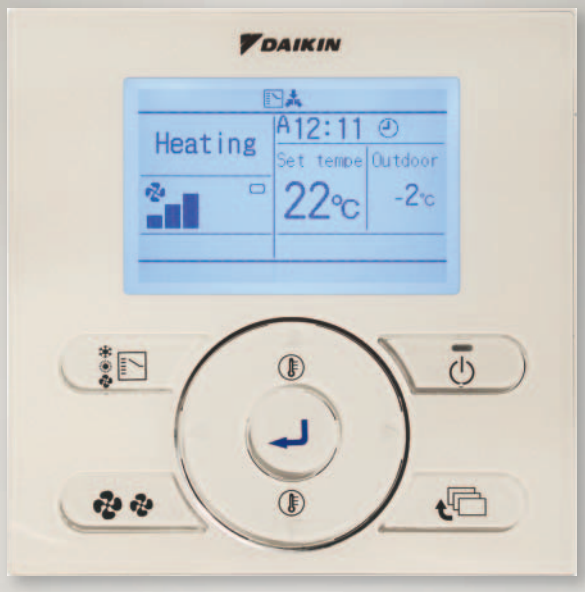
DAIKIN

Air Conditioners

Technical Data

VRV®

Centralised Control Systems



EEDEN10-204

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Centralised control systems

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

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

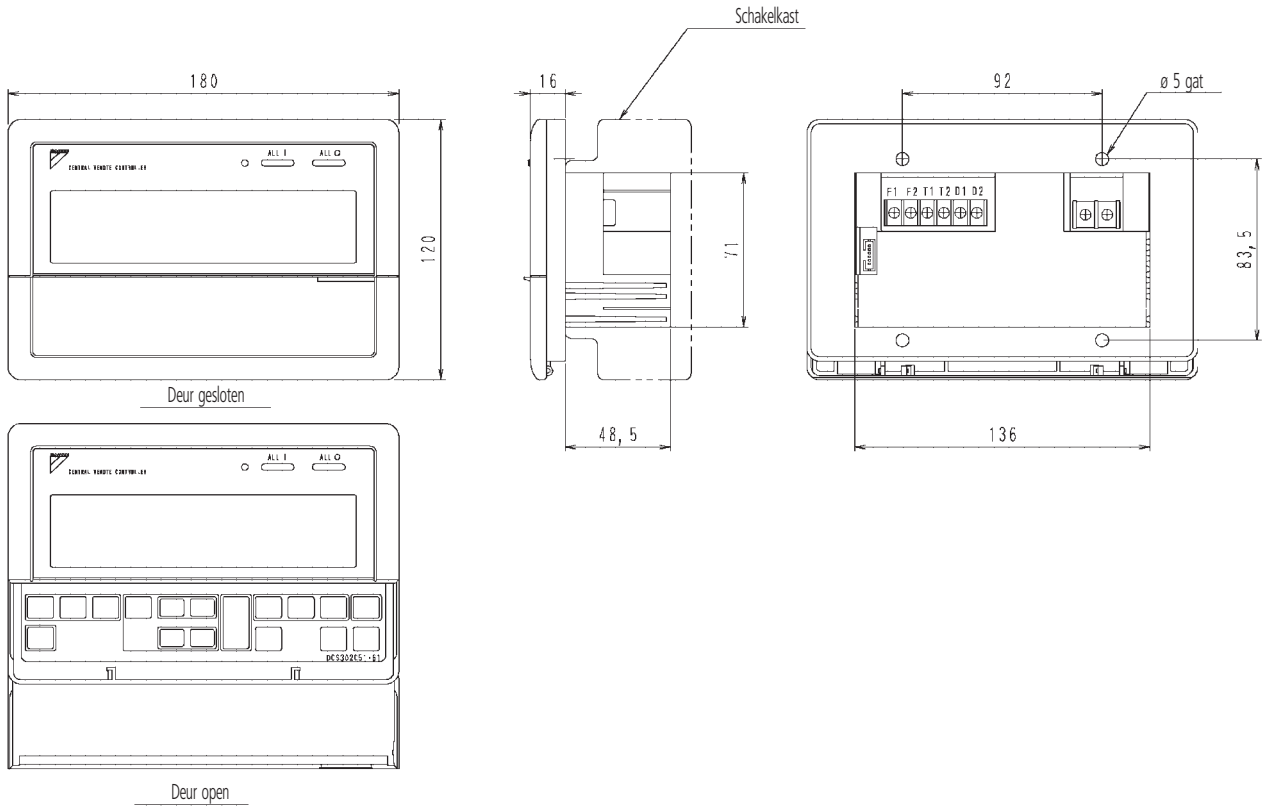
Enabling 64 groups to be programmed.

- 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

(Unit: mm)



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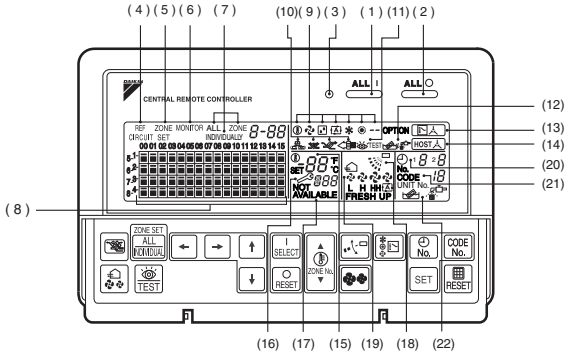
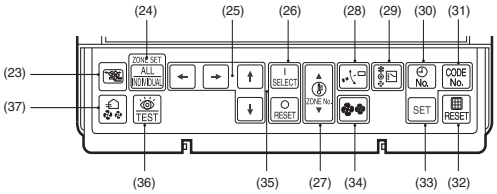
2 DCS302C51: Centralised remote control

2 - 2 Explanation of buttons and functions

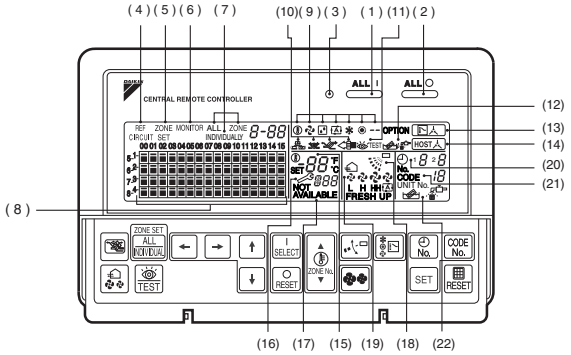


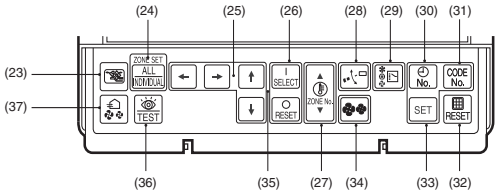


1	**UNIFIED OPERATION BUTTON**	17	**"NOT AVAILABLE" DISPLAY (NO FUNCITON DISPLAY)**
	Press to operate all indoor units.		If a function is not available in the indoor unit even if the button is pressed, "NOT AVAILABLE" is may be displayed for a few seconds.
2	**UNIFIED STOP BUTTON**	18	**" " DISPLAY (FAN DIRECTION SWING DISPLAY)**
	Press to stop all indoor units.		This displays whether the fan direction is fixed or set to swing.
3	**OPERATION LAMP (RED)**	19	**" " " LHHHA " "FRESH UP" DISPLAY (VENTILATION STRENGTH/SET FAN STRENGTH DISPLAY)**
	Lit while any of the indoor units under control is in operation.		This displays the set fan strength.
4	**" REF. CIRCUIT " DISPLAY (REFRIGERANT SYSTEM DISPLAY)**	20	**" No. " DISPLAY (TIME NO.)**
	The indication in the square is lit while the refrigerant system is being displayed.		**Displays the operation timer No. when used in conjunction with the shedule timer.**
5	**" ZONE SET " DISPLAY (ZONE SETTING)**	21	**" CODE No. " DISPLAY (OPERATION CODE AND UNIT NUMBER DISPLAY)**
	The lamp is lit while setting zones.		**The method of operation (remote controller prohibited, central operation priority after-press operation priority, etc.) is displayed by the corresponding code.** This displays the numbers of any indoor units which have stopped due to an error.
6	**" MONITOR " DISPLAY (OPERATION MONITOR)**	22	**" " DISPLAY (TIME TO CLEAN AIR CLEANER ELEMENT/TIME TO CLEAN AIR FILTER)**
	The lamp is lit while operation is being monitored.		Displayed to notify the user it is time to clean the air filter of air cleaner element of the group displayed.
7	**"ALL" "ZONE" "INDIVIDUALLY" DISPLAY**	23	**VENTILATION MODE BUTTON**
	The status displays indicates either batch functions or which zone or individual unit (or group) are being used.		This is pressed to switch the ventilation mode of the total enthalphy heat exchanger.
8	**OPERATION MONITOR**	24	**ALL/INDIVIDUAL BUTTON**
	Each square displays the state corresponding to each group.		Pressing this button scrolls through the "all screen", "zone screen", and "individual screen"/
9	**" " " " " " " " " -- " DISPLAY (OPERATION MODE)**	25	**ARROW KEY BUTTON**
	Displays operating state.		This button is pressed when calling an individual indoor unit or a zone.
10	**" " " " " " " " DISPLAY (VENTILATION CLEANING DISPLAY)**	26	**ON/OFF BUTTON**
	This is displayed when a Ventiair total enthalphy heat exchanger unit or other such unit is connected.		Starts and stops ALL, ZONE, and INDIVIDUAL units.
11	**" TEST " DISPLAY (INSPECTION/TEST)**	27	**TEMPERATURE ADJUSTMENT BUTTON (ZONE NUMBER BUTTON)**
	Pressing the maintenance/test run button (for service) displays this. This button should not normally be used.		This button is pressed when setting the temperature. Select the zone number if any zones have been registered.
12	**" " DISPLAY (TIME TO CLEAN)**	28	**FAN DIRECTION ADJUSTMENT BUTTON (ZONE NUMBER BUTTON)**
	It lights up when any individual unit (group) has reached the time for the filter or element to be cleaned.		This button is pressed when setting the fan direction to "fixed" or "swing".
13	**" " DISPLAY (COOLING/HEATING SELECTION PRIVILEGE NOT SHOWN)**	29	**OPERATION MODE SELECTOR BUTTOB**
	For zones or individual units (groups) for which this is displayed, cooling and heating cannot be selected.		This sets the operation mode. The dry setting cannot be done.
14	**" H ST " DISPLAY (UNDER HOST COMPUTER INTEGRATED COTROL)**	30	**TIME NO. BUTTON**
	While this display is lit up, no setting can be made. It lights up when the upper central machines are present on the same air conditioning network.		Selects time No. (Use in conjunction with the shedule timer only.)
15	**" SET 88.8 °C " DISPLAY (PRESET TEMPERATURE)**	31	**CONTROL MODE BUTTON**
	Displays the preset temperature.		Selects control mode.
16	**" UH " DISPLAY (MALFUNCTION CODE)**		
	The displays (flashes) the content of errors when an error failure has occurred. In mantenance mode, it displays the latest error content.		

2 DCS302C51: Centralised remote control

2 - 2 Explanation of buttons and functions





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

NOTES

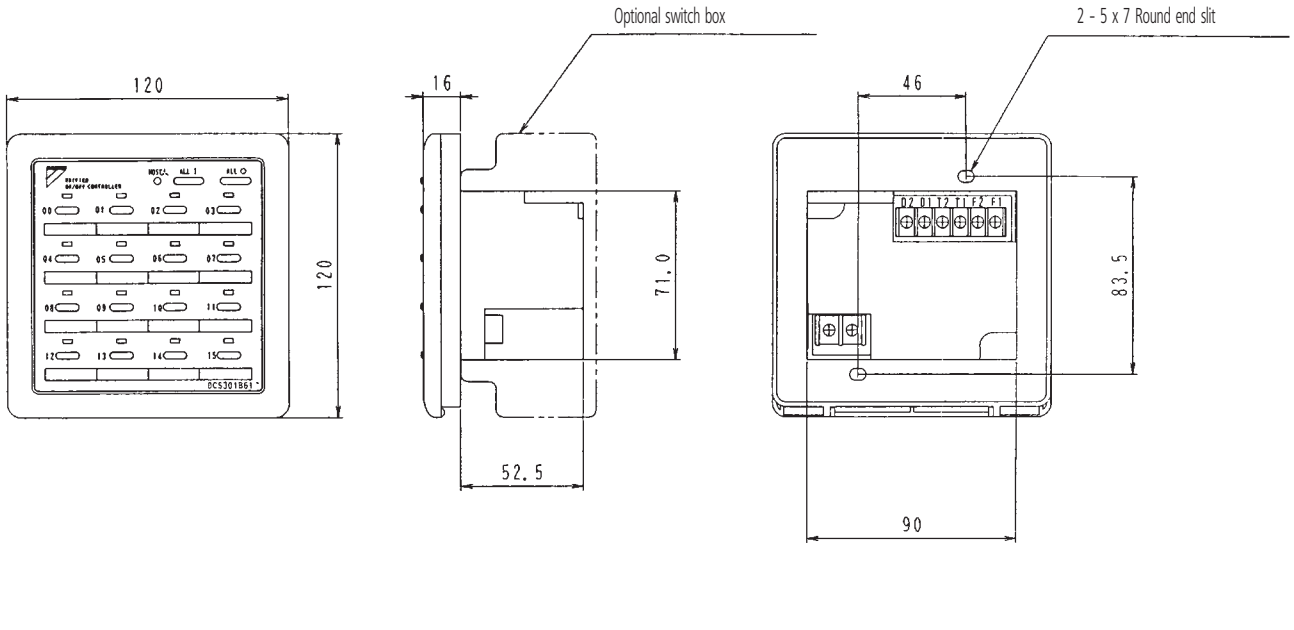
1 Please note that the display shows all indications for the purpose of explanation only.
This is contrary to actual running situations.

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

(Unit: mm)



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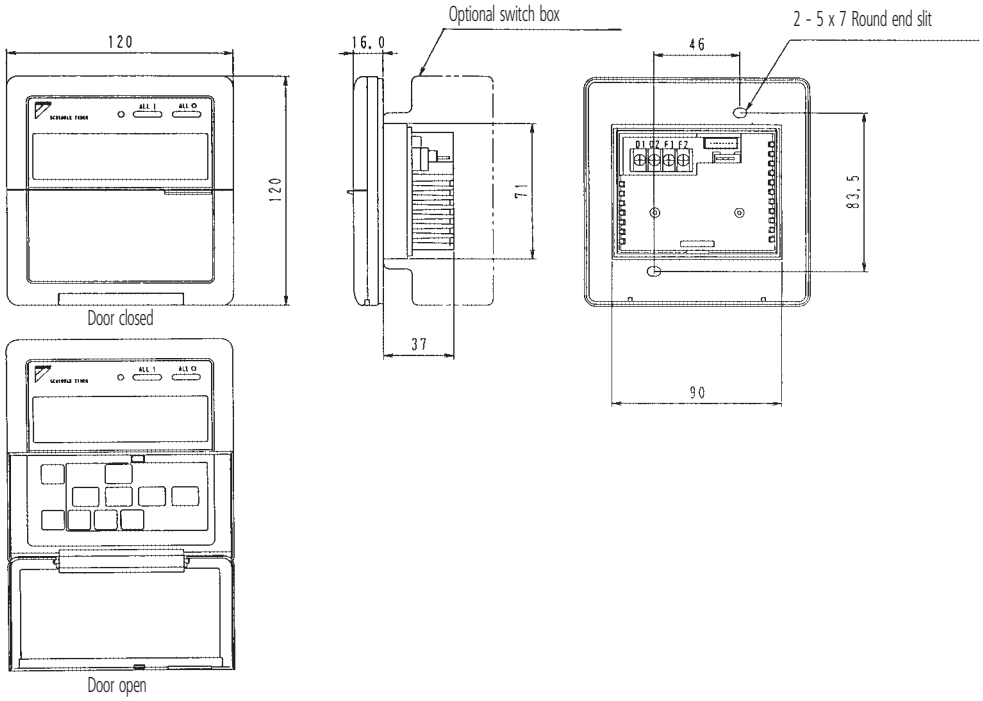
4 DST301B51: Schedule timer

4 - 1 Dimensional drawing

(Unit: mm)



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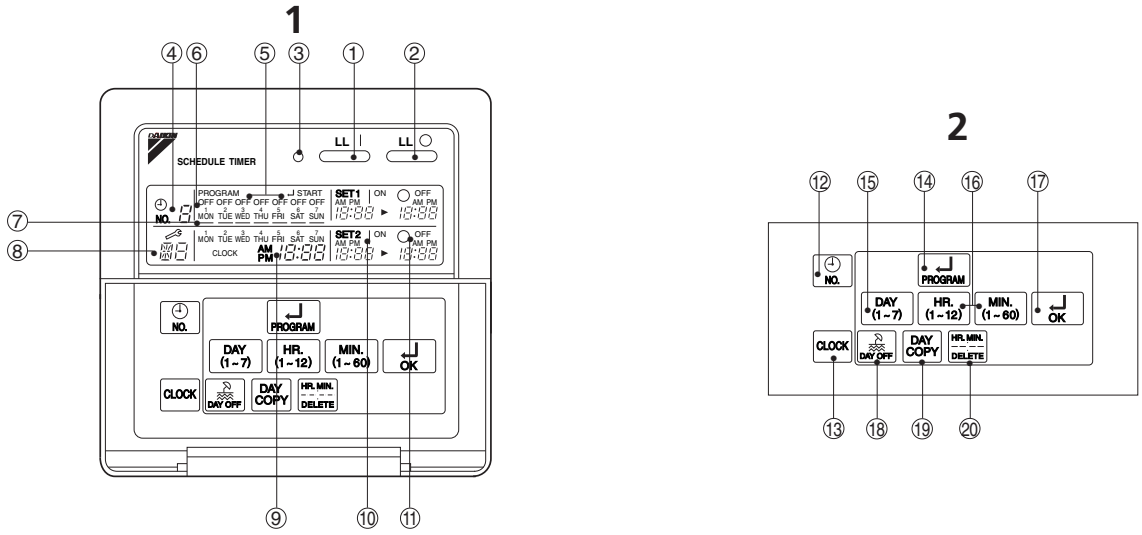
4 DST301B51: Schedule timer

4 - 2 Explanation of buttons and functions



1	**UNIFIED OPERATION BUTTON** Press this button to perform the unified operation regardless of the No. of programmed time.	11	**DISPLAY "○ OFF AM PM 18:88" (PROGRAMMED TIME OF SYSTEM OFF)** Displays the time programmed to stop.
2	**UNIFIED STOP BUTTON** Press this button to perform the unified stop regardless of the No. of programmed time.	12	**TIME NO. BUTTON**
3	**OPERATION LAMP (RED)** The light turns on during the operation of the indoor unit.	13	**CLOCK ADJUSTING BUTTON** Press this button to set the present time.
4	**"NO. 8" DISPLAY (TIME NO.)** Displays the time No. only when used in conjunction with the centralised remote control.	14	**PROGRAMMING START BUTTON** 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)** The light turns on when the timer is programmed.	15	**BUTTON FOR SELECTING DAYS OF A WEEK** Setting is not possible while this display is being displayed.
6	**DISPLAY " OFF " (HOLIDAY SETTING)** Lights above the day of the week set as holiday. The operation controlled by timer is not available on that day.	16	**HOUR/MINUTE BUTTON** Press this button to adjust the present time and the programmed time.
7	**DISPLAY " — " (SETTING OF DAYS OF A WEEK)** Flashes below the day of the week programmed.	17	**TIMER ON BUTTON** Press this button to set the present time and the programmed time.
8	**DISPLAY " " (MALFUNCTION CODE)** Displays the contents of malfunction during the stop due to malfunction.	18	**HOLIDAY SETTING BUTTON** Press this button to set holidays.
9	**DISPLAY " MON TUE WED THU FRI SAT SUN CLOCK AM PM 18:88 " (PRESENT TIME)** Displays the present day of the week and time.	19	**BUTTON FOR COPYING PROGRAM OF PREVIOUS DAY** Use this button to set the No. of programmed time same as that of the previous day.
10	**DISPLAY " MON TUE WED THU FRI SAT SUN CLOCK AM PM 18:88 " (PROGRAMMED TIME OF SYSTEM START)** Displays the time programmed to start.	20	**PROGRAM CANCELING BUTTON** 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.

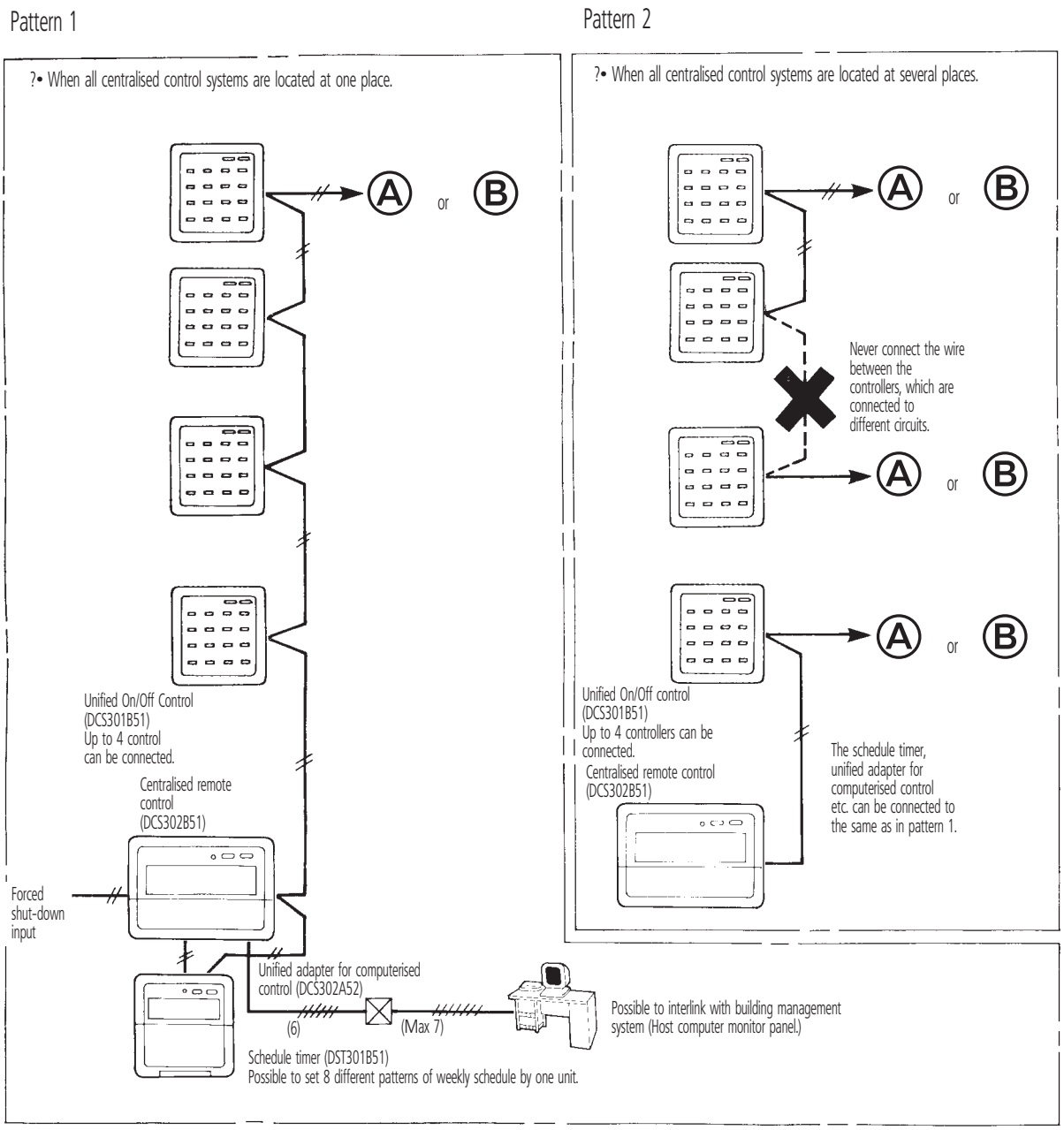
5 Survey of various control systems

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		• 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		• 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			• 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			• 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 unified ON/OFF controls.

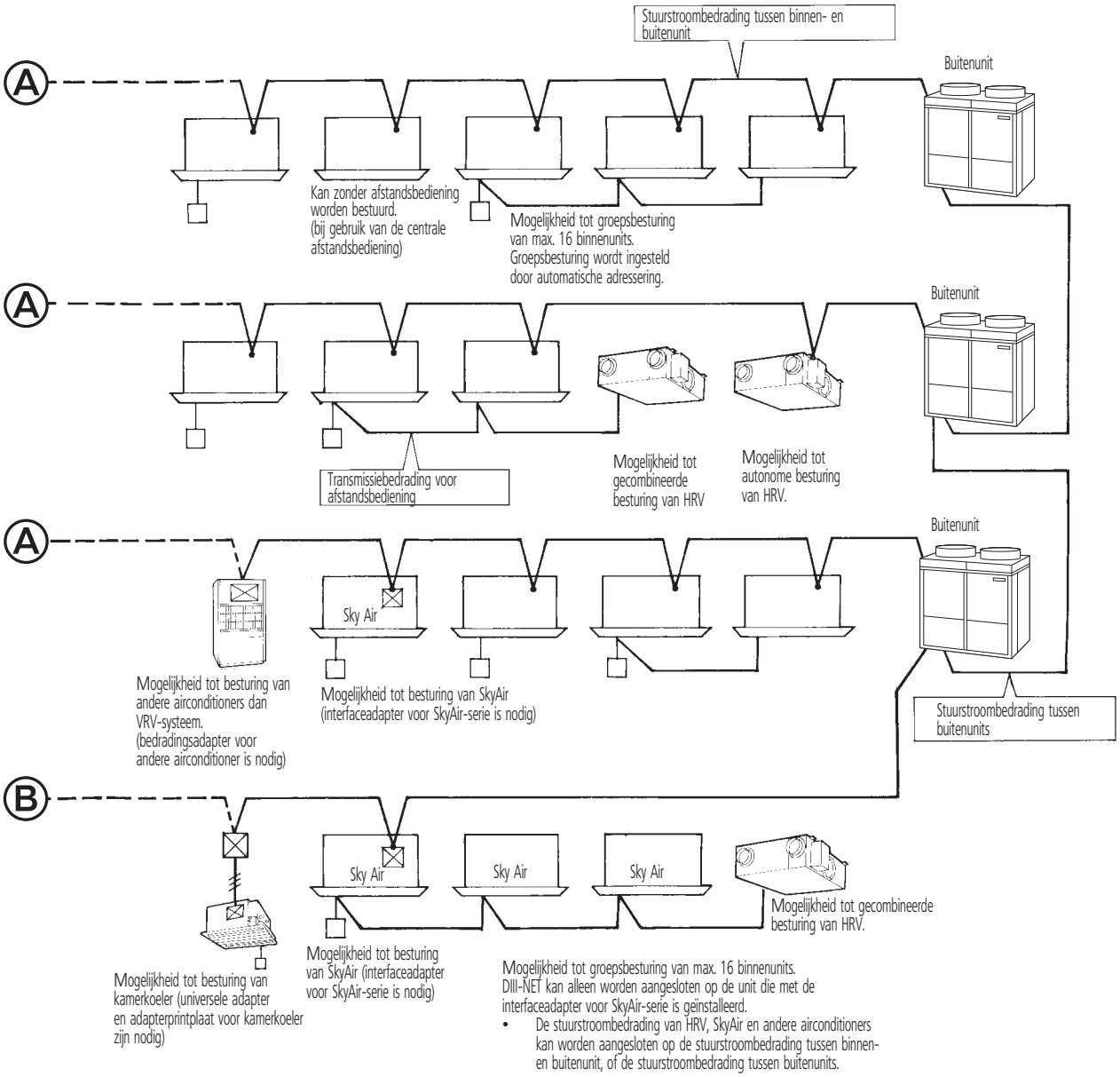
6 Wiring example of centralised control systems

- 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).



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 Ⓑ.

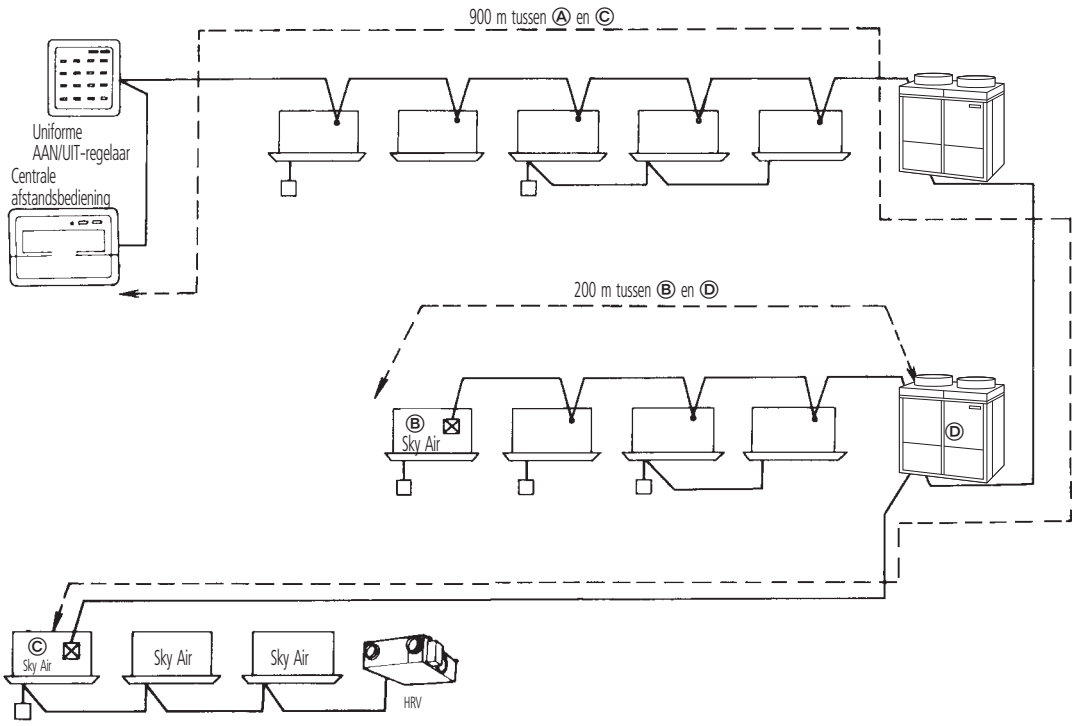
- If the central controllers are connected to (B), it is still possible to have centralised control, even if the power supply of other circuit connected to the central controller is shut-off. (Even if the power is shut off dure to long vacation etc.)

7 Length of transmission wiring

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 Ⓐ and Ⓒ and 200 m between Ⓑ and Ⓒ, 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.

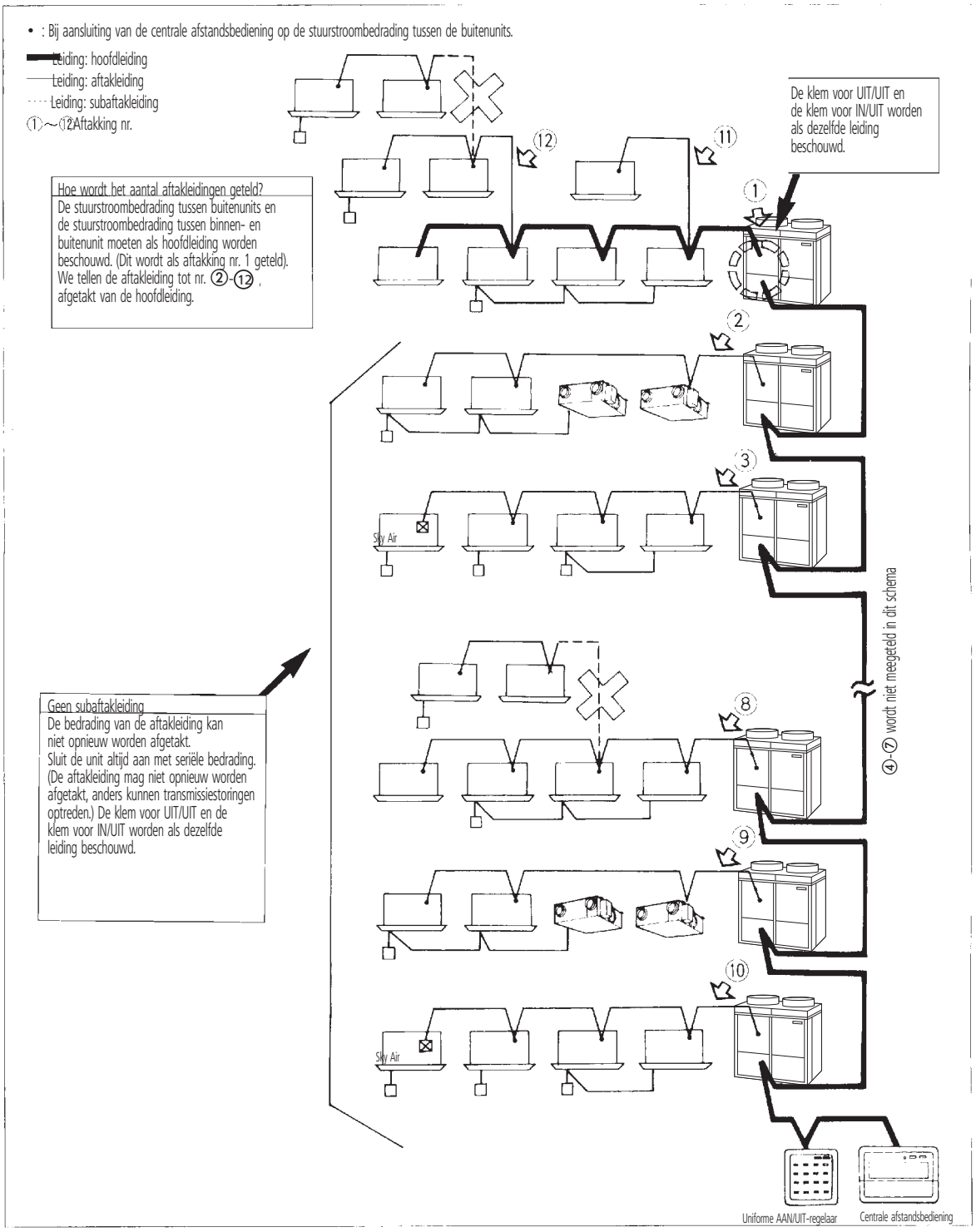
NOTES

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 Length of transmission wiring

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.



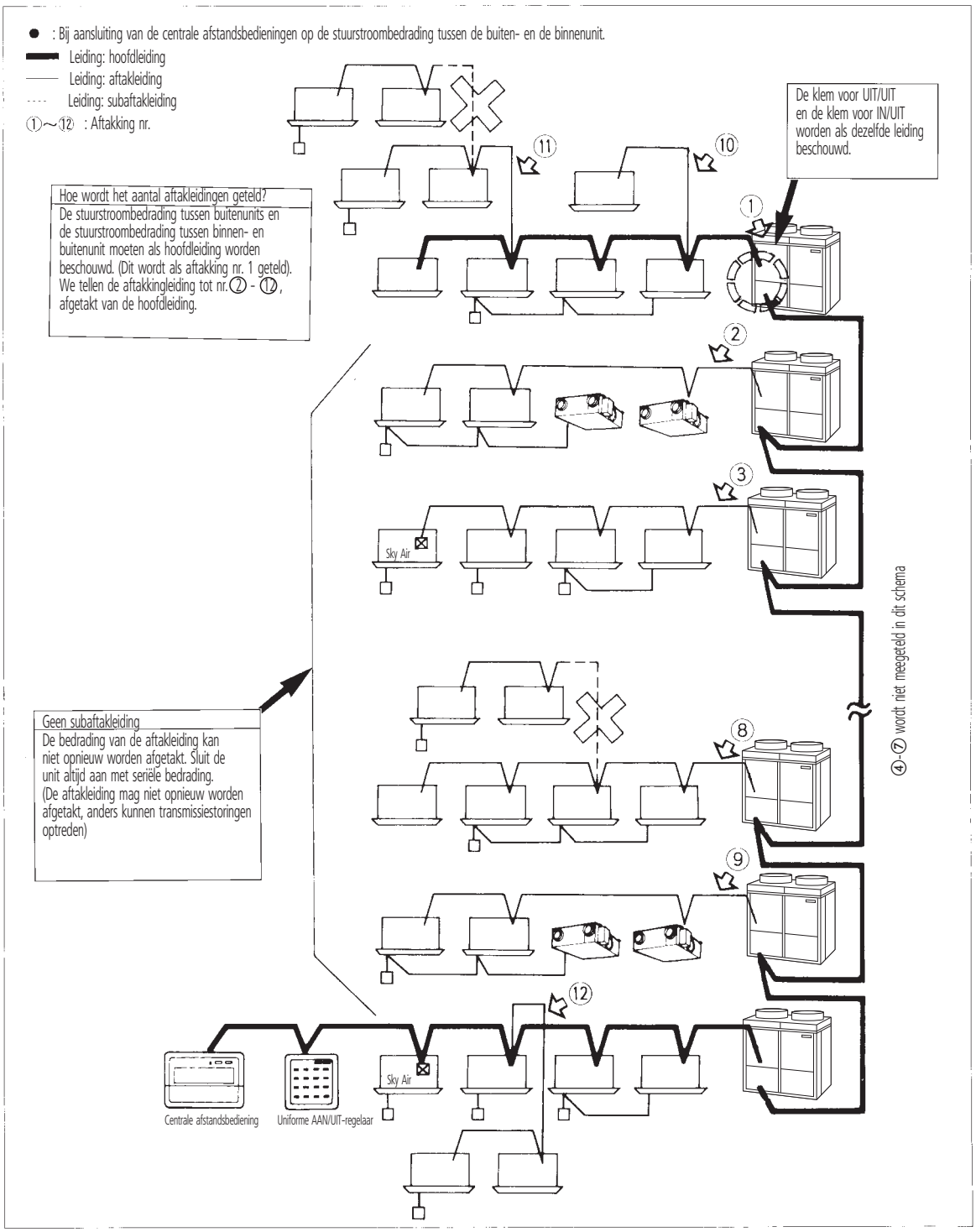
NOTES

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 Length of transmission wiring

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 Length of transmission wiring

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 ≤ 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.)

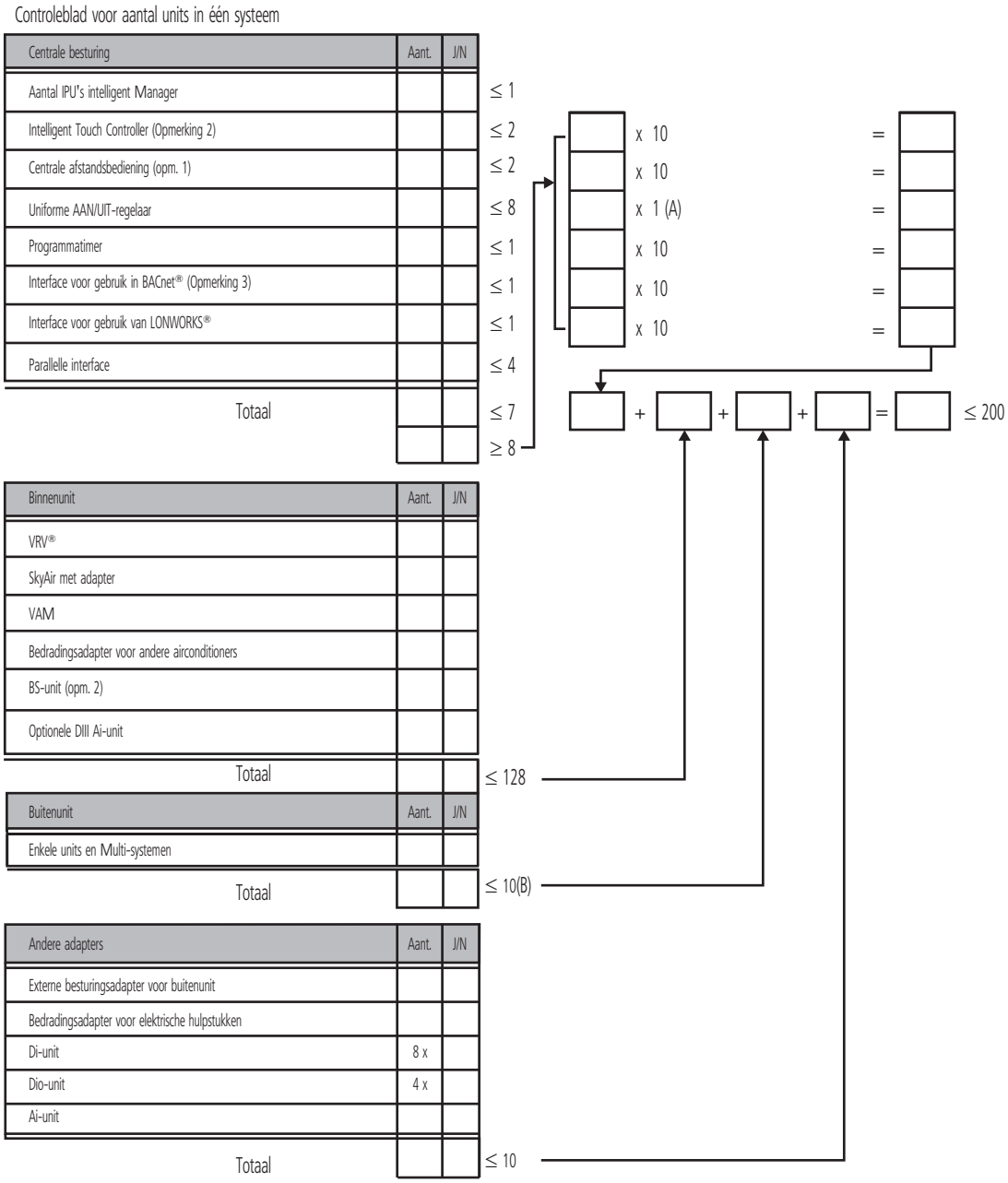
2 When BS unit is installed, BS unit is not counted in the number. However, the indoor units after BS unit should be counted.

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 Length of transmission wiring

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



NOTES

1 Condition
(A) means:
- Central control equipment + Indoor units + Outdoor units + other adapters ≤ 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 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 downstream are not counted.

4 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.

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 intention 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.

VRV® products are not within the scope of the Eurovent certification programme.

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EEDEN10-204 • CD • 09/10 • Copyright Daikin
The present publication supersedes EEDEN09-204
Prepared in Belgium by Lannoo (www.lannooprint.be), a company whose concern for the environment is set in the EMAS and ISO 14001 systems.
Responsible Editor: Daikin Europe N.V., Zandvoordestraat 300, B-8400 Oostende