	Horizontal	Set Position
	Stop (Error)	In Swing Operation	OFF	Horizontal	_
		In Airflow Direction Setting	OFF	Horizontal	_
	Overload Thermostat OFF	In Swing Operation	LL	Horizontal	Swing
		In Airflow Direction Setting	LL	Horizontal	Set Position
Cooling Operation	Thermostat ON in Program Dry Mode	In Swing Operation	L	Swing	Swing
		In Airflow Direction Setting	L	Setting	Set Position
	Thermostat OFF in Program Dry Mode	In Swing Operation	OFF	Swing	Swing
		In Airflow Direction Setting	OFF	Setting	Set Position
	Cooling Thermostat OFF	In Swing Operation	Setting	Swing	Swing
		In Airflow Direction Setting	Setting	Setting	Set Position
	Stop (Error)	In Swing Operation	OFF	Horizontal	_
		In Airflow Direction Setting	OFF	Setting	_
	Freeze Prevention in Program Dry Mode	In Swing Operation	L ★1	Swing	Swing
	(Including Cooling Operation)	In Airflow Direction Setting	L ★1	Setting	Set Position

<sup>★1:</sup> L or LL operation for FFQ only.

(L for 4-way outlet and LL for 2-way or 3-way outlet)

#### **Mode Conflict**

#### [Overview]

While the indoor unit for another room and the outdoor unit are operating, when the indoor unit for the own room is activated, the operation mode which can be selected in the own room has some restrictions as mentioned below.

- i) In case an priority for operation mode selection is given to the own room by setting the dip switch of outdoor unit;
  - →The own room can be operated in any mode.
- ii) In case an priority for operation mode selection is not given to the own room by setting the dip switch of outdoor unit;
  - $\rightarrow$ The unit can be operated as follows:

Outdoor unit	Operation mode selected in the own room					
operation mode when an operation mode for the own room is selected. (The outdoor unit is operated in the mode as mentioned below.)	Cooling or Automatic cooling (Note)	Dry	Blowing	Heating or Automatic heating (Note)		
Cooling	0	0	0	×		
Heating	×	×	×	0		
Blowing	0	0	0	O*		

O:Operational \*: The unit for another room is switched into non-operational condition.

- \* Operation of the indoor unit for the own room during non-operation.
- Fan = OFF
- Louver = becomes horizontal position.
- ON LED on the remote controller = blinks.
- Indication of "under central control" on the remote controller = displayed.



During automatic operation, at the time of changing operation mode to Automatic cooling or Automatic heating, the unit is operated as the table shown above.

x: Non-operational

Non-operating Room Dew Prevention Fan Control

#### [Overview]

After operating an indoor unit for the own room in the cooling mode or dry mode, stop the unit using the remote controller. Under the condition, when an unit for another room is started operation in the heating mode, the fan in the own room may rotate in the LL mode even though the remote controller of the fan is in stop mode.

#### [Purpose]

On multiple units, when units of other rooms start heating operation after unit of the own room starts cooling or dry operation, high-temperature refrigerant flows to the unit of the own room, thus resulting in evaporation of condensate retained in heat exchanger or drain pan. At this time, if casing temperature is below dew point, dew gets condensed. In order to prevent the dew condensation, this control is used to operate the fan for a specified period of time, thus discharging the moisture from the indoor unit.

#### [Outline]

- The fan rotates in LL mode even though the unit is turned off by the use of remote controller.
- This control can be reset only by conducting the cooling or dry operation of the unit of the own room with thermostat ON.
- This control is enabled within 8 hours after the "Outdoor unit operation mode" has changed from cooling or dry operation to heating operation.
- During the 8 hours, this control is activated for a cumulative period of 40 minutes.
- Emergency operation is not conducted.

The outdoor unit has no emergency function. Therefore, in the case of connecting to Split or Split Multi outdoor unit, only the fan operation is conducted even though the dip switch of indoor unit is set to EMERGENCY.

# Part 6 Test Operation

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## 1. Test Operation

#### 1.1 Procedure and Outline

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

#### 1.1.1 Check work prior to turn power supply on

Check the below items.

- · Power wiring
- Control transmission wiring between units
- · Earth wire



Check on refrigerant piping



Check on amount of refrigerant charge

- O Is the power supply single-phase 220-230V / 50Hz?
- O Have you finished a ductwork to drain?
- O Have you detach transport fitting?
- O Is the wiring performed as specified?
- O Are the designated wires used?
- O Is the grounding work completed?

  Use a 500V megger tester to measure the insulation.
  - · Do not use a megger tester for other circuits than 200-230V circuit.
- O Are the setscrews of wiring not loose?
- O Is the electrical component box covered with an insulation cover completely?
- O Is pipe size proper? (The design pressure of this product is 4.0MPa.)
- Are pipe insulation materials installed securely?
   Liquid and gas pipes need to be insulated. (Otherwise causes water leak.)
- O Are respective stop valves on liquid and gas line securely open?
- Is refrigerant charged up to the specified amount?
   If insufficient, charge the refrigerant from the service port of stop valve on the liquid side with outdoor unit in stop mode after turning power on.
- O Has the amount of refrigerant charge been recorded on "Record Chart of Additional Refrigerant Charge Amount"?

(V3180)

#### 1.1.2 Turn power on

Turn outdoor unit power on.



Turn indoor unit power on.



Carry out field setting on outdoor PC board

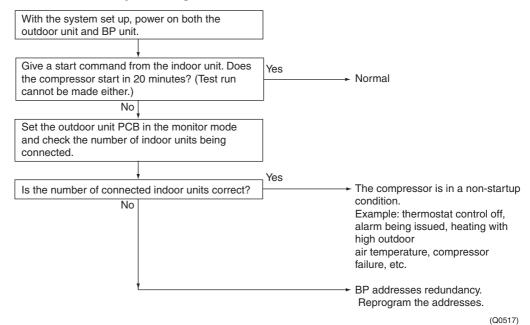
O Be sure to turn the power on 6 hours before starting operation to protect compressors.

(Q0398)

#### 1.1.3 Judging and reprogramming in case of redundant BP addresses

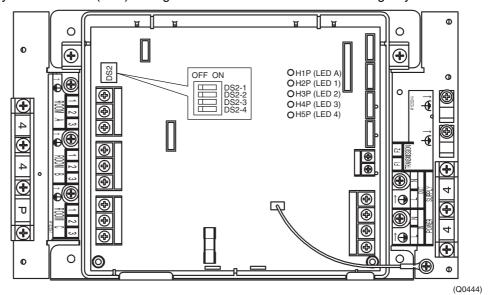
The BP unit of this system is provided with specific addresses in its production stage. These addresses are used to conduct various controls. If by any chance (on 3 out of 260000 units) these addresses are redundant, the system may get in trouble. When replacing the PCB of the BP unit too, these addresses may be used repeatedly.

#### Address redundancy checking flowchart



#### Reprogramming the PCB addresses of BP unit

Modify the DIP switch (DS2) settings on the BP unit's PCB in the following way.



#### Example of DIP switch (DS2) settings on the BP unit's PCB

	DS2-1	DS2-2	DS2-3	DS2-4
BP unit 1	OFF	OFF	ON	OFF
BP unit 2	OFF	OFF	OFF	ON
BP unit 3	OFF	OFF	ON	ON

DS1~4: Factory setting is OFF.

The BP unit 1 through 3 show the first through third unit, respectively. The order of these units is flexible.

The above table is just for your reference. The redundancy of addresses can be avoided when the DIP switch settings are individually specified.

With the DIP switch settings reprogrammed, power on the outdoor unit and BP unit again. Check for address redundancy.

Note:

If an error display appears on the indoor unit, BP unit or outdoor unit, follow its code and description.

#### 1.1.4 When Turning On Power First Time

The unit cannot be run for up to 12 minutes to automatically set address (indoor-outdoor address, etc.).

#### **Status**

Outdoor unit

Test lamp H2P .... Blinks

Can also be set during operation described above.

Indoor unit

If ON button is pushed during operation described above, the "UH" malfunction indicator blinks.

(Returns to normal when automatic setting is complete.)

#### 1.1.5 When Turning On Power the Second Time and Subsequent

Tap the RESET(BS5) button on the outdoor unit PC board. Operation becomes possible for about 2 minutes. If not, the unit cannot be run for up to 10 minutes.

#### **Status**

Outdoor unit

Test lamp H2P .... Blinks

Can also be set during operation described above.

Indoor unit

If ON button is pushed during operation described above, the operation lamp lights but the compressor does not operate. (Returns to normal when automatic setting is complete.)

# 1.1.6 When the No. of Indoor Unit Has Been Changed, or Indoor (BP) or Outdoor Unit PC Board Has Been Changed, or the System is transferred

Be sure to push and hold the RESET button for 5 seconds. If not, the addition cannot be recognized. In this case, the unit cannot be run for up to 12 minutes to automatically set the address (indoor-outdoor address, etc.)

**Status** 

Outdoor unit Test lamp H2P .... ON

Can also be set during operation described above.

Indoor unit

If ON button is pushed during operation described above, the "UH" or "U4" malfunction indicator blinks. (Returns to normal when automatic setting is complete.)

#### 1.1.7 Air Tight test and Vacuum Drying

- ♦ Air tight test: Make sure to use nitrogen gas.
- Pressurize the liquid and gas pipes to 4.0 MPa (40 bar) (do not pressurize more than 4.0 MPa (40 bar)). If the pressure does not drop within 24 hours, the system passes the test. If the pressure drops, check where the nitrogen leaks from.
- ◆ Vacuum drying: Use a vacuum pump which can evacuate to −100.7 kPa (5 Torr, −755 mm Hg)
- 1. Evacuate the system from the liquid and gas pipes by using a vacuum pump for more than 2 hours and bring the system to –100.7 kPa. After keeping the system under that condition for more than 1 hour, check if the vacuum gauge rises or not. If it rises, the system may either contain moisture inside or have leaks.
- Following should be executed if there is a possibility of moisture remaining inside the pipe (if piping work is carried out during the raining season or over a long period of time, rainwater may enter the pipe during work).

After evacuating the system for 2 hours, pressurize the system to 0.05 MPa (vacuum break) with nitrogen gas and evacuate the system again using the vacuum pump for 1 hour to -100.7 kPa (vacuum drying). If the system cannot be evacuated to -100.7 kPa within 2 hours, repeat the operation of vacuum break and vacuum drying.

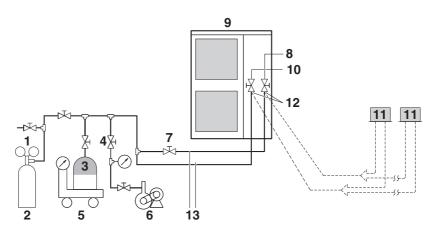
Then, after leaving the system in vacuum for 1 hour, confirm that the vacuum gauge does not rise.

#### 1.1.8 Additional Refrigerant Charge



• Refrigerant cannot be charged until field wiring has been completed.

- ◆ Refrigerant may only be charged after performing the leak test and the vacuum drying (see above).
- ♦ When charging a system, care shall be taken that its maximum permissible charge is never exceeded, in view of the danger of liquid hammer.
- ♦ Charging with an unsuitable substance may cause explosions and accidents, so always ensure that the appropriate refrigerant (R-410A) is charged.
- Refrigerant containers shall be opened slowly.
- ♦ Always use protective gloves and protect your eyes when charging refrigerant.
- When performing service on the unit requiring the refrigerant system to be opened, refrigerant must be evacuated according to local regulations.
- ◆ Do not use the automatic refrigerant charging function while working on the indoor units. When using the automatic refrigerant charging function, the indoor units operate automatically as well as the outdoor unit.
- When the power is on, please close the front panel when leaving the unit.



- 1. Pressure reducing valve
- 2. Nitrogen
- 3. Tank
- 4. Siphon system
- 5. Measuring instrument
- 6. Vacuum pomp
- 7. Valve A
- 8. Gas line stop valve
- 9. Outdoor unit
- 10. Liquid line stop valve
- 11. Indoor unit
- 12. Stop valve service port
- 13. Charge hose

## To avoid compressor breakdown. Do not charge the refrigerant more than the specified amount.

- ♦ This outdoor unit is factory charged with refrigerant and depending on pipe sizes and pipe lengths some systems require additional charging of refrigerant. See page 10 "Note: 1".
- ♦ In case re-charge is required, refer to the nameplate of the unit. The nameplate states the type of refrigerant and necessary amount.

#### Precautions when adding R-410A

Be sure to charge the specified amount of refrigerant in liquid state to the liquid pipe. Since this refrigerant is a mixed refrigerant, adding it in gas form may cause the refrigerant composition to change, preventing normal operation.

♦ Before charging, check whether the refrigerant cylinder is equipped with a siphon tube or not.

Charge the liquid refrigerant with the cylinder in upright position.



Charge the liquid refrigerant with the cylinder in up-side-down position.

#### Important information regarding the refrigerant used

This product contains fluorinated greenhouse gases covered by the Kyoto Protocol. Do not vent gases into the atmosphere.

Refrigerant type: R-410A GWP\* value: 1975

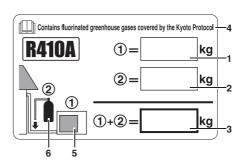
\*GWP = global warming potential

Please fill in with indelible ink,

- ♦ (1) the factory refrigerant charge of the product,
- (2) the additional refrigerant amount charged in the field and
- ♦ (1) + (2) the total refrigerant charge

on the refrigerant charge label supplied with the product.

The filled out label must be adhered in the proximity of the product charging port (e.g. onto the inside of the service cover).

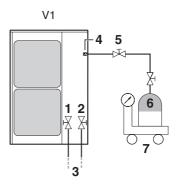


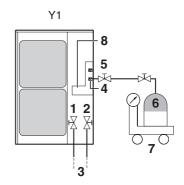
- 1. factory refrigerant charge of the product: see unit name plate
- 2. additional refrigerant amount charged in the field
- 3. total refrigerant charge
- 4. Contains fluorinated greenhouse gases covered by the Kyoto Protocol
- 5. outdoor unit
- 6. refrigerant cylinder and manifold for charging

# Procedures for adding refrigerant

# Procedure 1: Adding refrigerant by using the automatic refrigerant charging function (recommended)

⟨How to connect the tank?⟩





- 1. Liquid line stop valve
- 2. Gas line stop valve
- 3. To indoor unit
- 4. Service port for adding refrigerant
- 5. Valve A
- 6. R-410A tank
- 7. Measuring instrument
- 8. Pipe fixing plate

When the refrigerant tank is connected and the specified operation is performed, the appropriate amount of refrigerant will be charged into the system. After charging, the system will stop automatically. The refrigerant must be charged according to the procedure described below.



Make sure to turn ON the power 6 hours before starting the operation. This is necessary to warm the crankcase by the electric heater.

Automatic charging is able to charge 6 kg/hour refrigerant at an outside temperature of 0°C to 24 kg/hour refrigerant at an outside temperature of 35°C.

The charging time depends on the amount of charged refrigerant and on the outside temperature.

Automatic refrigerant charging is NOT possible if the following restrictions are exceeded:

- ♦ Outside temperature: 0°C DB~43°C DB
- ♦ Indoor temperature: 0°C DB~32°C DB
- ♦ Indoor unit connection capacity: 50%~130%

#### Automatic refrigerant charging procedure

1. Open the liquid and gas side stop valves completely.



**∖** Caution

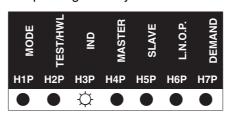
Note that valve A must be closed.

2. Turn on the power of the outdoor unit and indoor units.



When an indoor unit is connected to the refrigerant system and the indoor unit is turned off, automatic charging will fail.

3. Make sure that the led on the PCB on the outdoor unit are as shown in the table below. This indicates that the system is operating normally.



#### Led state

Throughout the manual the state of the leds is indicated as follows:



If H2P is lit up, check the type of error based on the error code in the remote controller and correct the error in accordance with "Test operation". (See page 130)

4. Automatically charge the refrigerant according to the procedure described below.



Do not touch anything else than the push buttons (BS1~5) on the PCB when making the settings. These settings must be done with the power on

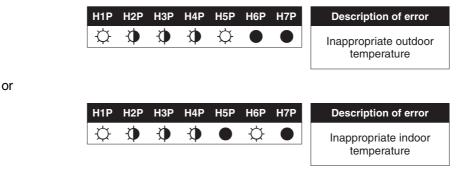
4.1 Press BS4 TEST once.



4.2 Press BS4 TEST for 5 seconds. The unit will start running.



If the led display below appears, the automatic refrigerant charging restriction has been exceeded. Additional refrigerant must be charged by calculating the additional refrigerant charging amount.



If the led display below appears, check the indoor unit connection capacity.



If the led display below appears, the liquid and gas side stop valves may be closed.





If you want to repeat the automatic refrigerant charging operation from step 4.1, fully open the liquid and gas side stop valves and press the BS1 MODE button once.

4.3 When the led indication becomes as shown in the table below in about 15 to 30 minutes after start of operation, open valve A at once to start charging of the refrigerant. Immediately after starting charging of the refrigerant by opening valve A, press BS4 TEST once. When BS4 TEST is not pressed within 10 minutes after the led indication is shown, charging is stopped.



4.4 The led indication becomes as shown in the table below during automatic refrigerant charging.

During automatic refrigerant charging, the remote controller indicates TEST (test operation) and (external control).



**Note** 

If the led display below appears, the refrigerant tank is empty. Replace the refrigerant tank, open valve A and re-charge.



The led indication becomes as shown in the table below when automatic refrigerant charging is about to end. Prepare to close the valve on the refrigerant tank.



Note:

It is possible that the code PE is not shown on the remote controller but this does not indicate a malfunction. The led indication can immediately shift to the situation as shown in "Case 1: Charging complete" on page 126.

4.5 When the led indication becomes as shown in the table below, quickly close valve A and follow instructions as described below.



When adding refrigerant is done or when pausing, close the valve on the refrigerant tank immediately.

More refrigerant might be charged by any remaining pressure after the machine is stopped.

♦ The outdoor fan may keep rotating a little bit more, but this does not indicate a malfunction.

Case 1: Charging complete



Charging of the refrigerant is complete. Press BS1 MODE button once and go to step 5.

Case 2: Recharging operation

H1P	H2P	Н3Р	H4P	H5P	H6P	Н7Р	Code on remote controller
₩	<b>(</b>	<b>(</b>		$\Diamond$	$\Diamond$	$\Diamond$	<i>?</i> 8

Press BS1 MODE button once and perform automatic refrigerant charging again starting from Step 4.1.

Case 3: Charging interrupted



Something is preventing normal operation:

- Is the gas side stop valve completely open?
- Are the valve on the refrigerant tank and valve A open?
   Check if the BS4 TEST button was pressed within 10 minutes after the valves were opened.
- ♦ Is the indoor unit air intake vent or outlet vent blocked?

After correcting the problem, press BS1 MODE button once and perform automatic refrigerant charging again starting from step 4.1.

Case 4: Failure



(\*) An error in the system interrupted the operation of the unit. Check the error by using the error code displayed on the remote controller. For an explanation of the error codes, see the chart below.

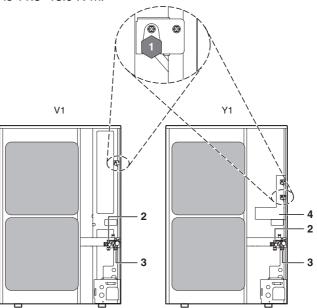
#### Error codes on the remote controller

Installation error	Malfunction code	Remedial action
The stop valve of an outdoor unit is left closed.	83	Open the stop valve on both the gas and liquid side.
The stop valve of an outdoor unit is left closed.		Open the stop valve on both the gas and liquid side.
Insufficient refrigerant	84 43	Check if the additional refrigerant charge has been finished correctly. Recalculate the required amount of refrigerant from the piping length and add an adequate amount of refrigerant.
Refrigerant overcharge	83 88	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
Insufficient supply voltage	u∂	Check if the supply voltage is supplied properly.
The check operation is not performed.	U3	Perform the check operation.
No power is supplied to the outdoor unit.	US	Check if the power wiring for the outdoor unit is connected correctly.
Improper type of indoor units are connected.	UR	Check the type of indoor units that are currently connected. If they are not proper, replace them with proper ones.
The stop valve of an outdoor unit is left closed.		Open the stop valve on both the gas and liquid side.
The piping and wiring of the specified indoor unit are not connected correctly to the outdoor unit.	UF	Confirm that the piping and wiring of the specified indoor unit are connected correctly to the outdoor unit.
Incorrect interconnections between units.	ux	Connect correctly the interconnections between units to the F1 and F2 (TO IN/D UNIT) terminals on the PC board in the outdoor unit.
Power supply cables are connected in the reverse phase instead of the normal phase.	u i	Connect the power supply cables in normal phase. Change any two of the three power supply cables (L1, L2, L3) to correct phase.

After correcting the problem, press BS1 MODE button once and perform automatic refrigerant charging again starting from step 4.1.

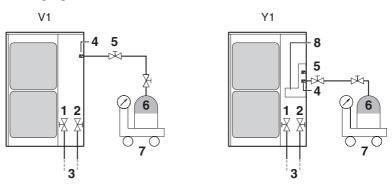
5. When charging is complete, determine the weight of refrigerant that was added and fill in the amount in the "Additional refrigerant charge label" attached to service precautions plate on the unit.

6. After adding the refrigerant, do not forget to close the lid of the service port. The tightening torque for the lid is 11.5~13.9 N•m.



- 1. Service port for adding refrigerant
- 2. Liquid line stop valve
- 3. Gas line stop valve
- 4. Pipe fixing plate

Procedure 2: Charging while the outdoor unit is at a standstill



1. Determine the weight of refrigerant to be charged additionally referring to the page 10 "Note: 1" and fill in the amount in the "Additional refrigerant charge label" attached to the unit.

- 2. After the vacuum drying is finished, open valve A and charge the additional refrigerant in its liquid state through the service port on the liquid stop valve taking into account following instructions:
  - Turn on the power of the outdoor unit and indoor units.
  - Check that gas and liquid stop valves are closed.
  - Stop the compressor and charge the specified weight of refrigerant.



- ◆ To avoid compressor breakdown. Do not charge the refrigerant more than the specified amount.
- If the total refrigerant cannot be charged while the outdoor unit is at a standstill, it is possible to charge the refrigerant by operating the outdoor unit using the refrigerant charge function (refer to "Setting mode 2" on page 138) and follow "Procedure 3: Charging while the outdoor unit is operating" below.

#### Procedure 3: Charging while the outdoor unit is operating

See the figure in "How to connect the tank?" on page 122.

- Completely open the gas side stop valve and liquid side stop valve. Valve A must be left fully closed.
- 2. Close the front panel and turn on the power to all indoor units and the outdoor unit.
- 3. Open valve A immediately after starting of the compressor.
- 4. Charge the additional refrigerant in its liquid state through the service port of the liquid line stop valve.
- 5. While the unit is at a standstill and under setting mode 2 (refer to "Setting the mode 2" on page 138), set the required function A (additional refrigerant charging operation) to ON (ON). Then operation starts. The blinking H2P led indicates test operation and the remote controller indicates TEST (test operation) and \_\_\_\_ (external control).
- 6. When the specified amount of refrigerant is charged, push the BS3 RETURN button. Then operation stops.
- ♦ The operation automatically stops within 30 minutes.
- If the refrigerant charge cannot be finished within 30 minutes, repeat step 5.
- If the operation stops immediately after restart, there is a possibility that the system is overcharged.
  - The refrigerant cannot be charged more than this amount.
- 7. After the refrigerant charge hose is removed, make sure to close valve A.

#### 1.1.9 Check Operation

- \* During check operation, mount front panel to avoid the misjudging.
- \* Check operation is mandatory for normal unit operation.

  (When the check operation is not executed, alarm code "U3" will be displayed.)

Set to setting mode 1 (H1P LED is OFF). (Refer to "Setting mode 1" on page 136.



Press and hold the TEST OPERATION button (BS4) on outdoor unit PC board for 5 seconds.



Check on operation

O The test operation is started automatically.

The following judgements are conducted within 15 minutes (about 30 minutes at the maximum).

- "Check for wrong wiring"
- "Check stop valve for not open"
- · "Check for refrigerant charge"

The following indications are conducted while in test operation.

- LED lamp on outdoor unit PC board H2P Blinks (test operation)
- Remote controller Indicates " \* " (during centralized control) on (Only for SkyAir) upper right.

  Indicates " © " (test operation) on lower left

(Q0379)

On completion of test operation, LED on outdoor unit PC board displays the following.

H3P ON: Normal completion

H2P ON: Abnormal completion  $\rightarrow$  Check the indoor unit remote controller for abnormal display and correct it.

#### Malfunction code

In case of an alarm code displayed on remote controller:

Malfunction code	Nonconformity during installation	Remedial action
E3	The stop valves in the outdoor unit remain closed.	Open the stop valve on both the gas side and liquid side.
The stop valves in the outdoor unit remain closed.  The operation mode on the remote controller was changed before the check run.  E4 F3  The refrigerant is insufficient.		Open the stop valve on both the gas side and liquid side.
		Set the operating mode on all indoor unit remote controllers to "cooling".
		<ul> <li>Check whether additional refrigerant charge has been finished correctly.</li> <li>Calculate again the required quantity of refrigerant to be charged based on the piping length, then charge additionally proper quantity of refrigerant.</li> </ul>
U2	Insufficient supply voltage	Check if the supply voltage is supplied properly.
U3	The check operation is not performed.	Perform the check operation.
U4	The power is not supplied to the outdoor unit.	Connect correctly the power cable of the outdoor unit.
UA	Improper type of indoor units or BP units are connected.	Check the type of indoor units and BP units currently connected. If they are not proper, replace them with proper ones.
The piping and wiring of the specified indo are not connected correctly to the outdoo  The operation mode on the remote	The stop valves in the outdoor unit remain closed.	Open the stop valve on both the gas side and liquid side.
	The piping and wiring of the specified indoor unit are not connected correctly to the outdoor unit.	Confirm that the piping and wiring of the specified indoor unit are connected correctly to the outdoor unit.
	controller was changed before the check	Set the operating mode on all indoor unit remote controllers to "cooling".
UH	The unit-to-unit wirings are not connected correctly.	Connect correctly the unit-to-unit wirings to the F1 and F2(TO BP UNIT) terminals on the PC board (A1P) in the outdoor unit.
U1	Power supply cables are connected in the reverse phase instead of the normal phase.	Connect the power supply cables in normal phase. Change any two of the three power supply cables (L1, L2, L3) to correct phase.

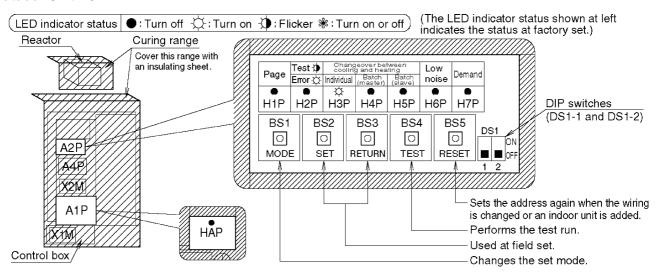
#### 1.1.10 Confirmation on Normal Operation

Conduct normal unit operation after the check operation has been completed.
 (When outdoor air temperature is 30°CDB or higher, the unit can not be operated with heating mode. See the installation manual attached.)

- Confirm that the indoor/outdoor units can be operated normally.
   (When an abnormal noise due to liquid compression by the compressor can be heard, stop the unit immediately, and turn on the crankcase heater to heat up it sufficiently, then start operation again.)
- Operate indoor unit one by one to check that the outdoor unit operates.
- Confirm that the indoor unit discharges cold air (or warm air).
- Operate the air direction control button and flow rate control button to check the function of the devices.

# 2. Outdoor Unit PCB Layout

### **Outdoor Unit PCB**



Caution

Cover electric parts with an insulating sheet during inspection to prevent electric shock.

# 3. Field Setting

# 3.1 Field Setting from Outdoor Unit

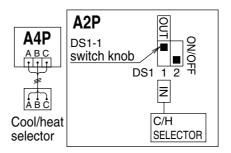
## 3.1.1 Setting by Dip Switches

The following field settings are made by dip switches on PC board.

	Dipswitch	Setting item	Description				
No.	Setting	Setting item	Description				
DS1-1	ON	Cool / Heat	Used to set cool / heat change over setting by remote				
D31-1	OFF (Factory set)	change over setting	controller equipped with outdoor unit. (Note 1)				
DS1-2	ON	Not used	Do not change the factory cottings				
D31-2	OFF (Factory set)	Not used	Do not change the factory settings.				

### Cool/heat selector connection procedure

- Set the remote controller only when changing over the operation mode between cooling and heating using the remote controller installed in the outdoor.
- ① Connect the cool/heat selector (optional accessory) to the terminals (A, B and C) on the outdoor PC board (A4P).
- ② Set the cool/heat selector switch DS1-1 from "IN (inside)" (which is selected at the factory before shipment) to "OUT (outside)".





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

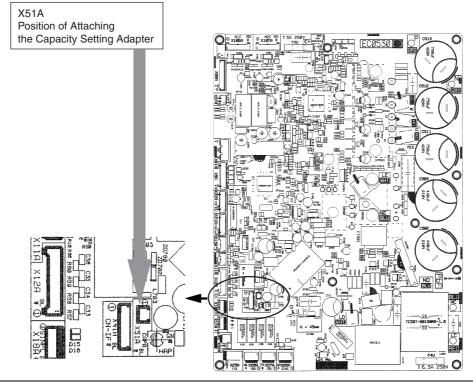
When you change the main PCB(A1P) to spare parts PCB, please carry out the following setting.

Please Attach the Capacity Setting Adapter corresponding to Capacity Class (ex. 112, 140, 160) in connector X51A. (See Below)

Capacity Setting Adapter

	Capacity Class	Note
1	4 (112)	CAPACITY SETTING ADAPTER (for 100/J112)
2	5 (140)	CAPACITY SETTING ADAPTER (for 125/J140)
3	6 (160)	CAPACITY SETTING ADAPTER (for 140/J160)

Position of Attaching the Capacity Setting Adapter

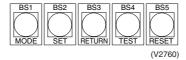


### Setting by pushbutton switches

The following settings are made by pushbutton switches on PCB.

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
LED indication	•	•	0	•	•	•	•

(Factory setting)



There are the following three setting modes.

### ① Setting mode 1 (H1P off)

Initial status (when normal): Also indicates during "abnormal".

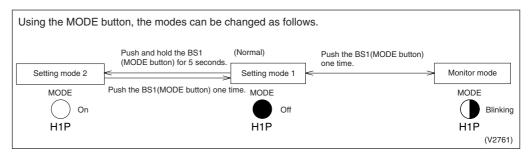
### ② Setting mode 2 (H1P on)

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

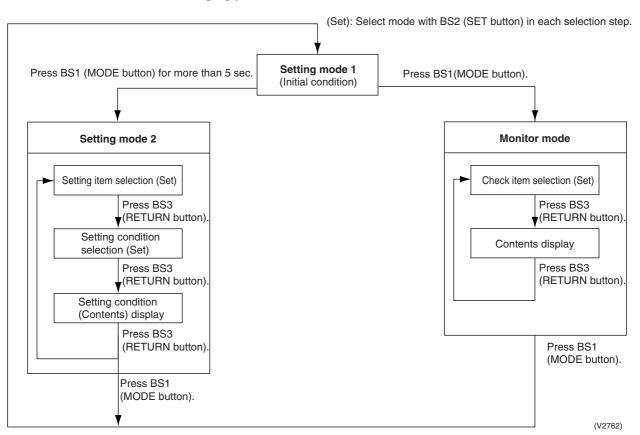
### 3 Monitor mode (H1P blinks)

Used to check the program made in Setting mode 2.

### ■ Mode changing procedure



### Mode changing procedure



### a. "Setting mode 1"

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

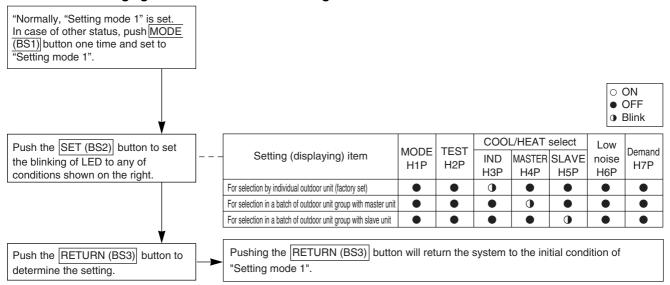
1. Set items ......In order to make COOL/HEAT selection in a batch of outdoor unit group, change the setting.

• COOL/HEAT selection (MASTER) ......Used to select COOL or HEAT by outdoor unit group with the master unit.

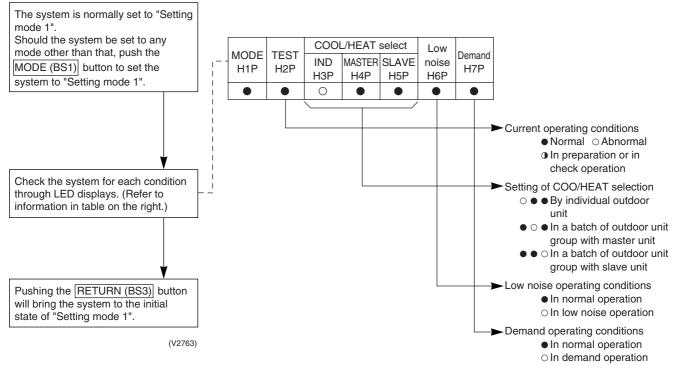
• COOL/HEAT selection (SLAVE)......Used to select COOL or HEAT by outdoor unit group with the slave unit.

- 2. Check items ...... The following items can be checked.
  - (1) Current operating conditions (Normal / Abnormal / In check operation)
  - (2) Setting conditions of COOL/HEAT selection (Individual / Batch master / Batch slave)
  - (3) Low noise operating conditions (In normal operation / In low noise operation)
  - (4) Demand operating conditions (In normal operation / In demand operation)

### Procedure for changing COOL/HEAT selection setting



### Procedure for checking check items



### b. "Setting mode 2"

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

#### <Selection of setting items>

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

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

### <Selection of setting conditions>

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

Push the RETURN (BS3) button and decide the condition.

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

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

(V2764)

No.	Setting item	Description
1	Cool/heat unified	Sets address for cool/heat unified operation.
2	Low noise/demand address	Address for low noise/demand operation
3	Test operation settings	Used to conduct test operation without making changes to the PCB and replacing the refrigerant, after the completion of maintenance.
5	Indoor unit forced fan H	Allows forced operation of indoor unit fan while unit is stopped. (H tap)
6	Indoor unit forced operation	Allows forced operation of indoor unit.
8	Te setting	Target evaporation temperature for cooling
9	Tc setting	Target condensation temperature for heating
10	Defrost changeover setting	Changes the temperature condition for defrost and sets to quick defrost or slow defrost.
12	External low noise setting / Demand setting	Reception of external low noise or demand signal
13	AIRNET address	Set address for AIRNET.
16	Setting of hot water	Make this setting to conduct heating operation with hot water heater.
20	Additional refrigerant charge operation setting	Carries out additional refrigerant charge operation.
21	Refrigerant recovery / vacuuming mode setting	Sets to refrigerant recovery or vacuuming mode.
22	Night-time low noise setting	Sets automatic nighttime low noise operation in a simple way. The operating time is based on "Starting set" and "Ending set".
25	Setting of external low noise level	Sets low noise level when the low noise signal is input from outside.
26	Night-time low noise operation start setting	Sets starting time of nighttime low noise operation. (Night-time low noise setting is also required.)
27	Night-time low noise operation end setting	Sets ending time of nighttime low noise operation. (Night-time low noise setting is also required.)
28	Power transistor check mode *Check after disconnection of compressor wires	Used for trouble diagnosis of DC compressor. Since the waveform of inverter is output without wiring to the compressor, it is convenient to probe whether the trouble comes from the compressor or PC board.
29	Capacity precedence setting	If the capacity control is required, the low noise control is automatically released by this setting during carrying out low noise operation and nighttime low noise operation.
30	Demand setting 1	Changes target value of power consumption when demand control 1 is input.
32	Normal demand setting	Normally enables demand control 1 without external input. (Effective to prevent a problem that circuit breaker of small capacity is shut down due to large load.

			Setting	g item dis			ı	•							
No.	Setting item	MODE	TEST	IND	/H selecti Master	on Slave	Low noise	Demand	Setting	condi	ition dis	play			
	County North	H1P	H2P	H3P	H4P	H5P	H6P	H7P					:	* Fac	tory set
									Address	0	$\circ$	•	•	•	• *
1	Cool / Heat Unified address	0	•	•	•	•	•	0	Binary number	1	$\circ$	•	•	•	0
	Offilied address								(6 digits)		~				_
								1		31	0 (	00	0 (	00	
									Address	0	0	) • (	•	•	• *
2	Low noise/demand address	0	•	•	•	•	0	•	Binary number	1	$\circ$	•	•	•	O
									(6 digits)		0		$\sim$	) ()	0
									Test operation : OFF	31					0
3	Test operation	0	•	•	•	•	0	0	Test operation : ON						• *
		_	_	_	_	_	_	_	Normal operation		0		•		<u> </u>
5	Indoor forced fan H	0	•	•	•	0	•	0	Indoor forced fan H		0				•
	Indoor forced		_	_	_				Normal operation		0		•		0 *
6	operation	0	•	•	•	0	0	•	Indoor forced operation		0		•		•
									High		0 (			) •	•
8	Te setting	0	•	•	0	•	•	•	Normal (factory setting)		0		•		• *
									Low		0		•	•	0
									High		0			•	•
9	Tc setting	0	•	•	0	•	•	0	Normal (factory setting)		0		•	0	• *
									Low		$\circ$		•	•	0
									Quick defrost		0			•	•
10	Defrost changeover setting	0	•	•	0	•	0	•	Normal (factory setting)		$\circ$		•	0	• *
									Slow defrost		$\circ$		• (	•	0
	External low noise/	_	_	_	_	_	_		External low noise/demand: NO		$\circ$		•	•	0 *
12	demand setting	0	•	•	0	0	•	•	External low noise/demand:		$\circ$		•		
									YES						<del>-</del>
									Address	0	0	) • (			• *
13	Airnet address	0	•	•	0	0	•	0	Binary number (6 digits)	1	~	, • (	•	•	O
									(o digita)	63		000	$\circ$	) ()	$\cap$
	Sotting of hot water								OFF						0 *
16	Setting of hot water heater	0	•	0	•	•	•	•	ON						_
	Additional refrigerant		_		_		_		Refrigerant charging: OFF		0		•	_	0 *
20	charging operation setting	0	•	0	•	0	•	•	Refrigerant charging: ON		0		•		_
	Refrigerant recovery /								Refrigerant recovery / vacuuming: OFF		0		•		0 *
21	vacuuming mode setting	0	•	0	•	0	•	0	Refrigerant recovery /				_		_
	County								vacuuming: ON						
									OFF		$\circ$	•	• (	•	• *
22	Night-time low noise	0	•	0	•	0	0	•	Level 1 (outdoor fan with 8 step or lower		0	•	• (	•	0
	setting							•	Level 2 (outdoor fan with 7 step or lower		0	•	• (		•
									Level 3 (outdoor fan with 6 step or lower	)	0			0	0

			Settin	g item dis	play									
No.	0-44	MODE	TEST		/H selection		Low	Demand	Setting cond	lition displa	y			
	Setting item	H1P	H2P	IND H3P	Master H4P	Slave H5P	noise H6P	H7P				* F	acto	ry set
									Level 1 (outdoor fan with 8 step or lower)	$\circ \bullet \bullet$	•	•	• (	<b>O</b>
25	Low noise setting	0	•	0	0	•	•	0	Level 2 (outdoor fan with 7 step or lower)	$\circ \bullet \bullet$	•	•		*
									Level 3 (outdoor fan with 6 step or lower)	$\circ \bullet \bullet$	•	0	• (	D
	Night-time low noise								About 20:00	$\circ \bullet \bullet$	•	•		C
26	operation start	0	•	0	0	•	0	•	About 22:00 (factory setting)	$\circ \bullet \bullet$	•	•		*
	Setting								About 24:00	$\circ \bullet \bullet$	•	0	• (	D
									About 6:00	$\circ \bullet \bullet$	•	•		C
27	Night-time low noise operation end setting	0	•	0	0	•	0	0	About 7:00	$\circ \bullet \bullet$	•	•	0	D
									About 8:00 (factory setting)	$\circ \bullet \bullet$	•	0	•	*
28	Power transistor	0		0	0	0			OFF	$\circ \bullet \bullet$	•	•		* C
20	check mode	)		)	O	Ü			ON	$\circ \bullet \bullet$	•		0	D
29	Capacity	0		0	0	0		0	OFF	$\circ \bullet \bullet$	•	•		* C
23	precedence setting	0		)	O	0		0	ON	$\circ \bullet \bullet$	•		0	D
									60 % demand	$\circ \bullet \bullet$	•	•		C
30	Demand setting 1	0	•	0	0	0	0	•	70 % demand	$\circ \bullet \bullet$	•	•		*
									80 % demand	$\circ \bullet \bullet$	•	0		D
32	Normal demand	0	0						OFF	$\circ \bullet \bullet$	•	•		* C
32	setting								ON	$\circ \bullet \bullet$	•	•	0	D

### c. Monitor mode

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

### <Selection of setting item>

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

### <Confirmation on setting contents>

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

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

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

(V2765)

	0.111.11			LE	D disp	lay			D
No.	Setting item	H1P	H2P	НЗР	H4P	H5P	H6P	H7P	- Data display
0	Various setting	•	•	•	•	•	•	•	See below
1	C/H unified address	•	•	•	•	•	•	0	
2	Low noise/demand address	•	•	•	•	•	0	•	
3	Not used	•	•	•	•	•	0	0	
4	Airnet address	•	•	•	•	0	•	•	Lower 6 digits
5	Number of connected indoor units	•	•	•	•	0	•	0	
7	Number of connected zone units (excluding outdoor and BS unit)	•	•	•	•	0	0	0	
8	Number of outdoor units	•	•	•	0	•	•	•	
11	Number of zone units (excluding outdoor and BS unit)	•	•	•	0	•	0	0	Lower 6 digits
12	Number of terminal blocks	•	•	•	0	0	•	•	Lower 4 digits: upper
13	Number of terminal blocks	•	•	•	0	0	•	0	Lower 4 digits: lower
14	Contents of malfunction (the latest)	0	•	•	0	0	0	•	Malfunction code table
15	Contents of malfunction (1 cycle before)	0	•	•	0	0	0	0	Refer page 262
16	Contents of malfunction (2 cycle before)	0	•	0	•	•	•	•	
20	Contents of retry (the latest)	0	•	0	•	0	•	•	
21	Contents of retry (1 cycle before)	0	•	0	•	0	•	0	
22	Contents of retry (2 cycle before)	0	•	0	•	0	0	•	
25	Normal judgment of outdoor units PC board	•	•	0	0	•	•	0	Lower 2 digits:

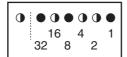
The numbers in the "No." column represent the number of times to press the SET (BS2) button.

Setting item 0 Display contents of "Various setting"

9	,					•		
EMG operation / backup operation	ON	•	•	•	0	•	•	•
setting	OFF	•	•	•	•	•	•	•
Defrost select setting	Short	•	•	•	•	0	•	•
	Medium	•	•	•	•	•	•	•
	Long	•	•	•	•	•	•	•
Te setting	Н	•	•	•	•	•	0	•
	М	•	•	•	•	•	•	•
	L	•	•	•	•	•	•	•
Tc setting	Н	•	•	•	•	•	•	0
	М	•	•	•	•	•	•	•
	L	•	•	•	•	•	•	•

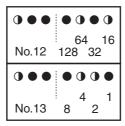
Push the SET button and match with the LEDs No. 1 - 15, push the RETURN button, and confirm the data for each setting.

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



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

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



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

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

# 3.2 Detail of Setting Mode

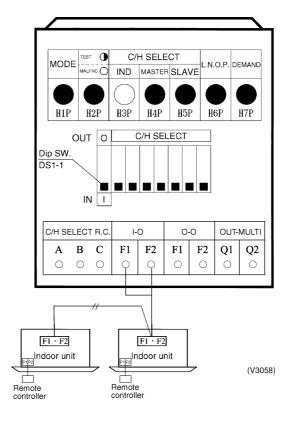
### 3.2.1 Cool / Heat Mode Switching

There are the following 4 cool/heat switching modes.

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

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

- It does not matter whether or not there is outdoor outdoor unit wiring.
- Set outdoor unit PC board DS1-1 to <u>IN</u> (factory set).
- ◆ Set cool/heat switching to <u>IND</u> (individual) for "Setting mode 1" (factory set).



### <Set the master unit (= indoor unit having the right to In the case of wireless remote controllers</p> select the cooling/heating operation mode).> In the case of wired remote controllers

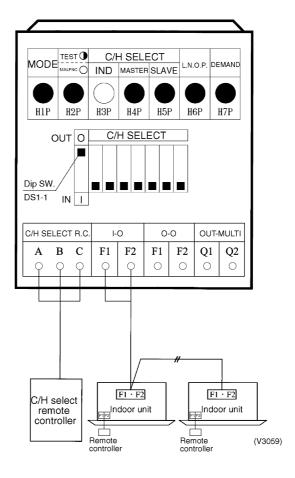
- After the check operation, "CHANGEOVER UNDER CONTROL" is flashing in all connected remote controllers.
- Select an indoor unit to be used as the master unit in accordance with the request from the customer. (It is recommended to select an indoor unit which will be used most often as the master unit.)
- Press the operation mode selector button in the remote
- controller of the indoor unit selected as the master unit. In that remote controller, "CHANGEOVER UNDER CONTROL" disappears. That remote controller will control
- changeover of the cooling/heating operation mode. In other remote controllers, "CHANGEOVER UNDER CONTROL" lights

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

- · After the check operation, the timer lamp is flashing in all connected indoor units.
- Select an indoor unit to be used as the master unit in accordance with the request from the customer. (It is recommended to select an indoor unit which will be used most often as the master unit.)
- Press the operation selector mode button in the remote controller of the indoor unit selected as the master unit. A "peep" sound is emitted, and the timer lamp turns off in all indoor units.
- That indoor unit will control changeover of the cooling/ heating operation mode.

### 2 Set Cool / Heat Separately for Each Outdoor Unit System by Cool/Heat Switching Remote Controller

- ◆ It does not matter whether or not there is outdoor outdoor unit wiring.
- Set outdoor unit PC board DS1-1 to OUT (factory set).
- Set cool/heat switching to <u>IND</u> (individual) for "Setting mode 1" (factory set).



### 3.2.2 Setting of Low Noise Operation and Demand Operation

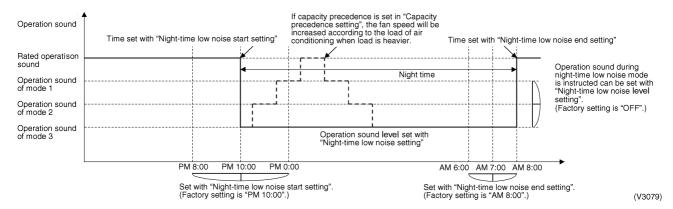
### **Setting of Low Noise Operation**

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

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

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

### Image of operation



### **Setting of Demand Operation**

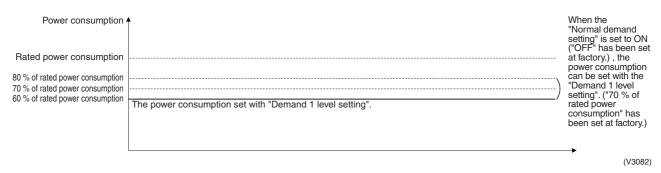
By connecting the external contact input to the demand input of the outdoor unit external control adapter (optional), the power consumption of unit operation can be saved suppressing the compressor operating condition.

Set item	Condition	Content
Demand	Mode 1	The compressor operates at approx. 60% or less of rating.
	Mode 2	The compressor operates at approx. 70% or less of rating.
	Mode 3	The compressor operates at approx. 80% or less of rating.

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

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

### Image of operation



### **Detailed Setting Procedure of Low Noise Operation and Demand Control**

### 1. Setting mode 1 (H1P off)

 $\odot$  In setting mode 2, push the BS1 (MODE button) one time.  $\rightarrow$  Setting mode 1 is entered and H1P off.

During the setting mode 1 is displayed, "In low noise operation" and "In demand control" are displayed.

### 2. Setting mode 2 (H1P on)

- ① In setting 1, push and hold the BS1 (MODE button) for more than 5 seconds. → Setting mode 2 is entered and H1P lights.
- ② Push the BS2 (SET button) several times and match the LED display with the Setting No. you want.
- ③ Push the BS3 (RETURN button) one time, and the present setting content is displayed. → Push the BS2 (SET button) several times and match the LED display with the setting content (as shown on next page) you want.
- 9 Push the BS3 (RETURN button) two times.  $\rightarrow$  Returns to 0.
- $\ \ \$  Push the BS1 (MODE button) one time.  $\ \rightarrow$  Returns to the setting mode 1 and turns H1P off.

O: ON ●: OFF ④: Blink

		1							2								3						
Setting No.	Setting contents		S	etting	No. in	dicatio	n			S	etting	No. in	dicatio	n		Setting contents	Setti	tting contents indication (Initial setting)					
		H1P	H2P	НЗР	H4P	H5P	H6P	H7P	H1P	H2P	НЗР	H4P	H5P	H6P	H7P		H1P	H2P	НЗР	H4P	H5P	H6P	H7P
12	External low noise / Demand setting	0	•	•	•	•	•	•	0	•	•	0	0	•	•	NO (Factory set)	0	•	•	•	•	•	•
	,															YES	0	•	•	•	•	•	•
22	Night-time low noise setting								0	•	0	•	0	0	•	OFF (Factory setting)	0	•	•	•	•	•	•
																Mode 1	0	•	•	•	•	•	•
																Mode 2	0	•	•	•	•	•	•
																Mode 3	0	•	•	•	•	•	•
26	Night-time								0	•	0	0	•	0	•	PM 8:00	0	•	•	•	•	•	•
	low noise start setting															PM 10:00 (Factory setting)	0	•	•	•	•	•	•
																PM 0:00	0	•	•	•	•	•	•
27	Night-time								0	•	0	0	•	0	0	AM 6:00	0	•	•	•	•	•	•
	low noise end setting															AM 7:00	0	•	•	•	•	•	•
																AM 8:00 (Factory setting)	0	•	•	•	•	•	•
29	Capacity precedence setting								0	•	0	0	0	•	0	Low noise precedence (Factory setting)	0	•	•	•	•	•	•
																Capacity precedence	0	•	•	•	•	•	•
30	Demand setting 1								0	•	0	0	0	0	•	60 % of rated power consumption	0	•	•	•	•	•	•
																70 % of rated power consumption (Factory setting)	0	•	•	•	•	•	•
																80 % of rated power consumption	0	•	•	•	•	•	•
32	Normal demand setting								0	•	•	•	•	•	•	OFF (Factory setting)	0	•	•	•	•	•	•
																ON	0	•	•	•	•	•	•
			Settin	g mod	e indi	cation	sectio	n		Settin	g No.	indica	tion se	ction				Set co	ontents	s indic	ation s	ection	

### **Setting of Refrigerant Additional Charging Operation**

### Refrigerant additional charging operation procedure

When the outdoor unit is stopped and the entire quantity of refrigerant cannot be charged from the stop valve on the liquid side, make sure to charge the remaining quantity of refrigerant using this procedure. If the refrigerant quantity is insufficient, the unit may malfunction.

1 Turn ON the power of the indoor unit and the outdoor unit.
2 Make sure to completely open the stop valve on the gas side and the stop valve on the liquid side.
3 Connect the refrigerant charge hose to the service port (for additionally charging the refrigerant).
4 In the stopped status, set to ON the refrigerant additional charging operation (A) in set mode 2 (H1P: Turn on).

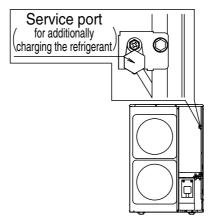
The operation is automatically started.

(The LED indicator H2P flickers, and "Test run" and "Under centralized control" are displayed in the remote controller.)

(a) After charging the specified quantity of refrigerant, press the RETURN button (BS3) to stop the operation. The operation is automatically stopped within 30 minutes.
If charging is not completed within 30 minutes, set and perform the refrigerant additional charging operation (A) again.

If the refrigerant additional charging operation is stopped soon, the refrigerant may be overcharged. Never charge extra refrigerant.

Disconnect the refrigerant charge hose.



### 3.2.4 Setting of Refrigerant Recovery Mode

When carrying out the refrigerant collection on site, fully open the respective expansion valve of indoor and outdoor units

All indoor and outdoor unit's operation are prohibited.

# Operation procedure

- ① In "Setting Mode 2" with units in stop mode, set "B Refrigerant Recovery / Vacuuming mode" to ON. The respective expansion valve of indoor and outdoor units are fully opened. "TEST OPERATION" and "UNDER CENTRALIZED CONTROL" are displayed on the remote controller, and the indoor / outdoor unit operation is prohibited.
  After setting, do not cancel "Setting Mode 2" until completion of refrigerant recovery operation.
- © Collect the refrigerant using a refrigerant recovery unit. (See the instruction attached to the refrigerant recovery unit for more detal.)
- ③ Press Mode button "BS1" once and reset "Setting Mode 2".

### 3.2.5 Setting of Vacuuming Mode

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

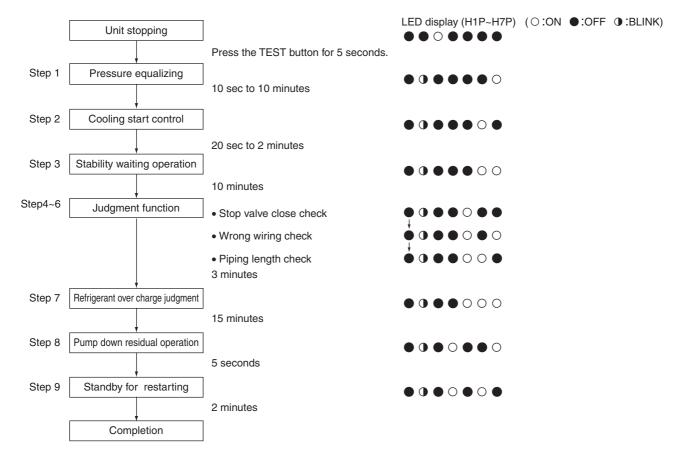
# Operating procedure

- ① In "Setting Mode 2" with units in stop mode, set "B Refrigerant Recovery / Vacuuming mode" to ON. The respective expansion valve of indoor and outdoor units are fully opened. "TEST OPERATION" and "UNDER CENTRALIZED CONTROL" are displayed on the remote controller, and the indoor / outdoor unit operation is prohibited.
  After setting, do not cancel "Setting Mode 2" until completion of Vacuuming operation.
- ② Use the vacuum pump to perform vacuuming operation.
- ③ Press Mode button "BS1" once and reset "Setting Mode 2".

### 3.2.6 Check Operation

To prevent any trouble in the period of installation at site, the system is provided with a test operation mode enabling check for incorrect wiring, stop valve left in closed, coming out (or misplacing with suction pipe thermistor) of discharge pipe thermistor and judgment of piping length, refrigerant overcharging, and learning for the minimum opening degree of electronic expansion valve.

#### **CHECK OPERATION FUNCTION**



# 4. Field Setting for SkyAir Indoor Unit

# 4.1 Explanation

Field set is carried out from the remote controller. At time of installation, or after maintenance inspection/repair, carry out field set according to the explanation below. Incorrect settings will cause a malfunction to occur. (The indoor unit settings are sometimes changed if optional accessories are mounted on the indoor unit. Refer to the optional accessory manual.)

#### **Field Setting** 4.2

#### 4.2.1 **Wired Remote Controller**



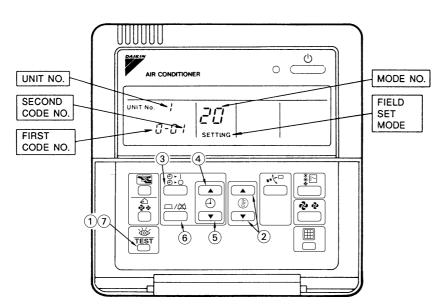
(Field setting must be made from the remote controller in accordance with the installation conditions.)

- Setting can be made by changing the "Mode number", "FIRST CODE NO.", and "SECOND CODE NO.".
- Refer to the following procedures for Field setting.

#### **Procedure**

- 1) When in the normal mode, press the " " button for a minimum of four seconds, and the FIELD SET MODE is entered.
- (2) Select the desired MODE NO. with the " button.
- (3) During group control, when setting by each indoor unit (mode No. 20, 21 and 23 have been " button and select the INDOOR UNIT NO to be set. (This operation is selected), push the ' unnecessary when setting by group.)
- 4) Push the " " upper button and select FIRST CODE NO. 雨
- (5) Push the " lower button and select the SECOND CODE NO.
- (6) Push the " " button once and the present settings are SET.
- 8 (7) Push the " " button for about one second to return to the NORMAL MODE. TEST

(Example) If during group setting and the time to clean air filter is set to FILTER CONTAMINATION -HEAVY, SET MODE NO. to "10," FIRST CODE NO. to "0," and SECOND CODE NO. to "02."



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### 4.2.2 Wireless Remote Controller



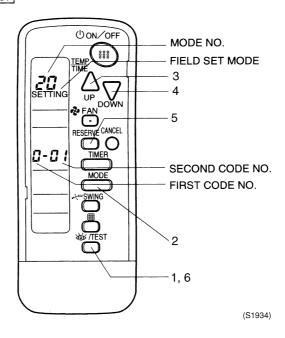
Note:

If optional accessories are mounted on the indoor unit, the indoor unit setting may have to be changed. Refer to the instruction manual (optional hand book) for each optional accessory.

#### **Procedure**

- 1. When in the normal mode, push the " \times /TEST " button for a minimum of four seconds, and the FIELD SET MODE is entered.
- 2. Select the desired MODE NO. with the " MODE " button.
- 3. Push the "  $\triangle$  " button and select the FIRST CODE NO.
- 4. Push the "  $\sum_{N=1}^{\infty}$  " button and select the SECOND CODE NO.
- " button and the present settings are SET.

  | We / TEST | " button to return to the NORMAL MODE." 5. Push the "
- 6. Push the " ₩/TEST



#### **Initial Setting Contents** 4.3

Setting Contents  Indoor Models		Filter Sign	Filter Sign Estimation of Accumulated Operating Hours	High Air Outlet Velocity (for Application to Ceiling Higher than 2.7m)	Selection of Airflow Direction F, T, W	Airflow Direction Adjust	Airflow Direction Range Setting	External Static Pressure	Long Life Filter Type	Fan Speed Up	Simultaneous operation (Twin)
Ceiling Suspended type (FHQ)	(Heat Pump) FHQ 35~60 BVV1B	0	0	0							
Ceiling Mounted Cassette type (FFQ)	(Heat Pump) FFQ 25~60 BV1B	0	0		0	0	0		0		

# 4.4 Local Setting Mode Number

**Example** 

To set the filter sign time to "filter contamination - heavy" for all units in a group: Set mode No. to "10," setting switch No. to "0," and setting position No. to "02."

### Table (FHQ & FFQ)

Mode	Setting	Setting Description			Sett	ting Positio	n No. *Not	e 2
No. Note 1	Switch No.			0	)1	0	2	03
10 (20)	0	Filter contamination - heavy / light (Setting of operating hours for filter sign indication) (Change setting when reducing filter sign indication time to half due to quick soiling of filter)	Long-Life Type	Light	Approx. 2,500 hours	Heavy	Approx. 1,250 hours	
	1	Long-life filter type (Setting of fil indication time) (Change setting when Ultra-long installed)	-	Long-Li	ife Filter	_	_	_
	2	Remote control thermostat (Set when remote control thermois used.)	stat sensor	U	se	Not	use	
	3	Estimation of filter operating hou (Change setting when filter sign inot used)	ır ndication is	C	N	OFF		_
11 (21)	2	Indoor unit fan OFF when thermo cooling/heating	stat OFF in	-	_	Fan	OFF	_
12 (22)	5	Automatic restart after power fai *Note 4	lure reset	0	FF	0	Ν	_
13 (23)	0	High Ceiling-suspended type Ceiling only)	e (FHQ	2.7 m c	r Lower	2.7~3	3.5 m	_
	1	Airflow direction selection (Char when blocking kit is installed) *I	nge setting Note 3	ı	F		Г	W
	4	Setting of airflow direction adjust	ment range	ge Upward Standard				Downward



- 1. Setting is made in all units in a group. To set for individual indoor units or to check the setting, use the mode Nos. (with "2" in upper digit) in parentheses ().
- 2. The setting position No. is set to "01" at the factory, except for the following cases in which "02" is set.
- Setting of airflow direction adjustment range 13(23)-4
- Automatic restart after power outage. 12(22)-5
- Remote control thermostat 10(20)-2
- Filter sign indication (only for ceiling-mounted duct type) 10(20)-3
- 3. Since drafts may result, carefully select the installation location.
- 4. When power returns, units resume the settings made before the power failure.



When "auto restart after power failure reset" is set, be sure to turn off air conditioners, then cut off the power supply before conducting maintenance, inspection and other work. If the power supply is cut off with the power switch left ON, air conditioners will automatically start operating when the power supply is turned on.

- 5. Do not set any items other than those listed in the above table.
- 6. Functions that indoor units are not equipped with will not be displayed.
- 7. When returning to normal mode, "88" may be displayed on the LCD section of the remote controller due to initialization operation.

# 4.5 Detailed Explanation of Setting Modes

## 4.5.1 Airflow Direction Setting (FFQ)

Set the airflow direction of indoor units as given in the table below. (Set when optional air outlet blocking pad has been installed.) The second code No. is factory set to "01."

### **Setting Table**

Mode No.	First Code No.	Second Code No.	Setting
13 (23)	1	01	F: 4-direction airflow
		02	T: 3-direction airflow
		03	W : 2-direction airflow

### 4.5.2 Filter Sign Setting (FFQ & FHQ)

If switching the filter sign ON time, set as given in the table below.

#### **Set Time**

Setting	Filter Specs.	Long Life
Contamination Light	01	2,500
Contamination Heavy	02	1,250

## 4.5.3 Range of Airflow Direction Setting (FFQ)

Make the following airflow direction setting according to the respective purpose.



(S2537)

Mode No.	First Code No.	Second Code No.	Setting
13 (23)	4	01	Upward (Draft prevention)
		02	Standard
		03	Downward (Ceiling soiling prevention)

### 4.5.4 Fan Speed OFF When Thermostat is OFF (FFQ & FHQ)

When the cool/heat thermostat is OFF, you can stop the indoor unit fan by switching the setting to "Fan OFF."

\* Used as a countermeasure against odor for barber shops and restaurants.

### **Setting Table**

Mode No.	First Code No.	Second Code No.	Setting
11(21)	2	01	_
		02	Fan OFF

# 4.5.5 Fan Speed Changeover When Thermostat is OFF (FFQ & FHQ)

By setting to "Set Fan Speed," you can switch the fan speed to the set fan speed when the heating thermostat is OFF.

\* Since there is concern about draft if using "fan speed up when thermostat is OFF," you should take the setup location into consideration.

### **Setting Table**

Mode No.	First Code No.	Second Code No.	Setting
12(22)	3	01	LL Fan Speed
		02	Set Fan Speed

### 4.5.6 Wireless Setting (Address and MAIN/SUB Setting)

### **Explanation**

If several wireless remote controller units are used together in the same room (including the case where both group control and individual remote controller control are used together), be sure to set the addresses for the receiver and wireless remote controller. (For group control, see the attached installation manual for the indoor unit.) If using together with a wired remote controller, you have to change the main/sub setting or the receiver.

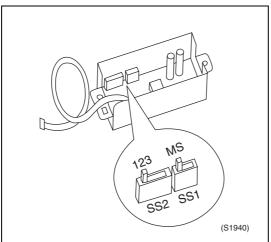
### **Receiver Setting**

Set the wireless address switch (SS2) on the transmitter board according to the table below.

Unit No.	No.1	No.2	No.3
Wireless Address Switch (SS2)	-1 ν ω (S1935)	-1 2ν ω (S1936)	-1 N ω (S1937)

When using both a wired and a wireless remote controller for 1 indoor unit, the wired controller should be set to MAIN. Therefore, set the MAIN/SUB switch (SS1) of the transmitter board to SUB.

	MAIN	SUB
MAIN/SUB Switch (SS1)	S M (S1938)	S M <sub>(S1939)</sub>



After completing setting, seal off the opening of the address switch and the MAIN/SUB switch with the attached sealing pad.

# Address Setting (It is Factory Set to "1")

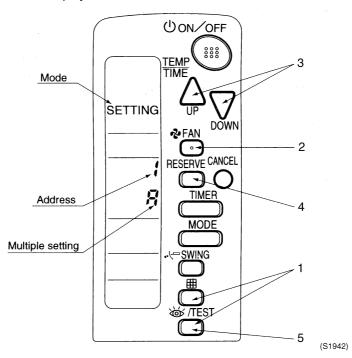
### <Setting from the remote controller>

- 1. Hold down the " button and the " writer " button for at least 4 seconds, to get the FIELD SET MODE. (Indicated in the display area in the figure at below).
- 2. Press the " FAN " button and select a multiple setting (A/b). Each time the button is pressed the display switches between "A" and "b".
- 3. Press the "  $\stackrel{\triangle}{\longrightarrow}$  " button and "  $\stackrel{\nabla}{\nabla}$  " button to set the address.

$$-1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6$$
 (S1941)

Address can be set from 1 to 6, but set it to 1  $\sim$  3 and to same address as the receiver. (The receiver does not work with address 4  $\sim$  6.)

- 4. Press the " RESERVE " button to enter the setting.
- 5. Hold down the " <a href="https://www.nest.nlm.nest.nl



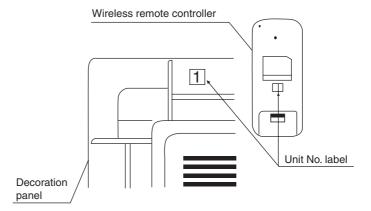
# Multiple Settings A/b

When the indoor is being operating by outside control (central remote controller, etc.), it sometimes does not respond to ON/OFF and temperature setting commands from this remote controller. Check what setting the customer wants and make the multiple setting as shown below.

Remote Controller		Indoor Unit	
Multiple Setting	Remote Controller Display	Controlled by other Air Conditioners and Devices	For other than on Left
A: Standard	All items Displayed.	Commands other than ON/OFF and Temperature Setting Accepted. (1 LONG BEEP or 3 SHORT BEEPS Emitted)	
b: Multiple display	Operations set only is displayed shortly after execution.	All Commands Accepted (2 SHORT BEEPS)	

### **After Setting**

Stick the Unit No. label at decoration panel air discharge outlet as well as on the back of the wireless remote controller.



#### **PRECAUTIONS**

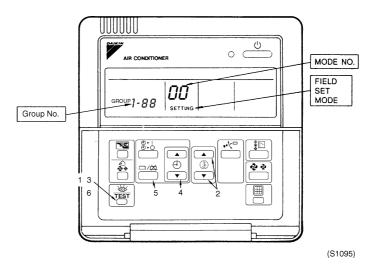
Set the Unit No. of the receiver and the wireless remote controller to be equal. If the settings differ, the signal from the remote controller cannot be transmitted.

# 4.6 Centralized Group No. Setting

- If carrying out centralized control with a central remote controller and unified ON/OFF controller, you have to set the group No. for each group by remote controller.
- To set the group No., first turn on the power supply of the central remote controller, unified ON/OFF controller and indoor unit.

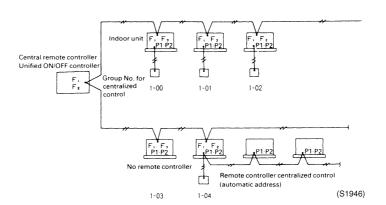
Centralized Group No. Setting by Remote Controller

- 1. If the inspection/test button is pushed for 4 seconds or more when in the normal mode, operation enters the "field set mode."
- 2. Using the temperature control buttons, set the mode No. to "00."
- 3. Push the inspection/test button to inspect the group No. display.
- 4. Using the programming time button, set the group No. for each group. (Group No. rises in the order of 1-00, 1-01, ...1-15, 2-00 ...4-15, etc. The unified ON/OFF controller however displays only the range of group numbers selected by the switch for setting each address.)
- 5. Push the timer ON/OFF button and enter the selected group No.
- 6. Push the inspection/test button and return to the normal mode.



 $\ast$  If the address has to be set individually for each unit for power consumption counting, etc., set the mode No. to "30."

# Group No. Setting Example



Note:

- 1. "F1,F2" indicates interface adaptor for SkyAir series.
- 2. If not using remote controllers, temporarily connect a remote controller to set the group No., set the group No. for centralized control, and then disconnect the controller.

# 4.7 Maintenance Mode Setting

#### **Procedure**

- 1. Enter the field set mode.
  - Continue to push the inspection / test operation button for a minimum of 4 seconds.
- 2. Enter the maintenance mode.
  - After having entered the field set mode, continue to push the inspection / test operation button for a minimum of 4 seconds.
- 3. Select the mode No.
  - Set the desired mode No. with the up/down temperature setting button.
- 4. Select the unit No.
  - Select the indoor unit No. set with the time mode START/STOP button.
- 5. Carry out the necessary settings for each mode. (Modes 41, 44 and 45) See the table below for details.
- 6. Enter the setting contents. (Modes 44 and 45) Enter by pushing the timer ON/OFF button.
- 7. Return to the normal operation mode.
  - Tap the inspection / test operation button one time.

### **Table**

Mode No.	Function	Content and Operation Method	Example of Remote Controller Display
40	Malfunction Hysteresis	You can change the history with the programming time updown button.	Past malfunction code  UNIT No.  SCODE SETTING  Malfunction 1: Newest hysteresis 3: Oldest * "00" displayed for 4 and subsequent.  (S1958)
41	Sensor Data Display	Select the display sensor with the programming time up- down button	Sensor type
		Display sensor Displa	UNIT No. Temperature  SETTING (S1954)
43	Forced Fan ON	Turns the fan ON for each unit individually.	UNIT No. SETTING (S1955)
44	Individual Setting	Sets fan speed and airflow direction for each unit individually when using group control.	Fan 1:Low speed 3: High 0:Upper
		Settings are made using the "airflow direction adjust" and "fan speed adjust" buttons.	UNIT No.  Air flow direction  4: Lowest  CODE  SETTING (S1956)
45	Unit No.	Changes unit No.	
	Change	Set the unit No. after changing with the programming time updown button.	No. after change
			CODE SETTING (S1957)

Operation is not reset by malfunction code reset for inspection. (Cannot be reset because the count is updated each time a malfunction occurs.)

# 5. Test Operation and Field Setting for RA Indoor Unit

# 5.1 Test Operation from the Remote Controller

### For Heat pump

In cooling mode, select the lowest programmable temperature; in heating mode, select the highest programmable temperature.

- Trial operation may be disabled in either mode depending on the room temperature.
- After trial operation is complete, set the temperature to a normal level. (26°C to 28°C in cooling mode, 20°C to 24°C in heating mode)
- For protection, the system disables restart operation for 3 minutes after it is turned off.

### For Cooling Only

Select the lowest programmable temperature.

- Trial operation in cooling mode may be disabled depending on the room temperature. Use the remote control for trial operation as described below.
- After trial operation is complete, set the temperature to a normal level (26°C to 28°C).
- For protection, the machine disables restart operation for 3 minutes after it is turned off.

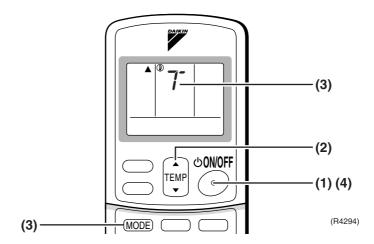
### **Trial Operation and Testing**

- 1. Measure the supply voltage and make sure that it falls in the specified range.
- 2. Trial operation should be carried out in either cooling or heating mode.
- 3. Carry out the test operation in accordance with the Operation Manual to ensure that all functions and parts, such as louver movement, are working properly.
- The air conditioner requires a small amount of power in its standby mode. If the system is not to be used for some time after installation, shut off the circuit breaker to eliminate unnecessary power consumption.
- If the circuit breaker trips to shut off the power to the air conditioner, the system will restore the original operation mode when the circuit breaker is opened again.

### **Trial operation from Remote Controller**

- (1) Press ON/OFF button to turn on the system.
- (2) Simultaneously press center of TEMP button and MODE buttons.
- (3) Press MODE button twice.

  ("7" will appear on the display to indicate that Trial Operation mode is selected.)
- (4) Trial run mode terminates in approx. 30 minutes and switches into normal mode. To quit a trial operation, press ON/OFF button.



## 5.2 Jumper Settings

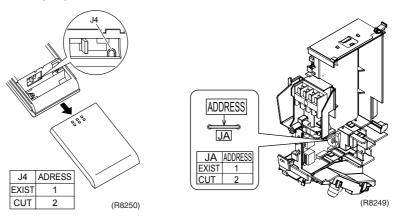
### 5.2.1 When Two Units are Installed in One Room

When two indoor units are installed in one room, the two wireless remote controllers can be set for different addresses.

### In case of FTXS20-50G

### How to set the different addresses

- Control PCB of the indoor unit
- (1) Remove the front grille. (2 screws)
- (2) Remove the electrical box (1 screw).
- (3) Remove the drip proof plate. (4 tabs)
- (4) Cut the address jumper JA on the control PCB.
- Wireless remote controller
- (1) Slide the front cover and take it off.
- (2) Cut the address jumper J4.



### 5.2.2 Jumper Setting

Jumper (On indoor PCB)	Function	When connected (factory set)	When cut
JC	Power failure recovery function	Auto-restart	Unit does not resume operation after recovering from a power failure. Timer ON-OFF settings are cleared.
JB	Fan speed setting when compressor is OFF on thermostat. (effective only at cooling operation)	Fan speed setting; Remote controller setting	Fan rpm is set to "0" <fan stop=""></fan>

168 Test Operation

# Part 7 Operation Manual

1.	Syst	em Configuration	170
	1.1	Operation Instructions	170
2.	Instr	uction	171
	2.1	RMXS Series	171
	2.2	FTXG-E, CTXG-E, FTXS-F, FDXS-C(E), FLK(X)S-B Series	172
	2.3	FTXS-G, FVXS-F Series	198
	2.4	FHQ-B Series	222
	2.5	FFQ-B Series	231

System Configuration SiBE18-821

## 1. System Configuration

## 1.1 Operation Instructions

After the installation and test operation of the room air conditioner have been completed, it should be operated and handled as described below. Every user would like to know the correct method of operation of the room air conditioner, to check if it is capable of cooling (or heating) well, and to know a clever method of using it.

In order to meet this expectation of the users, giving sufficient explanations taking enough time can be said to reduce about 80% of the requests for servicing. However good the installation work is and however good the functions are, the customer may blame either the room air conditioner or its installation work because of improper handling. The installation work and handing over of the unit can only be considered to have been completed when its handling has been explained to the user without using technical terms but giving full knowledge of the equipment.

## 2. Instruction

### 2.1 RMXS Series

REGARDING USE Super Multi Plus System air conditioner

### POINTS THE CUSTOMER SHOULD BE AWARE OF

### **■ COMFORT**

### At startup

• After the power is initially turned on, it will take approx. 10 minutes until startup. Usually the unit will start in 3 minutes

### Heating operation (Not for a unit for cooling only)

- The colder it is outside or the greater the number of indoor units, the longer the time required from the start of operation until the emission of warm air (around 35°C). When the outside temperature is -5 to 2°C, the inside temperature is 5 to 10°C, and total indoor unit combination is 100% capacity, the first startup of all indoor units in the morning will take approximately 20 to 30 minutes.
- Oil return operation will be performed once every 8 hours to preserve the lubrication of oil to the compressor.
  - Since operation is switched to cooling cycle during heating operation in order to return the oil, heating operation will not be possible for around 5 to 10 minutes.
- When the outside temperature is 28°C or higher, the unit will be set to the standby mode for protection.

### **■ OPERATING NOISE**

### At startup

• During startup, in order to emit warm or cool air as quickly as possible, the sound of refrigerant flowing will be heard for a short time (1 to 2 minutes) from the outdoor unit.

### At shutdown

• In order to ensure smooth startup the next time this unit is operated, the outdoor unit will continue to operate for around 1 minutes after shutdown. (The time of continued operation depends on the outside temperature, capacity of connected indoor units, and connection pipe length.)

### Cooling at low outside temperatures

During cooling operation when the outside temperature is 20°C or less, the fan of the outdoor unit will
operate at low speed to preserve capacity and the outdoor unit valve will be opened depending on the
pressure conditions, making it more likely that the sound of refrigerant flowing will be heard.

### Defrost (Not for a unit for cooling only)

• When the outside unit is performing defrosting operation, the fan of the indoor unit will stop temporarily, and the slight sound of refrigerant flowing will be heard.

### Excessive heating load (Not for a unit for cooling only)

During heating operation when the outside temperature is high (15 to 24°C), the fan of the outdoor unit
will be operated at low speed, making it more likely that the sound of refrigerant flowing will be heard from
the outdoor unit.

# 2.2 FTXG-E, CTXG-E, FTXS-F, FDXS-C(E), FLK(X)S-B Series 2.2.1 Manual Contents and Reference Page

Madal Carias	Wall Mounted Type	
Model Series	FTXG25/35E, CTXG50E	FTXS60/71F
Read Before Operation		
Remote Controller	173	174
Operation		
AUTO, DRY, COOL, HEAT, FAN Operation ★	177	177
Adjusting the Airflow Direction	179	181
POWERFUL Operation ★	185	185
OUTDOOR UNIT QUIET Operation ★	186	186
ECONO Operation	_	_
HOME LEAVE Operation ★	_	188
INTELLIGENT EYE Operation	190	192
TIMER Operation ★	194	194
Note for Multi System	196	196
Drawing No.	3P194513-2C	3P190111-1C

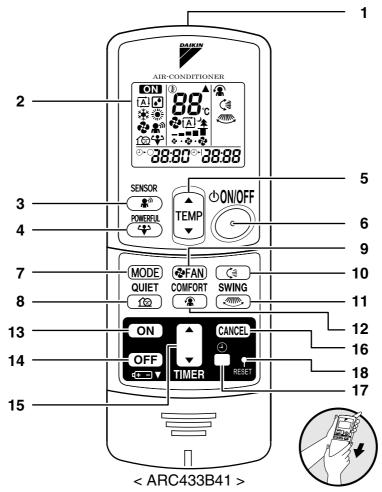
Model Series	Duct Connected Type	Floor/Ceiling Suspended Dual Type
Woder Series	FDXS50/60C FDXS25/35E	FLXS25/35/50/60B
Read Before Operation		
Remote Controller	175	176
Operation		
AUTO, DRY, COOL, HEAT, FAN Operation ★	177	177
Adjusting the Airflow Direction	_	183
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ECONO Operation	_	_
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INTELLIGENT EYE Operation	_	_
TIMER Operation ★	194	194
Note for Multi System	196	196
Drawing No.	3P196326-9B	3P194444-5C

 $<sup>\</sup>star$ : Illustrations are for wall mounted type FTXS60/71F as representative.

### 2.2.2 Remote Controller

FTXG 25/35 E, CTXG 50 E

### **■** Remote Controller



### 1. Signal transmitter:

• It sends signals to the indoor unit.

### 2. Display:

- It displays the current settings.
   (In this illustration, each section is shown with all its displays ON for the purpose of explanation.)
- 3. SENSOR button: INTELLIGENT EYE operation
- 4. POWERFUL button:

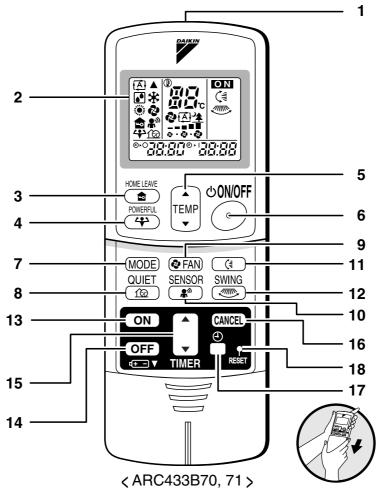
POWERFUL operation

- 5. TEMPERATURE adjustment buttons:
  - It changes the temperature setting.
- 6. ON/OFF button:
  - Press this button once to start operation. Press once again to stop it.
- 7. MODE selector button:
  - It selects the operation mode. (AUTO/DRY/COOL/HEAT/FAN)

- 8. QUIET button: OUTDOOR UNIT QUIET operation
- 9. FAN setting button:
  - It selects the air flow rate setting.
- 10. SWING button:
  - Flap (Horizontal blade)
- 11. SWING button:
  - Louvers (Vertical blades)
- 12. COMFORT AIRFLOW mode button
- 13. ON TIMER button
- 14. OFF TIMER button
- 15. TIMER Setting button:
  - It changes the time setting.
- 16. TIMER CANCEL button:It cancels the timer setting.
- 17. CLOCK button
- 18. RESET button:
  - · Restart the unit if it freezes.

### FTXS 60/71 F

### ■ Remote Controller



- 1. Signal transmitter:
  - · It sends signals to the indoor unit.
- 2. Display:
  - It displays the current settings.
     (In this illustration, each section is shown with all its displays ON for the purpose of explanation.)
- 3. HOME LEAVE button:

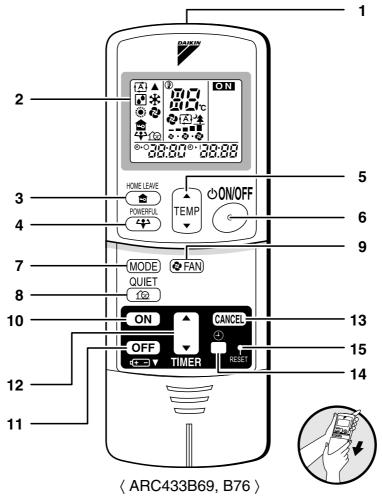
**HOME LEAVE** operation

- **4. POWERFUL button:** POWERFUL operation
- 5. TEMPERATURE adjustment buttons:
  - It changes the temperature setting.
- 6. ON/OFF button:
  - Press this button once to start operation.
     Press once again to stop it.
- 7. MODE selector button:
  - It selects the operation mode. (AUTO/DRY/COOL/HEAT/FAN)

- 8. QUIET button: OUTDOOR UNIT QUIET operation
- 9. FAN setting button:
  - It selects the air flow rate setting.
- SENSOR button: INTELLIGENT EYE operation
- 11. SWING button:
  - Flap (Horizontal blade)
- 12. SWING button:
  - · Louver (Vertical blades)
- 13. ON TIMER button
- 14. OFF TIMER button
- 15. TIMER Setting button:
  - It changes the time setting.
- 16. TIMER CANCEL button:
  - It cancels the timer setting.
- 17. CLOCK button 18. RESET button:
  - . NESET BUILDIT.
  - · Restart the unit if it freezes.
  - · Use a thin object to push.

### FDXS 50/60 C, FDXS 25/35 E

### ■ Remote Controller



### 1. Signal transmitter:

· It sends signals to the indoor unit.

### 2. Display:

It displays the current settings.
 (In this illustration, each section is shown with all its displays ON for the purpose of explanation.)

### 3. HOME LEAVE button:

HOME LEAVE operation

### 4. POWERFUL button:

POWERFUL operation

### 5. TEMPERATURE adjustment buttons:

• It changes the temperature setting.

### 6. ON/OFF button:

• Press this button once to start operation. Press once again to stop it.

### 7. MODE selector button:

- It selects the operation mode. (AUTO/DRY/COOL/HEAT/FAN)
- QUIET button: OUTDOOR UNIT QUIET operation

### 9. FAN setting button:

- It selects the air flow rate setting.
- 10. ON TIMER button
- 11. OFF TIMER button
- 12. TIMER Setting button:
  - It changes the time setting.

### 13. TIMER CANCEL button:

• It cancels the timer setting.

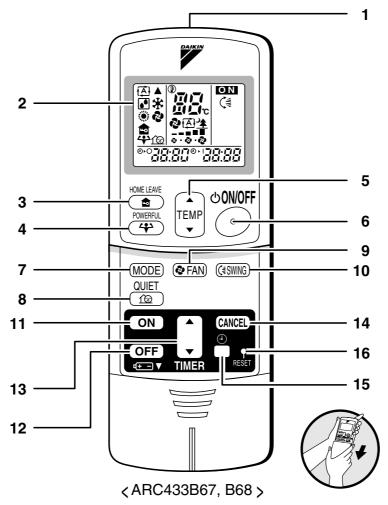
### 14. CLOCK button

### 15. RESET button:

- Restart the unit if it freezes.
- · Use a thin object to push.

### FLXS 25/35/50/60 B

### ■ Remote Controller



### 1. Signal transmitter:

· It sends signals to the indoor unit.

### 2. Display:

It displays the current settings.
 (In this illustration, each section is shown with all its displays ON for the purpose of explanation.)

### 3. HOME LEAVE button:

**HOME LEAVE** operation

### 4. POWERFUL button:

POWERFUL operation

### 5. TEMPERATURE adjustment buttons:

• It changes the temperature setting.

### 6. ON/OFF button:

• Press this button once to start operation. Press once again to stop it.

### 7. MODE selector button:

- It selects the operation mode. (AUTO/DRY/COOL/HEAT/FAN)
- **8. QUIET button:** OUTDOOR UNIT QUIET operation

### 9. FAN setting button:

· It selects the air flow rate setting.

- 10. SWING button
- 11. ON TIMER button
- 12. OFF TIMER button
- 13. TIMER Setting button:
  - It changes the time setting.
- 14. TIMER CANCEL button:It cancels the timer setting.
- 15. CLOCK button

### 16. RESET button:

- Restart the unit if it freezes.
- Use a thin object to push.

### 2.2.3 AUTO • DRY • COOL • HEAT • FAN Operation

## **AUTO · DRY · COOL · HEAT · FAN Operation**

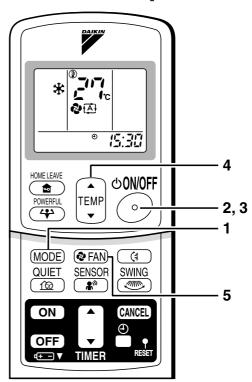
The air conditioner operates with the operation mode of your choice.

From the next time on, the air conditioner will operate with the same operation mode.

## ■ To start operation

- 1. Press "MODE selector button" and select a operation mode.
  - Each pressing of the button advances the mode setting in sequence.
    - AUTO
    - : DRY
    - \*: COOL
    - : HEAT
    - 🔁 : FAN





- 2. Press "ON/OFF button".
  - The OPERATION lamp lights up.



## To stop operation

- 3. Press "ON/OFF button" again.
  - Then OPERATION lamp goes off.

## ■ To change the temperature setting

4. Press "TEMPERATURE adjustment button".

DRY or FAN mode	AUTO or COOL or HEAT mode	
	Press " 📤 " to raise the temperature and press	
	" ▼ " to lower the temperature.	
The temperature setting is not variable.	Set to the temperature you like.	

## ■ To change the airflow rate setting

### 5. Press "FAN setting button".

DRY mode	AUTO or HEAT or COOL or FAN mode
The air flow rate setting is not variable.	Five levels of airflow rate setting from " • " to " • " plus " • " are available.

· Indoor unit quiet operation

When the airflow is set to " \( \grace{\dagger} \) ", the noise from the indoor unit will become quieter. Use this when making the noise quieter.

The unit might lose capacity when the air flow rate is set to a weak level.

### **NOTE**

### ■ Note on HEAT operation

- Since this air conditioner heats the room by taking heat from outdoor air to indoors, the heating capacity becomes smaller in lower outdoor temperatures. If the heating effect is insufficient, it is recommended to use another heating appliance in combination with the air conditioner.
- The heat pump system heats the room by circulating hot air around all parts of the room. After the start of heating operation, it takes some time before the room gets warmer.
- In heating operation, frost may occur on the outdoor unit and lower the heating capacity. In that case, the system switches into defrosting operation to take away the frost.
- During defrosting operation, hot air does not flow out of indoor unit.

### ■ Note on COOL operation

• This air conditioner cools the room by blowing the hot air in the room outside, so if the outside temperature is high, performance drops.

### ■ Note on DRY operation

• The computer chip works to rid the room of humidity while maintaining the temperature as much as possible. It automatically controls temperature and fan strength, so manual adjustment of these functions is unavailable.

### ■ Note on AUTO operation

- In AUTO operation, the system selects a temperature setting and an appropriate operation mode (COOL or HEAT) based on the room temperature at the start of the operation.
- The system automatically reselects setting at a regular interval to bring the room temperature to user-setting level.
- If you do not like AUTO operation, you can manually select the operation mode and setting you like.

### ■ Note on air flow rate setting

• At smaller airflow rates, the cooling (heating) effect is also smaller.

### 2.2.4 Adjusting the Airflow Direction

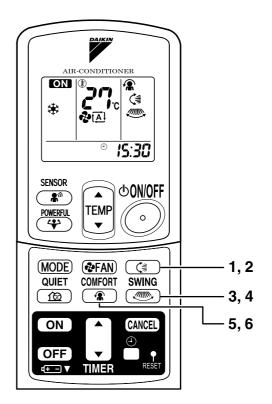
FTXG 25/35 E, CTXG 50 E

## **Adjusting the Airflow Direction**

You can adjust the air flow direction to increase your comfort.

# ■ To adjust the horizontal blade (flap)

- 1. Press "SWING button (\*)".
  - "() is displayed on the LCD.
- 2. When the flap has reached the desired position, press "SWING button 〈章" once more.
  - · The flap will stop moving.
  - "() disappears from the LCD.



# ■ To adjust the vertical blades (louvers)

- 3. Press "SWING button ...".
  - " " is displayed on the LCD.
- 4. When the louvers have reached the desired position, press the "SWING button "" once more.
  - The louvers will stop moving.

### ■ To 3-D Airflow

1. 3. Press the "SWING button 〈意" and the "SWING button 趣": the "〈意" and "趣" display will light up and the flap and louvers will move in turn.

### ■ To cancel 3-D Airflow

2. 4. Press either the "SWING button (\*)" or the "SWING button ...".

## ■ To start COMFORT AIRFLOW operation

### 5. Press "COMFORT AIRFLOW button".

- The flap orientation will change, preventing air from blowing directly on the occupants of the room.
- " ? " is displayed on the LCD.
- <COOL/DRY> The flap will go up.
- <HEAT> The flap will go down.

## ■ To cancel COMFORT AIRFLOW operation

- 6. Press "COMFORT AIRFLOW button" again.
  - The flaps will return to the memory position from before COMFORT AIRFLOW mode.
  - " a " disappears from the LCD.

### **NOTE**

 When "SWING button (a)" is selected, the flap swinging range depends on the operation mode. (See the figure.)

### Three-Dimensional (3-D) Airflow

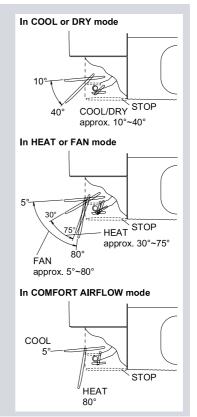
 Using three-dimensional airflow circulates cold air, which tends to collected at the bottom of the room, and hot air, which tends to collect near the ceiling, throughout the room, preventing areas of cold and hot developing.

### **Comfort Airflow**

- The air flow is set automatically.
- The air direction is as shown in the figure at right.

### ATTENTION

- Always use a remote controller to adjust the flap angle.
   If you attempt to move it forcibly with hand when it is swinging, the mechanism may be broken.
- Always use a remote controller to adjust the louvers angles.



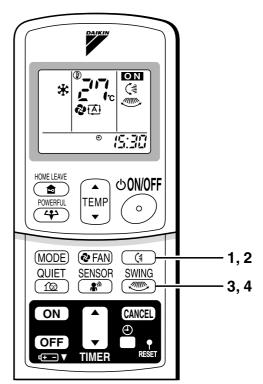
### FTXS 60/71 F

## **Adjusting the Airflow Direction**

You can adjust the air flow direction to increase your comfort.

# To adjust the horizontal blade (flap)

- 1. Press "SWING button (\$\)".
  - "()
     is displayed on the LCD and the flaps will begin to swing.
- 2. When the flap has reached the desired position, press "SWING button ⟨♣" once more.
  - The flap will stop moving.
  - "() disappears from the LCD.



## ■ To adjust the vertical blades (louvers)

- 3. Press "SWING button ...".
  - " " is displayed on the LCD.
- 4. When the louvers have reached the desired position, press the "SWING button "" once more.
  - The louvers will stop moving.
  - " disappears from the LCD.

### ■ To 3-D Airflow

1. 3. Press the "SWING button ()" and the "SWING button ": the "()" and " display will light up and the flap and louvers will move in turn.

### ■ To cancel 3-D Airflow

2. 4. Press either the "SWING button (\$\sigma" or the "SWING button ...").

### Notes on louvers angles

### ■ ATTENTION

• Always use a remote controller to adjust the louvers angles. In side the air outlet, a fan is rotating at a high speed.

## Notes on flap angle

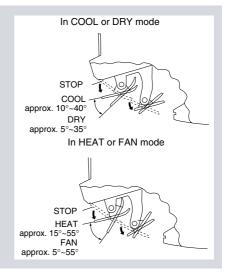
• When "SWING button" is selected, the flaps swinging range depends on the operation mode. (See the figure.)

### Three-Dimensional (3-D) Airflow

 Using three-dimensional airflow circulates cold air, which tends to collected at the bottom of the room, and hot air, which tends to collect near the ceiling, throughout the room, preventing areas of cold and hot developing.

### **■ ATTENTION**

- Always use a remote controller to adjust the flaps angle.
   If you attempt to move it forcibly with hand when it is swinging, the mechanism may be broken.
- Be careful when adjusting the louvers. Inside the air outlet, fan is rotating at a high speed.



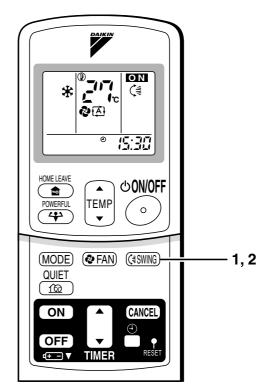
### FLXS 25/35/50/60 B

## **Adjusting the Airflow Direction**

You can adjust the air flow direction to increase your comfort.

# ■ To adjust the horizontal blade (flap)

- 1. Press "SWING button".
  - "() is displayed on the LCD and the flaps will begin to swing.
- 2. When the flaps have reached the desired position, press "SWING button" once more.
  - The flap will stop moving.
  - "(\(\big|\)" disappears from the LCD.



# ■ To adjust the vertical blades (louvers)

• When adjusting the louver, use a robust and stable stool and watch your steps carefully.

Hold the knob and move the louvers.

(You will find a knob on the left side and the right side blades.)

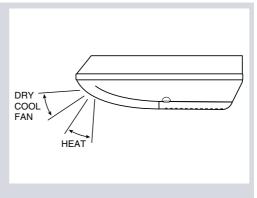


## Notes on flap and louvers angles.

- Unless [SWING] is selected, you should set the flap at a near- horizontal angle in COOL or DRY mode to obtain the best performance.
- In COOL or DRY mode, if the flap is fixed at a downward position, the flap automatically moves in about 60 minutes to prevent condensation on it.

### **■ ATTENTION**

- Always use a remote controller to adjust the flap angle.
  - If you attempt to move it forcibly with hand when it is swinging, the mechanism may be broken.
- Be careful when adjusting the louvers. Inside the air outlet, a fan is rotating at a high speed.



### 2.2.5 POWERFUL Operation

## **POWERFUL Operation**

POWERFUL operation quickly maximizes the cooling (heating) effect in any operation mode. You can get the maximum capacity.

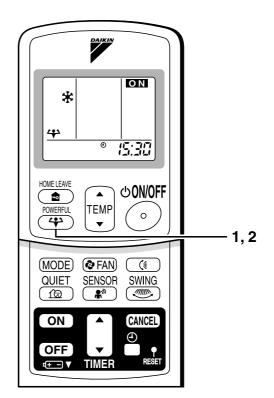
# To start POWERFUL operation

### 1. Press "POWERFUL button".

- POWERFUL operation ends in 20 minutes.
   Then the system automatically operates again with the settings which were used before POWERFUL operation.
- When using Powerful operation, there are some functions which are not available.
- "4" is displayed on the LCD.

# ■ To cancel POWERFUL operation

- 2. Press "POWERFUL button" again.
  - "\" disappears from the LCD.



### NOTE

### ■ Notes on POWERFUL operation

- POWERFUL Operation cannot be used together with QUIET Operation. Priority is given to the function of whichever button is pressed last.
- POWERFUL Operation can only be set when the unit is running. Pressing the operation stop button causes the settings to be canceled, and the "+" disappears from the LCD.
- In COOL and HEAT mode

To maximize the cooling (heating) effect, the capacity of outdoor unit must be increased and the air flow rate be fixed to the maximum setting.

The temperature and air flow settings are not variable.

• In DRY mode

The temperature setting is lowered by 2.5°C and the air flow rate is slightly increased.

• In FAN mode

The air flow rate is fixed to the maximum setting.

• When using priority-room setting See "Note for multi system".

### 2.2.6 OUTDOOR UNIT QUIET Operation

## **OUTDOOR UNIT QUIET Operation**

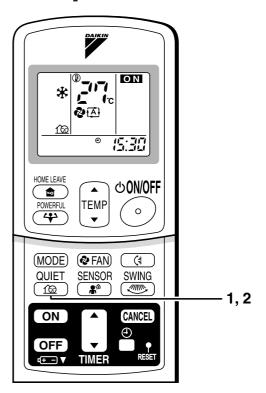
OUTDOOR UNIT QUIET operation lowers the noise level of the outdoor unit by changing the frequency and fan speed on the outdoor unit. This function is convenient during night.

## ■ To start OUTDOOR UNIT QUIET operation

- 1. Press "QUIET button".
  - "m" is displayed on the LCD.

## To cancel OUTDOOR UNIT QUIET operation

- 2. Press "QUIET button" again.
  - "'\( \frac{1}{10}\)" disappears from the LCD.



### NOTE

### ■ Note on OUTDOOR UNIT QUIET operation

- If using a multi system, this function will work only when the OUTDOOR UNIT QUIET operation is set on all operated indoor units.
  - However, if using priority-room setting, see "Note for multi system"
- This function is available in COOL, HEAT, and AUTO modes. (This is not available in FAN and DRY mode.)
- POWERFUL operation and OUTDOOR UNIT QUIET operation cannot be used at the same time.
  - Priority is given to the function of whichever button is pressed last.
- If operation is stopped using the remote controller or the main unit ON/OFF switch when using OUTDOOR UNIT QUIET operation, " @ " will remain on the remote controller display.

### 2.2.7 ECONO Operation

## **ECONO Operation**

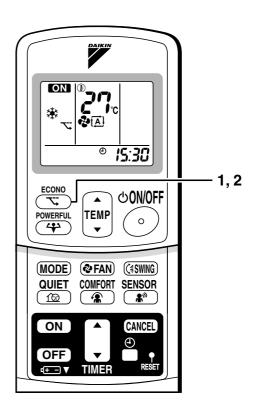
ECONO operation is a function which enables efficient operation by lowering the maximum power consumption value.

## To start ECONO operation

- 1. Press "ECONO button".
  - " " is displayed on the LCD.

## ■ To cancel ECONO operation

- 2. Press "ECONO button" again.
  - " " disappears from the LCD.



### **NOTE**

- ECONO Operation can only be set when the unit is running. Pressing the operation stop button causes the settings to be canceled, and the "\sigma" disappears from the LCD.
- ECONO operation is a function which enables efficient operation by limiting the power consumption of the outdoor unit (operating frequency).
- ECONO operation functions in AUTO, COOL, DRY, and HEAT modes.
- POWERFUL operation and ECONO operation cannot be used at the same time. Priority is given to the function of whichever button is pressed last.
- Power consumption may not drop even if ECONO operation is used, when the level of power consumption is already low.

### 2.2.8 HOME LEAVE Operation

## **HOME LEAVE Operation**

HOME LEAVE operation is a function which allows you to record your preferred temperature and air flow rate settings.

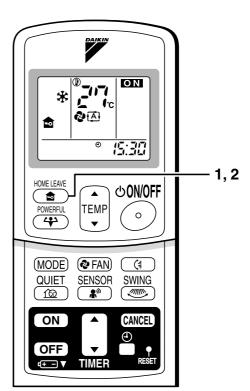
# To start HOME LEAVE operation

- 1. Press "HOME LEAVE button".
  - " a" is displayed on the LCD.
  - The HOME LEAVE lamp lights up.



## To cancel HOME LEAVE operation

- 2. Press "HOME LEAVE button" again.
  - "a" disappears from the LCD.
  - · The HOME LEAVE lamp goes off.



### Before using HOME LEAVE operation.

■ To set the temperature and air flow rate for HOME LEAVE operation

When using HOME LEAVE operation for the first time, please set the temperature and air flow rate for HOME LEAVE operation. Record your preferred temperature and air flow rate.

	Initial setting		Selectable range	
	temperature	Air flow rate	temperature	Air flow rate
Cooling	25°C	"( <u>A</u> )"	18-32°C	5 step, "t͡♣" and " 逢 "
Heating	25°C	"( <u>A</u> )"	10-30°C	5 step, "t͡ð" and "≛"

- 1. Press "HOME LEAVE button". Make sure " a" is displayed in the remote controller display.
- 2. Adjust the set temperature with "  $\blacktriangle$  " or "  $\blacktriangledown$  " as you like.
- 3. Adjust the air flow rate with "FAN" setting button as you like.

Home leave operation will run with these settings the next time you use the unit. To change the recorded information, repeat steps 1 - 3.

## ■ What's the HOME LEAVE operation?

Is there a set temperature and air flow rate which is most comfortable, a set temperature and air flow rate which you use the most? HOME LEAVE operation is a function that allows you to record your favorite set temperature and air flow rate. You can start your favorite operation mode simply by pressing the HOME LEAVE button on the remote controller. This function is convenient in the following situations.

### Useful in these cases

### 1.Use as an energy-saving mode.

Set the temperature 2-3°C higher (cooling) or lower (heating) than normal. Setting the fan strength to the lowest setting allows the unit to be used in energy-saving mode. Also convenient for use while you are out or sleeping.

· Every day before you leave the house...



When you go out, push the "HOME LEAVE Operation" button, and the air conditioner will adjust capacity to reach the preset temperature for HOME LEAVE Operation.



When you return, you will be welcomed by a comfortably air conditioned room.



Push the "HOME LEAVE Operation" button again, and the air conditioner will adjust capacity to the set temperature for normal operation.

#### · Before bed...



Set the unit to HOME LEAVE Operation before leaving the living room when going to bed.



The unit will maintain the temperature in the room at a comfortable level while you sleep.



When you enter the living room in the morning, the temperature will be just right. Disengaging HOME LEAVE Operation will return the temperature to that set for normal operation. Even the coldest winters will pose no problem!

### 2.Use as a favorite mode.

Once you record the temperature and air flow rate settings you most often use, you can retrieve them by pressing HOME LEAVE button. You do not have to go through troublesome remote control operations.

### NOTE

- Once the temperature and air flow rate for HOME LEAVE operation are set, those settings will be used whenever HOME LEAVE operation is used in the future. To change these settings, please refer to the "Before using HOME LEAVE operation" section above.
- HOME LEAVE operation is only available in COOL and HEAT mode. Cannot be used in AUTO, DRY, and FAN mode.
- HOME LEAVE operation runs in accordance with the previous operation mode (COOL or HEAT) before using HOME LEAVE operation.
- HOME LEAVE operation and POWERFUL operation cannot be used at the same time.
   Last button that was pressed has priority.
- The operation mode cannot be changed while HOME LEAVE operation is being used.
- When operation is shut off during HOME LEAVE operation, using the remote controller or the indoor
  unit ON/OFF switch, " a "will remain on the remote controller display.

### 2.2.9 INTELLIGENT EYE Operation

## **INTELLIGENT EYE Operation**

"INTELLIGENT EYE" is the infrared sensor which detects the human movement.

## ■ To start INTELLIGENT EYE operation

- 1. Press "SENSOR button".
  - "🔊" is displayed on the LCD.

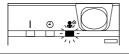
# ■ To cancel the INTELLIGENT EYE operation

- 2. Press "SENSOR button" again.
  - "\*" disappears from the LCD.

### [EX.]

### When somebody in the room

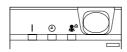
- Normal operation.
- The INTELLIGENT EYE lamp lights up.





### When somebody in the room

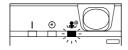
- 20 min. after, start energy saving operation.
- The INTELLIGENT EYE lamp goes off.

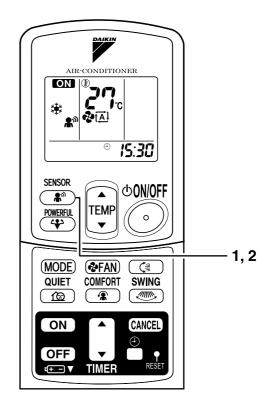




### Somebody back in the room

- · Back to normal operation.
- The INTELLIGENT EYE lamp lights up.





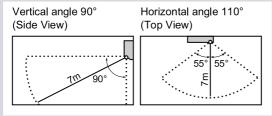
### "INTELLIGENT EYE" is useful for Energy Saving

### ■ Energy saving operation

- Change the temperature –2°C in heating / +2°C in cooling / +2°C in dry mode from set temperature.
- Decrease the air flow rate slightly in fan operation. (In FAN mode only)

### **Notes on "INTELLIGENT EYE"**

· Application range is as follows.



- Sensor may not detect moving objects further than 7m away. (Check the application range)
- Sensor detection sensitivity changes according to indoor unit location, the speed of passersby, temperature range, etc.
- The sensor also mistakenly detects pets, sunlight, fluttering curtains and light reflected off of mirrors as passersby.
- INTELLIGENT EYE operation will not go on during powerful operation.
- Night set mode will not go on during you use INTELLIGENT EYE operation.

## **A** CAUTION

- Do not place large objects near the sensor.

  Also keep heating units or humidifiers outside the sensor's detection area. This sensor can detect objects it shouldn't as well as not detect objects it should.
- Do not hit or violently push the INTELLIGENT EYE sensor. This can lead to damage and malfunction.

### FTXS 60/71 F

## **INTELLIGENT EYE Operation**

"INTELLIGENT EYE" is the infrared sensor which detects the human movement.

## To start INTELLIGENT EYE operation

- 1. Press "SENSOR button".
  - "♣" is displayed on the LCD.

# ■ To cancel the INTELLIGENT EYE operation

- 2. Press "SENSOR button" again.
  - "\*" disappears from the LCD.



### When somebody in the room

Normal operation



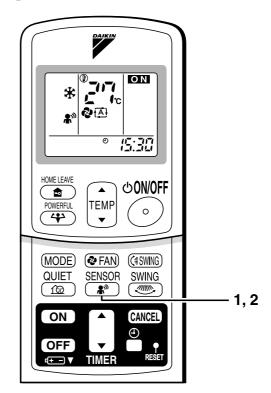
### When nobody in the room

20 min. after, start energy saving operation.



### Somebody back in the room

· Back to normal operation.

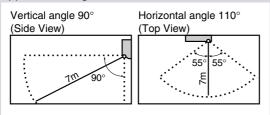


### "INTELLIGENT EYE" is useful for Energy Saving.

- **■** Energy saving operation
  - Change the temperature –2°C in heating / +2°C in cooling / +1°C in dry mode from set temperature.
  - Decrease the air flow rate slightly in fan operation. (In FAN mode only)

### **Notes on "INTELLIGENT EYE"**

· Application range is as follows.



- Sensor may not detect moving objects further than 7m away. (Check the application range)
- Sensor detection sensitivity changes according to indoor unit location, the speed of passersby, temperature range, etc.
- The sensor also mistakenly detects pets, sunlight, fluttering curtains and light reflected off of mirrors as passersby.
- INTELLIGENT EYE operation will not go on during powerful operation.
- · Night set mode will not go on during you use INTELLIGENT EYE operation.

## **⚠** CAUTION

- Do not place large objects near the sensor.

  Also keep heating units or humidifiers outside the sensor's detection area. This sensor can detect objects it shouldn't as well as not detect objects it should.
- Do not hit or violently push the INTELLIGENT EYE sensor. This can lead to damage and malfunction.

### 2.2.10 TIMER Operation

## **TIMER Operation**

Timer functions are useful for automatically switching the air conditioner on or off at night or in the morning. You can also use OFF TIMER and ON TIMER in combination.

# To use OFF TIMER operation

Check that the clock is correct.
 If not, set the clock to the present time.

### 1. Press "OFF TIMER button".

והיהוה is displayed.

⊕•○ blinks.

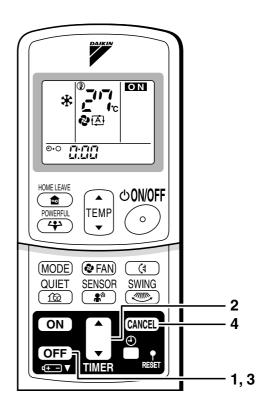
# 2. Press "TIMER Setting button" until the time setting reaches the point you like.

 Every pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.

## 3. Press "OFF TIMER button" again.

· The TIMER lamp lights up.





## ■ To cancel the OFF TIMER Operation

- 4. Press "CANCEL button".
  - The TIMER lamp goes off.

### **NOTE**

- When TIMER is set, the present time is not displayed.
- Once you set ON, OFF TIMER, the time setting is kept in the memory. (The memory is canceled when remote controller batteries are replaced.)
- When operating the unit via the ON/OFF Timer, the actual length of operation may vary from the time entered by the user. (Maximum approx. 10 minutes)

### ■ NIGHT SET MODE

When the OFF TIMER is set, the air conditioner automatically adjusts the temperature setting (0.5°C up in COOL, 2.0°C down in HEAT) to prevent excessive cooling (heating) for your pleasant sleep.

## ■ To use ON TIMER operation

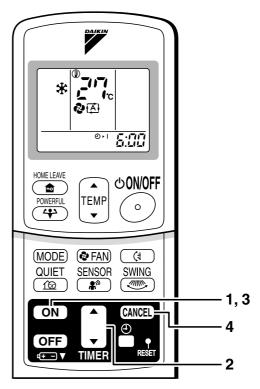
- Check that the clock is correct. If not, set the clock to the present time.
- 1. Press "ON TIMER button".

is displayed.

⊕ ⊦ | blinks.

- 2. Press "TIMER Setting button" until the time setting reaches the point you like.
  - Every pressing of either button increases or decreases the time setting by 10 minutes.
     Holding down either button changes the setting rapidly.
- 3. Press "ON TIMER button" again.
  - The TIMER lamp lights up.



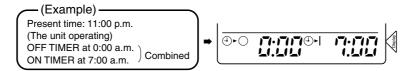


## ■ To cancel ON TIMER operation

- 4. Press "CANCEL button".
  - The TIMER lamp goes off.

### ■ To combine ON TIMER and OFF TIMER

• A sample setting for combining the two timers is shown below.



### **ATTENTION**

- In the following cases, set the timer again.
  - After a breaker has turned OFF.
  - After a power failure.
  - · After replacing batteries in the remote controller.

### 2.2.11 Note for Multi System

## **Note for Multi System**

 $\langle\langle$  What is a "Multi System"?  $\rangle\rangle$ 

This system has one outdoor unit connected to multiple indoor units.

## ■ Selecting the Operation Mode

## 1. With the Priority Room Setting present but inactive or not present.

When more than one indoor unit is operating, priority is given to the first unit that was turned on.

In this case, set the units that are turned on later to the same operation mode (\*1) as the first unit.

Otherwise, they will enter the Standby Mode, and the operation lamp will flash; this does not indicate malfunction.

(\*1)

- · COOL, DRY and FAN mode may be used at the same time.
- AUTO mode automatically selects COOL mode or HEAT mode based on the room temperature.
   Therefore, AUTO mode is available when selecting the same operation mode as that of the room with the first unit to be turned on.

### **(CAUTION)**

Normally, the operation mode in the room where the unit is first run is given priority, but the following situations are exceptions, so please keep this in mind.

If the operation mode of the first room is **FAN Mode**, then using **Heating Mode** in any room after this will give priority to **heating.** In this situation, the air conditioner running in FAN Mode will go on standby, and the operation lamp will flash.

### 2. With the Priority Room Setting active.

See "Priority Room Setting" on the next page.

## ■ NIGHT QUIET Mode (Available only for cooling operation)

NIGHT QUIET Mode requires initial programming during installation. Please consult your retailer or dealer for assistance. NIGHT QUIET Mode reduces the operation noise of the outdoor unit during the night time hours to prevent annoyance to neighbors.

- The NIGHT QUIET Mode is activated when the temperature drops 5°C or more below the highest temperature recorded that day. Therefore, when the temperature difference is less than 5°C, this function will not be activated.
- NIGHT QUIET Mode reduces slightly the cooling efficiency of the unit.

## OUTDOOR UNIT QUIET Operation

### 1. With the Priority Room Setting present but inactive or not present.

When using the OUTDOOR UNIT QUIET operation feature with the Multi system, set all indoor units to OUTDOOR UNIT QUIET operation using their remote controllers.

When clearing OUTDOOR UNIT QUIET operation, clear one of the operating indoor units using their remote controller. However OUTDOOR UNIT QUIET operation display remains on the remote controller for other rooms. We recommend you release all rooms using their remote controllers.

### 2. With the Priority Room Setting active.

See "Priority Room Setting" on the next page.

## ■ Cooling / Heating Mode Lock (Available only for heat pump models)

The Cooling / Heating Mode Lock requires initial programming during installation. Please consult your retailer or dealer for assistance. The Cooling / Heating Mode Lock sets the unit forcibly to either Cooling or Heating Mode. This function is convenient when you wish to set all indoor units connected to the Multi system to the same operation mode.

Outdoor unit Living room

## **Note for Multi System**

## **■** Priority Room Setting

The Priority Room Setting requires initial programming during installation. Please consult your retailer or dealer for assistance.

The room designated as the Priority Room takes priority in the following situations;

### 1. Operation Mode Priority.

As the operation mode of the Priority Room takes precedence, the user can select a different operation mode from other rooms.

(Example)

\* Room A is the Priority Room in the examples.

When COOL mode is selected in Room A while operating the following modes in Room B,C and D:

Operation mode in Room B, C and D	Status of Room B, C and D when the unit in Room A is in COOL mode
COOL or DRY or FAN	Current operation mode maintained
HEAT	The unit enters Standby Mode. Operation resumes when the Room A unit stops operating.
AUTO	If the unit is set to COOL mode, operation continues. If set to HEAT mode, it enters Standby Mode. Operation resumes when the Room A unit stops operating.

### 2. Priority when POWERFUL operation is used.

(Example)

\* Room A is the Priority Room in the examples.

The indoor units in Rooms A,B,C and D are all operating. If the unit in Room A enters POWERFUL operation, operation capacity will be concentrated in Room A. In such a case, the cooling (heating) efficiency of the units in Rooms B,C and D may be slightly reduced.

### 3. Priority when using OUTDOOR UNIT QUIET operation.

(Example)

\* Room A is the Priority Room in the examples.

Just by setting the unit in Room A to QUIET operation, the air conditioner starts OUTDOOR UNIT QUIET operation.

You don't have to set all the operated indoor units to QUIET operation.

## 2.3 FTXS-G, FVXS-F Series

## 2.3.1 Manual Contents and Reference Page

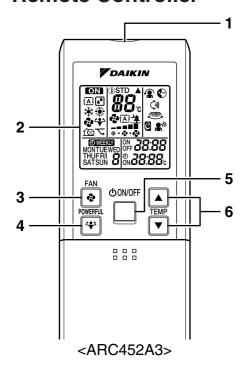
Madal Oadaa	Wall Mounted Type	Floor Standing Type
Model Series	FTXS20-50G	FVXS25-50F
Read Before Operation		
Remote Controller	199	200
Operation		
AUTO, DRY, COOL, HEAT, FAN Operation ★1	201	201
Adjusting the Airflow Direction	203	205
Comfort Airflow and INTELLIGENT EYE Operation	207	_
POWERFUL Operation ★1	210	210
OUTDOOR UNIT QUIET Operation ★1	211	211
ECONO Operation ★1	212	212
HOME LEAVE Operation	_	_
INTELLIGENT EYE Operation	_	_
TIMER Operation ★1	213	213
WEEKLY TIMER Operation ★1	215	215
Note for Multi System ★1	220	220
Drawing No.	3P207037-1C	3P191290-1G

<sup>★1:</sup> Illustrations are for wall mounted type FTXS20/25/35/42/50G as representative.

### 2.3.2 Remote Controller

### FTXS 20/25/35/42/50 G

### ■ Remote Controller



### 1. Signal transmitter:

· It sends signals to the indoor unit.

### 2. Display:

It displays the current settings.
 (In this illustration, each section is shown with all its displays ON for the purpose of explanation.)

### 3. FAN setting button:

· It selects the airflow rate setting.

### 4. POWERFUL button:

POWERFUL operation

### 5. ON/OFF button:

Press this button once to start operation.
 Press once again to stop it.

### 6. TEMPERATURE adjustment buttons:

• It changes the temperature setting.

### 7. MODE selector button:

 It selects the operation mode. (AUTO/DRY/COOL/HEAT/FAN)

### 8. QUIET button:

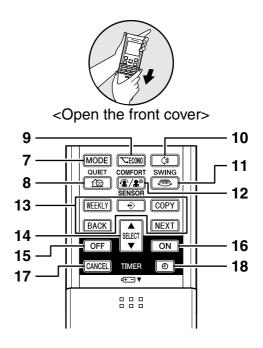
OUTDOOR UNIT QUIET operation

### 9. ECONO button:

ECONO operation

### 10. SWING button:

· Horizontal blades (flaps)



### 11. SWING button:

· Vertical blades (louvers)

### 12. COMFORT/SENSOR button:

 COMFORT AIRFLOW and INTELLIGENT EYE operation

## 13. WEEKLY/PROGRAM/COPY/BACK/NEXT button:

· WEEKLY TIMER operation

### 14. SELECT button:

 It changes the ON/OFF TIMER and WEEKLY TIMER settings.

### 15. OFF TIMER button

16. ON TIMER button

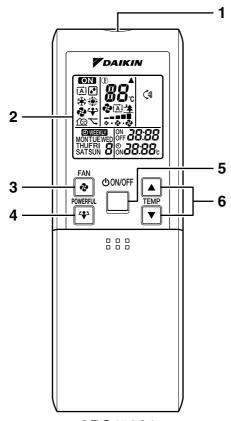
### 17. TIMER CANCEL button:

- It cancels the timer setting.
- It cannot be used for the WEEKLY TIMER operation.

### 18. CLOCK button

### FVXS 25/35/50 F

### ■ Remote Controller



<ARC452A1>

### 1. Signal transmitter:

• It sends signals to the indoor unit.

### 2. Display:

It displays the current settings.
 (In this illustration, each section is shown with all its displays ON for the purpose of explanation.)

### 3. FAN setting button:

· It selects the airflow rate setting.

### 4. POWERFUL button:

POWERFUL operation

### 5. ON/OFF button:

• Press this button once to start operation. Press once again to stop it.

### 6. TEMPERATURE adjustment buttons:

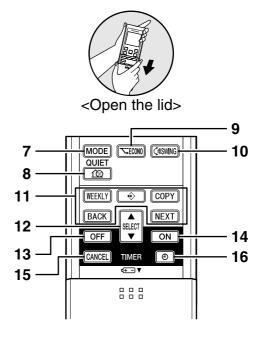
It changes the temperature setting.

### 7. MODE selector button:

 It selects the operation mode. (AUTO/DRY/COOL/HEAT/FAN)

### 8. QUIET button:

**OUTDOOR UNIT QUIET operation** 



### 9. ECONO button:

ECONO operation

### 10. SWING button:

· Adjusting the Airflow Direction

## 11. WEEKLY/PROGRAM/COPY/BACK/NEXT button:

WEEKLY TIMER operation

### 12. SELECT button:

 It changes the ON/OFF TIMER and WEEKLY TIMER settings.

### 13. OFF TIMER button

14. ON TIMER button

### 15. TIMER CANCEL button:

- It cancels the timer setting.
- It cannot be used for the WEEKLY TIMER operation.

### 16. CLOCK button

### 2.3.3 AUTO • DRY • COOL • HEAT • FAN Operation

## **AUTO · DRY · COOL · HEAT · FAN Operation**

The air conditioner operates with the operation mode of your choice.

From the next time on, the air conditioner will operate with the same operation mode.

## ■ To start operation

- 1. Press "MODE selector button" and select a operation mode.
  - Each pressing of the button advances the mode setting in sequence.

AUTO

■: DRY

\*: COOL

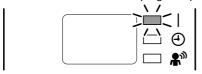
: HEAT

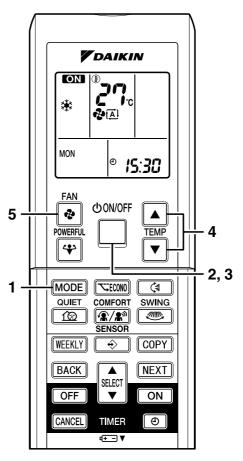
😍 : FAN



2. Press "ON/OFF button".

• The OPERATION lamp lights up.





## To stop operation

- 3. Press "ON/OFF button" again.
  - Then OPERATION lamp goes off.

## ■ To change the temperature setting

4. Press "TEMPERATURE adjustment button".

DRY or FAN mode	AUTO or COOL or HEAT mode
	Press "▲" to raise the temperature and press "▼" to lower the temperature.
The temperature setting is not variable.	Set to the temperature you like.
	<b>^27.</b>

## ■ To change the airflow rate setting

### 5. Press "FAN setting button".

DRY mode AUTO o	or COOL or HEAT or FAN mode
	els of airflow rate setting from " • " to " • " "  " " * * " are available.

· Indoor unit quiet operation

When the airflow is set to "♣", the noise from the indoor unit will become quieter. Use this when making the noise quieter.

### **NOTE**

### ■ Note on HEAT operation

- Since this air conditioner heats the room by taking heat from outdoor air to indoors, the heating capacity becomes smaller in lower outdoor temperatures. If the heating effect is insufficient, it is recommended to use another heating appliance in combination with the air conditioner.
- The heat pump system heats the room by circulating hot air around all parts of the room.

  After the start of heating operation, it takes some time before the room gets warmer.
- In heating operation, frost may occur on the outdoor unit and lower the heating capacity. In that case, the system switches into defrosting operation to take away the frost.
- During defrosting operation, hot air does not flow out of indoor unit.
- A pinging sound may be heard during defrosting operation, which, however does not mean that the air conditioner has failures.

### ■ Note on COOL operation

• This air conditioner cools the room by blowing the hot air in the room outside, so if the outside temperature is high, the performance of the air conditioner drops.

### ■ Note on DRY operation

• The computer chip works to rid the room of humidity while maintaining the temperature as much as possible. It automatically controls temperature and airflow rate, so manual adjustment of these functions is unavailable.

### ■ Note on AUTO operation

- In AUTO operation, the system selects a temperature setting and an appropriate operation mode (COOL or HEAT) based on the room temperature at the start of the operation.
- The system automatically reselects setting at a regular interval to bring the room temperature to user-setting level.
- If you do not like AUTO operation, manually change the set temperature.

### ■ Note on airflow rate setting

• At smaller airflow rates, the cooling (heating) effect is also smaller.

### 2.3.4 Adjusting the Airflow Direction

FTXS 20/25/35/42/50 G

## **Adjusting the Airflow Direction**

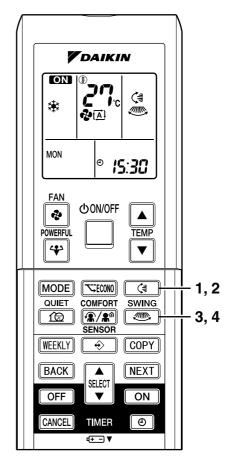
You can adjust the airflow direction to increase your comfort.

# ■ To adjust the horizontal blades (flaps)

- 1. Press "SWING button (\*)".
  - "(\$\Rightarrow\$" is displayed on the LCD and the flaps will begin to swing.
- 2. When the flaps have reached the desired position, press "SWING button (青" once more.
  - The flaps will stop moving.
  - "() " disappears from the LCD.

# ■ To adjust the vertical blades (louvers)

- 3. Press "SWING button "...".
  - " " is displayed on the LCD.
- 4. When the louvers have reached the desired position, press the "SWING button "" once more.
  - The louvers will stop moving.
  - " " disappears from the LCD.



#### ■ To start 3-D Airflow

1. 3. Press the "SWING button ()" and the "SWING button ": the "()" and " ()" display will light up and the flap and louvers will move in turn.

#### ■ To cancel 3-D Airflow

2. 4. Press either the "SWING button (3)" or the "SWING button ...".

## **■ COMFORT AIRFLOW operation**

 Check COMFORT AIRFLOW operation in the section of "COMFORT AIRFLOW Operation" and "INTELLIGENT EYE Operation".

### Notes on flaps and louvers angles

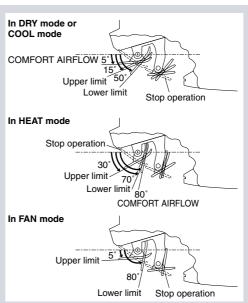
 When "SWING button" is selected, the flaps swinging range depends on the operation mode. (See the figure.)

#### Three-Dimensional (3-D) Airflow

 Using three-dimensional airflow circulates cold air, which tends to collected at the bottom of the room, and hot air, which tends to collect near the ceiling, throughout the room, preventing areas of cold and hot developing.

#### **■ ATTENTION**

- Always use a remote controller to adjust the angles of the flaps and louvers. If you attempt to move it forcibly with hand when it is swinging, the mechanism may be broken.
- Always use a remote controller to adjust the louvers angles. In side the air outlet, a fan is rotating at a high speed.



#### FVXS 25/35/50 F

## **Adjusting the Airflow Direction**

You can adjust the airflow direction to increase your comfort.

# ■ To adjust the horizontal blade (flap)

- 1. Press "SWING button (書".
  - "(\$\frac{1}{2}\$" is displayed on the LCD and the flaps will begin to swing.
- 2. When the flap has reached the desired position, press "SWING button 〈章" once more.
  - · The flap will stop moving.
  - "() disappears from the LCD.

### **V**DAIKIN MON *15:30* FAN 少0N/0FF 2 POWERFUL TEMP \* **▼**ECONO (\$SWING) 1.2 MODE QUIET 100 WEEKLY COPY BACK NEXT $\blacktriangle$ OFF ON CANCEL TIMER **(**

# ■ To adjust the vertical blades (louvers)

Hold the knob and move the louver. (You will find a knob on the left-side and the right-side blades.)

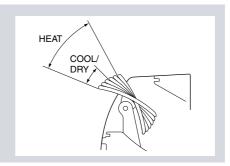


### Notes on flap and louvers angle

 Unless "SWING" is selected, you should set the flap at a near-horizontal angle in HEAT mode and at a upward position in COOL or DRY mode to obtain the best performance.

#### **■ ATTENTION**

- When adjusting the flap by hand, turn off the unit, and use the remote controller to restart the unit.
- Be careful when adjusting the louvers. Inside the air outlet, a fan is rotating at a high speed.



#### ■ Airflow selection

• Make airflow selection according to what suits you.

## When setting the airflow selection switch to .

• Air conditioner automatically decides the appropriate blowing pattern depending on the operating mode/situation.

Operating mode	Situation	Blowing pattern
COOL mode	When the room has become fully cool, or when one hour has passed since turning on the air conditioner.	So that air does not come into direct contact with people, air is blown upper air outlet, room tem- perature is equalized.
	At start of operation or other times when the room is not fully cooled.	
	At times other than below. (Normal time.)	
HEAT mode		Air is blown from the upper and lower air outlets for high speed cooling during COOL mode, and for filling the room with warm air during HEAT mode.
	At start or when air temperature is low.	So that air does not come into direct contact with people. Air is blown upper air outlet.

• During Dry mode, so that cold air does not come into direct contact with people, air is blown upper air outlet.

### When setting the air outlet selection switch to \(`\).

- Regardless of the operating mode or situation, air blows from the upper air outlet.
- Use this switch when you do not want air coming out of the lower air outlet. (While sleeping etc.)

### **A** CAUTION

- Do not try to adjust the flap by hand.
- When adjusting by hand, the mechanism may not operate properly or condensation may drip from air outlets.

### 2.3.5 COMFORT AIRFLOW and INTELLIGENT EYE Operation

# COMFORT AIRFLOW and INTELLIGENT EYE Operation

The INTELLIGENT EYE incorporates infrared sensors to detect the presence of people in the conditioned room.

When these sensors detect people, the louvers will adjust the airflow direction to an area where people are not present. When there are no people in the sensing areas, the air conditioner will go into energy-saving mode.

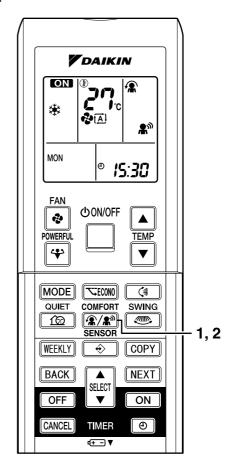
### ■ To start operation

- 1. Press "COMFORT/SENSOR button" and select an operation mode.
  - Choose the desired operation mode out of the following sequence.
  - Each time the "COMFORT/SENSOR button" is pressed a different setting option is displayed on the LCD.



### ■ To cancel operation

- 2. Press "COMFORT/SENSOR button".
  - Press the button to select "Blank".



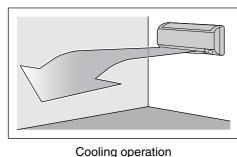
Display	Operation mode	Explanation
<b>*</b>	COMFORT AIRFLOW	The flaps will adjust the airflow direction upward while cooling, and adjust the airflow direction downward while heating.
<b>≜</b> ®	INTELLIGENT EYE	The sensors will detect the movement of people in the sensing areas and the louvers will adjust the airflow direction to an area where people are not present. When there are no people in the sensing areas, the air conditioner will go into energy-saving mode.
<b>A</b> · <b>A</b> <sup>n</sup>	COMFORT AIRFLOW and INTELLIGENT EYE	The air conditioner will be in COMFORT AIRFLOW operation combined with INTELLIGENT EYE operation.
Blank	No function	-

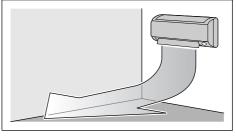
### Notes on "COMFORT AIRFLOW Operation"

- The flap position will change, preventing air from blowing directly on the occupants of the room.
- POWERFUL operation and COMFORT AIRFLOW operation cannot be used at the same time.
- The volume of air will be set to AUTO. If the upward and downward airflow direction is selected, the COMFORT AIRFLOW function will be canceled.
- Priority is given to the function of whichever button is pressed last.
- The COMFORT AIRFLOW function makes the following airflow direction adjustments.

  The flaps will move upward while cooling so that the airflow will be directed upward.

  The flaps will move downward while heating so that the airflow will be directed downward.

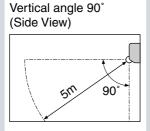




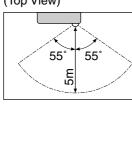
ation Heating operation

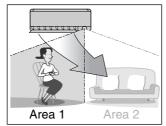
### Notes on "INTELLIGENT EYE Operation"

• The INTELLIGENT EYE sensor according to the following situations.

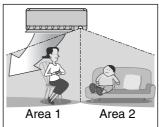


Horizontal angle 110° (Top View)



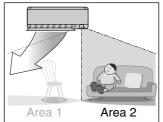


A person is detected in area 1.

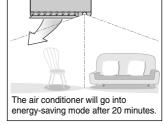


People are detected in both areas.

(Use the INTELLIGENT EYE Operation in combination with the COMFORT AIRFLOW Operation.)



A person is detected in area 2.



No people are detected in the areas.

\* The wind direction may differ from the illustrated direction depending on the actions and movements of the people in the areas.

# COMFORT AIRFLOW and INTELLIGENT EYE Operation

### Notes on "INTELLIGENT EYE Operation"

- While the air conditioner is in INTELLIGENT EYE operation, the louvers will adjust the airflow direction if there are people in the sensing areas of the INTELLIGENT EYE so that the leftward or rightward airflow will not be directed to the people.
  - If no people are detected in either area 1 or 2 in 20 minutes, the air conditioner will go into energy-saving mode with the set temperature shifted by  $2^{\circ}$ C.
  - The air conditioner may go into energy-saving operation even if there are people in the areas. This may occur depending on the clothes the people are wearing if there are no movements of the people in the areas.
- The airflow direction from the louvers will be leftward if there are people in both areas 1 and 2 or if there is a person right in front of the sensors because the sensors on the both sides will detect the person.
- Due to the position of the sensor, people might be exposed to the airflow of the indoor unit if they are close to the front side of the indoor unit.
  - If there are people close to the front side of the indoor unit or in both areas, it is recommended to use the COMFORT AIRFLOW and INTELLIGENT EYE functions simultaneously. When both of them are in use, the air conditioner will not direct the airflow towards the people.
- Sensor may not detect moving objects further than 5m away. (Check the application range)
- Sensor detection sensitivity changes according to indoor unit location, the speed of passersby, temperature range, etc.
- The sensor also mistakenly detects pets, sunlight, fluttering curtains and light reflected off of mirrors as passersby.
- NIGHT SET MODE will not go on during use of INTELLIGENT EYE operation.

### "INTELLIGENT EYE" is useful for Energy Saving

#### ■ Energy saving operation

- Change the temperature –2°C in heating / +2°C in cooling / +2°C in dry mode from set temperature.
- Decrease the airflow rate slightly in FAN mode only. If no presence detected in the room during 20 minutes.

# ■ To combine "COMFORT AIRFLOW Operation" and "INTELLIGENT EYE Operation"

 The air conditioner can go into operation with the COMFORT AIRFLOW and INTELLIGENT EYE functions combined.

The flaps adjust the airflow direction upward (while in cooling operation) and downward (while in heating operation), during which the sensors of the INTELLIGENT EYE are working to detect the movement of people. When the sensors detect people, the louvers will direct the airflow in such way that it will not be blown directly on them. If there are no people, the air conditioner will go into energy-saving operation after 20 minutes.

### **↑** CAUTION

- Do not place large objects near the sensor.
   Also keep heating units or humidifiers outside the sensor's detection area. This sensor can detect undesirable objects.
- Do not hit or violently push the INTELLIGENT EYE sensor. This can lead to damage and malfunction.

### 2.3.6 POWERFUL Operation

## **POWERFUL Operation**

POWERFUL operation quickly maximizes the cooling (heating) effect in any operation mode. You can get the maximum capacity.

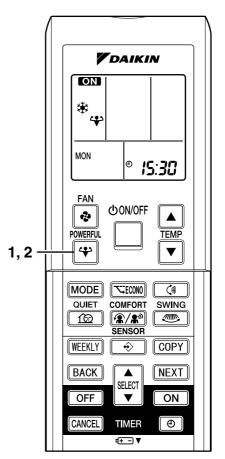
# To start POWERFUL operation

#### 1. Press "POWERFUL button".

- POWERFUL operation ends in 20minutes. Then the system automatically operates again with the previous settings which were used before POWERFUL operation.
- "♥" is displayed on the LCD.
- When using POWERFUL operation, there are some functions which are not available.

# To cancel POWERFUL operation

- 2. Press "POWERFUL button" again.
  - "♣" disappears from the LCD.



#### NOTE

#### ■ Notes on POWERFUL operation

 POWERFUL Operation cannot be used together with ECONO, QUIET, or COMFORT Operation.

Priority is given to the function of whichever button is pressed last.

• POWERFUL Operation can only be set when the unit is running. Pressing the operation stop button causes the settings to be canceled, and the "" disappears from the LCD.

#### • In COOL and HEAT mode

To maximize the cooling (heating) effect, the capacity of outdoor unit must be increased and the airflow rate be fixed to the maximum setting.

The temperature and airflow settings are not variable.

• In DRY mode

The temperature setting is lowered by 2.5°C and the airflow rate is slightly increased.

• In FAN mode

The airflow rate is fixed to the maximum setting.

• When using priority-room setting See "Note for Multi System".

### 2.3.7 OUTDOOR UNIT QUIET Operation

## **OUTDOOR UNIT QUIET Operation**

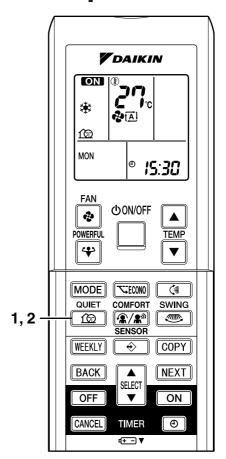
OUTDOOR UNIT QUIET operation lowers the noise level of the outdoor unit by changing the frequency and fan speed on the outdoor unit. This function is convenient during night.

## To start OUTDOOR UNIT QUIET operation

- 1. Press "QUIET button".
  - "max" is displayed on the LCD.

## To cancel OUTDOOR UNIT QUIET operation

- 2. Press "QUIET button" again.
  - "160" disappears from the LCD.



#### **NOTE**

#### ■ Note on OUTDOOR UNIT QUIET operation

- If using a multi system, this function will work only when the OUTDOOR UNIT QUIET operation is set on all operated indoor units.
  - However, if using priority-room setting, see "Note for Multi System".
- This function is available in COOL, HEAT, and AUTO modes. (This is not available in FAN and DRY mode.)
- POWERFUL operation and OUTDOOR UNIT QUIET operation cannot be used at the same time.

Priority is given to the function of whichever button is pressed last.

### 2.3.8 ECONO Operation

## **ECONO Operation**

ECONO operation is a function which enables efficient operation by limiting the maximum power consumption value.

This function is useful for cases in which attention should be paid to ensure a circuit breaker will not trip when the product runs alongside other appliances.

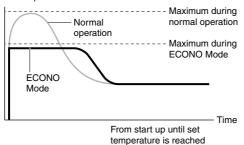
# To start ECONO operation

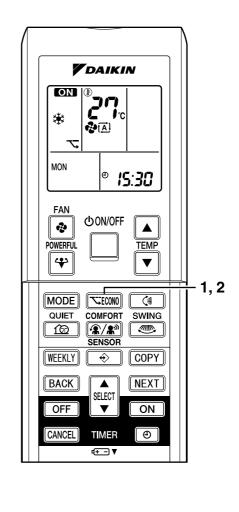
- 1. Press "ECONO button".
  - " \stacking" is displayed on the LCD.

# To cancel ECONO operation

- 2. Press "ECONO button" again.
  - " \stacks " disappears from the LCD.

Running current and power consumption





- This diagram is a representation for illustrative purposes only.
- \* The maximum running current and power consumption of the air conditioner in ECONO mode vary with the connecting outdoor unit.

#### **NOTE**

- ECONO Operation can only be set when the unit is running. Pressing the OFF button causes the setting to be canceled, and the "\\" " disappears from the LCD.
- ECONO operation is a function which enables efficient operation by limiting the power consumption of the outdoor unit (operating frequency).
- ECONO operation functions in AUTO, COOL, DRY and HEAT modes.
- POWERFUL and ECONO operation cannot be used at the same time.
   Priority is given to the function of whichever button is pressed last.
- Power consumption may not drop even if ECONO operation is used of the level of power consumption is already low.

### 2.3.9 TIMER Operation

## **TIMER Operation**

Timer functions are useful for automatically switching the air conditioner on or off at night or in the morning. You can also use OFF TIMER and ON TIMER in combination.

# ■ To use OFF TIMER operation

• Check that the clock is correct.

If not, set the clock to the present time.

#### 1. Press "OFF TIMER button".

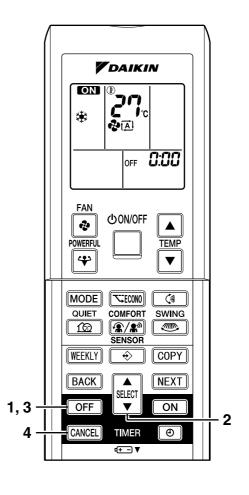
0:00 is displayed.

OFF blinks.

# 2. Press "SELECT button" until the time setting reaches the point you like.

- Every pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.
- 3. Press "OFF TIMER button" again.
  - The TIMER lamp lights up.





## ■ To cancel the OFF TIMER Operation

- 4. Press "CANCEL button".
  - · The TIMER lamp goes off.

#### **NOTE**

- When TIMER is set, the present time is not displayed.
- Once you set ON, OFF TIMER, the time setting is kept in the memory. (The memory is canceled when remote controller batteries are replaced.)
- When operating the unit via the ON/OFF Timer, the actual length of operation may vary from the time entered by the user. (Maximum approx. 10 minutes)

#### ■ NIGHT SET MODE

When the OFF TIMER is set, the air conditioner automatically adjusts the temperature setting (0.5°C up in COOL, 2.0°C down in HEAT) to prevent excessive cooling (heating) for your pleasant sleep.

# To use ON TIMER operation

- Check that the clock is correct. If not, set the clock to the present time.
- 1. Press "ON TIMER button".

**5**:**□** is displayed.

ON blinks.

- 2. Press "SELECT button" until the time setting reaches the point you like.
  - Every pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.
- 3. Press "ON TIMER button" again.
  - The TIMER lamp lights up.

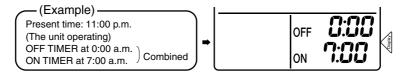


# ■ To cancel ON TIMER operation

- 4. Press "CANCEL button".
  - The TIMER lamp goes off.

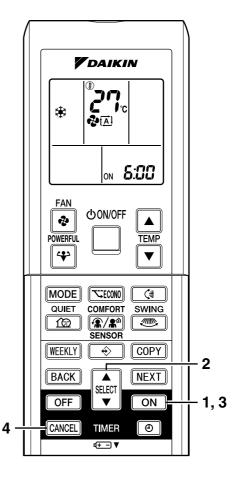
### ■ To combine ON TIMER and OFF TIMER

• A sample setting for combining the two timers is shown below.



#### **ATTENTION**

- In the following cases, set the timer again.
  - After a breaker has turned OFF.
  - After a power failure.
  - After replacing batteries in the remote controller.



### 2.3.10 WEEKLY TIMER Operation

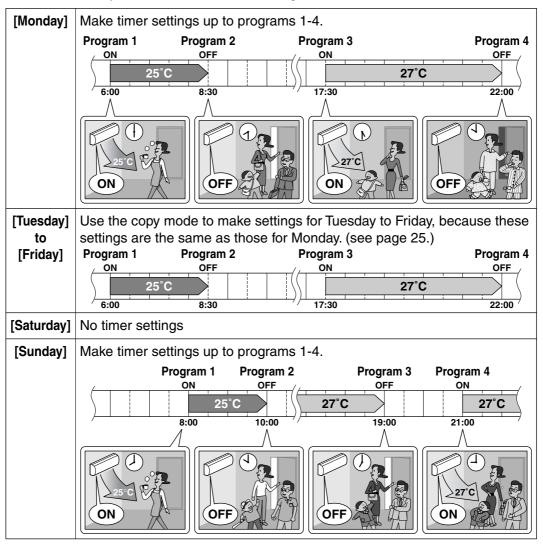
## **WEEKLY TIMER Operation**

Up to 4 timer settings can be saved for each day of the week. It is convenient if the WEEKLY TIMER is set according to the family's life style.

## ■ Using in these cases of WEEKLY TIMER

An example of WEEKLY TIMER settings is shown below.

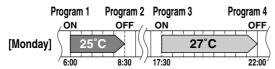
**Example:** The same timer settings are made for the week from Monday through Friday while different timer settings are made for the weekend.



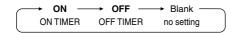
- Up to 4 reservations per day and 28 reservations per week can be set in the WEEKLY TIMER. The effective use of the copy mode ensures ease of making reservations.
- The use of ON-ON-ON-ON settings, for example, makes it possible to schedule operating mode and set temperature changes. Furthermore, by using OFF-OFF-OFF settings, only the turn-OFF time of each day can be set. This will turn OFF the air conditioner automatically if the user forgets to turn it OFF.

### ■ To use WEEKLY TIMER operation

Make sure the day of the week and time are set.
 If not, set the day of the week and time.



- 1. Press "→ button".
  - The day of the week and the reservation number will be displayed.
  - 1 to 4 settings can be made per day.
- 2. Press the "SELECT button" to select the desired day of the week and reservation number.
  - Pressing the "SELECT button" changes the reservation number and the day of the week.
- 3. Press "NEXT button".
  - The day of the week will be set.
  - "OWEEKLY" and "ON" blink.
- 4. Press "SELECT button" to select the desired mode.
  - "OWEEKLY" and "ON" or "OFF" will flash.



• Go to STEP 9 if "no setting" is selected.

#### 5. Press "NEXT button".

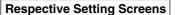
- The weekly mode will be set.
- "@WEEKLY" and "\[ \frac{1}{2} \frac{1}{2} \frac{1}{2} \]" blink.

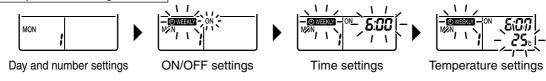
#### 6. Press "SELECT button" to select the desired time.

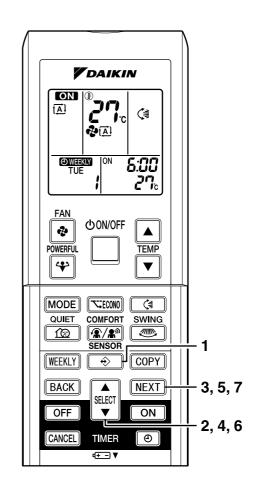
- The time can be set between 0:00 and 23:50 in 10 minute intervals.
- · Press "BACK button" to return to the mode setting.
- Go to STEP 9 if "OFF" is selected at STEP 4.

#### 7. Press "NEXT button".

- · The time will be set.
- "OWEEKLY" and the temperature blink.







## **WEEKLY TIMER Operation**

## 8. Press "SELECT button" to select the desired temperature.

 The temperature can be set between 10°C and 32°C.

Cooling: The unit operates at 18°C even if it is set at 10 to 17°C.

Heating: The unit operates at 30°C even if it is set at 31 to 32°C.

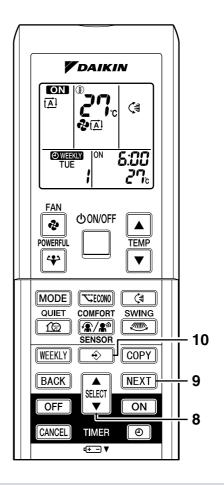
- To return to the time setting, press "BACK button".
- The set temperature is only displayed when the mode setting is on.

#### 9. Press "NEXT button".

- The temperature will be set and go to the next reservation setting.
- To continue further settings, repeat the procedure from STEP 2.

## 10.Press "♠ button" to complete the setting.

 Point the remote controller toward the air conditioner and press the buttons to operate. The air conditioner will beep and the operation lamp will flash.



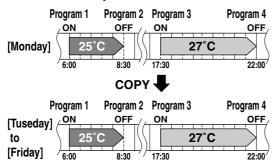
#### **NOTE**

#### **■ WEEKLY TIMER**

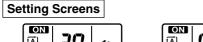
- Do not forget to set the time on the remote control first.
- The day of the week, ON/OFF time can be set with WEEKLY TIMER. For ON-TIMER, settings other than the above are based on the remote controller settings just before the operation.
- Both WEEKLY TIMER and ON/OFF timer cannot be used at the same time. The ON/OFF timer has priority if it is set while WEEKLY TIMER is still active. WEEKLY TIMER is activated after the reserved ON/OFF timer is completed.
- The "WEEKLY button" activates or deactivates the reservation.
- To set WEEKLY TIMER, press " button" and make a reservation according to the procedures.
- Up to 4 settings per day and up to 28 settings per week can be reserved with WEEKLY TIMER. If a reservation deactivated with "WEEKLY button" is activated once again, the last reservation mode will be used.
- Shutting the breaker off, power failure, and other similar events will render operation of the indoor unit's internal clock inaccurate. Reset the clock.
- The "BACK button" can be used only for the mode, time and temperature settings. It cannot be used to go back to the reservation number.

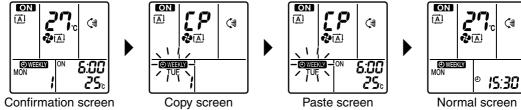
## Using copy mode

 A reservation made once can be easily copied and the same settings used for another day of the week.



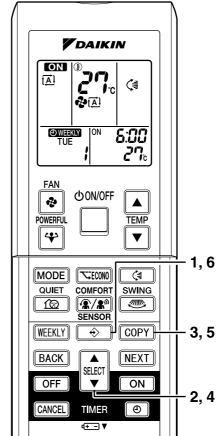
- 1. Press "→ button".
- 2. Press "SELECT button" to confirm the day of the week to be copied.
- 3. Press "COPY button".
  - This activates copy mode.
  - Copy whole reservation of the selected day of the week.
- 4. Press "SELECT button" to select the destination day of the week.
- 5. Press "COPY button".
  - The reservation will be copied to the selected day of the week. The whole reservation of the selected day of the week will be copied.
  - To continue copying the settings to other days of the week, repeat STEP 4 and STEP 5.
- 6. Press "→ button".
  - · Exit copy mode.





#### **NOTE**

- **COPY MODE**
- The entire reservation of the source day of the week is copied in the copy mode. Detailed settings can be made after the copy is completed.



## **WEEKLY TIMER Operation**

## ■ Confirming a reservation

- The reservation can be confirmed.
- 1. Press "→ button".
  - The day of the week and the reservation number of the current day will be displayed.
- 2. Press "SELECT button" to select the day of the week and the reservation number to be confirmed.
  - Pressing the "SELECT button" displays the reservation details.
- 3. Press "→ button".
  - · Reservation confirmation complete.

### **Setting Screens**



# Canceling all reservations

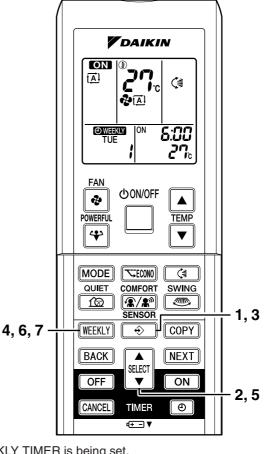
- 4. Hold the "WEEKLY button" for 5 seconds.
  - Be sure to direct the remote control toward the main unit and check for a receiving tone.
  - This operation is not effective while WEEKLY TIMER is being set.
  - · All reservations will be canceled.

### Canceling individual reservations

- This function can be used for canceling reservations for each day of the week.
- It can be used while confirming or setting reservations.
- 5. Select the day of the week to be canceled with the "SELECT button".
- 6. Hold the "WEEKLY button" for 5 seconds.
  - The selected reservation will be canceled.

## ■ To cancel WEEKLY TIMER operation

- 7. Press "WEEKLY button" to deactivate the WEEKLY operation.
  - The "OWEEKLY" will disappear from the display.
  - The TIMER lamp goes off.
  - To reactivate the WEEKLY TIMER operation, press the "WEEKLY button" again.



### 2.3.11 Note for Multi System

## **Note for Multi System**

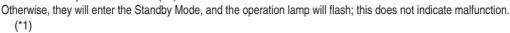
<< What is a "Multi System"? >>

This system has one outdoor unit connected to multiple indoor units.

## Selecting the operation mode

#### With the Priority Room Setting present but inactive or not present.

When more than one indoor unit is operating, priority is given to the first unit that was turned on. In this case, set the units that are turned on later to the same operation mode (\*1) as the first unit.



Outdoor

Living

Ć

room

room

róom

- COOL, DRY and FAN mode may be used at the same time.
- AUTO mode automatically selects COOL mode or HEAT mode based on the room temperature.
   Therefore, AUTO mode is available when selecting the same operation mode as that of the room with the first unit to be turned on.

#### <CAUTION>

Normally, the operation mode in the room where the unit is first run is given priority, but the following situations are exceptions, so please keep this in mind.

If the operation mode of the first room is **FAN Mode**, then using **Heating Mode** in any room after this will give priority to **heating.** In this situation, the air conditioner running in FAN Mode will go on standby, and the operation lamp will flash.

#### 2. With the Priority Room Setting active.

See "Priority Room Setting" on the next page.

### ■ NIGHT QUIET Mode (Available only for cooling operation)

NIGHT QUIET Mode requires initial programming during installation. Please consult your retailer or dealer for assistance. NIGHT QUIET Mode reduces the operation noise of the outdoor unit during the night time hours to prevent annoyance to neighbors.

- The NIGHT QUIET Mode is activated when the temperature drops 5°C or more below the highest temperature recorded that day. Therefore, when the temperature difference is less than 5°C, this function will not be activated.
- · NIGHT QUIET Mode reduces slightly the cooling (heating) efficiency of the unit.

### OUTDOOR UNIT QUIET operation

#### With the Priority Room Setting present but inactive or not present.

When using the OUTDOOR UNIT QUIET operation feature with the Multi system, set all indoor units to OUTDOOR UNIT QUIET operation using their remote controllers. When clearing OUTDOOR UNIT QUIET operation, clear one of the operating indoor units using their remote controller. However OUTDOOR UNIT QUIET operation display remains on the remote controller for other rooms. We recommend you release all rooms using their remote controllers.

## 2. With the Priority Room Setting active.

See "Priority Room Setting" on the next page.

## Cooling / Heating mode lock (Available only for heat pump models)

The Cooling / Heating Mode Lock requires initial programming during installation. Please consult your retailer or dealer for assistance. The Cooling / Heating Mode Lock sets the unit forcibly to either Cooling or Heating Mode. This function is convenient when you wish to set all indoor units connected to the Multi system to the same operation mode.

## **Note for Multi System**

### ■ Priority Room Setting

The Priority Room Setting requires initial programming during installation. Please consult your retailer or dealer for assistance.

The room designated as the Priority Room takes priority in the following situations;

#### 1. Operation mode Priority.

As the operation mode of the Priority Room takes precedence, the user can select a different operation mode from other rooms.

<Example>

\* Room A is the Priority Room in the examples.

When COOL mode is selected in Room A while operating the following modes in Room B,C and D:

Operation mode in Room B, C and D	Status of Room B, C and D when the unit in Room A is in COOL mode
COOL or DRY or FAN	Current operation mode maintained
HEAT	The unit enters Standby Mode. Operation resumes when the Room A unit stops operating.
AUTO	If the unit is set to COOL mode, operation continues. If set to HEAT mode, it enters Standby Mode. Operation resumes when the Room A unit stops operating.

#### 2. Priority when POWERFUL operation is used.

<Example>

\* Room A is the Priority Room in the examples.

The indoor units in Rooms A,B,C and D are all operating. If the unit in Room A enters POWERFUL operation, operation capacity will be concentrated in Room A. In such a case, the cooling (heating) efficiency of the units in Rooms B,C and D may be slightly reduced.

#### 3. Priority when using OUTDOOR UNIT QUIET operation.

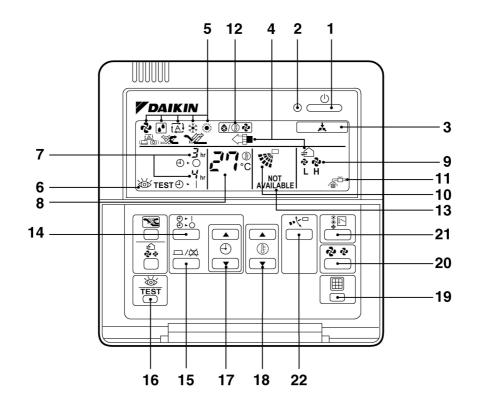
<Example>

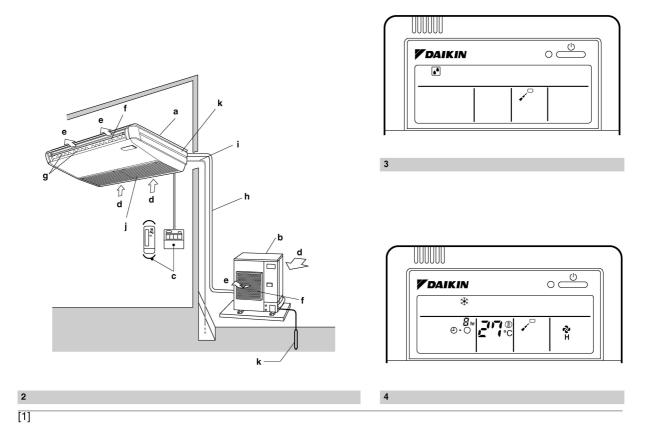
\* Room A is the Priority Room in the examples.

Just by setting the unit in Room A to QUIET operation, the air conditioner starts OUTDOOR UNIT QUIET operation.

You don't have to set all the operated indoor units to QUIET operation.

## 2.4 FHQ-B Series





# 5. NAME AND FUNCTION OF EACH SWITCH AND DISPLAY ON THE REMOTE CONTROLLER

Refer to figure 1 on page [1]

	ON/OFF BUTTON	
1	Press the button and the system will start.	
	Press the button again and the system will	
	stop. OPERATION LAMP (RED)	
2	` ′	
	The lamp lights up during operation.	
	(UNDER CENTRALIZED CONTROL)	
3	When this display shows, the system is	
	UNDER CENTRALIZED CONTROL.	
	DISPLAY " ≙<₽ " " Æ " " ※ " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>※</b> " " <b>"</b> " " " " " <b>"</b> "	
	(VENTILATION/AIR CLEANING)	
4	This display shows that the total heat	
	exchange and the air cleaning unit are in operation (These are optional accessories).	
	DISPLAY * * " * " * * " * " * "	
	DISPLAY 마장 " 마단 " 마단 " 마장 " * " * " * " * " * " * " * " * " * "	
5	This display shows the current OPERATION	
	MODE. For cooling only type, " 줘" (Auto)	
	and "" (Heating) are not installed.	
	DISPLAY " 🅸 TEST"	
	(INSPECTION/TEST OPERATION)	
6	When the INSPECTION/TEST OPERATION	
	BUTTON is pressed, the display shows the system mode is in.	
	•	
7	DISPLAY " 🌣 🐧 " (PROGRAMMED TIME)	
•	This display shows the PROGRAMMED TIME	
	of the system start or stop.	
8	217®	
	This display shows the set temperature.	
9	રુ જે	
	This display shows the set fan speed.	
10	W <sup>-</sup>	
	Refer to "AIR FLOW DIRECTION ADJUST".	
11	DISPLAY " 🚰 " (TIME TO CLEAN AIR FILTER)	
	Refer to "HOW TO CLEAN THE AIR FILTER".	
12	DISPLAY " ⑧®관 " (DEFROST)	
12	Refer to "DEFROST OPERATION".	
	Relei to DEFROST OPERATION.	

	NON-FUNCTIONING DISPLAY
40	If that particular function is not available, pressing the button may display the words "NOT AVAILABLE" for a few seconds.
13	When running multiple units simultaneously The "NOT AVAILABLE" message will only be
	appear if none of the indoor units is equipped with the function. If even one unit is equipped
	with the function, the display will not appear.
14	TIMER MODE START/STOP BUTTON
14	Refer to "PROGRAM TIMER OPERATION".
15	TIMER ON/OFF BUTTON
15	Refer to "PROGRAM TIMER OPERATION".
	INSPECTION/TEST OPERATION BUTTON
16	This button is used only by qualified service
	persons for maintenance purposes.
	PROGRAMMING TIME BUTTON
17	Use this button for programming "START and/ or STOP" time.
18	TEMPERATURE SETTING BUTTON
10	Use this button for SETTING TEMPERATURE.
19	FILTER SIGN RESET BUTTON
19	Refer to "HOW TO CLEAN THE AIR FILTER".
	FAN SPEED CONTROL BUTTON
20	Press this button to select the fan speed, HIGH or LOW, of your choice.
	OPERATION MODE SELECTOR BUTTON
21	Press this button to select OPERATION MODE.
	AIR FLOW DIRECTION ADJUST BUTTON
22	Refer to "AIR FLOW DIRECTION ADJUST".
NO.	
	TE ===== or the sake of explanation, all indications are
	hown on the display in Figure 1 contrary to
	ctual running situations.

#### 6. OPERATION PROCEDURE

#### Refer to figure 1 on page [1]

- Operating procedure varies with heat pump type and cooling only type. Contact your Daikin dealer to confirm your system type.
- To protect the unit, turn on the main power switch 6 hours before operation.
- If the main power supply is turned off during operation, operation will restart automatically after the power turns back on again.

## COOLING, HEATING, AUTOMATIC, FAN, AND PROGRAM DRY OPERATION

Operate in the following order.



OPERATION MODE SELECTOR

Press OPERATION MODE SELECTOR button several times and select the OPERATION MODE of your choice as follows.

- COOLING OPERATION.....\*\*\*
- - In this operation mode, COOL/HEAT changeover is automatically conducted.
- - The function of this program is to decrease the humidity in your room with the minimum temperature decrease.
  - Micro computer automatically determines TEMPERATURE and FAN SPEED.
  - This system does not go into operation if the room temperature is below 16°C.

#### Refer to figure 3 on page [1]

• For cooling only type, "COOLING", "FAN" and "DRY" operation are able to select.



#### ON/OFF

#### **Press ON/OFF BUTTON**

OPERATION lamp lights up or goes off and the system starts or stops OPERATION.

#### [EXPLANATION OF HEATING OPERATION]

#### **DEFROST OPERATION**

- As the frost on the coil of an outdoor unit increase, heating effect decreases and the system goes into DEFROST OPERATION.
- The indoor unit fan stops and the remote controller display shows " <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)</a> <a>(\*)
- After 6 to 8 minutes (maximum 10 minutes) of DEFROST OPERATION, the system returns to HEATING OPERATION.

## Regarding outside air temperature and heating capacity

- The heating capacity of the air conditioner declines as the outside air temperature falls. In such a case, use the air conditioner in combination with other heating systems.
- A warm air circulating system is employed, and therefore it takes some time until the entire room is warmed up after the start of operation.
- An indoor fan runs to discharge a gentle wind automatically until the temperature inside the air conditioner reaches a certain level. At this time, the remote controller displays " (\*\*). Leave it as it stands and wait for a while.
- When the warm air stays under the ceiling and your feet are cold, we recommend that you use a circulator (a fan to circulate the air inside the room). For details, consult your dealer.

#### **ADJUSTMENT**

For programming TEMPERATURE, FAN SPEED and AIR FLOW DIRECTION, follow the procedure shown below.



#### **TEMPERATURE SETTING**

Press TEMPERATURE SETTING button and program the setting temperature.



Each time this button is pressed, setting temperature rises 1°C.

Each time this button is pressed, setting temperature lowers  $1^{\circ}C$ .

• The setting is impossible for fan operation.

#### NOTE -

 The setting temperature range of the remote controller is 16°C to 32°C.



#### **FAN SPEED CONTROL**

#### Press FAN SPEED CONTROL button.

High or Low fan speed can be selected.

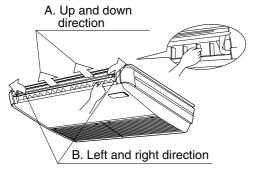
The micro computer may sometimes control the fan speed in order to protect the unit.



#### **AIR FLOW DIRECTION ADJUST**

- There are 2 ways of adjusting the air discharge angle.
  - 1. A. Up and down adjustment
  - 2. B. Left and right direction

Fig. 1



#### A. UP AND DOWN DIRECTION

The movable limit of the flap is changeable. Contact your Daikin dealer for details.

## Press the AIR FLOW DIRECTION ADJUST button to select the air direction as following.



The AIR FLOW FLAP display swings as shown the left and the air flow direction continuously varies. (Automatic swing setting)



Press AIR FLOW DIRECTION ADJUST button to select the air direction of your choice.



The AIR FLOW FLAP display stops swinging and the air flow direction is fixed (Fixed air flow direction setting).

#### MOVEMENT OF THE AIR FLOW FLAP

For the following conditions, micro computer controls the air flow direction so it may be different from the display.

Operation mode	Cooling	Heating
Operation condition	When room temperature is lower than the set temperature	When room temperature is higher than the set temperature     At defrost opera- tion
	When operating of downward air flow	

Operation mode includes automatic operation.

#### **B. LEFT AND RIGHT DIRECTION**

 Adjusting air flow direction in the left and right direction. (Refer to Fig. 1)

#### NOTE -

 Only make adjustments after you have stopped the air flow direction swing in a position where adjustments are possible. Your hand may get caught if you attempt to make adjustments while the unit is swinging.

#### PROGRAM TIMER OPERATION

Operate in the following order.

- The timer is operated in the following two ways.
- Programming the stop time (⊕ ○)
  - .... The system stops
  - operating after the set time has elapsed.
- Programming the start time (⊕ |) .... The system starts
  - operating after the set time has elapsed.
- The timer can be programmed a maximum of 72 hours.
- The start and the stop time can be simultaneously programmed.



#### TIMER MODE START/STOP

Press the TIMER MODE START/STOP button several times and select the mode on the display.

The display flashes.

For setting the timer stop .... "⊕ - ○"

For setting the timer start .... "  $\oplus$  - | "



#### **PROGRAMMING TIME**

Press the PROGRAMMING TIME button and set the time for stopping or starting the system.



When this button is pressed, the time advances by 1 hour.



When this button is pressed, the time goes backward by 1 hour.



#### **TIMER ON/OFF**

#### Press the TIMER ON/OFF BUTTON.

The timer setting procedure ends.

The display "  $\oplus$  -  $\bigcirc$  or  $\oplus$  -  $\mid$ " changes from flashing light to a constant light.

Refer to figure 4 on page [1]

#### NOTE -

 When setting the timer Off and On at the same time, repeat the above procedure from 1 to 3 once again.

When the timer is programmed to stop the system after 3 hours and start the system after 4 hours, the system will stop after 3 hours and then 1 hour later the system will start.

- After the timer is programmed, the display shows the remaining time.
- Press the TIMER ON/OFF BUTTON once again to cancel programming. The display vanishes.

#### 7. OPTIMUM OPERATION

Observe the following precautions to ensure the system operates.

- Adjust the room temperature properly for a comfortable environment. Avoid excessive heating or cooling.
- Prevent direct sunlight from entering a room during cooling operation by using curtains or blinds.
- Ventilate the room regularly.
   Using the unit for long periods of time requires attentive ventilation of the room.
- Keep doors and windows closed. If the doors and windows remain open, room air will flow out and cause to decrease the effect of cooling and heating.
- Do not place other heaters directly below the indoor unit.
  - They may deform due to the heat.
- Never place objects near the air inlet and the air outlet of the unit. It may cause deterioration in the effect or stop in the operation.

- 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 6hours before operation for smooth running (Refer to MAINTENANCE).
- When the display shows " " (TIME TO CLEAN AIR FILTER), ask a qualified service person to clean the filters (Refer to MAINTENANCE).
- Fully use the function of air flow direction adjust.
   Cold air gathers on the floor, and warm air gathers in the ceiling.

Set the air flow direction parallel during cooling or dry operation, and set it downwards during heating operation.

Do not let the air blow directly to a person.

 It takes time for the room temperature to reach the set temperature.

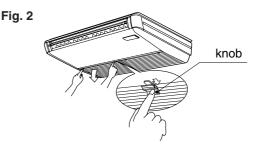
We recommend starting the operation in advance using timer operation.

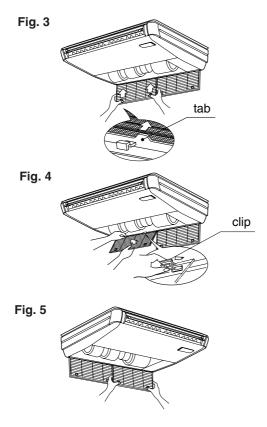
## 8. MAINTENANCE (FOR SERVICE PERSONNEL)

ONLY A QUALIFIED SERVICE PERSON IS ALLOWED TO PERFORM MAINTENANCE

#### **IMPORTANT!**

- BEFORE OBTAINING ACCESS TO TERMINAL DEVICES, ALL POWER SUPPLY CIRCUITS MUST BE INTERRUPTED
- To clean the air conditioner, be sure to stop operation, and turn the power switch off. Otherwise, an electric shock and injury may result.
- Do not wash the air conditioner with water Doing so may result in an electric shock.
- Be careful with a scaffold or staging Caution must be exercised because of work at a high place.





#### **HOW TO CLEAN 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

Increase the frequency of cleaning if the unit is installed in a room where the air is extremely contaminated.

If the dirt becomes impossible to clean, change the air filter (Air filter for exchange is optional).

#### 1. Open the suction grille.

Slide both knobs simultaneously as shown and then pull them downward.

(Do the same procedure for closing.)

(Refer to Fig. 2)

#### 2. Remove the air filters.

Push the 2 tabs up, and slowly lower the grille. (Refer to Fig. 3)

#### 3. Clean the air filter.

Use vacuum cleaner  $\bf A$ ) or wash the air filter with water  $\bf B$ ).

A)Using a vacuum cleaner



#### B)Washing with water

When the air filter is very dirty, use soft brush and neutral detergent.



Remove water and dry in the shade.

#### NOTE -

- Do not wash the air conditioner with hot water of more than 50°C, as doing so may result in discoloration and/or deformation.
- Do not expose it to fire, as doing so may result in burning.

#### 4. Fix the air filter.

Set the hatch of the air filter to the fook of the suction grille, and fix the air filter.

(Refer to Fig. 5)

#### 5. Close the suction grille.

Refer to item No. 1.

## 6. After turning on the power, press FILTER SIGN RESET BUTTON.

The "TIME TO CLEAN AIR FILTER" display vanishes.

## HOW TO CLEAN AIR OUTLET AND OUTSIDE PANELS

- · Clean with soft cloth.
- When it is difficult to remove stains, use water or neutral detergent.

#### NOTE -

- Do not use gasoline, benzene, thinner, polishing powder, liquid insecticide. It may cause discoloring or warping.
- Do not let the indoor unit get wet. It may cause an electric shock or a fire.
- Do not use water or air of 50°C or higher for cleaning air filters and outside panels.

#### **HOW TO CLEAN THE SUCTION GRILLE**

#### 1. Open the suction grille.

Slide both knobs and then pull them downward. (Do the same procedure for closing.)

#### 2. Remove the air filter.

Refer to "HOW TO CLEAN THE AIR FILTER". (Refer to Fig. 3)

#### 3. Remove the suction grille.

Open the suction grille and pull the clips on the back of the suction grille forward.

(Refer to Fig. 4)

#### 4. Clean the suction grille.

Wash with a soft bristle brush and neutral detergent or water, and dry throughly.



#### • When very grimy

Directly apply the type of detergent used for cleaning ventilation fans or ovens, wait 10 minutes, and then rinse with water.

#### NOTE -

- Do not wash the air conditioner with hot water of more than 50°C, as doing so may result in discoloration and/or deformation.
- 5. Fix the air filter.

  Refer to "HOW TO CLEAN THE AIR FILTER".
- **6. Fix the suction grille.** Refer to item No. 3.
- 7. Close the suction grille. Refer to item No. 1.

## START UP AFTER A LONG STOP Confirm the following

- Check that the air inlet and outlet are not blocked.
   Remove any obstacle.
- Check if the earth is connected.
   Might there be a broken wire somewhere?
   Contact your dealer if there are any problems

#### Clean the air filter and outside panels

- After cleaning the air filter, make sure to attach it. Turn on the main power supply switch
- The display on the remote controller will be shown when the power is turned on.
- To protect the unit, turn on the main power switch at least 6 hours before operation.

## WHAT TO DO WHEN STOPPING THE SYSTEM FOR A LONG PERIOD

Turn on FAN OPERATION for a half day and dry the unit.

- Refer to "6. OPERATION PROCEDURE". Cut off the power supply.
- 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.
- The display on the remote controller will vanish when the main power switch is turned off.

#### Clean the air filter and the exterior.

 Be sure to replace the air filter to its original place after cleaning. Refer to "MAINTENANCE".

## 9. NOT MALFUNCTION OF THE AIR CONDITIONER

The following symptoms do not indicate air conditioner malfunction

#### I. THE SYSTEM DOES NOT OPERATE

 The system does not restart immediately after the ON/OFF BUTTON is pressed.

If the OPERATION lamp lights, the system is in normal condition.

It does not restart immediately because a safety device operates to prevent overload of the system. After 3 minutes, the system will turn on again automatically.

 The system does not restart immediately when TEMPERATURE SETTING button is returned to the former position after pushing the button.

If the OPERATION lamp lights, the system is in normal condition.

It does not restart immediately because a safety device operates to prevent overload of the system. After 3 minutes, the system will turn on again automatically.

 The system does not start when the display shows " \_\_\_\_\_ " (UNDER CENTRALIZED CONTROL) and it flashes for few seconds after pressing an operation button.

This is because the system is under centralized control. Flashes on the display indicates that the system cannot be controlled by the remote controller.

- The system does not start immediately after the power supply is turned on.
  - Wait one minute until the micro computer is prepared for operation.
- · The outdoor unit is stopped

This is because the room temperature has reached the set temperature. The indoor unit switches to fan operation.

II. WHEN " \_\_\_\_ " (UNDER CENTRALIZED CONTROL) IS DISPLAYED AND OPERATION IS DIFFERENT FROM THE REMOTE CONTROL DISPLAY.

This is because operating mode is controlled by a micro computer, as shown below, depending on the operating mode of the other connected indoor units when using in a multi system.

 If the operating mode does not match that of the other indoor units which are already running, the indoor unit goes into standby mode (the fan stops and the air flow flaps become horizontal).

The unit will go into the above mode if either cooling, dry, or fan operation mode are set together with heating mode.

#### NOTE -

- Normally, the operation mode in the room where the unit is first run is given priority, but the following situations are exceptions, so please keep this in mind.
  - a If the operation mode of the first room is FAN Mode, then using Heating Mode in any room after this will give priority to heating. In this situation, the air conditioner running in FAN Mode will go on standby.
  - b With the Priority Room Setting active Contact your Daikin dealer for the operation that corresponds to your system.
- If the total capacity of all the indoor units running exceeds the limit, the indoor unit will go into standby mode (fan and air flow direction remain as set). (Only for cooling-only type.)
- If another indoor unit goes into heating mode after cooling, the unit may go into dry mode (fan operates whisper and the air flow flaps become horizontal).

## III.THE FAN SPEED IS DIFFERENT FROM THE SETTING

 Pressing the fan speed control button does not change the fan speed.

When the room temperature reaches the set temperature in heating mode, the power supply from the outdoor unit stops and the indoor unit goes into whisper mode (in a multi system, the fan goes back and forth between stop and whisper). This is to prevent the cool air from being blown directly onto anyone in the room.

#### IV.AIR BLOW DIRECTION IS NOT AS SPECIFIED.

- Actual air blow direction is not as shown on the remote controller.
- Automaticswing setting does not work.
   Refer to "AIR FLOW DIRECTION ADJUST".

#### **V.WHITE MIST COMES OUT OF A UNIT**

When humidity is high during cooling operation (In oily or dusty places)

If the inside of an indoor unit is extremely contaminated, the temperature distribution inside a room becomes uneven. It is necessary to clean the inside of the indoor unit. Ask your Daikin dealer for details on cleaning the unit. This operation requires a qualified service person.

 When the system is changed over to HEATING OPERATION after DEFROST OPERATION.

Moisture generated by DEFROST becomes steam and exists.

#### VI.NOISE OF AIR CONDITIONERS

A ringing sound after the unit is started.
 This sound is generated by the temperature regulator working.

It will quiet down after about a minute.

 A continuous flow "Shuh" sound is heard when the systems is in COOLING or DEFROST OPERATION.

This is the sound of refrigerant gas flowing through both indoor and outdoor units.

 A "Shuh" sound which is heard at the start or immediately after the stop of operation or which is heard at the start or immediately after the stop of DEFROST OPERATION.

This is the noise of refrigerant caused by flow stop and flow change.

 A continuous flow "Shah" sound is heard when the system is in COOLING OPERATION or at a stop.

The noise is heard when the drain pump is in operation.

 A "Pishi-pishi" squeaking sound is heard when the system is in operation or after the stop of operation.

Expansion and contraction of plastic parts caused by temperature change makes this noise.

#### **VII.DUST FROM THE UNITS**

 Dust may blow out from the unit after starting operation from long resting time.
 Dust absorbed by the unit blows out.

#### **VIII.THE UNITS GIVE OFF ODORS**

The unit absorbs the smell of rooms, furniture, cigarettes, etc., and then emits them.

## IX.THE LIQUID CRYSTAL OF THE REMOTE CONTROLLER SHOW "88"

 It happens immediately after the main power supply switch is turned on.

This shows that the remote controller is in normal condition.

This continues temporary.

#### X.DOES NOT COOL VERY WELL.

• Program dry operation.

Program dry operation is designed to lower the room temperature as little as possible. Refer to page 6.

#### 10. TROUBLE SHOOTING

 If one of the following malfunctions occurs, take the measures shown below and contact your Daikin dealer.

The system must be repaired by a qualified service person.

#### ─ MARNING

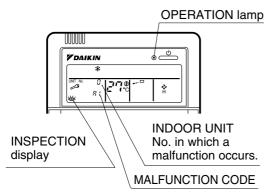
When the air conditioner is in abnormal conditions (smell of something burning, etc), unplug the power cord from the outlet, and contact your dealer

Continued operation under such circumstances may result in a failure, electric shock, and fire.

- If a safety device such as a fuse, a breaker or an earth leakage breaker frequently actuates;
   Measure: Do not turn on the main power switch.
- If the ON/OFF switch does not properly work;
   Measure: Turn off the main power switch.
- If water leaks from unit;
   Measure: Stop the operation.
- If the display " 

  " (INSPECTION), "UNIT No.",

   and the OPERATION lamp flash and the "MAL FUNCTION CODE" appears;

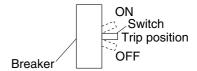


**Measure:** Notify your Daikin dealer and inform him/her of the display.

- II. If the system does not properly operate except for the above mentioned case, and none of the above mentioned malfunctions is evident, investigate the system according to the following procedures.
- 1. If the system does not operate at all.
  - Check if there is a power failure.
     Wait until power is restored. If power failure occurs during operation, the system automatically restarts immediately after the power supply recovers.
  - Check if no fuse has blown.
     Turn off the power supply.

 Check if the breaker is blown.
 Turn the power on with the breaker switch in the off position.

Do not turn the power on with the breaker switch in the trip position. (Contact your dealer.)



- 2. If the system stops operating after operating the system.
  - Check if the air inlet or outlet of outdoor or indoor unit is blocked by obstacles.
     Remove the obstacle and make it well-ventilated.
  - Check if the air filter is clogged.
     Ask a qualified service person to clean the air filters (Refer to MAINTENANCE).
- 3. The system operates but it does not sufficiently cool or heat.
  - If the air inlet or outlet of the indoor or the outdoor unit is blocked with obstacles.
     Remove the obstacle and make it well-ventilated.
  - If the air filter is clogged.
     Ask a qualified service person to clean the air filters (Refer to MAINTENANCE).
  - If the set temperature is not proper (Refer to ADJUSTMENT).
  - If the FAN SPEED button is set to LOW SPEED (Refer to ADJUSTMENT).
  - If the air flow angle is not proper (Refer to AIR FLOW DIRECTION ADJUST).
  - If the doors or the windows are open.
     Shut doors or windows to prevent wind from coming in.
  - If direct sunlight enters the room (when cooling).

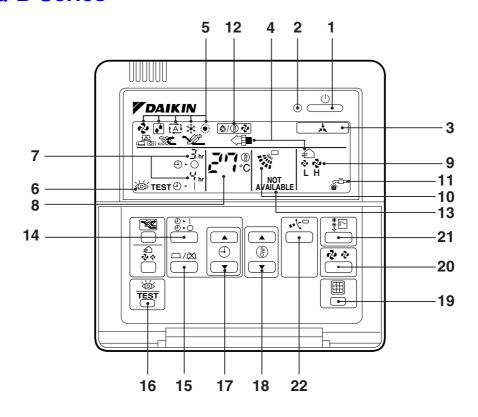
Use curtains or blinds.

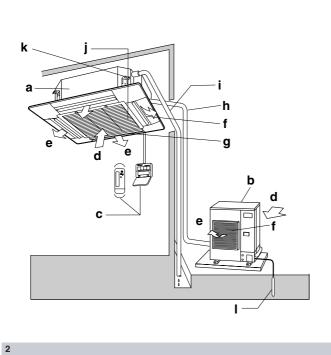
- When there are too many inhabitants in the room (when cooling).
  - Cooling effect decreases if heat gain of the room is too large.
- If the heat source of the room is excessive (when cooling).
  - Cooling effect decreases if heat gain of the room is too large.

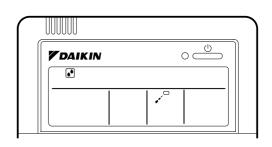
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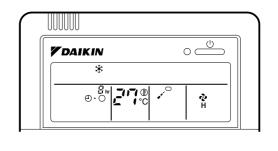
## 2.5 FFQ-B Series

1









### 5. NAME AND FUNCTION OF EACH SWITCH AND DISPLAY ON THE REMOTE CONTROLLER

Refer to figure 1 on page [1]

	ON/OFF BUTTON
1	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.
3	DISPLAY "
	When this display shows, the system is UNDER CENTRALIZED CONTROL.
	DISPLAY " ♠♠ "" ♠ "" ❤️ "" ❤️ " (VENTILATION/AIR CLEANING)
4	This display shows that the total heat exchange and the air cleaning unit are in operation (These are optional accessories).
	DISPLAY "❖""໋ ""ຝ ""☀ ""☀"" (OPERATION MODE)
5	This display shows the current OPERATION MODE. For cooling only type, "
	DISPLAY " & TEST "(INSPECTION/TEST OPERATION)
6	When the INSPECTION/TEST OPERATION BUTTON is pressed, the display shows the system mode is in.
7	DISPLAY " O O O O O O O O O O O O O O O O O O
	This display shows the PROGRAMMED TIME of the system start or stop.
8	DISPLAY " ₴Ეॄ® " (SET TEMPERATURE)
0	This display shows the set temperature.
9	DISPLAY " 🍫 🤣 " (FAN SPEED)
9	This display shows the set fan speed.
10	DISPLAY " 🤘 "(AIR FLOW FLAP)
10	Refer to "AIR FLOW DIRECTION ADJUST".
11	DISPLAY " " (TIME TO CLEAN AIR FIL-TER)
	Refer to "HOW TO CLEAN THE AIR FILTER".
10	DISPLAY "ஓ∕⊕⊋ "(DEFROST)
12	Refer to "DEFROST OPERATION".
	Refer to "DEFROST OPERATION".

	NON-FUNCTIONING DISPLAY
	If that particular function is not available,
	pressing the button may display the words
13	"NOT AVAILABLE" for a few seconds. When running multiple units simultaneously
13	The "NOT AVAILABLE" message will only be
	appear if none of the indoor units is equipped
	with the function. If even one unit is equipped
	with the function, the display will not appear.
14	TIMER MODE START/STOP BUTTON
14	Refer to "PROGRAM TIMER OPERATION".
15	TIMER ON/ OFF BUTTON
13	Refer to "PROGRAM TIMER OPERATION"
	INSPECTION/TEST OPERATION BUT-
16	TON
. •	This button is used only by qualified service
	persons for maintenance purposes.
	PROGRAMMING TIME BUTTON
17	Use this button for programming "START and/
	or STOP" time.
	TEMPERATURE SETTING BUTTON
18	Use this button for SETTING TEMPERA-
	TURE.
19	FILTER SIGN RESET BUTTON
13	Refer to "HOW TO CLEAN THE AIR FILTER".
	FAN SPEED CONTROL BUTTON
20	Press this button to select the fan speed,
	HIGH or LOW, of your choice.
21	OPERATION MODE SELECTOR BUTTON
	Press this button to select OPERATION MODE.
22	AIR FLOW DIRECTION ADJUST BUTTON
	Refer to "AIR FLOW DIRECTION ADJUST".

#### NOTE -

 For the sake of explanation, all indications are shown on the display in figure 1 contrary to actual running situations.

### 6. OPERATION PROCEDURE

Refer to figure 1 on page [1]

- Operating procedure varies with heat pump type and cooling only type. Contact your Daikin dealer to confirm your system type.
- To protect the unit, turn on the main power switch 6 hours before operation.

 If the main power supply is turned off during operation, operation will restart automatically after the power turns back on again.

## COOLING, HEATING, AUTOMATIC, FAN, AND PROGRAM DRY OPERATION

Operate in the following order.



## OPERATION MODE SELECTOR

# Press OPERATION MODE SELECTOR button several times and select the OPERATION MODE of your choice as follows.

- - In this operation mode, COOL/HEAT changeover is automatically conducted.
- - The function of this program is to decrease the humidity in your room with the minimum temperature decrease.
  - Micro computer automatically determines TEMPERATURE and FAN SPEED.
  - This system dose not go into operation if the room temperature is below 16°C.

#### Refer to figure 3 on page [1]

• For cooling only type, " COOLING ", " FAN " and " DRY " operation are able to select.



#### ON/OFF

#### Press ON/OFF button

OPERATION lamp lights up or goes off and the system starts or stops OPERATION.

#### [EXPLANATION OF HEATING OPERATION]

#### **DEFROST OPERATION**

- As the frost on the coil of an outdoor unit increase, heating effect decreases and the system goes into DEFROST OPERATION.
- After 6 to 8 minutes (maximum 10 minutes) of DEFROST OPERATION, the system returns to HEATING OPERATION.

## Regarding outside air temperature and heating capacity

 The heating capacity of the air conditioner declines as the outside air temperature falls.
 In such a case, use the air conditioner in combination with other heating systems.

- A warm air circulating system is employed, and therefore it takes some time until the entire room is warmed up after the start of operation.
- An indoor fan runs to discharge a gentle wind automatically until the temperature inside the air conditioner reaches a certain level. At this time, the remote controller displays" (a/De)". Leave it as it stands and wait for a while.
- When the warm air stays under the ceiling and your feet are cold, we recommend that you use a circulator (a fan to circulate the air inside the room). For details, consult your dealer.

#### **ADJUSTMENT**

For programming TEMPERATURE, FAN SPEED and AIR FLOW DIRECTION, follow the procedure shown below.



#### TEMPERATURE SETTING

## Press TEMPERATURE SETTING button and program the setting temperature.



Each time this button is pressed, setting temperature rises 1°C.

Each time this button is pressed, setting temperature lowers 1°C.

• The setting is impossible for fan operation.

#### NOTE TO

The setting temperature range of the remote controller is 16°C to 32°C.



#### **FAN SPEED CONTROL**

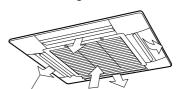
#### Press FAN SPEED CONTROL button.

High or Low fan speed can be selected. Micro computer may sometimes control the fan speed in order to protect the unit.



#### AIR FLOW DIRECTION ADJUST

Press the AIR FLOW DIRECTION ADJUST button to adjust the air flow angle.



Up and down adjustment

• The movable limit of the flap is changeable. Contact your Daikin dealer for details.

## Press the AIR FLOW DIRECTION ADJUST button to select the air direction as following.



The AIR FLOW FLAP display swings as shown left and the air flow direction continuously varies. (Automatic swing setting)



Press AIR FLOW DIRECTION ADJUST button to select the air direction of your choice.



The AIR FLOW FLAP display stops swinging and the air flow direction is fixed (Fixed air flow direction setting).

#### MOVEMENT OF THE AIR FLOW FLAP

For the following conditions, micro computer controls the air flow direction so it may be different from the display.

Operation mode
Operation condition

Operation mode includes automatic operation.

#### **PROGRAM TIMER OPERATION**

Operate in the following order.

- The timer is operated in the following two ways.
- Programming the stop time (♠ · ○) .... The system stops
- operating after the set time has elapsed.
- Programming the start time (⊕ |) .... The system starts
  - operating after the set time has elapsed.
- The timer can be programmed a maximum of 72 hours.
- The start and the stop time can be simultaneously programmed.



#### TIMER MODE START/STOP

# Press the TIMER MODE START/STOP button several times and select the mode on the display.

The display flashes.

For setting the timer stop .... " $\bigcirc$  "  $\bigcirc$  " For setting the timer start .... " $\bigcirc$  "  $\bigcirc$  "

# 2

#### PROGRAMMING TIME

Press the PROGRAMMING TIME button and set the time for stopping or starting the system



When this button is pressed, the time advances by 1 hour.

When this button is pressed, the time goes backward by 1 hour.



#### TIMER ON/OFF

#### Press the TIMER ON/OFF button.

The timer setting procedure ends. The display " $\oplus$  - $\bigcirc$  or  $\oplus$  - $\mid$ " changes from flashing light to a constant light.

#### Refer to figure 4 on page [1]

#### NOTE TO

 When setting the timer Off and On at the same time, repeat the above procedure from 1 to 3 once again.

When the timer is programmed to stop the system after 3 hours and start the system after 4 hours, the system will stop after 3 hours and then 1 hour later the system will start.

- After the timer is programmed, the display shows the remaining time.
- Press the TIMER ON/OFF button once again to cancel programming. The display vanishes.

#### 7. OPTIMUM OPERATION

Observe the following precautions to ensure the system operates.

- Adjust the room temperature properly for a comfortable environment. Avoid excessive heating or cooling.
- Prevent direct sunlight from entering a room during cooling operation by using curtains or blinds.
- Ventilate the room regularly.
   Using the unit for long periods of time requires attentive ventilation of the room.
- Do not place items that might be damaged by water under the indoor unit.
  - Water may condensate and drip if the humidity reaches 80% or if the drain exit gets clogged.
- Keep doors and windows closed. If the doors and windows remain open, room air will flow out and cause to decrease the effect of cooling and heating.

- Do not place other heaters directly below the indoor unit.
  - They may deform due to the heat.
- Never place objects near the air inlet and the air outlet of the unit. It may cause deterioration in the effect or stop in the operation.
- 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 6hours before operation for smooth running (Refer to MAINTE-NANCE).
- When the display shows " " (TIME TO CLEAN AIR FILTER), ask a qualified service person to clean the filters (Refer to MAINTE-NANCE).

## 8. MAINTENANCE (FOR SERVICE PERSONNEL)

## ONLY A QUALIFIED SERVICE PERSON IS ALLOWED TO PERFORM MAINTENANCE

#### **IMPORTANT!**

- BEFORE OBTAINING ACCESS TO TERMI-NAL DEVICES, ALL POWER SUPPLY CIR-CUITS MUST BE INTERRUPTED
- To clean the air conditioner, be sure to stop operation, and turn the power switch off. Otherwise, an electric shock and injury may result.
- Do not wash the air conditioner with water Doing so may result in an electric shock.
- Be careful with a scaffold or staging Caution must be exercised because of work at a high place.

#### **HOW TO CLEAN 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

Increase the frequency of cleaning if the unit is installed in a room where the air is extremely contaminated.

If the dirt becomes impossible to clean, change the air filter (Air filter for exchange is optional)

#### 1. Open the suction grille.

Push it downward slowly while pressing horizontally the buttons provided on two spots. (Follow the same procedure for closing).

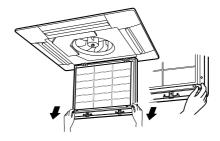
Fig. 1



#### 2. Detach the air filter

Pull the hook of the air filter out diagonally downward, and remove the filter.

Fig. 2



#### 3. Clean the air filter.

Use vacuum cleaner A) or wash the air filter with water B).

A) Using a vacuum cleaner



B) Washing with water
When the air filter is very dirty, use soft brush and neutral detergent.

Remove water and dry in the shade.



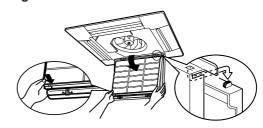
#### NOTE -

- Do not wash the air conditioner with hot water of more than 50°C, as doing so may result in discoloration and/or deformation.
- Do not expose it to fire, as doing so may result in burning.

#### 4. Fix the air filter

- (1) Hook the air filter to a protrusion on the suction grille.
- (2) Push the lower part of the air filter onto the protrusion at the lower part of the suction grille, and fix the air filter there.

Fig. 3



5. Shut the suction grille.

Refer to item No.1.

After turning on the power, press FILTER SIGN RESET button.

The "TIME TO CLEAN AIR FILTER" display vanishes.

#### HOW TO CLEAN AIR OUTLET AND OUT-SIDE PANELS

- · Clean with soft cloth.
- When it is difficult to remove stains, use water or neutral detergent.

#### NOTE TO

- Do not use gasoline, benzene, thinner, polishing powder, liquid insecticide. It may cause discoloring or warping.
- Do not let the indoor unit get wet. It may cause an electric shock or a fire.
- Do not use water or air of 50°C or higher for cleaning air filters and outside panels.

#### **HOW TO CLEAN THE SUCTION GRILLE**

1. Open the suction grille.

Push it downward slowly while pressing horizontally the buttons provided on two spots. (Follow the same procedure for closing.)

Fig. 4



2. Detach the suction grille.

Open the suction grille 45 degrees and lift it upward.

Fig. 5



3. Detach the air filter.
Refer to "HOW TO CLEAN THE AIR FILTER".
(Refer to Fig. 2)

4. Clean the suction grille.

Wash with a soft bristle brush and neutral detergent or water, and dry throughly.

When very grimy



Directly apply the type of detergent used for cleaning ventilation fans or ovens, wait 10 minutes, and then rinse with water.

5. Fix the air filter.

Refer to "HOW TO CLEAN THE AIR FILTER". (Refer to Fig. 3)

6. Fix the suction grille.

Refer to item No. 2.

7. Shut the suction grille. Refer to item No. 1.

### START UP AFTER A LONG STOP

Confirm the following

- Check that the air inlet and outlet are not blocked. Remove any obstacle.
- Check if the earth is connected.
   Might there be a broken wire somewhere?
   Contact your dealer if there are any problems.

#### Clean the air filter and outside panels

· After cleaning the air filter, make sure to attach it.

#### Turn on the main power supply switch

- The display on the remote controller will be shown when the power is turned on.
- To protect the unit, turn on the main power switch at least 6 hours before operation.

## WHAT TO DO WHEN STOPPING THE SYSTEM FOR A LONG PERIOD

Turn on FAN OPERATION for a half day and dry the unit.

• Refer to "6.OPERATION PROCEDURE".

#### Cut off the power supply.

- 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.
- The display on the remote controller will vanish when the main power switch is turned off.

#### Clean the air filter and the exterior.

 Be sure to replace the air filter to its original place after cleaning. Refer to "MAINTENANCE".

## 9. NOT MALFUNCTION OF THE AIR CONDITIONER

The following symptoms do not indicate air conditioner malfunction

#### I. THE SYSTEM DOES NOT OPERATE

 The system does not restart immediately after the ON/OFF button is pressed.

If the OPERATION lamp lights, the system is in normal condition.

It does not restart immediately because a safety device operates to prevent overload of the sys-

tem. After 3 minutes, the system will turn on again automatically.

 The system does not restart immediately when TEMPERATURE SETTING button is returned to the former position after pushing the button.

If the OPERATION lamp lights, the system is in normal condition.

It does not restart immediately because a safety device operates to prevent overload of the system. After 3 minutes, the system will turn on again automatically.

 The system does not start when the display shows "\_\_\_\_\_\_" (UNDER CENTRALIZED CONTROL) and it flashes for few seconds after pressing an operation button.

This is because the system is under centralized control. Flashes on the display indicates that the system cannot be controlled by the remote controller.

 The system does not start immediately after the power supply is turned on.

Wait one minute until the micro computer is prepared for operation.

• The outdoor unit is stopped
This is because the room temprerature has

reached the set temperature. The indoor unit switches to fan operation.

II. The display shows "\_\_\_\_\_" (UNDER CENTRALIZED CONTROL) and the unit operates in a mode different to what is shown on the remote controller display.

When using a unit in a multi system, the operation condition of that unit is controlled by a micro computer as described below, according to the operation condition of other indoor units connected to the system.

 If the operation mode does not match other indoor units that are already running, the indoor unit will assume the STANDBY state (the fan is stopped and the air flow flap is positioned horizontally).

If HEATING mode is set together with COOL-ING, DRY or FAN mode, the above mentioned condition will occur.

#### NOTE 1

- Normally, the operation mode in the room where the unit is first run is given priority, but the following situations are exceptions, so please keep this in mind
  - a. If the operation mode of the first room is FAN Mode, then using Heating Mode in any room after this will give priority to heating. In this situation, the air conditioner running in FAN Mode will go on standby.
  - b. With the Priority Room Setting active. Contact your Daikin dealer for the operation that corresponds to your system.
- If the total capacity of operating indoor units exceeds the limit, the indoor unit will assume the STANDBY state (FAN and AIR FLOW DIREC-

TION will be left as set). (This only applies to cooling only type.)

 If another indoor unit commences a HEATING operation after this indoor unit is running in COOLING mode, this indoor unit may switch to DRY operation (fan on low, air flow flap set at horizontal).

#### III. The fan speed is different from the setting.

 Pressing the fan speed control button does not change the fan speed.

When the room temperature reaches the set temperature in heating mode, the power supply from the outdoor unit is stopped and the indoor unit will operate on the low fan setting. (If using the multi system, the fan will alternate between off and low.)

This is to prevent the cool air from being blown directly onto anyone in the room.

## IV. AIR BLOW DIRECTION IS NOT AS SPECIFIED.

- Actual air blow direction is not as shown on the remote contoller.
- Automatic swing setting does not work.
   Refer to "AIR FLOW DIRECTION ADJUST."

#### V. WHITE MIST COMES OUT OF A UNIT

 When humidity is high during cooling operation (In oily or dusty places)

If the inside of an indoor unit is extremely contaminated, the temperature distribution inside a room becomes uneven. It is necessary to clean the inside of the indoor unit. Ask your Daikin dealer for details on cleaning the unit. This operation requires a qualified service person.

 When the system is changed over to HEAT-ING OPERATION after DEFROST OPERA-TION.

Moisture generated by DEFROST becomes steam and exists.

#### **VI.NOISE OF AIR CONDITIONERS**

A ringing sound after the unit is started.

This sound is generated by the temperature regulator working.

It will quiet down after about a minute.

 A continuous flow "Shuh" sound is heard when the systems is in COOLING or DEFROST OPERATION.

This is the sound of refrigerant gas flowing through both indoor and outdoor units.

- A "Shuh" sound which is heard at the start or immediately after the stop of operation or which is heard at the start or immediately after the stop of DEFROST OPERATION.
  - This is the noise of refrigerant caused by flow stop and flow change.
- A continuous flowing sound "Shah" or a trickling sound "Jyuru Jyuru" are heard when the system is in COOLING OPERATION or at a stop.

The noise is heard when the drain pump is in operation.

 A "Pishi-pishi" squeaking sound is heard when the system is in operation or after the stop of operation.

Expansion and contraction of plastic parts caused by temperature change makes this noise.

#### **VII.DUST FROM THE UNITS**

 Dust may blow out from the unit after starting operation from long resting time.
 Dust absorbed by the unit blows out.

#### **VIII.THE UNITS GIVE OFF ODORS**

The unit absorbs the smell of rooms, furniture, cigarettes, etc., and then emits them.

## IX.THE LIQUID CRYSTAL OF THE REMOTE CONTROLLER SHOW "88"

 It happens immediately after the main power supply switch is turned on.

This shows that the remote controller is in normal condition.

This continues temporary.

#### **10.TROUBLE SHOOTING**

 If one of the following malfunctions occurs, take the measures shown below and contact your Daikin dealer.

The system must be repaired by a qualified service person.

### — <u></u> warning-

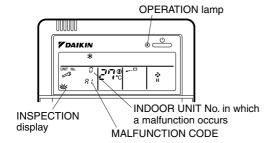
When the air conditioner is in abnormal conditions (smell of something burning, etc), unplug the power cord from the outlet, and contact your dealer

Continued operation under such circumstances may result in a failure, electric shock, and fire.

- If a safety device such as a fuse, a breaker, or an earth leakage breaker frequently actuates, or ON/OFF switch does not properly work.
- **Measure:** Turn off the main power switch If water leaks from unit.

Measure: Stop the operation.

 If the display " (INSPECTION), "UNIT No.", and the OPERATION lamp flash and the "MAL-FUNCTION CODE" appears.



**Measure:** Notify and inform the model name and what the malfunction code indicates to your Daikin dealer.

- II. If the system does not properly operate except for the above mentioned case, and none of the above mentioned malfunctions is evident, investigate the system according to the following procedures.
- 1. If the system does not operate at all.
- Check if there is a power failure.
   Wait until power is restored. If power failure occurs during operation, the system automatically restarts immediately after the power supply recovers.
- Check if the fuse has blown or breaker has worked.

Change the fuse or set the breaker.

- If the system stops operating after operating the system.
- Check if the air inlet or outlet of outdoor or indoor unit is blocked by obstacles.
- Remove the obstacle and make it well-ventilated.
- Check if the air filter is clogged.
   Ask a qualified service person to clean the air filters (Refer to MAINTENANCE).
- The system operates but it does not sufficiently cool or heat.
- If the air inlet or outlet of the indoor or the outdoor unit is blocked with obstacles.
  - Remove the obstacle and make it well-ventilated.
- If the air filter is clogged.
   Ask a qualified service person to clean the air filters (Refer to MAINTENANCE).
- If the set temperature is not proper (Refer to ADJUSTMENT).
- If the FAN SPEED button is set to LOW SPEED (Refer to ADJUSTMENT).
- If the air flow angle is not proper (Refer to AIR FLOW DIRECTION ADJUST).
- If the doors or the windows are open.
   Shut doors or windows to prevent wind from coming in.
- If direct sunlight enters the room (when cooling).
   Use curtains or blinds.
- When there are too many inhabitants in the room (when cooling).
- Cooling effect decreases if heat gain of the room is too large.
- If the heat source of the room is excessive (when cooling).
  - Cooling effect decreases if heat gain of the room is too large.

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Instruction SiBE18-821

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242 Troubleshooting SiBE18-821 Caution for Diagnosis

### 1. Caution for Diagnosis

### 1.1 Troubleshooting with the Operation Lamp (RA Indoor Unit)

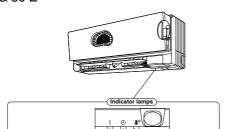
The operation lamp blinks when any of the following errors is detected.

- 1. When a protection device of the indoor or outdoor unit is activated or when the thermistor malfunctions, disabling equipment operation.
- 2. When a signal transmission error occurs between the indoor and outdoor units. In either case, conduct the diagnostic procedure described in the following pages.

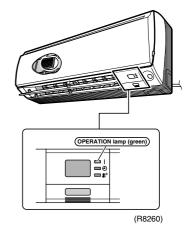
(R5072)

Location of Operation Lamp

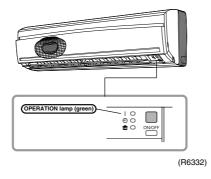
In case of FTXG 25/35 E Series CTXG 50 E



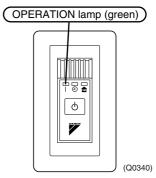
In case of FTXS 20/25/35/42/50 G Series



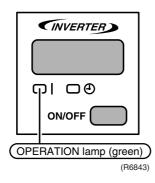
In case of FTXS 60/71 F Series



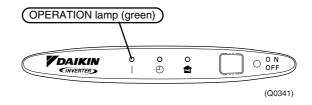
In case of FDXS 50/60 C Series FDXS 25/35 E Series



In case of FVXS 25/35/50 F Series



In case of FLXS 25/35/50/60 B Series



Caution for Diagnosis SiBE18-821



Caution:

Operation stops suddenly. (Operation lamp blinks.)

Cause of above trouble could be "Operation mode butting".

Check followings;

Are the operation modes all the same for indoor units connected to Multi system outdoor unit? If not set all indoor units to the same operation mode and confirm that the operation lamp is not blinking.

Moreover, when the operation mode is in "Auto", set all indoor unit operation mode to "Cool" or "Heat" and check again if the operation lamp is normal.

If the lamp stops blinking after the above steps, there is no malfunction.

★Operation stops and operation lamp blinks only for indoor unit which the different operation mode is set later. (The first set operation mode has priority.)

### 1.2 Troubleshooting with the LED on the SkyAir Indoor Unit

#### **Foreword**

Troubleshooting can be carried out by service monitor LED (green). (Blinks when normal) ∴ LED on • : LED off ∴ : LED blinks — : No connection with troubleshooting

Microcomputer Normal Monitor	Contents/Processing				
HAP	· ·				
<b>Φ</b>	Incorrect wiring between indoor and outdoor unit If outdoor unit's HAP is off, proceed outdoor unit's trouble shooting. If outdoor unit's HAP blinks, failure of wiring or indoor or outdoor unit P.C board ass'y. (Note 4)				
≎	Failure of indoor unit PC board ass'y (Note 5)				
•	Malfunction of power supply or failure of PC board ass'y or broken transmission wire between indoor and outdoor unit. (Note 5)				



- 1. When the INSPECTION/TEST button of remote controller is pushed, **INSPECTION** display blinks entering **INSPECTION** mode.
- In the INSPECTION mode, when the ON/OFF button is pushed and held for 5 seconds or more, the aforementioned malfunctioning history display is off. In this case, after the malfunction code blinks 2 times, the code display turns to "00" (=Normal) and the unit No. turns to "0". The INSPECTION mode automatically switches to the normal mode (set temperature display).
- 3. Operation halts due to malfunction depending on the model or condition.
- 4. The wiring between indoor and outdoor unit may be incorrect or disconnected. Before performing the previously described troubleshooting, check the wiring. If the outdoor unit is inverter unit, the outdoor unit fuse may be blown.
- 5. Troubleshoot by turning off the power supply for a minimum of 5 seconds, turning it back on, and then rechecking the LED display.

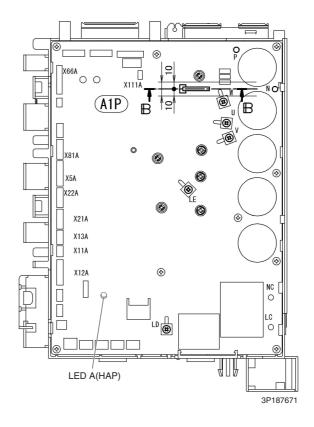
SiBE18-821 Caution for Diagnosis

### 1.3 Troubleshooting with the LED on the Outdoor Unit

There are green and orange LEDs on the PCB. The blinking green LED indicates normal equipment condition, and the OFF condition of the orange LED indicates normal equipment condition.

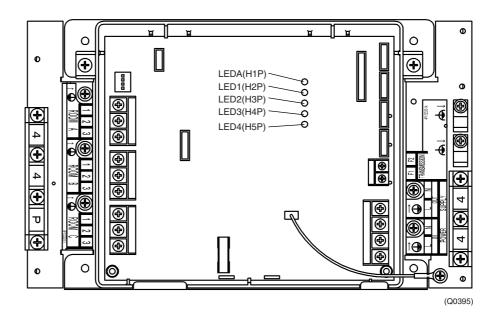
(Troubleshooting with the green LED)

The LED A (green) of the outdoor unit indicate microcomputer operation condition. Even after the error is cancelled and the equipment operates in normal condition, the LED indication remains.



Caution for Diagnosis SiBE18-821

### 1.4 Troubleshooting with the LED on the BP Unit



LED-B (GREEN)		
INTERCOMMNICATION TO	DIAGNOSIS	
OUTDOOR UNIT: NORMAL		
<b>()</b>	NORMAL	
٥	ABNORMALITY → CHECK INTER-UNIT WIRING	
	ARNODMALITY CHECK INTED. LINIT WIDING	

GREEN	NORMALLY FLASHING
RED	NORMALLY OFF
<b>O</b>	ON
<b>(</b>	FLASH
•	OFF
_	IRRELEVANT

GREEN	GREEN RED						
	MALFUNTION DETECTION				DIAGNIGGIG		
LED-A	LED-1 LED-2 LED-3 LEI		LED-4	DIAGNOSIS			
<b>(</b> )	•	•	•	•	NORMAL → CHECK INDOOR OR OUTDOOR UNIT		
(1)	¢	O	•	•	THERMISTOR ABNORMALITY		
•	0	•	٥	٥	HIGH PRESSURE PROTECTOR WORKED, OR FREEZE-UP IN OPERATING UNIT OR STAND-BY UNIT		
(1)	٥	•	•	•	ELECTRONIC EXPANSION VALVE ABNORMALITY		
0	_	_	_	_	[NOTE 1]		
•	_	_	_	_	POWER SUPPLY FAULT OR [NOTE 2]		

NOTES 1.TURN THE POWER OFF THEN ON AGAIN, IF THE LED DISPLAY RECURS, THE BRANCH PROVIDER UNIT PCB IS

THE INDOOR UNIT PCB IS FAULTY. TURN THE RECONNECT LINE 2 OF ALL INTER-UNIT WIRING AND CHECK THE DAIGNOSIS BY LEDS ON INDOOR UNIT PCB.

3P058760C

<sup>2.</sup>TURN THE POWER OFF AND THEN ON AGAIN, IF THE LED DISPLAY RECURS, TURN THE POWER OFF AND DISCONNECT LINE 2 OF INTER-UNIT WIRING FOR ALL UNITS, THEN TURN THE POWER ON AGAIN.

<sup>&</sup>lt;IF LED-A IS OFF : >

THE BRANCH PROVIDER UNIT PCB IS FAULTY.

<sup>&</sup>lt;IF LED-A IS FLASHING : >

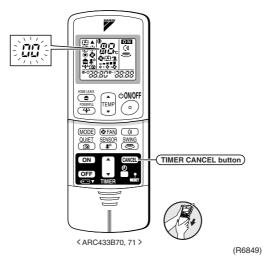
### 2. Service Check Function

### 2.1 RA Indoor Unit Wireless Remote Controller

In the ARC433 series remote controller, the temperature display sections on the main unit indicate corresponding codes.

#### **Check Method 1**

1. When the timer cancel button is held down for 5 seconds, a "CC" indication flashes on the temperature display section.



- 2. Press the timer cancel button repeatedly until a continuous beep is produced.
- The code indication changes in the sequence shown below, and notifies with a long beep.

No.	Code	No.	Code	No.	Code
1	88	12	£7	23	XC
2	84	13	X8	24	٤ ;
3	F3	14	J3	25	ዖዣ
4	88	15	83	26	13
5	LS	16	8:	27	7.4
6	88	17	٤٩	28	H8
7	85	18	ES	29	X7
8	۶۶	19	XS	30	u≥
9	29	20	<i>4</i> 8	31	ux ux
10	ШΩ	21	UR	32	88
11	٤٦	22	85	33	88

Service Check Function SiBE18-821

#### <In case of ARC433B70, 71>

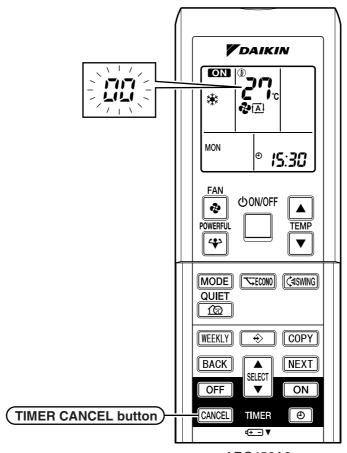
No.	Code	No.	Code	No.	Code
1	88	12	۶8	23	8:
2	UЧ	13	£η	24	ε:
3	LS	14	83	25	UR
4	88	15	X8	26	UX
5	HS	16	X9	27	24
6	X8	17	83	28	13
7	88	18	٤٩	29	78
8	£7	19	ξS	30	87
9	UB	20	J3	31	u∂
10	F3	21	J8	32	ER
11	85	22	85	33	88



- 1. A short beep and two consecutive beeps indicate non-corresponding codes.
- 2. To cancel the code display, hold the timer cancel button down for 5 seconds. The code display also cancels itself if the button is not pressed for 1 minute.

#### **ARC452** Series

1. When the timer cancel button is held down for 5 seconds, a "00" indication flashes on the temperature display section.





< ARC452A2 >

(R6757)

- 2. Press the timer cancel button repeatedly until a continuous beep is produced.
- The code indication changes in the sequence shown below, and notifies with a long beep.

No.	Code	No.	Code	No.	Code
1	88	13	٤٦	25	UR
2	uч	14	83	26	UH UH
3	LS	15	X8	27	PY
4	88	16	X9	28	13
5	H8	17	29	29	14
6	X8	18	S	30	87
7	88	19	ES	31	u2
8	£7	20	J3	32	88
9	<i>U</i> 0	21	J8	33	88
10	F3	22	85	34	F8
11	85	23	8:		
12	88	24	٤ :		



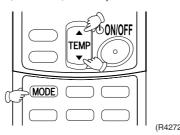
- 1. A short beep and two consecutive beeps indicate non-corresponding codes.
- 2. To cancel the code display, hold the timer cancel button down for 5 seconds. The code display also cancels itself if the button is not pressed for 1 minute.

Service Check Function SiBE18-821

#### **Check Method 2**

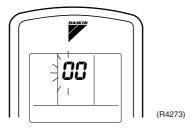
1. Enter the diagnosis mode.

Press the 3 buttons (TEMP▲,TEMP▼, MODE) simultaneously.



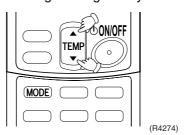
The digit of the number of tens blinks.

★Try again from the start when the digit does not blink.



2. Press the TEMP button.

Press TEMP▲ or TEMP▼ and change the digit until you hear the sound of "beep" or "pi pi".



3. Diagnose by the sound.

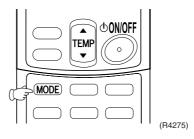
★"pi": The number of tens does not accord with the error code.

★"pi pi": The number of tens accords with the error code.

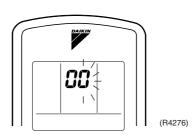
 $\star$  "beep": The both numbers of tens and units accord with the error code. (→See 7.)

4. Enter the diagnosis mode again.

Press the MODE button.

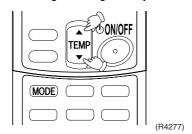


The digit of the number of units blinks.



5. Press the TEMP button.

Press TEMP▲ or TEMP▼ and change the digit until you hear the sound of "beep".



6. Diagnose by the sound.

 $\star$ "pi": The both numbers of tens and units do not accord with the error code.

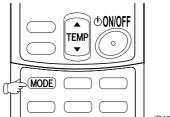
★"pi pi": The number of tens accords with the error code.

 $\star$  "beep": The both numbers of tens and units accord with the error code.

7. Determine the error code.

The digits indicated when you hear the "beep" sound are error code.

8. Exit from the diagnosis mode. Press the MODE button.



(R4278)

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#### Error Code List in Relation to RA Indoor Units

#### -: Not used for troubleshooting

Indication on the remote controller	Des	Details of fault (Refer to the indicated page.)			
88	Indoor unit in normal condunit.)	Indoor unit in normal condition (Conduct a diagnosis of the outdoor unit.)			
8 :	Indoor unit PCB abnorma	265			
85	Freeze-up protection con model only)	266			
88	Fan motor or related	AC motor (Duct, Floor / Ceiling)	268		
7 10	abnormality	DC motor (Wall, Floor)	269		
54	Heat exchanger thermisto	271			
£9	Room temperature therm	istor abnormality	271		

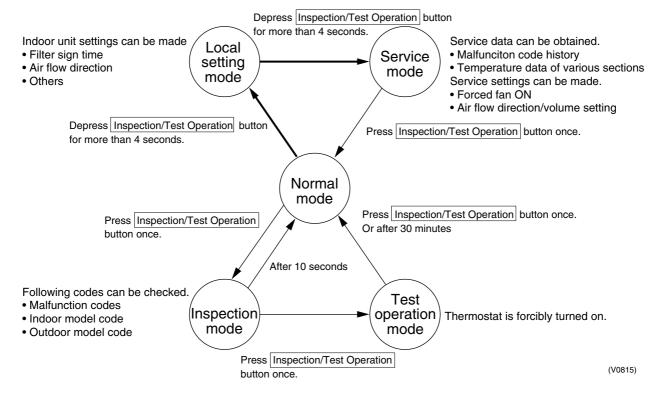
### 2.2 SkyAir Indoor Unit INSPECTION/TEST Button

#### **Explanation**

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



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

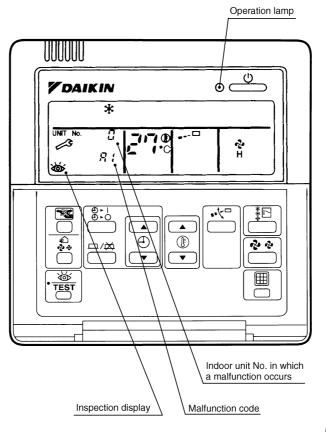


Service Check Function SiBE18-821

### 2.3 SkyAir Indoor Unit Wired Remote Controller

#### **Explanation**

If operation stops due to malfunction, the remote controller's operation LED blinks, and malfunction code is displayed. (Even if stop operation is carried out, malfunction contents are displayed when the inspection mode is entered.) The malfunction code enables you to tell what kind of malfunction caused operation to stop. See page 258 for malfunction code and malfunction contents.



(S2001)

### 2.4 SkyAir Indoor Unit Wireless Remote Controller

If equipment stops due to a malfunction, the operation indicating LED on the light reception section flashes.

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

#### **Procedure**

1. Press the INSPECTION/TEST button to select "Inspection."

The equipment enters the inspection mode. The "Unit" indication lights and the Unit No. display shows flashing "0" indication.

2. Set the Unit No.

Press the UP or DOWN button and change the Unit No. display until the buzzer (\*1) is generated from the indoor unit.

\*1 Number of beeps

3 short beeps: Conduct all of the following operations.

1 short beep: Conduct steps 3 and 4.

Continue the operation in step 4 until a buzzer remains ON. The continuous buzzer indicates that the malfunction code is confirmed.

Continuous beep: No abnormality.

3. Press the MODE selector button.

The left "0" (upper digit) indication of the malfunction code flashes.

4. Malfunction code upper digit diagnosis

Press the UP or DOWN button and change the malfunction code upper digit until the malfunction code matching buzzer (\*2) is generated.

■ The upper digit of the code changes as shown below when the UP and DOWN buttons are pressed.

\*2 Number of beeps

Continuous beep: Both upper and lower digits matched. (Malfunction code confirmed)

2 short beeps: Upper digit matched.

1 short beep: Lower digit matched.

5. Press the MODE selector button.

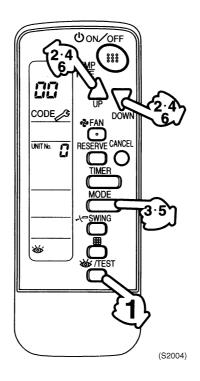
The right "0" (lower digit) indication of the malfunction code flashes.

6. Malfunction code lower digit diagnosis

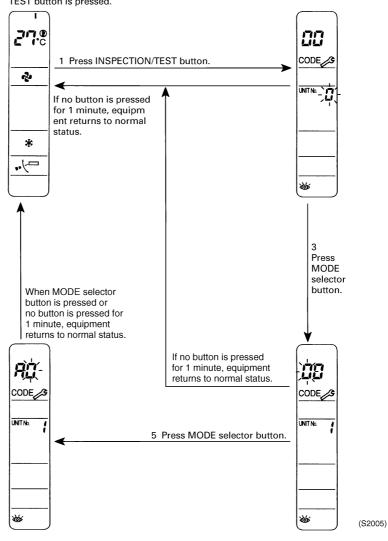
Press the UP or DOWN button and change the malfunction code lower digit until the continuous malfunction code matching buzzer (\*2) is generated.

■ The lower digit of the code changes as shown below when the UP and DOWN buttons are pressed.

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Normal status Enters inspection mode from normal status when the INSPECTION/ TEST button is pressed.



### 2.5 Sky Air Indoor Unit Error Codes and LED Indication

#### **Symbols**

 $\clubsuit$  : Blinks  $\diamondsuit$  : On  $\blacksquare$  : Off -: No connection with troubleshooting

High probability of malfunction Possibility of malfunction

☐ : Low probability of malfunction

-: No possibility of malfunction (do not replace)

#### **System**

Remote		Location of	Malfunction		Contents of Malfunction	Details of
Controller Display	Other		PC Board			Malfunction (Reference
	than PC Board	Outdoor Unit	Indoor Unit	Remote Controller		Page)
US	<b>©</b>	-	0	0	Transmission error (between indoor and remote controller)	289
U8	<b>©</b>		0	0	Transmission error between "main" remote controller and "sub" remote controller	290
UR	<b>©</b>		0		Excessive indoor units connected to this system.	291

#### **Indoor Unit**

Indoor	Remote					Contents of Malfunction	Details of
Unit LED	Controller Display	Other	PC Board				Malfunction (Reference
Display (H1P)		than PC Board	Outdoor Unit	Indoor Unit	Remote Controller		Page)
•		_		_	_	Normal $\rightarrow$ to outdoor unit	_
<b>Φ</b>	8:	_	_	0	_	Failure of indoor unit PC board (For self-diagnosis by	275
≎						LED, refer to p.244.)	
•							
⋫	83	0	_	_	_	Malfunction of drain water level system	276
<b>(</b>	8F	0	_	_	_	Float switch operation during compressor stop	278
<b>(</b>	#8 (FHQ only)	<b>©</b>			_	Indoor unit fan motor overload / overcurrent / lock	279, 280
<b>(</b>	87	<b>©</b>			_	Swing flap motor Malfunction / Lock	282
<b>(</b>	8.7	0		0	_	Failure of capacity setting	284
<b>♦</b>	EY	<b>©</b>	_		_	Malfunction of heat exchanger temperature sensor system (R2T)	285
﴾	85	•			_	Malfunction of heat exchanger temperature sensor system (R3T)	286
<b>(</b>	£8	0			_	Malfunction of suction air temperature sensor system	287
<b>Þ</b>	EJ	<u> </u>			_	Malfunction of remote control air temperature sensor system	288

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### 2.6 Malfunction Code Indication by Outdoor Unit PCB

#### <Monitor mode>

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

#### <Selection of setting item>

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

#### <Confirmation of malfunction 1>

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

#### <Confirmation of malfunction 2>

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

Detail

on next page.

description

#### <Confirmation of malfunction 3>

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

#### <Confirmation of malfunction 4>

Push the <u>SET (BS2)</u> button once to display "master or slave 1 or slave 2" and "malfunction location".

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

Contents of	malfunction	Malfunction code
In-phase malfunction of DIII-NET	Detection of DIII-NET	E1
Abnormal discharge pressure	HPS activated	E3
Abnormal suction pressure	Abnormal Pe	E4
Compressor lock	Detection of INV compressor lock	E5
Over load, over current,	Detection of DC fan 1 motor lock	E7
abnormal lock of outdoor unit fan motor	Detection of DC fan 2 motor lock	
Malfunction of electronic expansion	EV1	E9
valve	EV3	
Faulty sensor of outdoor air temperature	Faulty Ta sensor (short)	H9
Abnormal discharge pipe temperature	Abnormal Td	F3
Abnormal heat exchanger temperature	Refrigerant over charge	F6
Faulty sensor of discharge pipe temperature	Faulty Tdi sensor (short)	J3
Faulty sensor of suction pipe	Faulty Ts1 sensor (short)	J5
temperature	Faulty Ts2 sensor (short)	
Faulty sensor of heat exchanger temperature	Faulty Tb sensor (short)	J6
Malfunction of the liquid pipe temperature sensor	Faulty TI sensor (short)	J7
Faulty sensor of subcool heat exchanger temperature	Faulty Tsh sensor (short)	J9
Faulty sensor of discharge pressure	Faulty Pc sensor (short)	JA
Faulty sensor of suction pressure	Faulty Pe sensor (short)	JC
Faulty Inverter PC board	Faulty IPM	L1
	Abnormal Current sensor offset	
	Abnormal IGBT	
	Faulty Current sensor	
	Abnormal SP-PAM over-voltage	
Inverter radiation fin temperature rising	Over heating of inverter radiation fin temperature	L4
DC output over current	Inverter instantaneous over current	L5
Electronic thermal	Electronic thermal switch 1	L8
	Electronic thermal switch 2	
	Out-of-step	
	Speed down after startup	
	Lightening detection	
Stall prevention (Limit time)	Stall prevention (Current increasing)	L9
	Stall prevention (Faulty start up)	
	Abnormal wave form in startup	
	Out-of-step	
Transmission error between inverter and outdoor unit	Inverter transmission error	LC

<sup>\*</sup> Push the MODE (BS1) button and returns to "Setting mode 1".

 $\bigcirc : \mathsf{ON} \quad \bullet : \mathsf{OFF} \quad \bullet : \mathsf{Blink}$ 

Malfunation	(	Confir	matio	n of m	nalfun	ction	1	(	Confir	matio	n of m	alfun	ction	2	(	Confir	matio	n of m	alfun	ction :	3	(	Confir	matio	n of m	alfun	ction .	4		
Malfunction code		H2P		H4P	H5P	H6P	_	H1P		H3P	H4P	H5P	H6P	H7P	H1P		H3P	H4P	H5P	H6P	H7P	H1P			H4P	H5P	H6P	H7P		
E1	•	1121	1101	1141	1101	1101	0	•	1 121	1101	1141	1101	•	11/1	•	0	1101	1141	1101	•	•	•	0	0	1 141	1101	1101	0		
E3	•							0			•	•	•	0	0	0	•	•	•	•	•	0			•	•	•			
E4								•			•	0	•	•	0			•	•	•	•	•			•	•				
E5										0			•	0	•	0	0			•	•	•	•	0			•	•		
E7								0			•	0	0	0	0			•	•	•	•	0			•	0	*	1		
L/								•				•	•		0			•	•			0			•	0		•		
E9								•			0	•	•	•	0			•	•	•	•	•			•	•				
Lo								•			•				0			•	•	•	•	•			0	•				
H9								•			•	•	•	•	0			•	•	•	•	•			•	•	*	1		
	_														_													4		
F3	0			•	•	•	•	0			•	•	0	0	0			•	•	•	•	0			•	•		1		
F6	_			_	-	_	_	0			•	0	0	•	0			•	•	•	•	0			•	•	•	•		
J3	•			•	•	•	•	•			•	•	•	•	•			•	•	•	•	•			•	•				
J5								•			•	•	•	•	•			•	•	•	•	•			•	•				
															•			•	•	•	•	•			•	•				
J6								•			•	•	•	•	•			•	•	•	•	•			•	•				
J7								•			•	•	•	•	0			•	•	•	•	•			•	•	*	1		
J9								•			•	•	•	•	•			•	•	•	•	•			•	•				
JA								•			•	•	•	•	•			•	•	•	•	•			•	•				
JC								0			0	0	•	•	0			•	•	•	•	0			•	•				
L1	•			•	•	•	•	0			•	•	•	0	0			•	•	•	•	0			•	•	•	•		
					•	•		0			•	•	•	0	0			•	•	•	•	0				•	•	0		
								0			•	•	•	0	0			•	•	•	•	0			•	•	0	•		
								0			•	•	•	0	0			•	•	•	•	0			•	•	0	•		
								0			•	•	•	0	0			•	•	•	•	0			•	0	•	•		
L4	1							0			•	0	•	•	0			•	•	•	•	0			•	•				
L5	1							0			•	0	•	0	0			•	•	•	•	0			•	•				
L8								0			0	•	•	•	0			•	•	•	•	0			•	•				
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L9								•			•	•	•	•	•			•	•	•	•	•			•	•				
															•			•	•	•	•	•			•	•				
															•			•	•	•	•	•			•	•				
LC								•			•	•	•	•	•			•	•	•	•	•			•	•				

Display of contents of malfunction (first digit)

Display of contents of malfunction (second digit)

Display 1 of malfunction in detail

Display 2 of malfunction in detail

Master
 Slave1
 Slave2
 System

Service Check Function SiBE18-821

#### <Monitor mode>

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

#### <Selection of setting item>

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

#### <Confirmation of malfunction 1>

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

#### <Confirmation of malfunction 2>

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

#### <Confirmation of malfunction 3>

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

#### <Confirmation of malfunction 4>

Push the <u>SET (BS2)</u> button once to display "master or slave 1 or slave 2" and "malfunction location".

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

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

Contents of	malfunction	Malfunction code
Open phase/Power supply imbalance	Imbalance of inverter power supply voltage	P1
Faulty temperature sensor of inverter radiation fin	Faulty thermistor of inverter fin	P4
Gas shortage	Gas shortage alarm	U0
Abnormal power supply voltage	Insufficient Inverter voltage	U2
	Faulty charge of capacitor in main inverter circuit	
	Malfunction due to SP-PAM overvoltage	
	Malfunction due to P-N short circuit	
No implementation of test-run		U3
Transmission error between indoor	I/O transmission error	U4
and outdoor unit	I/O transmission error	
Transmission error of other system	Indoor unit system abnormal in other system or other indoor unit system abnormal in own system	U9
Erroneous field setting	System transmission malfunction	UA
	Overconnection malfunction of indoor units	
	Malfunction of field setting	
	Refrigerant abnormal	
	Connection error (BP unit)	
Faulty system malfunction	Wiring error (Auto-address error)	UH
Conflict in wiring and piping, no setting for system	Conflict in wiring and piping	UF

Detail description on next page.

○: ON •: OFF •:Blink

Malfunction	C	Confir	matio	n of m	alfun	ction	1	(	Confire	matio	n of m	nalfun	ction	2	(	Confir	matio	n of m	nalfun	ction	3	Confirmation of malfunction 4												
code	H1P	H2P	Н3Р	H4P	H5P	H6P	H7P	H1P	H2P	НЗР	H4P	H5P	H6P	H7P	H1P	H2P	НЗР	H4P	H5P	H6P	H7P	H1P	H2P	НЗР	H4P	H5P	H6P	H7P						
P1	0			0	•	•	•	•			•	•	•	•	•			•	•	•	•	•			•	•	*	1						
P4								•			•	•	•	•	•			•	•	•	•	•			•	•	*	'						
U0	•			•	•	•	•	•			•	•	•	•	•			•	•	•	•	•			•	•	•	•						
U2								•			•	•	•	•	•			•	•	•	•	•			•	•	*	1						
																•			•	•	•	•				•	•							
															•			•	•	•	•	•			•	•	•	•						
															•			•	•	•	•	•			•	•	•	•						
U3								•			•	•	•	•	•			•	•	•	•	•			•	•	•	•						
																					•			•	•	•	•	•			•	•	•	•
U4								•			•	•	•	•	•			•	•	•	•	•			•	•	•	•						
															•			•	•	•	•	•			•	•	•	•						
U9								•			•	•	•	•	•			•	•	•	•	•			•	•	•	•						
UA								•			•	•	•	•	•			•	•	•	•	•			•	•	•	•						
															•			•	•	•	•	•			•	•	•	•						
															•			•	•	•	•	•			•	•	•	•						
															•			•	•	•	•	•			•	•	•	•						
															•			•	•	•	•	•			•	•	•	•						
UH								•			•	•	•	•	•			•	•	•	•	•			•	•	•	•						
UF								•			•	•	•	•	•			•	•	•	•	•			•	•	•	•						

Display of contents of malfunction (first digit)

Display of contents of malfunction (second digit)

Display 1 of malfunction in detail

Display 2 of malfunction in detail

Master
 Slave1
 Slave2
 System

List of Malfunction Code SiBE18-821

### 3. List of Malfunction Code

**●**: Blink ○: ON **●**: OFF

	Malfunction	Malfunction contents		Page R	eferred	
	code		RA Indoor Unit	SkyAir Indoor Unit	BP Unit	Outdoor Unit
Indoor	A0	Error of external protection device	_	_	_	_
Unit	A1	PC board defect, E <sup>2</sup> PROM defect	265	275	_	_
	А3	Malfunction of drain level control system (33H)	_	276	_	_
	A5	Freeze-up protection or high pressure control	266	_	_	_
	A6	Fan motor (MF) lock, overload	268, 269	279, 280	_	_
	A7	Malfunction of swing flap motor (MA)	_	282	_	_
	A9	Malfunction of electronic expansion valve (20E)	_	_	294	_
	AF	Drain pump error	_	278	_	_
	AJ	Malfunction of capacity setting	_	284	_	_
	C4	Malfunction of thermistor (R2T) for heat exchanger (loose connection, disconnection, short circuit, failure)	271	285	_	_
	C5	Malfunction of thermistor (R3T) for heat exchanger (loose connection, disconnection, short circuit, failure)	_	286	_	_
	C7	Shutter drive motor / shutter limit switch abnormality	_	_	_	_
	C9	Malfunction of thermistor (R1T) for air inlet (loose connection, disconnection, short circuit, failure)	271	287	_	_
	CA	Malfunction of thermistor for air outlet (loose connection, disconnection, short circuit, failure)	_	_	_	_
	CJ	Malfunction of thermostat sensor in remote controller	_	288	_	_

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

SiBE18-821 List of Malfunction Code

 $\bullet \colon \mathsf{Blink} \ \bigcirc \colon \mathsf{ON} \quad \bullet \colon \mathsf{OFF}$ 

	NA 16 .:	NA W. C	1		Blink O: O	N
	Malfunction code	Malfunction contents		Page R		
	code		RA Indoor Unit	SkyAir Indoor Unit	BP Unit	Outdoor Unit
Outdoor	E1	PC board defect, E <sup>2</sup> PROM defect	_	_	_	301
Unit	E2	Faulty BP unit PCB	_	_	295	_
[	E3	Actuation of high pressure switch	_	_	_	302
	E4	Actuation of low pressure switch	_	_	_	304
	E5	Compressor motor lock	_	_	_	306
	E6	Standard compressor lock or over current	_	_	_	_
	E7	Malfunction of outdoor unit fan motor	_	_		307
	E9	Malfunction of moving part of electronic expansion valve (Y1E~3E)	_	_	_	308
	F3	Abnormal discharge pipe temperature	_	_		310
	F6	Refrigerant overcharged	_	_	_	311
	H3	Malfunction of high pressure switch	_	_	_	_
	H4	Actuation of low pressure switch	_	_		_
	H7	Abnormal outdoor fan motor signal	_	_	_	_
	H9	Malfunction of thermistor (R1T) for outdoor air (loose connection, disconnection, short circuit, failure)	_	_	_	312
	J0	Faulty BP liquid or gas pipe thermistor	_	_	296	_
	J2	Current sensor malfunction	_	_		_
	J3	Malfunction of discharge pipe thermistor (R2T) (loose connection, disconnection, short circuit, failure)	_	_	_	313
	J5	Malfunction of thermistor (R3T, R5T) for suction pipe (loose connection, disconnection, short circuit, failure)	_	_	_	314
	J6	Malfunction of thermistor (R4T) for heat exchanger (loose connection, disconnection, short circuit, failure)	_	_	_	315
	J7	Malfunction of liquid thermistor (R7T)	_	_	_	316
	J8	Malfunction of thermistor (R7T) for oil equalizing pipe. (loose connection, disconnection, short circuit, failure)	_	_	_	_
	J9	Malfunction of subcooling heat exchanger thermistor (R6T)	_	_	_	317
	JA	Malfunction of discharge pipe pressure sensor	_	_	_	318
	JC	Malfunction of suction pipe pressure sensor		_		319
	L0	Inverter system error	_	_	_	_
	L1	Malfunction of PC board		_		320
	L4	Malfunction of inverter radiating fin temperature rise	_	_	_	321
	L5	Inverter compressor motor grounding, short circuit		_	<u> </u>	322
	L8	Inverter current abnormal	_	_		323
	L9	Inverter start up error	_	_	_	324
	LA	Malfunction of power unit	_	_	_	_
	LC	Malfunction of transmission between inverter and control PC board	_	_		325
	P1	High voltage of capacitor in main inverter circuit		_		326
	P4	Malfunction of inverter radiating fin temperature rise sensor	_	_	_	327
	PJ	Faulty combination inverter and fan driver, Malfunction of capacity setting	_	_	_	328

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

List of Malfunction Code SiBE18-821

 $\bullet \colon \mathsf{Blink} \ \bigcirc \colon \mathsf{ON} \quad \bullet \colon \mathsf{OFF}$ 

	Malfunction	Malfunction contents		Page R	oforrod	
	code	Wallunction contents				
	oodc		RA Indoor Unit	SkyAir Indoor Unit	BP Unit	Outdoor Unit
System	U0	Low pressure drop due to refrigerant shortage or electronic expansion valve failure	_	_	_	329
	U1	Reverse phase / open phase	_	_	_	_
	U2	Power supply insufficient or instantaneous failure	_	_	_	331
	U3	Check operation is not conducted.	_	_	_	333
	U4	Malfunction of transmission between indoor and outdoor units, etc.	_	_	297	334
	U5	Malfunction of transmission between remote controller and indoor unit	_	289	_	336
	U5	Failure of remote controller PC board or setting during control by remote controller	_	_	_	_
	U7	Malfunction of transmission between outdoor units	_	_	_	_
	U8	Malfunction of transmission between main and sub remote controllers	_	290	_	_
	U9	Malfunction of transmission between indoor unit and outdoor unit in the same system	_	_	_	331
	UA	Excessive number of indoor units etc.	_	291	_	333
	UC	Address duplication of central remote controller	_	_	_	341
	UE	Malfunction of transmission between central remote controller and indoor unit	_	_	_	342
	UF	System is not set yet	_	_	_	333
	UH	Malfunction of system, refrigerant system address undefined	_	_	_	334
	UJ	Transmission error between outdoor unit and BP unit	_	_	299	_

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

### 4. Troubleshooting for RA Indoor Unit

### 4.1 Indoor Unit PCB Abnormality

Remote Controller Display 81

Method of Malfunction Detection

Evaluation of zero-cross detection of power supply by indoor unit.

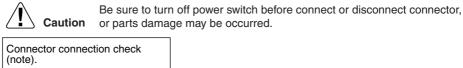
Malfunction Decision Conditions

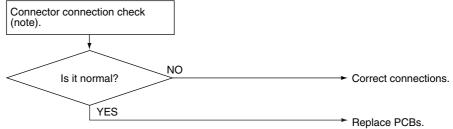
When there is no zero-cross detection in approximately 10 continuous seconds.

Supposed Causes

- Faulty indoor unit PCB
- Faulty connector connection

#### **Troubleshooting**





(R7130)

Note:

Connector Nos. vary depending on models.

Control connector

Model Type	Connector No.
Wall Mounted Type	Terminal strip~Control PCB
Duct Connected Type	Terminal strip~Control PCB
Floor / Ceiling Suspended Dual Type	S37
Floor Standing Type	Terminal strip~Control PCB

### 4.2 Freeze-up Protection Control or High Pressure Control

#### Remote Controller Display



## Method of Malfunction Detection

- High pressure control (heat pump model only)

  During heating operations, the temperature detected by the indoor heat exchanger thermistor is used for the high pressure control (stop, outdoor fan stop, etc.)
- The freeze-up protection control (operation halt) is activated during cooling operation according to the temperature detected by the indoor unit heat exchanger thermistor.

#### Malfunction Decision Conditions

- High pressure control

  During heating operations, the temperature detected by the indoor heat exchanger thermistor is above 65°C
- Freeze-up protection

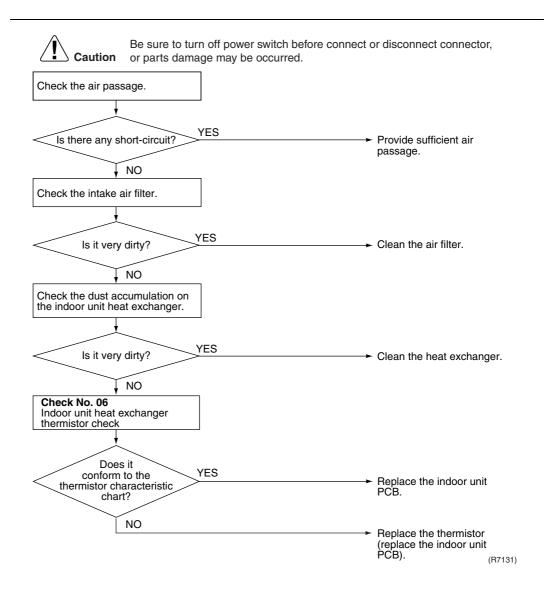
  When the indoor unit heat exchanger temperature is below 0°C during cooling operation.

### Supposed Causes

- Operation halt due to clogged air filter of the indoor unit.
- Operation halt due to dust accumulation on the indoor unit heat exchanger.
- Operation halt due to short-circuit.
- Detection error due to faulty indoor unit heat exchanger thermistor.
- Detection error due to faulty indoor unit PCB.

#### **Troubleshooting**





### 4.3 Fan Motor or Related Abnormality

### 4.3.1 AC Motor (Duct, Floor / Ceiling)

Remote Controller Display 88

Method of Malfunction Detection

The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor operation.

Malfunction Decision Conditions When the detected rotation speed does not reach the demanded rotation speed of the target tap, and is less than 50% of the maximum fan motor rotation speed.

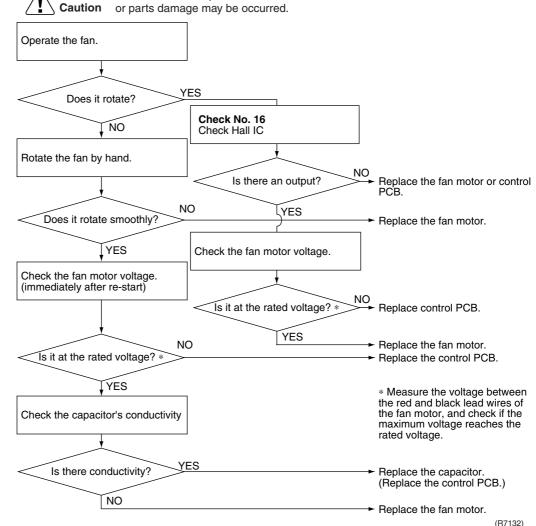
### Supposed Causes

- Operation halt due to short circuit inside the fan motor winding.
- Operation halt due to breaking of wire inside the fan motor.
- Operation halt due to breaking of the fan motor lead wires.
- Operation halt due to faulty capacitor of the fan motor.
- Detection error due to faulty control PCB.

#### **Troubleshooting**



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



#### 4.3.2 DC Motor (Wall 20~35 G series and 60/71 class, Floor)

Remote Controller Display



Method of Malfunction Detection

The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor operation.

Malfunction Decision Conditions When the detected rotation speed does not reach the demanded rotation speed of the target tap, and is less than 50% of the maximum fan motor rotation speed.

### Supposed Causes

- Operation halt due to short circuit inside the fan motor winding.
- Operation halt due to breaking of wire inside the fan motor.
- Operation halt due to breaking of the fan motor lead wires.
- Operation halt due to faulty capacitor of the fan motor.
- Detection error due to faulty indoor unit PCB.

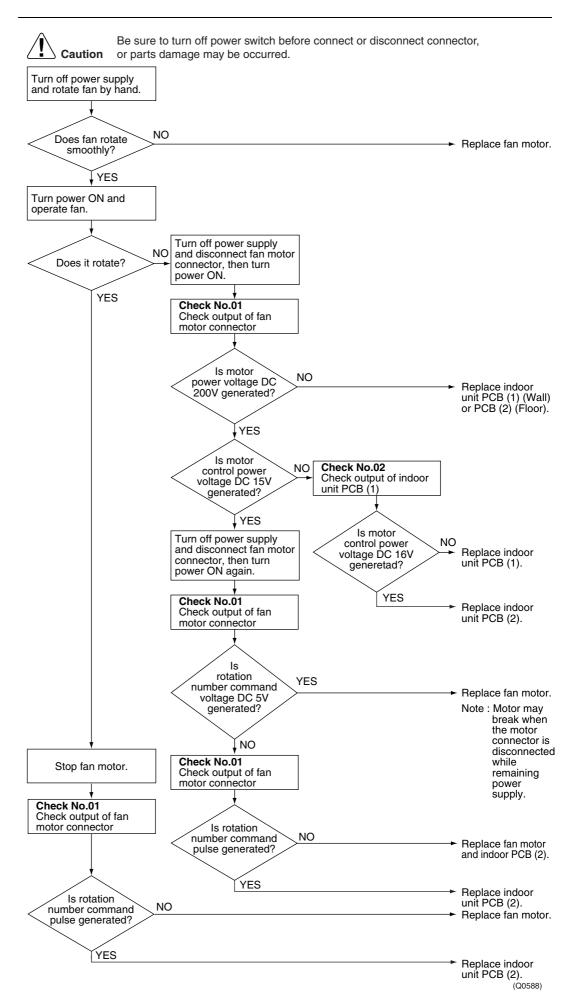
#### **Troubleshooting**



Check No.01 Refer to P.272

ck No.0

Check No.02 Refer to P.272



(R7134)

### 4.4 Thermistor or Related Abnormality (Indoor Unit)

Remote Controller Display **E4. E8** 

Method of Malfunction Detection

The temperatures detected by the thermistors are used to determine thermistor errors.

Malfunction Decision Conditions When the thermistor input is more than 4.96 V or less than 0.04 V during compressor operation\*.

\* (reference)

When above about 212°C (less than 120 ohms) or below about -50°C (more than 1,860 kohms).



Note:

The values vary slightly in some models.

Supposed Causes

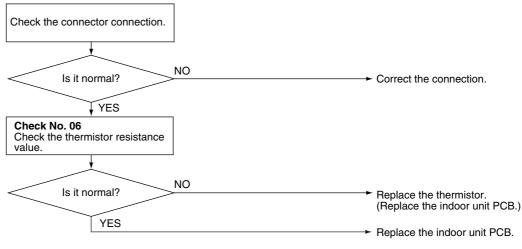
- Faulty connector connection
- Faulty thermistor
- Faulty PCB

#### **Troubleshooting**



Cautio

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



ধ্য: Heat exchanger temperature thermistor

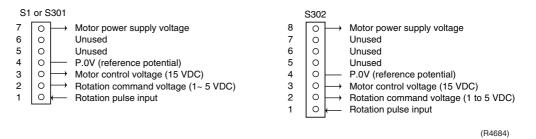
£3: Room temperature thermistor

### 4.5 Check

### 4.5.1 Fan Motor Connector Output Check

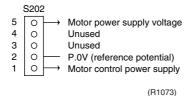
#### Check No.01

- 1. Check connector connection.
- 2. Check motor power supply voltage output (pins 4-7 and 4-8).
- 3. Check motor control voltage (pins 4-3).
- 4. Check rotation command voltage output (pins 4-2).
- 5. Check rotation pulse input (pins 4-1).



#### Check No.02

- 1. Check connector connection.
- 2. Check motor control voltage output (pins 2-1).



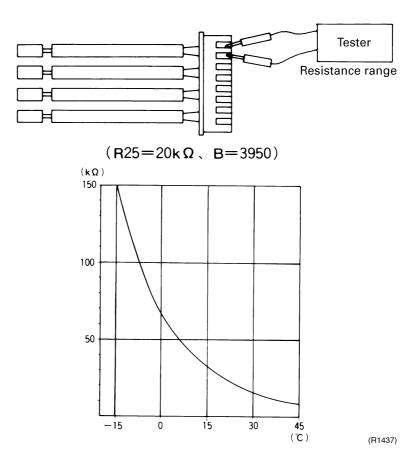
### 4.5.2 Thermistor Resistance Check

#### **Check No.06**

Remove the connectors of the thermistors on the PCB, and measure the resistance of each thermistor using tester.

The relationship between normal temperature and resistance is shown in the graph and the table below.

Thermistor	R25°C=20kΩ B=3950
Temperature (°C)	
-20	211.0 (kΩ)
<b>–15</b>	150
-10	116.5
<b>-</b> 5	88
0	67.2
5	51.9
10	40
15	31.8
20	25
25	20
30	16
35	13
40	10.6
45	8.7
50	7.2



#### 4.5.3 Hall IC Check

#### Check No.16

- 1. Check the connector connection.
- 2. With the power ON, operation OFF, and the connector connected, check the following. \*Output voltage of about 5 V between pins 1 and 3.
  - \*Generation of 3 pulses between pins 2 and 3 when the fan motor is operating.

Failure of (1)  $\rightarrow$  faulty PCB  $\rightarrow$  Replace the PCB.

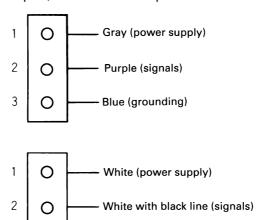
Failure of (2)  $\rightarrow$  faulty hall IC  $\rightarrow$  Replace the fan motor.

Both (1) and (2) result → Replace the PCB.

3

0

The connector has 3 pins, and there are two patterns of lead wire colors.



White with manufacturer mark (grounding)

(R1990)

### 5. Troubleshooting for SkyAir Indoor Unit

### 5.1 Indoor Unit PCB Abnormality

Remote Controller Display 81

Applicable Models

FFQ, FHQ

Method of Malfunction Detection

Check data from E<sup>2</sup>PROM.

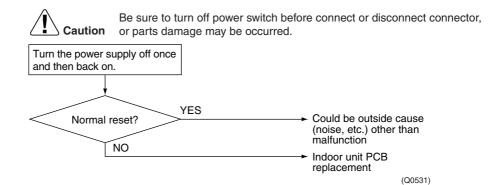
Malfunction Decision Conditions When data could not be correctly received from the E2PROM

E<sup>2</sup>PROM : Type of nonvolatile memory. Maintains memory contents even when the power supply is turned off.

Supposed Causes

■ Failure of PCB

#### **Troubleshooting**



# 5.2 Malfunction of Drain Water Level System (Float Type)

83 Remote Controller **Display Applicable** FFQ, FHQ **Models** Method of By float switch OFF detection Malfunction **Detection** Malfunction When rise of water level is not a condition and the float switch goes OFF. **Decision Conditions** Supposed ■ Failure of drain pump **Causes** Improper drain piping work Drain piping clogging Failure of float switch Failure of indoor unit PCB

Failure of short-circuit connector

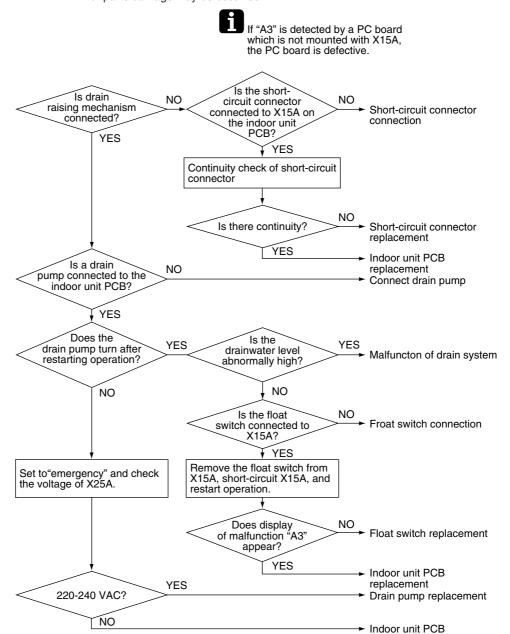
replacement

(Q0532)

### **Troubleshooting**



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



### 5.3 Malfunction of Drain System

Remote Controller Display RE

# Applicable Models

FHQ

# Method of Malfunction Detection

Water leakage is detected based on float switch ON/OFF operation while the compressor is in non-operation.

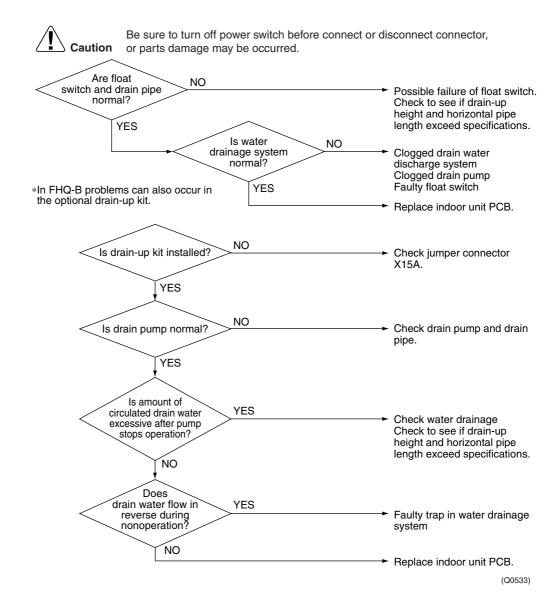
### Malfunction Decision Conditions

When the float switch changes from ON to OFF while the compressor is in non-operation.

# Supposed Causes

- Error in drain pipe installation
- Faulty float switch
- Faulty indoor unit PCB

#### **Troubleshooting**



### 5.4 Indoor Unit Fan Motor Lock

Remote Controller Display 88

Applicable Models

FHQ

Method of Malfunction Detection

Detection by failure of signal for detecting number of turns to come from the fan motor

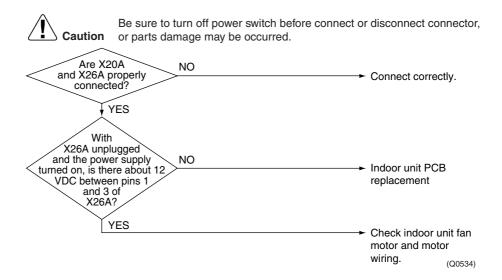
Malfunction Decision Conditions

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

# Supposed Causes

- Failure of indoor unit fan motor
- Broken or disconnected wire
- Failure of contact
- Failure of indoor unit PCB

### **Troubleshooting**



### 5.5 Malfunction of Indoor Unit Fan Motor

Remote Controller Display 88

Applicable Models

FFQ

Method of Malfunction Detection

Detection of abnormal fan speed by signal from the fan motor

Malfunction Decision Conditions When fan speed does not increase

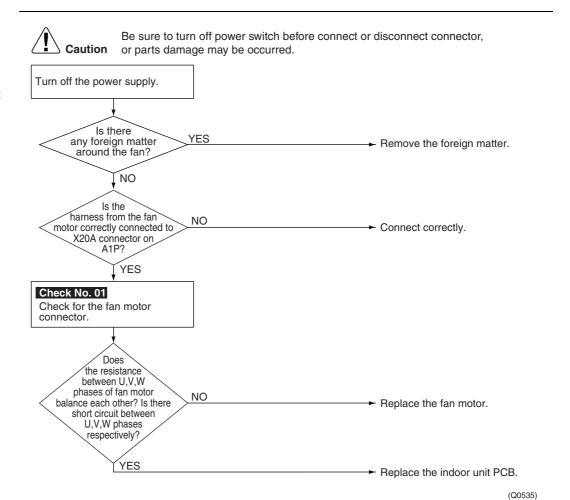
# Supposed Causes

- Disconnection, short circuit or disengagement of connector in fan motor harness
- Faulty fan motor (disconnection, poor insulation)
- Abnormal signal from fan motor (faulty circuit)
- Faulty PCB
- Instantaneous fluctuation of power supply voltage
- Fan motor lock (Caused by motor or other external factors)
- Fan does not turn due to a tangle of foreign matters.

### **Troubleshooting**



Check No.01 Refer to P.292



# 5.6 Swing Flap Motor Malfunction / Lock

Remote Controller Display 87

Applicable Models

FHQ

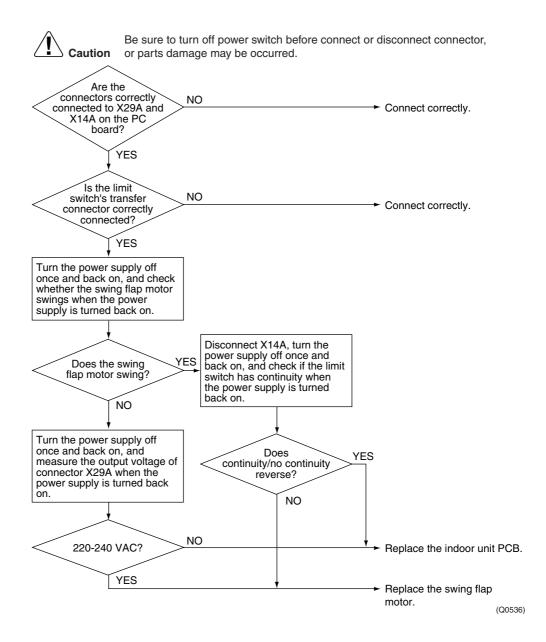
Method of Malfunction Detection Utilizes ON/OFF of the limit switch when the motor turns.

Malfunction Decision Conditions When ON/OFF of the microswitch for positioning cannot be reversed even though the swing flap motor is energized for a specified amount of time (about 30 seconds).

Supposed Causes

- Failure of motor
- Failure of microswitch
- Failure of connector connection
- Failure of indoor unit PCB

### **Troubleshooting**



### 5.7 Malfunction of Capacity Setting

Remote Controller Display



# Applicable Models

FFQ, FHQ

# Method of Malfunction Detection

Capacity is determined according to resistance of the capacity setting adaptor and the memory inside the IC memory on the indoor unit PCB, and whether the value is normal or abnormal is determined.

### Malfunction Decision Conditions

Operation and:

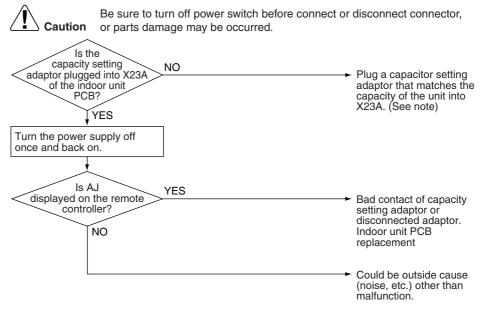
(1) When the capacity code is not contained in the PCB's memory, and the capacity setting adaptor is not connected.

(2) When a capacity that doesn't exist for that unit is set.

# Supposed Causes

- Failure of capacity setting adaptor connection
- Failure of indoor unit PCB

### **Troubleshooting**



(Q0537)



Capacity is factory set in the data IC on the PCB. A capacity setting adaptor that matches the capacity of the unit is required in the following case.

If the indoor PCB installed at the factory is for some reason changed at the installation site, the capacity will not be contained in the replacement PCB.

If you connect a capacity setting adaptor to a PCB in which the capacity is memorized, the capacity setting for the PCB will become the capacity setting of the adaptor. (Priority of capacity setting adaptor)

#### **Malfunction of Heat Exchanger Thermistor (R2T)** 5.8

Remote Controller **Display** 

[4

**Applicable** Models

FFQ, FHQ

Method of Malfunction **Detection** 

Malfunction detection is carried out by temperature detected by heat exchanger sensor.

Malfunction **Decision Conditions** 

When the heat exchanger thermistor becomes disconnected or shorted while the unit is running.

Supposed Causes

- Failure of the sensor itself
- Broken or disconnected wire
- Failure of electronic circuitry (indoor unit PCB)
- Failure of connector contact

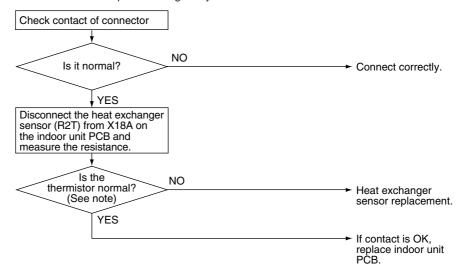
#### **Troubleshooting**



Check No.02 Refer to P.293



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



★See Check No. 02 for "Thermistor temperature and resistance characteristics".

(Q0538)

## 5.9 Malfunction of Heat Exchanger Thermistor (R3T)

Remote Controller Display [5

Applicable Models

FFQ, FHQ

Method of Malfunction Detection

Malfunction detection is carried out by temperature detected by heat exchanger sensor (R3T).

Malfunction Decision Conditions When the heat exchanger thermistor becomes disconnected or shorted while the unit is running.

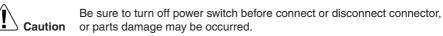
Supposed Causes

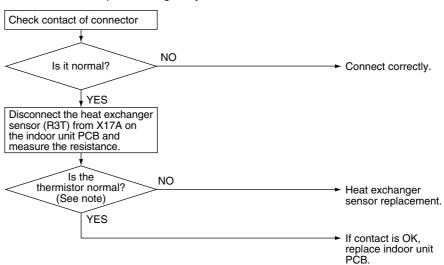
- Failure of the sensor itself
- Broken or disconnected wire
- Failure of electronic circuitry (indoor unit PCB)
- Failure of connector contact

#### **Troubleshooting**



Check No.02 Refer to P.293





★See Check No. 02 for "Thermistor temperature and resistance characteristics". (Q0539)

### 5.10 Malfunction of Suction Air Thermistor

Remote Controller Display [3

Applicable Models

FFQ, FHQ

Method of Malfunction Detection

Malfunction detection is carried out by temperature detected by suction air temperature sensor.

Malfunction Decision Conditions When the suction air temperature sensor's thermistor becomes disconnected or shorted while the unit is running.

Supposed Causes

- Failure of the sensor itself
- Broken or disconnected wire
- Failure of indoor unit PCB
- Failure of connector contact

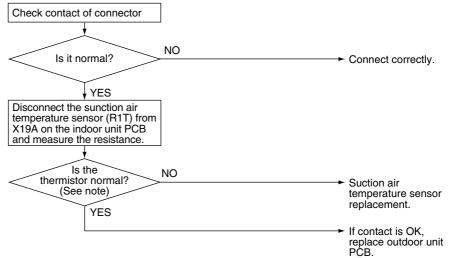
#### **Troubleshooting**



Check No.02 Refer to P.293



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



★See Check No. 02 for "Thermistor temperature and resistance characteristics". (Q0540)

### 5.11 Malfunction of Remote Controller Thermistor

Remote Controller Display Applicable Models

FFQ, FHQ

Method of Malfunction Detection

Even if remote controller thermistor is faulty, system is possible to operate by system thermistor. Malfunction detection is carried out by temperature detected by remote controller thermistor.

Malfunction Decision Conditions When the remote controller thermistor becomes disconnected or shorted while the unit is running.

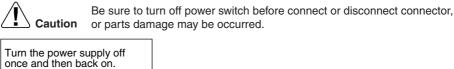
Supposed Causes

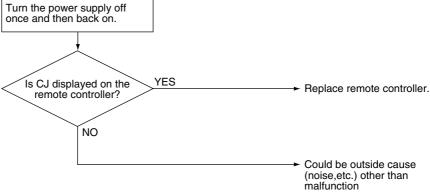
- Failure of sensor itself
- Broken wire

#### **Troubleshooting**



Check No.02 Refer to P.293





★See Check No. 02 for "Thermistor temperature and resistance characteristics".

(Q0541)

# 5.12 Transmission Error (between Indoor Unit and Remote Controller)

Remote Controller Display 115

Applicable Models

FFQ, FHQ

Method of Malfunction Detection

Microcomputer checks if transmission between indoor unit and remote controller is normal.

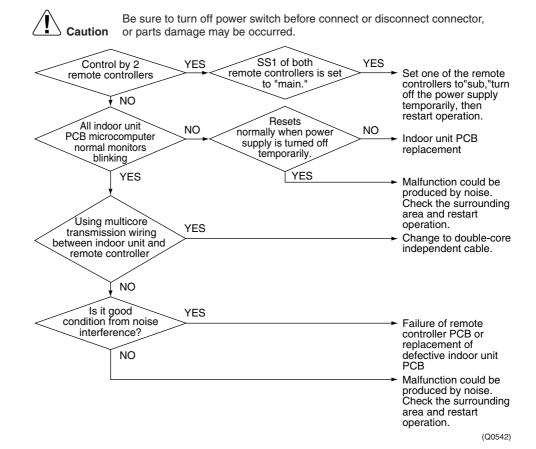
Malfunction Decision Conditions

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

Supposed Causes

- Failure of remote controller
- Failure of indoor PCB
- Outside cause (noise, etc.)
- Connection of 2 master remote controllers (When using 2 remote controllers)

### **Troubleshooting**



# 5.13 Transmission Error (between Main and Sub Remote Controller)

Remote Controller Display 118

Applicable Models

FFQ, FHQ

Method of Malfunction Detection

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

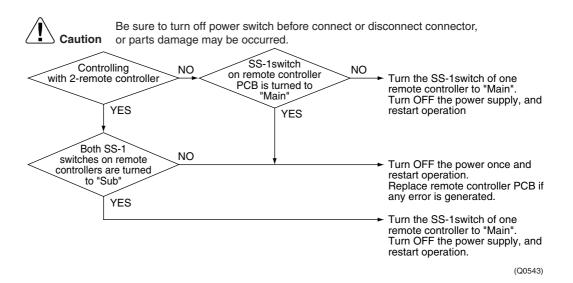
Malfunction Decision Conditions

Normal transmission does not continue for specified period.

Supposed Causes

- Transmission error between Main remote controller and Sub remote controller
- Connection among "Sub" remote controllers
- Faulty remote controller PCB

### **Troubleshooting**



### 5.14 Malfunction of Field Setting Switch

Remote Controller Display UR

Applicable Models FFQ, FHQ

Method of Malfunction Detection

Malfunction Incorrect field setting

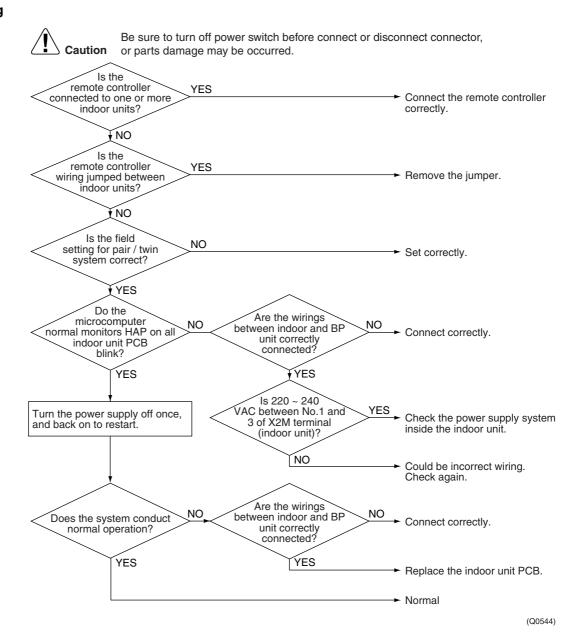
Decision Conditions

**Supposed** 

**Causes** 

- Indoor-Outdoor (BP) transmission line
- Faulty remote controller wiring

#### **Troubleshooting**



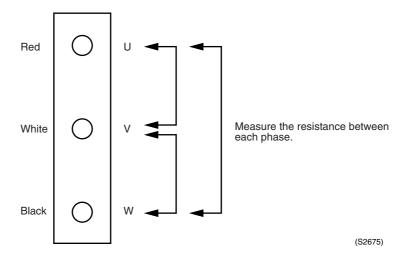
### 5.15 Check

### Check No. 01

### **Check for Fan Motor Connector (Power Supply Line)**

(1) Turn the power supply off.

With the relay connector disconnected, measure the resistance between UVW phases of the connector (3 cores) at the motor side, then make sure that the resistance between each phase is balanced and not short-circuited.



### Check No. 02 Check for Thermistors

Disconnect the thermistor connector from PCB, then measure the resistance by using a tester.

Thermistor temperature and resistance characteristics Unit :  $k\Omega$ 

Temperature °C	А	В
-6.0	90.8	88.0
-4.0	81.7	79.1
-2.0	73.5	71.1
0.0	66.3	64.1
2.0	59.8	57.8
4.0	54.1	52.3
6.0	48.9	47.3
8.0	44.3	42.9
10.0	40.2	38.9
12.0	36.5	35.3
14.0	33.2	32.1
16.0	30.2	29.2
18.0	27.5	26.6
20.0	25.1	24.3
22.0	23.0	22.2
24.0	21.0	20.3
26.0	19.2	18.5
28.0	17.6	17.0
30.0	16.2	15.6
32.0	14.8	4.2
34.0	13.6	13.1
36.0	12.5	12.0
38.0	11.5	11.1
40.0	10.6	10.3
42.0	9.8	9.5
44.0	9.1	8.8
46.0	8.4	8.2
48.0	7.8	7.6
50.0	7.2	7.0
52.0	6.9	6.7
54.0	6.2	6.0
56.0	5.7	5.5
58.0	5.3	5.2
Application	<ul> <li>Heat exchanger (Indoor/Outdoor units)</li> <li>Suction air</li> <li>Remote controller</li> <li>Air</li> <li>Outdoor air</li> <li>Suction pipe</li> </ul>	●Radiator fin

# 6. Troubleshooting for BP Unit

## 6.1 Malfunction of Electronic Expansion Valve

Remote Controller Display 89

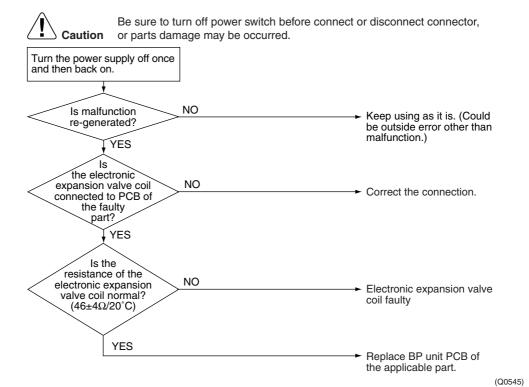
Method of Malfunction Detection Detection by checking continuity and lack of connector.

Malfunction Decision Conditions Malfunction is determined by no common voltage applied when turning the power supply on.

Supposed Causes

- Faulty harness of electronic expansion valve
- Incorrect connectors connection of electronic expansion valve

#### **Troubleshooting**



## 6.2 Faulty BP Unit PCB

Remote Controller Display **E2** 

Method of Malfunction Detection

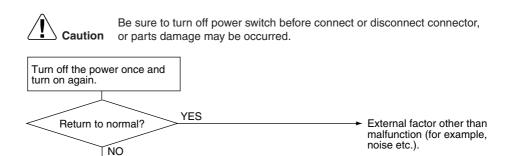
Check data from E2PROM

Malfunction 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

■ Defect of BP unit PCB

### **Troubleshooting**



(Q0546)

Replace the BP unit PCB.

## 6.3 Faulty BP Liquid or Gas Pipe Thermistor

Remote Controller Display



Method of Malfunction Detection

Malfunction Decision Conditions When the BP liquid or gas pipe temperature sensor became short-circuited or open.

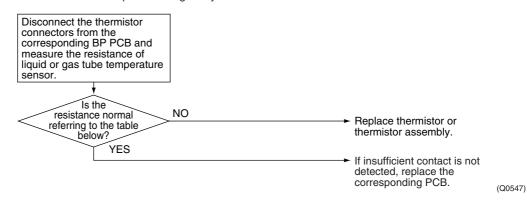
Supposed Causes

- Faulty BP liquid or gas pipe temperature sensor
- Faulty connectors connection of BP liquid or gas pipe temperature sensor

### **Troubleshooting**



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



Temp.	Resistance
-10°C	117kΩ
0°C	67kΩ
10°C	40kΩ
20°C	25kΩ
30°C	16kΩ
40°C	10kΩ
50°C	7kΩ
60°C	5kΩ
70°C	3kΩ

### 6.4 Transmission Error between Indoor Unit and BP Unit

# Outdoor Unit Indication

### 

# Method of Malfunction Detection

The data received from the BP unit in indoor unit-BP unit signal transmission is checked whether it is normal.

### Malfunction Decision Conditions

When the data sent from the BP unit cannot be received normally, or when the content of the data is abnormal.

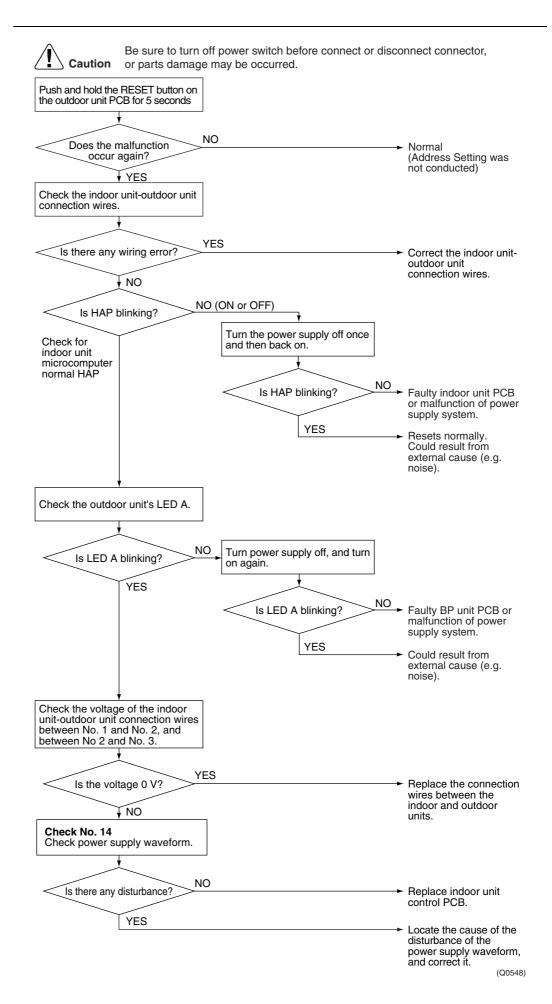
# Supposed Causes

- Faulty BP unit PCB.
- Faulty indoor unit PCB.
- Indoor unit-BP unit signal transmission error due to wiring error.
- Indoor unit-BP unit signal transmission error due to disturbed power supply waveform.
- Indoor unit-BP unit signal transmission error due to breaking of wire in the connection wires between the indoor and BP units (wire No. 2).

#### **Troubleshooting**

k No.14

Check No.14 Refer to P.300



### 6.5 Transmission Error between Outdoor Unit and BP Unit

# Outdoor Unit Indication

### 44

# Method of Malfunction Detection

Transmission error is detected when the outdoor unit could not received the data from BP unit correctly.

### Malfunction Decision Conditions

When the data from BP unit could not be correctly received continuously for 10 minutes

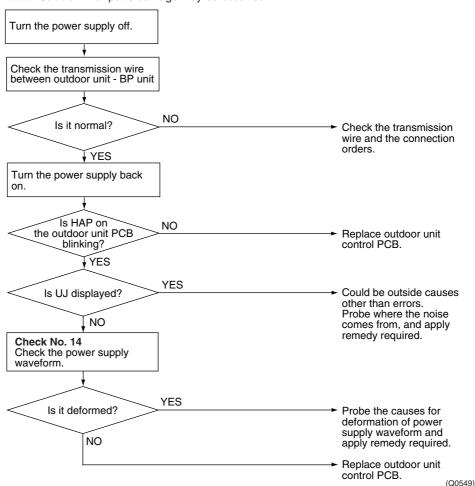
# Supposed Causes

- Incorrect connection of transmission wire
- Faulty outdoor unit power supply
- Faulty BP unit PCB
- Faulty outdoor unit PCB
- Distortion of power supply wave

#### **Troubleshooting**



Check No.14 Refer to P.300 Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



### 6.6 Check

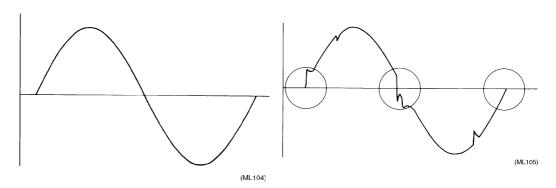
## **6.6.1 Power Supply Waveforms Check**

### Check No.14

Measure the power supply waveform between pins 1 and 3 on the terminal board, and check the waveform disturbance.

- Check to see if the power supply waveform is a sine wave (Fig.1).
- Check to see if there is waveform disturbance near the zero cross (sections circled in Fig.2)

[Fig.1] [Fig.2]



# 7. Troubleshooting for Outdoor Unit

## 7.1 Faulty Outdoor Unit PCB

Remote Controller Display EI

Applicable Models

All outdoor unit models

Method of Malfunction Detection

Check data from E<sup>2</sup>PROM

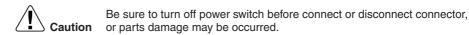
Malfunction Decision Conditions When data could not be correctly received from the E2PROM

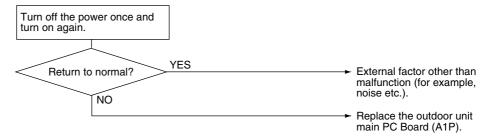
E<sup>2</sup>PROM: Type of nonvolatile memory. Maintains memory contents even when the power supply is turned off.

Supposed Causes

■ Defect of outdoor unit PCB (A1P)

### **Troubleshooting**





(Q0550)

## 7.2 Actuation of High Pressure Switch

Remote Controller Display **E3** 

Applicable Models

All outdoor unit models

Method of Malfunction Detection Abnormality is detected when the contact of the high pressure protection switch opens.

Malfunction Decision Conditions Error is generated when the HPS activation count reaches the number specific to the operation

mode.

(Reference) Operating pressure of high pressure switch

Operating pressure: 4.0MPa Reset pressure: 3.0MPa

Supposed Causes

Actuation of outdoor unit high pressure switch

- Defect of High pressure switch
- Defect of outdoor unit PCB
- Instantaneous power failure
- Faulty high pressure sensor

#### **Troubleshooting**



Check No.01 Refer to P.346



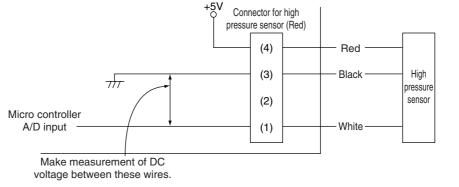
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Check for the points shown below. 1) Is the stop valve open? 2 Is the HPS connector properly connected to the main PCB? 3 Does the high pressure switch have continuity? Are the NO Rectify defective points, if any. three points above OK? YES Mount a pressure gauge on the high-pressure service port. Connect the Service Checker. Reset the operation using the remote controller, and then restart the operation. Is the HPS Does the NO Replace the HPS. YES operating value normal stop due to malfunction (i.e., 4.0MPa)? (E3) recur? NO YES Are the characteristics of the high NO - Replace the high pressure sensor. pressure sensor normal? (See \*1.) YES Is the pressure detected NO Replace the main PCB. with the PCB normal? (See \*2.) YES

· The high pressure sensor is normal, and the pressure detected with the PCB is also normal. · The high pressure has really become high.

Check No.01 Referring to information on page 346, remove the causes by which the high pressure has become high.

- \*1: Make a comparison between the voltage of the pressure sensor and that read by the pressure gauge.
  - (As to the voltage of the pressure sensor, make measurement of voltage at the connector, and then convert it to pressure according to information on page 351.)
- \*2: Make a comparison between the high pressure value checked with the Service Checker and the voltage of the pressure sensor (see \*1).
- \*3: Make measurement of voltage of the pressure sensor.



(Q0551)

### 7.3 Actuation of Low Pressure Sensor

Remote Controller Display EH

Applicable Models

All outdoor unit models

Method of Malfunction Detection

Abnormality is detected by the pressure value with the low pressure sensor.

Malfunction Decision Conditions Error is generated when the low pressure is dropped under specific pressure. Operating pressure:0.07MPa

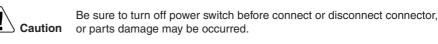
Supposed Causes

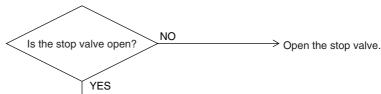
- Abnormal drop of low pressure (Lower than 0.07MPa)
- Defect of low pressure sensor
- Defect of outdoor unit PCB
- Stop valve is not opened.

#### **Troubleshooting**

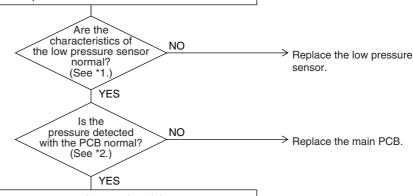


Check No.02 Refer to P.347





- 1 Mount a pressure gauge on the low-pressure service port.
- (2) Connect the Service Checker.
- 3 Reset the operation using the remote controller, and then restart the operation.



- · The low pressure sensor is normal, and the pressure detected with the PCB is also normal.
- · The low pressure has really become low.



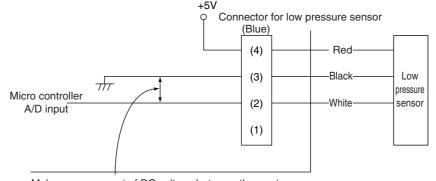
Check No.2 Referring to information on page 347, remove the causes by which the low pressure has become low.

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

(As to the voltage of the pressure sensor, make measurement of voltage at the connector, and then convert it to pressure according to information on page 351.)

\*2: Make a comparison between the low pressure value checked with the Service Checker and the voltage of the pressure sensor (see \*1).

\*3: Make measurement of voltage of the pressure sensor.



Make measurement of DC voltage between these wires.

(Q0552)

#### **Compressor Motor Lock** 7.4

Remote Controller **Display** 

<u>ES</u>

**Applicable** Models

All outdoor unit models

Method of Malfunction **Detection** 

Inverter PCB takes the position signal from UVW line connected between the inverter and compressor, and the malfunction is detected when any abnormality is observed in the phasecurrent waveform.

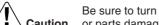
Malfunction **Decision Conditions** 

This malfunction will be output when the inverter compressor motor does not start up even in forced startup mode.

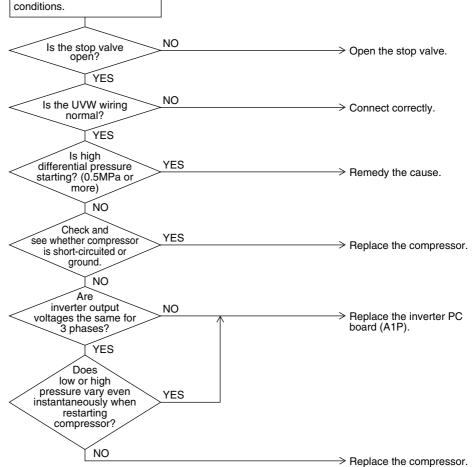
Supposed Causes

- Compressor lock
- High differential pressure (0.5MPa or more)
- Incorrect UVW wiring
- Faulty inverter PCB
- Stop valve is left in closed.

#### **Troubleshooting**



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



(Q0553)

### 7.5 Malfunction of Outdoor Unit Fan Motor

Remote Controller Display Fr

# Applicable Models

All outdoor unit models

# Method of Malfunction Detection

Malfunction of fan motor system is detected according to the fan speed detected by Hall IC when the fan motor runs.

### Malfunction Decision Conditions

- When the fan runs with speed less than a specified one for 6 seconds or more when the fan motor running conditions are met
- When malfunction is generated 4 times, the system shuts down.

# Supposed Causes

- Malfunction of fan motor
- The harness connector between fan motor and PCB is left in disconnected, or faulty connector
- Fan does not run due to foreign matters tangled
- Clearing condition: Operate for 5 minutes (normal)

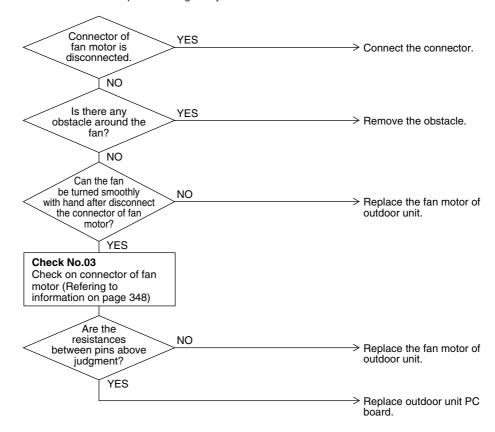
#### **Troubleshooting**

No.03

Check No.03 Refer to P.348



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



(Q0554)

# 7.6 Malfunction of Moving Part of Electronic Expansion Valve (Y1E, Y3E)

Remote Controller Display <u>E9</u>

Applicable Models

All outdoor unit models

Method of Malfunction Detection Check disconnection of connector Check continuity of expansion valve coil

Malfunction Decision Conditions Error is generated under no common power supply when the power is on.

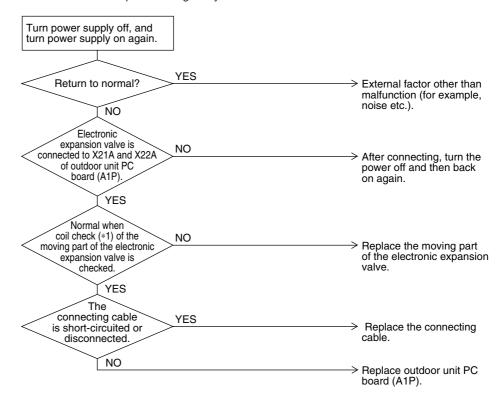
Supposed Causes

- Defect of moving part of electronic expansion valve
- Defect of outdoor unit PCB (A1P)
- Defect of connecting cable

### **Troubleshooting**

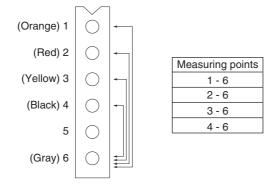


Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



(Q0555)

<sup>\*</sup>Make measurement of resistance between the connector pins, and then make sure the resistance falls in the range of 40 to  $50\Omega$ .



(V3067)

## 7.7 Abnormal Discharge Pipe Temperature

Remote Controller Display



# Applicable Models

All outdoor unit models

# Method of Malfunction Detection

Abnormality is detected according to the temperature detected by the discharge pipe temperature sensor.

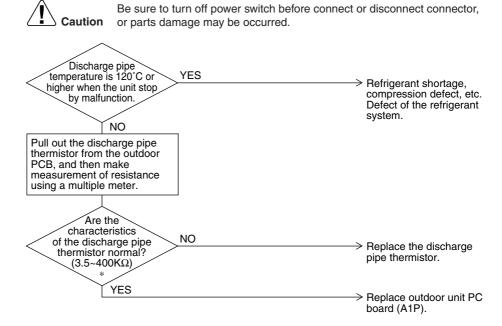
### Malfunction Decision Conditions

When the discharge pipe temperature rises to an abnormally high level When the discharge pipe temperature rises suddenly

# Supposed Causes

- Faulty discharge pipe temperature sensor
- Faulty connection of discharge pipe temperature sensor
- Faulty outdoor unit PCB

### **Troubleshooting**



(Q0556)



st Refer to "Thermistor Resistance / Temperature Characteristics" table on P349.

# 7.8 Refrigerant Overcharged

Remote Controller Display FB

Applicable Models

All outdoor unit models

Method of Malfunction Detection

Excessive charging of refrigerant is detected by using the heat exchanging deicer temperature during a check operation.

Malfunction Decision Conditions When the amount of refrigerant, which is calculated by using the heat exchanging deicer temperature during a check run, exceeds the standard.

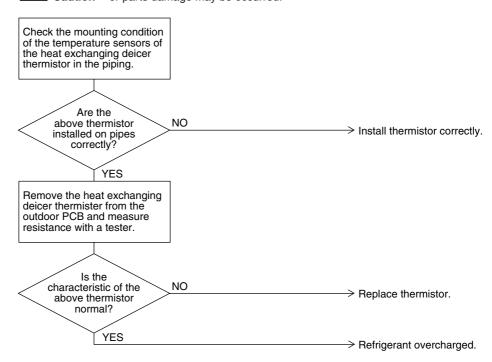
Supposed Causes

- Refrigerant overcharge
- Misalignment of the thermistor for heat exchanger
- Defect of the thermistor for heat exchanger

#### **Troubleshooting**



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



(Q0557)

**G** 

\* Refer to "Thermistor Resistance / Temperature Characteristics" table on P349.

### 7.9 Malfunction of Thermistor for Outdoor Air (R1T)

Remote Controller Display HS

Applicable Models

All outdoor unit models

Method of Malfunction Detection

Malfunction is detected from the temperature detected by the outdoor air thermistor.

Malfunction Decision Conditions When the outside air temperature thermistor has short circuit or open circuit.

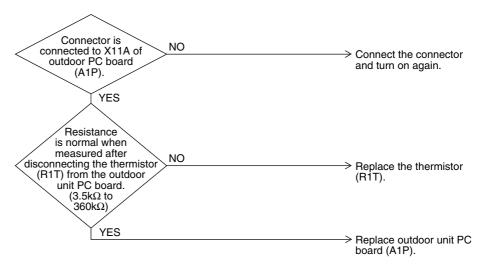
Supposed Causes

- Defect of thermistor (R1T) for outdoor air
- Defect of outdoor unit PCB (A1P)

### **Troubleshooting**



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



(Q0558)



\* Refer to "Thermistor Resistance / Temperature Characteristics" table on P349.

### 7.10 Malfunction of Discharge Pipe Thermistor (R2T)

Remote Controller Display



# Applicable Models

All outdoor unit models

Method of Malfunction Detection

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

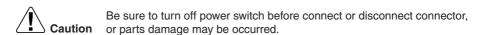
Malfunction Decision Conditions

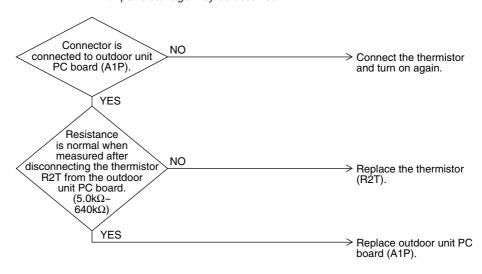
When a short circuit or an open circuit in the discharge pipe temperature thermistor is detected.

## Supposed Causes

- Defect of thermistor (R2T) for outdoor unit discharge pipe
- Defect of outdoor unit PCB (A1P)

### **Troubleshooting**





(Q0559)



\* Refer to thermistor resistance / temperature characteristics table on P349.

# 7.11 Malfunction of Thermistor (R3T, R5T) for Suction Pipe1, 2

Remote Controller Display 15

Applicable Models

All outdoor unit models

Method of Malfunction Detection

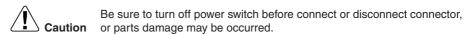
Malfunction is detected from the temperature detected by the thermistor for suction pipe 1, 2.

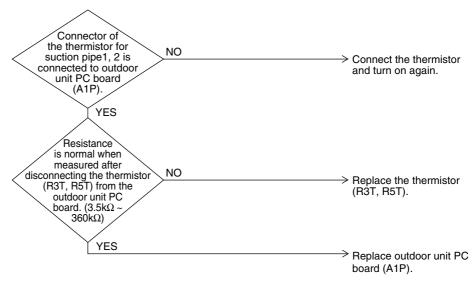
Malfunction Decision Conditions When a short circuit or an open circuit in the thermistor for suction pipe 1, 2 are detected.

Supposed Causes

- Defect of thermistor (R3T, R5T) for outdoor unit suction pipe
- Defect of outdoor unit PCB (A1P)

### **Troubleshooting**





(Q0560)

G

\* Refer to thermistor resistance / temperature characteristics table on P349.

# 7.12 Malfunction of Thermistor (R4T) for Outdoor Unit Heat Exchanger

Remote Controller Display 115

Applicable Models

All outdoor unit models

Method of Malfunction Detection

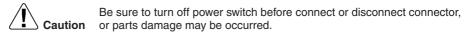
Malfunction is detected from the temperature detected by the heat exchanger thermistor.

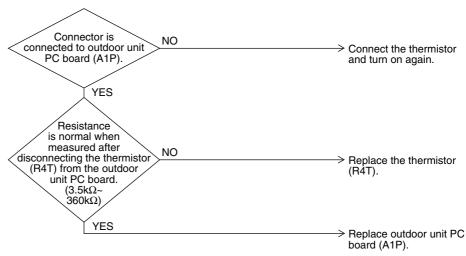
Malfunction Decision Conditions When a short circuit or an open circuit in the heat exchange thermistor is detected.

Supposed Causes

- Defect of thermistor (R4T) for outdoor unit heat exchanger
- Defect of outdoor unit PCB (A1P)

### **Troubleshooting**





(R7891)

G

\* Refer to thermistor resistance / temperature characteristics table on P349.

# 7.13 Malfunction of Thermistor (R7T) for Outdoor Unit Liquid Pipe

Remote Controller Display Applicable Models

All outdoor unit models

Method of Malfunction Detection

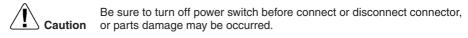
Malfunction is detected from the temperature detected by the liquid pipe thermistor.

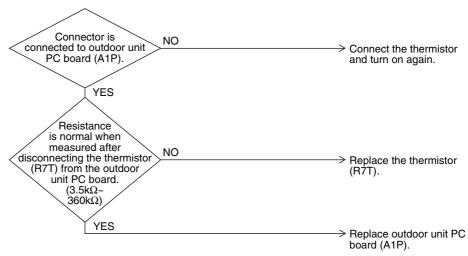
Malfunction Decision Conditions When a short circuit or an open circuit in the heat exchange thermistor is detected.

Supposed Causes

- Defect of thermistor (R7T) for outdoor unit liquid pipe
- Defect of outdoor unit PCB (A1P)

### **Troubleshooting**





(Q0561)

L

\* Refer to thermistor resistance / temperature characteristics table on P349.

# 7.14 Malfunction of Subcooling Heat Exchanger Thermistor (R6T)

Remote Controller Display 33

Applicable Models

All outdoor unit models

Method of Malfunction Detection

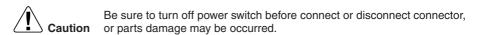
Malfunction is detected according to the temperature detected by subcooling heat exchanger gas pipe thermistor.

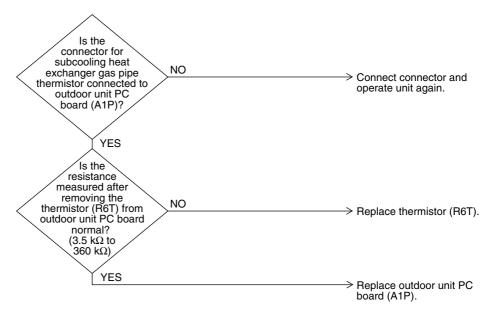
Malfunction Decision Conditions When the subcooling heat exchanger gas pipe thermistor is short circuited or open.

Supposed Causes

- Faulty subcooling heat exchanger gas pipe thermistor (R6T)
- Faulty outdoor unit PCB

### **Troubleshooting**





(Q0563)

\* Refer to "Thermistor Resistance / Temperature Characteristics" table on P349.

### 7.15 Malfunction of High Pressure Sensor

Remote Controller Display



## Applicable Models

All outdoor unit models

# Method of Malfunction Detection

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

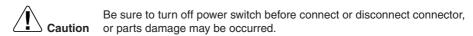
### Malfunction Decision Conditions

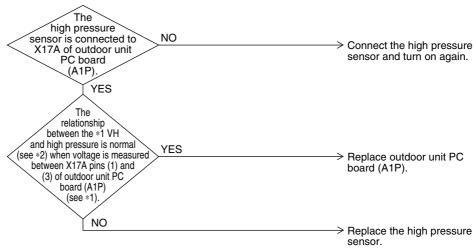
When the high pressure sensor is short circuit or open circuit.

## Supposed Causes

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

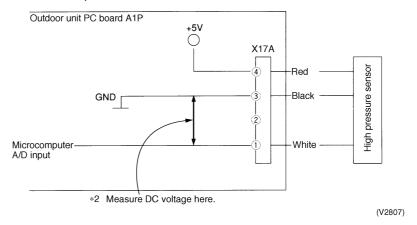
#### **Troubleshooting**





(Q0564)

### \*1: Voltage measurement point



G

\*2: Refer to "Pressure Sensor", pressure / voltage characteristics table on P351.

### 7.16 Malfunction of Low Pressure Sensor

Remote Controller Display 11

Applicable Models

All outdoor unit models

Method of Malfunction Detection

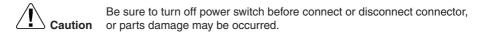
Malfunction is detected from pressure detected by low pressure sensor.

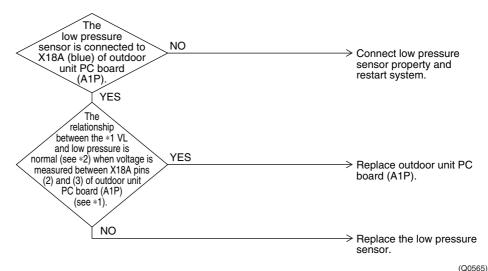
Malfunction Decision Conditions When the low pressure sensor is short circuit or open circuit.

Supposed Causes

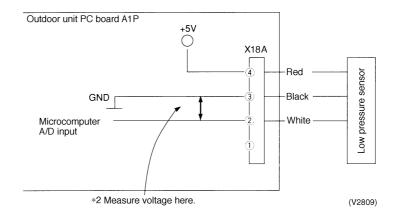
- Defect of low pressure sensor
- Connection of high pressure sensor with wrong connection.
- Defect of outdoor unit PCB.

#### **Troubleshooting**





\*1: Voltage measurement point



G

\*2: Refer to "Pressure Sensor", pressure/voltage characteristics table on P351.

### 7.17 Malfunction of PCB

Remote Controller Display

## Applicable Models

#### All outdoor unit models

### Method of Malfunction Detection

- Detect malfunctions by current value during waveform output before compressor startup.
- Detect malfunctions by current sensor value during synchronized operation at the time of startup.
- Detect malfunctions using an SP-PAM series capacitor overvoltage sensor.

### Malfunction Decision Conditions

- In case of overcurrent (OCP) during waveform output
- When the current sensor malfunctions during synchronized operation
- When overvoltage occurs in SP-PAM
- In case of IGBT malfunction

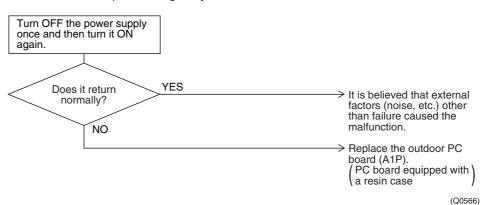
## Supposed Causes

- Faulty outdoor PCB (A1P)
  - IPM failure
  - Current sensor failure
  - SP-PAM failure
  - · Failure of IGBT or drive circuit

### **Troubleshooting**



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



### 7.18 Malfunction of Inverter Radiating Fin Temperature Rise

Remote Controller Display 14

## Applicable Models

All outdoor unit models

# Method of Malfunction Detection

Fin temperature is detected by the thermistor of the radiation fin.

### Malfunction Decision Conditions

When the temperature of the inverter radiation fin increases above 83°C.

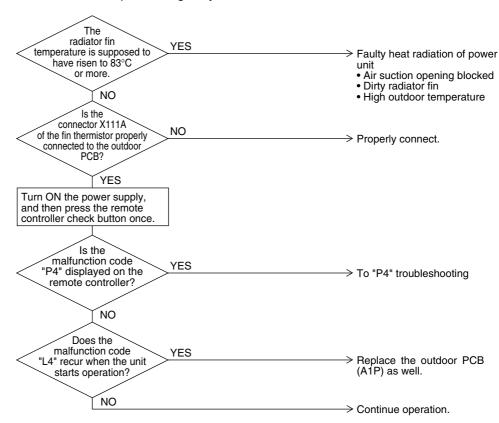
## Supposed Causes

- Actuation of fin thermal (Actuates above 83°C)
- Defect of inverter PCB
- Defect of fin thermistor

#### **Troubleshooting**



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



(Q0567)

## 7.19 Inverter Compressor Abnormal

Remote Controller Display 15

Applicable Models

All outdoor unit models

Method of Malfunction Detection

Malfunction is detected from current flowing in the power transistor.

Malfunction Decision Conditions

When an excessive current flows in the power transistor. (Instantaneous overcurrent also causes activation.)

Supposed Causes

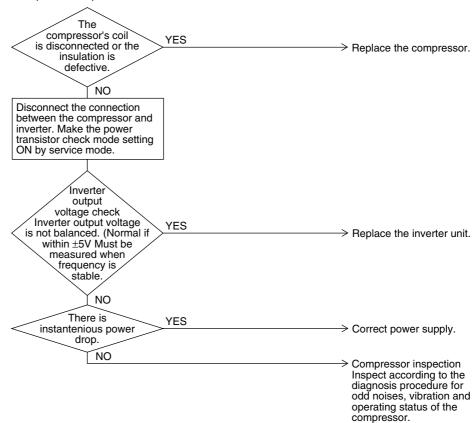
- Defect of compressor coil (disconnected, defective insulation)
- Compressor start-up malfunction (mechanical lock)
- Defect of inverter PCB

#### **Troubleshooting**



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

Compressor inspection



Higher voltage than actual is displayed when the inverter output voltage is checked by tester.

### 7.20 Inverter Current Abnormal

Remote Controller Display 18

Applicable Models

All outdoor unit models

Method of Malfunction Detection

Malfunction is detected by current flowing in the power transistor.

Malfunction Decision Conditions When overload in the compressor is detected.

Supposed Causes

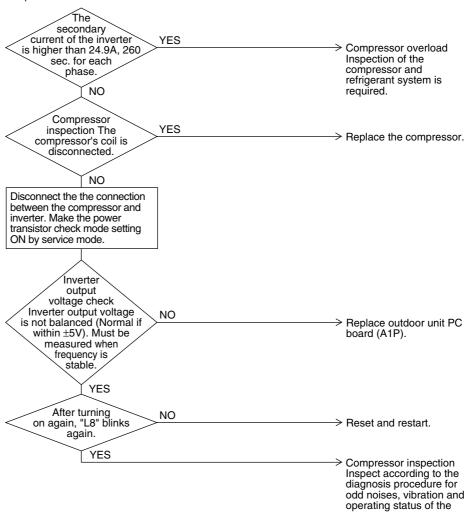
- Compressor overload
- Compressor coil disconnected
- Defect of outdoor unit PCB (A1P)

#### **Troubleshooting**



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

Output current check



compressor.

(Q0569)

### 7.21 Inverter Start up Error

Remote Controller Display 13

Applicable Models

All outdoor unit models

Method of Malfunction Detection

Malfunction is detected from current flowing in the power transistor.

Malfunction Decision Conditions When overload in the compressor is detected during startup

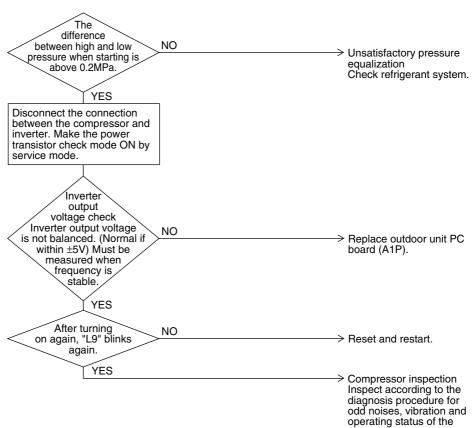
Supposed Causes

- Defect of compressor
- Pressure differential start
- Defect of outdoor unit PCB (A1P)

#### **Troubleshooting**



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



compressor.

(Q0570)

# 7.22 Malfunction of Transmission between Inverter and Control PCB

Remote Controller Display 15

Applicable Models

All outdoor unit models

Method of Malfunction Detection

Check the communication state between inverter PCB and control PCB by micro-computer.

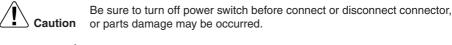
Malfunction Decision Conditions

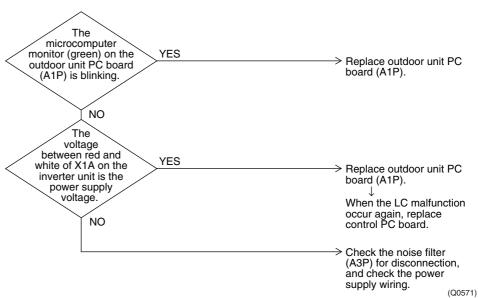
When the correct communication is not conducted in certain period.

## Supposed Causes

- Malfunction of connection between the inverter microcomputer and outdoor control microcomputer
- Defect of outdoor unit PCB
- Defect of noise filter
- External factor (Noise etc.)

#### **Troubleshooting**





### 7.23 High Voltage of Capacitor in Main Inverter Circuit

Remote Controller **Display** 

PI

### **Applicable** Models

All outdoor unit models

### Method of Malfunction **Detection**

Malfunction is detected according to the voltage waveform of main circuit capacitor built in the inverter.

### Malfunction **Decision Conditions**

When the aforementioned voltage waveform becomes identical with the waveform of the power supply open phase.

### Supposed Causes

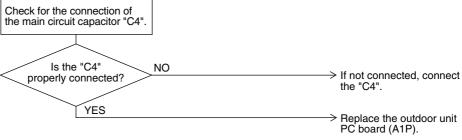
- Defect of main circuit capacitor
- Improper main circuit wiring
- Defect of outdoor unit PCB (A1P)

### **Troubleshooting**



Caution

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



(Q0572)

# 7.24 Malfunction of Inverter Radiating Fin Temperature Rise Sensor

Remote Controller Display



Applicable Models

All outdoor unit models

Method of Malfunction Detection

Resistance of radiation fin thermistor is detected when the compressor is not operating.

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

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

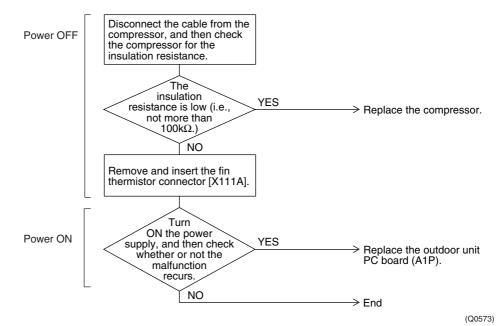
Supposed Causes

- Defect of radiator fin temperature sensor
- Defect of outdoor unit PC board (A1P)

### **Troubleshooting**



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



### 7.25 Faulty Combination of Inverter and Fan Driver

Remote Controller Display



Applicable Models

All outdoor unit models

Method of Malfunction Detection

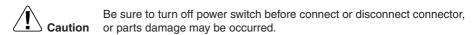
Check the communication state between inverter PCB and control PCB by micro-computer.

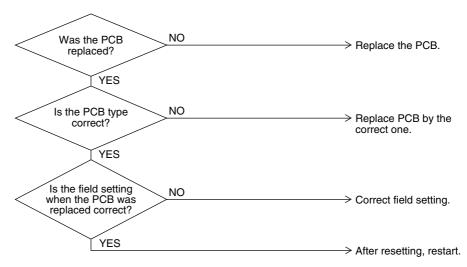
Malfunction Decision Conditions When the communication data about inverter PCB type is incorrect.

Supposed Causes

- Mismatching of inverter PCB
- Faulty field setting

### **Troubleshooting**





(Q0574)



\* Refer to "Field Setting from Outdoor Unit" on P133.

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

Remote Controller Display Applicable Models

All outdoor unit models

Method of Malfunction Detection

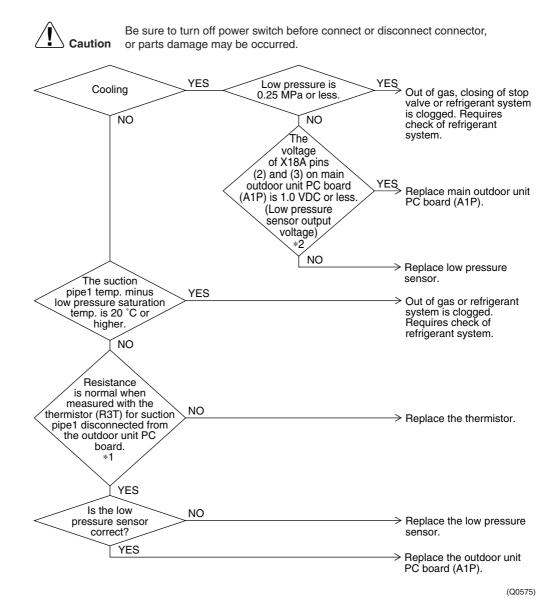
Short of gas malfunction is detected by discharge pipe temperature thermistor and low pressure saturation temperature.

Malfunction Decision Conditions Microcomputer judge and detect if the system is short of refrigerant. ★Malfunction is not decided while the unit operation is continued.

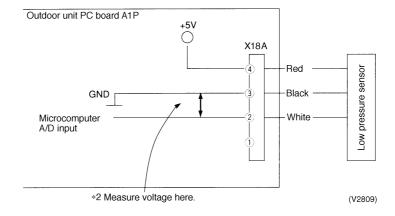
Supposed Causes

- Out of gas or refrigerant system clogging (incorrect piping)
- Defect of pressure sensor
- Defect of outdoor unit PCB (A1P)
- Defect of thermistor R3T

### **Troubleshooting**



#### \*2: Voltage measurement point





- \*1: Refer to "Thermistor Resistance / Temperature Characteristics" table on P349.
- \*2: Refer to "Pressure Sensor, Pressure / Voltage Characteristics" table on P351.

## 7.27 Power Supply Insufficient or Instantaneous Failure

Remote Controller Display 112

Applicable Models

All outdoor unit models

Method of Malfunction Detection

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

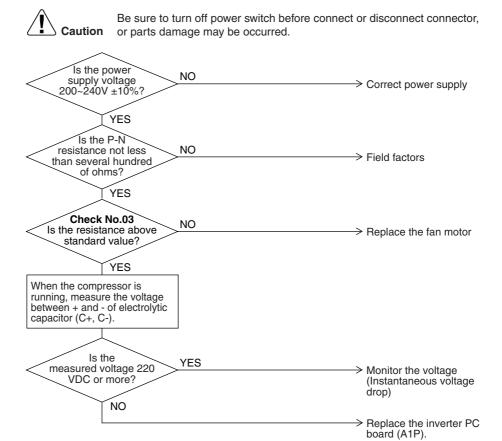
Malfunction Decision Conditions When the abnormal voltage of main circuit capacitor built in the inverter and abnormal power supply voltage are detected.

Supposed Causes

- Power supply insufficient
- Instantaneous power failure
- Defect of outdoor unit fan motor
- Defect of outdoor control PCB (A1P)

### **Troubleshooting**





(Q0576)

(Q0577)

## 7.28 Check Operation not Executed

Remote Controller Display 111-

Applicable Models

All outdoor unit models

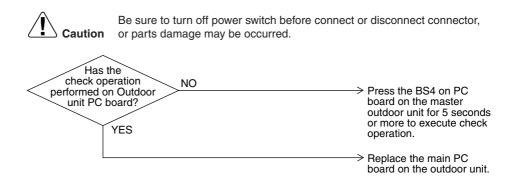
Method of Malfunction Detection Check operation is executed or not

Malfunction Decision Conditions Malfunction is decided when the unit starts operation without check operation.

Supposed Causes

Check operation is not executed.

### **Troubleshooting**



# 7.29 Malfunction of Transmission between Indoor Units and Outdoor Units

Remote Controller Display Applicable Models

All indoor unit models
All outdoor unit models

Method of Malfunction Detection

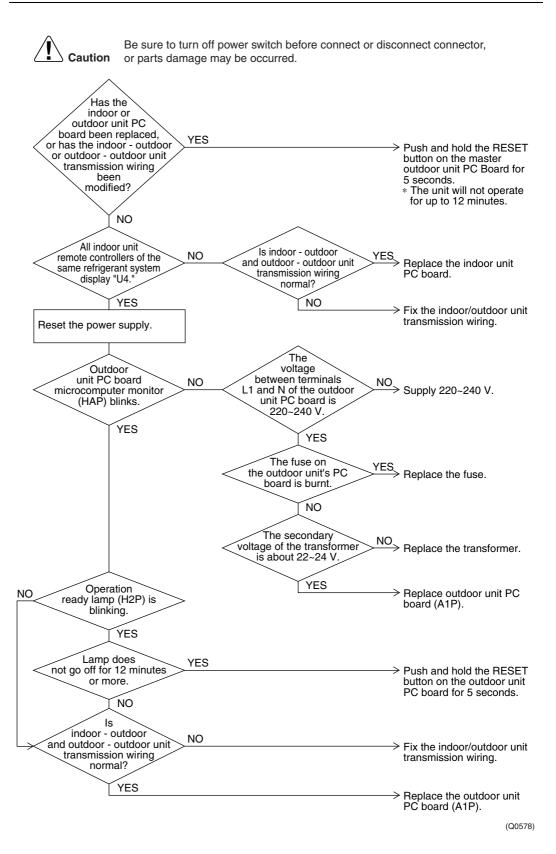
Microcomputer checks if transmission between indoor and outdoor units is normal.

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

Supposed Causes

- Indoor to outdoor, outdoor to outdoor transmission wiring F1, F2 disconnection, short circuit or wrong wiring
- Outdoor unit power supply is OFF
- System address doesn't match
- Defect of outdoor unit PCB
- Defect of indoor unit PCB

### **Troubleshooting**



# 7.30 Malfunction of Transmission between Remote Controller and Indoor Unit

Remote Controller Display 115

# Applicable Models

All indoor unit models

# Method of Malfunction Detection

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

### Malfunction Decision Conditions

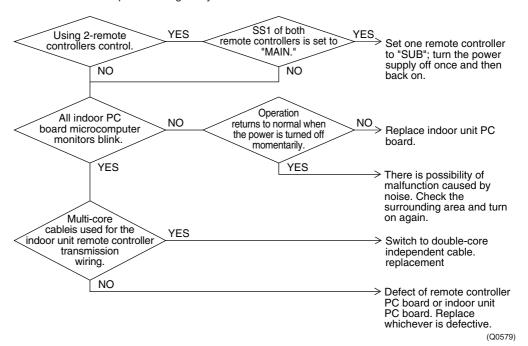
Normal transmission does not continue for specified period.

## Supposed Causes

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

### **Troubleshooting**

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



# 7.31 Malfunction of Transmission between Main and Sub Remote Controllers

Remote Controller Display 48

# Applicable Models

All indoor unit models

Method of Malfunction Detection

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

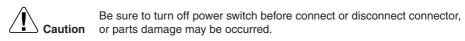
### Malfunction Decision Conditions

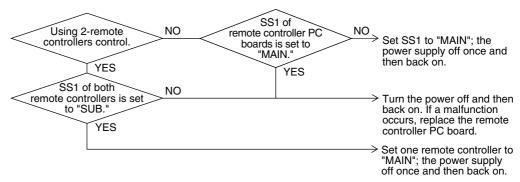
Normal transmission does not continue for specified period.

## Supposed Causes

- Malfunction of transmission between main and sub remote controller
- Connection between sub remote controllers
- Defect of remote controller PCB

### **Troubleshooting**



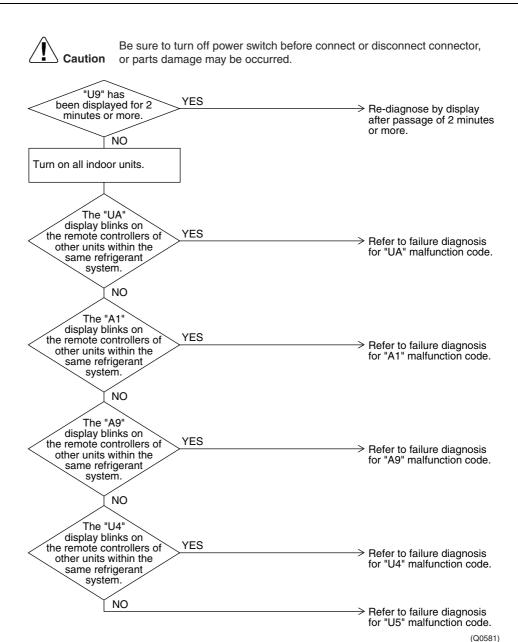


(Q0580)

# 7.32 Malfunction of Transmission between Indoor and Outdoor Units in the Same System

Remote Controller Display	<u>us</u>
Applicable Models	All indoor unit models
Method of Malfunction Detection	
Malfunction Decision Conditions	
Supposed Causes	<ul> <li>Malfunction of transmission within or outside of other system</li> <li>Malfunction of electronic expansion valve in indoor unit of other system</li> <li>Defect of PCB of indoor unit in other system</li> </ul>

### **Troubleshooting**



### 7.33 Excessive Number of Indoor Units

Remote Controller Display Applicable Models

All indoor unit models

Method of Malfunction Detection

Malfunction Decision Conditions

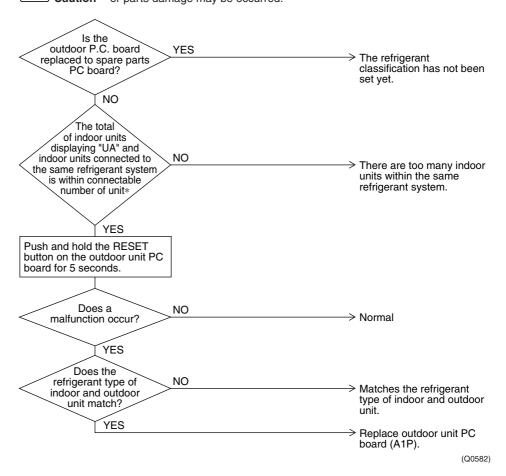
Supposed Causes

- Excess of connected indoor units
- Defect of 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 parts PCB.

### **Troubleshooting**

Caution

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



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

### 7.34 Address Duplication of Central Remote Controller

Remote Controller Display Applicable Models

All indoor unit models

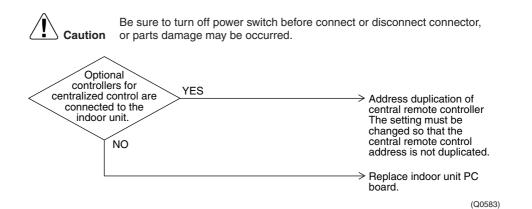
Method of Malfunction Detection

Malfunction Decision Conditions

Supposed Causes

- Address duplication of centralized remote controller
- Defect of indoor unit PCB

#### **Troubleshooting**



# 7.35 Malfunction of Transmission between Central Remote Controller and Indoor Unit

Remote Controller Display LIE

Applicable Models

All indoor unit models Centralized controller

Method of Malfunction Detection

Microcomputer checks if transmission between indoor unit and centralized remote controller is normal.

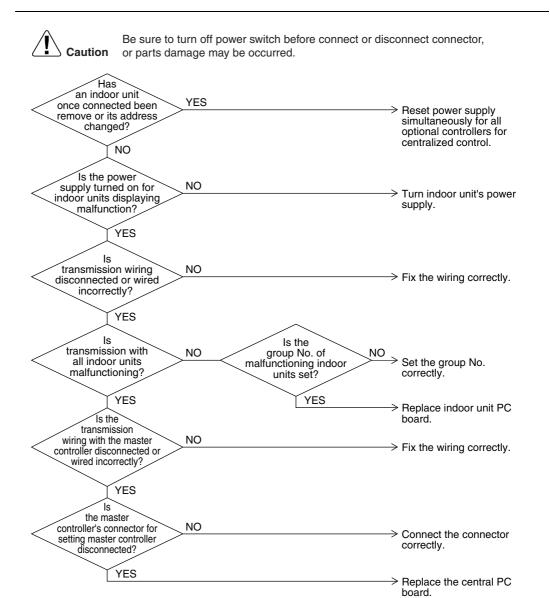
Malfunction Decision Conditions When transmission is not carried out normally for a certain amount of time

## Supposed Causes

- Malfunction of transmission between optional controllers for centralized control and indoor unit
- Connector for setting master controller is disconnected.
- Failure of PCB for centralized remote controller
- Defect of indoor unit PCB

(Q0584)

### **Troubleshooting**



### 7.36 System is not Set yet

Remote Controller Display 115

Applicable Models

All indoor unit models
All outdoor unit models

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

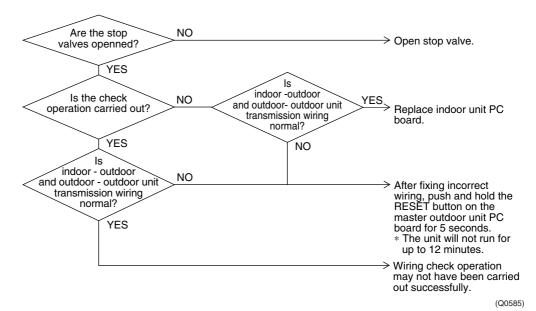
Malfunction Decision Conditions The malfunction is determined as soon as the abnormality aforementioned is detected through checking the system for any erroneous connection of units on the check operation.

## Supposed Causes

- Improper connection of transmission wiring between indoor-outdoor units and outdoor-outdoor units
- Failure to execute check operation
- Defect of indoor unit PC board
- Stop valve is left in closed

### **Troubleshooting**

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



Note:

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

### 7.37 Malfunction of System, Refrigerant System Address Undefined

Remote Controller Display 111-

Applicable Models

All indoor unit models
All outdoor unit models

Method of Malfunction Detection

Malfunction Decision Conditions

Supposed Causes

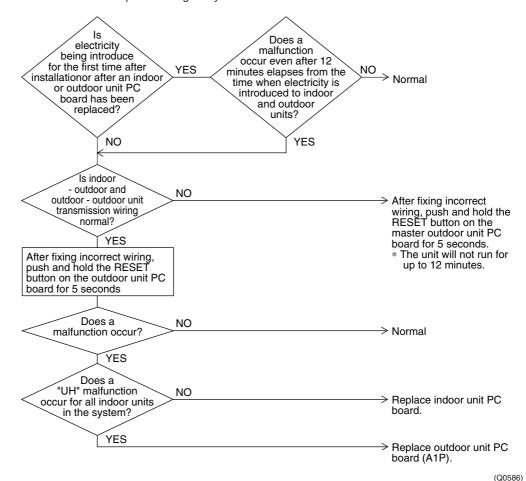
- Improper connection of transmission wiring between outdoor unit and outdoor unit outside control adaptor
- Defect of indoor unit PCB
- Defect of outdoor unit PCB (A1P)

### **Troubleshooting**



Caution

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



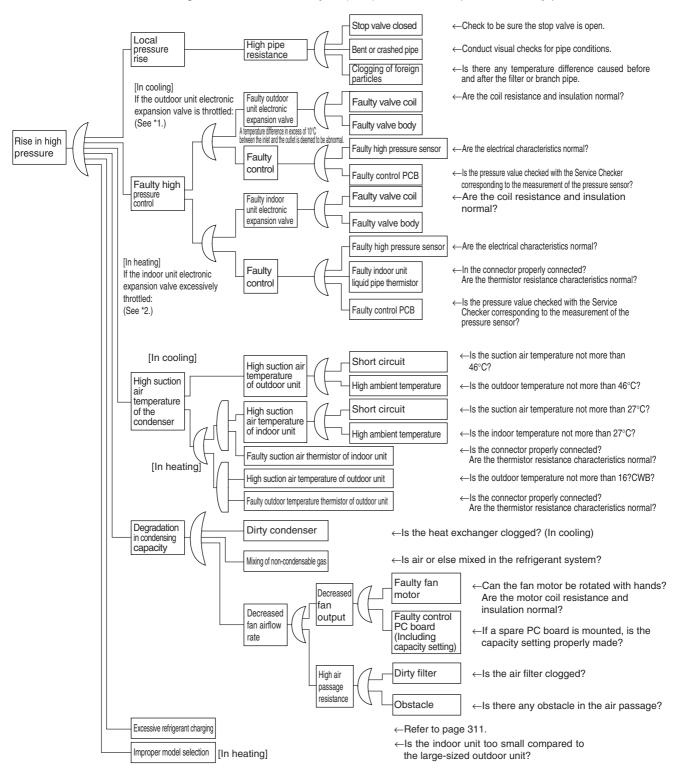
Check SiBE18-821

### 8. Check

#### Check No.01

### Check for causes of rise in high pressure

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



<sup>\*1:</sup> In cooling, it is normal if the outdoor unit electronic expansion valve (EV1) is fully open.

C: SDK04009

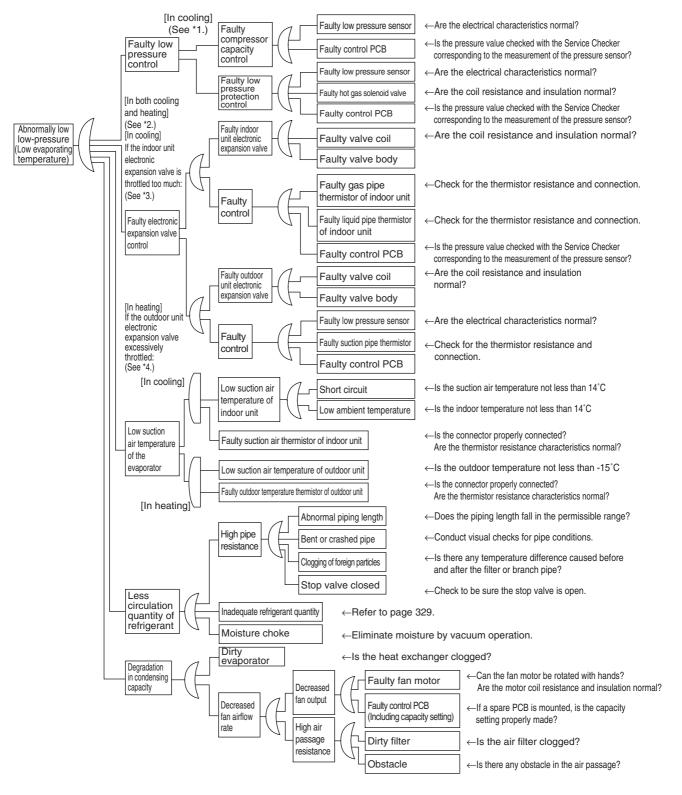
<sup>\*2:</sup> In heating, the indoor unit electronic expansion valve is used for "subcooled degree control".

SiBE18-821 Check

#### Check No.02

### Check for causes of drop in low pressure

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



<sup>\*1:</sup> For details of the compressor capacity control while in cooling, refer to "Compressor PI Control" on page 60.

C: SDK04009

<sup>\*2:</sup> The "low pressure protection control" includes low pressure protection control and hot gas bypass control. For details, refer to page 72.

<sup>\*3:</sup> In cooling, the indoor unit electronic expansion valve is used for "superheated degree control".

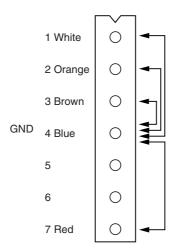
<sup>\*4:</sup> In heating, the outdoor unit electronic expansion valve (EV1) is used for "superheated degree control of outdoor unit heat exchanger". (For details, refer to page 63.)

Check SiBE18-821

#### Check No. 03

#### **Check for Fan Motor Connector**

- (1) Turn the power supply off.
- (2) With the fan motor connector disconnected, measure the resistance between each pin, then make sure that the resistance is more than the value mentioned in the following table.



Measurement point	Judgment
1 - 4	1M $\Omega$ or more
2 - 4	100k $\Omega$ or more
3 - 4	$100\Omega$ or more
4 - 7	100k $\Omega$ or more

Outdoor unit for fin thermistor

## 9. Thermistor Resistance / Temperature **Characteristics**

R1T

Indoor unit For air suction R<sub>1</sub>T For liquid pipe R2T

For gas pipe R3T

Outdoor unit For outdoor air R<sub>1</sub>T

> For suction pipe 1 R3T For heat exchanger R4T For suction pipe 2 R5T

For Subcooling heat exchanger outlet R6T

For Liquid pipe R7T

$(k\Omega)$
-------------

T00	
T°C	0.0
-10 -8	-
-6	88.0
-4	79.1
-2	71.1
0	64.1
2	57.8
4	52.3
6	47.3
8	42.9
10	38.9
12 14	35.3 32.1
16	29.2
18	26.6
20	24.3
22	22.2
24	20.3
26	18.5
28	17.0
30	15.6
32	14.2
34	13.1
36 38	12.0 11.1
40	10.3
40	9.5
44	8.8
46	8.2
48	7.6
50	7.0
52	6.7
54	6.0
56 58	5.5 5.2
60 62	4.79 4.46
64	4.15
66	3.87
68	3.61
70	3.37
72	3.15
74	2.94
76 78	2.75 2.51
	2.51
80 82	2.41 2.26
84	2.12
86	1.99
88	1.87
90	1.76
92	1.65
94	1.55
96 98	1.46
98	1.38

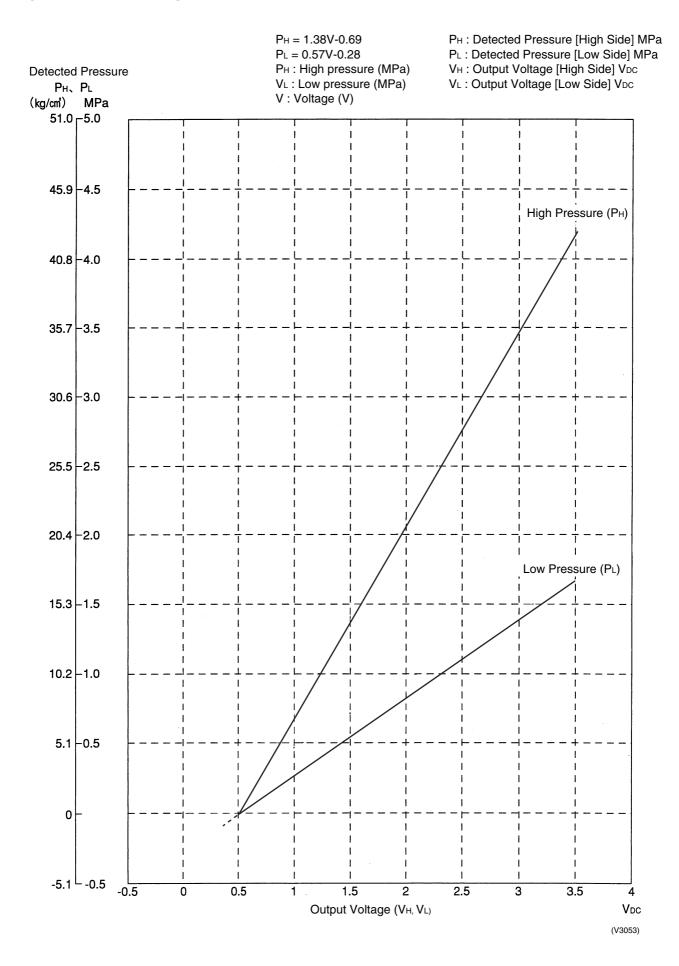
						$(k\Omega)$
T°C	0.0	0.5		T°C	0.0	0.5
-20	197.81	192.08		30	16.10	15.76
-19	186.53	181.16		31	15.43	15.10
-18	175.97	170.94		32	14.79	14.48
-17	166.07	161.36		33	14.18	13.88
-16	156.80	152.38		34	13.59	13.31
-15	148.10	143.96		35	13.04	12.77
-14	139.94	136.05		36	12.51	12.25
-13	132.28	128.63		37	12.01	11.76
-12	125.09	121.66		38	11.52	11.29
-11	118.34	115.12		39	11.06	10.84
-10	111.99	108.96		40	10.63	10.41
-9	106.03	103.18		41	10.21	10.00
-8	100.41	97.73		42	9.81	9.61
-7	95.14	92.61		43	9.42	9.24
-6	90.17	87.79		44	9.06	8.88
-5	85.49	83.25		45	8.71	8.54
-4	81.08	78.97		46	8.37	8.21
-3	76.93	74.94		47	8.05	7.90
-2	73.01	71.14		48	7.75	7.60
-1	69.32	67.56		49	7.46	7.31
0	65.84	64.17		50	7.18	7.04
1	62.54	60.96		51	6.91	6.78
2	59.43	57.94		52	6.65	6.53
3	56.49	55.08		53	6.41	6.53
4	53.71	52.38		54	6.65	6.53
5	51.09	49.83		55	6.41	6.53
6	48.61	47.42		56	6.18	6.06
7	46.26	45.14		57	5.95	5.84
8	44.05	42.98		58	5.74	5.43
9	41.95	40.94		59	5.14	5.05
10	39.96	39.01		60	4.96	4.87
11	38.08	37.18		61	4.79	4.70
12	36.30	35.45		62	4.62	4.54
13	34.62	33.81		63	4.46	4.38
14	33.02	32.25		64	4.30	4.23
15	31.50	30.77		65	4.16	4.08
16	30.06	29.37		66	4.01	3.94
17	28.70	28.05		67	3.88	3.81
18	27.41	26.78		68	3.75	3.68
19	26.18	25.59		69	3.62	3.56
20	25.01	24.45		70	3.50	3.44
21	23.91	23.37		71	3.38	3.32
22	22.85	22.35		71	3.27	3.21
		21.37				
23 24	21.85 20.90	20.45		73 74	3.16 3.06	3.11 3.01
25 26	20.00	19.56		75 76	2.96	2.91
26	19.14	18.73		76 77	2.86	2.82
27	18.32	17.93		77 79	2.77	2.72
28	17.54	17.17		78 70	2.68	2.64
29	16.80	16.45		79	2.60	2.55
30	16.10	15.76	]	80	2.51	2.47

Outdoor Unit Thermistors for Discharge Pipe (R2T)

T°C         0.0         0.5         T°C         0.0         0.5         T°C         0.0         0.5         T°C         0.0         0.5         T°C         0.0         0.5         T°C         0.0         0.5         100         13.35         13.15           1         609.31         594.43         51         69.64         68.34         101         12.95         12.76           2         579.96         565.78         52         67.06         65.82         102         12.57         12.38           4         525.63         512.97         54         62.24         61.09         104         11.84         11.62           6         477.01         465.65         56         57.80         56.75         106         11.15         10.99           7         454.60         443.84         57         55.72         54.70         107         10.83         10.57           9         413.24         403.57         59         51.98         50.96         100         10.21         10.06           10         394.16         384.98         60         49.96         49.06         10         19.22         9.78           11         376.05										$(k\Omega)$
1         609.31         594.43         51         69.64         68.34         101         12.95         12.76           2         579.96         565.78         52         67.06         65.82         102         12.57         12.38           3         552.00         538.63         53         64.60         63.41         103         12.20         12.01           4         525.63         512.97         54         62.24         61.09         104         11.84         11.68           5         50.66         488.67         55         59.97         58.87         105         11.49         11.32           6         477.01         465.65         56         57.80         56.75         106         11.15         10.99           7         454.60         443.84         57         55.72         54.70         107         10.83         10.57           9         413.24         403.57         59         51.98         50.96         100         10.21         10.06           10         394.16         384.98         60         49.96         49.06         10         19.96         10.21         10.06           11         376.05 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>										
2         579.96         565.78         52         67.06         65.82         102         12.57         12.30           4         525.63         512.97         54         62.24         61.09         104         11.84         11.66           5         500.66         488.67         55         59.97         58.87         105         11.49         11.26           6         477.01         465.65         56         57.80         56.75         106         11.149         11.32           8         433.37         423.17         58         53.72         54.70         107         10.83         10.67           8         433.37         423.17         58         53.72         52.84         108         10.52         10.36           9         413.24         403.57         59         51.98         50.96         109         10.21         10.06           10         394.16         384.98         60         49.96         49.06         110         9.92         9.78           11         376.05         367.35         61         48.19         47.33         111         9.64         9.96         14.97         111         9.64         9.96 </td <td>0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	0									
3         552,00         538,63         53         64,60         63,41         103         12,20         12,01           5         500,66         488,67         55         59,97         58,87         105         11,49         11,66           6         477,01         465,65         56         57,80         56,75         106         11,15         10,99           7         454,60         443,84         57         55,72         54,70         107         10,83         10,67           8         433,37         423,17         58         53,72         52,84         108         10,52         10,36           10         394,16         384,98         60         49,96         49,06         110         9,92         9,78           11         376,05         367,35         61         48,19         47,33         111         9,64         9,50           12         358,88         350,62         62         46,49         45,67         112         9,36         9,23           13         342,58         34,74         63         44,86         44,07         113         9,10         8,97            14         327,11         319,66		609.31	594.43			68.34				
4         525.63         512.97         54         62.24         61.09         104         11.84         11.86           5         500.66         488.67         55         59.97         58.87         105         11.49         11.32           6         477.01         465.65         56         57.80         56.75         106         11.15         10.99           7         454.60         443.84         57         55.72         54.70         107         10.83         10.67           8         433.37         423.17         58         53.72         52.84         108         10.52         10.36           9         413.24         403.57         59         51.98         50.96         109         10.21         10.06           10         394.16         384.88         60         49.96         49.06         110         9.92         9.78           11         376.05         367.35         61         48.19         47.33         111         9.64         9.50           12         358.88         350.62         62         46.49         45.67         112         9.36         9.23           13         312.14         305.33										
5         500.66         488.67         55         59.97         58.87         105         11.49         11.26           6         477.01         465.65         56         57.80         56.75         106         11.15         10.99           7         454.60         443.84         57         55.72         54.70         107         10.83         10.67           8         433.37         423.17         58         53.72         52.84         108         10.52         10.36           10         394.16         384.98         60         49.96         49.06         110         9.92         9.78           11         376.05         367.35         61         48.19         47.33         111         9.64         9.50           12         358.88         350.62         62         46.49         45.67         112         9.36         9.23           13         342.58         334.74         63         44.86         44.07         113         9.10         8.97           14         327.10         319.66         64         43.30         42.54         114         8.84         8.71           15         312.41         305.33		552.00	538.63	53	64.60	63.41		103	12.20	12.01
6         477.01         465.65         56         57.80         56.75         106         11.15         10.99           7         454.60         443.84         57         55.72         54.70         107         10.83         10.67           8         433.37         423.17         58         53.72         52.84         108         10.52         10.36           9         413.24         403.57         59         51.98         50.96         109         10.21         10.06           10         394.16         384.98         60         49.96         49.06         110         9.92         9.78           11         376.05         367.35         61         48.19         47.33         111         9.64         9.50           12         38.88         350.62         62         46.49         45.67         112         9.36         9.23           13         342.58         334.74         43         30         42.54         114         8.84         8.71           15         312.41         305.33         65         41.79         41.06         115         8.59         8.47           16         298.45         291.73		525.63	512.97	54	62.24	61.09		104	11.84	11.66
7         454.60         443.84         57         55.72         54.70         107         10.83         10.67           8         433.37         423.17         58         53.72         52.84         108         10.52         10.36           10         394.16         384.98         60         49.96         49.06         110         9.92         9.78           11         376.05         367.35         61         48.19         47.33         111         9.64         9.50           12         358.88         350.62         62         46.49         45.67         112         9.36         9.23           13         342.58         334.74         63         44.86         44.07         113         9.10         8.97           14         327.10         319.66         64         43.30         42.54         114         8.84         8.71           16         298.45         291.73         66         40.35         39.65         116         8.35         8.23           17         285.18         227.80         66.7         38.96         38.29         117         8.12         8.01           18         272.58         266.51	5	500.66	488.67	55	59.97	58.87		105	11.49	11.32
8         433.37         423.17         58         53.72         52.84         108         10.52         10.36           10         394.16         384.98         60         49.96         49.06         110         9.92         9.78           11         376.05         367.35         61         48.19         47.33         111         9.64         9.50           12         358.88         350.62         62         46.49         45.67         112         9.36         9.23           13         342.58         334.74         63         44.86         44.07         113         9.10         8.97           14         327.10         319.66         64         43.30         42.54         114         8.84         8.71           15         312.41         305.33         65         41.79         41.06         115         8.53         8.23           17         285.18         278.80         67         38.96         38.29         117         8.12         8.01           18         272.58         266.51         68         37.63         36.98         118         7.83         17.2         19.768         7.57           20	6	477.01	465.65	56	57.80	56.75		106	11.15	10.99
9         413,24         403,57         59         51,98         50,96         109         10,21         10,06           10         394,16         384,98         60         49,96         49,06         110         9,92         9,78           11         376,05         367,35         61         48,19         47,33         111         9,64         9,50           12         388,88         350,62         62         46,49         45,67         112         9,36         9,23           13         342,58         334,74         63         44,86         44,07         113         9,10         8,97           14         327,10         319,66         64         43,30         42,54         114         8,84         8,71           16         298,45         291,73         66         40,35         39,65         116         8,35         8,47           18         272,58         266,51         68         37,63         36,98         118         7,89         7,78           20         249,00         243,61         70         35,11         34,51         120         7,47         7,36           21         238,05         223,08	7	454.60	443.84	57	55.72	54.70		107	10.83	10.67
9         413,24         403,57         59         51,98         50,96         109         10,21         10,06           10         394,16         384,98         60         49,96         49,06         110         9,92         9,78           11         376,05         367,35         61         48,19         47,33         111         9,64         9,50           12         388,88         350,62         62         46,49         45,67         112         9,36         9,23           13         342,58         334,74         63         44,86         44,07         113         9,10         8,97           14         327,10         319,66         64         43,30         42,54         114         8,84         8,71           16         298,45         291,73         66         40,35         39,65         116         8,35         8,47           18         272,58         266,51         68         37,63         36,98         118         7,89         7,78           20         249,00         243,61         70         35,11         34,51         120         7,47         7,36           21         238,05         223,08		433.37	423.17	58	53.72	52.84		108		10.36
10		413.24	403.57		51.98	50.96			10.21	10.06
111         376.05         367.35         61         48.19         47.33         111         9.64         9.50           12         388.88         350.62         62         46.49         45.67         112         9.36         9.23           13         384.58         334.74         63         44.86         44.07         113         9.10         8.97           14         327.10         319.66         64         43.30         42.54         114         8.84         8.71           15         312.41         305.33         65         41.79         41.06         115         8.59         8.47           16         298.45         291.73         66         40.35         39.65         116         8.35         8.23           17         285.18         278.80         67         38.96         38.29         117         8.12         8.01           18         272.58         266.51         68         37.63         36.98         118         7.89         7.78           19         260.60         254.72         69         36.34         35.72         119         7.66         7.57           20         249.00         243.61				60						9.78
12         358.88         350.62         62         46.49         45.67         112         9.36         9.23           13         342.58         334.74         63         44.86         44.07         113         9.10         8.97           14         327.10         319.66         64         43.30         42.54         114         8.84         8.71           15         312.41         305.33         65         41.79         41.06         115         8.59         8.47           16         298.45         291.73         66         40.35         39.65         116         8.35         8.23           17         2285.18         272.80         66.51         68         37.63         36.98         118         7.89         7.78           19         260.60         254.72         69         36.34         35.72         119         7.66         7.57           20         249.00         243.61         70         35.11         34.51         120         7.47         7.36           21         238.36         233.14         71         33.92         33.35         121         7.26         7.16         6.97         7.16         7.26		376.05		61	48.19					9.50
13         342.58         334.74         63         44.86         44.07         113         9.10         8.97           14         327.10         319.66         64         43.30         42.54         114         8.84         8.71           16         298.45         291.73         66         40.35         39.65         116         8.35         8.23           17         285.18         278.80         67         38.96         38.29         117         8.12         8.01           18         272.58         266.51         68         37.63         36.98         118         7.89         7.78           19         260.60         254.72         69         36.34         35.72         119         7.68         7.57           20         249.00         243.61         70         35.11         34.51         120         7.47         7.36           21         238.36         233.14         71         33.92         33.35         121         7.26         7.16           22         228.05         223.08         72         32.78         32.23         122         7.06         6.97           23         218.24         213.51										
14         327.10         319.66         64         43.30         42.54         114         8.84         8.71           15         312.41         305.33         65         41.79         41.06         115         8.59         8.47           16         298.45         221.73         66         40.35         39.65         116         8.35         8.23           17         285.18         278.80         67         38.96         38.29         117         8.12         8.01           18         272.58         266.51         68         37.63         36.98         118         7.89         7.78           20         2249.00         243.61         70         35.11         34.51         119         7.68         7.57           20         2249.00         223.08         72         32.78         32.23         122         7.06         6.97           21         238.36         233.14         71         33.92         33.35         121         7.26         7.16           22         228.05         223.08         72         32.78         32.23         122         7.06         6.97           24         208.90         204.39										
15         312.41         305.33         65         41.79         41.06         115         8.59         8.47           16         298.45         291.73         66         40.35         39.65         116         8.35         8.23           17         285.18         278.80         67         38.96         38.29         117         8.12         8.01           18         272.58         266.51         68         37.63         36.98         118         7.89         7.78           19         260.60         254.72         69         36.34         35.72         119         7.68         7.57           20         249.00         243.61         70         35.11         34.51         120         7.47         7.36           21         238.36         223.08         72         32.78         32.23         122         7.06         6.97           23         218.24         213.51         73         31.69         31.15         123         6.87         6.78           24         208.90         204.39         74         30.63         30.12         124         6.69         6.59           25         200.00         195.71										
16         298.45         291.73         66         40.35         39.65         116         8.35         8.23           17         285.18         278.80         67         38.96         38.29         117         8.12         8.01           18         272.58         266.51         68         37.63         36.98         118         7.89         7.78           19         260.60         254.72         69         36.34         35.72         119         7.68         7.57           20         249.00         243.61         70         35.11         34.51         120         7.47         7.36           21         238.36         233.14         71         33.92         33.35         121         7.26         7.16           22         228.05         223.08         72         32.78         32.23         122         7.06         6.97           23         218.24         213.51         73         31.69         31.15         123         6.87         6.78           24         208.90         204.39         74         30.63         30.12         124         6.69         6.59           25         200.00         195.71						41.06				
17         285.18         278.80         67         38.96         38.29         117         8.12         8.01           18         272.58         266.51         68         37.63         36.98         118         7.89         7.78           20         249.00         243.61         70         35.11         34.51         120         7.47         7.36           21         238.36         233.14         71         33.92         33.35         121         7.26         7.16           22         228.05         223.08         72         32.78         32.23         122         7.06         6.97           23         218.24         213.51         73         31.69         31.15         123         6.87         6.78           24         208.90         204.39         74         30.63         30.12         124         6.69         6.59           25         200.00         195.71         75         29.61         29.12         125         6.51         6.42           26         191.53         187.44         76         28.64         28.16         126         6.33         6.25           27         183.46         179.57										
18         272.58         266.51         68         37.63         36.98         118         7.89         7.78           19         260.60         254.72         69         36.34         35.72         120         7.47         7.36           21         238.36         233.14         71         33.92         33.35         121         7.26         7.16           22         228.05         223.08         72         32.78         32.23         122         7.06         6.97           23         218.24         213.51         73         31.69         31.15         123         6.87         6.78           24         208.90         204.39         74         30.63         30.12         124         6.69         6.59           25         200.00         195.71         75         29.61         29.12         125         6.51         6.42           26         191.53         187.44         76         28.64         28.16         126         6.33         6.25           27         183.46         179.57         77         27.69         26.35         128         6.00         5.92           29         168.44         164.90										
19         260.60         254.72         69         36.34         35.72         119         7.68         7.57           20         249.00         243.61         70         35.11         34.51         120         7.47         7.36           21         238.36         233.14         71         33.92         33.35         121         7.26         7.16           22         228.05         223.08         72         32.78         32.23         122         7.06         6.97           23         218.24         213.51         73         31.69         31.15         123         6.87         6.78           24         208.90         204.39         74         30.63         30.12         124         6.69         6.59           25         200.00         195.71         75         29.61         29.16         6.51         6.42           26         191.53         187.44         76         28.64         28.16         126         6.33         6.25           27         183.46         179.57         77         27.69         27.24         127         6.16         6.08           28         175.77         172.06         78										
20         249.00         243.61         70         35.11         34.51         120         7.47         7.36           21         238.36         233.14         71         33.92         33.35         121         7.26         7.16           22         228.05         223.08         72         32.78         32.23         122         7.06         6.97           23         218.24         208.90         204.39         74         30.63         30.12         124         6.69         6.59           25         200.00         195.71         75         29.61         29.12         125         6.51         6.42           26         191.53         187.44         76         28.64         28.16         126         6.33         6.25           27         183.46         179.57         77         27.69         27.24         127         6.16         6.08           28         175.77         172.06         78         26.79         26.35         128         6.00         5.92           29         168.44         164.90         79         25.91         25.49         129         5.84         5.76           30         161.45										
21         238.36         233.14         71         33.92         33.35         121         7.26         7.16           22         228.05         223.08         72         32.78         32.23         122         7.06         6.97           23         218.24         213.51         73         31.69         31.15         123         6.87         6.78           24         208.90         204.39         74         30.63         30.12         124         6.69         6.59           25         200.00         195.71         75         29.61         29.12         125         6.51         6.42           26         191.53         187.44         76         28.64         28.16         126         6.33         6.25           27         183.46         179.57         77         27.69         27.24         127         6.16         6.08           28         175.77         172.06         78         26.79         26.35         128         6.00         5.92           29         168.44         164.90         79         25.91         25.49         129         5.84         5.76           30         161.45         158.08										
22         228.05         223.08         72         32.78         32.23         122         7.06         6.97           23         218.24         213.51         73         31.69         31.15         123         6.87         6.78           24         208.90         204.39         74         30.63         30.12         124         6.69         6.59           25         200.00         195.71         75         29.61         29.12         125         6.51         6.42           26         191.53         187.44         76         28.64         28.16         126         6.33         6.25           27         183.46         179.57         77         27.69         27.24         127         6.16         6.08           28         175.77         172.06         78         26.79         26.35         128         6.00         5.92           29         168.44         164.90         79         25.91         25.49         129         5.84         5.76           30         161.45         158.08         80         25.07         24.66         130         5.69         5.61           31         154.79         151.57										
23         218.24         213.51         73         31.69         31.15         123         6.87         6.78           24         208.90         204.39         74         30.63         30.12         124         6.69         6.59           25         200.00         195.71         75         29.61         29.12         125         6.51         6.42           26         191.53         187.44         76         28.64         28.16         126         6.33         6.25           27         183.46         179.57         77         27.69         27.24         127         6.16         6.08           28         175.77         172.06         78         26.79         26.35         128         6.00         5.92           29         168.44         164.90         79         25.91         25.49         129         5.84         5.76           30         161.45         158.08         80         25.07         24.66         130         5.69         5.61           31         154.79         151.57         81         24.26         23.87         131         5.54         5.46           32         148.43         145.37										
24         208.90         204.39         74         30.63         30.12         124         6.69         6.59           25         200.00         195.71         75         29.61         29.12         125         6.51         6.42           26         191.53         187.44         76         28.64         28.16         126         6.33         6.25           27         183.46         179.57         77         27.69         27.24         127         6.16         6.08           28         175.77         172.06         78         26.79         26.35         128         6.00         5.92           29         168.44         164.90         79         25.91         25.49         129         5.84         5.76           30         161.45         158.08         80         25.07         24.66         130         5.69         5.61           31         154.79         151.57         81         24.26         23.87         131         5.54         5.46           32         148.43         145.37         82         23.48         23.10         132         5.39         5.32           33         142.37         133.79										
25         200.00         195.71         75         29.61         29.12         125         6.51         6.42           26         191.53         187.44         76         28.64         28.16         126         6.33         6.25           27         183.46         179.57         77         27.69         27.24         127         6.16         6.08           28         175.77         172.06         78         26.79         26.35         128         6.00         5.92           29         168.44         164.90         79         25.91         25.91         25.91         25.91         25.91         25.84         5.76           30         161.45         158.08         80         25.07         24.66         130         5.69         5.61           31         154.79         151.57         81         24.26         23.87         131         5.54         5.46           32         148.43         145.37         82         23.48         23.10         132         5.39         5.32           33         142.37         139.44         83         22.73         22.36         133         5.25         5.18           34										
26         191.53         187.44         76         28.64         28.16         126         6.33         6.25           27         183.46         179.57         77         27.69         27.24         127         6.16         6.08           28         175.77         172.06         78         26.79         26.35         128         6.00         5.92           29         168.44         164.90         79         25.91         25.49         129         5.84         5.76           30         161.45         158.08         80         25.07         24.66         130         5.69         5.61           31         154.79         151.57         81         24.26         23.87         131         5.54         5.46           32         148.43         145.37         82         23.48         23.10         132         5.39         5.32           33         142.37         139.44         83         22.73         22.36         133         5.25         5.18           34         136.59         133.79         84         22.01         21.65         134         5.12         5.05           35         131.06         128.39										
27         183.46         179.57         77         27.69         27.24         127         6.16         6.08           28         175.77         172.06         78         26.79         26.35         128         6.00         5.92           29         168.44         164.90         79         25.91         25.49         129         5.84         5.76           30         161.45         158.08         80         25.07         24.66         130         5.69         5.61           31         154.79         151.57         81         24.26         23.87         131         5.54         5.46           32         148.43         145.37         82         23.48         23.10         132         5.39         5.32           33         142.37         139.44         83         22.73         22.65         133         5.25         5.18           34         136.59         133.79         84         22.01         21.65         134         5.12         5.05           35         131.06         128.39         85         21.31         20.97         135         4.98         4.92           36         125.79         123.24										
28         175.77         172.06         78         26.79         26.35         128         6.00         5.92           29         168.44         164.90         79         25.91         25.49         129         5.84         5.76           30         161.45         158.08         80         25.07         24.66         130         5.69         5.61           31         154.79         151.57         81         24.26         23.87         131         5.54         5.46           32         148.43         145.37         82         23.48         23.10         132         5.39         5.32           33         142.37         139.44         83         22.73         22.36         133         5.25         5.18           34         136.59         133.79         84         22.01         21.65         134         5.12         5.05           35         131.06         128.39         85         21.31         20.97         135         4.98         4.92           36         125.79         123.24         86         20.63         20.31         136         4.86         4.79           37         120.76         118.32										
29         168.44         164.90         79         25.91         25.49         129         5.84         5.76           30         161.45         158.08         80         25.07         24.66         130         5.69         5.61           31         154.79         151.57         81         24.26         23.87         131         5.54         5.46           32         148.43         145.37         82         23.48         23.10         132         5.39         5.32           33         142.37         139.44         83         22.73         22.36         133         5.25         5.18           34         136.59         133.79         84         22.01         21.65         134         5.12         5.05           35         131.06         128.39         85         21.31         20.97         135         4.98         4.92           36         125.79         123.24         86         20.63         20.31         136         4.86         4.79           37         120.76         118.32         87         19.98         19.67         137         4.73         4.67           38         115.95         113.62										
30         161.45         158.08         80         25.07         24.66         130         5.69         5.61           31         154.79         151.57         81         24.26         23.87         131         5.54         5.46           32         148.43         145.37         82         23.48         23.10         132         5.39         5.32           33         142.37         139.44         83         22.73         22.36         133         5.25         5.18           34         136.59         133.79         84         22.01         21.65         134         5.12         5.05           35         131.06         128.39         85         21.31         20.97         135         4.98         4.92           36         125.79         123.24         86         20.63         20.31         136         4.86         4.79           37         120.76         118.32         87         19.98         19.67         137         4.73         4.67           38         115.95         113.62         88         19.36         19.05         138         4.61         4.55           39         111.35         109.13										
31         154.79         151.57         81         24.26         23.87         131         5.54         5.46           32         148.43         145.37         82         23.48         23.10         132         5.39         5.32           33         142.37         139.44         83         22.73         22.36         133         5.25         5.18           34         136.59         133.79         84         22.01         21.65         134         5.12         5.05           35         131.06         128.39         85         21.31         20.97         135         4.98         4.92           36         125.79         123.24         86         20.63         20.31         136         4.86         4.79           37         120.76         118.32         87         19.98         19.67         137         4.73         4.67           38         115.95         113.62         88         19.36         19.05         138         4.61         4.55           39         111.35         109.13         89         18.75         18.46         139         4.49         4.44           40         106.96         104.84										
32         148.43         145.37         82         23.48         23.10         132         5.39         5.32           33         142.37         139.44         83         22.73         22.36         133         5.25         5.18           34         136.59         133.79         84         22.01         21.65         134         5.12         5.05           35         131.06         128.39         85         21.31         20.97         135         4.98         4.92           36         125.79         123.24         86         20.63         20.31         136         4.86         4.79           37         120.76         118.32         87         19.98         19.67         137         4.73         4.67           38         115.95         113.62         88         19.36         19.05         138         4.61         4.55           39         111.35         109.13         89         18.75         18.46         139         4.49         4.44           40         106.96         104.84         90         18.17         17.89         140         4.38         4.32           41         102.76         100.73										
33         142.37         139.44         83         22.73         22.36         133         5.25         5.18           34         136.59         133.79         84         22.01         21.65         134         5.12         5.05           35         131.06         128.39         85         21.31         20.97         135         4.98         4.92           36         125.79         123.24         86         20.63         20.31         136         4.86         4.79           37         120.76         118.32         87         19.98         19.67         137         4.73         4.67           38         115.95         113.62         88         19.36         19.05         138         4.61         4.55           39         111.35         109.13         89         18.75         18.46         139         4.49         4.44           40         106.96         104.84         90         18.17         17.89         140         4.38         4.32           41         102.76         100.73         91         17.61         17.34         141         4.27         4.22           42         98.75         96.81										
34         136.59         133.79         84         22.01         21.65         134         5.12         5.05           35         131.06         128.39         85         21.31         20.97         135         4.98         4.92           36         125.79         123.24         86         20.63         20.31         136         4.86         4.79           37         120.76         118.32         87         19.98         19.67         137         4.73         4.67           38         115.95         113.62         88         19.36         19.05         138         4.61         4.55           39         111.35         109.13         89         18.75         18.46         139         4.49         4.44           40         106.96         104.84         90         18.17         17.89         140         4.38         4.32           41         102.76         100.73         91         17.61         17.34         141         4.27         4.22           42         98.75         96.81         92         17.07         16.80         142         4.16         4.11           43         94.92         93.06         <										
35         131.06         128.39         85         21.31         20.97         135         4.98         4.92           36         125.79         123.24         86         20.63         20.31         136         4.86         4.79           37         120.76         118.32         87         19.98         19.67         137         4.73         4.67           38         115.95         113.62         88         19.36         19.05         138         4.61         4.55           39         111.35         109.13         89         18.75         18.46         139         4.49         4.44           40         106.96         104.84         90         18.17         17.89         140         4.38         4.32           41         102.76         100.73         91         17.61         17.34         141         4.27         4.22           42         98.75         96.81         92         17.07         16.80         142         4.16         4.11           43         94.92         93.06         93         16.54         16.29         143         4.06         4.01           44         91.25         89.47 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>										
36         125.79         123.24         86         20.63         20.31         136         4.86         4.79           37         120.76         118.32         87         19.98         19.67         137         4.73         4.67           38         115.95         113.62         88         19.36         19.05         138         4.61         4.55           39         111.35         109.13         89         18.75         18.46         139         4.49         4.44           40         106.96         104.84         90         18.17         17.89         140         4.38         4.32           41         102.76         100.73         91         17.61         17.34         141         4.27         4.22           42         98.75         96.81         92         17.07         16.80         142         4.16         4.11           43         94.92         93.06         93         16.54         16.29         143         4.06         4.01           44         91.25         89.47         94         16.04         15.79         144         3.96         3.91           45         87.74         86.04         9										
37         120.76         118.32         87         19.98         19.67         137         4.73         4.67           38         115.95         113.62         88         19.36         19.05         138         4.61         4.55           39         111.35         109.13         89         18.75         18.46         139         4.49         4.44           40         106.96         104.84         90         18.17         17.89         140         4.38         4.32           41         102.76         100.73         91         17.61         17.34         141         4.27         4.22           42         98.75         96.81         92         17.07         16.80         142         4.16         4.11           43         94.92         93.06         93         16.54         16.29         143         4.06         4.01           44         91.25         89.47         94         16.04         15.79         144         3.96         3.91           45         87.74         86.04         95         15.55         15.31         145         3.86         3.81           46         84.38         82.75         96<										
38         115.95         113.62         88         19.36         19.05         138         4.61         4.55           39         111.35         109.13         89         18.75         18.46         139         4.49         4.44           40         106.96         104.84         90         18.17         17.89         140         4.38         4.32           41         102.76         100.73         91         17.61         17.34         141         4.27         4.22           42         98.75         96.81         92         17.07         16.80         142         4.16         4.11           43         94.92         93.06         93         16.54         16.29         143         4.06         4.01           44         91.25         89.47         94         16.04         15.79         144         3.96         3.91           45         87.74         86.04         95         15.55         15.31         145         3.86         3.81           46         84.38         82.75         96         15.08         14.85         146         3.76         3.72           47         81.16         79.61         97 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>										
39         111.35         109.13         89         18.75         18.46         139         4.49         4.44           40         106.96         104.84         90         18.17         17.89         140         4.38         4.32           41         102.76         100.73         91         17.61         17.34         141         4.27         4.22           42         98.75         96.81         92         17.07         16.80         142         4.16         4.11           43         94.92         93.06         93         16.54         16.29         143         4.06         4.01           44         91.25         89.47         94         16.04         15.79         144         3.96         3.91           45         87.74         86.04         95         15.55         15.31         145         3.86         3.81           46         84.38         82.75         96         15.08         14.85         146         3.76         3.72           47         81.16         79.61         97         14.62         14.40         147         3.67         3.62           48         78.09         76.60         98										
40         106.96         104.84         90         18.17         17.89         140         4.38         4.32           41         102.76         100.73         91         17.61         17.34         141         4.27         4.22           42         98.75         96.81         92         17.07         16.80         142         4.16         4.11           43         94.92         93.06         93         16.54         16.29         143         4.06         4.01           44         91.25         89.47         94         16.04         15.79         144         3.96         3.91           45         87.74         86.04         95         15.55         15.31         145         3.86         3.81           46         84.38         82.75         96         15.08         14.85         146         3.76         3.72           47         81.16         79.61         97         14.62         14.40         147         3.67         3.62           48         78.09         76.60         98         14.18         13.97         148         3.58         3.54           49         75.14         73.71         99					19.36				4.61	4.55
41         102.76         100.73         91         17.61         17.34         141         4.27         4.22           42         98.75         96.81         92         17.07         16.80         142         4.16         4.11           43         94.92         93.06         93         16.54         16.29         143         4.06         4.01           44         91.25         89.47         94         16.04         15.79         144         3.96         3.91           45         87.74         86.04         95         15.55         15.31         145         3.86         3.81           46         84.38         82.75         96         15.08         14.85         146         3.76         3.72           47         81.16         79.61         97         14.62         14.40         147         3.67         3.62           48         78.09         76.60         98         14.18         13.97         148         3.58         3.54           49         75.14         73.71         99         13.76         13.55         149         3.49         3.45	39			89	18.75			139	4.49	
42     98.75     96.81     92     17.07     16.80     142     4.16     4.11       43     94.92     93.06     93     16.54     16.29     143     4.06     4.01       44     91.25     89.47     94     16.04     15.79     144     3.96     3.91       45     87.74     86.04     95     15.55     15.31     145     3.86     3.81       46     84.38     82.75     96     15.08     14.85     146     3.76     3.72       47     81.16     79.61     97     14.62     14.40     147     3.67     3.62       48     78.09     76.60     98     14.18     13.97     148     3.58     3.54       49     75.14     73.71     99     13.76     13.55     149     3.49     3.45										
43     94.92     93.06     93     16.54     16.29     143     4.06     4.01       44     91.25     89.47     94     16.04     15.79     144     3.96     3.91       45     87.74     86.04     95     15.55     15.31     145     3.86     3.81       46     84.38     82.75     96     15.08     14.85     146     3.76     3.72       47     81.16     79.61     97     14.62     14.40     147     3.67     3.62       48     78.09     76.60     98     14.18     13.97     148     3.58     3.54       49     75.14     73.71     99     13.76     13.55     149     3.49     3.45					17.61	17.34			4.27	4.22
44     91.25     89.47     94     16.04     15.79     144     3.96     3.91       45     87.74     86.04     95     15.55     15.31     145     3.86     3.81       46     84.38     82.75     96     15.08     14.85     146     3.76     3.72       47     81.16     79.61     97     14.62     14.40     147     3.67     3.62       48     78.09     76.60     98     14.18     13.97     148     3.58     3.54       49     75.14     73.71     99     13.76     13.55     149     3.49     3.45	42	98.75	96.81	92	17.07	16.80		142	4.16	4.11
45     87.74     86.04     95     15.55     15.31     145     3.86     3.81       46     84.38     82.75     96     15.08     14.85     146     3.76     3.72       47     81.16     79.61     97     14.62     14.40     147     3.67     3.62       48     78.09     76.60     98     14.18     13.97     148     3.58     3.54       49     75.14     73.71     99     13.76     13.55     149     3.49     3.45	43	94.92	93.06	93	16.54	16.29		143	4.06	4.01
45     87.74     86.04     95     15.55     15.31     145     3.86     3.81       46     84.38     82.75     96     15.08     14.85     146     3.76     3.72       47     81.16     79.61     97     14.62     14.40     147     3.67     3.62       48     78.09     76.60     98     14.18     13.97     148     3.58     3.54       49     75.14     73.71     99     13.76     13.55     149     3.49     3.45	44	91.25	89.47	94	16.04	15.79		144	3.96	3.91
46     84.38     82.75     96     15.08     14.85     146     3.76     3.72       47     81.16     79.61     97     14.62     14.40     147     3.67     3.62       48     78.09     76.60     98     14.18     13.97     148     3.58     3.54       49     75.14     73.71     99     13.76     13.55     149     3.49     3.45	45	87.74	86.04	95	15.55	15.31		145		3.81
47     81.16     79.61     97     14.62     14.40     147     3.67     3.62       48     78.09     76.60     98     14.18     13.97     148     3.58     3.54       49     75.14     73.71     99     13.76     13.55     149     3.49     3.45	46	84.38		96	15.08	14.85		146		3.72
48     78.09     76.60     98     14.18     13.97     148     3.58     3.54       49     75.14     73.71     99     13.76     13.55     149     3.49     3.45										
49         75.14         73.71         99         13.76         13.55         149         3.49         3.45										
	50	72.32	70.96	100	13.35	13.15	1	150	3.41	3.37

SiBE18-821 Pressure Sensor

## **10.Pressure Sensor**



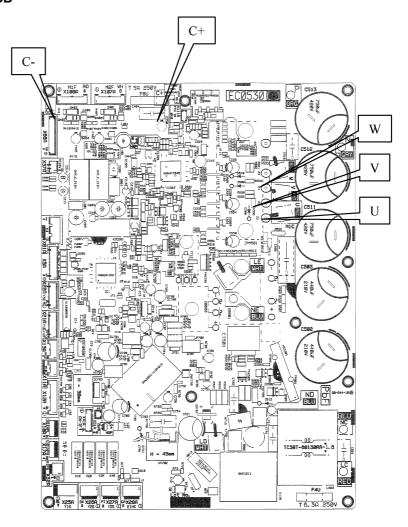
# 11.Method of Replacing The Inverter's Power Transistors Modules

#### Checking failures in power semiconductors mounted on inverter PCB

Check the power semiconductors mounted on the inverter PCB by the use of a multiple tester. <a href="tester-right"><a href="tester-right">tester PCB</a> by the use of a multiple tester. <a href="tester-right">tester PCB</a> by the use of a multiple tester.

- Multiple tester : Prepare the digital type of multiple tester with diode check function. <**Preparation>**
- Turn OFF the power supply. Then, after a lapse of 10 minutes or more, make measurement of resistance.
- To make measurement, disconnect all connectors and terminals.

#### **Inverter PCB**



#### Power module checking

When using the digital type of multiple tester, make measurement in diode check mode.

Tester terminal		Criterion	Remark
+	-		
C+	U	Not less than 0.3V	It may take time to
	V	(including ∞)*	determine the voltage
	W		due to capacitor
U	C-	Not less than 0.3V	charge or else.
V		(including ∞)*	
W			
U	C+	0.3 to 0.7V	
V		(including ∞)*	
W			
C-	U	0.3 to 0.7V	
	V	(including ∞)*	
	W		

<sup>\*</sup>There needs to be none of each value variation.

The following abnormalities are also doubted besides the PC board abnormality.

- Faulty compressor (ground fault, ground leakage)
- Faulty fan motor (ground leakage)

# Part 9 Appendix

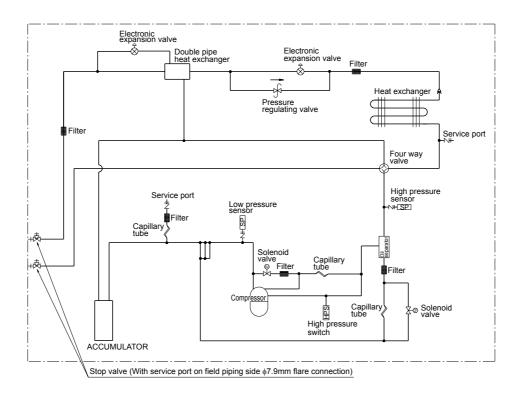
1.	Pipir	ng Diagrams	356
		Outdoor Units	
	1.2	BP Units	357
		Indoor Units	
2.	Wirir	ng Diagrams	363
	2.1	Outdoor Units	363
	2.2	BP Units	364
		Indoor Units	

Piping Diagrams SiBE18-821

## 1. Piping Diagrams

## 1.1 Outdoor Units

#### RMXS112/140/160E8V1B

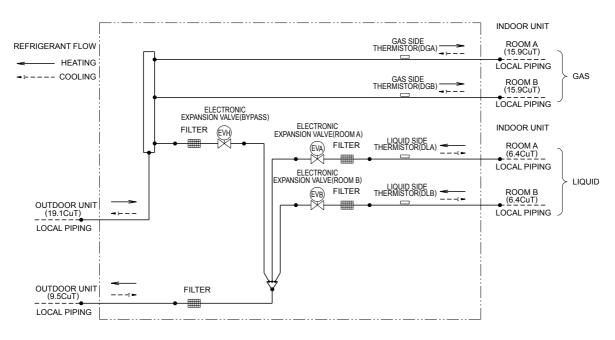


3D052712

SiBE18-821 Piping Diagrams

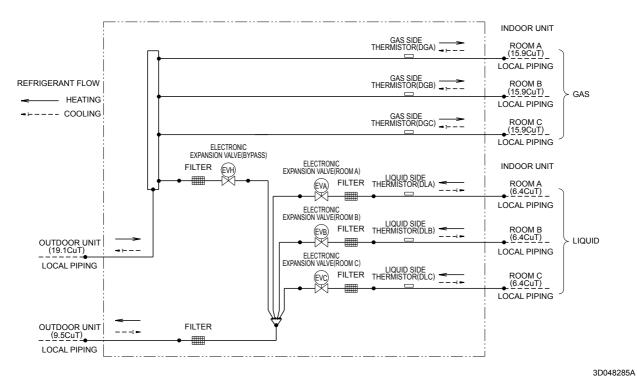
## 1.2 BP Units

#### BPMKS967B2B



3D048286B

#### **BPMKS967B3B**



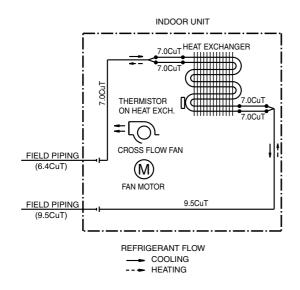
Piping Diagrams SiBE18-821

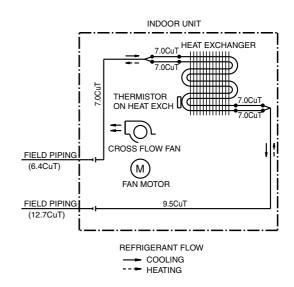
## 1.3 Indoor Units

## 1.3.1 Wall Mounted Type

#### FTXG25/35EV1BW(S)

#### CTXG50EV1BW(S)

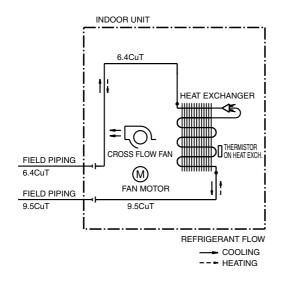


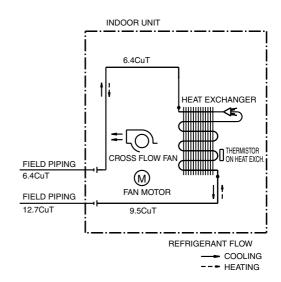


4D045301C 4D050924

#### FTXS20/25/35/42G2V1B

#### FTXS50G2V1B



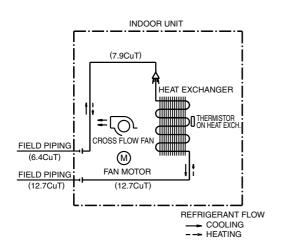


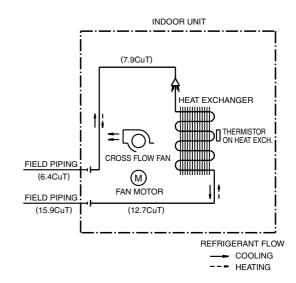
4D058897 4D058898

SiBE18-821 Piping Diagrams

FTXS60FV1B

#### FTXS71FV1B

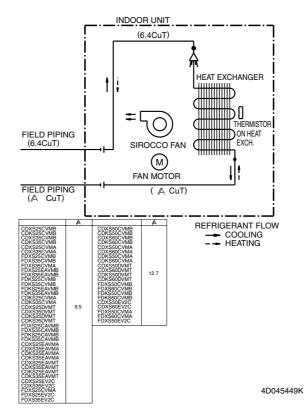




4D040081R 4D040082Q

## 1.3.2 Duct Connected Type

#### FDXS50/60CVMB, FDXS25/35EAVMB

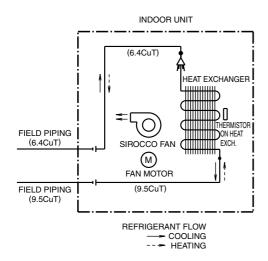


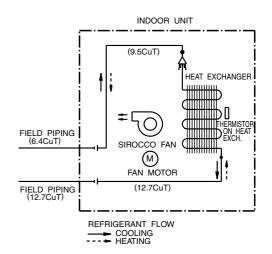
Piping Diagrams SiBE18-821

## 1.3.3 Floor / Ceiling Suspended Dual Type

#### FLXS25/35BAVMB

#### FLXS50/60BAVMB

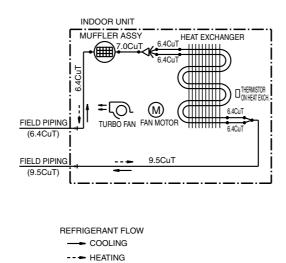




4D048722B 4D048724B

## 1.3.4 Floor Standing Type

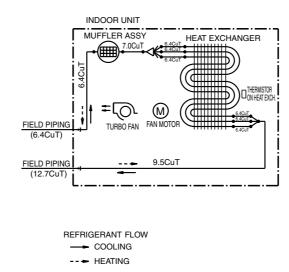
#### FVXS25/35FV1B



4D056137A

SiBE18-821 Piping Diagrams

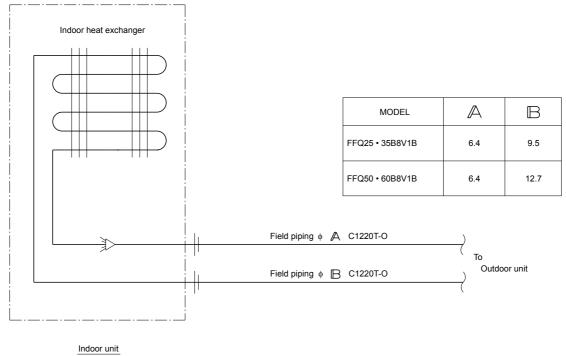
#### FVXS50FV1B



4D056138A

## 1.3.5 Ceiling Mounted Cassette Type

#### FFQ25/35/50/60B8V1B

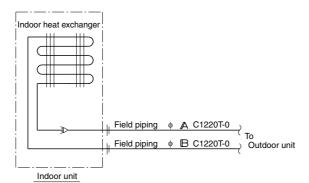


C: 4D039335

Piping Diagrams SiBE18-821

## 1.3.6 Ceiling Suspended Type

#### FHQ35/50/60BVV1B



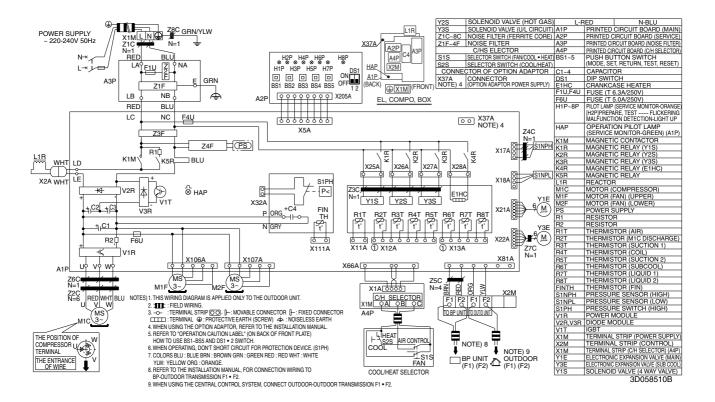
4D037995H

SiBE18-821 Wiring Diagrams

## 2. Wiring Diagrams

## 2.1 Outdoor Units

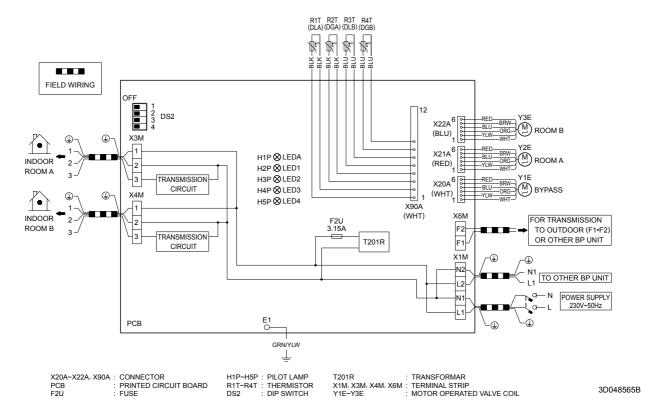
#### RMXS112/140/160E8V1B



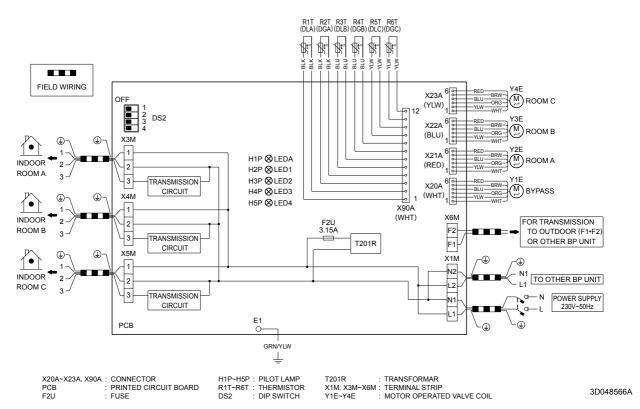
Wiring Diagrams SiBE18-821

## 2.2 BP Units

#### BPMKS967B2B



#### **BPMKS967B3B**

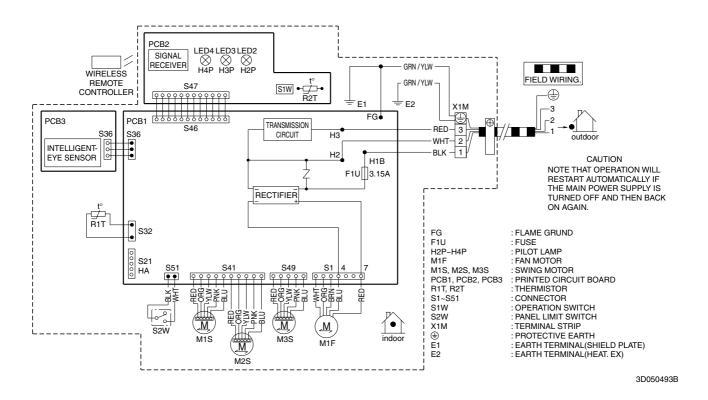


SiBE18-821 Wiring Diagrams

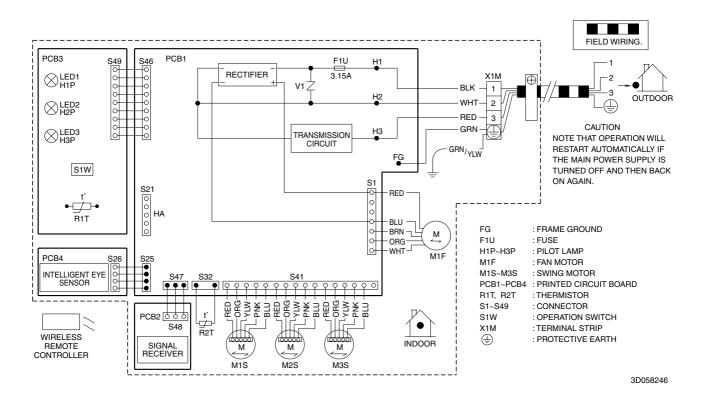
## 2.3 Indoor Units

## 2.3.1 Wall Mounted Type

#### FTXG25/35EV1BW(S), CTXG50EV1BW(S)

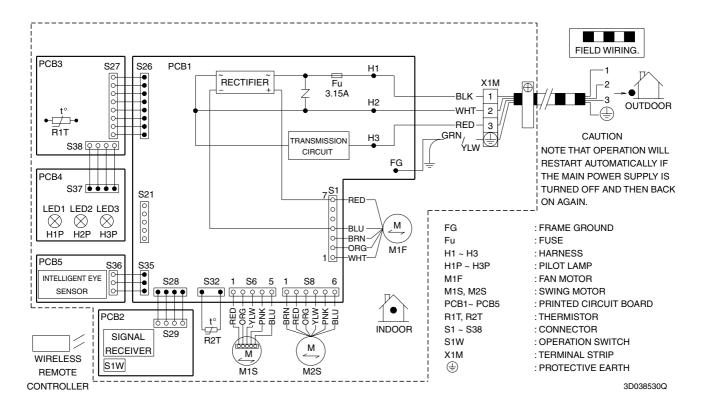


#### FTXS20/25/35/42/50G2V1B



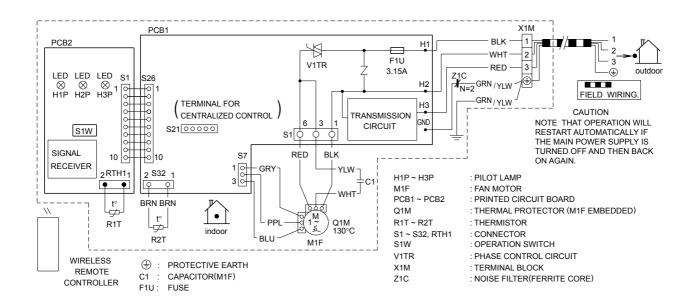
Wiring Diagrams SiBE18-821

#### FTXS60/71FV1B



## 2.3.2 Duct Connected Type

#### FDXS50/60CVMB, FDXS25/35EAVMB

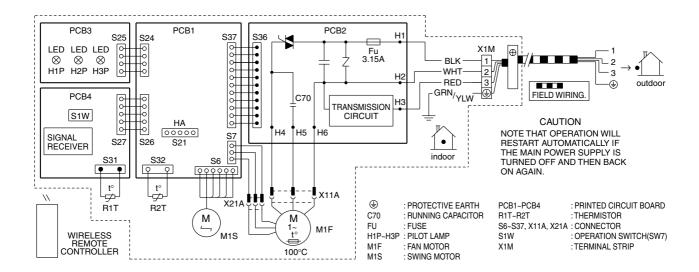


3D045012K

SiBE18-821 Wiring Diagrams

## 2.3.3 Floor / Ceiling Suspended Dual Type

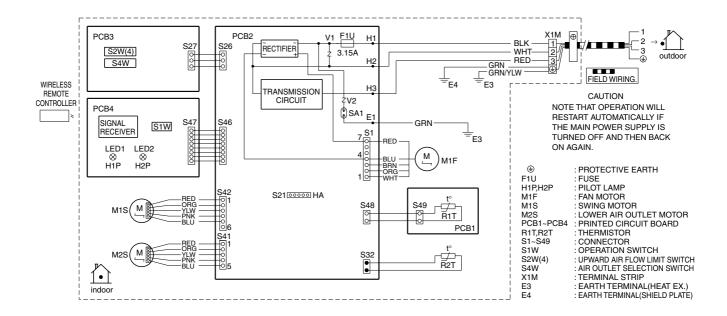
#### FLXS25/35/50/60BAVMB



3D033909F

## 2.3.4 Floor Standing Type

#### FVXS25/35/50FV1B

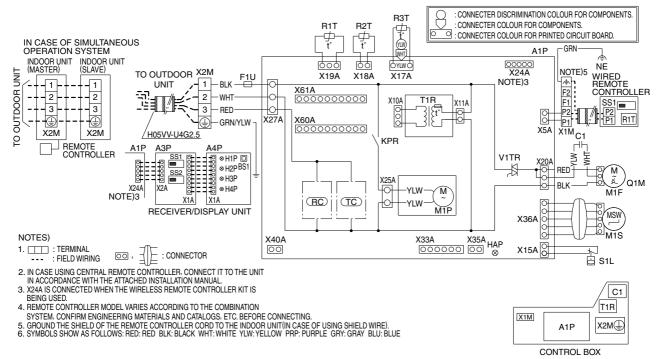


3D055953A

Wiring Diagrams SiBE18-821

## 2.3.5 Ceiling Mounted Cassette Type

#### FFQ25/35/50/60B8V1B



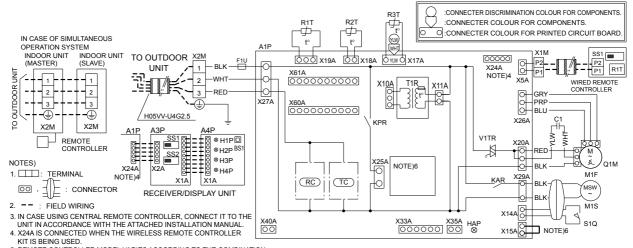
A1P	PRINTED CIRCUIT BOARD	BS1	PUSH BUTTON(ON/OFF)
C1	CAPACITOR(M1F)	H1P	LIGHT EMITTING DIODE
F1U	FUSE(F5A 250V)		(ON-RED)
HAP	LIGHT EMITTING DIODE	H2P	LIGHT EMITTING DIODE
	(SERVICE MONITOR GREEN)		(TIMER-GREEN)
KPR	MAGNETIC RELAY(M1P)	H3P	LIGHT EMITTING DIODE
M1F	MOTOR(INDOOR FAN)		(FILTER SIGN-RED)
M1P	MOTOR(DRAIN PUMP)	H4P	LIGHT EMITTING DIODE
M1S	MOTOR(SWING FLAP)		(DEFROST-ORANGE)
Q1M	THERMO SWITCH(M1F EMBEDDED)	SS1	SELECTOR SWITCH
R1T	THERMISTOR(AIR)		(MAIN/SUB)
R2T	THERMISTOR(COIL-1)	SS2	SELECTOR SWITCH
R3T	THERMISTOR(COIL-2)		(WIRELESS ADDRESS SET)
S1L	FLOAT SWITCH	CONNE	ECTOR FOR OPTIONAL PARTS
T1R	TRANSFORMER(220-240V/22V)	X33A	CONNECTOR
V1TR	PHASE CONTROL CIRCUIT		(ADAPTOR FOR WIRING)
X1M	TERMINAL STRIP	X35A	CONNECTOR
X2M	TERMINAL STRIP		(GROUP CONTROL ADAPTOR)
(RC)	SIGNAL RECEIVER CIRCUIT	X40A	CONNECTOR
CC	SIGNAL TRANSMISSION CIRCUIT		(ON/OFF INPUT FROM OUTSIDE)
WIRE	D REMOTE CONTROLLER	X60A	
R1T	THERMISTOR(AIR)	X61A	(INTERFACE ADAPTOR
SS1	SELECTOR SWITCH(MAIN/SUB)		FOR SKYAIR SERIES)
	WIRELESS REMOTE CONTROLLER		
(RECEIVER/DISPLAY UNIT)			
A3P	PRINTED CIRCUIT BOARD		
A4P	PRINTED CIRCUIT BOARD		

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SiBE18-821 **Wiring Diagrams** 

## **Ceiling Suspended Type**

#### FHQ35/50/60BVV1B



KIT IS BEING USED.

5. REMOTE CONTROLLER MODEL VARIES ACCORDING TO THE COMBINATION
SYSTEM, CONFIRM ENGINEERING MATERIALS AND CATALOGS, ETC. BEFORE CONNECTING.

6. IN CASE INSTALLING THE DRAIN PUMP(M1P), REMOVE THE JUMPER CONNECTOR OF X15A AND EXECUTE THE ADDITIONAL WIRING FOR FLOAT SWITCH AND DRAIN PUMP.

7. SYMBOLS SHOW AS FOLLOWS: RED:RED BLK:BLACK WHT:WHITE YLW:YELLOW PRP:PURPLE GRY:GRAY BLU:BLUE

A1P	PRINTED CIRCUIT BOARD	BS1	PUSH BUTTON(ON/OFF)	
C1	CAPACITOR(M1F)	H1P	LIGHT EMITTING DIODE	
F1U	FUSE(F5A 250V)		(ON-RED)	
HAP	LIGHT EMITTING DIODE	H2P	LIGHT EMITTING DIODE	
	(SERVICE MONITOR GREEN)	1121	(TIMER-GREEN)	
KAR	MAGNETIC RELAY(M1S)	H3P	LIGHT EMITTING DIODE	
KPR	MAGNETIC RELAY(M1P)		(FILTER SIGN-RED)	
M1F	MOTOR(INDOOR FAN)	H4P	LIGHT EMITTING DIODE	
M1S	MOTOR(SWING FLAP)		(DEFROST-ORANGE)	
Q1M	THERMO SWITCH(M1F EMBEDDED)	SS1	SELECTOR SWITCH	
R1T	THERMISTOR(AIR)		(MAIN/SUB)	
R2T	THERMISTOR(COIL-1)	SS2	SELECTOR SWITCH	
R3T	THERMISTOR(COIL-2)		(WIRELESS ADDRESS SET)	
S1Q	LIMIT SWITCH(SWING FLAP)	CONNE	ECTOR FOR OPTIONAL PARTS	
T1R	TRANSFORMER(220-240V/22V)	X15A	CONNECTOR(FLOAT SWITCH)	
V1TR	PHASE CONTROL CIRCUIT	X25A	CONNECTOR(DRAIN PUMP)	
X1M	TERMINAL BLOCK	X33A	CONNECTOR	
X2M	TERMINAL BLOCK		(ADAPTOR FOR WIRING)	
RC	SIGNAL RECEIVER CIRCUIT	X35A	CONNECTOR	
TC	SIGNAL TRANSMISSION CIRCUIT		(GROUP CONTROL ADAPTOR)	
WIR	ED REMOTE CONTROLLER	X40A	CONNECTOR	
R1T	THERMISTOR(AIR)		(ON/OFF INPUT FROM OUTSIDE)	
SS1	SELECTOR SWITCH(MAIN/SUB)	X60A	CONNECTOR	
WIREL	ESS REMOTE CONTROLLER	X61A	(INTERFACE ADAPTOR	
(RECE	IVER/DISPLAY UNIT)		FOR SKY AIR SERIES)	
A3P	PRINTED CIRCUIT BOARD			
A4P	PRINTED CIRCUIT BOARD			
		A	1P C1 T1R	
			X1M X2M	
			CONTROL BOX	

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- Ask a qualified installer or contractor to install this product. Do not try to install the product yourself.
   Improper installation can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Use only those parts and accessories supplied or specified by Daikin. Ask a qualified installer or contractor to install those parts and accessories. Use of unauthorised parts and accessories or improper installation of parts and accessories can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Read the User's Manual carefully before using this product. The User's Manual provides important safety instructions and warnings. Be sure to follow these instructions and warnings.

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

#### **Cautions on product corrosion**

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



JMI-0107



JQA-1452

#### About ISO 9001

ISO 9001 is a plant certification system defined by the International Organization for Standardization (ISO) relating to quality assurance. ISO 9001 certification covers quality assurance aspects related to the "design, development, manufacture, installation, and supplementary service" of products manufactured at the plant.



EC99J2044

#### -About ISO 14001 -

ISO 14001 is the standard defined by the International Organization for Standardization (ISO) relating to environmental management systems. Our group has been acknowledged by an internationally accredited compliance organisation as having an appropriate programme of environmental protection procedures and activities to meet the requirements of ISO 14001.

Dealer

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