DAIKIN

EDUS 391004 - M

R-410A

Engineering Data

VRV III®

General Information

RXYQ-PB
REYQ-P(B)

DAIKIN AC (AMERICAS), INC.

General Information ..... **EDUS391004-M (This booklet)**

Indoor Units

Ceiling-Mounted Cassette Type (Round Flow) ..... FXFQ-P **EDUS391000-F1**

4-Way Ceiling Mounted Cassette Type (2'×2') ..... FXZQ-M **EDUS39-800-F9**

Slim Ceiling Mounted Duct Type ..... FXDQ-M **EDUS39-600-F2**

Ceiling Mounted Duct Type ..... FXMQ-P **EDUS39-900A-F4**

Ceiling Mounted Duct Type ..... FXMQ-M **EDUS39-900A-F11**

Ceiling Suspended Type ..... FXHQ-M **EDUS39-600-F5**

Wall Mounted Type ..... FXAQ-M **EDUS39-600-F6**

Floor Standing Type / Concealed Floor Standing Type ..... FXLQ-M,FXNQ-M **EDUS39-600-F7**

Air Handling Unit ..... FXTQ-PA **EDUS391000-F12**

Branch Selector Units ..... BSVQ-P **EDUS39-900-F8**

Outdoor Air Processing Unit

Outdoor Air Processing Unit ..... FXMQ-MF **EDUS39-900A-F10**

Outdoor Units

Heat Pump ..... RXYQ-PB **460V** **EDUS391005-R1**

230V **EDUS391006-R1**

Heat Recovery ..... REYQ-PB **460V** **EDUS391005-R2**

230V **EDUS391006-R2**

Installation of Outdoor Units **EDUS391004-N**

Controls **EDUS391000-C**

Remote Controller

BRC1E71 ..... **EDUS72-975**

1. Introduction

Preface

Due to higher quality, more sophisticated building environments, there is now a greater demand for multiple-unit, flexible air-conditioning systems that serve individual needs. Energy efficiency and low maintenance are also in high demand considering heightened social awareness of the significance of energy consumption and environmentally safe operation.

Daikin is the sole air conditioning company in the world that manufactures every component from refrigerant to complete air conditioning systems. Our commitment to offering the best for both people and the environment, inspires us to develop new systems that make the most effective use of energy resources and protect the ozone layer.

Daikin is the first in the industry to develop the VRV system, and offers enhanced R-410A with the innovative Inverter VRV system.

This publication contains a variety of information related to the design and installation of this new VRV System. We hope this information deepens your understanding of the system and helps you to efficiently develop its highly evolved characteristics.

Global Operations Division

General Information

1. Model Names of Indoor/Outdoor Units....2
2. External Appearance....5
2.1 Indoor Units....5
2.2 Outdoor-Air Processing Unit....5
2.3 Outdoor Units (RXYQ)....6
2.4 Outdoor Units (REYQ)....6
3. Nomenclature....7
4. Capacity Range....9
5. Features and Benefits....10
5.1 System Capacity Range....11
5.2 Efficiency Improvements....12
5.3 Piping Capabilities....13
5.4 Connection Index....14
5.5 Condenser External Static Pressure....15
5.6 Improved Branch Selector Box....15
5.7 Industry Leading Advanced Defrost Cycle....16
5.8 Low Ambient Cooling Enhancement....17
5.9 Built-In System Redundancy....17
6. Control Systems....18
7. DAIKIN Building Air Conditioning Control System(D-BACS)....21
7.1 System Configuration (Central Remote Controller)....21
8. Control System....22
8.1 Various Control by Liquid Crystal Remote Controller....22
8.2 Building Control System Introduction....27
8.3 Specifications of the Control Wiring....33
8.4 Wiring Example....33
8.5 Length of Transmission Wiring....35
8.6 Connection Method....36
9. Guide Specifications....44
9.1 Guide Specifications....44
10. CAUTION FOR REFRIGERANT LEAKS....46
11. Safety Devices Setting....47

1. Model Names of Indoor/Outdoor Units

Indoor Units

Type		Model Name												Power Supply, Compatibility Symbol
Ceiling Mounted Cassette Type (Round Flow)	FXFQ	—	09P	12P	18P	24P	30P	36P	—	48P	—	—	—	VJU
4 Way Ceiling Mounted Cassette Type (2'×2')	FXZQ	07M7	09M7	12M7	18M7	—	—	—	—	—	—	—	—	
Slim Ceiling Mounted Duct Type	FXDQ	07M	09M	12M	18M	24M	—	—	—	—	—	—	—	
Ceiling Mounted Duct Type	FXMQ	07P	09P	12P	18P	24P	30P	36P	—	48P	—	—	—	
Ceiling Mounted Duct Type	FXMQ	—	—	—	—	—	—	—	—	—	—	72M	96M	
Ceiling Suspended Type	FXHQ	—	—	12M	—	24M	—	36M	—	—	—	—	—	
Wall Mounted Type	FXAQ	07M	09M	12M	18M	24M	—	—	—	—	—	—	—	
Floor Standing Type	FXLQ	—	—	12M	18M	24M	—	—	—	—	—	—	—	
Concealed Floor Standing Type	FXNQ	—	—	12M	18M	24M	—	—	—	—	—	—	—	
Air Handling Unit	FXTQ	—	—	12PA	18PA	24PA	30PA	36PA	42PA	48PA	54PA	—	—	

Branch Selector Units

Type		Model Name			Power Supply, Compatibility Symbol
Heat Recovery Series	BSVQ	36P	60P	96P	VJU

Outdoor-Air Processing Unit

Series	Model Name			Power Supply, Compatibility Symbol
FXMQ	48MF	72MF	96MF	VJU

Outdoor Units (Inverter Series)

Type			Model Name							Power Supply, Compatibility Symbol
			6 ton	8 ton	10 ton	12 ton	14 ton	16 ton	18 ton	
Heat Pump	230V	RXYQ-	72PT	96PT	120PT	144PB	168PB	192PB	216PB	TJ
	460V	RXYQ-	72PY	96PY	120PY	144PB	168PB	192PB	216PB	YD
Heat Recovery	230V	REYQ-	72PT	96PT	120PT	144PB	168PB	192PB	216PB	TJ
	460V	REYQ-	72PY	96PY	120PY	144PB	168PB	192PB	216PB	YD

Type			Model Name						Power Supply, Compatibility Symbol
			20 ton	22 ton	24 ton	26 ton	28 ton	30 ton	
Heat Pump	230V	RXYQ-	240PB	264PB	288PB	312PB	336PB	360PB	TJ
	460V	RXYQ-	240PB	264PB	288PB	312PB	336PB	360PB	YD
Heat Recovery	230V	REYQ-	240PB	264PB	288PB	312PB	336PB	—	TJ
	460V	REYQ-	240PB	264PB	288PB	312PB	336PB	—	YD

VJ: 1 phase, 208/230V, 60Hz
YD: 3 phase, 460V, 60Hz
TJ: 3 phase, 208/230V, 60Hz
U(VJU): Standard Compatibility Symbol

Combination of Outdoor Units

Heat Pump 460V

Model Name	RXYQ72PBYD	RXYQ96PBYD	RXYQ120PBYD	RXYQ144PBYD	RXYQ168PBYD
Outdoor Unit 1	RXYQ72PBYD	RXYQ96PBYD	RXYQ120PBYD	RXYQ72PBYD	RXYQ72PBYD
Outdoor Unit 2	—	—	—	RXYQ72PBYD	RXYQ96PBYD
Outdoor Unit 3	—	—	—	—	—

Model Name	RXYQ192PBYD	RXYQ216PBYD	RXYQ240PBYD	RXYQ264PBYD	RXYQ288PBYD
Outdoor Unit 1	RXYQ72PBYD	RXYQ96PBYD	RXYQ120PBYD	RXYQ72PBYD	RXYQ72PBYD
Outdoor Unit 2	RXYQ120PBYD	RXYQ120PBYD	RXYQ120PBYD	RXYQ96PBYD	RXYQ96PBYD
Outdoor Unit 3	—	—	—	RXYQ96PBYD	RXYQ120PBYD

Model Name	RXYQ312PBYD	RXYQ336PBYD	RXYQ360PBYD
Outdoor Unit 1	RXYQ72PBYD	RXYQ96PBYD	RXYQ120PBYD
Outdoor Unit 2	RXYQ120PBYD	RXYQ120PBYD	RXYQ120PBYD
Outdoor Unit 3	RXYQ120PBYD	RXYQ120PBYD	RXYQ120PBYD

Heat Pump 230V

Model Name	RXYQ72PBTJ	RXYQ96PBTJ	RXYQ120PBTJ	RXYQ144PBTJ	RXYQ168PBTJ
Outdoor Unit 1	RXYQ72PBTJ	RXYQ96PBTJ	RXYQ120PBTJ	RXYQ144PBTJ	RXYQ72PBTJ
Outdoor Unit 2	—	—	—	—	RXYQ96PBTJ
Outdoor Unit 3	—	—	—	—	—

Model Name	RXYQ192PBTJ	RXYQ216PBTJ	RXYQ240PBTJ	RXYQ264PBTJ	RXYQ288PBTJ
Outdoor Unit 1	RXYQ72PBTJ	RXYQ96PBTJ	RXYQ120PBTJ	RXYQ72PBTJ	RXYQ72PBTJ
Outdoor Unit 2	RXYQ120PBTJ	RXYQ120PBTJ	RXYQ120PBTJ	RXYQ96PBTJ	RXYQ96PBTJ
Outdoor Unit 3	—	—	—	RXYQ96PBTJ	RXYQ120PBTJ

Model Name	RXYQ312PBTJ	RXYQ336PBTJ	RXYQ360PBTJ
Outdoor Unit 1	RXYQ72PBTJ	RXYQ96PBTJ	RXYQ120PBTJ
Outdoor Unit 2	RXYQ120PBTJ	RXYQ120PBTJ	RXYQ120PBTJ
Outdoor Unit 3	RXYQ120PBTJ	RXYQ120PBTJ	RXYQ120PBTJ

Heat Recovery 460V

Model Name	REYQ72PYDN	REYQ96PYDN	REYQ120PYDN	REYQ144PBYD	REYQ168PBYD
Outdoor Unit 1	REYQ72PYDN	REYQ96PYDN	REYQ120PYDN	REMQ72PBYD	REMQ72PBYD
Outdoor Unit 2	—	—	—	REMQ72PBYD	REMQ96PBYD
Outdoor Unit 3	—	—	—	—	—

Model Name	REYQ192PBYD	REYQ216PBYD	REYQ240PBYD	REYQ264PBYD	REYQ288PBYD
Outdoor Unit 1	REMQ96PBYD	REMQ96PBYD	REMQ120PBYD	REMQ72PBYD	REMQ72PBYD
Outdoor Unit 2	REMQ96PBYD	REMQ120PBYD	REMQ120PBYD	REMQ96PBYD	REMQ96PBYD
Outdoor Unit 3	—	—	—	REMQ96PBYD	REMQ120PBYD

Model Name	REYQ312PBYD	REYQ336PBYD
Outdoor Unit 1	REMQ96PBYD	REMQ96PBYD
Outdoor Unit 2	REMQ96PBYD	REMQ120PBYD
Outdoor Unit 3	REMQ120PBYD	REMQ120PBYD

Heat Recovery 230V

Model Name	REYQ72PTJU	REYQ96PTJU	REYQ120PTJU	REYQ144PBTJ	REYQ168PBTJ
Outdoor Unit 1	REYQ72PTJU	REYQ96PTJU	REYQ120PTJU	REYQ144PBTJ	REMQ72PBTJ
Outdoor Unit 2	—	—	—	—	REMQ96PBTJ
Outdoor Unit 3	—	—	—	—	—

Model Name	REYQ192PBTJ	REYQ216PBTJ	REYQ240PBTJ	REYQ264PBTJ	REYQ288PBTJ
Outdoor Unit 1	REMQ96PBTJ	REMQ96PBTJ	REMQ120PBTJ	REMQ72PBTJ	REMQ72PBTJ
Outdoor Unit 2	REMQ96PBTJ	REMQ120PBTJ	REMQ120PBTJ	REMQ96PBTJ	REMQ96PBTJ
Outdoor Unit 3	—	—	—	REMQ96PBTJ	REMQ120PBTJ

Model Name	REYQ312PBTJ	REYQ336PBTJ
Outdoor Unit 1	REMQ96PBTJ	REMQ96PBTJ
Outdoor Unit 2	REMQ96PBTJ	REMQ120PBTJ
Outdoor Unit 3	REMQ120PBTJ	REMQ120PBTJ

2. External Appearance

2.1 Indoor Units

Ceiling mounted cassette type (Round flow)

FXFQ09PVJU
FXFQ12PVJU
FXFQ18PVJU
FXFQ24PVJU
FXFQ30PVJU
FXFQ36PVJU
FXFQ48PVJU

Wall mounted type

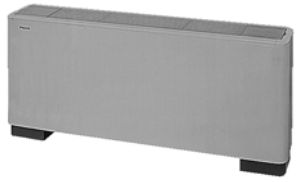
FXAQ07MVJU
FXAQ09MVJU
FXAQ12MVJU
FXAQ18MVJU
FXAQ24MVJU

4 way ceiling mounted cassette type (2'×2')

FXZQ07M7VJU
FXZQ09M7VJU
FXZQ12M7VJU
FXZQ18M7VJU

Floor standing type

FXLQ12MVJU
FXLQ18MVJU
FXLQ24MVJU

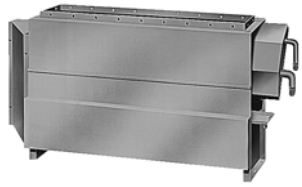


Slim ceiling-mounted duct type

FXDQ07MVJU
FXDQ09MVJU
FXDQ12MVJU
FXDQ18MVJU
FXDQ24MVJU

Concealed-floor standing type

FXNQ12MVJU
FXNQ18MVJU
FXNQ24MVJU



Ceiling-mounted duct type

FXMQ07PVJU
FXMQ09PVJU
FXMQ12PVJU
FXMQ18PVJU
FXMQ24PVJU
FXMQ30PVJU
FXMQ36PVJU
FXMQ48PVJU

Air handling unit

FXTQ12PAVJU
FXTQ18PAVJU
FXTQ24PAVJU
FXTQ30PAVJU
FXTQ36PAVJU
FXTQ42PAVJU
FXTQ48PAVJU
FXTQ54PAVJU

Ceiling-mounted duct type

FXMQ72MVJU
FXMQ96MVJU

Branch Selector Units

BSVQ36PVJU
BSVQ60PVJU
BSVQ96PVJU

Ceiling suspended type

FXHQ12MVJU
FXHQ24MVJU
FXHQ36MVJU

2.2 Outdoor-Air Processing Unit

Outdoor-air processing unit

FXMQ48MFVJU
FXMQ72MFVJU
FXMQ96MFVJU

2.3 Outdoor Units (RXYQ)

RXYQ72PBYD RXYQ72PBTJ	RXYQ96/120PBYD RXYQ96/120PBTJ	RXYQ144PBTJ
 6 ton	 8, 10 ton	 12 ton

RXYQ168/192PBYD RXYQ168/192PBTJ	RXYQ216/240PBYD RXYQ216/240PBTJ
 14, 16 ton	 18, 20 ton

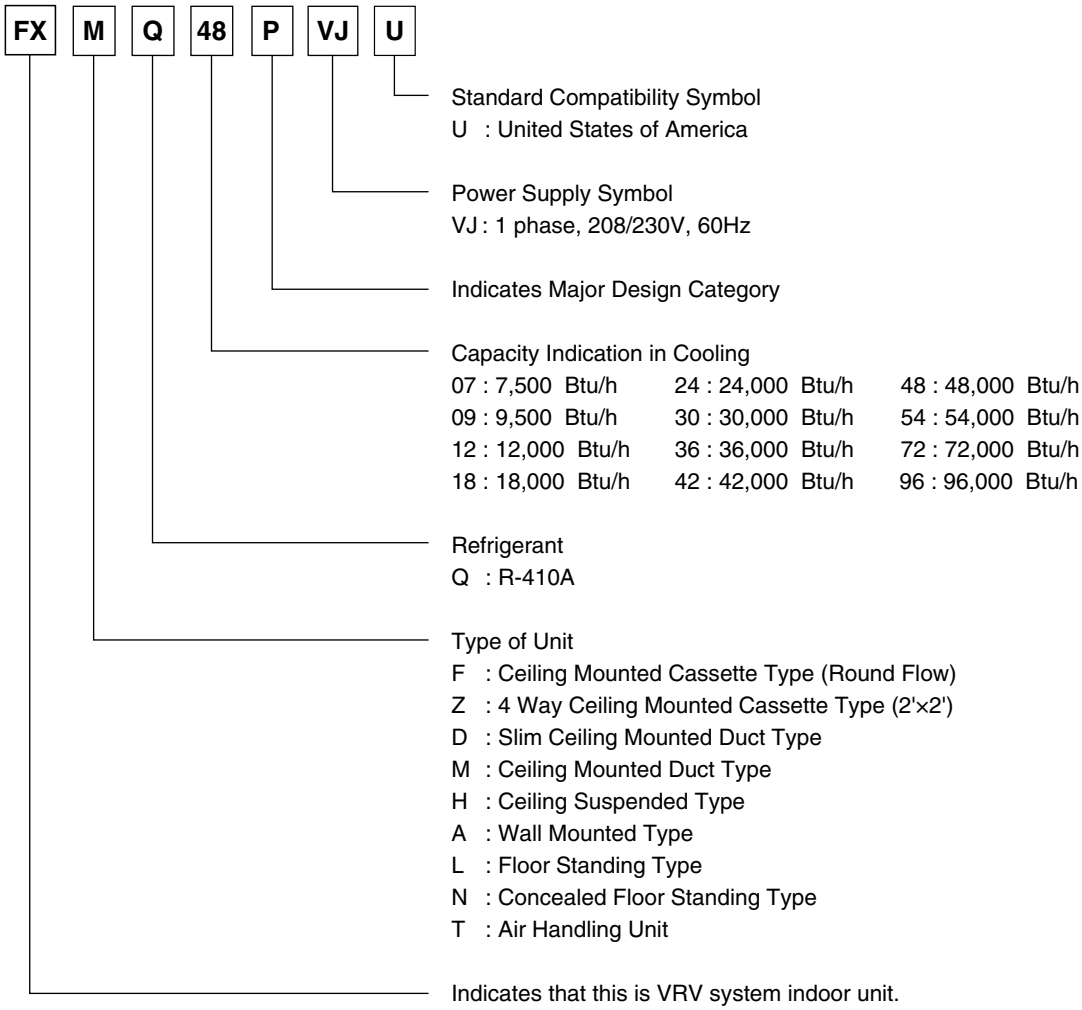
RXYQ264/288/312PBYD RXYQ264/288/312PBTJ	RXYQ336/360PBYD RXYQ336/360PBTJ
 22, 24, 26 ton	 28, 30 ton

2.4 Outdoor Units (REYQ)

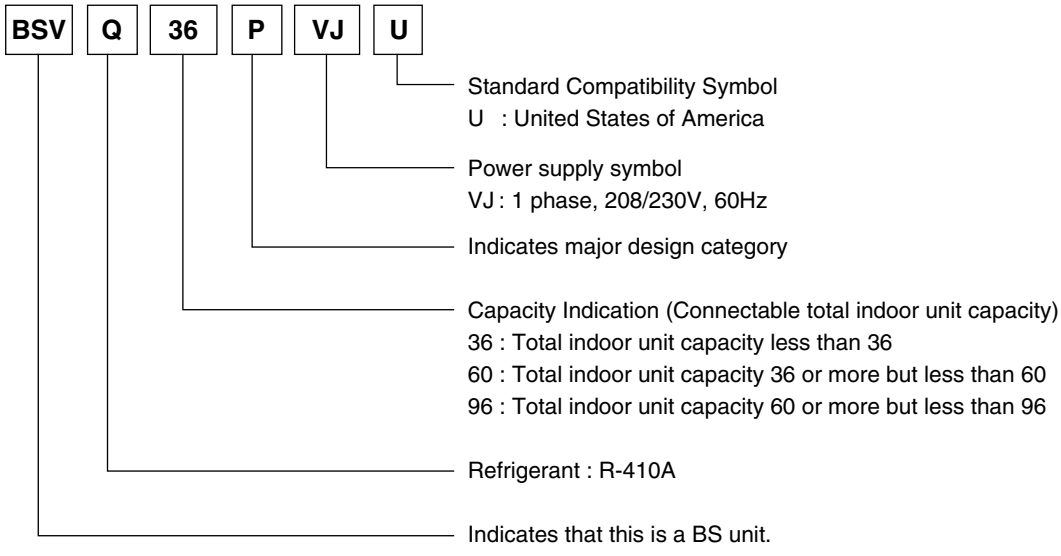
REYQ72/96/120PYDN REYQ72/96/120PTJU,144PBTJ	REYQ144/168/192/216/240PBYD REYQ168/192/216/240PBTJ	REYQ264/288/312/336PBYD REYQ264/288/312/336PBTJ
 6, 8, 10, 12 ton	 12, 14, 16, 18, 20 ton	 22, 24, 26, 28 ton

3. Nomenclature

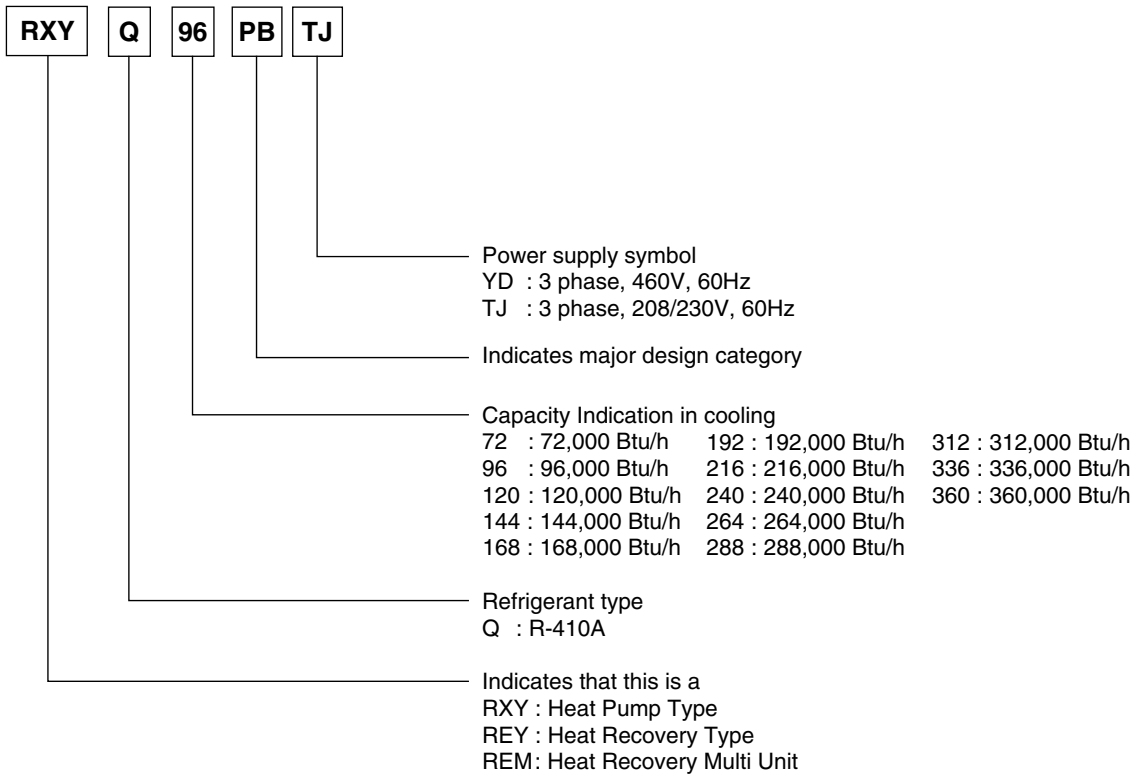
Indoor Unit



Branch Selector Unit (Only Necessary for Heat Recovery System)



Outdoor Unit



4. Capacity Range

Outdoor Units

Capacity Range	6 ton	8 ton	10 ton	12 ton	14 ton	16 ton	18 ton
RXYQ	72PB	96PB	120PB	144PB	168PB	192PB	216PB
REYQ	72P	96P	120P	144PB	168PB	192PB	216PB
Max. Number of Connectable Indoor Units	12	16	20	25	29	33	37
Total Capacity Index of Indoor Units to be Connected	36 ~ 93	48 ~ 124	60 ~ 156	72 ~ 187	84 ~ 218	96 ~ 249	108 ~ 280

Capacity Range	20 ton	22 ton	24 ton	26 ton	28 ton	30 ton
RXYQ	240PB	264PB	288PB	312PB	336PB	360PB
REYQ	240PB	264PB	288PB	312PB	336PB	—
Max. Number of Connectable Indoor Units	41	45	49	54	58	62
Total Capacity Index of Indoor Units to be Connected	120 ~ 312	132 ~ 343	144 ~ 374	156 ~ 405	168 ~ 436	180 ~ 468

Indoor Units

Capacity Range		0.6ton	0.8ton	1ton	1.5ton	2ton	2.5ton	3ton	3.5ton	4ton	4.5ton	6ton	8ton
Capacity Index		7.5	9.5	12	18	24	30	36	42	48	54	72	96
Ceiling Mounted Cassette Type (Round Flow)	FXFQ	—	09P	12P	18P	24P	30P	36P	—	48P	—	—	—
Ceiling Mounted Cassette Type (2'×2')	FXZQ	07M7	09M7	12M7	18M7	—	—	—	—	—	—	—	—
Slim ceiling Mounted Duct Type	FXDQ	07M	09M	12M	18M	24M	—	—	—	—	—	—	—
Ceiling Mounted Duct Type	FXMQ	07P	09P	12P	18P	24P	30P	36P	—	48P	—	—	—
Ceiling Mounted Duct Type	FXMQ	—	—	—	—	—	—	—	—	—	—	72M	96M
Ceiling Suspended Type	FXHQ	—	—	12M	—	24M	—	36M	—	—	—	—	—
Wall Mounted Type	FXAQ	07M	09M	12M	18M	24M	—	—	—	—	—	—	—
Floor Standing Type	FXLQ	—	—	12M	18M	24M	—	—	—	—	—	—	—
Connected Floor Standing Type	FXNQ	—	—	12M	18M	24M	—	—	—	—	—	—	—
Air Handling Unit	FXTQ	—	—	12PA	18PA	24PA	30PA	36PA	42PA	48PA	54PA	—	—

5. Features and Benefits

VRV III Features & Benefits

Voltage Platform & Operation Choice	**- 460V 3-Phase 6, 8, 10-Ton Single Cabinet; 12, 14, 16, 18, and 20-Ton Double Module Cabinet & 22, 24, 26, 28 and 30-Ton Triple Module Cabinent Condensing Units available for Commercial Applications.**
	- 208-230V 3-Phase 6, 8, 10 and 12-Ton Single Cabinet; 14, 16, 18 and 20-Ton Double Module Cabinet & 22, 24, 26, 28 and 30-Ton Triple Module Cabinet Condensing Units available for Light Commercial Applications.
	- Heat Pump and Heat Recovery Systems providing Simultaneous Heating and Cooling are available with both voltage platforms.
Advanced Zoning	**- Individual Zones can be provided for up to 62 zones on a Single VRV III system.**
Independent Control	- Each Fan Coil Unit uses a dedicated Electronic Expansion Valve for superior room temperature control, meaning individual control in all necessary zones.
Absolute Reliability	**- The latest G-Type Daikin designed & manufactured Inverter Scroll Compressor delivers excellent performance and reliability.**
VFD Inverter Capacity Control	- At the heart of the condensing unit is a high efficiency Variable Speed "Inverter" Compressor coupled with Inverter Fan Motors for superior System Part Load performance
	- Compressor Capacity is modulated automatically to maintain a constant Suction Pressure, while varying the refrigerant volume to the deliver precisely the needs of the Cooling or Heating Loads.
	- Indoor Fan Coil units use P.I.D. control to control Superheat and maintain the temperature in the occupied space close to the setpoint temperature.
Optimized R-410A Design	**- This 7th Generation VRV system has been completely overhauled to satisfy the latest minimum efficiency requirements as determined by the U.S. Department of Energy (DOE).**
Flexible Design	**- Extremely long refrigerant lines - up to 540ft (620ft equivalent) linear piping between Condensing Unit and Furthest Located Fan Coil Unit.**
	- Extremely long refrigerant lines - up to 3280ft Total "one-way" piping in the complete piping network.
	- Extremely flexible Vertical (height) separation - up to 295ft between the Condensing Unit and the Fan Coil Units is permitted.
	- Connection Diversity can be applied up to 200% of the Indoor Fan Coil Unit Capacity to Outdoor Condensing Unit Nominal Capacity.
	- Modular condensing units can be installed, phase by phase or floor by floor all around the building perimeter offering a decentralized alternative to traditional centralized plant equipment.
	- Plant Room installation condensing units supported with Fan / Fan Motor ESP up to 0.32" WG as standard allowing connection of discharge ductwork & preventing discharge air short circuiting.
	- Continuous operation at 0F DB (-4F WB) ~ 64F DB (60F WB) in Heating Mode and 23F DB ~ 122F DB in Cooling Mode. Some systems are supported down to -4F DB in Cooling Mode for Low Ambient Operation.
Indoor Units	- A full array of Ducted and Ductless style Fan Coil Units, including the FXTQ Vertical Air Handler & NEW FXMQ_P DC Ducted indoor unit are available to meet the demands of any application.
	- Capacity range covers 0.6 (7.5MBH) to 8 (96MBH) Ton in 0.5 Ton increments to ensure the optimum selection for the zone load conditions.
Simple Wiring	- Daisy chain control wiring, 2 wire, multi stranded, non shielded and non polarized for simple error free installations.
Energy Efficiency	- Excellent Part Load System performance delivering maximum comfort for minimal power consumption on the complete application temperature range.
	- Equivalent or better "annual" performance levels as associated with high efficiency Air Cooled & Water Cooled Chiller Systems.
Outside Air	- Outside air capability with ducted fan coil units and ductless cassette units and the NEW Daikin Outdoor Air Processing Unit.
Space Saving	**- With a Condensing Unit Module Footprint as small as 3'-5/8" x 2' 6-1/8" (7.66sq/ft) location and installation of VRV III is simple to realize.**
Advanced Diagnostics	- The advanced, self-diagnostic, auto-check function will detect a malfunction and immediately display the type and location so it can be resolved quickly and effectively.
Advanced Controls	- Unique and user friendly zone controller capable of advanced scheduling, set-back operation, individual cooling and heating set-points, room temperature display and backlight function.
	- Connects to the full suite of advanced Daikin Control Solutions including Intelligent-Touch Controller and Intelligent-Manager.
	- Can be integrated to Open Protocol Building Management Systems via the Daikin BACnet and LONworks Gateways.
Low Sound Levels	- All indoor Fan Coil Units are extremely quiet in operation. The FXFQ indoor unit has a sound pressure level as low as 27dB(A).
	- The VRV III condensing unit rated Sound Pressure Level is as low as 57dB(A), with the ability to operate as low as 45dB(A) when using the "Night-Time Quiet" Setback Feature.

5.1 System Capacity Range

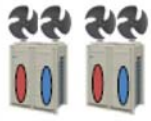
Base Single Modules

Capacity (Tons)	6	8	10	12*
VRV-III HP **RXYQ_PB** Single Outdoor Unit				
VRV-III HR **REYQ_P(B)** Single Outdoor Unit				

*Single module 12 Ton only available in 208/230V

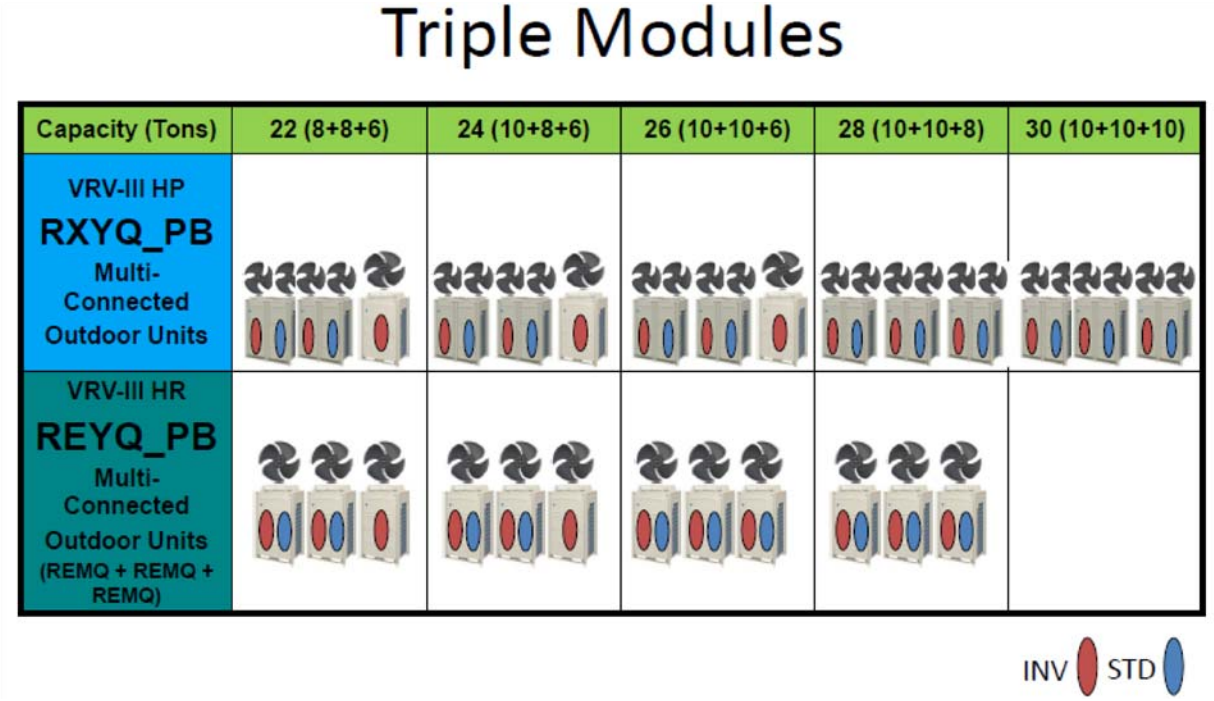
INV STD

Double Modules

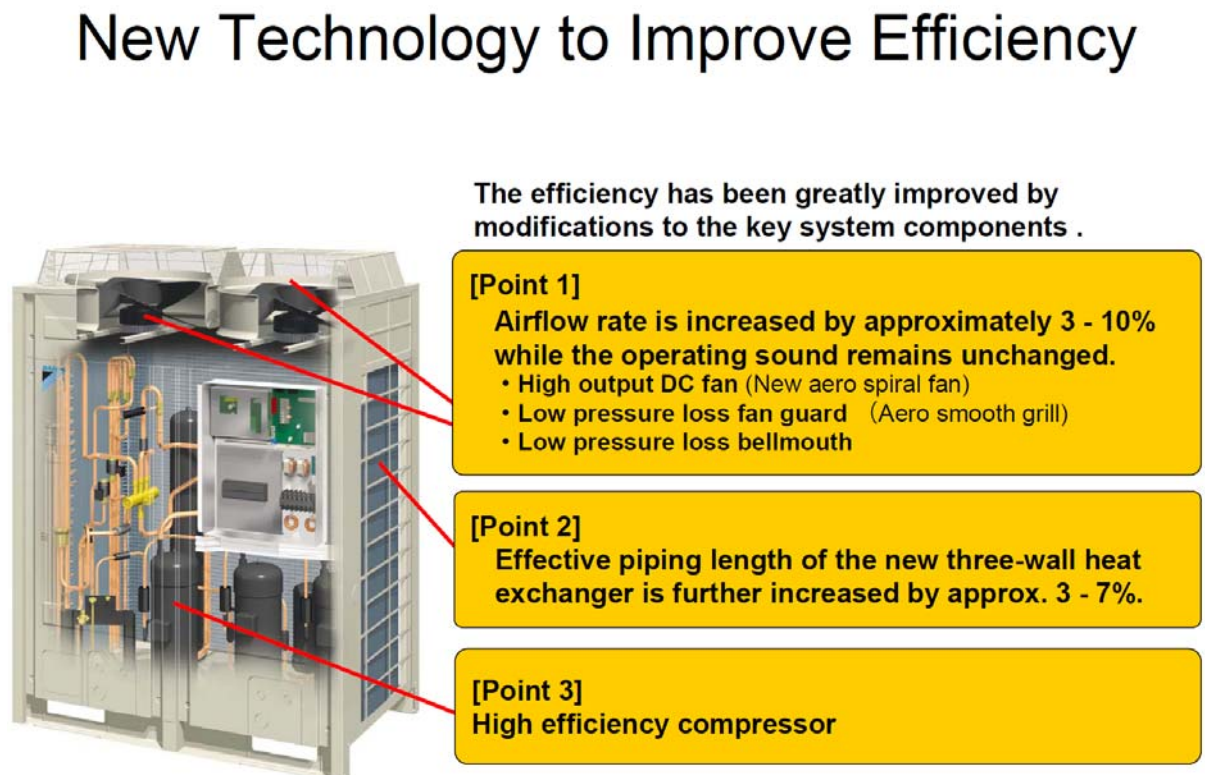
Capacity (Tons)	*12 (2x6)	14 (8+6)	16 (10+6) HP 16 (8+8) HR	18 (10+8)	20 (10+10)
VRV-III HP **RXYQ_PB** Multi-Connected Outdoor Units					
VRV-III HR **REYQ_PB** Multi-Connected Outdoor Units (REMQ + REMQ)					

*Double module 12 ton only available in 460V

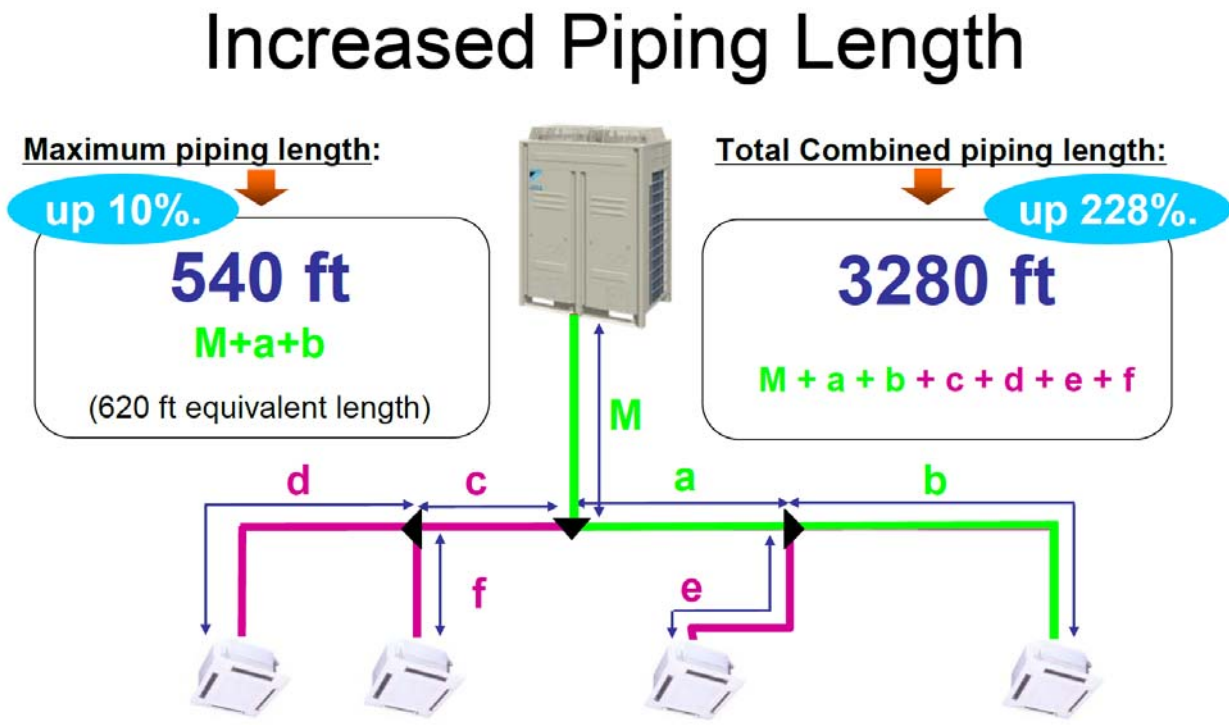
INV STD



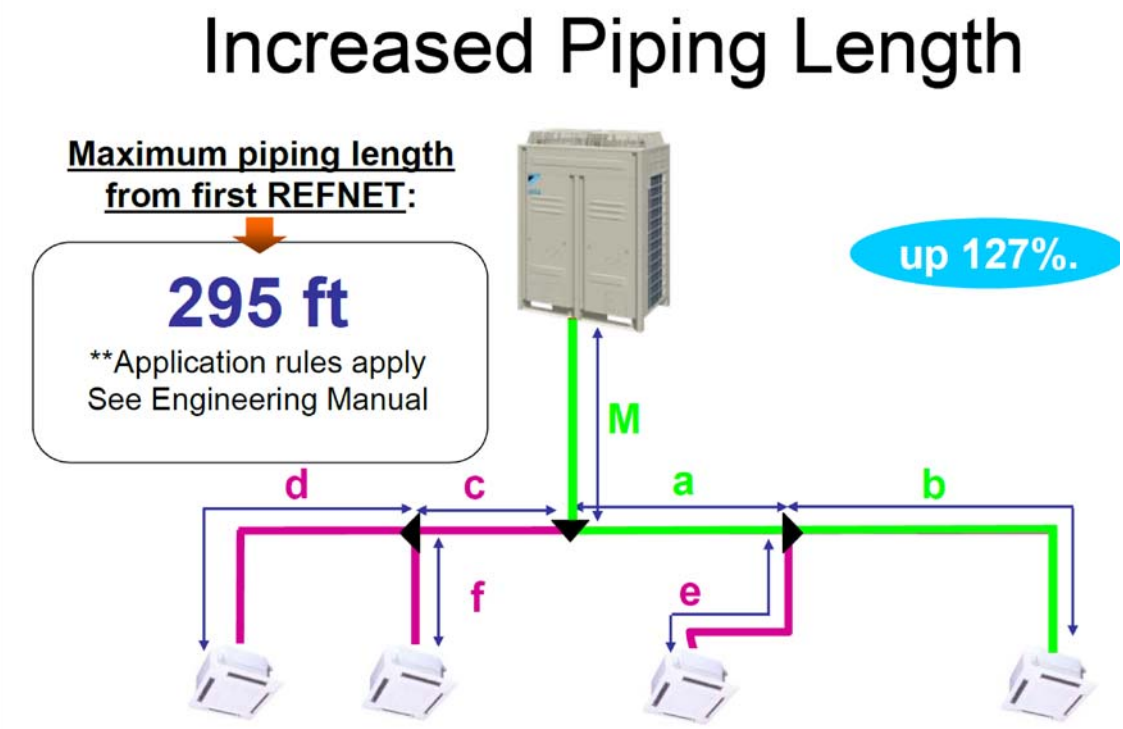
5.2 Efficiency Improvements

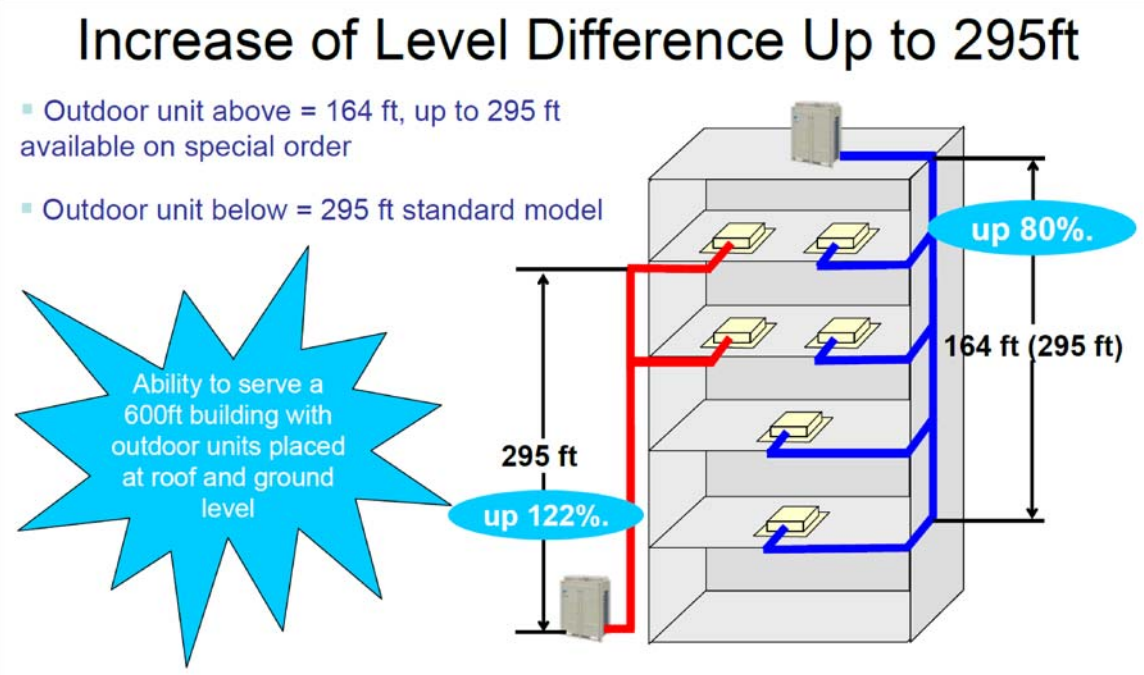


5.3 Piping Capabilities



Increased Piping Length





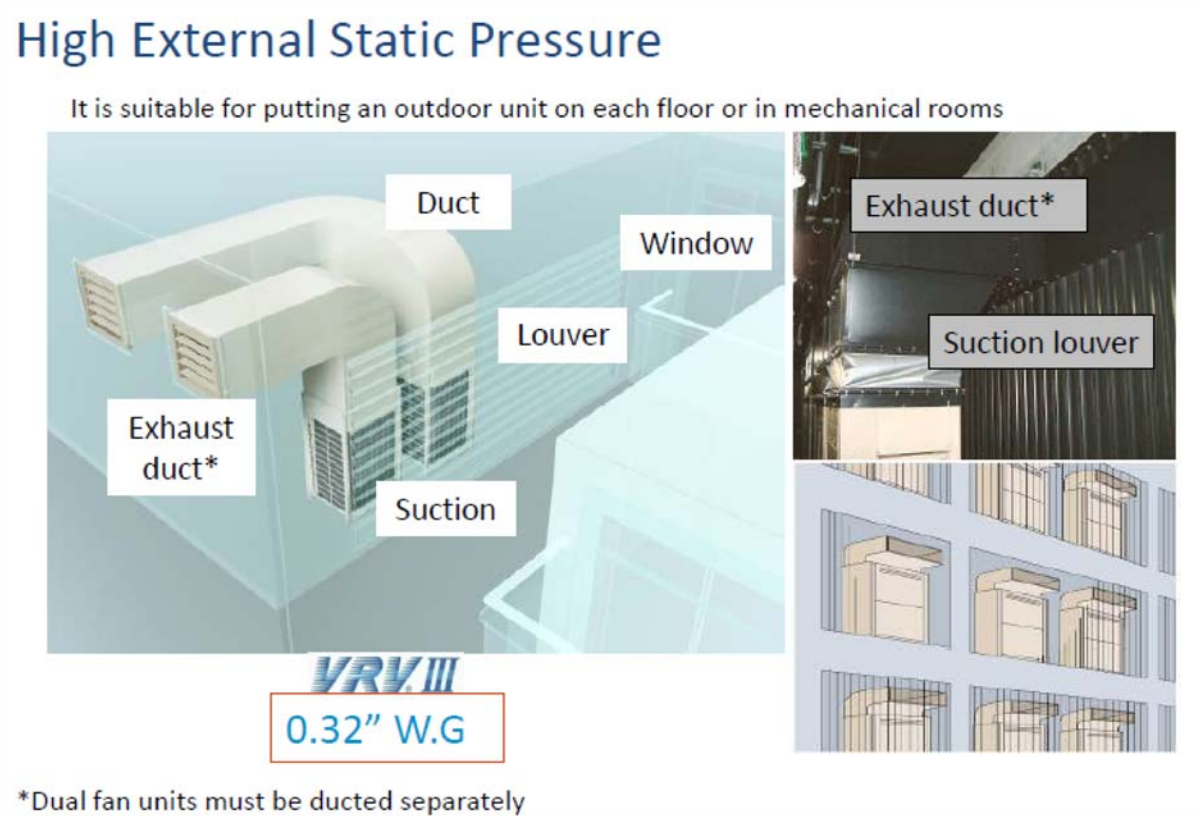
5.4 Connection Index

Increased Connection Ratio – General Rules

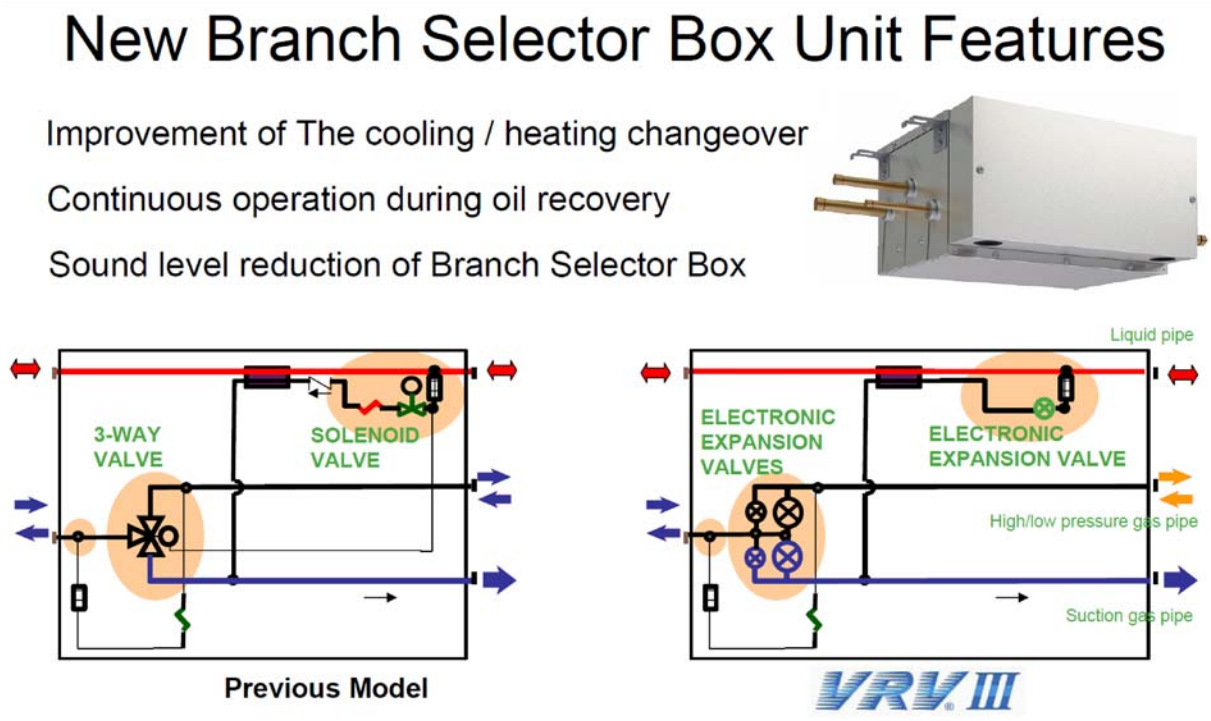
		When Using Only FXTQ_PA Models		When Using Only FXDQ, FXMQ_P and FXAQ Models		All Other IDU Models	
Outdoor Unit	Ton	Connection Ratio	Max. No. of IDU	Connection Ratio	Max. No. of IDU	Connection Ratio	Max. No. of IDU
Single	6	130%	7	200%	12	200%	12
	8		10		16		16
	10		13		20		20
	12*		15		25		25
Double	12**		15		25	160%	25
	14		18		29		29
	16		20		33		33
	18		23		37		37
	20		26		41		41
Triple	22		28		45	130%	45
	24		31		49		49
	26		33		54		54
	28		36		58		58
	30 (HP)		39		62		62

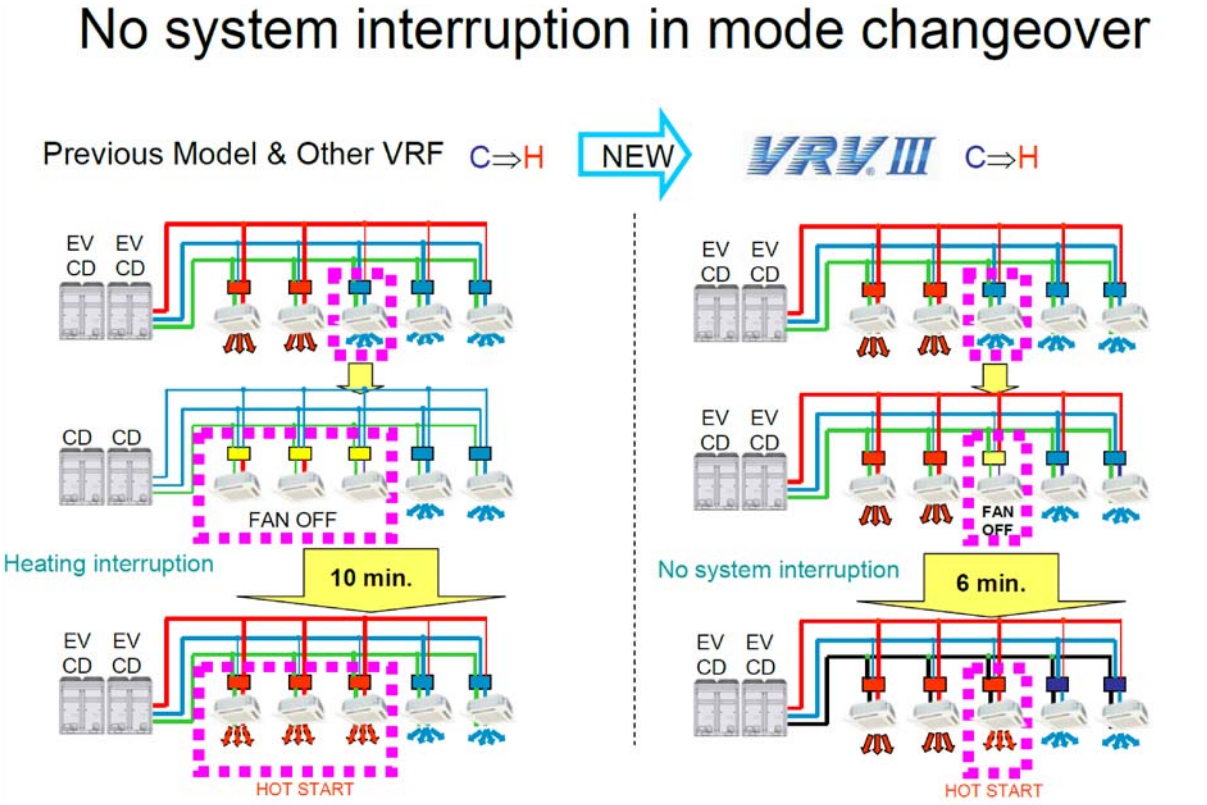
*12 Ton 208/230V only **12 Ton 460V only

5.5 Condenser External Static Pressure



5.6 Improved Branch Selector Box





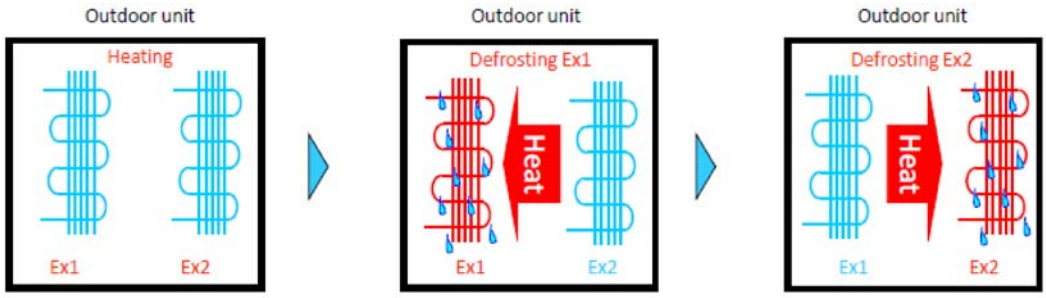
5.7 Industry Leading Advanced Defrost Cycle

Advanced Defrost Cycle Operation in Heating*

Superior Heating Comfort

Thanks to the dual heat exchanger arrangement in the outdoor unit(s), cold draft discharge from your indoor unit during defrost is eliminated. Therefore, heating comfort is improved and better maintained
A minimum of 30% capacity can now be delivered during defrost

Each heat exchanger is defrosted by using heat transferred from one heat exchanger to the other



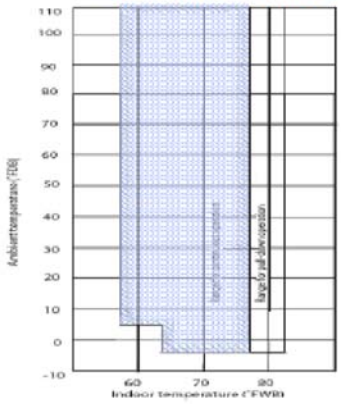
* Heat recovery systems only

5.8 Low Ambient Cooling Enhancement

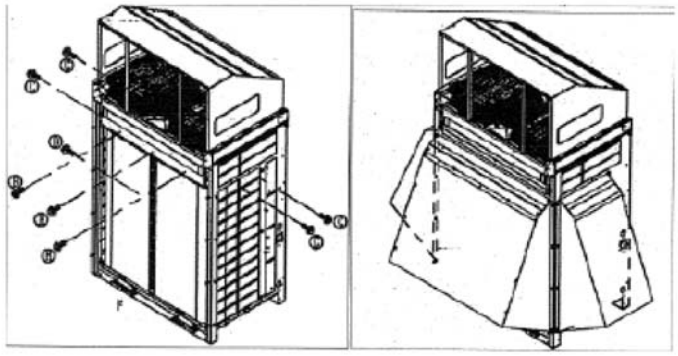
VRV III – Cooling Enhancement

- The VRV III PB product will include a new feature for low ambient cooling
- This function enhances VRV III Heat Recovery systems as follows:
  - Allows Operation to -4F (-20C) in Cooling Mode* – Normal limit is 23F (-5C)
  - Operation below 23F (-5C) ambient temperature requires the addition of locally sourced “wind covers” onto the condensing unit.

Operation Range



Wind Cover Appearance



*Application rules apply, please contact your local Daikin representative for further

5.9 Built-In System Redundancy

Back Up Compressor Operation

In the unlikely event of a compressor failure the faulty compressor or outdoor module can be locked out via the emergency mode

This ensures the system can provide 50% capacity to the building

Trouble

Alarm

Emergency operation can be activated by local remote controller or field setting

6. Control Systems

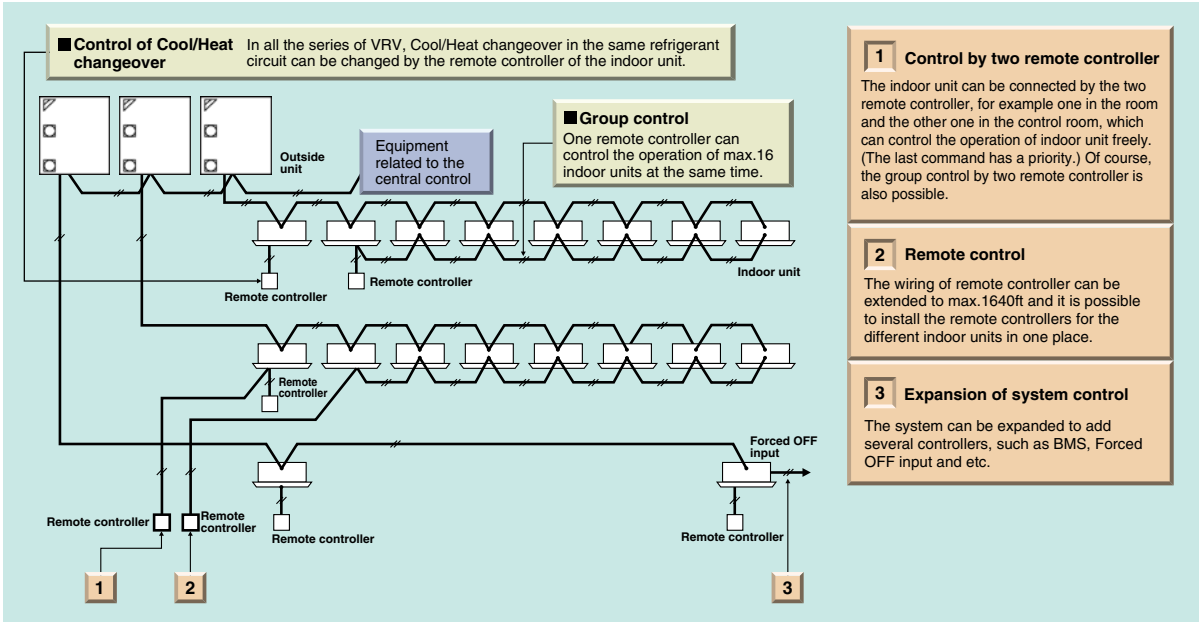
Individual Control Systems

Wired remote controller (Optional) BRC1E71

Wired remote controller

- Clear Display
  Equipped with backlight and large sized character display and buttons.
- Stylish
  Basic tone is white and arrow keys are located at the center.
- Simple Operation
  Simple operation used with arrow keys and menu-driven method.
- Multilingual Display
  Available for selection of 10 languages to display arbitrarily
- Other Features
  Wide variety of functions to meet customer needs such as schedule setting and contact address display.

The wired remote controller supports a wide range of control functions

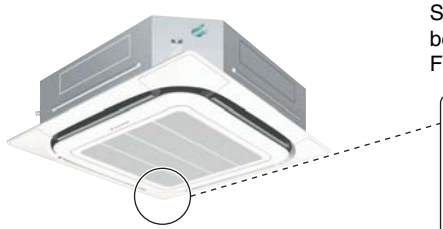


Wireless remote controller (Optional) BRC4C/BRC7E/BRC7F Type

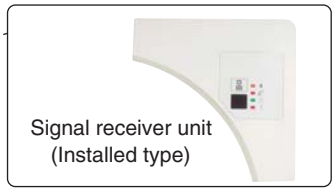
Wireless remote controller


Signal receiver unit
(Separate type)

- The same operation modes and settings as with wired remote controllers are possible.
- A compact light receiving unit to be mounted into a wall or ceiling is included.
  - A light receiving unit for a ceiling-mounted cassette type, ceiling-suspended type and wall-mounted type is mounted into the indoor unit.



Signal receiver unit can be installed on the panel FXFQ-P

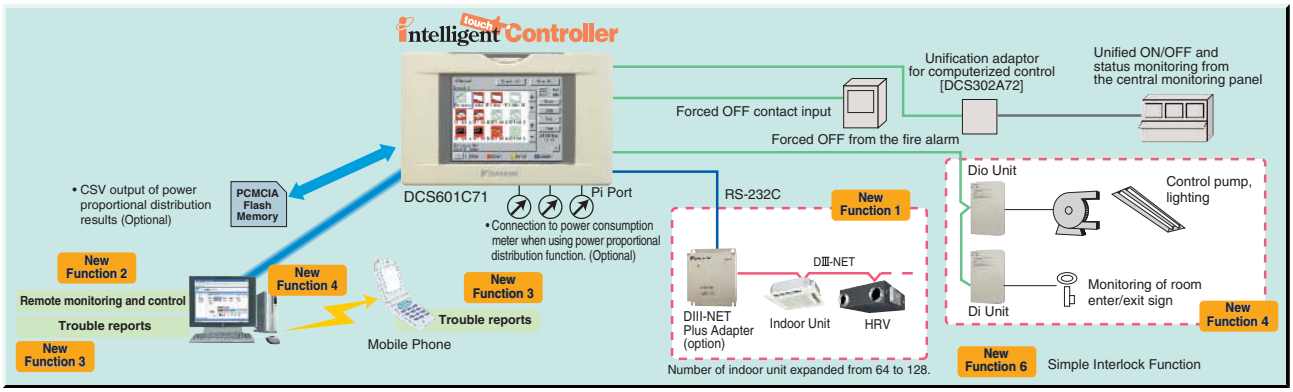


Simplified wired remote controller (Optional) BRC2A71


Exposed type

- The remote controller has centralized its frequently used operation selectors and switches (on/off, operation mode, temperature setting and airflow volume), making itself suitable for use in hotel rooms or conference rooms.

intelligent touch Controller



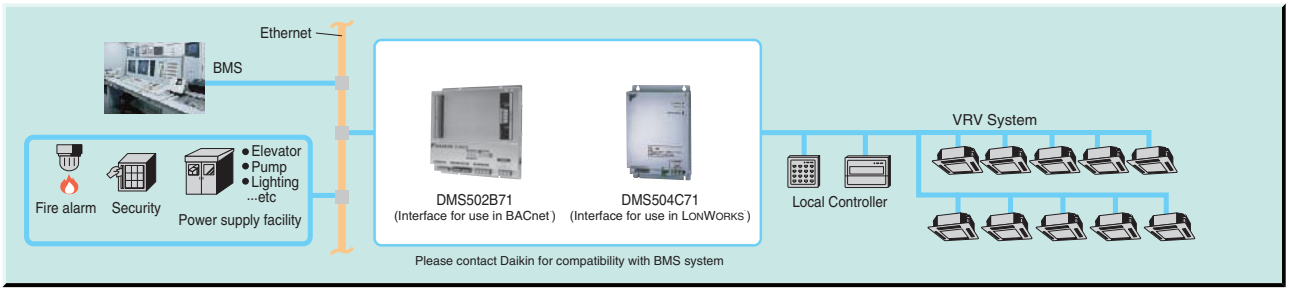
New communication functions in the user-friendly icon-based multilingual controller simplify centralized control of the VRV system.

- Color LCD touch panel icon display
- Small manageable size
- Simplified engineering
- Yearly schedule
- Auto heat/cool change-over
- Temperature limitation
- History of 500 actions
- Air Conditioning Network Service System (Optional Maintenance Service)
- Simple Interlock Function

New Functions

- **New Function 1** Doubling of number of control points by adding a DIII-NET Plus Adapter (Optional)
- **New Function 2** Support for centralized control from elsewhere using a PC with a Web browser (Optional)
- **New Function 3** Sending of e-mail alerts to a specified address when malfunctions occur (Optional)
- **New Function 4** Built-in Ethernet port for connecting to the Internet or an intranet
- **New Function 5** Management of facilities / equipment other than A/C units (Compatible with Dio unit and Di unit)
- **New Function 6** Simple Interlock Function

Interface for BACnet® and LONWORKS®



DMS504B71
(Interface for use in LONWORKS®)

DMS502B71
(Interface for use in BACnet®)

Integrated control systems that recognize the trend of open control systems

- Compatibility with BMS enhanced by utilizing the international communication standards, BACnet® or LONWORKS®.

DMS504C71 Interface for use in LONWORKS®

- XIF file for confirming of specifications of the units.
- Connectable up to 10 outdoor units and 64 indoor unit groups.

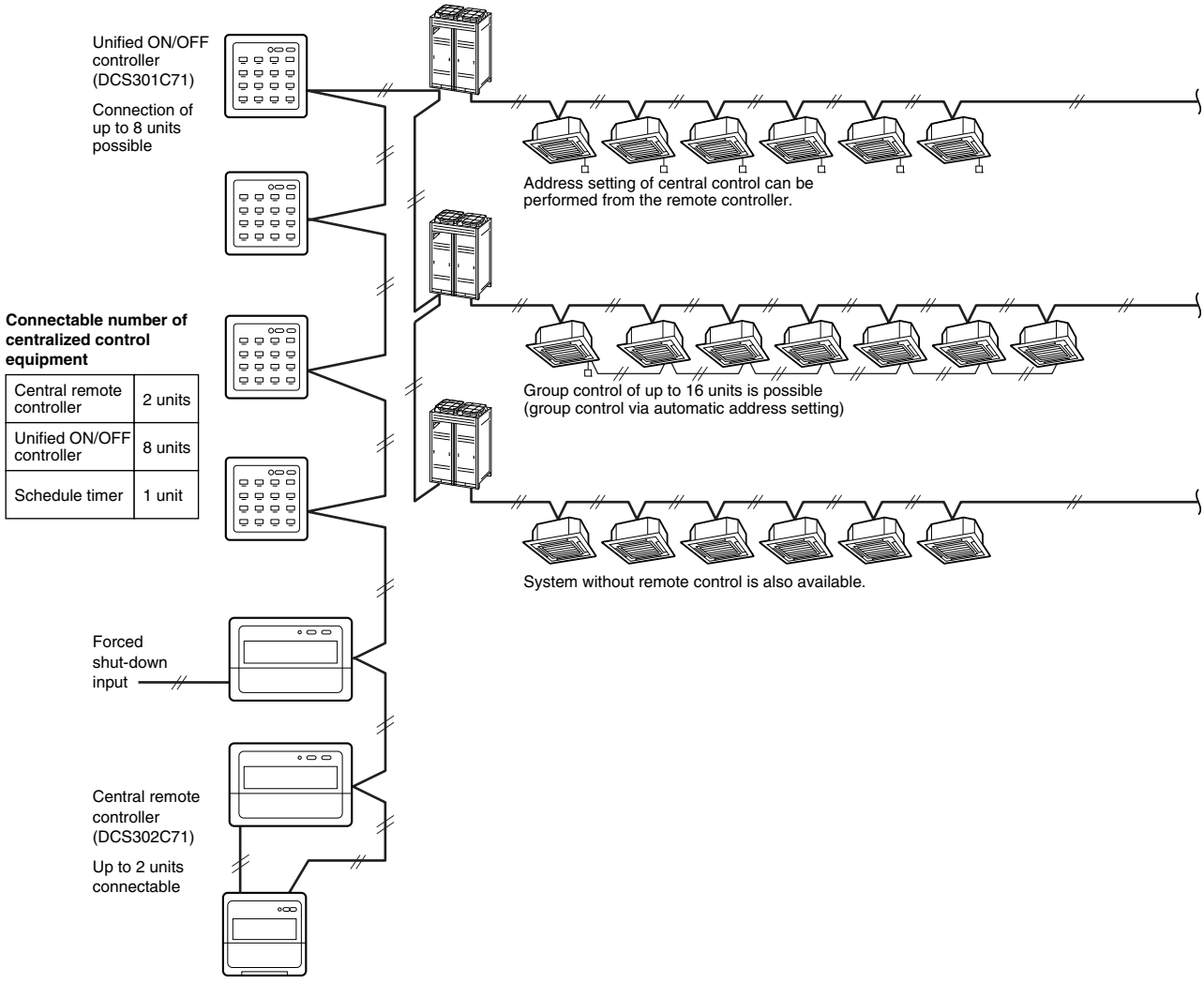
DMS502B71 Interface for use in BACnet®

- Conformance class 3 (ASHRAE 135-1995)
- Standard BACnet® Device B-ASC (ASHRAE 135-2001)
- BACnet® OPC server compatibility
- BACnet®/IP over Ethernet
- Up to 40 outdoor units and 256 indoor uit groups on one gateway. (optional adapter)

7. DAIKIN Building Air Conditioning Control System (D-BACS)

7.1 System Configuration (Central Remote Controller)

- Up to 64 groups of indoor units (128 units) can be centrally controlled.
- Optional controllers for centralized control can be combined freely, and system can be designed in accordance with building scale and purpose.
- Wiring can be run up to a total length of 6560ft, and adapts easily to large-scale system expansion.



No.	Part Name	Model No.	Function
1	Central Remote Controller	DCS302C71	Up to 64 groups of indoor units (128 units) can be connected, and on/off, temperature setting and monitoring can be accomplished individually or simultaneously. Connectable up to 2 sets into one system.
2	Unified ON/OFF Controller	DCS301C71	Up to 16 groups of indoor units (128 units) can be turned, on/off individually or simultaneously, and operation and malfunction can be displayed. Can be used in combination with up to 8 controllers.
3	Schedule Timer	DST301BA61	Programmed time weekly schedule can be controlled by unified control for up to 64 groups of indoor units (128 units). Can turn units on/off twice per day.

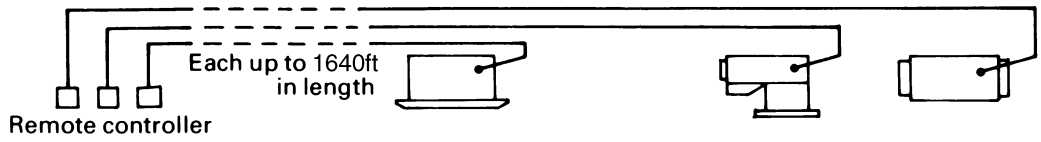
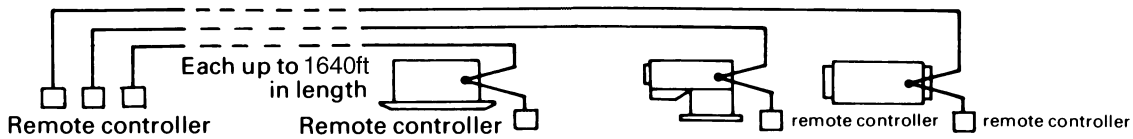
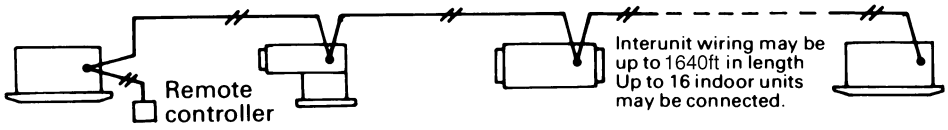
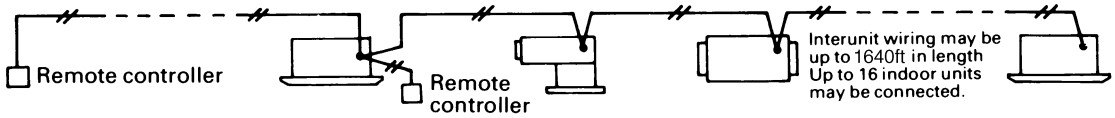
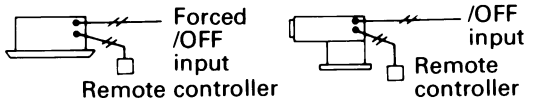
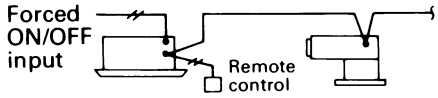
8. Control System

8.1 Various Control by Liquid Crystal Remote Controller

For more effective localized environmental control Daikin offers various control systems such as single or double remote control or centralized control. This enables the construction of a variety of operational control systems which can be adapted for various uses from remote control to building automation.

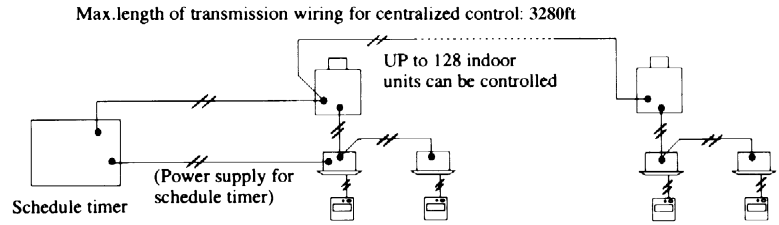
Control Method		Objective / Use	Unit Name and Model	Function	Standard Number of Units	
Control by Remote Controller	Local operation of remote controller	Example of typical use	**BRC1E71**  Connected to indoor units ■ For group control it is connected to 1 unit out of the group ■ In the case of control by 2 remote controllers both controllers are connected to the indoor unit	**Main Menu** ■ Air Flow Direction ■ Ventilation ■ Schedule ■ Off Timer ■ Celsius / Fahrenheit ■ Maintenance Information ■ Configuration ■ Current Settings ■ Clock & Calendar ■ Daylight Saving Time ■ Language **Service Settings** ■ Test Operation ■ Maintenance Contact ■ Field Settings ■ Energy Saving Options ■ Prohibit Buttons ■ Min Setpoints Differential ■ Group Address ■ Indoor unit AirNet Address ■ Outdoor unit AirNet Address ■ Error History ■ Indoor Unit Status ■ Outdoor Unit Status ■ Forced Fan ON ■ Switch Main Sub Controller ■ Filter Indicator	1 remote controller controls 1 indoor unit	
	Remote operation of remote controller	For control from distant place				
	2 remote control	For control from 2 places (distant or local)			2 remote controllers control 1 indoor unit	
	Group control ★1	For the control of plural indoor units on a floor at the same time			1 remote controller controls up to 16 indoor units simultaneously	
	★1 Group control by 2 remote controllers	For above control from distant place.			2 remote controllers control up to 16 indoor units from 2 different places simultaneously	
	Forced OFF command from outside	Forced OFF for forgetting to turn equipment off, or in times of an emergency.		■ Forcibly stops indoor unit operation by command from outside. ■ During remote controller group control, input a command from outside to any one of the indoor units.	Same as the number of units controlled by remote controller	

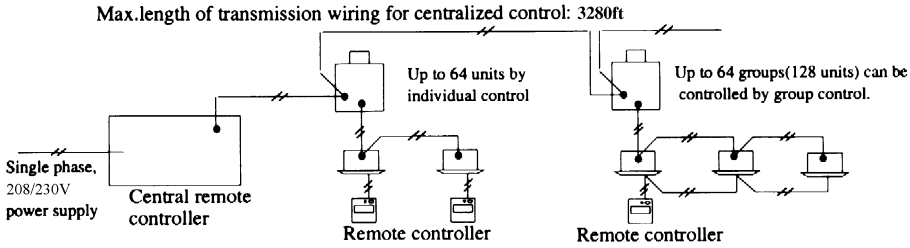
★1 In case of group control, the remote controller used as master control must be selected with auto-swing function (BRC1E71). When the group has cassette, FXF (Q)) or Wall mounted (FXA (Q)) models.

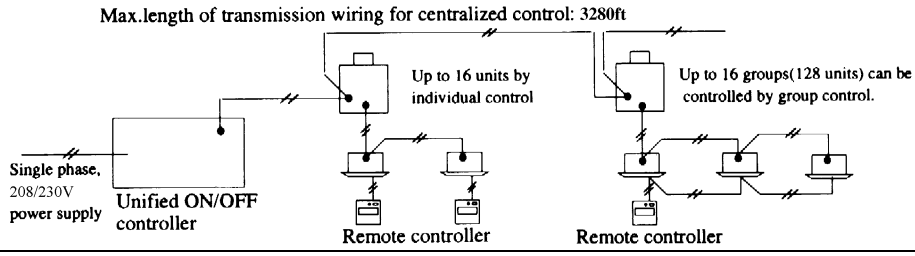
	Outline of System
	
	
	
	
	
	● For local operation of remote controller  ● For group control 

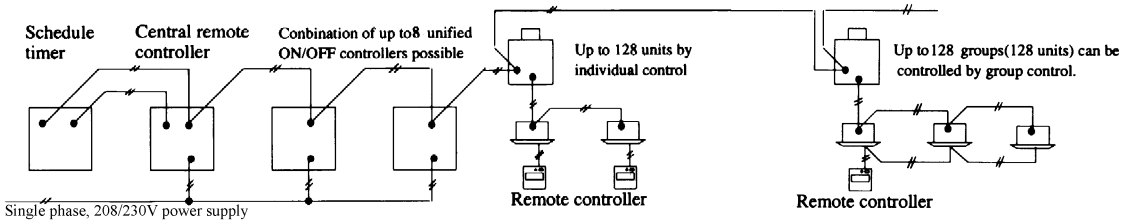
Control Method		Objective / Use	Unit Name and Model	Function	Standard Number of Units	
Central Control	Schedule timer	For carrying out weekly schedule operation by 1-minute units	**DST301BA61** 	■ ON/OFF time can be set by units of day, hour and minute; ON/OFF pattern can be set by time zone of twice per day in accordance with application.	Simultaneously controls 64 groups with one schedule timer. Max. 128 units	
	Central remote controller	For control all indoor units just like remote controller	**DCS302C71** 	64 groups (zones) of indoor units can be controlled individually same as LCD Remote controller. ■ Max.64 groups (128 indoor units controllable) ■ Max. 128 groups (128 indoor units) are controllable by using 2 central remote controllers, which can control from 2 different places. ■ Zone control ■ Malfunction code display ■ Max. wiring length 3,280-27/32ft (Total : 6,561-11/16ft) ■ Combination with Unified ON/OFF controller, schedule timer and BMS system ■ Airflow volume and direction can be controlled individually for indoor units in each group operation. ■ Ventilation volume and mode can be controlled for Heat Reclaim Ventilation (HRV). ■ Up to 4 Operation/Stop pairs can be set per	Controls up to 64 groups of indoor units with one central remote controller. Max. 128 units	
	Unified ON/OFF controller	For ON/OFF operate all indoor units just like remote controller	**DCS301C71** 	■ Double central control function ■ Indoor unit ON/OFF control ■ Individual/unified operation ■ Remote controller operation rejected command (Central remote controller given priority when used in combination with central remote controller.) ■ Sequential start function	Controls up to 16 groups of indoor units with one unified ON/OFF controller. Max. 128 units	
	■ Schedule timer ■ Central remote controller ■ Unified ON/ OFF controller	For controlling all indoor units from one place	**DST301BA61**  **DCS302C71**  **DCS301C71** 	■ Respective functions of schedule timer, central remote controller and unified ON/OFF controller are possible. (Control mode of central remote controller is given priority for operation of remote controller for indoor unit.) ■ Sequential start function	Controls up to 128 groups (Max. 128 indoor units) with one schedule timer, two central remote controller and eight unified ON/OFF controllers.	

Outline of System

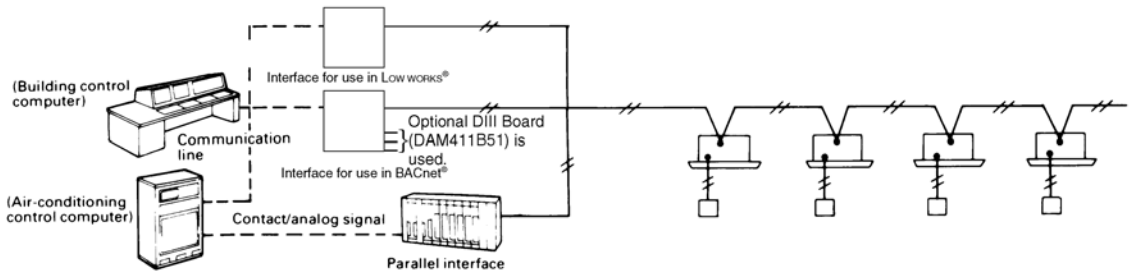








Control Method	Objective / Use	Unit Name and Model	Function	Standard Number of Controllers	
Building Control System	Building control computer, air-conditioning control computer and control system for air-conditioning are carried out by communication and contact signal.	■ Interface for use in BACnet® **DMS502B71** ■ Interface for use in LONWORKS® **DMS504C71**	■ Interface for use in BACnet® Interface unit to allow communications between VRV and BMS. ■ Interface for use in LONWORKS® The LON Gateway functions as the interface for a building monitoring system and cannot be w-installed on the DIII-NET along with following equipment / devices that have similar functions.	Interface for use in BACnet® : Up to 256 indoor units (256 groups) When the option DIII board is used Interface for use in LONWORKS® Up to 64 indoor units (64 groups)	

	Outline of System
	

8.2 Building Control System Introduction

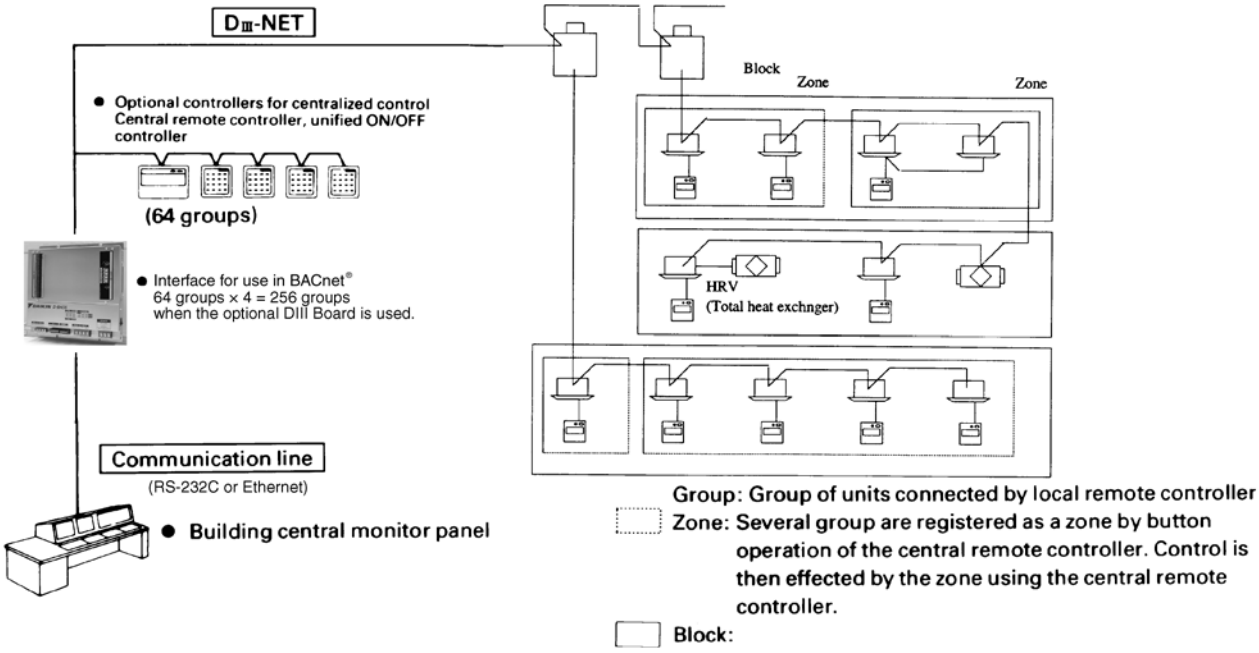
High-speed transmission type air-conditioning control system D-BACS (DAIKIN Building Air-conditioning Control System) networks up to 64 groups of indoor units (128 units). There is a complete line up of variegated control equipment for D-BACS, such as parallel interface, or a master station that can directly access a building control computer via a communication line. Changing control function to a component configuration makes D-BACS a central control system that can be flexibly combined with other equipment, which can respond to various air-conditioning control needs such as application, conditions and scale.

8.2.1 Interface for use in BACnet®

This system sets the control configuration and controls air-conditioning equipment, monitors system status and possesses a system backup function.

■ **Control configuration setting function for air-conditioning equipment**

System Outline



Name	Functions
Interface for use in BACnet® (DMS502B71)	Interface unit to allow communications between VRV and BMS. Operation and monitoring of air-conditioning systems through BACnet® communications.
Optional DIII board (DAM411B51)	Expansion kit, installed on the DMS502B71, to provide 2 more DIII-NET communication ports. Not usable independently.

Optional Di Board (DAM412B51)	Expansion kit, installed on the DMS502B71, to provide 12 more wattmeter pulse input points. Not usable independently.
Central Remote Controller (DCS302C71)	Functions as a backup if the building control systems fails.
Unified ON/OFF Controller (DCS301C71)	Central control panel for simple operation by ON/OFF switch and LED display. Also functions as a backup just as with the central remote controller.
Local Remote Controller (BRC1E71)	Provided in each room. Used for operating, setting and monitoring air-conditioning equipment.

Note:

1. A group consists of several indoor units that can be started or stopped simultaneously. As shown in the figure above, a group consists of several indoor units wired to the same remote controller. For units without a remote controller, each unit is treated as a group.
2. Several groups are registered as a zone with the central remote controller. By pushing 1 button of the central remote controller, all groups within the same zone can be turned on or off simultaneously.

Building management 1 system controls and monitors air-conditioning equipment by the block. A block consists of 1 or more groups (max. 32), and can be set without regard for the zones mentioned above. You must, however, take the following things into consideration.

(1) If the air-conditioning mode is switched, as a premise, permission for cool / heat selection for indoor units (by remote controller or central remote controller) must be designated within the program.

(2) Program status is basically monitored by observing the data of a representative unit. The contents which can be monitored are therefore restricted if the representative unit is designated as an adaptor, etc.

Block registration is accomplished through signal transmission from the building control system to the cooler-conditioning system. Because configuration can be changed while receiving power even after operating, maintenance from the maker of the air-conditioning equipment is not required when changing the configuration.

8.2.2 Air-Conditioning Equipment and possible Functions

Function	Air-Conditioner Devices	Remarks
	VRV Inverter Series	
Start/Stop Control and Monitoring	○	
Air-Conditioner Error Notification	○	
Indoor Air Temperature Monitoring	○	
Temperature Setting and Monitoring	○	
Air-Conditioning Mode Setting and Monitoring	○	Air-Conditioning mode switching is effective only for indoor units for which cool/heat selection is permitted.
★1 Remote Controller Mode Setting and Monitoring	○	
Filter Sign Monitoring and Reset	○	
Cumulative Power Value Monitoring	○	
Thermostat Status Monitoring	○	
Compressor Operation Status Monitoring	○	
Indoor Fan Operation Status Monitoring	○	
Heater Operation Status Monitoring	○	
Air Direction Setting and Monitoring	○	
Air Flow Rate Setting and Monitoring	○	
Forced Thermostat Off Setting and Monitoring	○ ★2	
Forced Thermostat On Setting and Monitoring	○ ★2	
Energy Efficiency Command (Setting Temperature Shift)	○	

Note:

★1. Remote controller mode is for acceptance or rejection of on/off operation, temperature setting and air-conditioning mode setting by remote controller.

★2. If set locally, the host is not notified. Thus, monitoring cannot be accomplished from the host.

3. The meaning of ○, × are as follows
   ○ : Possible Functions
   × : Impossible Functions

8.2.3 Central Control Equipment Combinations

The table below shows which combinations of central control equipment are possible and which are not.

	Central Remote Controller	Unified ON/OFF Controller	Schedule Timer	Wiring Adaptor for Electrical Appendices	Parallel Interface	Interface for use in BACnet®	intelligent Manager
Central Remote Controller	— ★4	○	○	×	○	○	○
Unified ON/OFF Controller	○	— ★3	○	×	○	○	○
Schedule Timer ★1	○	○	—	×	×	×	×
Wiring Adaptor for Electrical Appendices	×	×	×	—	×	×	×
Interface for use in BACnet®	○	○	×	×	×	—	×

★1 The schedule timer cannot be used by itself. Use in combination with the central remote controller or unified on/off controller.

★2 May be used in combination if control range differs (up to 4 units).

★3 May be used in combination if control range differs (up to 8 units: Up to 16 units in the double central control mode).

★4 May be used in combination if control range differs (up to 2 units: Up to 4 units in the double central control mode).

5 The meaning of ○, ×, — are as follows
- ○ : Possible Functions
- × : Impossible Functions
- — : No Functions

- If using in combination with central control equipment, the relation between them is last command priority.
- If using in combination with central control equipment, the remote control mode is decided by the setting of the highest priority item in the priority rank shown in the table below.

Priority Ranking of Remote Control Mode Settings

	Interface for use in BACnet®	Central Remote Controller	Unified ON/OFF Controller	Schedule Timer
Priority Ranking	1	2	3	4

8.2.4 Intelligent Touch Controller and Central Control Equipments Combinations

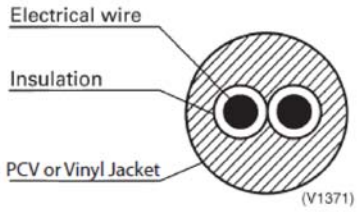
Combination	#1		#2		#3		#4	
	1-00~4-15	Main/ Sub	5-00~5-15	Main/ Sub	1-00~4-15	Main/ Sub	5-00~5-15	Main/ Sub
Impossible	intelligent Touch Controller	Main	intelligent Touch Controller	Main	intelligent Touch Controller	Sub	intelligent Touch Controller	Sub
Impossible	intelligent Touch Controller	Main	intelligent Touch Controller	Main	intelligent Touch Controller	Sub	Central Remote Controller	Sub
Impossible	intelligent Touch Controller	Main	intelligent Touch Controller	Main	Central Remote Controller	Sub	intelligent Touch Controller	Sub
Impossible	intelligent Touch Controller	Main	intelligent Touch Controller	Main	Central Remote Controller	Sub	Central Remote Controller	Sub
Impossible	intelligent Touch Controller	Main	Central Remote Controller	Main	intelligent Touch Controller	Sub	intelligent Touch Controller	Sub
Impossible	intelligent Touch Controller	Main	Central Remote Controller	Main	intelligent Touch Controller	Sub	Central Remote Controller	Sub
Impossible	intelligent Touch Controller	Main	Central Remote Controller	Main	Central Remote Controller	Sub	intelligent Touch Controller	Sub
Impossible	intelligent Touch Controller	Main	Central Remote Controller	Main	Central Remote Controller	Sub	Central Remote Controller	Sub
Impossible	Central Remote Controller	Main	intelligent Touch Controller	Main	intelligent Touch Controller	Sub	intelligent Touch Controller	Sub
Impossible	Central Remote Controller	Main	intelligent Touch Controller	Main	intelligent Touch Controller	Sub	Central Remote Controller	Sub
Impossible	Central Remote Controller	Main	intelligent Touch Controller	Main	Central Remote Controller	Sub	intelligent Touch Controller	Sub
Impossible	Central Remote Controller	Main	intelligent Touch Controller	Main	Central Remote Controller	Sub	Central Remote Controller	Sub
Impossible	Central Remote Controller	Main	Central Remote Controller	Main	intelligent Touch Controller	Sub	intelligent Touch Controller	Sub
Impossible	Central Remote Controller	Main	Central Remote Controller	Main	intelligent Touch Controller	Sub	Central Remote Controller	Sub
Impossible	Central Remote Controller	Main	Central Remote Controller	Main	Central Remote Controller	Sub	intelligent Touch Controller	Sub
Possible	Central Remote Controller	Main	Central Remote Controller	Main	Central Remote Controller	Sub	Central Remote Controller	Sub
Possible	Central Remote Controller	Main	—	—	Central Remote Controller	Sub	—	—
Possible	intelligent Touch Controller	Main	—	—	intelligent Touch Controller	Sub	—	—
Possible	Central Remote Controller	Main	—	—	intelligent Touch Controller	Sub	—	—
Possible	intelligent Touch Controller	Main	—	—	Central Remote Controller	Sub	—	—
Possible	Central Remote Controller	Main	—	—	—	—	—	—
Possible	intelligent Touch Controller	Main	—	—	—	—	—	—

8.3 Specifications of the Control Wiring

Use 2-conductor, stranded non-shielded copper cable/PVC or vinyl jacket.

- Vinyl cab tire round cord 2-conductor, 18-2 AWG, stranded, non-shielded copper
- PVC or vinyl jacket
- Plenum rated if pulled through common plenum or ductwork, per code
- Control transmission wire must be kept separate from power wiring
- Using UV stabilized cable should be standard when exposed to outside elements.

Example of Section of cord:

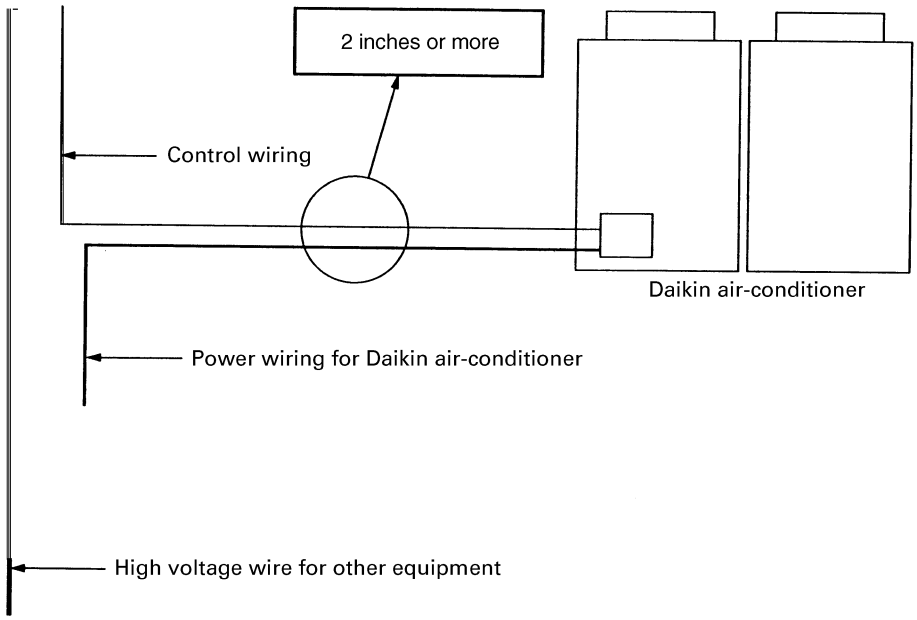


<Cautions>

1. **2-conductor, stranded non-shielded copper cable/PVC or vinyl jacket.**
2. **Never use a 3 or more core of cord or cable.**
3. **The size of wire Wire size should be AWG18-16 18-2 AWG, maximum 1640 ft.**
4. **Never bundle the transmission line cables or cords.**
5. **Be sure to keep the transmission wiring distant from power wiring.**

[Example]

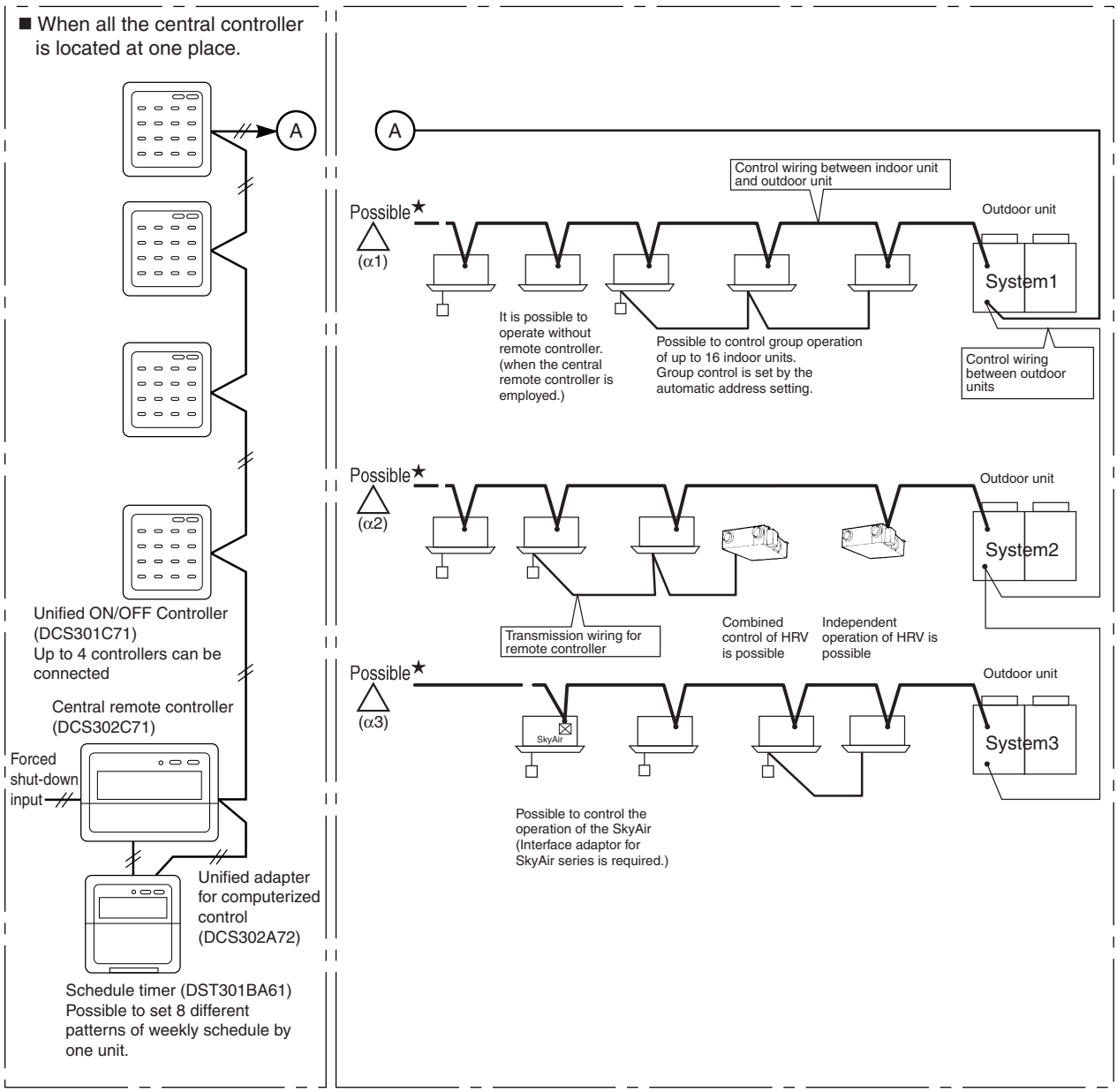
8.4 Wiring Example



Example of Control Wiring

- Be sure to connect the wiring of the central controller to control wiring between outdoor units.
  When wiring connections are made between indoor and outdoor units, there may be cases where control over normal systems may become impossible if one of the connected systems should happen to fail.
- Be sure to prevent the connection of three wires on the same terminal.

<Pattern 1>



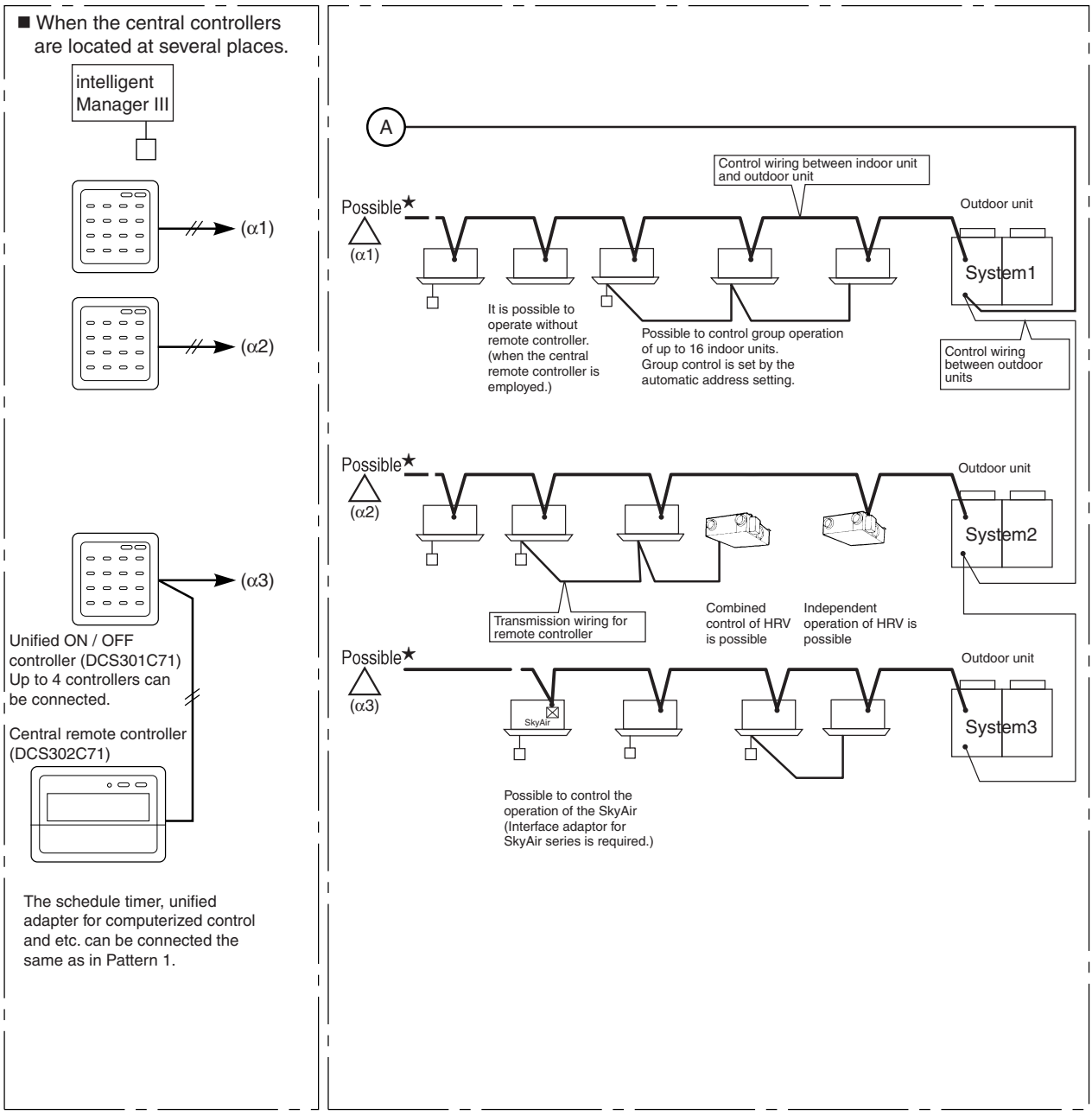
The advantages when the central controller are connected to A.

- If the central controllers are connected to A, it is still possible to have a central control, even if the power supply of other circuit connected to the central controller is shut-off. (even if the power is shut off due to long vacation etc.)

Caution:

★1. It is not recommended to connect a centralized device on (αi), as there is a risk to loose control over all systems.
e.g.; If central remote controller is connected on α 1, and System1 shut down, control over System2 and System3 units is lost.

<Pattern 2>



The advantages when the central controller are connected to A.

■ If the central controllers are connected to A, it is still possible to have a central control, even if the power supply of other circuit connected to the central controller is shut-off. (even if the power is shut off due to long vacation etc.)

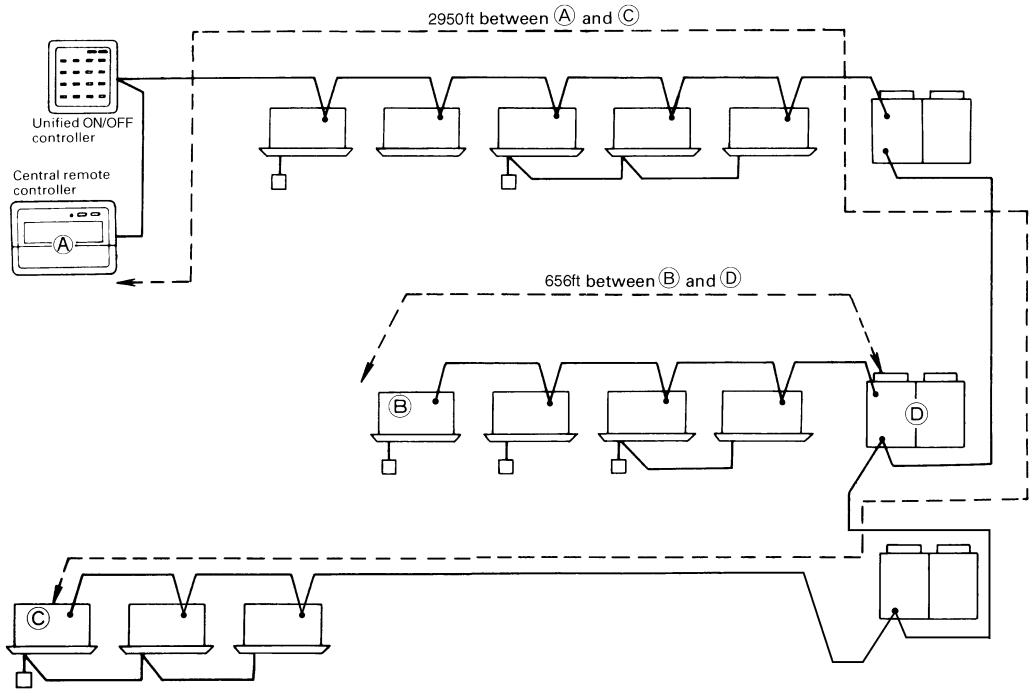
Caution:

★1. It is not recommended to connect a centralized device on (αi), as there is a risk to loose control over all systems.
e.g.; If central remote controller is connected on α 1, and System1 shut down, control over System2 and System3 units is lost.

8.5 Length of Transmission Wiring

The super wiring system, which integrates the control wiring between indoor unit and outdoor unit and the transmission wiring to the central controllers into one common wiring, should satisfy the following limitation.
The longest extension of wiring: Not exceeding 3280ft
Total length of wiring: Not exceeding 6560ft

8.5.1 Example of Wiring



- In the above system, the longest extension of wiring is 2950ft between (A) and (C), which satisfies the limit of 3280ft. And the total length is 3610ft, that is the total of 2950ft between (A) and (C) and 656ft between (B) and (D), which also satisfies the limit of 6560ft. The central controller functions properly, only when both the longest extension and the total length of wiring satisfies the limitation, as shown above.

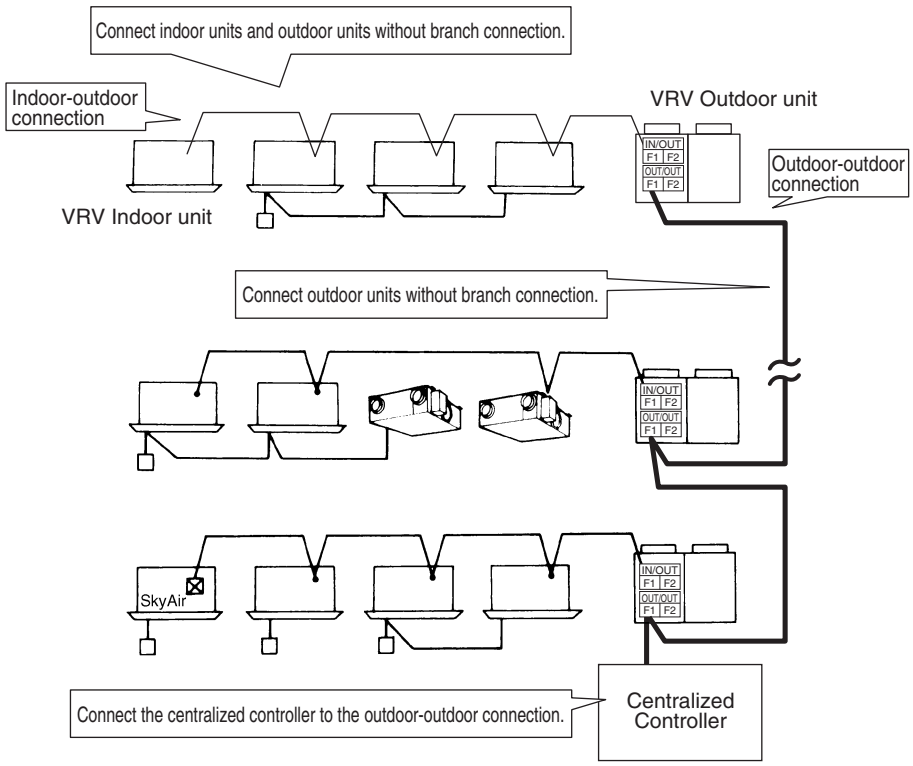
Caution:
When designing the system, be sure to check both the longest extension and the total length of wiring. If it exceeds the limitation, there is no other way but to split into several systems.

8.6 Connection Method

8.6.1 Correct wiring

- Series wiring method only should be used.

[Example]



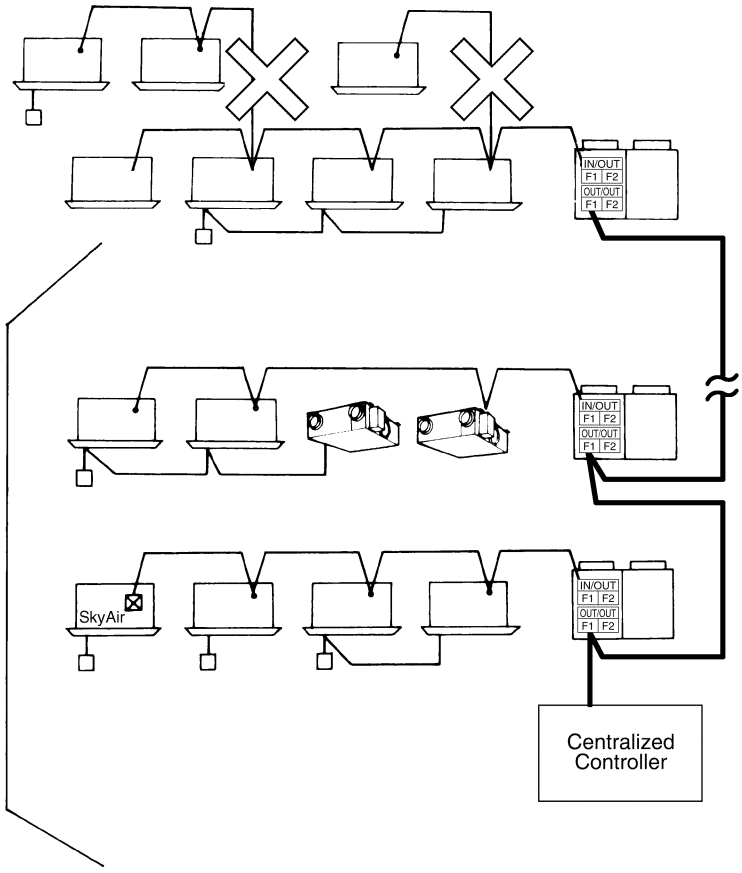
Note:
Be sure to have indoor-outdoor control wiring and that of refrigerant system coincide.
Crossed wiring will cause malfunctioning.

8.6.2 Incorrect Wiring example

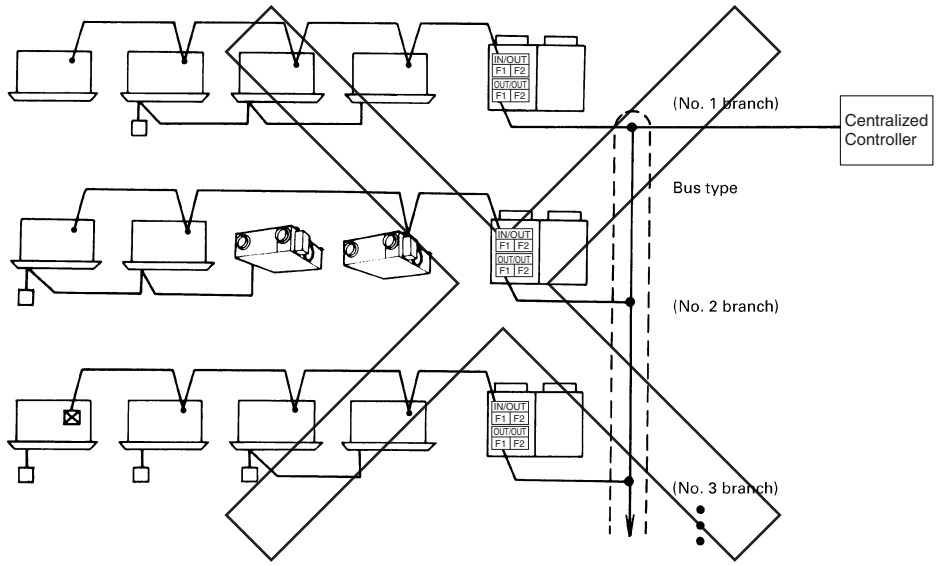
Caution:
Communication problems could occur.

[Incorrect Wiring Example 1]

- Series wiring method only should be used.

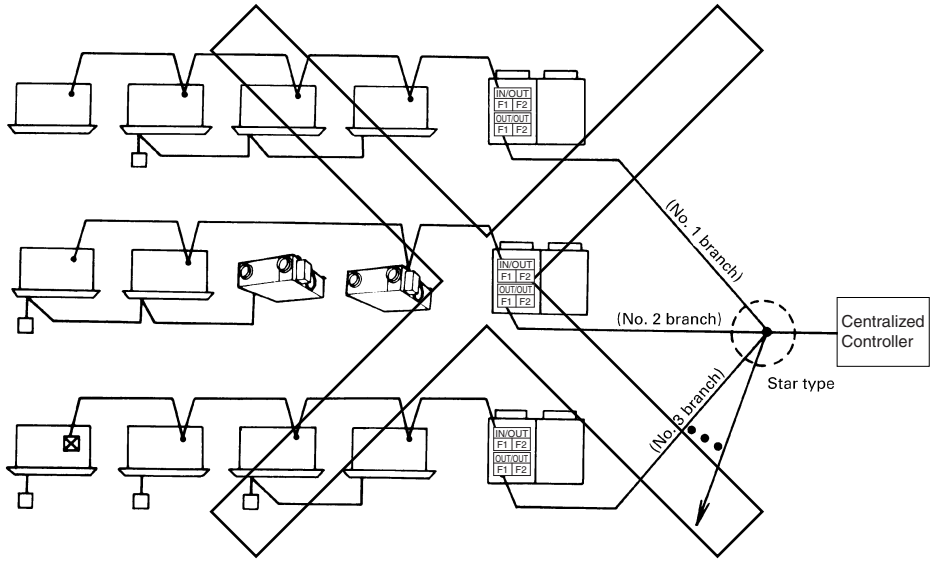


[Incorrect Wiring Example 2]



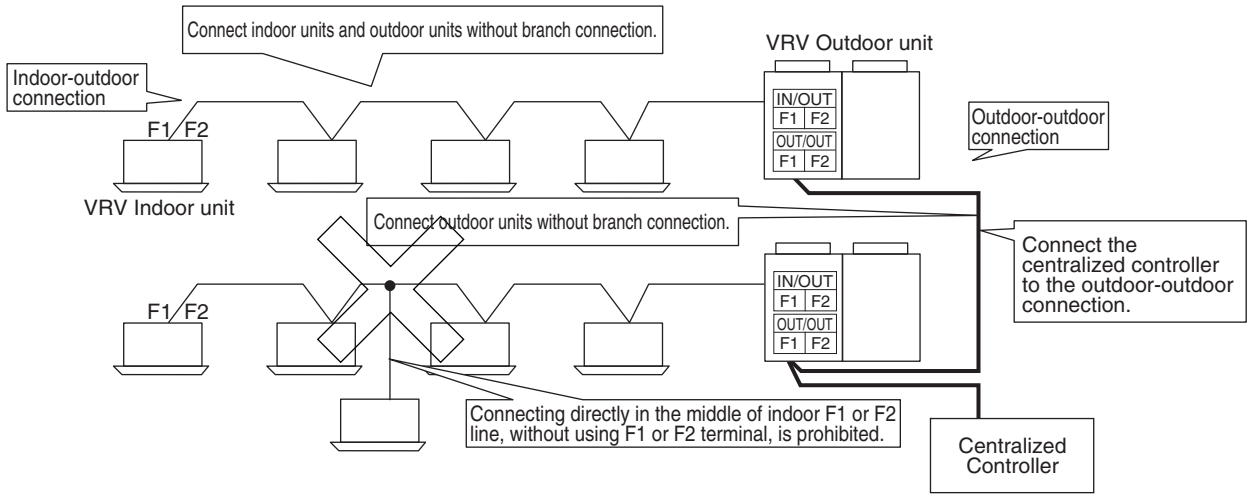
Caution:
[Reason]
Communication problems could occur.

[Incorrect Wiring Example 3]

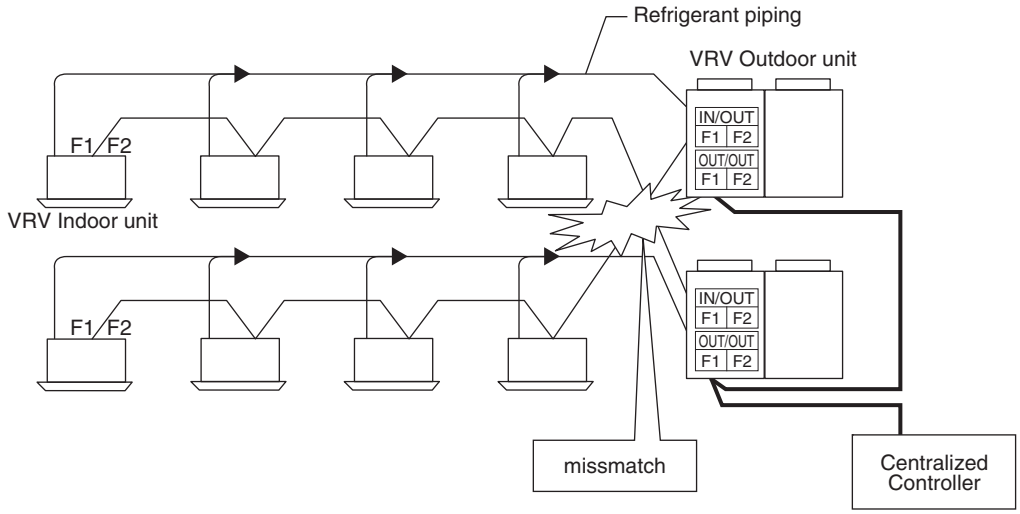


Caution:
[Reason]
Communication problems could occur.

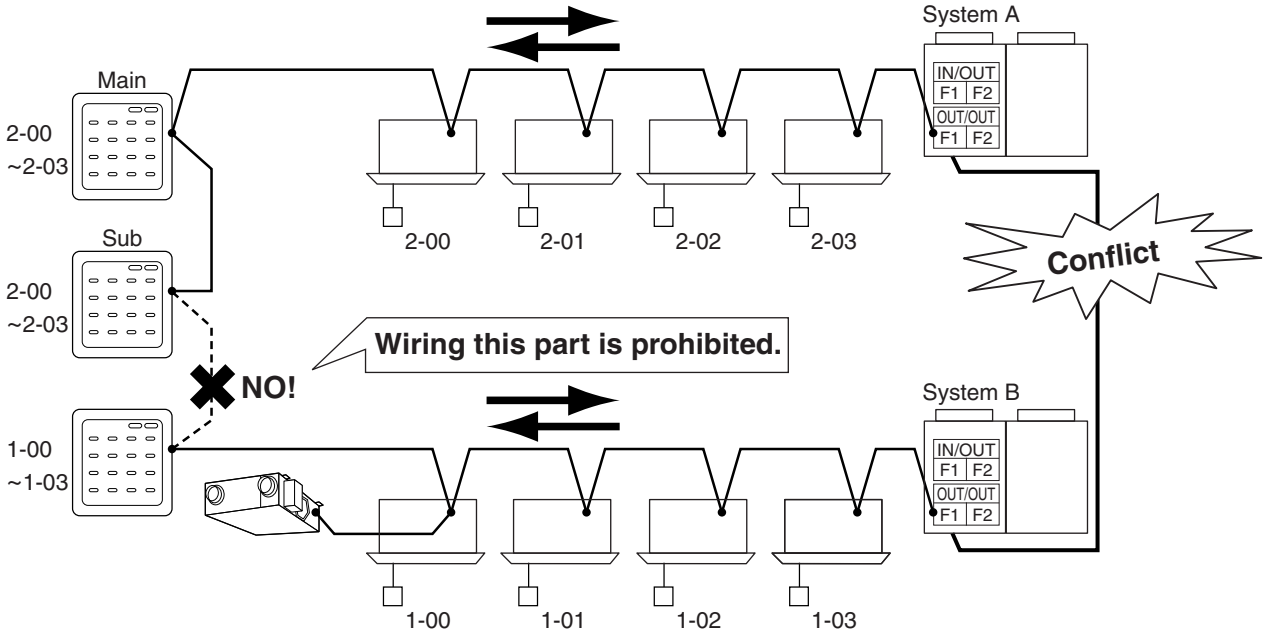
[Incorrect Wiring Example 4]



[Incorrect Wiring Example 5]



[Incorrect Wiring Example 6]



8.6.3 Number of Connectable Units

	Central Control Equipment	Indoor Unit	Outdoor Unit	Other Adaptors
Target Controller (Max. Number)	■ Central remote controller (2 units) (Note 1) ■ Unified ON/OFF controller (8 units) (Note 1) ■ Schedule timer (1 unit) ■ Interface for use in LONWORKS® (1 unit)	■ VRV system ■ Branch Selector unit (Note 3) ■ Wiring adaptor	Outdoor unit for VRV system	■ External control adaptor for outdoor unit ■ Wiring adaptor for electrical appendices (1)
Number of Units	(Note 2)	Up to 128 units (Note 5)	Up to 10 units (Note 4)	Up to 10 units

Note:

1. When you have a 2 central control system (to control one system from 2 central locations), 2 intelligent Touch Controllers, 4 central remote controllers and 16 unified ON/OFF controllers can be connected. However, a maximum of 128 units can only be controlled.
2. When you connect 8 or more central control equipment, it is required to satisfy the following conditions. (The following conditions are not required to be considered when the number of controller is 7 or less.)

■ **Central control equipment + Indoor units + Outdoor units + other adaptors ≤ 160 units**

■ **Central Conversion number of central control equipment (★) + Indoor units + Outdoor units + other adaptors ≤ 200 units**

(Note: (★) is converted one central control equipment except unified ON/OFF controller as 10 units.)

3. When Branch Selector unit is installed, Branch Selector unit is not counted in the number. However, the indoor units after Branch Selector unit should be counted.

8.6.4 Flow Chart to Determined the Number of Units to Connected

The outdoor unit is limited up to a maximum of 10 units.

CHECK SHEET FOR NUMBER OF UNIT IN ONE SYSTEM

Centralized controller	Qty	Y/N	
Central remote controller (Note 1)			≦2
Unified ON/OFF controller			≦8
Schedule timer			≦1
Interface for use in BACnet® (Note 3)			≦1
Total			≦7
			≧8

	× 10	=	
	× 10	=	
	× 1 (A)	=	
	× 10	=	
	× 10	=	
	× 10	=	

Indoor unit	Qty	Y/N	
VRV			
Branch Selector unit (Note 2)			
			≦128
Total			

Outdoor unit	Qty	Y/N	
RXYQ-PB, REYQ-PB			
Total			≦10 (B)

Other adaptors	Qty	Y/N	
External control adaptor for outdoor unit			
Wiring adaptor for electrical appendices			
Total			≦10

□ + □ + □ + □ = □ ≦ 200

Note:

Condition

(A) means;

- Central control equipment + Indoor units + Outdoor units + other adaptors ≤ 160 units
- Conversion number of central control equipment + Indoor units + Outdoor units + other adaptors ≤ 200 units

(B) means;

In case of connecting to DIII-NET

- Outdoor units must be counted to one system even in case of including 3 units. (Master + Master + Master = One system)
- The outdoor units connected by terminal Ex. Q1, Q2 (excepting terminal F_1, F_2) are regarded as one system.

Control wiring		Y/N	
Maximum extension	ft		< 3280
Total wiring length	ft		≦ 6560
Wiring Branch			≦ 16

Notes:

1. When a Branch Selector unit is used, the indoor units used in its downstream are not counted.
2. One port of one Interface for use in BACnet® can have up to 64 groups (64 master indoor units with address). In case of adopting group controlling, the circuit covered by the data station can have up to 128 indoor units including main and sub units.

8. Guide Specifications

8.1 Guide Specifications

General

Unit shall be air cooled, split type multi-system air conditioner consisting of one outdoor unit and plural indoor units, each having capability to cool or heat independently for the requirements of the rooms.
Up to 8 different type indoor units can be connected to one refrigerant circuit and controlled individually.
Compressor shall be equipped with inverter controller, and capable of changing the rotating speed to follow variations in cooling and heating load.
Outdoor unit shall be suitable for mix-match connection of following models.

- Ceiling Mounted Cassette Type (Round Flow)
- 4-Way Ceiling Mounted Cassette Type (2'×2')
- Slim Ceiling Mounted Duct Type
- Ceiling Mounted Duct Type
- Ceiling Suspended Type
- Wall Mounted Type
- Floor Standing Type
- Concealed Floor Standing Type
- Air Handling Unit
- Refrigerant : R-410A

8.1.1 PB Series Outdoor Unit

The refrigerant piping shall be extended up to 540ft with 164ft (★1) level difference without any oil traps.

- Air conditioner shall operate continuously at the ambient temperature of 23°F in cooling 0°F in heating.
  Both indoor unit outdoor unit are assembled, tested, and charged with refrigerant at the factory.
  ★1: The value is based on the case where the outdoor unit is located above indoor unit. Where the outdoor unit is located under the indoor unit, the level difference is a maximum of 130ft.

Outdoor Unit

The outdoor unit shall be a factory assembled unit housed in a sturdy weatherproof casing constructed form rust-proofed mild steel panels coated with a baked enamel finish.

- The outdoor unit of shall have two of scroll compressors and be able to operate even in case that one of compressors is out of order.
- The outdoor unit shall be modular in design and should be allowed for side by side installation.

Compressor

The compressor shall be of highly efficient hermetic scroll type and equipped with inverter control capable of changing the speed in accordance to the cooling or heating load requirement.

- The outdoor unit shall have the multi-step of capacity control to meet load fluctuation and indoor unit individual control.

Heat Exchanger

The heat exchanger shall be constructed with copper tubes mechanically bonded to aluminium fins to form a cross fin coil.

- The aluminium fins shall be covered by anti-corrosion resin film.

Refrigerant Circuit

The refrigerant circuit shall include liquid and gas shut off valves and a solenoid valves.
All necessary safety devices shall be provided to ensure the safety operation of the system.

Safety Devices
The following safety devices shall be part of the outdoor unit.
High Pressure Switch, Overload Relay, Inverter Overload Protector, Fusible Plugs.

Oil Recovery System
Unit shall be equipped with an oil recovery system to ensure stable operation with long refrigerant piping.

8.1.2 Indoor Units

Each indoor unit shall be of the Ceiling Mounted Cassette Type (Round flow), 4-Way Ceiling Mounted Cassette Type (2'×2'), or Slim Ceiling Mounted Duct Type, or Ceiling Mounted Duct Type, or Ceiling Suspended Type, or Wall Mounted Type, or Floor Standing Type, or Concealed Floor Standing Type, or Air Handling Unit. It shall have electronic control valve which control refrigerant flow rate in respond to load variations of the room. The fan shall be of the dual suction multi blade type and statically and dynamically balanced to ensure low noise and vibration free operation.

- The address of the indoor unit shall be set automatically in case of individual and group control.
- In case of centralized control, it shall be set by liquid crystal remote controller.

Control
Computerized PID control shall be used to maintain a correct room temperature.
Unit shall be equipped with a self-diagnosis for easy and quick maintenance and service.
The LCD (Liquid Crystal Display) remote controller shall memorize the latest malfunction code for easy maintenance.

- It shall be able to control up to 16 indoor units and change fan speed and angle of swing flap individually in the group.

Central Remote Controller (Option)
A multi-functional centralized controller (central remote controller) shall be supplied as optional accessory.

- It shall be able to control up to 64 zones of 64 groups (each group consists of Max. 16 units) or 128 Numbers of indoor units with the following functions.
  a) Temperature setting for each zone, or group, or indoor unit.
  b) On / off as a zone or individual unit.
  c) Indication of operating condition.
  d) Select one of 10 operation modes for each zone.
- The controller shall have wide screen liquid crystal display and can be wired by a non-polar 2-wire transmission cable to a distance of 1 km away from the indoor unit.

Unified ON / OFF Controller (Option)
Unified ON / OFF controller shall be supplied as optional accessory.
It shall be able to control up to 16 groups (each group consists of Max. 16 indoor units) or 128 No.s of indoor units with the following functions.
a) On/off as a zone or individual unit.
b) Indication of operation condition of each group.
c) Select one of 4 operation modes.

It shall be wired by a non-polar 2-wire transmission cable to a distance of 1 km away from indoor unit.

Schedule Timer (Option)
A schedule timer shall be supplied as optional accessory.

- It shall be able to set operation schedule of up to 128 No.s of indoor units.
  The operation schedule shall include twice on/off a day and holiday.
- It shall be able to set 8 pattern of schedule combined with centralized controller.

9. CAUTION FOR REFRIGERANT LEAKS

(Points to note in connection with refrigerant leaks)

Introduction:

The installer and system specialist shall secure safety against leakage according to local regulations or standards. The following standards may be applicable if local regulations are not available.

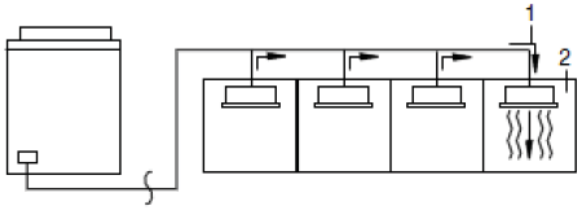
The VRV System, like other air conditioning systems, uses R-410A as refrigerant. R-410A is an entirely safe non-toxic, non-combustible refrigerant. Nevertheless care must be taken to ensure that air conditioning facilities are installed in a room that is sufficiently large. This assures that the maximum concentration level of refrigerant gas is not exceeded, in the unlikely event of major leak in the system and this in accordance to the local applicable regulations and standards.

Maximum concentration level

The maximum charge of refrigerant and the calculation of the maximum concentration of refrigerant is directly related to the humanly occupied space in to which it could leak.

The unit of measurement of the concentration is lb/ft^3 (the weight in lb of the refrigerant gas in 1 ft^3 volume of the occupied space).

Compliance to the local applicable regulations and standards for the maximum allowable concentration level is required.



1. direction of the refrigerant flow
2. room where refrigerant leak has occurred (outflow of all the refrigerant from the system)

Pay special attention to the place, such as a basement, etc., where refrigerant can stay, since refrigerant is heavier than air.

Procedure for checking maximum concentration

Check the maximum concentration level in accordance with steps 1–2 below and take whatever action is necessary to comply.

1. Calculate the amount of refrigerant (lb) charged to each system separately.

amount of refrigerant in a single unit system (amount of refrigerant with which the system is charged before leaving the factory)	+	additional charging amount (amount of refrigerant added locally in accordance with the length or diameter of the refrigerant piping)	=	total amount of refrigerant (lb) in the system

- Where a single refrigerant facility is divided into 2 entirely independent refrigerant systems then use the amount of refrigerant with which each separate system is charged.

2. Follow local code requirements (ASHRAE-15 2007 & ASHRAE-34 2007).

10. Safety Devices Setting

	Safety Devices		07	09	12	18	24	30	36	42	48	54	72	96
FXFQ-PVJU	PC board fuse		-	250V 5A	250V 5A	250V 5A	250V 5A	250V 5A	250V 5A	-	250V 5A	-	-	-
	Fan motor thermal fuse	°F	-	-	-	-	-	-	-	-	-	-	-	-
	Fan motor thermal protector	°F	-	-	-	-	-	-	-	-	-	-	-	-
FXZQ-M7VJU	PC board fuse		250V 5A	250V 5A	250V 5A	250V 5A	-	-	-	-	-	-	-	-
	Fan motor thermal fuse	°F	-	-	-	-	-	-	-	-	-	-	-	-
	Fan motor thermal protector	°F	OFF:266±9 ON:181±36	OFF:266±9 ON:181±36	OFF:266±9 ON:181±36	OFF:266±9 ON:181±36	-	-	-	-	-	-	-	-
FXDQ-MVJU	PC board (A1P) fuse		250V 5A	250V 5A	250V 5A	250V 5A	250V 5A	-	-	-	-	-	-	-
	Fan motor thermal protector	°F	OFF:266±9 ON:181±27	OFF:266±9 ON:181±27	OFF:266±9 ON:181±27	OFF:266±9 ON:181±27	OFF:266±9 ON:181±27	-	-	-	-	-	-	-
FXMQ-PVJU	PC board fuse		250V 3.15A	250V 3.15A	250V 3.15A	250V 3.15A	250V 3.15A	250V 3.15A	250V 3.15A	-	250V 3.15A	-	-	-
	PC board fuse (Fan driver)		250V 5A	250V 5A	250V 5A	250V 6.3A	250V 6.3A	250V 6.3A	250V 6.3A	-	250V 6.3A	-	-	-
	Drain pump thermal fuse	°F	293	293	293	293	293	293	293	-	293	-	-	-
FXMQ-MVJU	PC board fuse		-	-	-	-	-	-	-	-	-	-	250V 10A	250V 10A
	Fan motor thermal fuse	°F	-	-	-	-	-	-	-	-	-	-	-	-
	Fan motor thermal protector	°F	-	-	-	-	-	-	-	-	-	-	OFF:275±14 (ON:189±27)	OFF:275±14 (ON:189±27)
FXHQ-MVJU	PC board fuse		-	-	250V 5A	-	250V 5A	-	250V 5A	-	-	-	-	-
	Fan motor thermal fuse	°F	-	-	-	-	-	-	-	-	-	-	-	-
	Fan motor thermal protector	°F	-	-	OFF:266±9 ON:176±36	-	OFF:266±9 ON:176±36	-	OFF:266±9 ON:176±36	-	-	-	-	-
FXAQ-MVJU	PC board fuse		250V 3.15A	250V 3.15A	250V 3.15A	250V 3.15A	250V 3.15A	-	-	-	-	-	-	-
	Fan motor thermal fuse	°F	-	-	-	-	-	-	-	-	-	-	-	-
	Fan motor thermal protector	°F	-	-	-	-	-	-	-	-	-	-	-	-
FXLQ-MVJU FXNQ-MVJU	PC board fuse		-	-	250V 10A	250V 10A	250V 10A	-	-	-	-	-	-	-
	Fan motor thermal protector	°F	-	-	OFF:275±18 ON:248 or less	OFF:275±18 ON:248 or less	OFF:275±18 ON:248 or less	-	-	-	-	-	-	-
FXTQ-PAVJU	PC board fuse (A1P)		-	-	T3.15A, 250V	T3.15A, 250V	T3.15A, 250V	T3.15A, 250V	T3.15A, 250V	T3.15A, 250V	T3.15A, 250V	T3.15A, 250V	-	-
	PC board fuse (A2P)		-	-	T3.15A, 250V	T3.15A, 250V	T3.15A, 250V	T3.15A, 250V	T3.15A, 250V	T3.15A, 250V	T3.15A, 250V	T3.15A, 250V	-	-
	Fan driver overload protector	°F	-	-	248	248	248	248	248	248	248	248	-	-

Warning

Daikin Industries, Ltd.'s products are manufactured for export to numerous countries throughout the world. Daikin Industries, Ltd. does not have control over which products are exported to and used in a particular country. Prior to purchase, please therefore confirm with your local authorized importer, distributor and/or retailer whether this product conforms tot he applicable standards, and is suitable for use, in the region where the product will be used. This statement does not purport to exclude, restrict or modify the application of any local legislation.

Ask a qualified installer or contractor to install this product. Do not try to install the product yourself. Improper installation can result in water or refrigerant leakage, electrical shock, fire, or explosion.

Use only those parts and accessories supplied or specified by Daikin. Ask a qualified installer or contractor to install those parts and accessories. Use of unauthorized 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 inquiries, please contact your local importer, distributor, or retailer.

C ETL LISTED US

Intertek

CERTIFIED JQA MANAGEMENT SYSTEM ISO 9001 JMI-0107

CERTIFIED JQA MANAGEMENT SYSTEM ISO 9001 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.

ISO 14001 JACO JAPAN AUDIT AND CERTIFICATION ORGANIZATION FOR ENVIRONMENT AND QUALITY 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 program of environmental protection procedures and activities to meet the requirements of ISO 14001.

Dealer

DAIKIN AC (AMERICAS), INC.
1645 Wallace Drive, Suite 110
Carrollton, TX75006
info@daikinac.com
www.daikinac.com

● Specifications, designs and other content appearing in this brochure are current as of March 2011 but subject to change without notice.

EDUS391004-M
Printed in U.S.A. 3/2011 B AK