

technical data

Centralised control systems

air conditioning systems

R-410A



Centralised control systems

R-410A

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1 Possible centralised control systems

Centralised control of the system can be achieved via 3 user friendly compact controls: centralised remote control, unified on/off control and schedule timer. These controls may be used independently or in combination where 1 group = several (up to 16) indoor units in combination and 1 zone = several groups in combination.

A centralised remote control is ideal for use in tenanted commercial buildings subject to random occupation, enabling indoor units to be classified in groups per tenant (zoning).

The schedule timer programmes the schedule and operation conditions for each tenant and the control can easily be reset according to varying requirements.



Centralised remote control - DCS302C51

 $\label{eq:providing individual control of 64 groups (zones) of indoor units.$

- A maximum of 64 groups (128 indoor units, max. 10 outdoor units) can be controlled.
- A maximum of 128 groups (128 indoor units, max. 10 outdoor units) can be controlled via 2 central remote controls in separate locations.
- · Zone control
- Group control
- · Malfunction code display
- Maximum wiring length of 1,000m (total:2,000m)
- · HRV air flow direction & air flow rate can be controlled
- Expanded timer function



Unified on/off control - DCS301B51

Providing simultaneous and individual control of 16 groups of indoor units.

- A maximum of 16 groups (128 indoor units) can be controlled
- 2 remote controls in separate locations can be used
- · Operating status indication (normal operation, alarm)
- · Centralised control indication
- Maximum wiring length of 1,000m (total:2,000m)

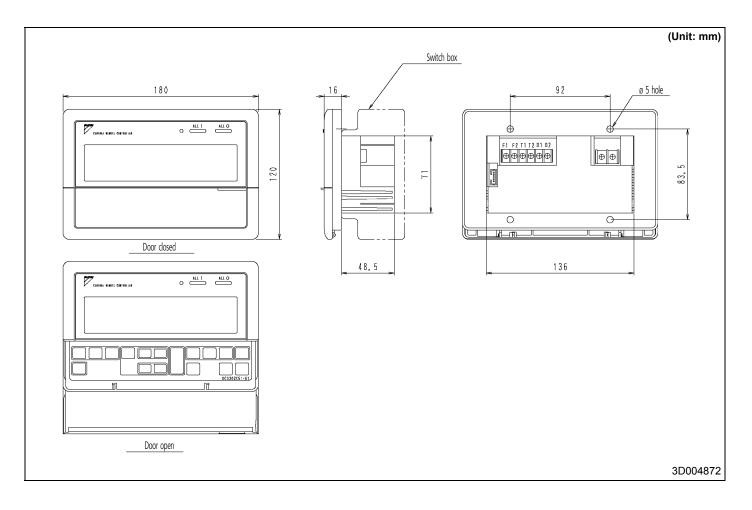
Schedule timer - DST301B51

Enabling 64 groups to be programmed.

- A maximum of 128 indoor units can be controlled
- 8 types of weekly schedule
- · A maximum of 48 hours back up power supply
- A maximum wiring length of 1,000m (total:2,000m)

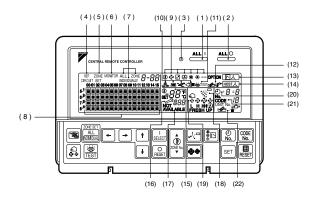
2 DCS302C51: Centralised remote control

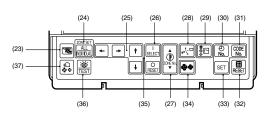
2 - 1 Dimensional drawing



2 DCS302C51: Centralised remote control

2 - 2 Explanation of buttons and functions

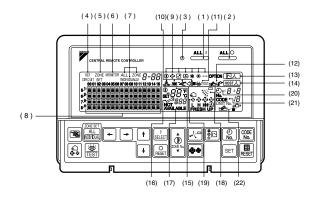


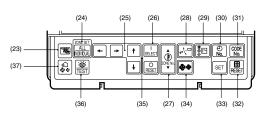


	UNIFIED OPERATION BUTTON		"NOT AVAILABLE" DISPLAY (NO FUNCITON DISPLAY)
1	Press to operate all indoor units.		If a function is not available in the indoor unit even if the button is pressed, "NOT AVAILABLE"
	UNIFIED STOP BUTTON		is may be displayed for a few seconds.
2	Press to stop all indoor units.		" 🚀 " DISPLAY (FAN DIRECTION SWING DISPLAY)
	OPERATION LAMP (RED)	18	This displays whether the fan direction is fixed or set to swing.
3	Lit while any of the indoor units under control is in operation.		" € " " € * * * * * * * * * * * * * * *
	"CIRCUIT " DISPLAY (REFRIGERANT SYSTEM DISPLAY)	19	STRENGTH DISPLAY)
4	The indication in the square is lit while the refrigerant system is being displayed.		This displays the set fan strength.
-	"ZONE " DISPLAY (ZONE SETTING)	00	" (IND. " DISPLAY (TIME NO.)
5	The lamp is lit while setting zones.	20	Displays the operation timer No. when used in conjunction with the shedule timer.
0	"MONITOR " DISPLAY (OPERATION MONITOR)		" CODE IE " DISPLAY (OPERATION CODE AND UNIT NUMBER DISPLAY)
6	The lamp is lit while operation is being monitored.	04	The method of operation (remote controller prohibited, central operation priority after-
7	"ALL" "ZONE" "INDIVIDUALLY" DISPLAY	21	press operation priority, etc.) is displayed by the corresponding code.
7	The status displays indicates either batch functions or which zone or individual unit (or group) are being used.		This displays the numbers of any indoor units which have stopped due to an error.
8	OPERATION MONITOR	22	" LOGING TIME TO CLEAN AIR CLEANER ELEMENT/TIME TO CLEAN AIR FILTER)
	Each square displays the state corresponding to each group.		Displayed to notify the user it is time to clean the air filter of air cleaner element of the group displayed.
9	"()" "�" "€] " "€] " "★" " ()" " " DISPLAY (OPERATION MODE)		VENTILATION MODE BUTTON
9	Displays operating state.	23	This is pressed to switch the ventilation mode of the total enthalphy heat exchanger.
10	"""∞"" "∞"" " <≣ " " CISPLAY (VENTILATION CLEANING DISPLAY)	24	ALL/INDIVIDUAL BUTTON
10	This is displayed when a Ventiair total enthalphy heat exchanger unit or other such unit is connected.	24	Pressing this button scrolls through the "all screen", "zone screen", and "individual screen"/
11	"₩ TEST" DISPLAY (INSPECTION/TEST)	25	ARROW KEY BUTTON
11	Pressing the maintenance/test run button (for service) displays this. This button should not normally be used.	25	This button is pressed when calling an individual indoor unit or a zone.
12	" LOPIC TIME TO CLEAN)	26	ON/OFF BUTTON
12	It lights up when any individual unit (group) has reached the time for the filter or element to be cleaned.	20	Starts and stops ALL, ZONE, and INDIVIDUAL units.
	" []] " DISPLAY (COOLING/HEATING SELECTION PRIVILEGE NOT SHOWN)		TEMPERATURE ADJUSTMENT BUTTON (ZONE NUMBER BUTTON)
13	For zones or individual units (groups) for which this is displayed, cooling and heating cannot be selected.	27	This button is pressed when setting the temperature. Select the zone number if any zones have been registered.
	" [H ST 六] " DISPLAY (UNDER HOST COMPUTER INTEGRATED COTROL)		FAN DIRECTION ADJUSTMENT BUTTON (ZONE NUMBER BUTTON)
14	While this display is lit up, no setting can be made. It lights up when the upper central machines	28	This button is pressed when setting the fan direction to "fixed" or "swing".
	are present on the same air conditioning network.	29	OPERATION MODE SELECTOR BUTTOB
15	" జైచ్రై " DISPLAY (PRESET TEMPERATURE)	29	This sets the operation mode. The dry setting cannot be done.
10	Displays the preset temperature.	30	TIME NO. BUTTON
	" - 야나 " DISPLAY (MALFUNCTION CODE)	30	Selects time No. (Use in conjunction with the shedule timer only.)
16	The displays (flashes) the content of errors when an error failure has occurred. In mantenance mode, it displays the latest error content.		CONTROL MODE BUTTON
			Selects control mode.

2 DCS302C51: Centralised remote control

2 - 2 Explanation of buttons and functions





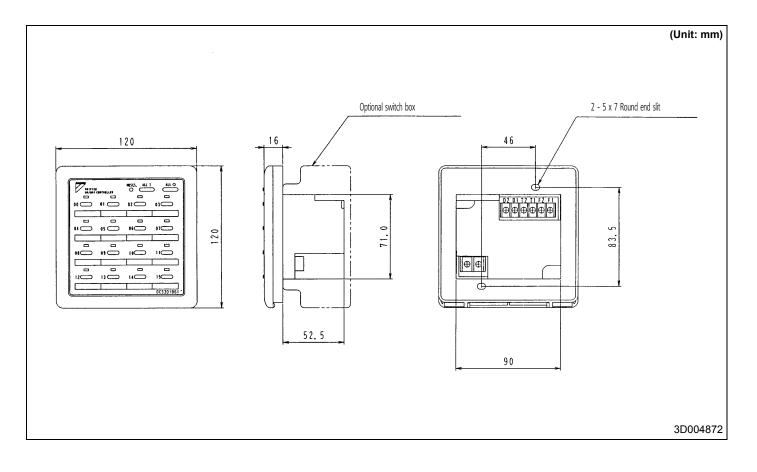
32	FILTER SIGN RESET BUTTON		INSPECTON/TEST RUN BUTTON (FOR SERVICE)
32	This button is pressed to erase the "clean filter" display after cleaning or replacement.	36	Pressing this button scrolls through "inspection", "test run", and "system display".
33	SET BUTTON		This button is not normally used.
33	Sets control mode and time No.		VENTILATION STRENGTH ADJUSTMENT BUTTON
34	FAN STRENGTH ADJUSTMENT BUTTON	37	This button is pressed to switch the ventilation strength ("fresh up") of the total enthalphy heat exchanger.
34	Pressing this button scrolls through "weadé, "strong", and "fast".		
	ZONE SETTING BUTTON		
35	Zone registration mode can be turned on and off by pressing the start and stop buttons simultaneously for at least four seconds.		

NOTES

- 1 Please note that the display shows all indications for the purpose of explanation only. This is contrary to actual running situations.
- 2 If the unit is used in conjunction with other optional centralised control systems, the operation lamp of the unit that is not under operation control may light up and go out a few minutes behind schedule. This shows that the signal is being exchanged, and does not indicate any failure.

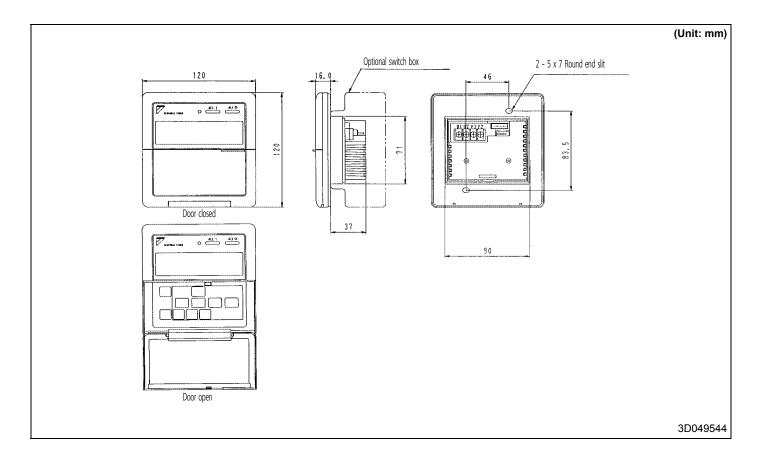
3 DCS301B51: Unified on/off control

3 - 1 Dimensional drawing



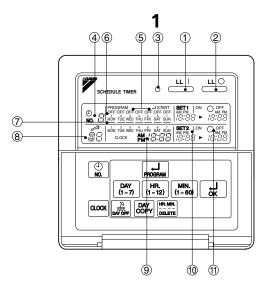
4 DST301B51: Schedule timer

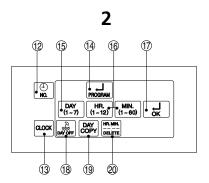
4 - 1 Dimensional drawing



4 DST301B51: Schedule timer

4 - 2 Explanation of buttons and functions





1	UNIFIED OPERATION BUTTON	11	DISPLAY "Orthogonal Time of System off)
1	Press this button to perform the unified operation regardless of the No. of programmed time.	11	Displays the time programmed to stop.
2	UNIFIED STOP BUTTON	12	TIME NO. BUTTON
2	Press this button to perform the unified stop regardless of the No. of programmed time.	12	
3	OPERATION LAMP (RED)	13	CLOCK ADJUSTING BUTTON
5	The light turns on during the operation of the indoor unit.	15	Press this button to set the present time.
4	$\overset{\circ \otimes}{_{MO}}$;; DISPLAY (TIME NO.)	14	PROGRAMMING START BUTTON
4	Displays the time No. only when used in conjunction with the centralised remote control.	14	Press this button to set or check the No. of programmed time. Press it again after you are through with the program.
5	DISPLAY "PROGRAM 🔔 START." (PROGRAMMING START)	15	BUTTON FOR SELECTING DAYS OF A WEEK
5	The light turns on when the timer is programmed.	15	Setting is not possible while this display is being displayed.
6	DISPLAY " OFF " (HOLIDAY SETTING)		HOUR/MINUTE BUTTON
0	Lights above the day of the week set as holiday. The operation controlled by timer is not available on that day.	16	Press this button to adjust the present time and the programmed time.
7	DISPLAY " — " (SETTING OF DAYS OF A WEEK)		TIMER ON BUTTON
'	Flashes below the day of the week programmed.	17	Press this button to set the present time and the programmed time.
8	DISPLAY "	18	HOLIDAY SETTING BUTTON
0	Displays the contents of malfunction during the stop due to malfunction.		Press this button to set holidays.
9	DISPLAY "wind the set of the set		BUTTON FOR COPYING PROGRAM OF PREVIOUS DAY
э	Displays the present day of the week and time.	19	Use this button to set the No. of programmed time same as that of the previous day.
10	DISPLAY " no from the first stars " (PROGRAMMED TIME OF SYSTEM START)	20	PROGRAM CANCELING BUTTON
10	Displays the time programmed to start.	20	Use this button to set the programmed time to cancel. The display shows "-;".

NOTES

1 Please note that the display shows all indications for the purpose of explanation only. This is contrary to actual running situations.

5 Survey of various control systems

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 (BA).

Control Method	Objective / use	System outline	Function	Standard number of units
DST301B51 Schedule timer	To carry out weekly schedule operation by 1- minute units	Max length of transmission wing for centralised control: 1 km	 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
Centralised remote control DCS302B51	To control all indoor units from one place	Max length of tansmission wing for centraleed control. 1km Max length of tansmission wing for centraleed control. 1km Single phase, 2200-240V centraleed terrole Remote control Remote control	 Double central control function Function of liquid crystal remote control can be controlled individually for each zone of the indoor unit. Individual/ unified operation Up to 8 patterns can be set for operation controlled by programmed time when used in combination with schedule timer. Temperature setting for each zone Control operation for each room during centralized control Remote control operation rejected command Sequential start function 	Controls up to 64 groups with one centralised remote control. Max. 128 units
Unified ON/OFF control DCS301B51		Max kingth of transmission wing for centralised control: 1 km Single phase 220-240 V United ONOFF Remote control Remote control	 Double central control function Indoor unit ON/OFF control Individual/unified operation Remote control operation rejected command. (Centralised remote control given priority when used in combination with centralised remote control.) Sequential start function 	Controls up to 16 groups of indoor units with one unified ON/OFF control. Max. 128 units
 Schedule timer Centralised remote control Unified ON/OFF control 		Schedule Certralised remote Combination of up to 8 united timer control oNOFF controls possible to 128 units by can be combaled by a control of groups (128 units) control contro	 Respective functions of schedule timer, centralised remote control and unified ON/OFF control are possible. (Control mode of centralised remote control is given priority for operation of remote control for indoor unit.) Sequential start function. 	Controls up to 64 groups of indoor units with 1 schedule, timer, 2 centralised remote controls and 8 unitied ON/OFF controls.

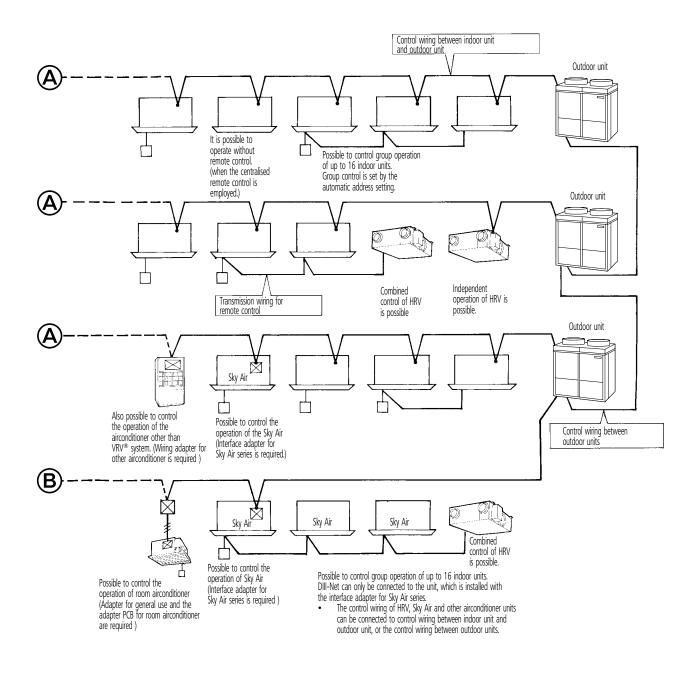
6 Wiring example of centralised control systems

- Be sure to connect the wiring of the central controller to (A) or (B). (Connect to (B), if it is possible.)
- Be sure to limit the number of indoor units within the limitation for each system.
- · Never connect the wire between the controllers, that are connected to different circuits.
- In order to prevent the connection of 3 wires on the same terminal, connect to the terminal unit of (A) or (B), or use the relay terminal (local supply).

Pattern 2 Pattern 1 ?• When all centralised control systems are located at several places. ?• When all centralised control systems are located at one place. ___ B ----**(B)** or ---or 00 0 0 0 0 0 0 0 0 ----. --------Never connect the wire between the controllers, which are connected to different circuits. **(B**) 00 00 ---- (\mathbf{B}) Α Unified On/Off control (DCS301B51) Unified On/Off Control (DCS301B51) Up to 4 controllers can be Up to 4 control The schedule timer, connected. can be connected. unified adapter for Centralised remote control Centralised remote (DCS302B51) computerised control control etc. can be connected to (DCS302B51) the same as in pattern 1. 000 Forced shut-down input Unified adapter for computerised control (DCS302A52) • • • • Possible to interlink with building management (Max 7) system (Host computer monitor panel.) (6 Schedule timer (DST301B51) Possible to set 8 different patterns of weekly schedule by one unit.

6 Wiring example of centralised control systems

- The longest wiring extension should not exceed 1,000 m.
 (Total wiring length schould not exceed 2,000 m, excluding the wiring to the remote control).
- Up to 128 indoor units can be controlled.



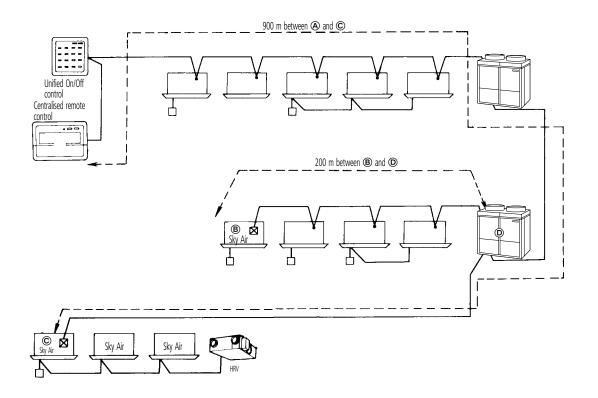
Advantages when central controllers are connected to (B).

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

The super wiring system, that 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 wiring extension: Not exceeding 1,000 m
- Total wiring length: Not exceeding 2,000 m

7 - 1 Wiring example



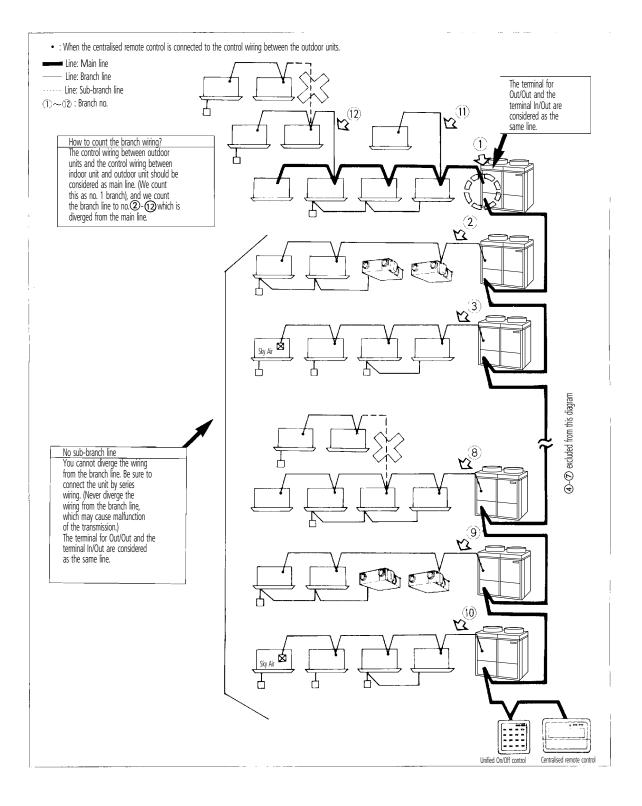
In the above system, the longest wiring extension is 900 m between A and C, which satisfies the limit of 1,000 m. The total length is 1,100 m, that is the total of 900 m between (a) and (c) and 200 m between (b) and (c), which also satisfies the limit of 2,000 m. The central controller functions properly, only when both the longest extension and the total length of wiring satisfies the limitation, as shown above.

NOTES

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

7 - 2 System example (1)

- Branch line; line that is diverged from the main line.
- Sub-branch line: line that is diverged from the branch line.

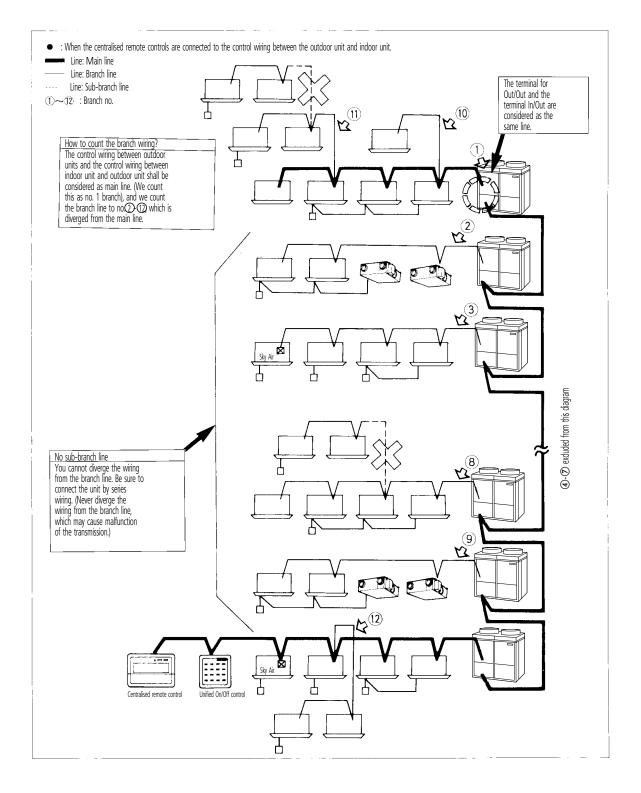


NOTES

1 As shown above, the centralised remote controls schould be connected to the wiring between the outdoor units, wherever possible. (If connected to the control wiring between indoor unit and the outdoor unit, it may not be able to control the units even on the normal circuit if the circuit connected to the central control is out of order.)

7 - 3 System example (2)

- · Branch line; line that is diverged from the main line.
- Sub-branch line: line that is diverged from the branch line.



NOTES

1 As shown above, if the centralised remote controls are connected to the control wiring between indoor unit and outdoor unit, it may not be able to control the units even on the normal circuit, if the circuit connected to the central controller is out of order. Be sure to connect the central controllers to the control wiring between the outdoor units.

7 - 4 Number of connectable Units

	Central control equipment Indoor unit		Outdoor unit	Other adapters	
Target controller (max. number)	 Centralised remote control (2 units) Unified ON/OFF control (8 units) Schedule timer (1unit) Parallel interface (4 units) 	 VRV[®] system Sky Air series (Interface adapter for Sky Air is required.) HRV unit Facility air-conditioner (Wiring adapter for other air- conditioner is required.) Room air conditioner (Wiring adapter for other air conditioner is required) BS unit (2) Wiring adapter 	 Outdoor unit for VRV[®] system 	 External control adapter for outdoor unit Wiring adapter for electrical appendices 	
Number of units	(note 1)	Up to 128 units (note 4)	Up to 10 units (note 3)	Up to 10 units	

NOTES

1 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 adapters \leq 160 units
- Central Conversion number of central control equipment * + Indoor units + outdoor units + other adapters ≤ 200 units

NOTE: * is converted one central control equipment except unified ON/OFF control as 10 units.)

2 When BS unit is installed, BS unit is not counted in the number. However, the indoor units after BS unit should be counted.

- 3 The outdoor unit is limited up to maximum of 10 units and also the number of function units is also limited up to 5. However, if the sequential start setting is possible, up to 10 function units can be connected.
- 4 When the parallel interface is connected, the number of indoor units is limited up to 64 groups (128 units). When you judge whether the number of the connectable units is possible, refer to the flow chart on the next page.

7 - 5 Flow chart to determine the number of units to be connected

	Check sheet for number of units in one system	_		1		
	Centralised controller	Qty	Y/N			
	No. of IPU of intelligent Manager			≤1		
	Intelligent Touch Controller (Note 2)			≤ 2 \mathbf{r} $\times 10$ $=$		
	Central remote control (Note 2)			≤ 2 \rightarrow x 10 =		
	Unified ON/OFF control			≤ 8 $x 1 (A) =$		
	Schedule timer			≤ 1 x 10 =		
	Interface for use in BACnet® (Note 3)			≤ 1 x 10 $=$		
	Interface for use of LONWORKS®			$ \leq 1 $		
	Parallel interface					
		-		╡╴│┍╾┪┍╾┑┍╼┑┍╼┑		
	Total		<u> </u>	$4 \leq 7 \qquad \qquad + \qquad + \qquad + \qquad + \qquad + \qquad = \qquad \leq 200$		
	Unit	Qty	Y/N			
	VRV®					
	SkyAir with adapter					
	HRV (VAM)					
	Wiring adapter for other air conditioner		+			
	BS unit (Note 4)		-			
			<u> </u>			
	Optional DIII Ai unit					
	Total			≤ 128		
	Outdoor unit	Qty	Y/N			
	Single units and Multi systems					
	Total] ≤ 10(B)		
	Other adapters	Qty	Y/N]		
	External control adapter for outdoor unit			1		
	Wiring adapter for electrical appendices (1)]		
	Di unit	8 x				
	Dio unit	4 x				
	Ai unit					
	Total			≤ 10		
_	NOTES					
1	Condition					
'	(A) means:					
	Central control equipment + Indoor units +			•		
	 Conversion number of central control equi (B) means: 	Ipmer	nt + I	Indoor units + Outdoor units + other adaptors \leq 200 units		
	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 F1, F2) are regarded as one system. 					
2	When one system is to be controlled from two locations, up to two intelligent Touch Controller (In case of combining the					
	intelligent Touch Controller and Central Remote Controller, it is restricted to combine two Controllers in total), four Central Remote Controller and 16 unified ON/OFF Controller can be connected. However, the maximum number of units that can be controlled is 128.					
3	When a BS unit is used, the indoor units used	in its	dow	vnstream are not counted.		
4	One port of one Interface for use in BACnet®	can h	ave	up to 64 groups (64 master indoor units with address). In case of a station can have up to 128 indoor units including main and sub units.		



Daikin's unique position as a manufacturer of air conditioning equipment, compressors and refrigerants has led to its close involvement in environmental issues. For several years Daikin has had the intension to become a leader in the provision of products that have limited impact on the environment. This challenge demands the eco design and development of a wide range of products and an energy management system, resulting in energy conservation and a reduction of waste.

DAIKIN EUROPE N.V.

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Daikin Europe N.V. is approved by LRQA for its Quality Management System in accordance with the ISO9001 standard. ISO9001 pertains to quality assurance regarding design, development, manufacturing as well as to services related to the product.

ISO14001 assures an effective environmental management system in order to help protect human health and the environment from the potential impact of our activities, products and services and to assist in maintaining and improving the quality of the environment.

Daikin units comply with the European regulations that guarantee the safety of the product.

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