Air Conditioners

Technical Data

Control systems

EEDEN12-100

TABLE OF CONTENTS

Control Systems

TABLE OF CONTENTS

Individual control systems

1 Possible individual control systems

Simplified remote control - BRC2C51

- simple, compact and easy to operate unit
- suitable for use in hotel bedrooms

Operation buttons:

- ON / OFF
- Operation mode selection
- Fan speed control
- Temperature setting

Display

- Cool / heat changeover control
- Heat Recovery Ventilation (HRV) in operation
- Set temperature
- Operating mode
- Centralised control indication
- Fan speed
- Defrost / hot start
- Malfunction adjustment
- Operating mode selection
- Fan speed control
- Filter sign reset
- Inspection test / operation

Simplified remote control for hotel applications - BRC3A61

- compact, user friendly unit
- ideal for use in hotel bedrooms

Operation buttons:

- ON / OFF
- Fan speed control
- Temperature setting

Display

- Heat Recovery Ventilation (HRV) in operation
- Set temperature
- Operating mode
- Centralised control indication
- Fan speed
- Defrost / hot start
- Malfunction

Infrared remote control - BRC4C* / BRC7C*

Operation buttons:

- ON / OFF
- Timer mode start / stop
- Timer mode on / off
- Programmed time
- Temperature setting
- Air flow direction (FXHQ, FXFQ, FXCQ and FXAQ models only)
- Operating mode
- Fan speed control
- Filter sign reset
- Inspection test / operation

Display

- Operating mode
- Battery change
- Set temperature
- Air flow direction (FXHQ, FXFQ, FXCQ and FXAQ models only)
- Programmed time
- Inspection test / operation
- Fan speed

1 Possible individual control systems

BRC1E51A

Wired remote control - BRC1E51A/B

User-friendly remote control with contemporary design

A series of energy saving functions that can be individually selected.

- Temperature range limit
- Setback function
- Presence & floor sensor connection (available on new round flow cassette)
- kWh indication
- Set temperature auto reset
- Off-timer

Temperature range limit avoids excessive heating or cooling.

Save energy by constraining the lower temperature limit in cooling and upper temperature limit in heating mode.

note: also available in auto cooling/heating change over mode.

kWh indication keeps track of your consumption.

The kWh indication shows an indicative electricity consumption of the last day/month/year.

Other functions:

- Up to 3 independent schedules can be set, so the user can easily change the schedule himself throughout the year (e.g. Summer, winter, mid-season)
- Possibility to individually restrict menu functions
- **Easy to use**: all main functions directly accessible
- **Easy setup**: clear graphical user interface for advanced menu settings
- **Real time clock** with auto update to daylight saving time
- **Supports multiple languages** (English,German,Dutch,Spanish,Italian,Portuguese,French,Greek,Russian,Turkish, Polish (**NEW**))
- **Built-in backup power**: when a power failure occurs all settings remain stored up to 48 hours

BRC1D52

Wired remote control - BRC1D52

- Schedule timer:
  - –Five day actions can be set as follows:
    * set point: unit is switched ON and normal operation is maintained
    * OFF: unit is switched OFF
    * limits: unit is switched ON and min./max. control (cf.limit operation for more details)
- Home leave (frost protection): during absence, the indoor temperature can be maintained at a certain level. This function can also switch the unit ON/OFF
- User friendly HRV function, thanks to the introduction of a button for ventilation mode and fan speed
- Constantly monitoring of the system for malfunctions in a total of 80 components
- Immediate display of fault location and condition
- Reduction of maintenance time and costs

Display

- Operating mode
- Heat Recovery Ventilation (HRV) in operation
- Cool / heat changeover control
- Centralised control indication
- Group control indication
- Set temperature
- Air flow direction
- Programmed time
- Inspection test / operation
- Fan speed
- Clean air filter
- Defrost / hot start
- Malfunction

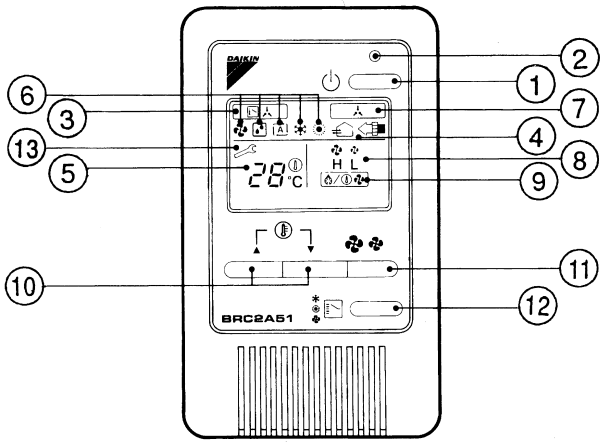
1 Possible individual control systems

1 - 1 Survey

DESCRIPTION		FXFQ	FXZQ	FXCQ	FXKQ	FXDQ-M9	FXDQ-PB/NB	FXSQ	FXMQ-P	FXMQ-MA	FXAQ	FXHQ	FXUQ	FXLQ	FXNQ
Wired remote control		BRC1E51A/B / BRC1D52B													
Infrared remote control	cooling only	BRC7F533F	BRC7E531	BRC7C67	BRC4C63	BRC4C64	BRC4C64	BRC4C66	BRC4C66	BRC4C66	BRC7E619	BRC7E66	BRC7C529	BRC4C64	BRC4C64
	heat pump	BRC7F532F	BRC7E530	BRC7C62	BRC4C61	BRC4C62	BRC4C65	BRC4C65	BRC4C65	BRC4C65	BRC7E618	BRC7E63	BRC7C528	BRC4C62	BRC4C62
Simplified remote control		-	-	-	-	BRC2C51	BRC2C51	BRC2C51	BRC2C51	BRC2C51	-	-	-	BRC2C51	BRC2C51
Simplified remote control for hotel use		-	-	-	-	BRC3A61	BRC3A61	BRC3A61	BRC3A61	BRC3A61	-	-	-	BRC3A61	BRC3A61

2 BRC2C51 - Simplified remote control

2 - 1 Explanation of buttons and functions



1	ON/OFF BUTTON Press the button and the system will start. Press the button again and the system will stop.	8	DISPLAY ' ' (FAN SPEED) The display shows the fan speed: "HIGH" or "LOW".
2	OPERATION LAMP (RED) The lamp lights up during operation and blinks in case of stop due to malfunction.	9	DISPLAY ' ' (DEFROST/HOT START) Indicates that defrost or hot start (during which the fan is stopped till the temperature of air supply rises enough at the start of a heating run) is in progress.
3	DISPLAY ' ' (CHANGEOVER UNDER CONTROL) It is impossible to changeover heat/cool with the remote control when it shows this display. (As for details, see "SETTINGS OF MASTER REMOTE CONTROL" in the operation manual attached to the indoor unit.).	10	TEMPERATURE SETTING BUTTON Use this button for SETTING TEMPERATURE of the thermostat. ; Each press raises the set temperature by 1°C. ; Each press lowers the set temperature by 1°C. The variable temperature range is 16°C tot 32°C.
4	DISPLAY " "," ","OPTION" (VENTILATION / AIR CLEANING) This display shows that the total heat exchange unit and the air cleaning unit are in operation. (These are optional accessories.).		
5	DISPLAY ' ' (SET TEMPERATURE) This display shows the set temperature. Only given during a cooling or heating operation.	11	FAN SPEED CONTROL BUTTON Press this button to select the fan speed, HIGH or LOW, of your choice.
6	DISPLAY ' ' ' ' ' ' ' ' ' ' (OPERATION MODE) This display shows the current OPERATION MODE. ' ' is not available with outdoor units specially designed for cooling only. ' ' is reserved only for outdoor units capable of heat recovery.	12	OPERATION MODE SELECTOR BUTTON Press this button to select OPERATION MODE.
		13	DISPLAY ' ' (MALFUNCTION) Indicates malfunction and blinks if the unit stops operating due to the malfunction. (As for details, see "TROUBLE SHOOTING" in the operation manual attached to the indoor unit.)
7	DISPLAY ' ' (UNDER CENTRALIZED CONTROL) When this display shows, the system is UNDER CENTRALIZED CONTROL. (This is not a standard specification)		

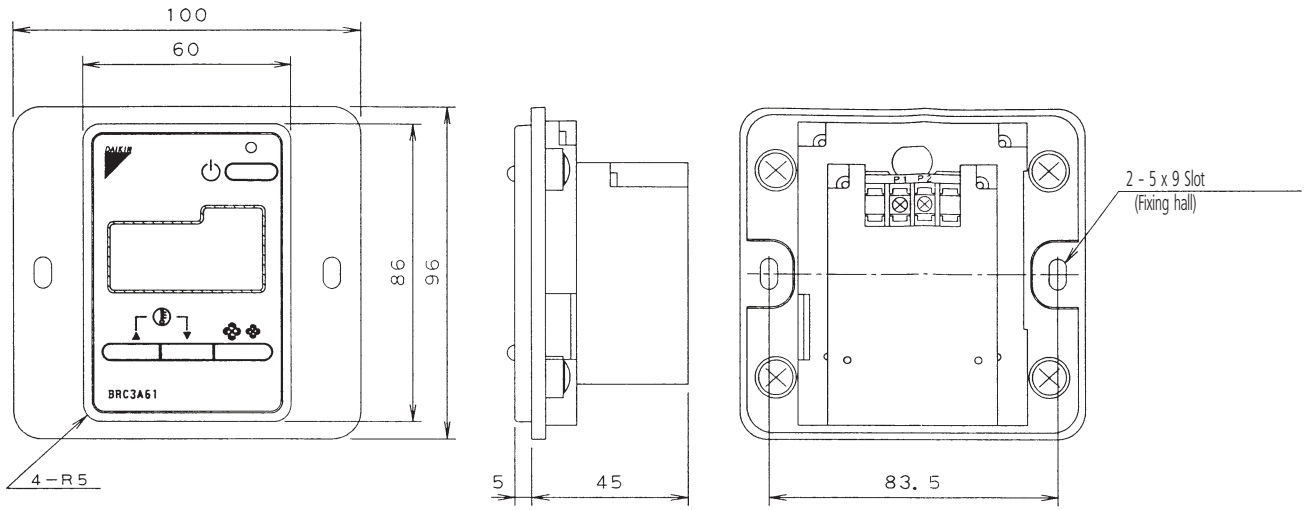
NOTE

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

3 BRC3A61 - Simplified remote control for hotel applications

3 - 1 Dimensional drawing

(Unit: mm)

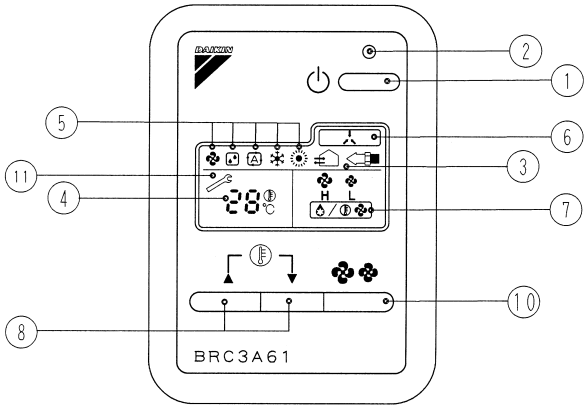


BRC3A61	FXSQ
	FXMQ
	FXDQ
	FXLQ/FXNQ

3D013859A

3 BRC3A61 - Simplified remote control for hotel applications

3 - 2 Explanation of buttons and functions



1	ON/OFF BUTTON	7	DISPLAY ' ' (FAN SPEED)
	Press the button and the system will start. Press the button again and the system will stop.		The display shows the set fan speed: 'HIGH' or 'LOW'.
2	OPERATION LAMP (RED)	8	DISPLAY ' ' (DEFROST/HOT START)
	The lamp lights up during operation or blinks if a malfunction occurs.		Indicates that defrost or hot start (during which the fan is stopped till the temperature of air supply rises enough at the start of a heating run) is in progress.
3	DISPLAY " "," " (VENTILATION / AIR CLEANING)	9	TEMPERATURE SETTING BUTTON
	This display shows that the total heat exchange unit is in operation. (These is an optional accessory).		Use this button for SETTING TEMPERATURE of the thermostat. ; Each press raises the set temperature by 1°C. ; Each press lowers the set temperature by 1°C. The variable temperature range is 16°C tot 32°C.
4	DISPLAY ' ' (SET TEMPERATURE)		
	This display shows the set temperature. Only given during a cooling or heating operation.		
5	DISPLAY ' ' ' ' ' ' ' ' ' ' (OPERATION MODE)	10	FAN SPEED CONTROL BUTTON
	This display shows the current OPERATION MODE. ' ' is not available with outdoor units specially designed for cooling only. ' ' is reserved only for heat recovery outdoor units.		Press this button to select the fan speed, HIGH or LOW, of your choice.
		11	DISPLAY ' ' (MALFUNCTION)
6	DISPLAY ' ' (UNDER CENTRALIZED CONTROL)		Indicates malfunction and blinks if the unit stops operating due to the malfunction. (As for details, see "TROUBLE SHOOTING" in the operation manual attached to the indoor unit.)
	When this display shows, the system is UNDER CENTRALIZED CONTROL. (This is not a standard specification)		

NOTES

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

2 This remote control does not have "AIR FLOW DIRECTION ADJUST BUTTON." Don't operate the flap adjusting air flow direction by your hand. (FXFQ, FXCQ, FXAQ, FXKQ)

4 BRC1E52A/B - Wired remote control

4 - 1 Features

- User friendly remote control with contemporary design
- Easy to use: all main functions directly accessible
- Easy setup: clear graphical user interface for advanced menu settings
- Optimise your air conditioning system by activating a series of energy saving functions (temperature range limit, setback function, off timer, …)
- Keep track of your energy consumption with the kWh indication showing an indicative electricity consumption
- Set up to 3 independent schedules, so the user can easily change the schedule himself throughout the year (e.g. summer, winter, mid-season)
- Real time clock with auto update to daylight saving time
- Supports multiple languages (English, German, Dutch, Spanish, Italian, Portuguese, French, Greek, Russian, Turkish and Polish)
- Possibility to individually restrict menu functions
- When a power failure occurs all settings remain stored up to 48 hours thanks to the built-in backup power
- Home leave operation maintains the indoor temperature at your specified comfort level during absence, thus saving energy

4 BRC1E52A/B - Wired remote control

4 - 2 Specifications

TECHNICAL SPECIFICATIONS				BRC1E52A* / BRC1E52B*
Casing	Colour			Fresh White
	Button cover			No
	Operation LED	Colour		Green
Dimensions	Unit	HeightxWidthxDepth	mm	120x120x19
	Packed unit	HeightxWidthxDepth	mm	150x160x55
Weight	Unit		kg	0.200
	Packed unit		kg	0.415
Packing	Material			Carton
	Weight		kg	0.050
LCD	Type			Full dot (160 x 255)
	Dimensions	Height	mm	43.2
		Width	mm	68.85
	Back light	Colour		White
Temperature setting	Resolution		ºC	1
	Setpoint range	Cooling	ºC	Depends on the indoor unit
		Heating	ºC	Depends on the indoor unit
Ambient temperature	Operation	Min.	ºC	-10
		Max.	ºC	50
	Storage	Min.	ºC	-20
		Max.	ºC	70
	Relative humidity \<		%	95

ELECTRICAL SPECIFICATIONS				BRC1E52A* / BRC1E52B*
Wiring connections	Type of wires			Sheathed vinyl cord or cable
	Size		mm²	0.75 / 1.25
	For connection with indoor	Quantity		2
		Remark		P1-P2 wired connection from indoor unit
	Wiring length	Max.	m	500
Back-up for power failure				Yes (The clock will keep functioning for a period not exceeding 48 hours)

Notes

* BRC1E52A contains languages English, German, French, Dutch, Spanish, Italian, Greek, Portuguese, Russian, Turkish and Polish

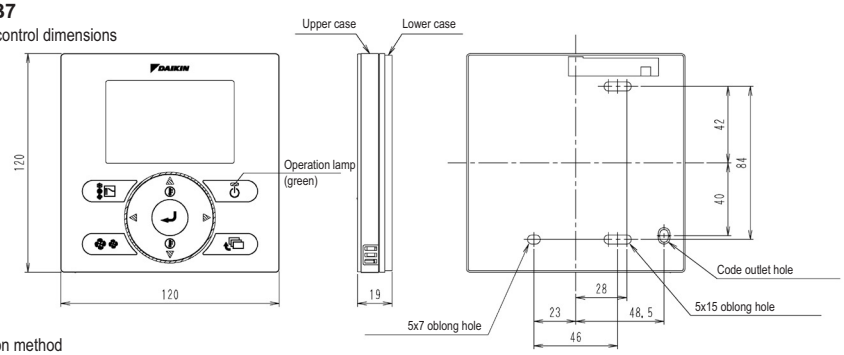
* BRC1E52B contains languages English, German, Albanian, Bulgarian, Croatian, Czech, Hungarian, Romanian, Serbian, Slovak and Slovenian

4 BRC1E52A/B - Wired remote control

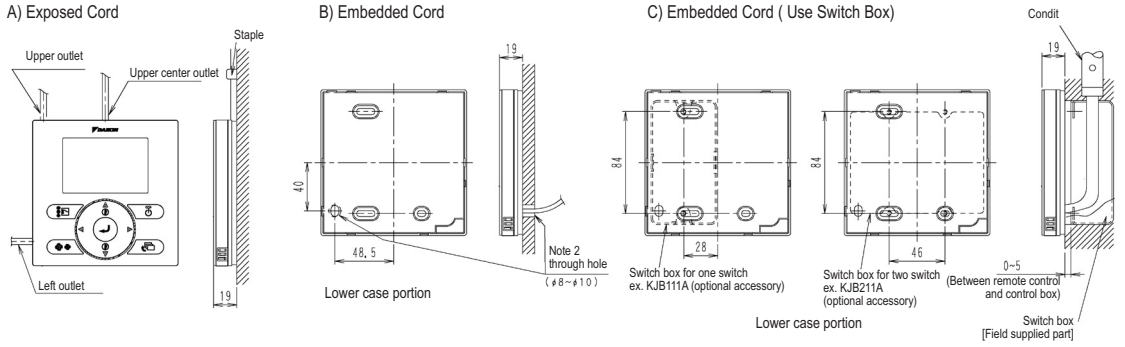
4 - 3 Dimensional Drawings

BRC1E52A7
BRC1E52B7

- Remote control dimensions



- Installation method



3D064037

NOTES

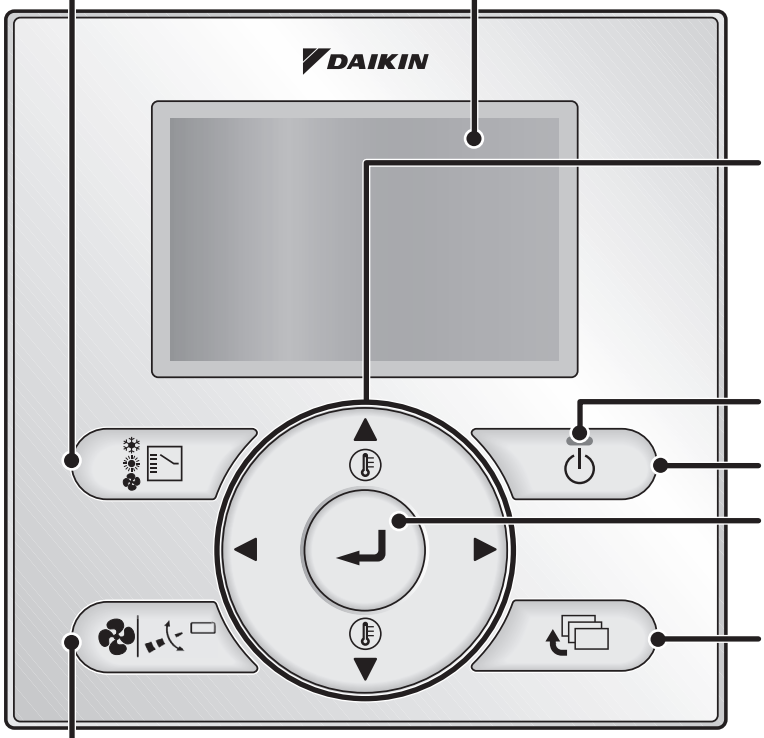
1. Remote control cord and staple are not attached, they are field supplied parts.
   Specifications of cord

Type	Vinyl cord with sheath or cable (insulated thickness: 1mm or more)
Size	0.75~1.25mm²
Total length	500m

2. If the hole size is too large or the location is not proper, the hole may come out from the remote control.

4 BRC1E52A/B - Wired remote control

4 - 4 Explanation of buttons and functions



1. Operation mode selector button
11. LCD (with backlight)
4. Up button ▲
5. Down button ▼
6. Right button ▶
7. Left button ◀
9. Operation lamp
8. On/Off button
3. Menu/Enter button
10. Cancel button
2. Fan speed/Airflow direction setting button

Functions other than basic operation items (i.e., On/Off, Operation mode selector, Fan speed/Airflow direction, and temperature settings) are set from the menu screen.

4 BRC1E52A/B - Wired remote control

4 - 4 Explanation of buttons and functions

1. Operation mode selector button

- Press this button to select the operation mode of your preference. **(See page 21.)**
  * Available modes vary with the connecting model.

2. Fan speed/Airflow direction setting button

- Used to indicate the Air Volume/Airflow direction setting screen. **(See page 14.)**
  * Available fan speed and Airflow direction vary with the connecting model.

3. Menu/Enter button

- Used to indicate the main menu. **(See page 25 for the menu items.)**
- Used to enter the setting item selected.

4. Up button ▲ (Be sure to press the part with the symbol ▲)

- Used to raise the set temperature.
- The next items on the upper side will be highlighted. (The highlighted items will be scrolled continuously when the button is kept pressed.)
- Used to change the item selected.

5. Down button ▼ (Be sure to press the part with the symbol ▼)

- Used to lower the set temperature.
- The next items on the lower side will be highlighted. (The highlighted items will be scrolled continuously when the button is kept pressed.)
- Used to change the item selected.

6. Right button ▶ (Be sure to press the part with the symbol ▶)

- Used to highlight the next items on the right-hand side.
- Each screen is scrolled in the right-hand direction.

7. Left button ◀ (Be sure to press the part with the symbol ◀)

- Used to highlight the next items on the left-hand side.
- Each screen is scrolled in the left-hand direction.

8. On/Off button

- Press this button and system will start.
- Press this button again and system will stop.

9. Operation lamp (Green)

- This lamp lights up during operation.
- This lamp blinks if a error occurs.

10. Cancel button

- Used to return to the previous screen.

11. LCD (with backlight)

- The backlight will be light for approximately 30 seconds by pressing any operation button. Operate buttons excluding the On/Off button while the backlight is lit.
- If 2 remote controllers are used to control a single indoor unit, the backlight of the remote controller operated earlier than the other one will be lit.

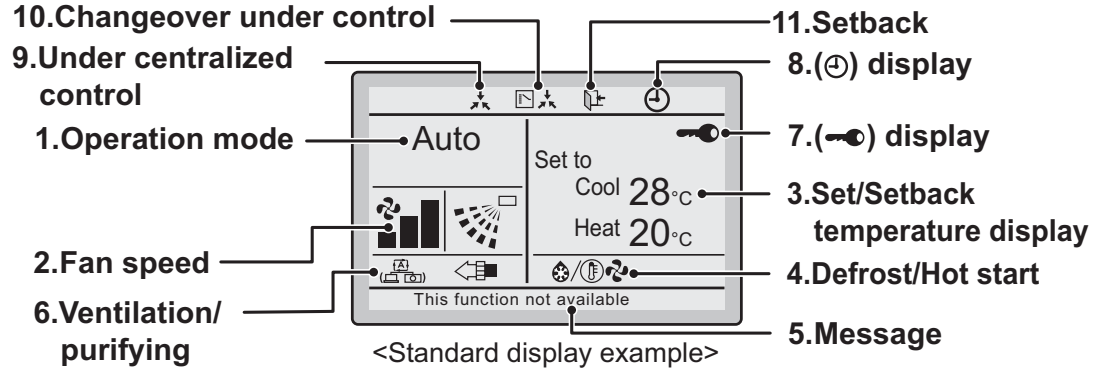
4 BRC1E52A/B - Wired remote control

4 - 4 Explanation of buttons and functions

Liquid Crystal Display

- Two types of liquid crystal display (LCD) are available. The standard display is by default set.
- To go to the detailed display, select the detailed display in the main menu. **(See page 53.)**
- The displayed contents of the screen vary with the operation mode of the equipment interlocked. (The following display will appear when the air conditioner is in automatic heating operation.)

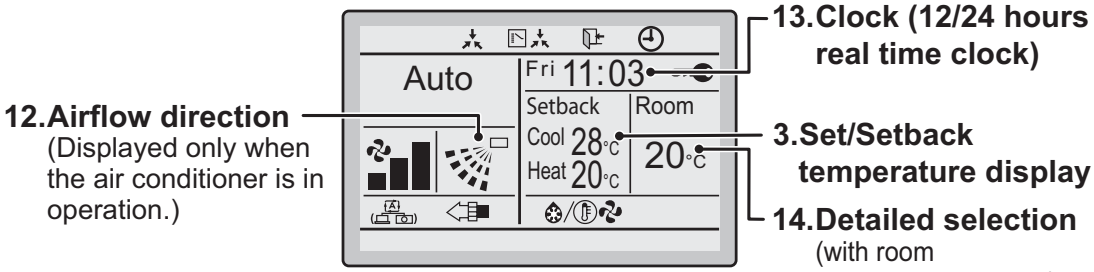
Standard display



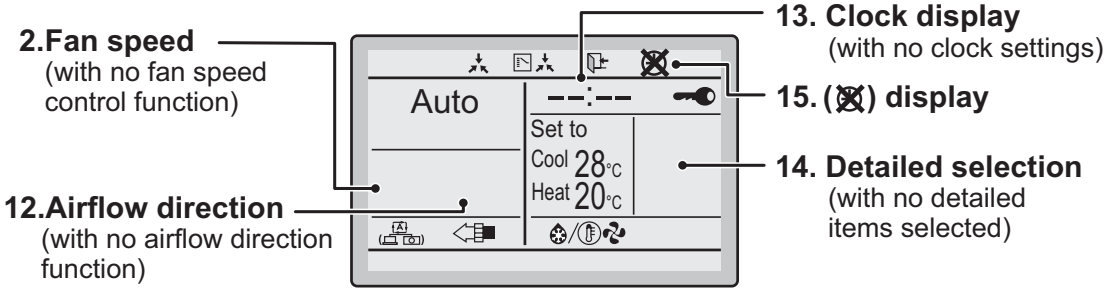
<Standard display example>

Detailed display

■ **The airflow direction, clock, and detailed selection items appear on the detailed display screen in addition to the items appearing on the standard display.**



<Detailed display example 1>



<Detailed display example 2>

4 BRC1E52A/B - Wired remote control

4 - 4 Explanation of buttons and functions

1. Operation mode

- Used to display the present operation mode Cool, Heat, Vent, Fan, Dry or Auto mode.

2. Fan speed

- Used to display the fan speed that is set for the air conditioner.
- The fan speed will not be displayed if the air conditioner does not have fan speed control function.

3. Set/Setback temperature display

- When the unit is turned on, **Set to** indicates the temperatures that are set for the air conditioner.
- When the unit is turned off, **Setback** indicates the temperatures that are set for the setback function.

4. Defrost/Hot start "/" (See page 16.)

If Ventilating operation " " is displayed:

- Displayed when a total heat exchanger unit, such as the Ventiair, is connected. For details, refer to the Operation Manual of the Ventiair.

5. Message

The following messages are displayed.
"This function not available."

- Displayed for a few seconds when an operation button is pressed if the indoor unit is not provided with the corresponding function.
- If a number of indoor units are in operation, the message will appear only if none of the indoor units is provided with the corresponding function, i.e., the message will not appear if at least one of the indoor units is provided with the corresponding function.

"Error: Press Menu Button."
"Warning: Press Menu Button."

- Displayed if an error or a warning is detected **(see page 63)**.

"Quick Start" (SkyAir only)

- Displayed if the quick cooling/heating function is turned ON **(see page 32).**

"Time to clean filter."
"Time to clean element."
"Time to clean filter and element."

- Displayed when the time to clean the filter or element has come **(see page 61).**

6. Ventilation/Purifying

- Displayed when a total heat exchanger unit, such as the Ventiair, is connected.
- **Ventilation mode icon."** **"** These icons indicate the current ventilation mode (HRV only) (AUTOMATIC, ENERGY RECLAIM VENTILATION, BYPASS).
- **AIR Purifying ICON "** **"** This icon indicates that the air cleaning unit (option) is operational.

7. display (See page 23.)

- Displayed when the key lock is set.

8. display (See page 42 and 49.)

- Displayed if the schedule timer or OFF timer is enabled.

9. Under Centralized control "

- Displayed if the system is under the management of central control equipment (optional accessories) and the operation of the system through the remote controller is prohibited.

10. Changeover under control "

(VRV only)

- Displayed on the remote controller if the remote controller has no cooling/heating selection eligibility mode **(see page 21)**.

4 BRC1E52A/B - Wired remote control

4 - 4 Explanation of buttons and functions

11. Setback " " (See page 19.)

- The setback icon flashes when the unit is turned on under the setback control.

12. Airflow direction " "

- Displayed when the airflow direction and swing are set **(see page 15)**.
- This item is not displayed if the system is not provided with a function to set airflow directions.

13. Clock (12/24 hours real time clock)

- Displayed if the clock is set **(see page 57)**.
- If the clock is not set, " -- : -- " will be displayed.

14. Detailed selection

- Displayed if the detailed display mode is selected **(see page 53)**.
- No detailed items are by default selected.

15. display

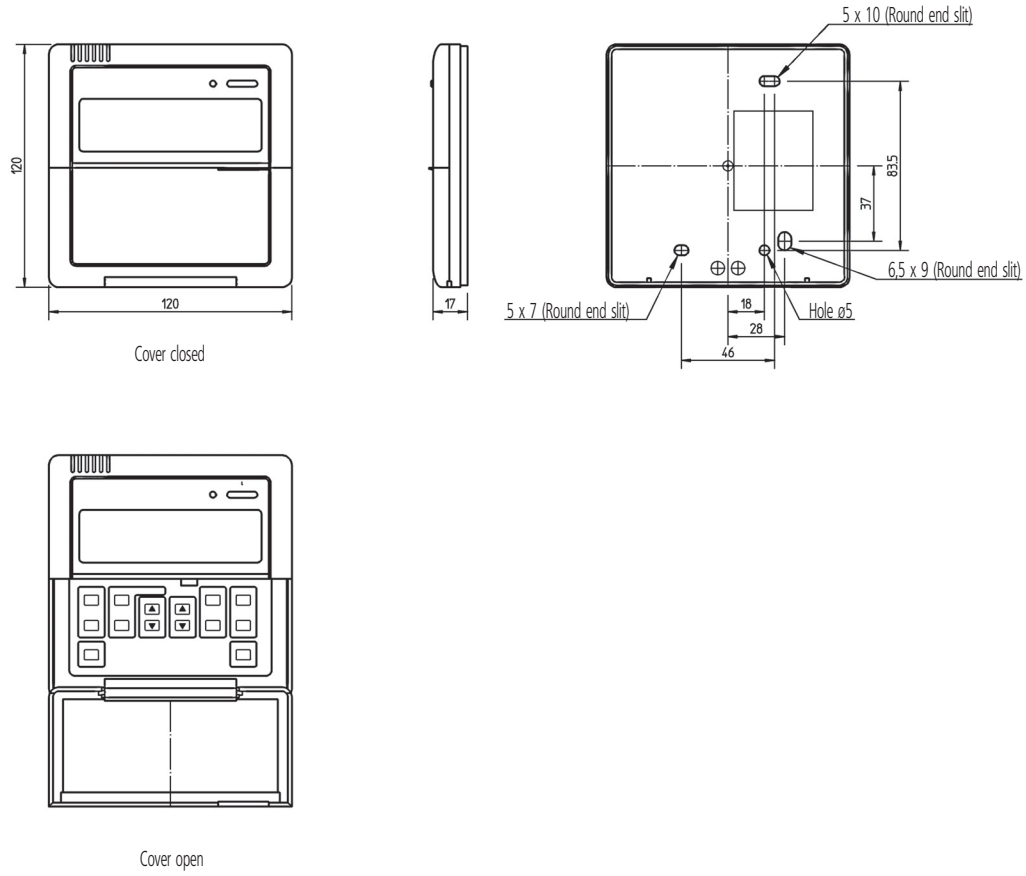
- Displayed to inform that the clock needs to be set again.
- The schedule timer function will not work unless the clock is set again.

5 BRC1D52 - Wired remote control

1
5

5 - 1 Dimensional drawing

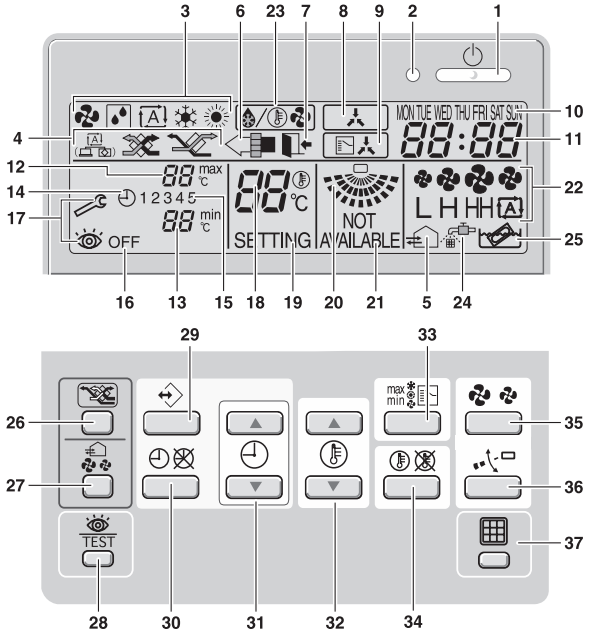
(Unit: mm)



3TW23651-2

5 BRC1D52 - Wired remote control

5 - 2 Explanation of buttons and functions

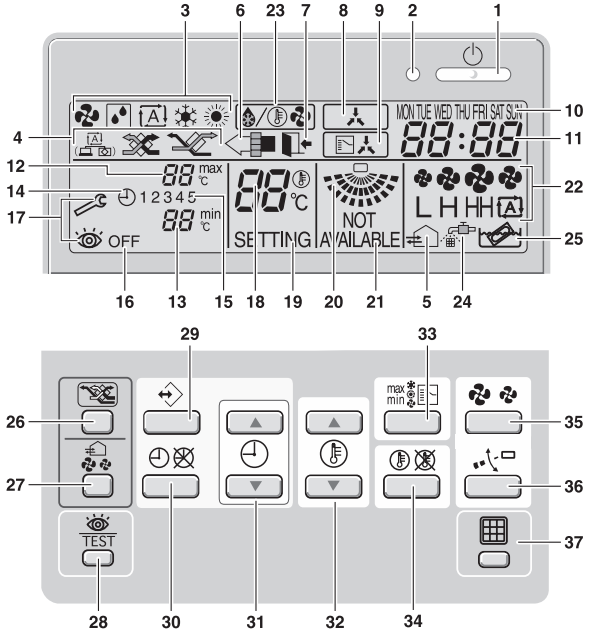


1	ON/OFF BUTTON ' ⏻ ' Press the ON/OFF button to start or stop the system.	13	MNIIMUM SET TEMPERATURE ' 88 min °C ' The minimum set temperature indicates the minimum set temperature when in limit operation.
2	OPERATION LAMP ' ○ ' The operation lamp lights up during operation or blinks if a malfunction occurs.	14	SCHEDULE TIMER ICON ' 🕘 ' This icon indicates that the schedule timer is enabled.
3	OPERATION MODE ICON ' ' ' ' ' A ' ' ' ' ' These icons indicate the current operation mode (FAN, DRY, AUTOMATIC, COOLING, HEATING).	15	ACTION ICONS ' 1 2 3 4 5 ' These icons indicate the actions for each day of the schedule timer.
4	VENTILATION MODE ICON ' A ' ' ' ' ' These icons indicate the current ventilation mode (HRV only) (AUTOMATIC, HEAT EXCHANGE, BYPASS).	16	OFF ICON ' OFF ' This icon indicates that the OFF action is selected when programming the schedule timer.
5	VENTILATION ICON' ' The ventilation icon appears when the ventilation is adjusted with the ventilation amount button (HRV only). Simultaneously, the ventilation amount is indicated by the fan speed icon (see 22).	17	INSPECTION REQUIRED ' ' and ' ' These icons indicate that inspection is required. Consult your installer.
		18	SET TEMPERATURE DISPLAY ' 27 °C ' This indicates the current set temperature of the installation (not shown in LIMIT operation or in FAN or DRY mode).
6	AIR CLEANING ICON ' ' This icon indicates that the air cleaning unit (option) is operational.		
7	LEAVE HOME ICON' ' The leave home icon shows the status of the leave home function. ON — Leave home is enabled FLASHING — Leave home is active OFF — Leave home is disabled	19	SETTING ' SETTING ' Not used, for service purposes only.
		20	AIR FLOW DIRECTION ICON ' ' This icon indicates the air flow direction (only for installations with motorised air flow flaps).
		21	NOT AVAILABLE ' NOT AVAILABLE ' This is displayed whenever a non-installed option is addressed or a function is not available.
8	EXTERNAL CONTROL ICON ' ' This icon indicates that another controller with higher priority is controlling or disabling your installation.	22	FAN SPEED ICON ' L H HH A ' This icon indicates the set fan speed.
9	CHANGE-OVER UNDER CENTRALISED CONTROL ICON ' ' This icon indicates that the change-over of the installation is under centralised control assigned to another indoor unit or optional cool/heat selector connected to the outdoor unit (= master remote control).	23	DEFROST/HOTSTART MODE ICON ' ' This icon indicates that the defrost/hotstart mode is active.

10	DAY OF THE WEEK INDICATOR ' MON TUE WED THU FRI SAT SUN ' The day of the week indicator shows the current week day (or the set day when reading or programming the schedule timer).	24	AIR FILTER CLEANING TIME ICON ' ' This icon indicates the air filter must be cleaned. Refer to the manual of the indoor unit.
11	CLOCK DISPLAY ' 88:88 ' The clock display indicates the current time (or the action time when reading or programming the schedule timer).	25	ELEMENT CLEANING TIME ICON ' ' This icon indicates the element must be cleaned (HRV only).
12	MAXIMUM SET TEMPERATURE ' 88 max °C ' The maximum set temperature indicates the maximum set temperature when in limit operation.	26	VENTILATION MODE BUTTON ' ' The ventilation mode button operates the HRV; refer to the HRV manual for more details.

5 BRC1D52 - Wired remote control

5 - 2 Explanation of buttons and functions



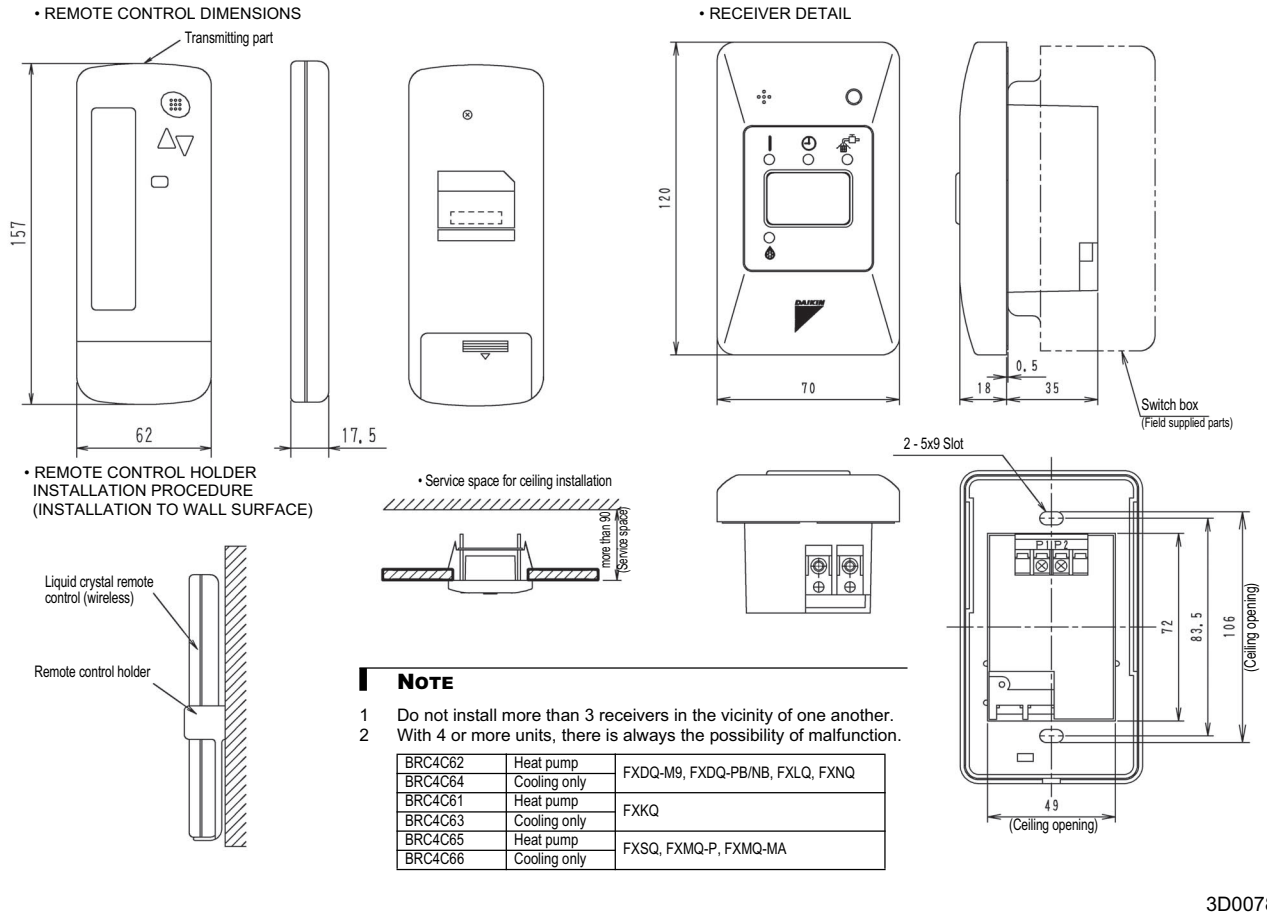
27	VENTILATION AMOUNT BUTTON ' '	33	OPERATION CHANGE/MIN-MAX BUTTON ' '
	This button sets the ventilation amount; refer to the HRV manual for more details.		This button is a multi-purpose button. Depending on the previous manipulations of the user, it can have following functions: 1 select the operation mode of the installation (FAN, DRY, AUTOMATIC, COOLING, HEATING) 2 toggle between minimum temperature and maximum temperature when in limit operation
28	INSPECTION/TEST OPERATION BUTTON ' TEST '		
	Not used, for service purposes only.		
29	PROGRAMMING BUTTON' '	34	SETPOINT/LIMIT BUTTON ' '
	This button is a multi-purpose button. Depending on the previous manipulations of the user, the programming button can have various functions.		This button toggles between setpoint, limit operation or ' OFF ' (programming mode only).
30	SCHEDULE TIMER BUTTON' '	35	FAN SPEED BUTTON ' '
	This button enables or disables the schedule timer.		This button toggles between L (Low), H (High), HH (very High), A (Automatic).
31	TIME ADJUST BUTTON ' '	36	AIR FLOW DIRECTION ADJUST BUTTON ' '
	These buttons are used to adjust the clock or, when in programming mode, to adjust the programmed action time. Both buttons have an auto-repeat function.		This button enables to adjust the air flow direction.
32	TEMPERATURE ADJUST BUTTON ' '	37	AIR FILTER CLEANING TIME ICON RESET BUTTON ' '
	These buttons are used to adjust the current setpoint or, when in programming mode, to adjust the programmed setpoint temperature (step = 1°C). Both buttons are also used to adjust the day of the week.		This button is used to reset the air filter cleaning time icon.

6 BRC4C61,62,63,64,65,66 - Infrared remote control

1
6

6 - 1 Dimensional drawing

(Unit: mm)



NOTE

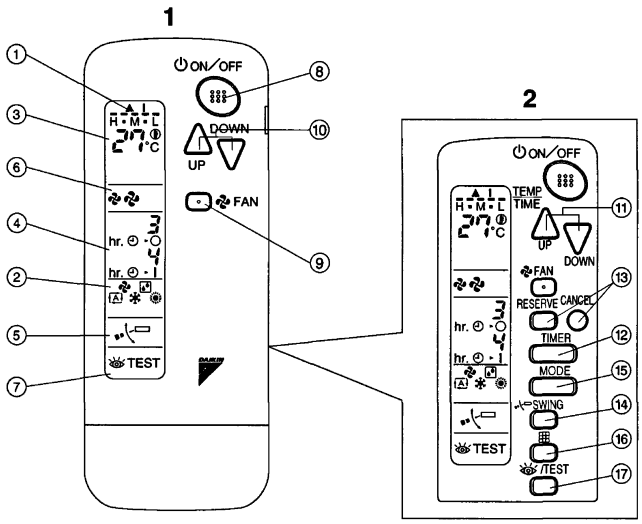
1 Do not install more than 3 receivers in the vicinity of one another.
2 With 4 or more units, there is always the possibility of malfunction.

BRC4C62	Heat pump	FXDQ-M9, FXDQ-PB/NB, FXLQ, FXNQ
BRC4C64	Cooling only	
BRC4C61	Heat pump	FXKQ
BRC4C63	Cooling only	
BRC4C65	Heat pump	FXSQ, FXMQ-P, FXMQ-MA
BRC4C66	Cooling only	

3D007898B

6 BRC4C61,62,63,64,65,66 - Infrared remote control

6 - 2 Explanation of buttons and functions



1	DISPLAY 'G' (SIGNAL TRANSMISSION) This lights up when a signal is being transmitted.	13	TIMER RESERVE/CANCEL BUTTON
		14	AIR FLOW DIRECTION ADJUST BUTTON (BRC4C61,63 only)
2	DISPLAY ' ' ' ' ' ' ' ' (OPERATION MODE) This display shows the current OPERATION MODE. For cooling only type, ' ' (Auto) and ' ' (Heating) are not installed.	15	OPERATION MODE SELECTOR BUTTON Press this button to select OPERATION MODE.
		16	FILTER SIGN RESET BUTTON
3	DISPLAY ' ' (SET TEMPERATURE) This display shows the set temperature.	17	INSPECTION/TEST OPERATION BUTTON This button is used only by qualified service persons for maintenance purposes.
4	DISPLAY ' ' (PROGRAMMED TIME) This display shows PROGRAMMED TIME of the system start or stop.	18	EMERGENCY OPERATION SWITCH This switch is readily used if the remote control does not work.
5	DISPLAY ' ' (AIR FLOW FLAP) (BRC4C61,63 only)	19	RECEIVER This receives the signals from the remote control.
6	DISPLAY ' ' (FAN SPEED) The display shows the set fan speed.	20	OPERATING INDICATOR LAMP (RED) This lamp stays lit while the air conditioner runs. It flashes when the unit is in trouble.
7	DISPLAY ' ' (INSPECTION/TEST OPERATION) When the INSPECTION/TEST OPERATION BUTTON is pressed, the display shows the system mode is in.	21	TIMER INDICATOR LAMP (GREEN) This lamp stays lit while the timer is set.
8	ON/OFF BUTTON Press the button and the system will start. Press the button again and the system will stop.	22	AIR FILTER CLEANING TIME INDICATOR LAMP (RED) Lights up when it is time to clean the air filter.
9	FAN SPEED CONTROL BUTTON Press this button to select the fan speed, HIGH or LOW, of your choice.	23	DEFROST LAMP (ORANGE) Lights up when the defrosting operation has started. (For straight cooling type this lamp does not turn on.)
10	TEMPERATURE SETTING BUTTON Use this button for SETTING TEMPERATURE. (Operates with the front cover of the remote control closed.)	24	FAN/AIR CONDITIONING SELECTOR SWITCH Set the switch to " " (FAN) for FAN and " " (A/C) for HEAT or COOL.
11	PROGRAMMING TIME BUTTON Use this button for programming "START and/or STOP" time. (Operates with the front cover of the remote control closed.)	25	COOL/HEAT CHANGEOVER SWITCH Set the switch to " " (COOL) for COOL and " " (HEAT) for HEAT.
12	TIMER MODE START/STOP BUTTON		

NOTES

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

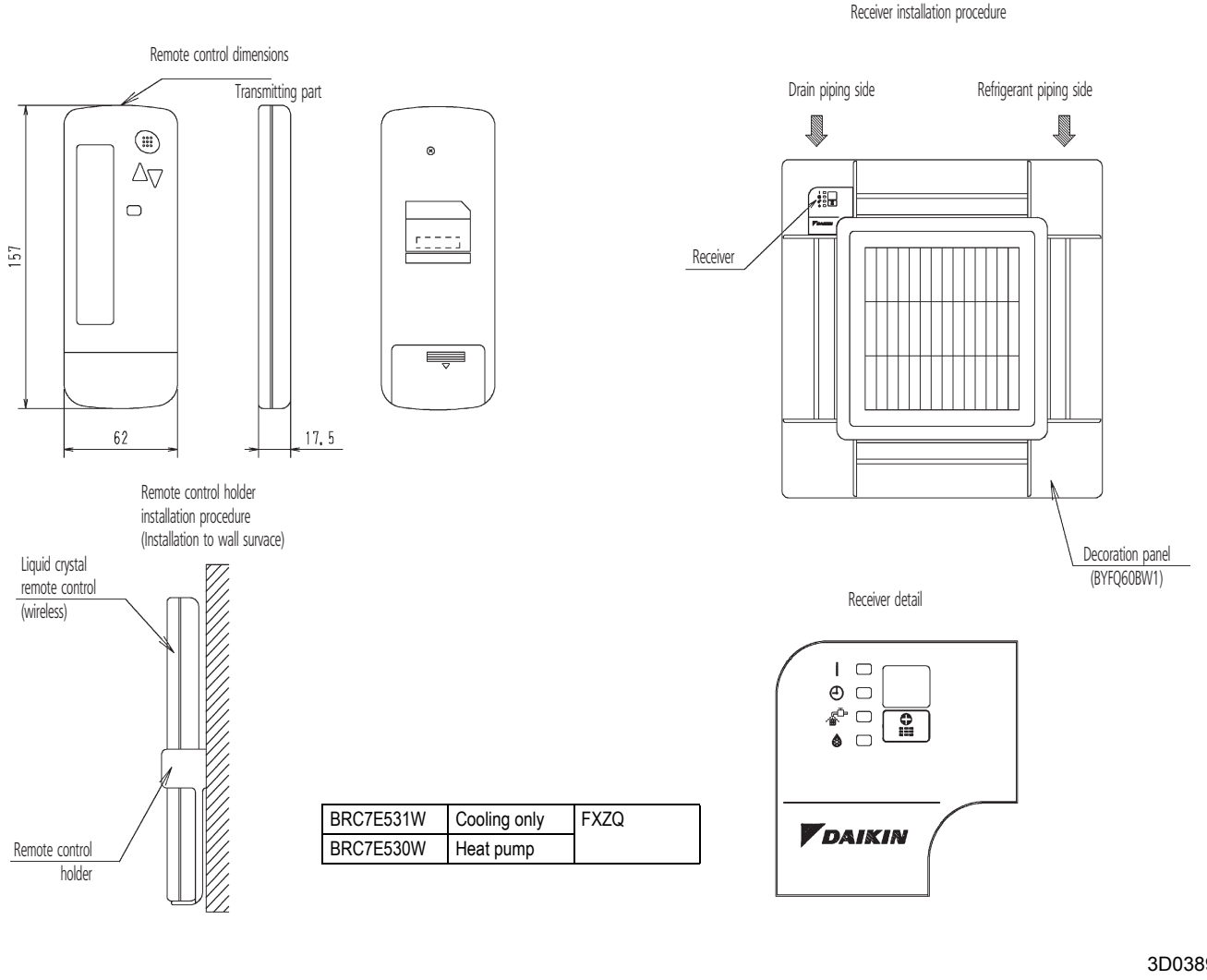
2 Figure 2 shows the remote control with the front cover opened.

7 BRC7E531W,530W - Infrared remote control

1
7

7 - 1 Dimensional drawing

(Unit: mm)



BRC7E531W	Cooling only	FXZQ
BRC7E530W	Heat pump	

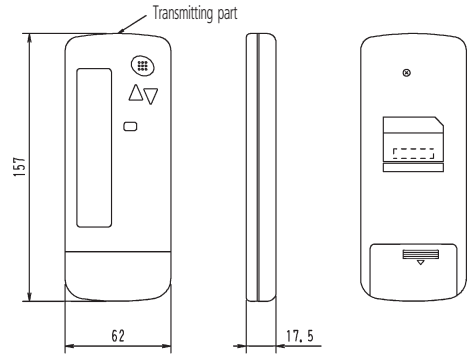
3D038937

8 BRC7E63W,66 - Infrared remote control

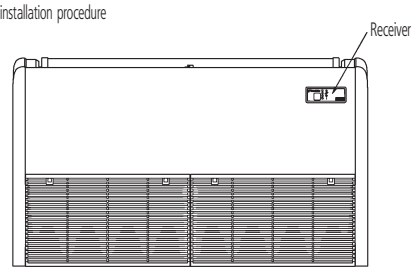
8 - 1 Dimensional drawing

(Unit: mm)

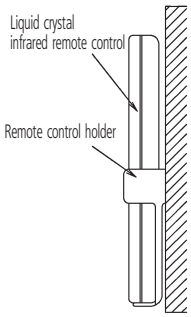
Remote control dimensions



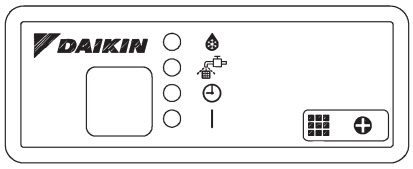
Receiver installation procedure



Remote control holder installation procedure (installation to wall surface)



Receiver detail

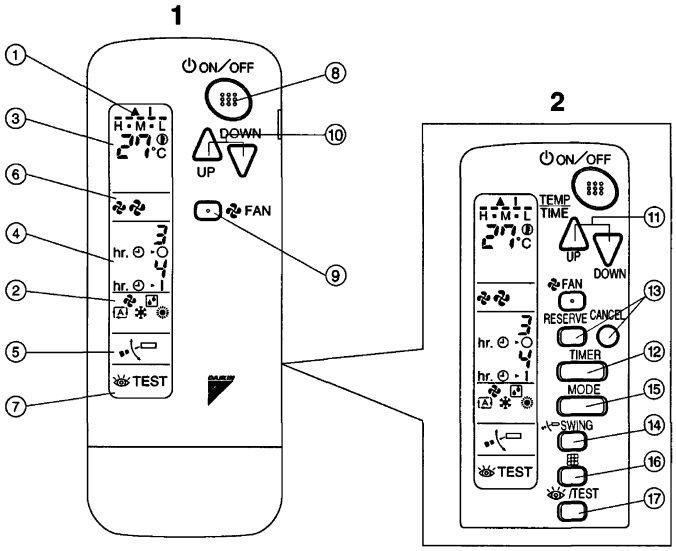


BRC7E63W	Heat pump	FXHQ
BRC7E66	Cooling only	

3D028963

8 BRC7E63W,66 - Infrared remote control

8 - 2 Explanation of buttons and functions



1	DISPLAY 'G' (SIGNAL TRANSMISSION)	13	TIMER RESERVE/CANCEL BUTTON
	This lights up when a signal is being transmitted.	14	AIR FLOW DIRECTION ADJUST BUTTON
2	DISPLAY ' ' ' ' ' ' ' ' ' ' (OPERATION MODE)	15	OPERATION MODE SELECTOR BUTTON
	This display shows the current OPERATION MODE. For cooling only type, ' ' (Auto) and ' ' (Heating) are not installed.		Press this button to select OPERATION MODE.
		16	FILTER SIGN RESET BUTTON
3	DISPLAY ' ' (SET TEMPERATURE)	17	INSPECTION/TEST OPERATION BUTTON
	This display shows the set temperature.		This button is used only by qualified service persons for maintenance purposes.
4	DISPLAY ' ' (PROGRAMMED TIME)	18	EMERGENCY OPERATION SWITCH
	This display shows PROGRAMMED TIME of the system start or stop.		This switch is readily used if the remote control does not work.
5	DISPLAY ' ' (AIR FLOW FLAP)	19	RECEIVER
6	DISPLAY ' ' (FAN SPEED)		This receives the signals from the remote control.
	The display shows the set fan speed.	20	OPERATING INDICATOR LAMP (RED)
7	DISPLAY ' ' (INSPECTION/TEST OPERATION)		This lamp stays lit while the air conditioner runs. It flashes when the unit is in trouble.
	When the INSPECTION/TEST OPERATION BUTTON is pressed, the display shows the system mode is in.	21	TIMER INDICATOR LAMP (GREEN)
8	ON/OFF BUTTON		This lamp stays lit while the timer is set.
	Press the button and the system will start. Press the button again and the system will stop.	22	AIR FILTER CLEANING TIME INDICATOR LAMP (RED)
9	FAN SPEED CONTROL BUTTON		Lights up when it is time to clean the air filter.
	Press this button to select the fan speed, HIGH or LOW, of your choice.	23	DEFROST LAMP (ORANGE)
10	TEMPERATURE SETTING BUTTON		Lights up when the defrosting operation has started. (For straight cooling type this lamp does not turn on.)
	Use this button for SETTING TEMPERATURE. (Operates with the front cover of the remote control closed.)	24	FAN/AIR CONDITIONING SELECTOR SWITCH
11	PROGRAMMING TIME BUTTON		Set the switch to " " (FAN) for FAN and " " (A/C) for HEAT or COOL.
	Use this button for programming "START and/or STOP" time. (Operates with the front cover of the remote control opened.)	25	COOL/HEAT CHANGEOVER SWITCH
12	TIMER MODE START/STOP BUTTON		Set the switch to " " (COOL) for COOL and " " (HEAT) for HEAT.

NOTES

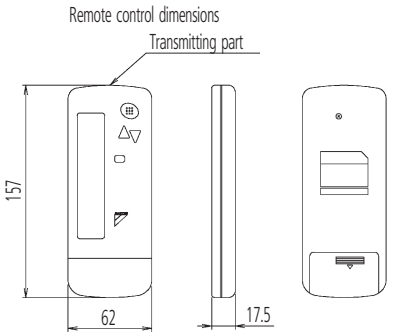
1 Please note that the display shows all indications for the purpose of explanation only.
This is contrary to actual running situations.

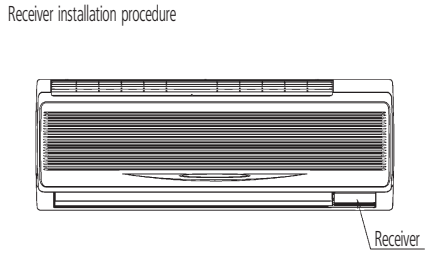
2 Figure 2 shows the remote control with the front cover opened.

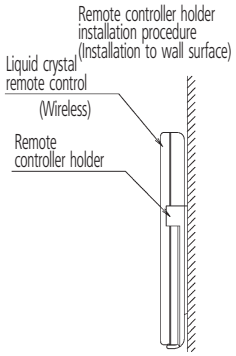
9 BRC7E618,619 - Infrared remote control

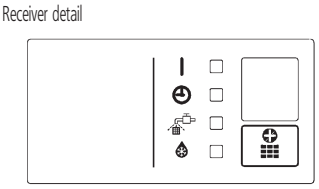
9 - 1 Dimensional drawing

(Unit: mm)









BRC7E618	Heat pump	FXAQ
BRC7E619	Cooling only	

3D034905

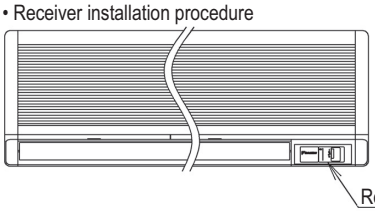
10 BRC518,519 - Infrared remote control

1
10

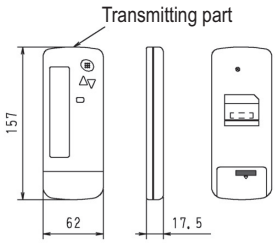
10 - 1 Dimensional drawing

BRC7C518,519

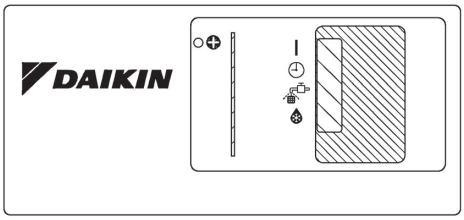
• Receiver installation procedure



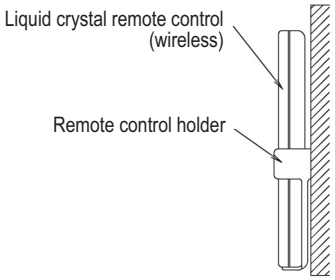
• Remote control dimensions



• Receiver detail



• Remote control holder installation procedure
(Installation to wall surface)



Indoor Unit	Infrared remote control kit	
	Heat pump system	Cooling only system
FAQ100	BRC7C510W	BRC7C511W

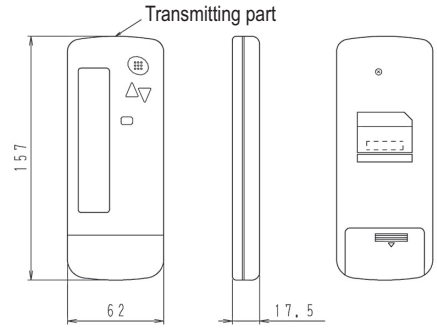
3D010766B

11 BRC7C528,529W - Infrared remote control

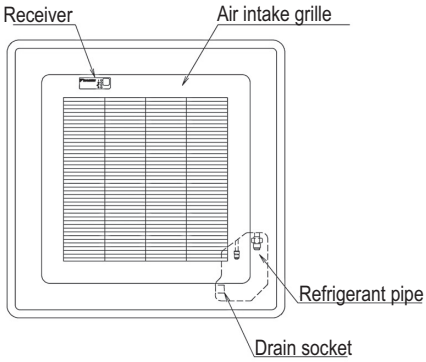
11 - 1 Dimensional drawing

BRC7C528W,529W

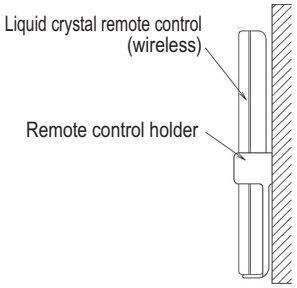
• Remote control dimensions



• Receiver installation procedure



• Remote control holder installation procedure
(Installation to wall surface)



• Receiver detail

• Infrared remote control kit for each indoor unit

Indoor Unit	Infrared remote control kit			
	Heat pump system		Cooling only system	
FUQ	BRC7C528W	BRC7CA528W	BRC7C529W	BRC7CA529W

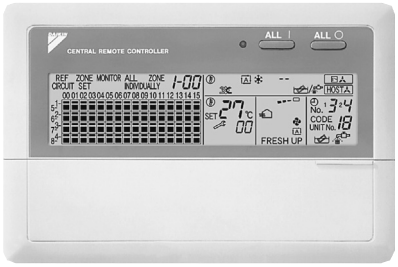
3D014035A

TABLE OF CONTENTS

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

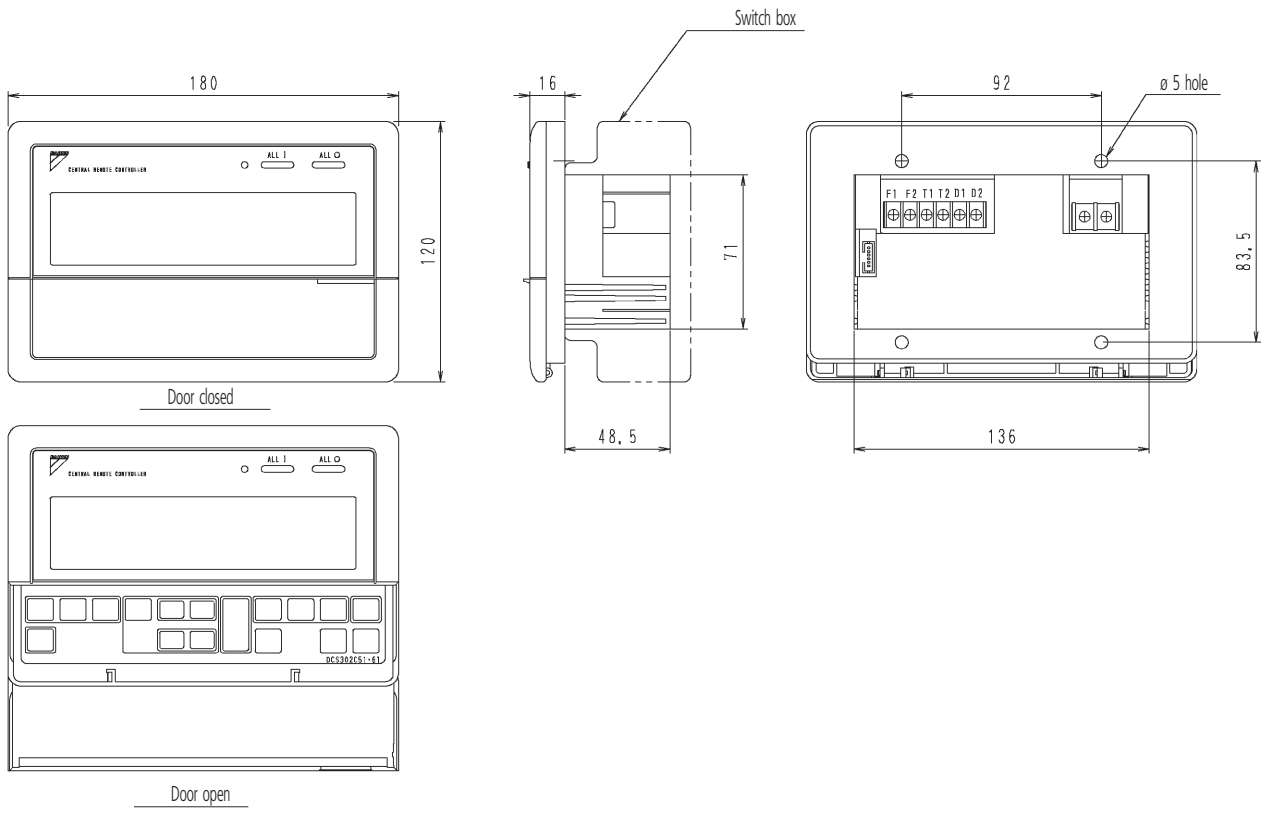
Enabling 64 groups to be programmed.

- 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

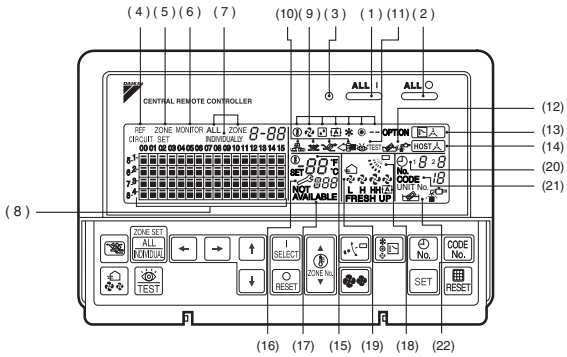
(Unit: mm)

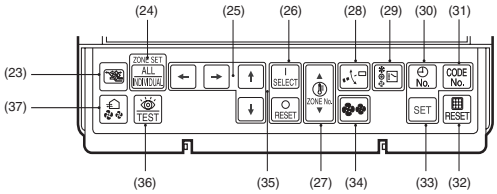


3D004872

2 DCS302C51: Centralised remote control

2 - 2 Explanation of buttons and functions

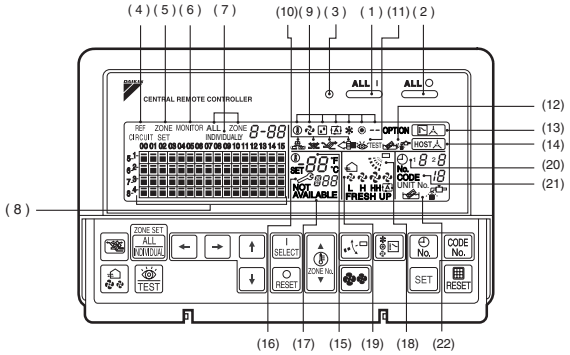


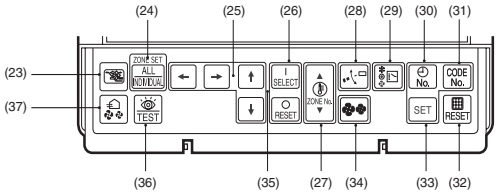


1	**UNIFIED OPERATION BUTTON** Press to operate all indoor units.	17	**"NOT AVAILABLE" DISPLAY (NO FUNCITON DISPLAY)** If a function is not available in the indoor unit even if the button is pressed, "NOT AVAILABLE" is may be displayed for a few seconds.
2	**UNIFIED STOP BUTTON** Press to stop all indoor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

2 DCS302C51: Centralised remote control

2 - 2 Explanation of buttons and functions





32	**FILTER SIGN RESET BUTTON**	36	**INSPECTON/TEST RUN BUTTON (FOR SERVICE)**
	This button is pressed to erase the “clean filter” display after cleaning or replacement.		Pressing this button scrolls through “inspection”, “test run”, and “system display”. This button is not normally used.
33	**SET BUTTON**	37	**VENTILATION STRENGTH ADJUSTMENT BUTTON**
	Sets control mode and time No.		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

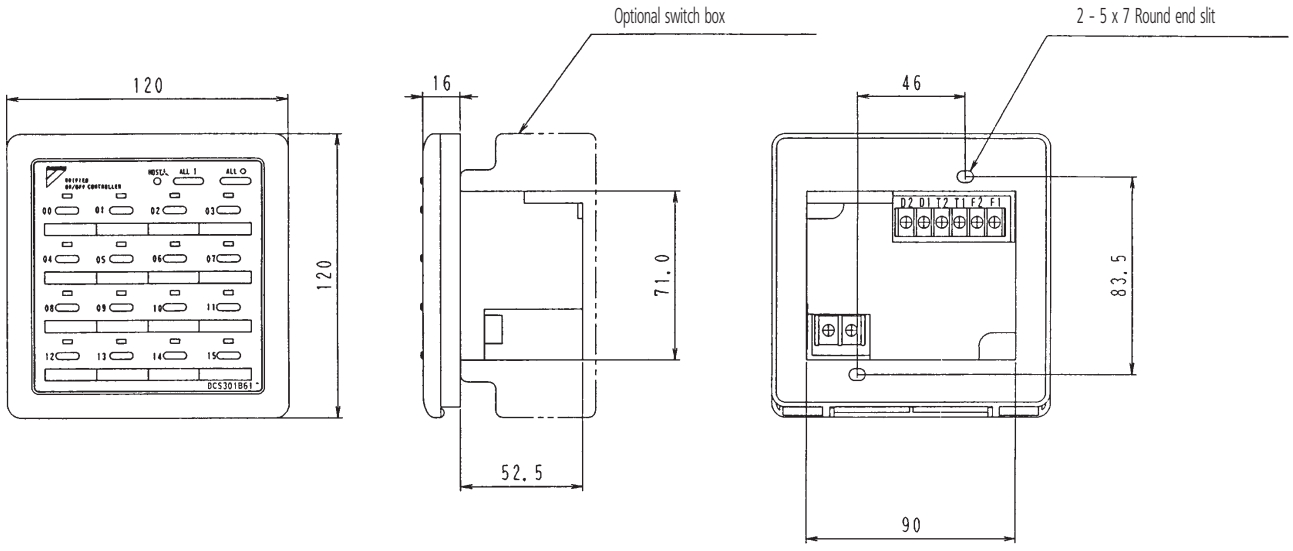
1 Please note that the display shows all indications for the purpose of explanation only.
This is contrary to actual running situations.

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)

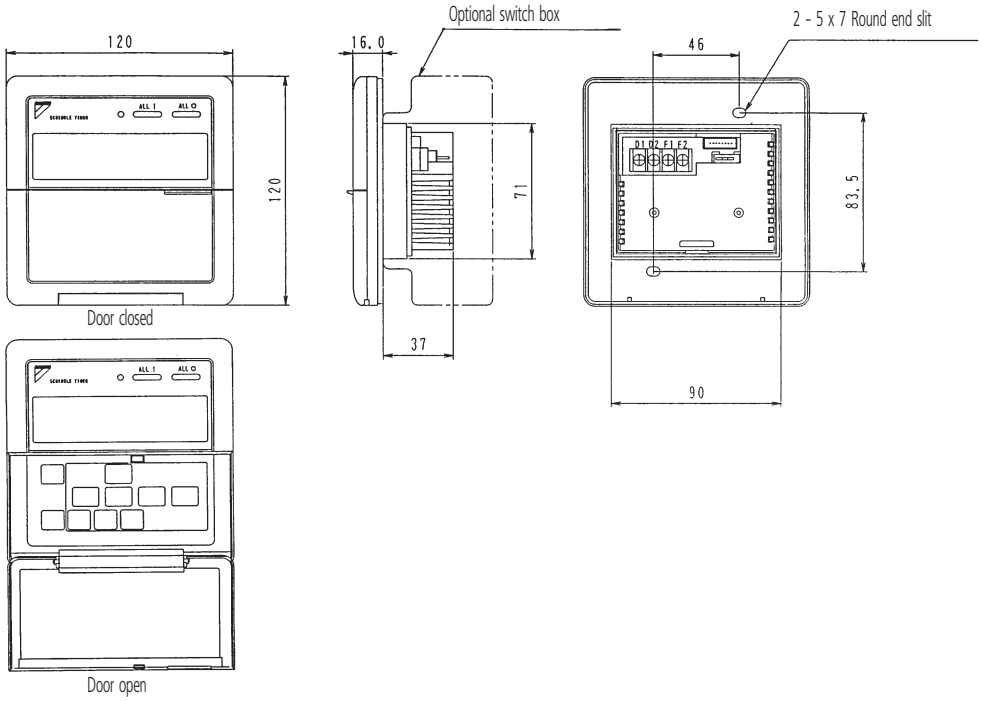


3D004872

4 DST301B51: Schedule timer

4 - 1 Dimensional drawing

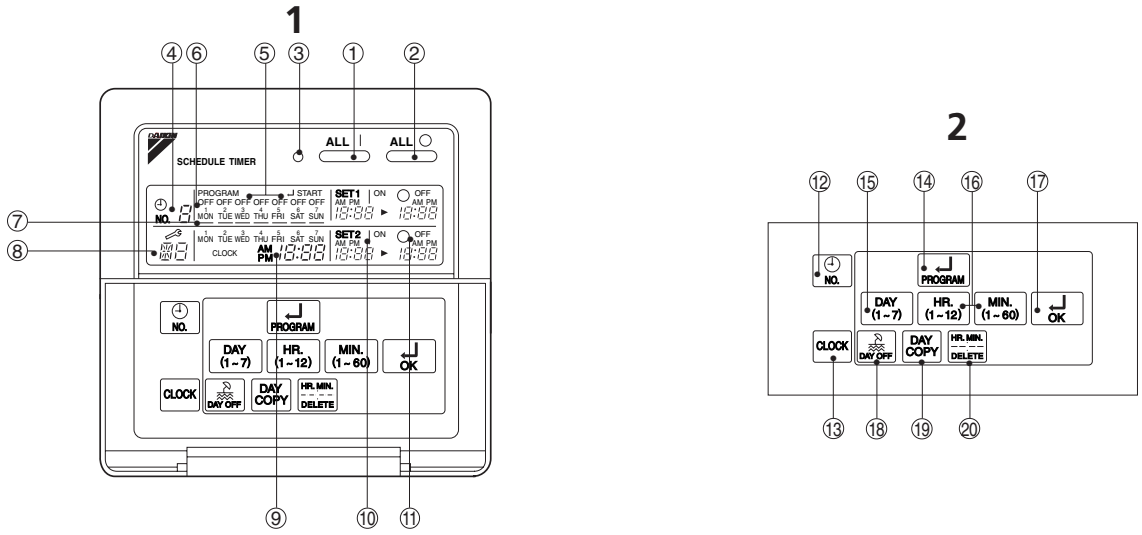
(Unit: mm)



3D049544

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 10:00" (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 10:00 " (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 10:00 " (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.

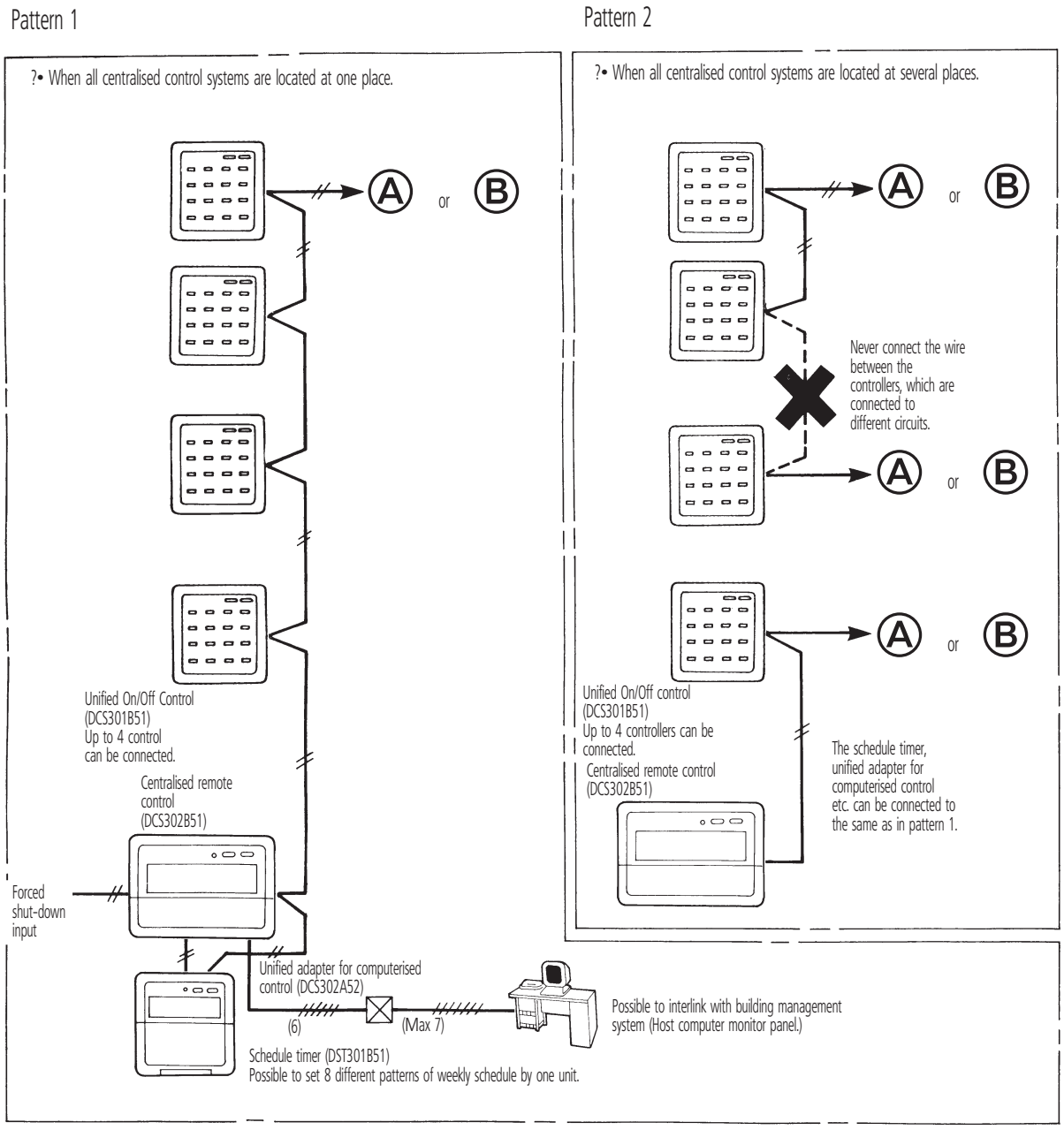
5 Survey of various control systems

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.

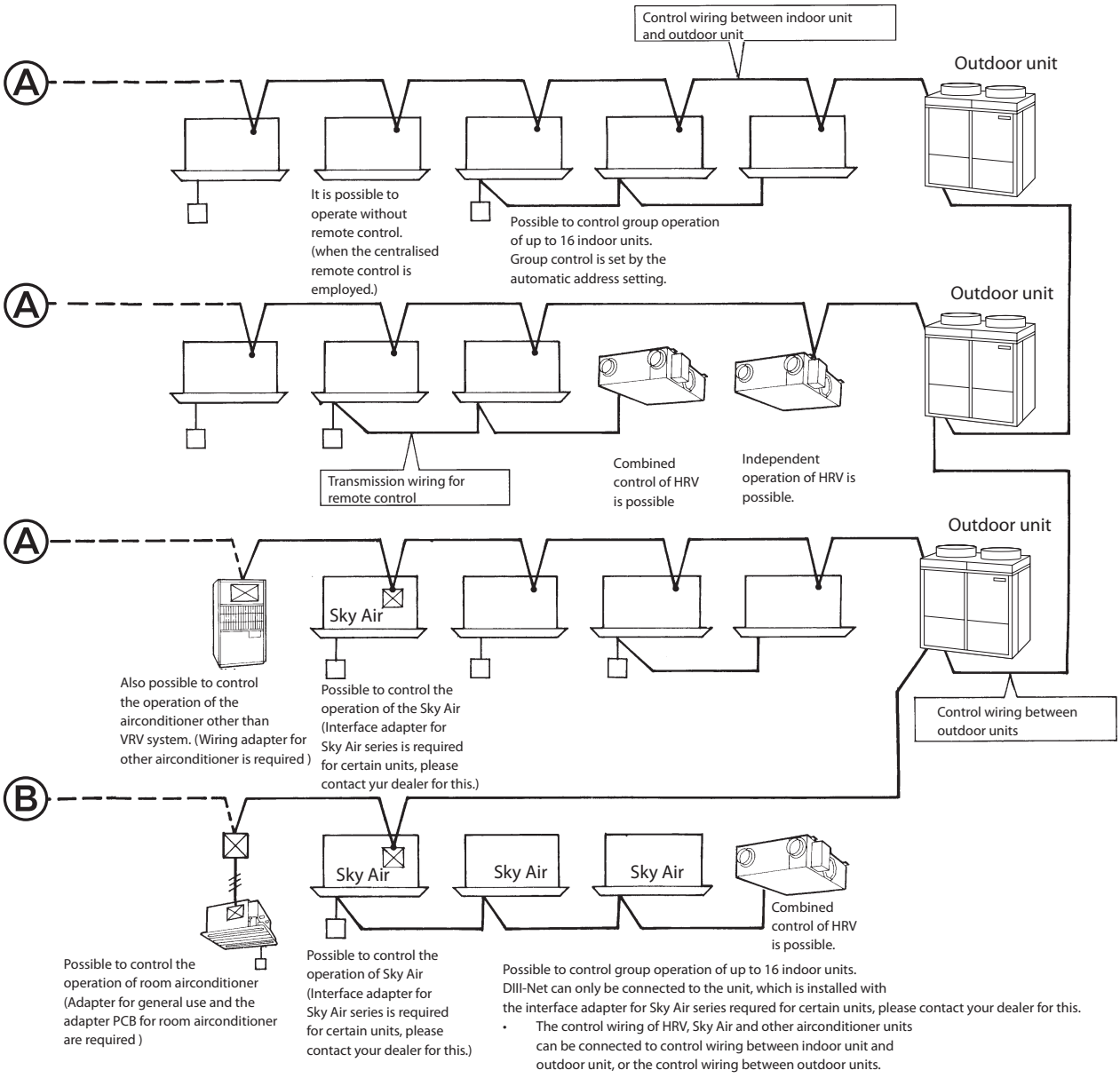
6 Wiring example of centralised control systems

- 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 B.

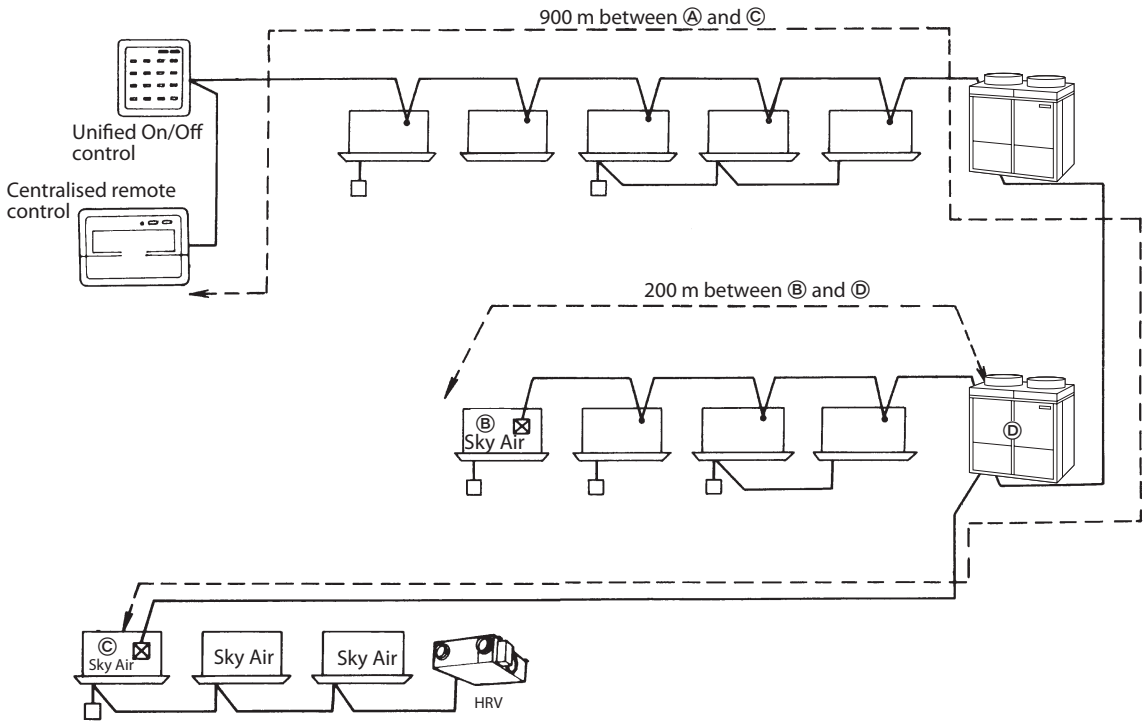
- If the central controllers are connected to (B), it is still possible to have centralised control, even if the power supply of other circuit connected to the central controller is shut-off. (Even if the power is shut off dure to long vacation etc.)

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 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.

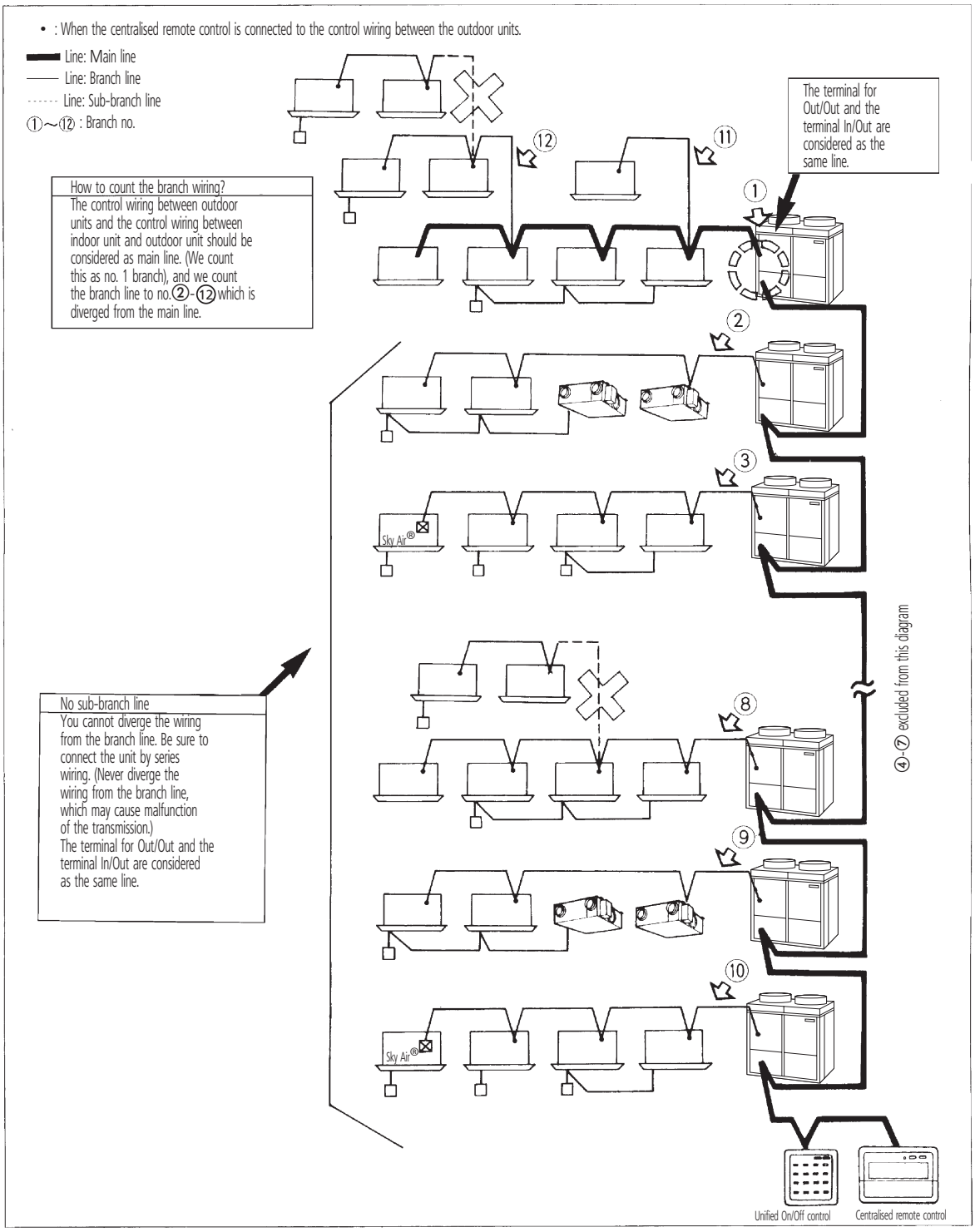
NOTES

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 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.



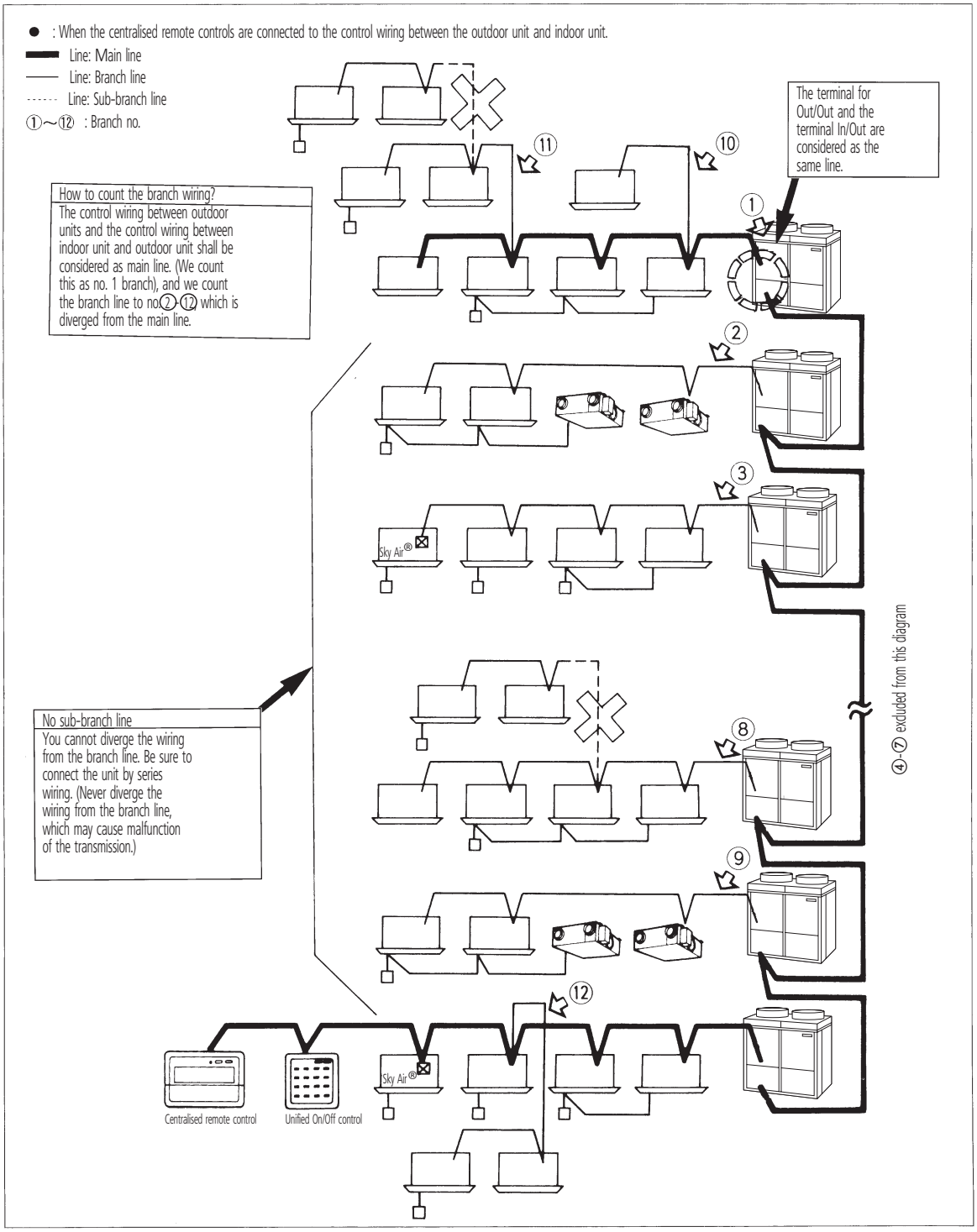
NOTES

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 for certain units, please contact your dealer for this.) • 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

Check sheet for number of units in one system

Centralised controller	Qty	Y/N	
No. of IPU of intelligent Manager			≤ 1
Intelligent Touch Controller (Note 2)			≤ 2
Central remote control (Note 2)			≤ 2
Unified ON/OFF control			≤ 8
Schedule timer			≤ 1
Interface for use in BACnet® (Note 3)			≤ 1
Interface for use of LONWORKS®			≤ 1
Parallel interface			≤ 4
Total			≤ 7
			≥ 8

	x 10	=
	x 10	=
	x 1 (A)	=
	x 10	=
	x 10	=
	x 10	=

	+		+		+		=		≤ 200

Unit	Qty	Y/N	
VRV			
SkyAir with adapter for certain units, please contact your dealer for this.			
HRV (VAM)			
Wiring adapter for other air conditioner			
BS unit (Note 4)			
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			
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 + 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.

DS-net

1 Features & Outline

Basic solution for control and management of Sky Air and VRV systems

Application area

- Critical applications for centralized monitoring.

System functions

- Automates alarm (report messages) for any malfunctions/ errors. Immediate report of any indoor unit breakdown to the servicing company.
- Minimizes the inconvenience of not having air conditioning via rapid messages.

Functions via mobile phone

- Status monitoring and control (Start/Stop, Set temperature, Operation mode, Room temperature, Operation time, Error code)
- Error notification

Functions when standing alone

- Rotation function
- Back-up operation

2 Main Functions

A single DS-NET Adapter unit can monitor and control the air conditioners of up to 4 remote control groups.

The following functions of air conditioners can be monitored and controlled by mobile phone:

Item	Monitoring	Operation
Start/Stop	o	o
Operating mode (Fan/Cool/Heat)	o	o
Temperature setting (Cool/Heat)	o	o
Error code	o	x

O: Possible

X: Impossible

3 Specifications

		DTA113B51
Supply - Voltage		DC 16V supplied from R/C line
Maximum number of connectable indoor units		4 units per adapter PCB (via GSM)
Forced ON/OFF input		Non-voltage (normal) 'a' contact x each point
Dimensions (mm)		100x100x35
Installation method		Built into the indoor unit or placed inside a box especially built for it
Communication functions	via GSM	RS232C, GSM modem
Ambient temperature/humidity conditions for operation		-10 ~ 50°C, max. of 95% RH
Control functions	via GSM	Start/stop, operation mode (fan/cool/heat), temperature setting
Monitoring functions	via GSM	Start/stop, operation mode (fan/cool/heat), temperature setting, error code
Malfunction monitoring functions		Malfunction reporting function
Automatic alternating operation functions	via GSM	Yes
Back-up operation functions	via GSM	Yes

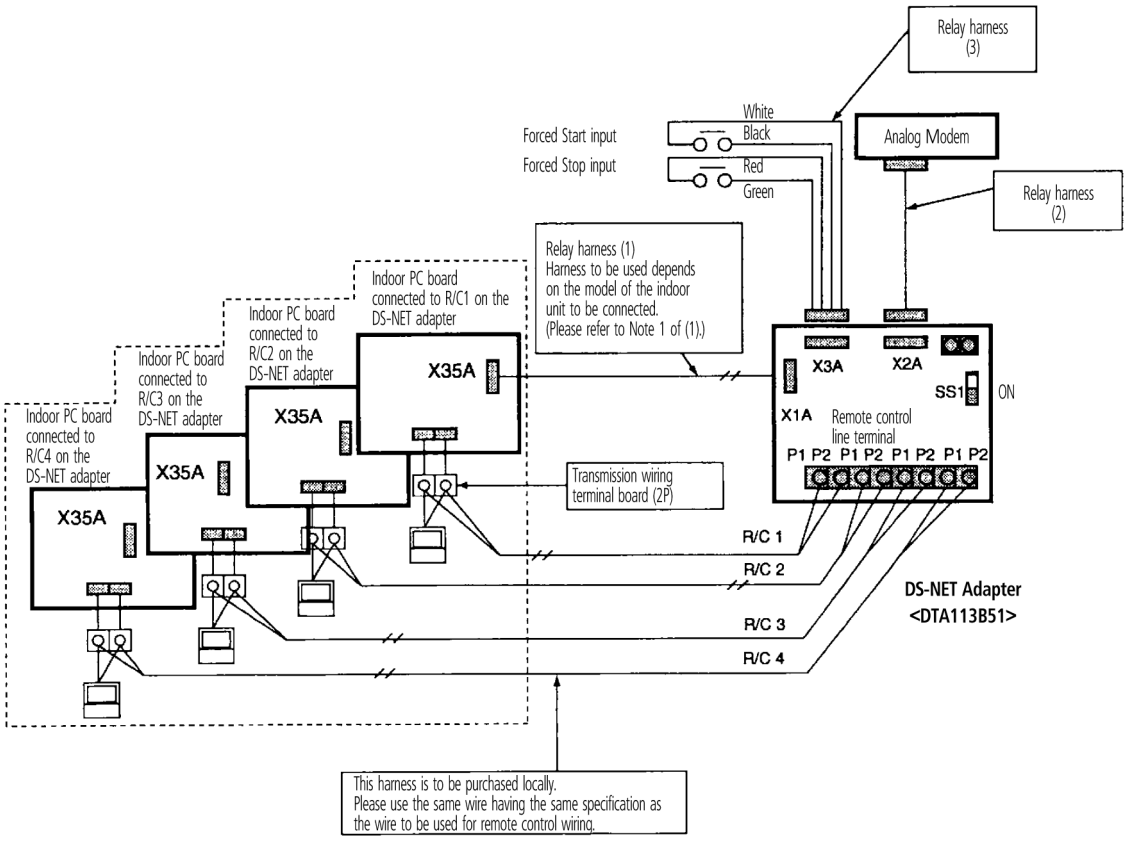
Daikin recommends the use of a Wavecom Fastrack modem

4 Electric wiring

The contact is constant contact. The output conditions are level reading.

- When the forced operation contact is closed, all stopped units are continuously instructed to operate.
- When the forced stop contact is closed, all operating units are continuously instructed to stop.
- Once the forced operation contact is closed, all indoor units which are stopped at that time are instructed to operate, even if the forced stop contact is closed immediately after, the indoor units will operate for a moment and then stop. (This is the same as with the remote control operation.)

The contact is to be purchased locally. The current applied when the contact is ON is approx. DC16V, 10mA. Input is via momentary A-contact. Minimum 1 second is required for turning ON. Please don't clamp with high voltage cable.



Electrical wiring

Procured on-site sheathed vinyl cord

(VCTF 0.2 mm^2 or 0.3 mm^2)

Important

- The A (+) and B (-) terminals have polarity which must not be mixed up.
- Turn on SS1 (terminating resistance) for the DS-NET adapter.
- Leave the adapter address of the circuit board to 0.

3
4

TABLE OF CONTENTS

intelligent touch Controller

1 Features

1 - 1 Main Features

a **Languages***

- English
- French
- German
- Italian
- Spanish
- Dutch**
- Portuguese**

b **Management**

- Web application & internet compatibility
  - Monitoring & control according to user
  - Remote monitoring & control of more than one building
  - Remote monitoring & control of more than one building via internet
- Power Proportional Distribution: PPD (option)
- PPD data is available on the network through Web option
- Easy management of electricity consumption
- Enhanced history function
- Http interface option

c **Control**

- Individual control (set point, start/stop, fan speed, etc) (Max. 2 x 64 groups/indoor units)
- Set back schedule**
- Enhanced scheduling function (8 schedules, 17 patterns)
- Yearly schedule
- Flexible grouping in zones
- Free cooling function
- Automatic cooling/heating changeover
- Temperature limit
- Heating optimization
- Fire emergency stop control
- Interlocking control (option)
- Increased HRV monitoring and control function
- Password security: 3 levels (general, administration & service)
- Quick selection & full control
- Simple navigation

d **Monitoring**

- Visualisation via Graphical User Interface (GUI)
- Icon colour display change function
- Indoor units operation mode
- Error messages via e-mail (web option)
- Indication filter replacement
- Multi PC

e **Cost Performance**

- Labour saving
- Easy installation
- Compact design: limited installation space
- Overall energy saving

* For DAME only available in English
** Contact your local dealer for more information and availability

1 Features

1 - 1 Main Features

f **Connectable to**

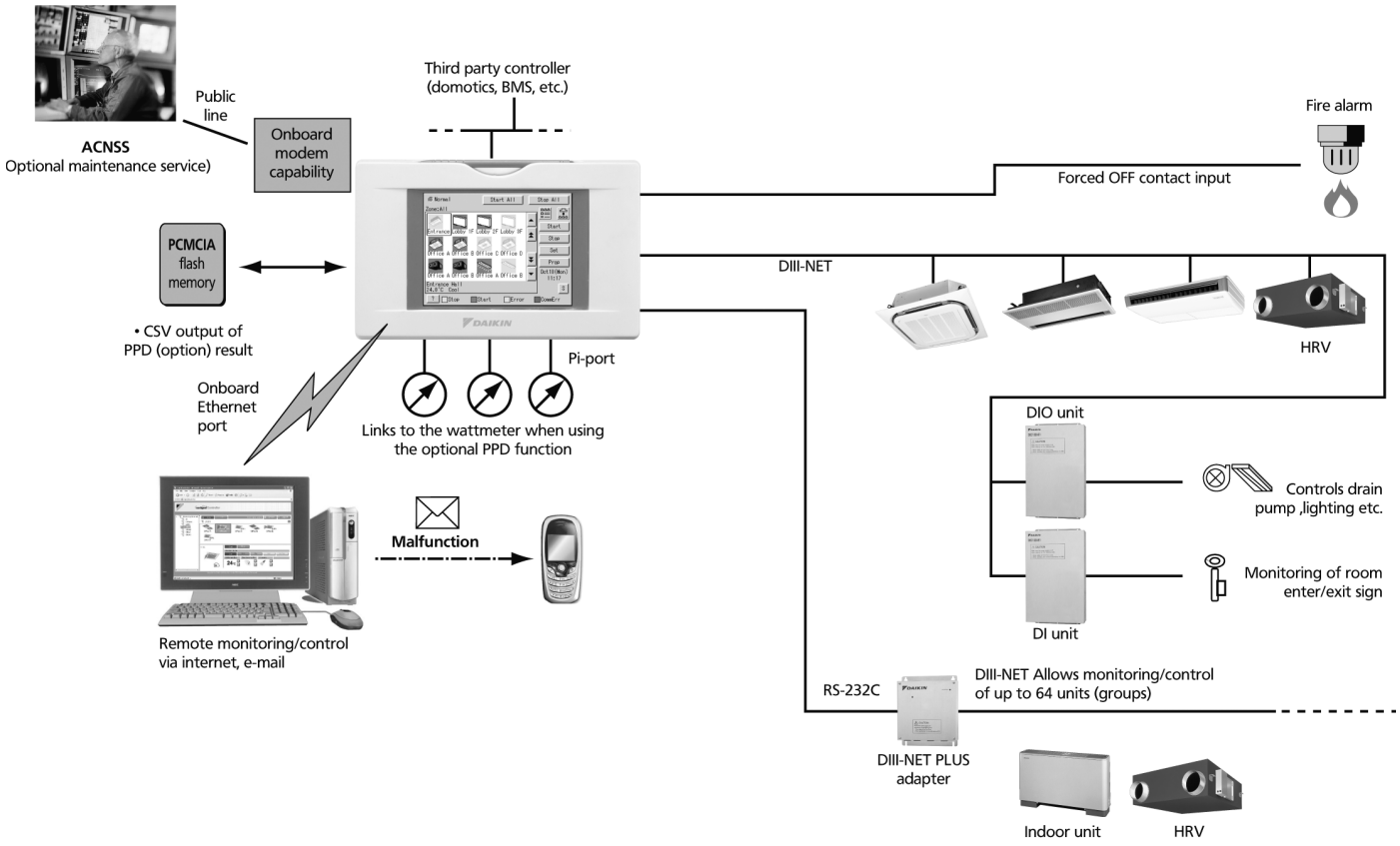
- VRV
- HRV
- Sky Air (via interface adapter for certain units, please contact your dealer for this.)
- Split (via interface adapter)

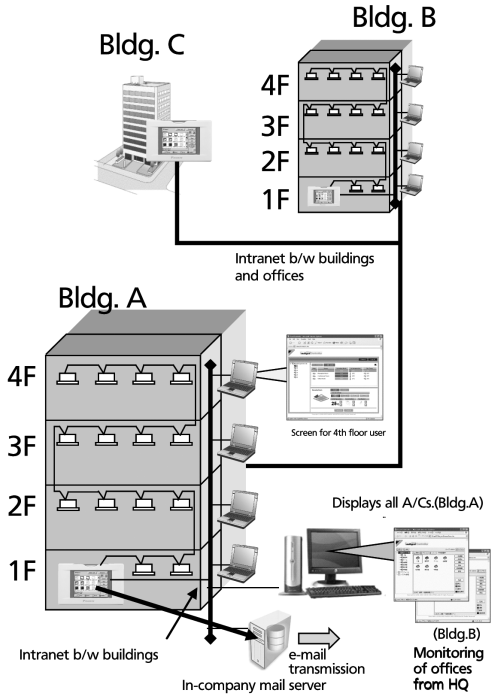
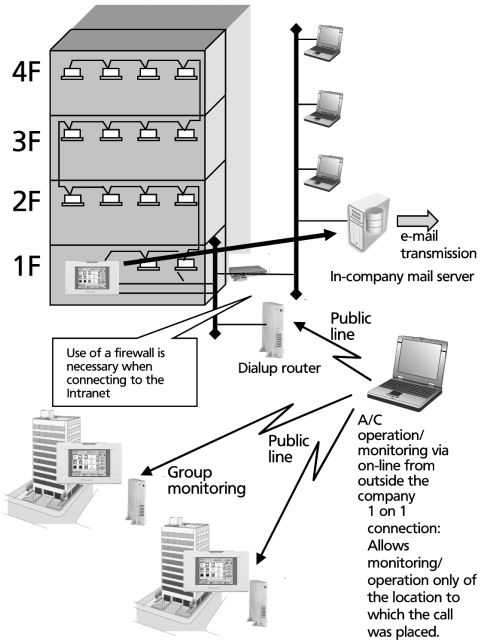
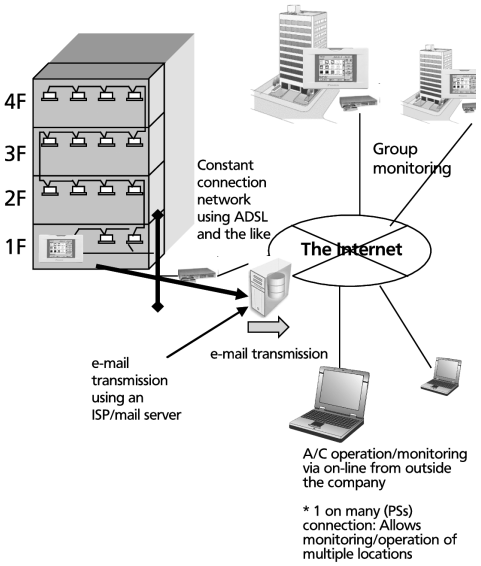
g **System Layout**

- Up to 2 x 64 indoor units can be controlled
- Onboard Ethernet port (web + e-mail)
- Digital i/o contacts (option DEC101A51 / DEC102A51)
- Touch panel (full colour LCD via icon display)

h **Open Interface**

- Communication to any third party controller (domotics, BMS, etc.) is possible via open interface



pe of ection	When using a LAN (Intranet) within the company	When using dialup	When using an constant Internet connection
Use narios	• A/C operation via the office PC • A/C operation via PCs on each floor • Monitoring of each office and sales branch from HQ • Error messages via e-mail	• A/C operation and status monitoring from remote locations • Group monitoring by connecting whenever necessary • Error messages via e-mail	• A/C operation and status monitoring from remote location • Group monitoring via a constant connection (monitoring of the buildings and offices) • PPD data can be accessed remotely via the internet • Error messages via e-mail
tem mples			 * When connecting also to the Intranet, use of a firewall is necessary as in the case of dialup.
twork nment vices ured by g nment target g and ercially le cts.			
urity ls for ystem mple	• Allows for security within the Intranet • Username/password control via iTC web functions * If information/data such as passwords are leaked, it is possible that individuals (users of the Intranet) could maliciously operate the system from within the company	• Dialup router security function (phone number, username and password in general) as well as username/password control via the iTC web function * If information/data such as phone numbers and passwords are leaked, it is possible that the A/C system could be operated by an intruder. * When connecting to the Intranet, it is possible that someone could enter the Intranet unauthorized via a dialup environment	• Username/password control via the iTC web function • If there is no security within the constant connection environmen to the web, available security is only the username/password control via the iTC web function. * If information/data such as the password is leaked, it is possible that an intruder could operation the A/C.
posals better urity	• Users can be limited by allowing only limited PCs to be able to access the web via the use of firewalls and the like	• Introduction of security for constant connection environment via network devices allows for a higher level of security (Example) Introduction of network devices, such as dialup routers, that feature strict authentication of accesses from outside the company Unauthorized access from outside the company prevented with a virtual private network (VPN).	• Introduction of security for constant connection environment via network devices allows for a higher level of security (Example) Unauthorized access from outside the company prevented with a virtual private network (VPN).

2 System overview

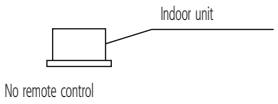
This intelligent Touch Controller is capable of controlling/monitoring up to 64 groups of indoor units (hereafter “groups”).

The main functions of the intelligent Touch Controller include:

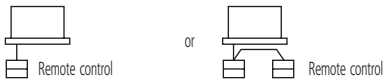
1 Set back function, enabling a building’s temperature to be monitored and managed during both heating and cooling seasons through a single setting.
2 Free cooling function, reducing the air conditioning energy consumption by actively introducing fresh air into rooms.
3 Collective starting/stopping of operation of the indoor units connected to the intelligent Touch Controller.
4 Starting/stopping of operation, temperature setting, switching between temperature control modes and enabling/disabling of operation with the hand-held remote control by zone or group .
5 Scheduling by zone or group .
6 Monitoring of the operation status by zone or group .
7 Display of the air conditioner operation history.
8 Compulsory contact stop input from the central monitoring panel (non-voltage, normally-open contact).
9 Power proportional distribution of the air conditioners. (With the optional software DCS002C51)
10 Control and Monitoring of air conditioner with personal computer by the Controller (with the optional software DCS004A51).

* A group of indoor units include:

a One indoor unit without a remote control.



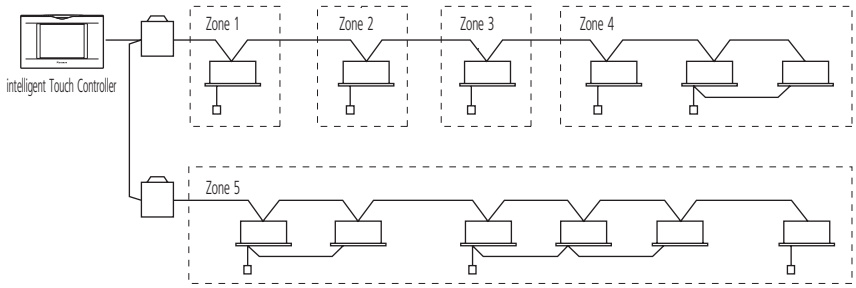
b One indoor unit controlled with one or two remote controls.



c Up to 16 indoor units controlled with one or two remote controls.

* Zone control with the intelligent Touch Controller

* Zone control, which allows collective settings for more than one group, is available with the intelligent Touch Controller, which facilitates the setting operations.



- One setting makes the same setting for all of the units in one zone.
- Up to 128 zones can be set with one intelligent Touch Controller. (The maximum number of groups in one zone is 64.)
- Groups can be zoned at will with the intelligent Touch Controller.
- Units in one group can be divided into more than one zone.

3 Part Names

3 - 1 Front and Side

PCMCIA Card Slot

Used when using the optional Power Proportional Distribution (DCS002C51) or updating the intelligent Touch Controller software to a newer version.

Color LCD with Touch Panel

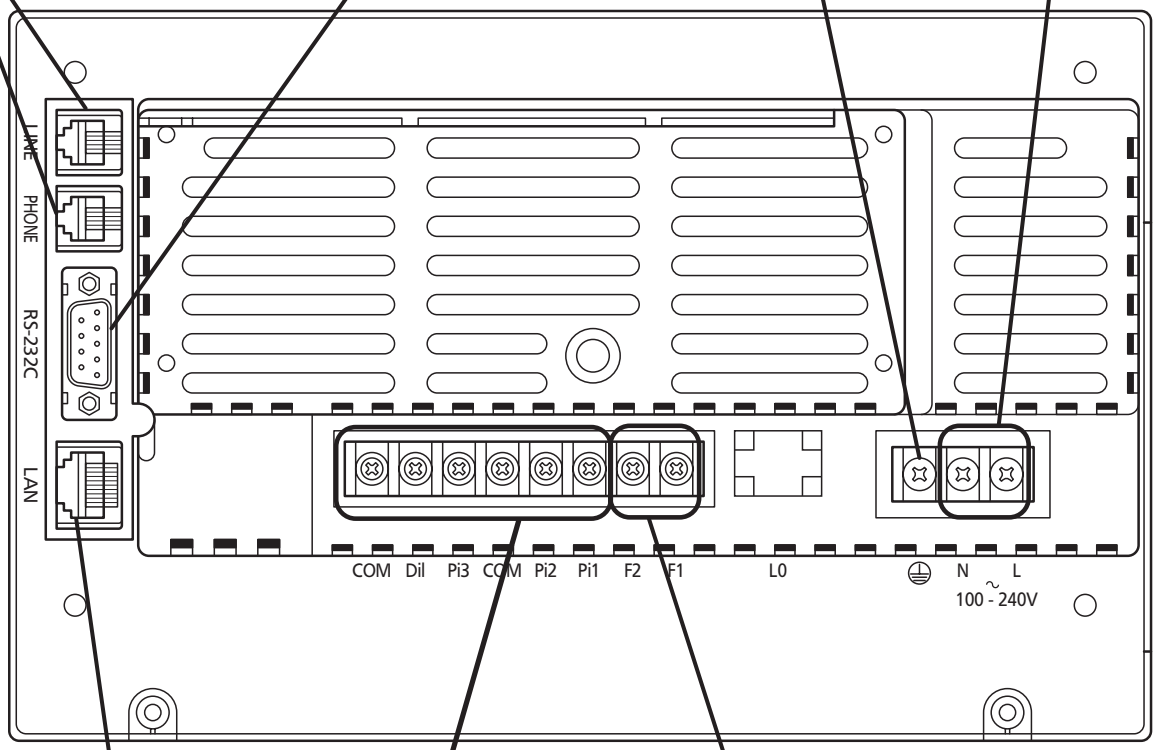
Provides a display for monitoring and operation.

Touch Pen

Be sure to use the touch pen for operation of the touch panel of the intelligent Touch Controller. Operating with an object other than the touch pen provided may cause damage and failure.
(When the pen is lost, contact the dealer you purchased the product from.)

3 Part Names

3 - 2 Back



Modem connector for Air Conditioning Network Service system

When using Air Conditioning Network Service System service, connect it to the telephone line.

RS232-C connector for DIII-NET Plus adapter

Using DIII-NET Plus adapter being sold as an accessory, you can increase the number of indoor units to be controlled.

Terminal block for power supply

Connect to AC100-240V power supply. Terminal size is M4.

Earth terminal block

Securely connect the earth wire. Terminal size is M4.

Ethernet connector for web

When monitoring and operating the indoor units using the optional Web and E-mail function software sold separately, connect to LAN via Ethernet cable.

Terminal block for DIII-NET communication

The terminal size of the terminal block for communication with indoor units is M3.5.

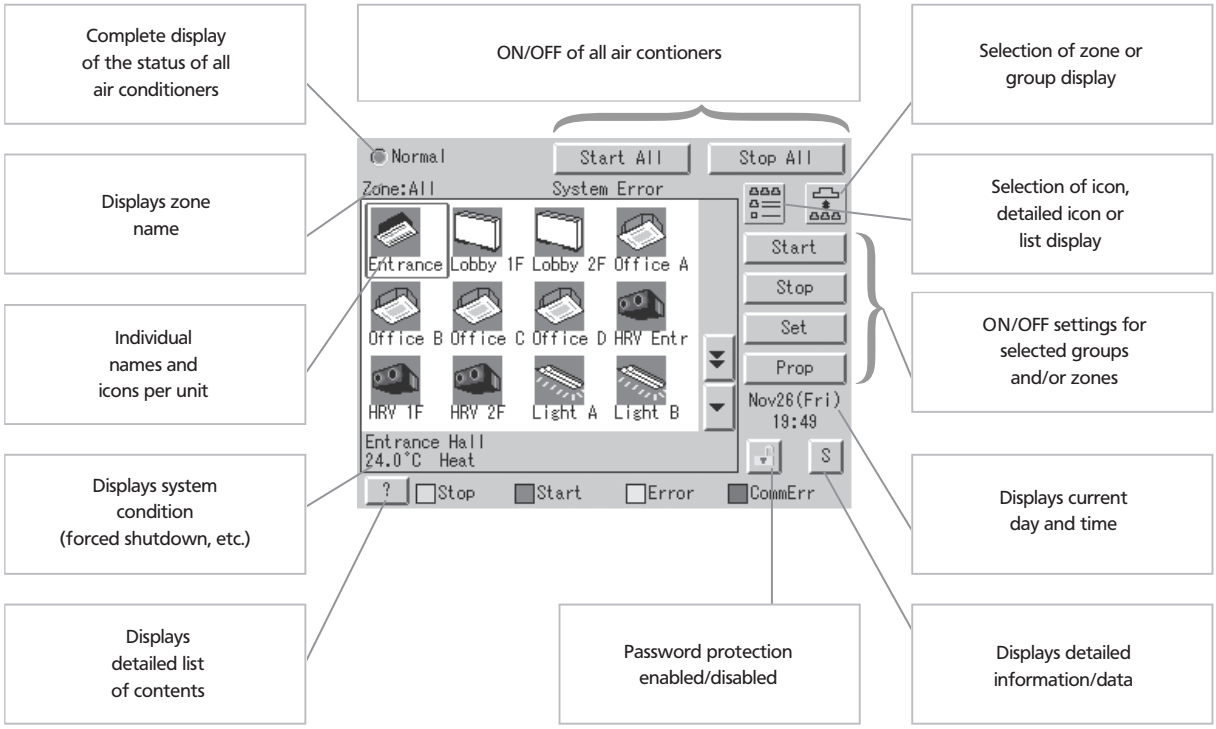
Terminal block for watt hour meter and force stop input of indoor units

This is used when distributing the power supply to indoor units using optional Power Proportional Distribution software sold separately and when stopping the indoor units compulsorily by contact input.
The size of terminal block is M3.5.

4 Detailed and easy monitoring and operation

Detailed and easy monitoring and operation of systems with up to 2x 64 groups of indoor units (with maximum 128 indoor units).

Just a touch on the screen brings up icons that make it easy to grasp any information regarding system control. The Intelligent Touch Controller enables an operator to carry out a variety of quick and easy operations, establish numerous settings and bring up screens to confirm the details.



5 Specifications


			Intelligent Touch Controller	DIII-NET Plus adapter
REFERENCE			DCS601C51	DCS601A52
POWER SUPPLY			externally supplied AC100V-240V, 50/60Hz	externally supplied AC100V-240V, 50/60Hz
CONDITION OF INSTALLATION METHOD FOR USE			JIS4 switchbox embedded in indoor wall	-
OPERATING CONDITION	Surrounding temperature		0°C to 40°C	-10°C to 40°C
	Humidity		less than 85 % RH (if no condensation)	less than 90 % RH
DIMENSIONS	HxWxD	mm	147x230x107	190x157x42
LCD PANEL	Size / n° of dots / n° of colours		5.7 inches / QVGA 320x240 / 4,096 colours	-
MAXIMUM NUMBER OF INDOOR GROUPS			1 x 64 (2 x 64: combined with DCS601A52)	1 x 64
MAXIMUM NUMBER OF OUTDOOR SYSTEMS			1 x 10 (2 x 10: combined with DCS601A52)	10
PC & DISPLAY			built-in	-
INPUT	Touch panel		10 bit encoded analog input	-
COMMUNICATION FUNCTIONS	DIII-NET x 1		air conditioning equipment communication line	air conditioning equipment communication line
	Ethernet		port for web access and e-mail function	-
	RS-232C		DIII-NET Plus adapter	-
	10BASE-T		web option	-
	Modem	999121A	onboard modem capability	-
	PCMCIA slot		flash memory card	-
INPUT TERMINALS	Digital input Di x 1		forced shutdown	-
	Pulse input Pi x 3		power measuring pulse	power measuring pulse
OVERSEAS CERTIFICATION	Safety of information - Technology Equipment		IEC60730 (including IEC60335)	IEC60730 (including IEC60335)
	Interference (EMC)		EN55022 Class A, EN55024	EN55022 Class A, EN55024
PROJECT DATA & ENGINEERING			Configuration and engineering for each project are necessary. For further details, please consult with Daikin distributors and dealers	

6 Accessories

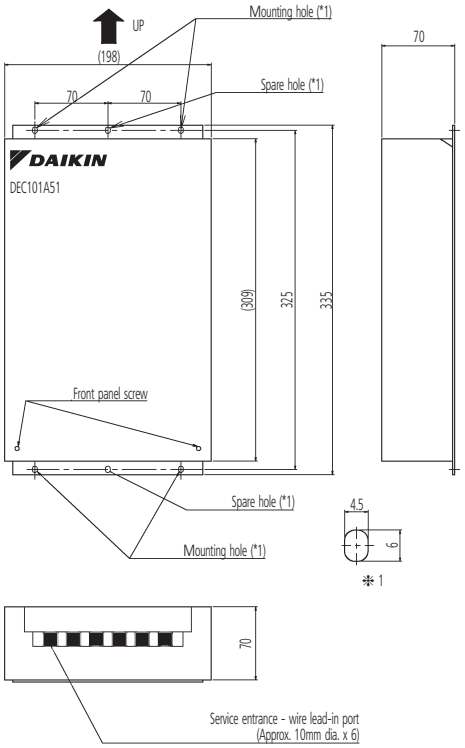
Description	Reference	Comments
SOFTWARE	DCS002C51	Power Proportional Distribution (PPD) Software
	DCS004A51	E-mail / Web software
	DCS007A51	Http interface option
HARDWARE	DCS601A52	DIII NET-Plus adapter
TOUCH-PEN	1264009	Spare part n° of Touch-Pen for Intelligent Touch Controller
INTERFACE ADAPTERS	KRP928A2S	For connection to Split units
	DTA102A52	For connection to R-22 / R-407C Sky Air units
	DTA112B51	For connection to R-410A Sky Air units
DIII-AI	DAM101A51	Outdoor temperature sensor, required for free cooling changeover
DIGITAL INPUT	DEC101A51	Input contacts: 8 inputs wth additional error feedback
DIGITAL INPUT/OUTPUT	DEC102A51	Output contacts: 4 points with additional error and on/off feedback

6 Accessories

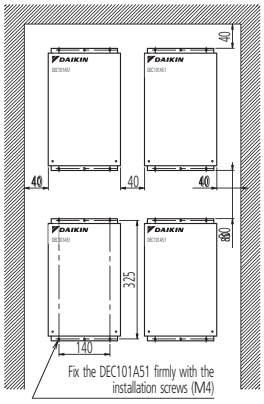
6 - 1 DEC101A51 - Digital input

6 - 1 - 1 Dimensional drawing

DEC101A51



Power supply specifications	1~200-240V 50/60Hz
Rated power consumption	15W
Mass (Weight)	2.5kg
Case material	Plated steel sheet
Case color	Matting chrome



NOTES

1 Installation place
- Install the unit indoors where it is not exposed to water and dust or dirt.
- Install the unit where both temperature and humidity do not become high.
  (Operating (available) temperature: -10~+40°C
  Operating (available) humidity: 10~85%)
- Connect the wiring to be connected in the field from the lower surface side.
  It is, therefore, necessary to make arrangements so as not to attach other equipment within 80mm from the lower surface of this equipment.
- Install this equipment in a place in which only authorized personnel can touch it.

2 Installation Direction
Install this equipment vertically to the floor surface. It should be noted that if it is installed in horizontal direction, a malfunction or failure may result.

3 Installation Method
Ensure that this equipment is installed with 4 screws (screw size M4 min.).

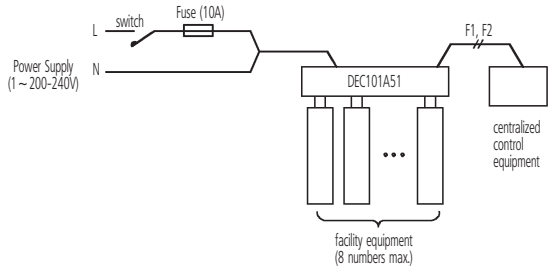
4 Restrictions in continuous installation
In case several devices are set up and installation inside the power board is carried out, each equipment installation space and space between the wall surface and this equipment should be left at least as shown to the left.

3D047630

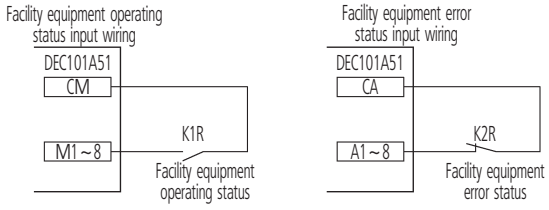
6 - 1 - 2 External connection diagram

DEC101A51

No.	Wiring procedure
	<F1/F2> wiring between this equipment and centralized control equipment is required.
	The connection to the facility equipment and setting of various switches are required. See the "Wiring with Facility equipment" paragraph.
	Connect the power supply and earth. See the "Power Supply & Earth wiring" paragraph.
	For the wiring connection and clamping method, refer to the "Wiring lead-in" paragraph.



Wiring with Facility Equipment
<Caution> The length of wiring between this equipment and facility equipment is 100m max.
Abormal input When the contact is "Open" or "Closed", "Error" is produced. Input specifications: No-voltage "a" contact (The welding current is approx. 10mA when the applied voltage is 20 to 30 V DC and the contact is "Closed".) For input, use the contact to micro current. (12VDC, 1mA max.)



Power Supply & Earth Wiring
For power supply, 1~200-240V is used. The wiring to the power terminal block (L/N) is required. The electric wire used should be 1.25 to 2.0mm^2. After checking the power supply specifications, make correct connections.
Connect the earth wiring to the " ⏚ " terminal. Use a 2.0 mm^2 wire.

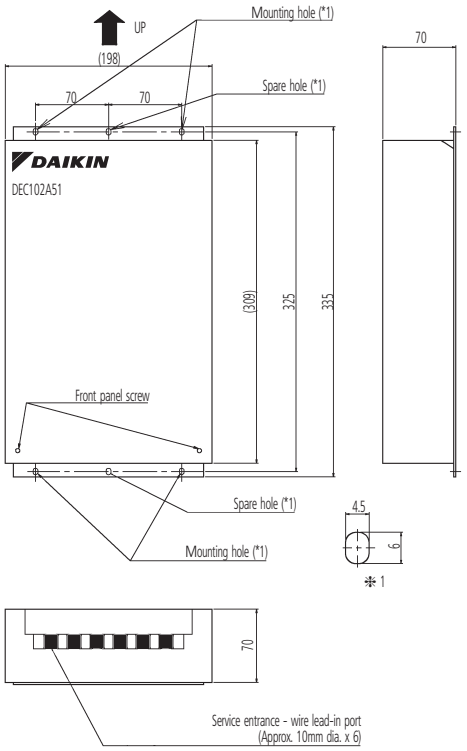
3D047631

6 Accessories

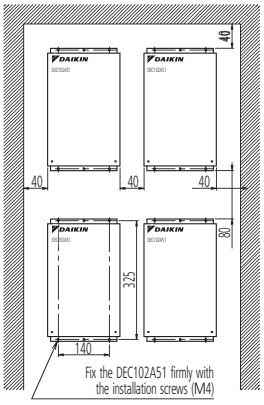
6 - 2 DEC102A51 - Digital input / output

6 - 2 - 1 Dimensional drawing

DEC102A51



Power supply specifications	1~200-240V 50/60Hz
Rated power consumption	15W
Mass (Weight)	2.5kg
Case material	Plated steel sheet
Case color	Matting chrome



NOTES

1 Installation place
- Install the unit indoors where it is not exposed to water and dust or dirt.
- Install the unit where both temperature and humidity do not become high.
  (Operating (available) temperature: -10~+40°C
  Operating (available) humidity: 10~85%)
- Connect the wiring to be connected in the field from the lower surface side.
  It is, therefore, necessary to make arrangements so as not to attach other equipment within 80mm from the lower surface of this equipment.
- Install this equipment in a place in which only authorized personnel can touch it.

2 Installation Direction
Install this equipment vertically to the floor surface. It should be noted that if it is installed in horizontal direction, a malfunction or failure may result.

3 Installation Method
Ensure that this equipment is installed with 4 screws (screw size M4 min.).

4 Restrictions in continuous installation
In case several devices are set up and installation inside the power board is carried out, each equipment installation space and space between the wall surface and this equipment should be left at least as shown to the left.

3D047623

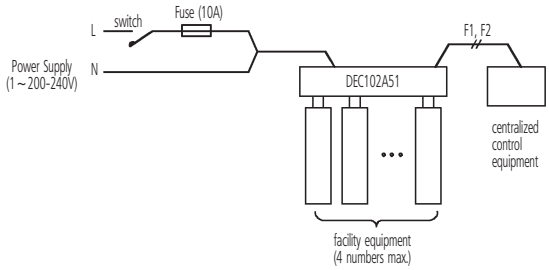
6 Accessories

6 - 2 DEC102A51 - Digital input / output

6 - 2 - 2 External connection diagram

DEC102A51

No.	Wiring procedure
	<F1/F2> wiring between this equipment and centralized control equipment is required.
	The connection to the facility equipment and setting of various switches are required. See the "Wiring with Facility equipment" paragraph.
	Connect the power supply and earth. See the "Power Supply & Earth wiring" paragraph.
	For the wiring connection and clamping method, refer to the "Wiring lead-in" paragraph.



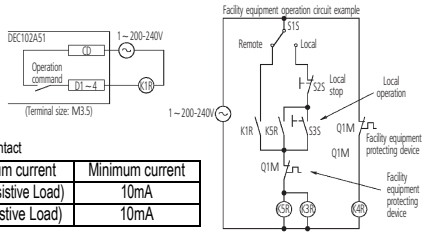
Wiring with Facility Equipment

<Caution> The length of wiring between this equipment and facility equipment is 100m max.

Operation output

It is possible to select continuous 1 output (4 points) or instantaneous 2 output (ON/OFF pair - 2 points).

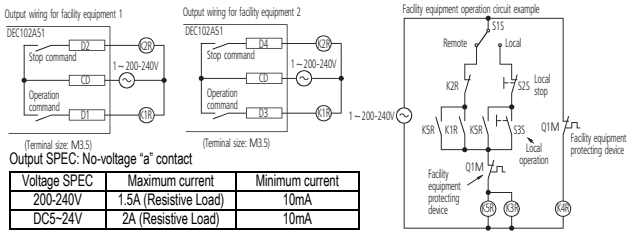
- Wiring at Continuous Output (Up to 4 facility equipments can be connected.)



Output SPEC: No-voltage "a" contact

Voltage SPEC	Maximum current	Minimum current
200-240V	1.5A (Resistive Load)	10mA
DC5~24V	2A (Resistive Load)	10mA

- Wiring at instantaneous Output (Up to 2 facility equipments can be connected.)



Output SPEC: No-voltage "a" contact

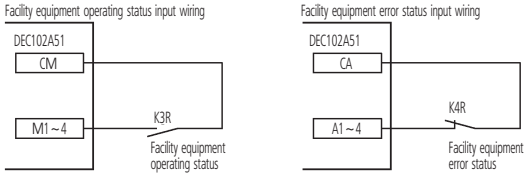
Voltage SPEC	Maximum current	Minimum current
200-240V	1.5A (Resistive Load)	10mA
DC5~24V	2A (Resistive Load)	10mA

Operation input

When the contact is "Closed", "Run" is to be input. Input SPEC: No-voltage "a" contact (When the applied voltage is 20 to 30V DC and the contact is "Closed", the welding current is approx. 10mA.) For input, use a contact for micro current. (12V DC, 1mA max.)

Abnormal input

When the contact is "Open" or "Closed", "Error" is produced. Input specifications: No-voltage "a" contact (The welding current is approx. 10mA when the applied voltage is 20 to 30V DC and the contact is "Closed".) For input, use the contact for micro current. (12V DC, 1mA max.)



When the switch was set to "Ins." (Instantaneous Output), the operation input terminals M3, M4 and abnormal input terminals A3, A4 ar not used.

Terminal used in case where the switch was set to "Continuous Output" (Con.) or "Instantaneous Output" (Ins.)

Facility equipment (Up to 4 units can be connected to single DEC102A51.)	Terminal used in the case of setting to "Continuous Output"					
	Run/Stop output terminal		Operation input terminal		Abnormal input terminal	
1st equipment	CD	D1	CM	M1	CA	A1
2nd equipment	CD	D2	CM	M2	CA	A2
3rd equipment	CD	D3	CM	M3	CA	A3
4th equipment	CD	D4	CM	M4	CA	A4

Facility equipment (Up to 2 units can be connected to single DEC102A51.)	Terminal used in the case or setting to "Instantaneous Output"							
	Operation output terminal		Stop output terminal		Operation input terminal		Stop input terminal	
1st equipment	CD	D1	CD	C2	CM	M1	CA	A1
2nd equipment	CD	D2	CD	C4	CM	M2	CA	A2

When the switch was set to "Ins." (Instantaneous Output), the operation input terminals M3, M4 and abnormal input terminals A3, A4 are not used.

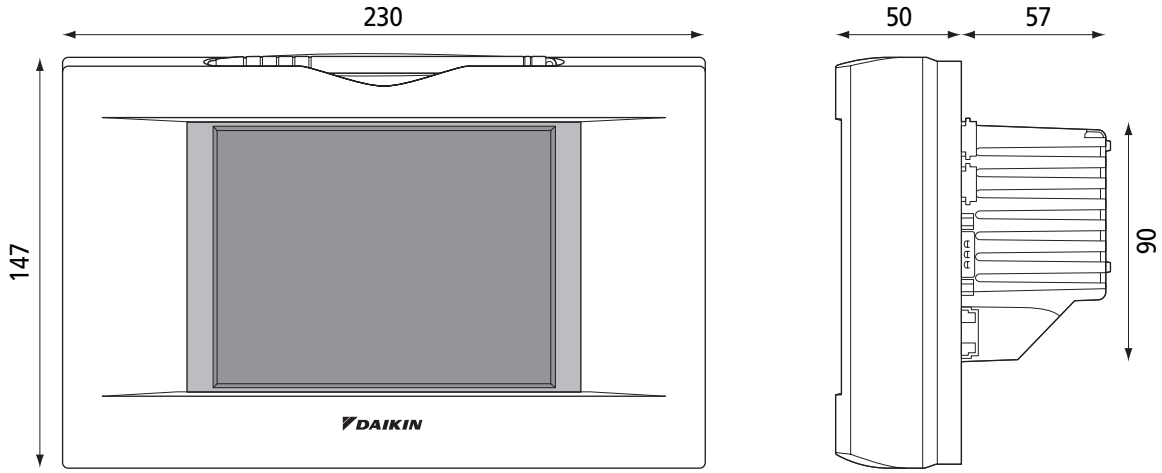
Power Supply & Earth Wiring

For power supply, 1~200-240V is used. The wiring to the power terminal block (L/N) is required. The electric wire used should be 1.25 to 2.0mm^2. After checking tht power supply specifications, make correct connections.

Connect the earth wiring to the " ⏚ " terminal. Use a 2.0 mm^2 wire.

3D047624

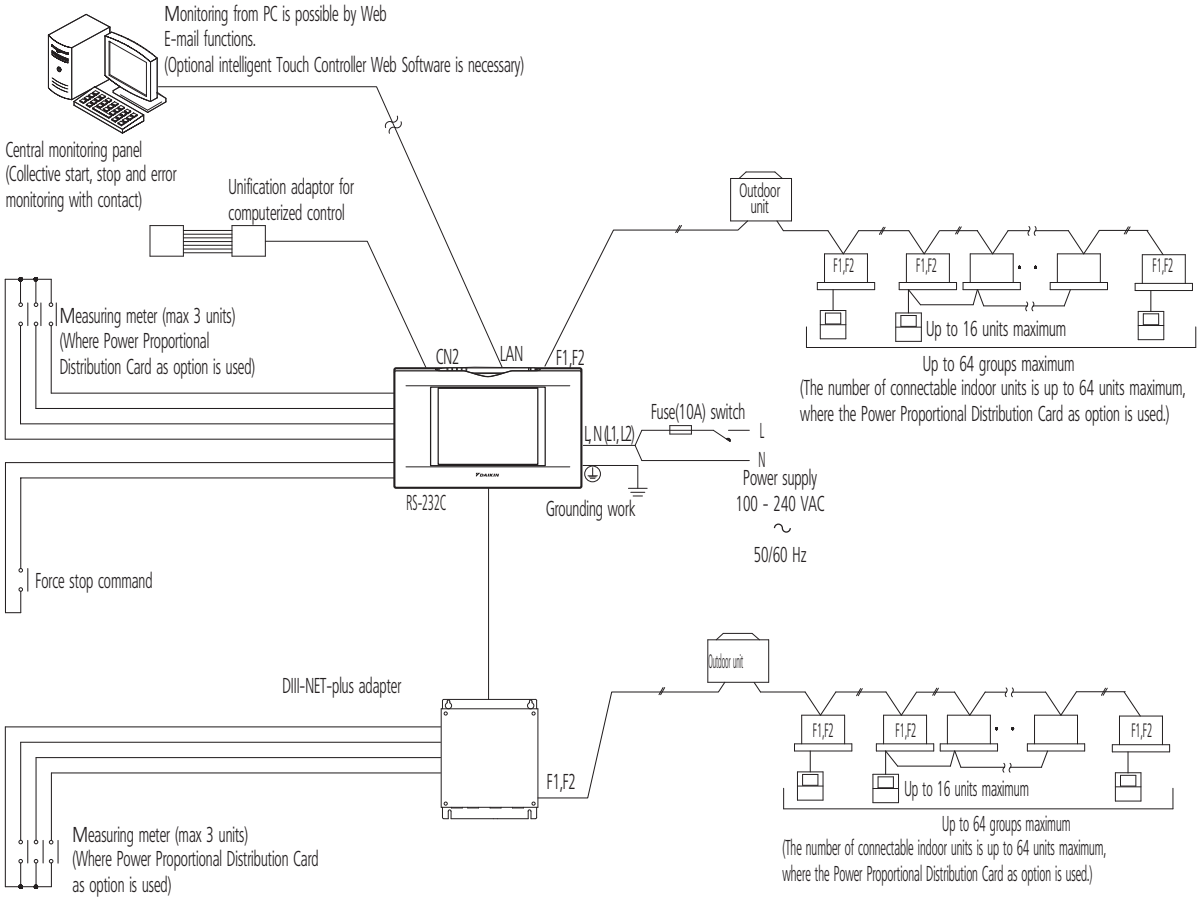
7 Dimensions



8 System wiring

Connecting Unification adaptor allows using the contact for normal and abnormal operation signal and collective start/stop with a contact. For details, contact the vendor you purchased the product from.

Also, by connecting DIII-NET-plus adapter, it is possible to operate and monitor the indoor units of 64 groups (intelligent Touch Controller plus DIII-NET – plus adapter–128 groups in total) additionally.



9 Power Proportional Distribution Card

9 - 1 Function and Outline

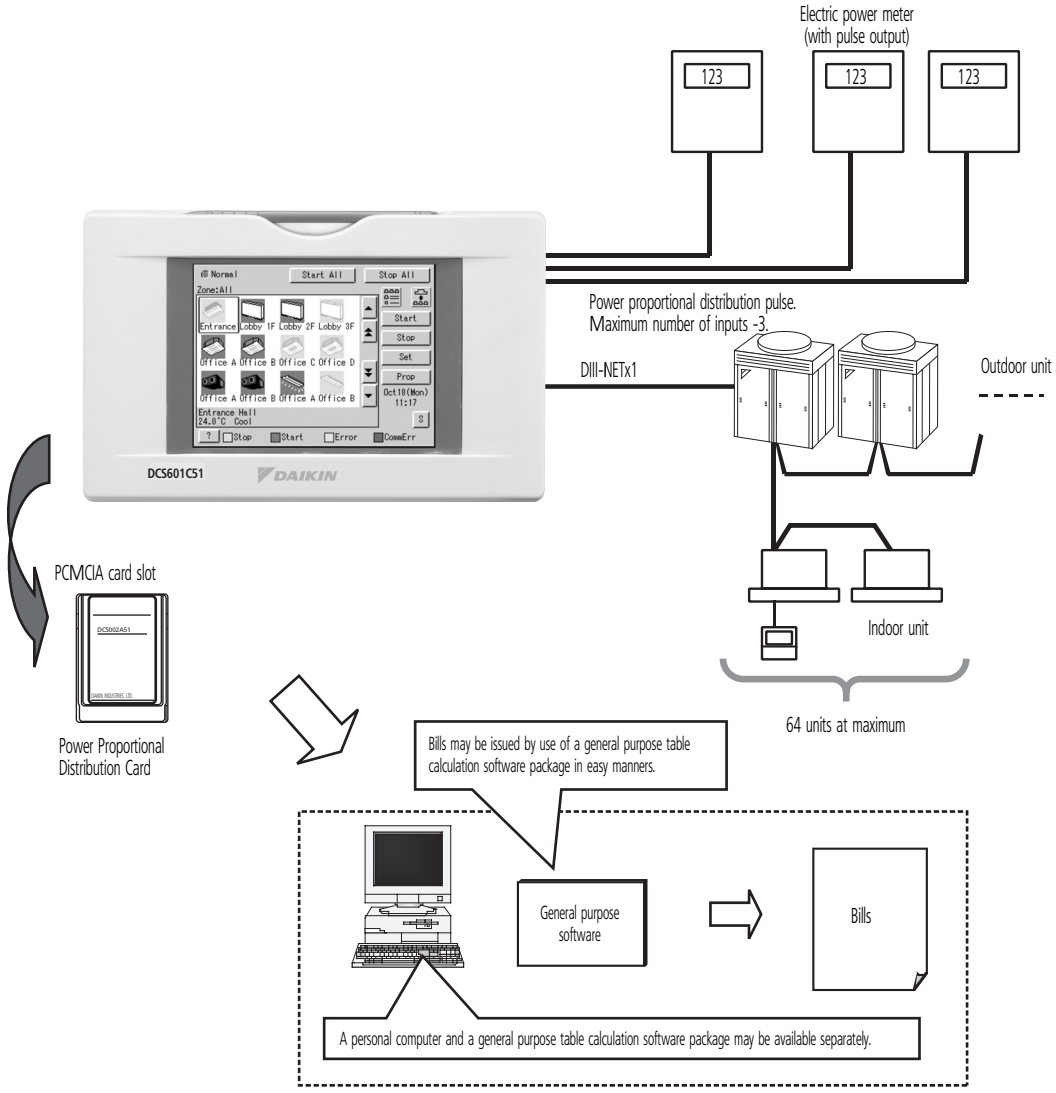
Power Proportional Distribution Card, in combination with an existing intelligent Touch Controller, enables to proportionally calculate and display electricity amount used by air conditioner per indoor unit.

9 - 1 - 1 Main Functions

- 13 months data storage possible
- Data available per hour per indoor unit
- Power proportional distribution may be calculated for 2 x 64 indoor units at maximum.
- Power proportion distribution results data may be saved into a PCMCIA card.
  Data is saved CSV format generally applied to personal computers, so bills may be issued by use of a general purpose table calculation software package in easy manners.
  (A personal computer and a general purpose table calculation software package may be available separately.)

9 - 1 - 2 Precautions

This system calculates electricity consumptions by size of indoor units, run time, expansion vales open gap, suction rate and the number of pulses from the power meters installed at the Outdoor Units.
This method is not calculated by direct measurement alone.



9 Power Proportional Distribution Card

9 - 2 File Format

When Power Proportional Distribution Report is saved, a zone information file, an electric power information file and detailed information file are created.

9 - 2 - 1 Zone information file

This contains zone name and information of air conditioners in the zone.

(1) File name : ZONE.CSV

(2) File format:

(Example)

zone ID, Name ← Index

0, " 'all" ← Zone ID, zone name

1, " 'Z-000"

2, " 'Z-001"

3, " 'Z-002"

← One line space

zone ID, AC No. ← Zone ID, air conditioner number

0, 0

0, 1

1, 2

1, 3

9 - 2 - 2 Electric power information file

This file contains Power Proportional Distribution Report and information of air conditioners.

(1) File name : YYYYMMDD - YYYYMMDD

Month and date of calculation completion

Year, month and date of calculation start

(2) File format :

(Example)

Index

Start day, number of days, air conditioner type (0 : normal type), Undistributed Power Amount, period designation type (0 : period designation, 1 : month designation)

20050101, 31, 0, 0, 200501

← One line space

Air conditioner number, indoor unit number, horse power code, Daytime used Pwr, Nighttime used Pwr, Daytime Idle Pwr, Nighttime Idle Pwr, GasAmount.

0, "1:1-00",38,2459,0,0,0,0

1, "1:1-01", 38,2718,0,0,0,0

60, "1:4-12", 70,489,0,0,0,0

TABLE OF CONTENTS

intelligent Manager

1 System Overview

1 - 1 Overview

• What is the intelligent Manager?

intelligent Manager is an integrated building management system that uses our independent, high-speed multi-transmission method DIII-NET that is employed on VRV for buildings.

It has a centralized controller function that can perform high-speed centralized control of our VRV for buildings.

• Applicable Buildings

This is a VRV intelligent Manager monitoring system that is perfect for small and medium scale buildings.

Number of Management Items: Standard 256 indoor units. Expansion is possible up to a maximum of 1,024 items.

- For medium and small scale individual air conditioning systems

- For existing buildings planning to update from a central air conditioning system to a decentralized air conditioning system

• Merits

- Allows the configuration of simple systems that do not require an interface.

- Has control data application software that supports drawing up business management plans.

- Handles small to medium scale buildings.

- Can be operated with the ease of an office computer.

- ACNSS (Optional maintenance service) intelligent Manager is equipped with the leading failure warning functions, it prevents A/C faults in advance.

There are restrictions in applicable areas, so consult with us separately for details

1 - 2 Features

• Simple Equipment Configuration

High priced interface equipment is unnecessary between the monitoring system and the air conditioning equipment.

Particularly, if directly connected with VRV for buildings that employ our DIII-NET, special instrumentation for sensors etc. are unnecessary. DIII-NET makes it possible to directly monitor abundant operating data.

• Low Installation Work, Less Wiring

Wiring to VRV (with equipment that handles DIII-NET) for your building is extremely easy. You only need to connect to the DIII-NET terminal.

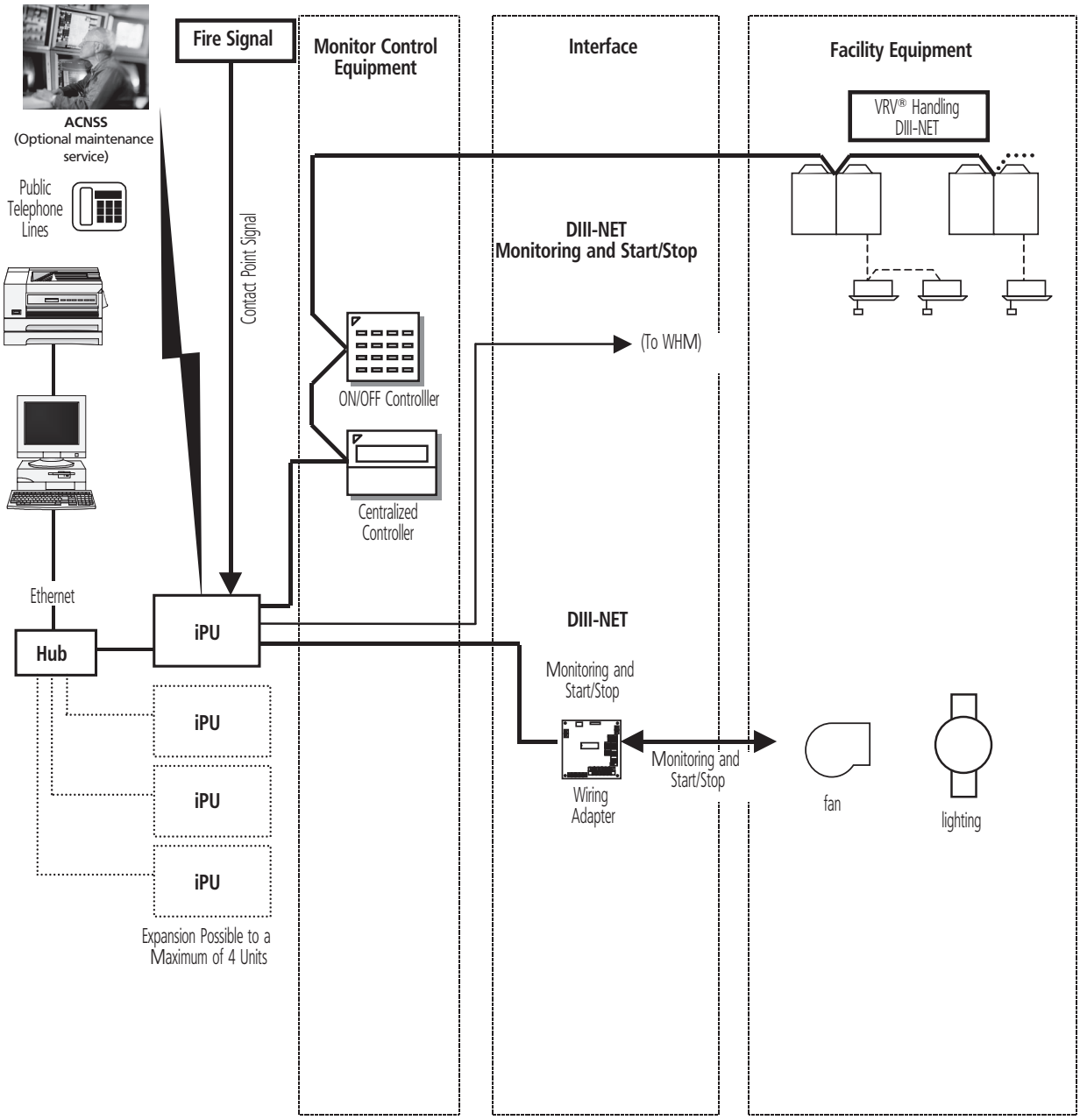
Monitoring and control are possible just by wiring (Daisy-chain method) 1 cable (non-polar, dual core) to each unit even for facility equipment.

• User-friendly System

- Anyone can easily operate using a mouse on an ordinary use computer.

- Using widely sold spread-sheet software, anyone can easily manage and process data. This helps the efficient management of your building.

2 System Image



NOTES

1 iPU: intelligent Processing Unit

2 * intelligent Manager has a scheduling function. There are cases in which it could operate unintentionally, so do not connect the schedule timer.

3 Specifications

Item				Comments
IPU (INTELLIGENT PROCESSING UNIT)	DAM602B51			256 indoor groups per iPU
	DAM602B52			128 indoor groups per iPU
	Back-up for power failure			Data are file into non volatile memory
	Transmission			DIII-NET std: 1 line; Max. 4 lines / 1iPU
	Power supply			AC100-240V, ± 10%, 50/60Hz, Max. 20W
	Ambient temperature			-10 ~ +50°C
	Ambient humidity			0~98% (condensation is not acceptable)
	Dimensions	HxWxD	mm	281 x 260 x 78.5
	Weight		kg	4
PC	Performance	CPU		Pentium 800MHz or above recommended
		Memory		256Mb or above
		HDD		4GB minimum, 8GB or above recommended
	Network			100 Mbit Ethernet
	Operation			Keyboard, mouse, sound & speaker
SOFTWARE				Windows XP (Professional SP2 or later), Windows 2000 (Professional SP4 or later), Internet explorer 7.0
CRT	SVGA			800 x 600, 1,024 x 768, 1,280 x 1,024
PRINTER				A4 page printer
NETWORK EQUIPMENT				Multi Port HUB (1 port per iPU and PC required)
UPS (EG. APC SMART UPS 1,000)	Capacity			200~250W / 20min
	Voltage			As required on the field
	Control signals			Power failure signal (from UPS), UPS shut down signal (to iPU)/Power failure signal from UPS to both iPU and PC
	Relay			I/0 module (AP9610)

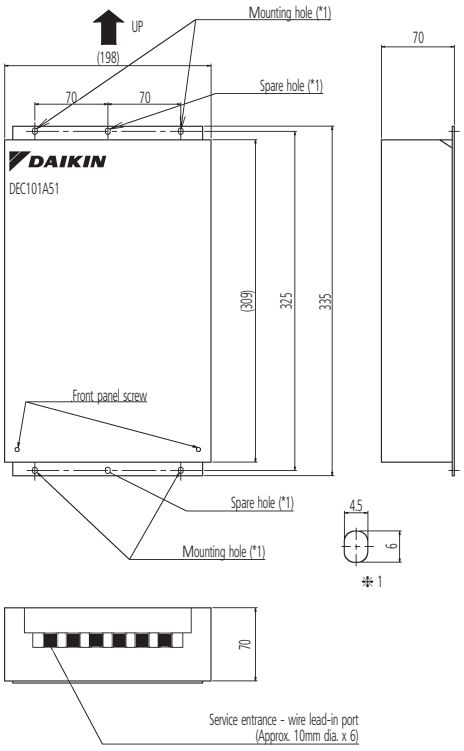
4 Accessories

Item		Comments
INTERFACE ADAPTERS	KRP928B2S	For connection to Split units
	DTA102A52	For connection to R-22/R-407C Sky Air units
	DTA112B51	For connection to R-410A Sky Air units
DIII AI	DAM101A51	Outdoor temperature sensor
DIGITAL INPUT	DEC101A51	Input contacts: 8 points with additional error feedback
DIGITAL INPUT/OUTPUT	DEC102A51	Output contacts: 4 points with additional error and ON/OFF feedback
SOFTWARE	DAM002A51	Power Proportional Distribution
	DAM003A51	ECO Mode
	DAM004A51	Web Access Function

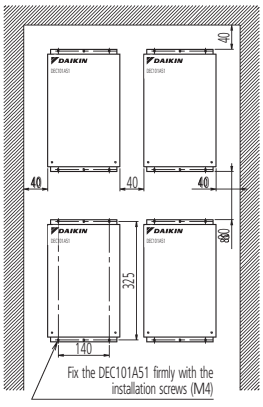
4 - 1 DEC101A51 - Digital input

4 - 1 - 1 Dimensional drawing

DEC101A51



Power supply specifications	1~200-240V 50/60Hz
Rated power consumption	15W
Mass (Weight)	2.5kg
Case material	Plated steel sheet
Case color	Matting chrome



NOTES

1 Installation place
- Install the unit indoors where it is not exposed to water and dust or dirt.
- Install the unit where both temperature and humidity do not become high.
  (Operating (available) temperature: -10~+40°C
  Operating (available) humidity: 10~85%)
- Connect the wiring to be connected in the field from the lower surface side.
  It is, therefore, necessary to make arrangements so as not to attach other equipment within 80mm from the lower surface of this equipment.
- Install this equipment in a place in which only authorized personnel can touch it.

2 Installation Direction
Install this equipment vertically to the floor surface. It should be noted that if it is installed in horizontal direction, a malfunction or failure may result.

3 Installation Method
Ensure that this equipment is installed with 4 screws (screw size M4 min.).

4 Restrictions in continuous installation
In case several devices are set up and installation inside the power board is carried out, each equipment installation space and space between the wall surface and this equipment should be left at least as shown to the left.

3D047630

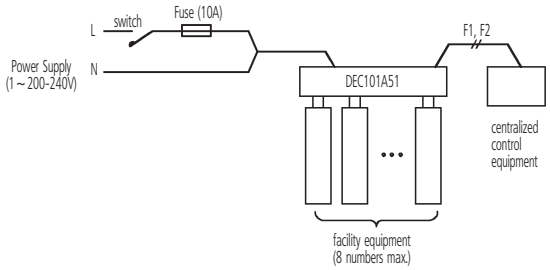
4 Accessories

4 - 1 DEC101A51 - Digital input

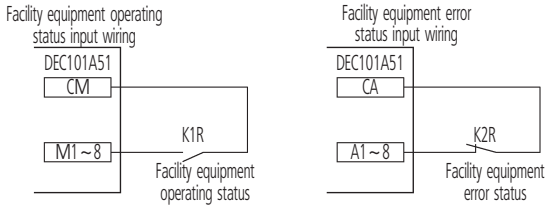
4 - 1 - 2 External connection diagram

DEC101A51

No.	Wiring procedure
	<F1/F2> wiring between this equipment and centralized control equipment is required.
	The connection to the facility equipment and setting of various switches are required. See the "Wiring with Facility equipment" paragraph.
	Connect the power supply and earth. See the "Power Supply & Earth wiring" paragraph.
	For the wiring connection and clamping method, refer to the "Wiring lead-in" paragraph.



Wiring with Facility Equipment
<Caution> The length of wiring between this equipment and facility equipment is 100m max.
Abormal input When the contact is "Open" or "Closed", "Error" is produced. Input specifications: No-voltage "a" contact (The welding current is approx. 10mA when the applied voltage is 20 to 30 V DC and the contact is "Closed".) For input, use the contact to micro current. (12VDC, 1mA max.)



Power Supply & Earth Wiring
For power supply, 1~200-240V is used. The wiring to the power terminal block (L/N) is required. The electric wire used should be 1.25 to 2.0mm^2. After checking the power supply specifications, make correct connections.
Connect the earth wiring to the " ⏚ " terminal. Use a 2.0 mm^2 wire.

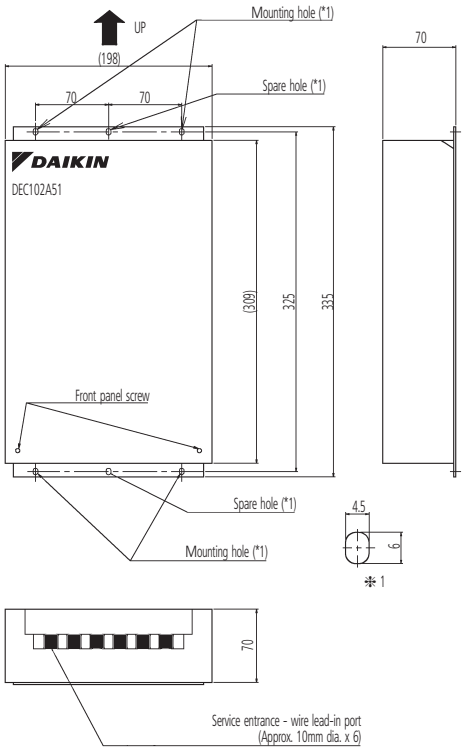
3D047631

4 Accessories

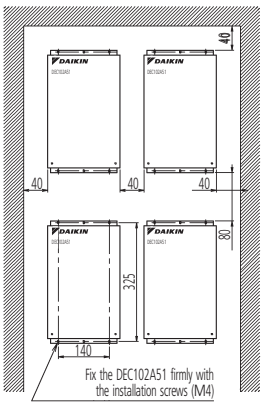
4 - 2 DEC102A51 - Digital input / output

4 - 2 - 1 Dimensional drawing

DEC102A51



Power supply specifications	1~200-240V 50/60Hz
Rated power consumption	15W
Mass (Weight)	2.5kg
Case material	Plated steel sheet
Case color	Matting chrome



NOTES

1 Installation place
- Install the unit indoors where it is not exposed to water and dust or dirt.
- Install the unit where both temperature and humidity do not become high.
  (Operating (available) temperature: -10~+40°C
  Operating (available) humidity: 10~85%)
- Connect the wiring to be connected in the field from the lower surface side.
  It is, therefore, necessary to make arrangements so as not to attach other equipment within 80mm from the lower surface of this equipment.
- Install this equipment in a place in which only authorized personnel can touch it.

2 Installation Direction
Install this equipment vertically to the floor surface. It should be noted that if it is installed in horizontal direction, a malfunction or failure may result.

3 Installation Method
Ensure that this equipment is installed with 4 screws (screw size M4 min.).

4 Restrictions in continuous installation
In case several devices are set up and installation inside the power board is carried out, each equipment installation space and space between the wall surface and this equipment should be left at least as shown to the left.

3D047623

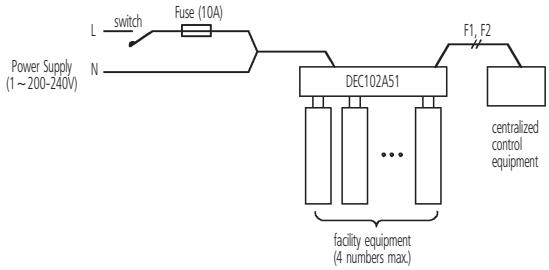
4 Accessories

4 - 2 DEC102A51 - Digital input / output

4 - 2 - 2 External connection diagram

DEC102A51

No.	Wiring procedure
	<F1/F2> wiring between this equipment and centralized control equipment is required.
	The connection to the facility equipment and setting of various switches are required. See the "Wiring with Facility equipment" paragraph.
	Connect the power supply and earth. See the "Power Supply & Earth wiring" paragraph.
	For the wiring connection and clamping method, refer to the "Wiring lead-in" paragraph.



5
4

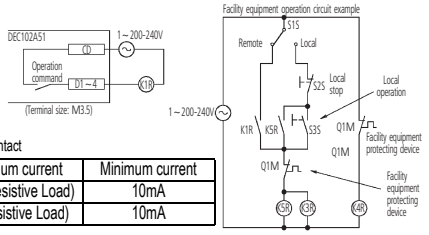
Wiring with Facility Equipment

<Caution> The length of wiring between this equipment and facility equipment is 100m max.

Operation output

It is possible to select continuous 1 output (4 points) or instantaneous 2 output (ON/OFF pair - 2 points).

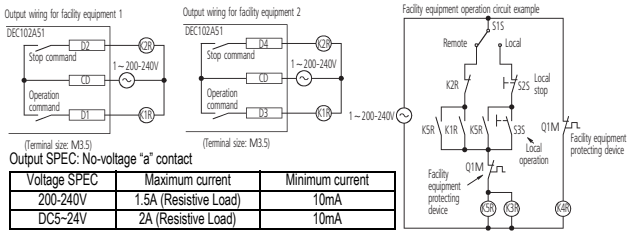
- Wiring at Continuous Output (Up to 4 facility equipments can be connected.)



Output SPEC: No-voltage "a" contact

Voltage SPEC	Maximum current	Minimum current
200-240V	1.5A (Resistive Load)	10mA
DC5~24V	2A (Resistive Load)	10mA

- Wiring at instantaneous Output (Up to 2 facility equipments can be connected.)



Output SPEC: No-voltage "a" contact

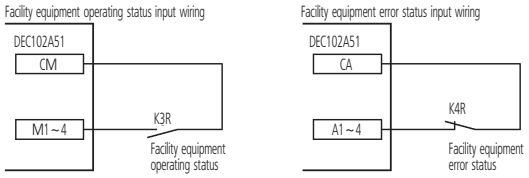
Voltage SPEC	Maximum current	Minimum current
200-240V	1.5A (Resistive Load)	10mA
DC5~24V	2A (Resistive Load)	10mA

Operation input

When the contact is "Closed", "Run" is to be input. Input SPEC: No-voltage "a" contact (When the applied voltage is 20 to 30V DC and the contact is "Closed", the welding current is approx. 10mA.) For input, use a contact for micro current. (12V DC, 1mA max.)

Abnormal input

When the contact is "Open" or "Closed", "Error" is produced. Input specifications: No-voltage "a" contact (The welding current is approx. 10mA when the applied voltage is 20 to 30V DC and the contact is "Closed".) For input, use the contact for micro current. (12V DC, 1mA max.)



When the switch was set to "Ins." (Instantaneous Output), the operation input terminals M3, M4 and abnormal input terminals A3, A4 ar not used.

Terminal used in case where the switch was set to "Continuous Output" (Con.) or "Instantaneous Output" (Ins.)

Facility equipment (Up to 4 units can be connected to single DEC102A51.)	Terminal used in the case of setting to "Continuous Output"					
	Run/Stop output terminal		Operation input terminal		Abnormal input terminal	
1st equipment	CD	D1	CM	M1	CA	A1
2nd equipment	CD	D2	CM	M2	CA	A2
3rd equipment	CD	D3	CM	M3	CA	A3
4th equipment	CD	D4	CM	M4	CA	A4

Facility equipment (Up to 2 units can be connected to single DEC102A51.)	Terminal used in the case or setting to "Instantaneous Output"							
	Operation output terminal		Stop output terminal		Operation input terminal		Stop input terminal	
1st equipment	CD	D1	CD	C2	CM	M1	CA	A1
2nd equipment	CD	D2	CD	C4	CM	M2	CA	A2

When the switch was set to "Ins." (Instantaneous Output), the operation input terminals M3, M4 and abnormal input terminals A3, A4 are not used.

Power Supply & Earth Wiring

For power supply, 1~200-240V is used. The wiring to the power terminal block (L/N) is required. The electric wire used should be 1.25 to 2.0mm^2. After checking tht power supply specifications, make correct connections.

Connect the earth wiring to the " ⏚ " terminal. Use a 2.0 mm^2 wire.

3D047624

5 Functions

5 - 1 List of Functions

5 - 1 - 1 Local Functions

Items		Contents
Local Functions	Monitoring	Monitoring of air conditioner status (256 units, max. 1024 groups on one iManager system with four iPUs)(*1) Web access function Cumulated value upper limit monitoring (for each item of control) Continuous operation time limit monitoring (for each item of control) Power failure monitoring
	Control/Operation/Settings	Login settings Individual control Collective starting/stopping and settings for control group (200 groups) Schedule control (200 programs) Interlocking control (100 programs) Emergency stop control for fire (32 programs) Power failure and recovery processing control (selected from 5 power recovery modes) Centralized control of air conditioners Pre-cooling and pre-heating function
	Display	Display of name of management item or icon display, list display Control group list display Move screen function Operating time, start/stop count integration display, history display (abnormalities, warnings, control history)
	Measuring	Operating time integration, start/stop count integration Inspection of meter (Pi port of main unit)
	Control	Operating history control Creates daily, monthly, annual reports VRV power proportional distribution (option consumption: 256 units)
	Memory/Recording	Print output Data memory
	Report	Emergency signal input

NOTES

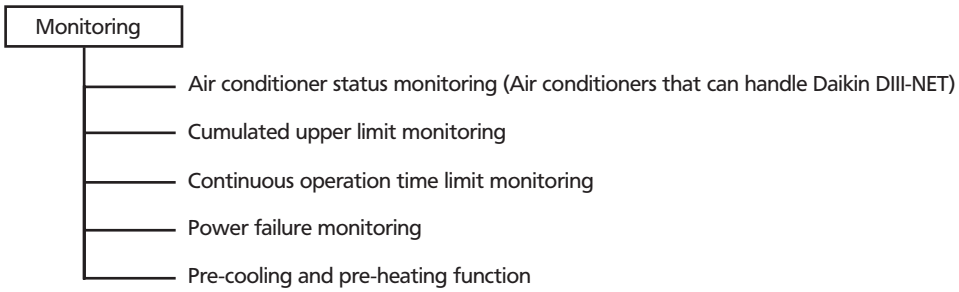
1 iPUs can be expanded to 4 units. Shows “Maximum 1,024 units,” for example, for the values when expanding to the maximum, if the number of management points is increased when expanding the number of units.

2 1,024 indoor units/station when 4 iPUs are connected.

5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 1 Monitoring



(1) Air conditioner status monitoring (Air conditioners that can handle Daikin's DIII-NET)

Allows you to know the detailed operating status such as running/stopped status, temperature setting, operating mode, the occurrence and content of errors and filter sign for each air conditioner targeted for monitoring.

The occurrences and the contents of errors are displayed in the error message area. When an error occurs on an air conditioner targeted for monitoring, or the management item icon flashes. You can set a buzzer notification of the occurrences of errors and have the printer automatically printout of the contents of the errors.

Management points: 1 indoor unit = 1 item

The number of management items of equipment connected to DIII-NET, with the total number of air conditioners is 256 /(per 1 iPU unit)

When expanding to the maximum number: 1,024 items/(when 4 iPUs are connected)

The number of management items can be fewer than those listed above depending on the number of outdoor unit in the air conditioning system.

*Refer to our D-BACS Design Guide for details regarding the method for connecting air conditioners that can handle DIII-NET and the restrictions on the number of units.

(2) Cumulated Value Upper Limit Monitoring

Prints a warning with the daily report of the contents when the cumulated values of the operating time and the start/stop count exceed the set upper limit values.

The Result: General standards for maintenance of the facility's equipment and replacement periods are clarified, therefore allowing for planned maintenance thereby enabling you to expect a reduction of overall maintenance costs.

(3) Continuous Operating Time Limit Monitoring

Displays a fault when a single continuous operating time for the facility equipment exceeds the set upper limit. You can set the buzzer to ring and/or the printer to automatically print when an error occurs.

You can set the time limit up to a range of 8 digits in one second intervals for each item to control.

The Result: Prevents idling or burnout by issuing an abnormality when the operation of facilities exceed prescribed time or normal operation.

(4) Power Failure Monitoring

You can set the error display and/or buzzer ring for power failures.

Power failures are determined by the power failure signal from a UPS (uninterruptible power supply device.)

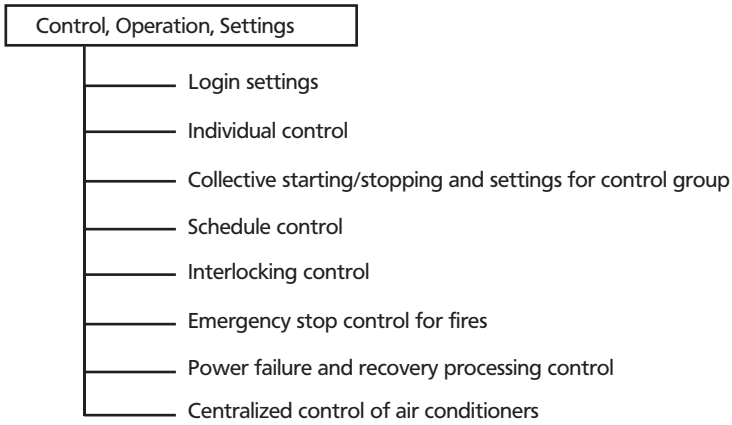
(A UPS is connected to the intelligent Manager monitoring system PC and the iPU.)

Operation data is automatically saved when there is a power failure. The system is automatically shutdown approximately 10 minutes later.

5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 2 Control, Operation, Settings



(1) Login settings

Sets user operation authority to control the range of operation and view, consultation, read, read-only. When logging in, the users can operate the intelligent Manager within their allocated authority.

30 users can be registered and passwords can be set individually.

When unmanned, this is set to a log-off status. Settings can also be set for the log-off status.

It is possible to limit personnel who may operate intelligent Manager to prevent mis-operation or unauthorized handling.

The following shows authorization levels that can be set.

Authorization	When Authorized	When Not Authorized
Running/Stopping/Setting	Can perform run/stop/set operations	Cannot perform run/stop/set
Schedule Registration	Can inspection, register and edit schedules	Can only inspect schedule
Interlock Control Registration	Can inspection, register and edit link control	Can only inspect link operation
Emergency Stop Registration	Can inspection, register and edit emergency stop	Can only inspect emergency stop
Emergency Stop Canceling	Can cancel emergency stop	Cannot operate
Report Inspection	Can inspect reports (daily, monthly annual)	Cannot inspect
Report Registration	Can set reports (daily, monthly annual)	Cannot operate
History Operation	Can inspect and set history	Can only inspect history
System Settings	Can set system	Cannot operate
Subordinate Centralized Control Setting	Can set centralized control	Cannot operate
User Registration	Can register users and set authority	Cannot operate
Maintenance Mode	Can set maintenance mode	Cannot operate

(2) Individual Control

Allows manual, individual operation of starting and stopping of management items. Operations for starting and stopping, switching the operating mode, changing the temperature settings, switching enable/disable of individual remote controllers and for resetting of the filter sign are possible when using DIII-NET compatible air conditioners.

Items pressed later have priority with regard to management items defined by the schedule control and interlocking control.

(3) Collective starting/stopping and settings for control group

Registering a plurality of management items to a control group allows manual starting and stopping for all equipment. Operations for starting and stopping, switching the operating mode, changing the temperature settings, switching enable/disable of individual remote controllers and for resetting of the filter sign are possible when using DIII-NET air conditioners.

Items pressed later have priority with regard to management items defined by the schedule control and interlocking control.

Registers a maximum of 1024 management items in one group and a maximum of 200 groups.

5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 2 Control, Operation, Settings

(4) Schedule control

Automatically performs starting and stopping of any control group and management items according to the set time schedule.

Creating and registering a year calendar and a week schedule will automatically create an execution schedule and the specified management items and control groups are controlled according to that execution schedule. Also, by editing the execution schedule, the schedule for the next coming week can be specially changed.

A maximum of 128 programs can be registered.

The year calendar, week schedule and execution schedule are in parity of 1 to 1, and schedule operations can be executed by combining each one.

Year Calendar:
13 month calendar. Can set for regular days, holidays or special days for each day and allows creation of customized calendars for each tenant.

Week Schedule:
Registers the times for performing control from the intelligent Manager for any control group or management item individually, for each day, holiday or special day of the week. Specify either of the instructions, run, stop, enable remote controller, disable remote controller, fan, cool, heat operation mode or set point.
Registers up to 20 actions per day.

Execution Schedule:
Daily schedule for the coming week. The actual schedule runs according to this. Automatically created based on year calendar and week schedule. With the execution schedule, you can change anytime to correspond to the remaining hours to run and other specially made schedules.

(5) Interlocking control

Automatically starts and stops equipment that has been set according to the change in operating status of specified equipment or the occurrence of abnormality. There are 2 types of input conditions that can be specified: “Start/Stop Status” and “Error”

Using link control allows for starting and stopping links (sequential operation etc) for a plurality of facilities, indoor/outdoor units links, key control links and reporting.

A maximum of 50 input condition management items and a maximum of 50 start/stop output management items can be set with 1 link program. A maximum of 200 link programs can be defined.

The application of a plurality of link programs for input and output with the same management items is possible.

Example of Interlocking Programs: Indoor unit Link: Inputs signal from lighting equipment and turns OFF air conditioning of rooms where all lights have been turned OFF.

Key Control Link: Inputs signal from key control device and turns OFF lights and air conditioning of areas from which keys have been returned.

(6) Emergency stop control for fires

The system performs the necessary determined actions (rings buzzer, prints to printer, display fire sign, stops air conditioning equipment, etc) to notify of fires and to prevent the spread of flames when a fire signal is input. These fire related actions take priority over normal actions.

Though similar to linked operations, a major difference is that the content of the output is limited to the stop instruction. The emergency stop takes priority with regard to control.

Registering the management items to be the target of an emergency stop can be done by specifying the management items to stop or by targeting all management items for a stop and then specifying the management items that are an exceptions.

A maximum of 32 programs can be set.

The fire warning system controls smoke detectors and dampers according to fire prevention laws. Elevators, etc are controlled by a dedicated control system.
Therefore, these facilities are not targeted for control by the emergency stop program.

5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 2 Control, Operation, Settings

(7) Power failure and recovery processing control

- Power Failure

The system enters a power failure execution after the reception of a power failure signal.

Automatically saves all operating data and control data. The system automatically shuts down approximately 10 minutes later. Status monitoring of management items is possible during the power failure processing, but control is not possible.

- Recovery

All facilities and power supplies are restarted when commercial power is recovered.

The following 5 controls can be set for the recovery mode.

1 Restore to status prior to power failure: Returns each management item to its start/stop status prior to the power failure.
2 Execute Scheduled run: Determines start/stop status (the status that should be for operation) of the time of the recovery according to the execution schedule and outputs a start/stop instruction.
3 Force Stop: The start/stop status is “stop”.
4 Force Operation: The start/stop status is “start”.
5 Recover Remote Controller: Returns the remote controller enable/disable to the status prior to power failure. No other instructions are output.

NOTE

1 Regardless of the power recovery mode, a link operation that was applied prior to the power failure will restart after power is restored (after approximately 10 minutes after power is restored).

(8) Centralized control of air conditioners

intelligent Manager allows for centralized operation of DIII-NET air conditioners.

Performs detailed control by allowing operation of start/stop, switching of the operating mode, changing of the temperature setpoint, enable/disable remote controller(1) operations and resetting the filter sign.

NOTE

1 Enable/disable remote controller operations
Limits operations from individual remote controllers on DIII-NET air conditioners and corresponds to various controls and operations.

[Start/Stop]:	3 settings possible: Disable remote controller/enable only remote controller stop/enable remote controller
[Operating Mode]:	Select either enable/disable remote controller for this operation
[Temperature Adjustment]:	Select either enable/disable remote controller for this operation

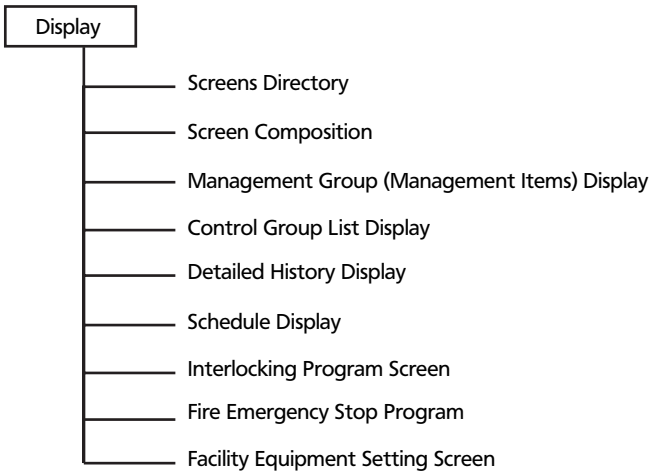
(9) Pre-cooling and pre-heating function

This function varies the starting time of the system depending on actual and predicted heating/cooling loads in the room. This results in a more efficient use of the air conditioning system and improved comfort.

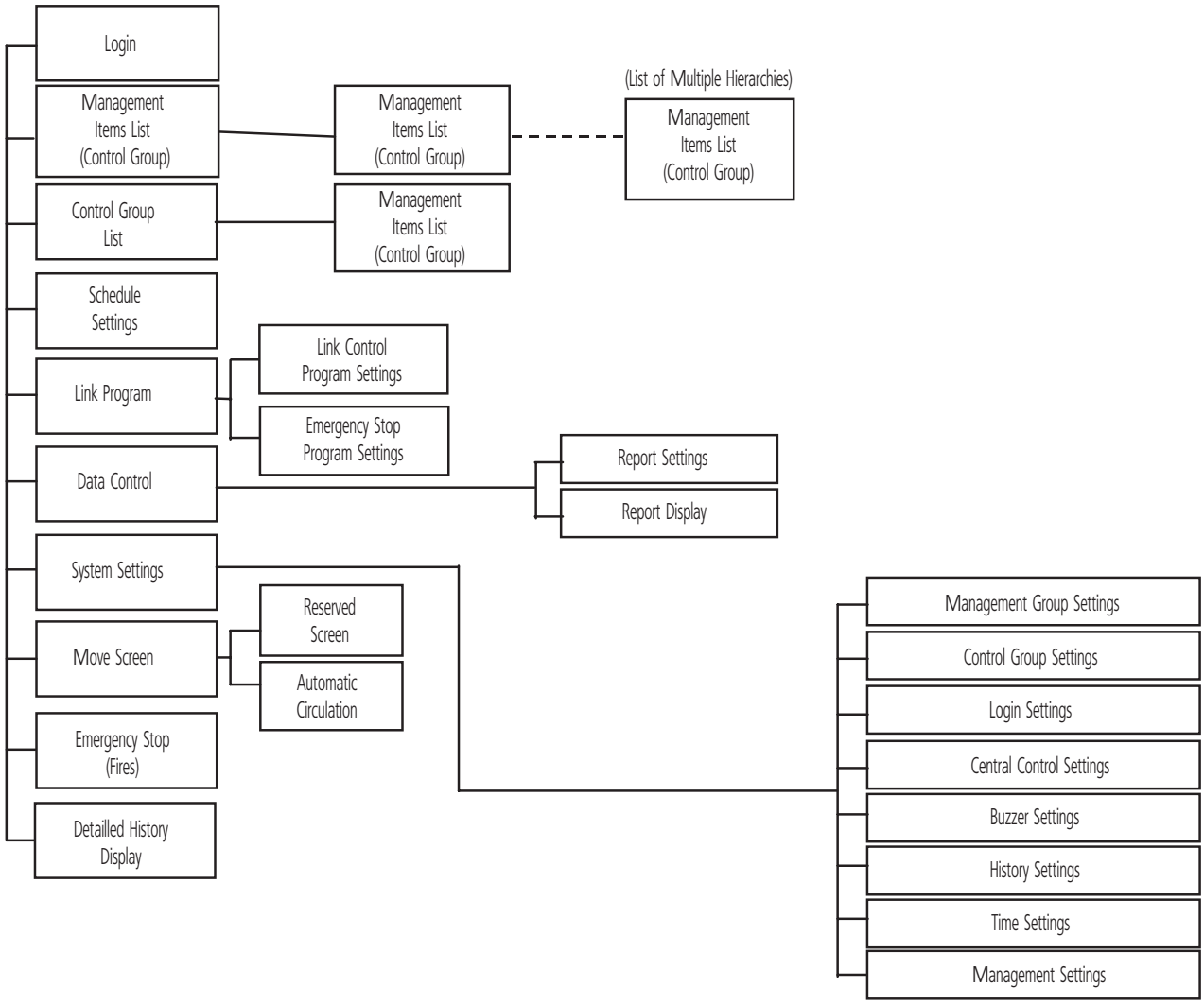
5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 3 Display



(1) Screens Directory



5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 3 Display

(2) Screen Composition

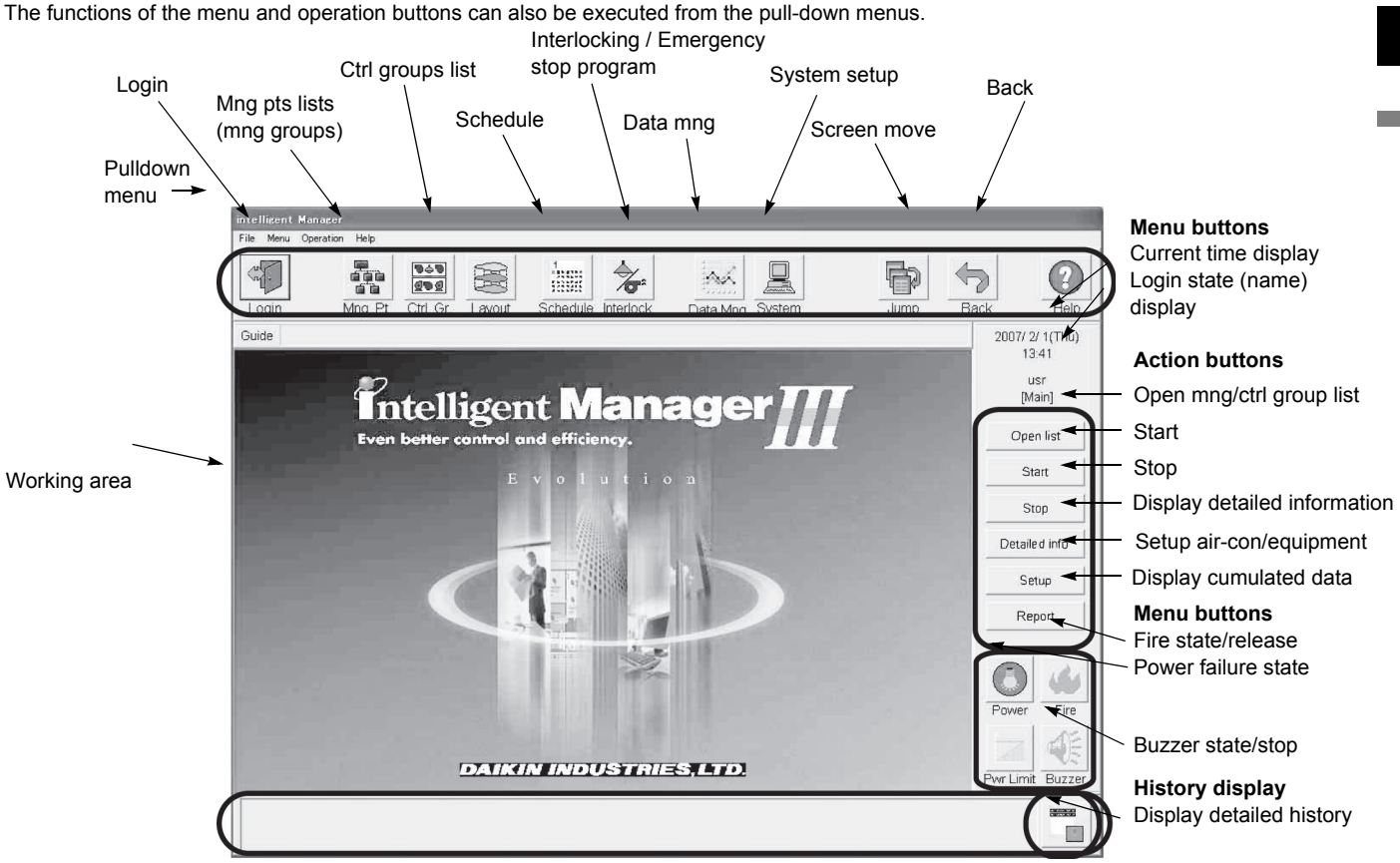
The screen is composed of menu buttons, operation buttons, error history real-time displays and working area.

- Menu buttons: Buttons that call up all functions. These are always operable on any menu screen.
- Operation buttons: Buttons for running and stopping the equipment, etc.
- Error history real-time display:

  Area displaying the error history in real-time
- Working area: Area displaying the functions called up by the menu buttons.

NOTE

1 The functions of the menu and operation buttons can also be executed from the pull-down menus.



5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 3 Display

(3) Management Group (Management Items) Display

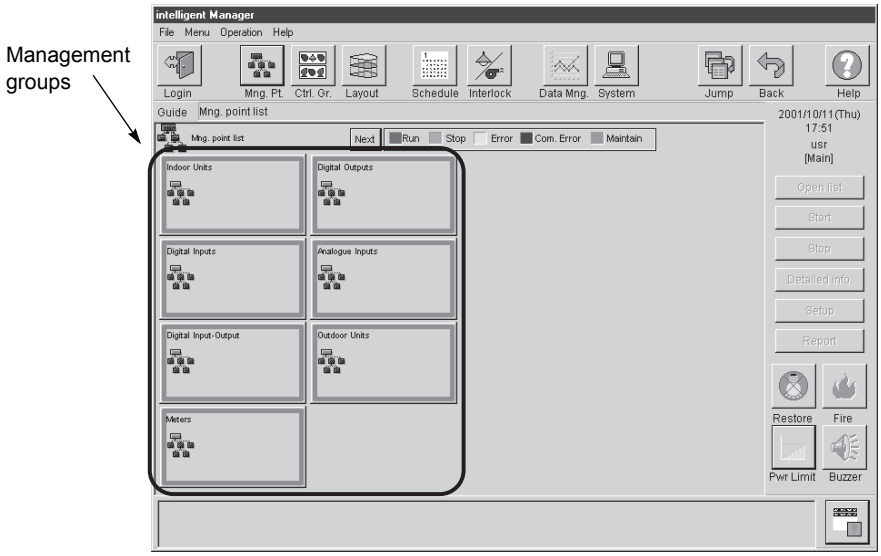
Management Group combines management items to make a group for easy management. (Controls for all of the equipment in a group are performed in control groups.)

Allows division of facilities targeted for monitoring into any group for the monitor screens.

Allows constructing multi-hierarchic configurations to any depth in the order of “Management Group List”

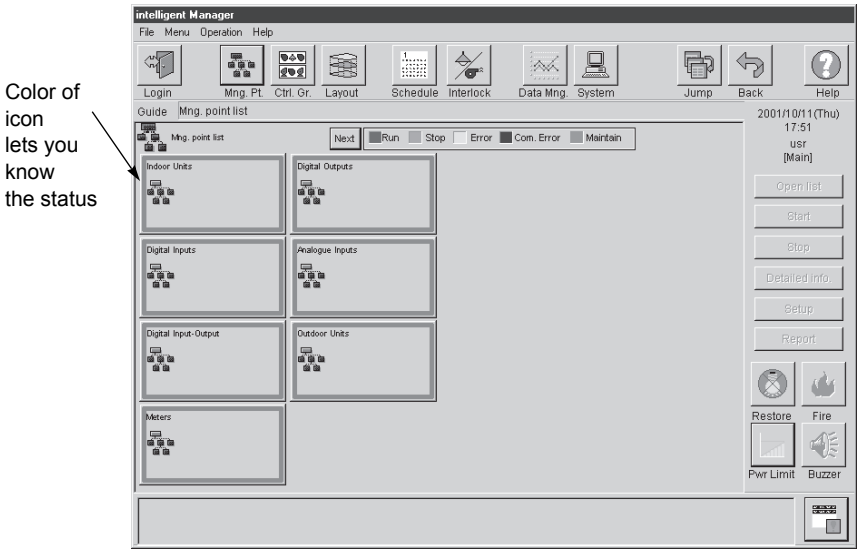
→(“Management Group List”→ ...) → “Management Item List.”

[Management Group List Screen]



Select the group and press “Open List” to shift to lower level management

[Management Item List Screen]



The color of the icon lets you know the status of the management item.

Red: Running, Green: Stopped, Green Flashing: Emergency Stopped, Yellow Flashing: Error, Blue: Communications error, Gray: Under maintenance.

Also, the filter sign, cooling selection authorized, targeted for automatic control (link and schedule target) marks are also displayed.FunctionsDetailed Explanation of Functions

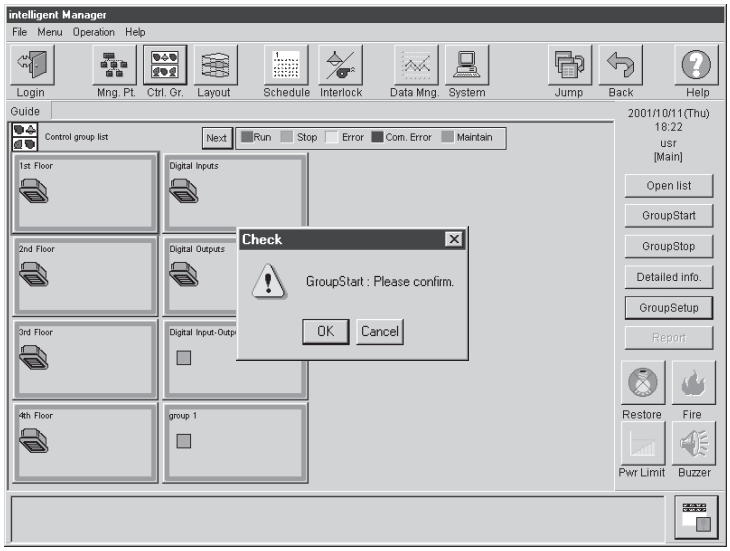
5 - 2 - 3 Display

(4) Control Group List Display

The Control Group binds the management items for batch control.

Select the control group and press the “Run All” or “Stop All” button to control the starting and stopping in control group units. A maximum of 100 management items can be registered in one group and a maximum of 100 groups can be registered.

Also, operations for switching the operating mode, changing temperature settings or enabling/disabling the remote controller are possible when the management items in the control group are DIII-NET compatible air conditioners.

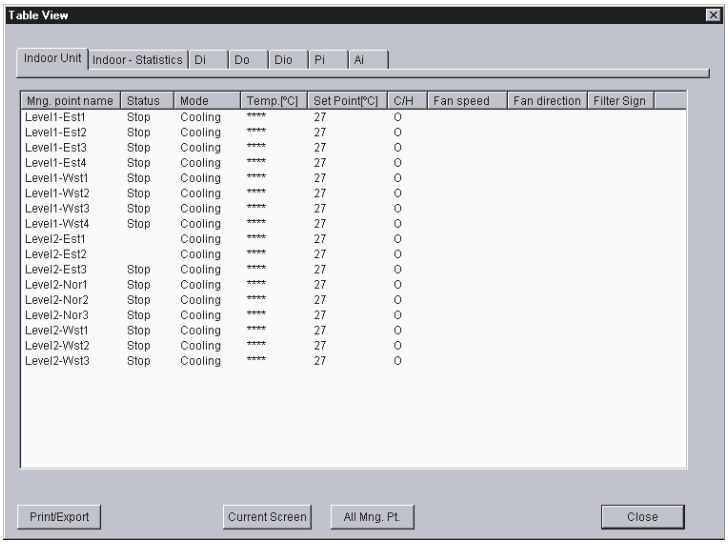


(5) Operating Time and Start/Stop Cumulated Count Display

The following data can be confirmed as the cumulated information display.

- Start/stop count
- Start/stop count upper limit value (warning value)
- Operating time cumulated
- Operating time upper limit value (warning value)

[Cumulated Information Display]



5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 3 Display

(6) Detailed History Display

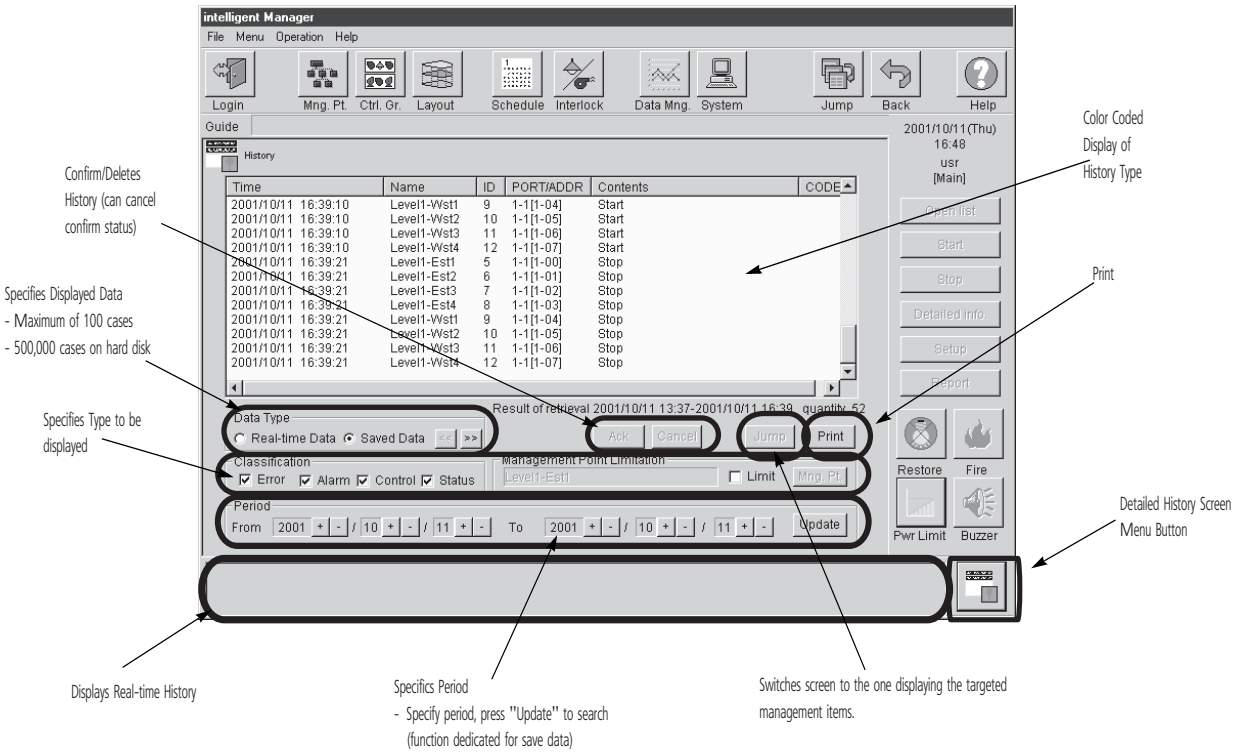
Allows management of history items such as starting the control of management error occurrence/recovery, status changes (run/stop etc) and schedules.

You can select to display the information displayed on the Detailed Screen in real-time or to display data saved to a file on the hard disk.

* Data saved to a file is called saved data.

100 items of information can be displayed on the History Details Screen at a time if using real-time and you can search from 500,000 occurrences of saved data and display.

[History Details Screen]



Message display colors differ according to the type of history:

Error	Red (Purple)
Warning	Blue (Gray)
Cancel	Green
Other	Black

* The colors indicated in the parentheses are the colors of confirmed messages.

5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 3 Display

(7) Schedule Display

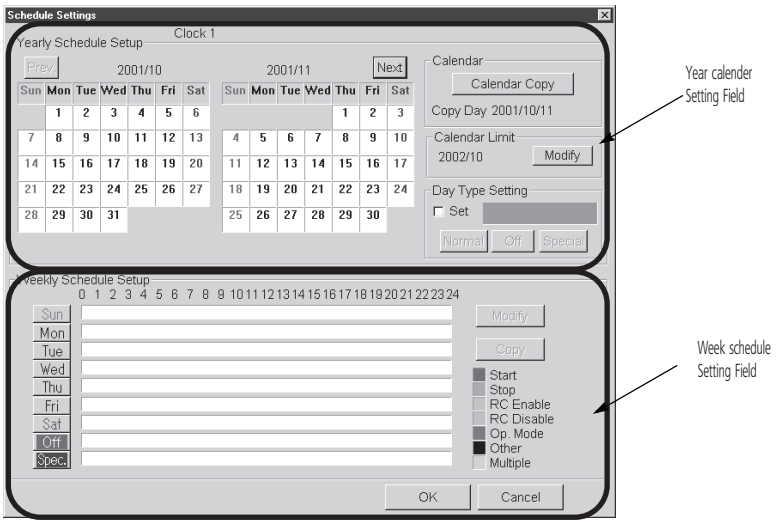
Automatically performs facility start/stop control, switching of the operating mode, setting of temperatures and enabling/disabling of the remote controller according to the preset time schedule.

Register 1 week's cycle schedule program and specify what operations to perform on each day. Also, you can specify holidays or special days throughout one year (13 months) and specify the method of operation for holidays or special days in the same way as the daily operating schedule when using the schedule program.

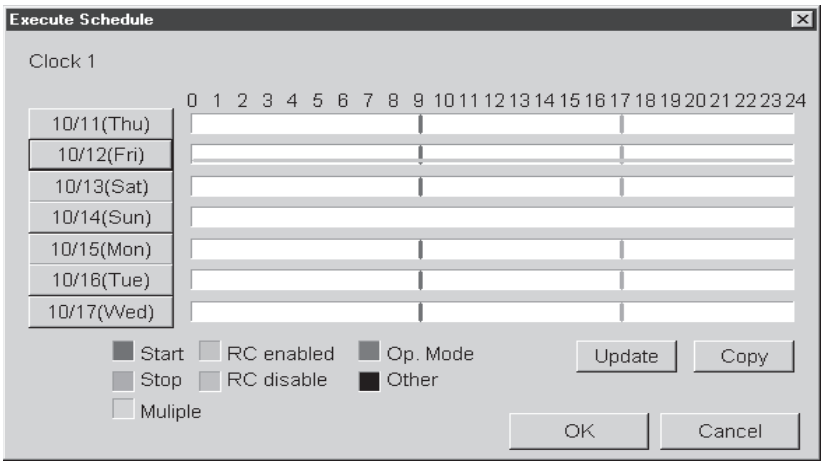
One system can register up to 128 schedule programs.

When the schedule operation is executed, those operations are recorded in the history.

[Schedule Setting Screen]



[Execution Schedule Screen]



You can view this screen if you need to confirm the actual schedule control. Also, special schedule changes within one week change on execution schedule screen.

5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 3 Display

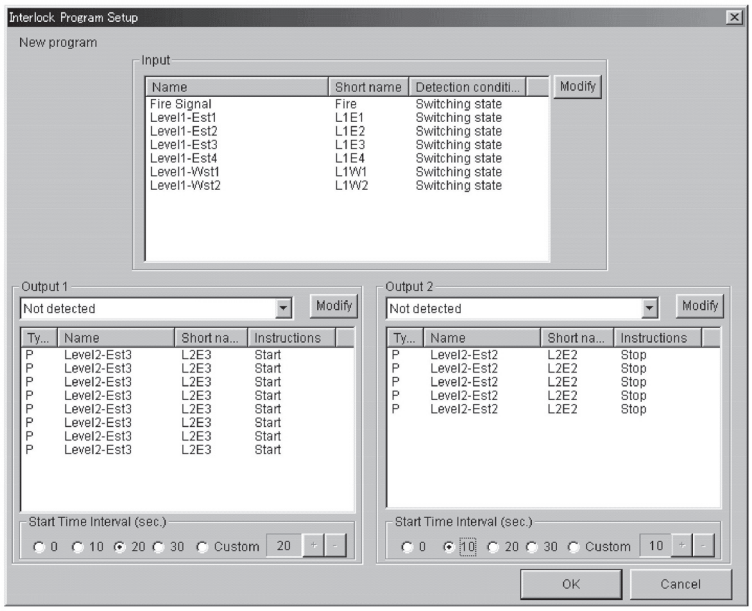
(8) Interlocking Program Screen

Automatically starts and stops equipment that was set, in response to changes in the operating status of the facilities or the occurrence of errors. 8 types of input conditions can be specified.

Using this enables the interlocking of starting and stopping of a plurality of facilities (operation in order etc) indoor/outdoor link, key management link and reporting.

1 link program can set a maximum of 50 input condition management items and a maximum of 50 start/stop output management items. A maximum of 100 link programs can be defined. A plurality of link programs can be applied for input and output of the same management items.

[Interlocking Program Screen]



The figure above is an example of a link program that is running air conditioners in common areas along with the air conditioners that are running for certain tenants.

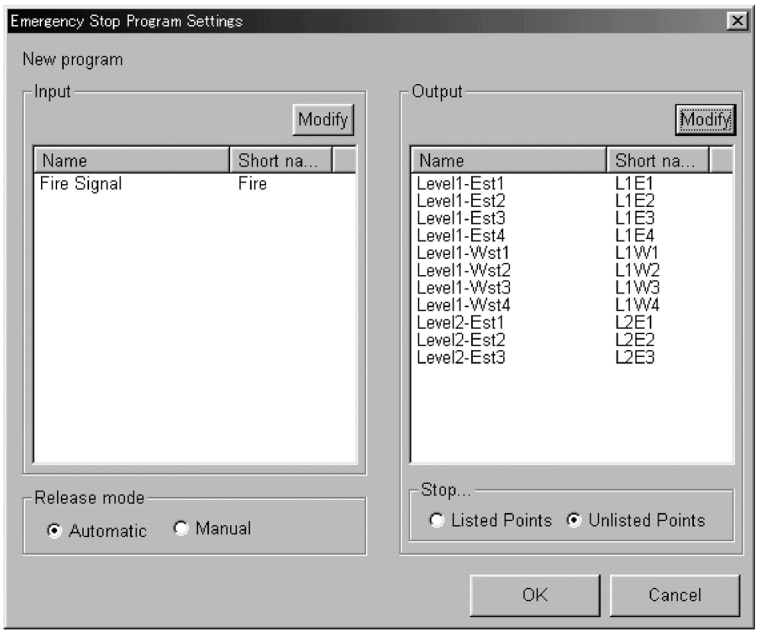
5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 3 Display

(9) Fire Emergency Stop Program

[Emergency Stop Program Screen]



The registration of management items to be targeted for emergency stop can be performed using either method of specifying the management item to stop or of making all management items targets for stopping and then specifying the management item that is out of range.

(Facilities that are conformed to fire safety laws are exceptions.)

This example figure shows the specification of management items (not to stop when there is a fire) that are not targeted for emergency stops.

[Fire Occurrence Screen]

The fire icon on the bottom right-hand side of the screen will change to red when the emergency stop signal is input. (Normally, the report signal is input from the fire system.)

(Intelligent Manager is not a fire prevention certified product.)

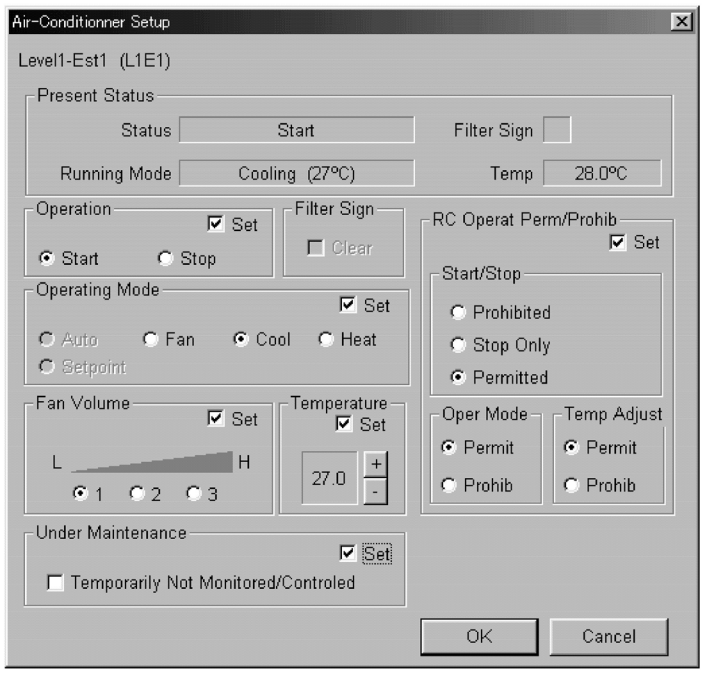
5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 3 Display

(10) Facility Equipment Setting Screen

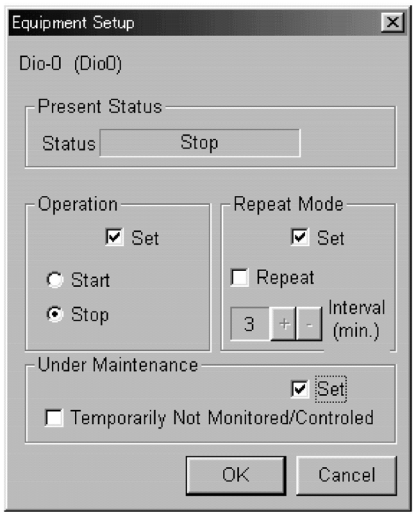
[DIII-NET Air Conditioner Setting Screen]



Each of the operations of start/stop, switching of operating mode, changing of temperature settings, switching of enable/disable of individual remote controllers, resetting of the filter sign, clearing of the failure warning and settings for being under maintenance are possible when using our DIII-NET compatible air conditioners.

Items pressed later have priority with regard to management items defined by the schedule control and link control.

[Setting Screen for Other Facility Equipment that can be Started and Stopped]



In addition to start/stop operation, supported by all facility equipment, our DIII-NET air conditioners, can be started and stopped with the repeat mode. In this case the outputs start and stop instructions in determined time intervals to make the starting and stopping states of the facility obey the intelligent Manager instructions, regardless of the local operation.

5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 4 Measuring

- Measuring
  - Cumulated Running Time and Cumulated Start/Stop Count
  - Automatic Inspection of Meter

(1) Cumulated Running Time and Cumulated Start/Stop Count

Cumulated running time and cumulated start/stop count are possible on all facility equipment that should be monitored. This is a standard for equipment maintenance. Can set as data for calculating electrical costs according to the use of the equipment.

(2) Automatic Inspection of Meter

Automatically cumulates pulses of electrical power meters, water amount totals and gas meter. Data that is inspected is reflected in the tenant's monthly cost calculations (optional). (A measuring instrument with a pulse generator of a minimum of 100 ms pulse width is necessary.)

Number of management items: meter = 1 item.

Meters can be connected to the Pi port on the main unit.

5 - 2 - 5 Management

- Management
  - Running History Management
  - Report Creation (Including the proportion of electric power)

(1) Running History Management

You can print the changes in the status of the equipment (start/stop).

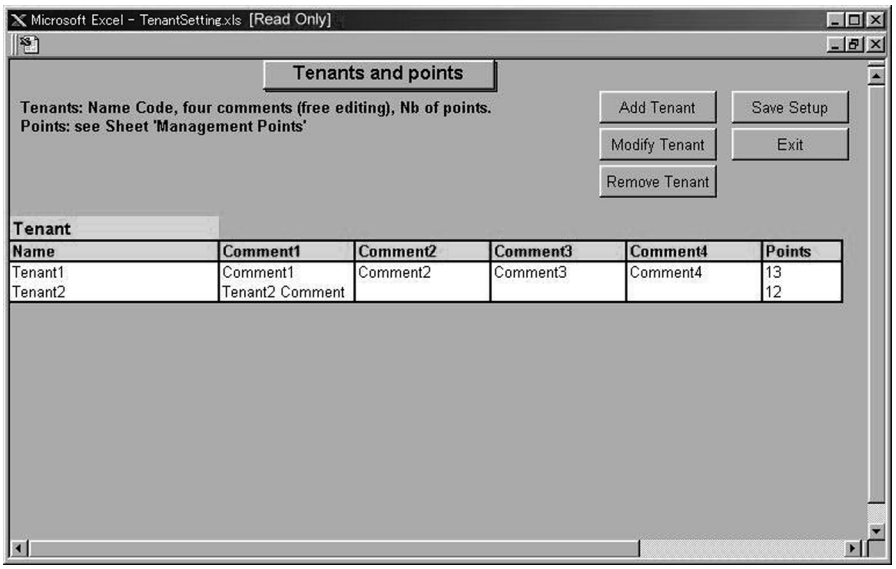
(See the section on Detailed History Display on page 13.)

Stores up to 500,000 items of error history data of the equipment (occurrence of errors and recovery) in memory. Allows you to display and to print the error history for each specific management item and to display and to print the histories of all management items. Also, you can set the period targeted for display (or printing) for each and set whether to display or print the errors and recoveries.

(2) Report Creation

Accumulates and manages the data for integration (running time of equipment, start/stop count), meters (pulse integration by the Pi on the main unit) and the power consumption amount (in units of indoor equipment) by the proportion of electrical power of the VRV. It can also be searched and displayed using Excel software.

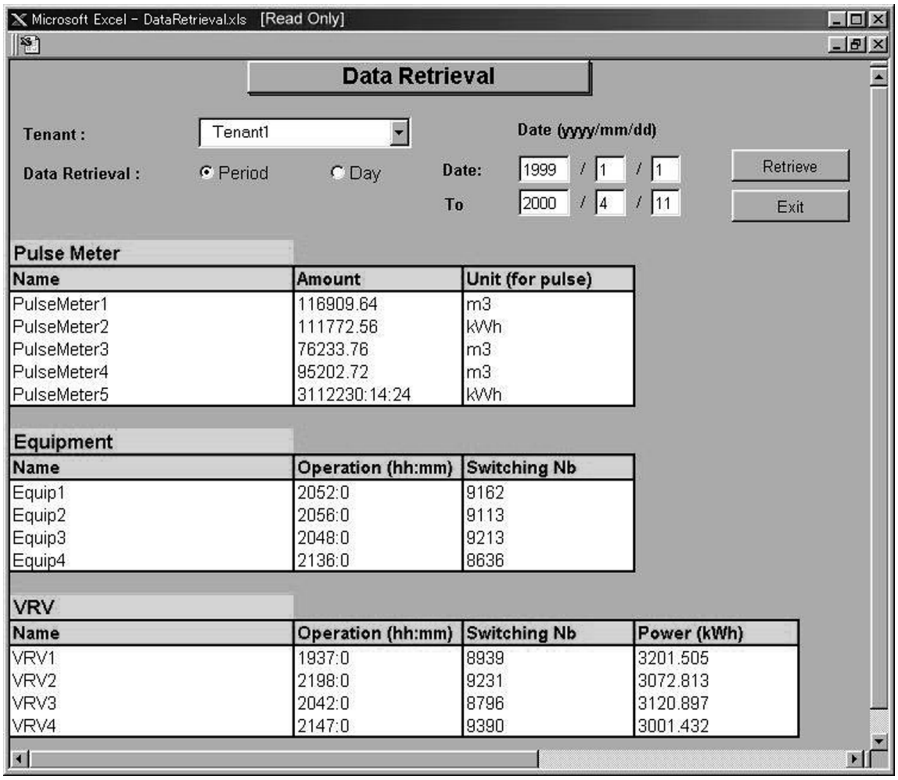
* Customers can freely change their department charges and accounting books (under their own responsibility).



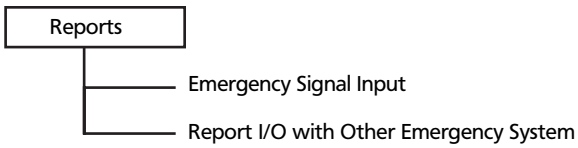
5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 5 Management



5 - 2 - 6 Reports



(1) Emergency Signal Input

Allocates a dedicated input board for fire signal input. (Di on iPU main unit)

The emergency stop program using this as the input signal function has priority over other controls. (See Fire emergency stop control.)

(2) Report I/O with Other Emergency System

The application of link control enables key management control that uses the input of a signal from the key management device and the notification to warning devices in security companies when errors in the facilities are detected, such as filled head water tanks, elevator error signals and fire warning systems. It also controls the input and output of a variety of reports.

(However, the status of the proportion of the output of reports does not change for approximately 10 minutes after recovery from a power failure.)

5 Functions

5 - 2 Detailed Explanation of Functions

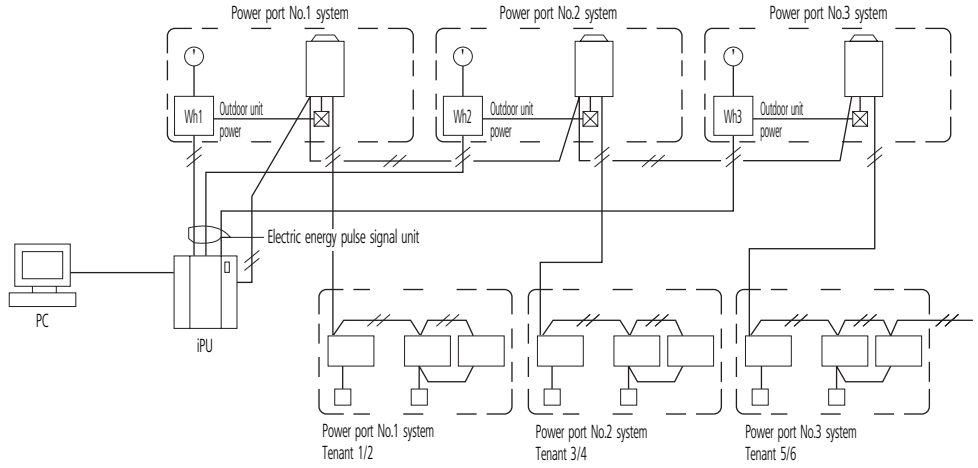
5 - 2 - 7 Power Proportional Distribution

- Power Proportional Distribution
  - System Components
  - Power Proportional Distribution Function
  - Setting of the period with no electric energy distributing
  - Data Back-Up

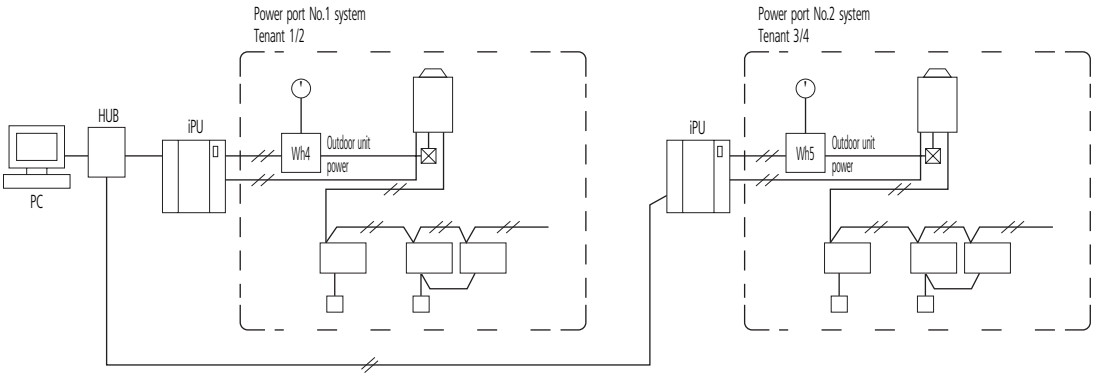
(1) System Components

Option setting for use of many watthour meters ("Grouping of electric power port" to be specified) 18 units (Max.) of watt hour meter for one iPU (the 1st one) and 19 units (Max.) of that for each iPU among several iPUs (the 2nd or more one) can be connected. Therefore, when 4 units of iPU are used, 75 units (Max.) of watthour meter can be connected. (It is not recommended to install many watthour meters.)
In this case, it is also allowed to specify the option of "Grouping of electric power port".
Normally, it is not necessary to specify it. The system connection example is as shown below. For both Pattern 1 and Pattern 2, the calculation method, if specified, is the same.

- Pattern 1: Three watthour meters to be connected to one iPU:



- Pattern 2: Two watthour meters to be used with two units of iPU:



5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 7 Power Proportional Distribution

Item	Power port not specified (Normal)	Power port specified
Design precautions	Standard design without major conditions	Required to allow each of indoor/outdoor units and watthour meter to correspond.
Test run date	Preparation of address table	Required to prepare the address table and enter the port No.
Relation between the indicated value of watthour meter and the total value of calculation results	The total value of calculation results of electric energy distribution is almost the same as the one of the indicated value of watthour meter. Because the calculation method has a treatment of counting fractions as one, it never becomes smaller than the indicated value of the watthour meter. (1)	
Relation between the distribution calculated value and the watthour meter indicated value	There is a case of no conformance between each watthour meter indicated value and the calculation result of corresponding air-conditioner.	Each watthour meter indicated value almost conforms to the calculation result of corresponding air-conditioner.

NOTE

1 If many watthour meters (more than two) are installed, it is required to make group setting very watthour meter. If the group setting is not made, the error may become large in the total of each calculation result of the indoor unit corresponding with each watthour meter, though the total of the indicated value of watthour meter almost conforms to the total of calculation result.

- Pattern 3: Sky Air distribution of electric energy Refer to Item 7 “Design precautions”.

(2) Power Proportional Distribution Function

Because the JIS calculation is not based on the Weighing Law, it cannot be used for any official business transaction.

- Power proportional distribution function

The power proportional distribution and determination method is as listed below.

1. Power Proportional Distribution as a calculation standard	The power consumption of outdoor unit is counted in 1kWh unit. (To be inputted through integrating watthour meter with pulse oscillator) This value is a standard for determination, therefore, if the watthour meter has a wrong specification, the determined electric energy used is a wrong value.
2. Calculation of operating load state every indoor unit (1 unit) (Load every indoor unit to be supposed)	Every 20 sec., the connected indoor unit operating state is received and collected as a communication data, and the tabulation (summing-up) for an hour shall be a “temporary load".
3. Calculation of distribution ratio	In order to determine the power consumption of some air-conditioner A, it is required to determine the temporary load ratio (distribution ratio) of air-conditioner A to the total temporary load of all the connected air-conditioners. However, the value to be determined here is a ratio and not the power consumption. Distribution ratio of indoor unit A $t = \frac{\text{Temporary load of air-conditioner A}}{\text{Sum total of temporary load of all air- conditioners}}$
4. Electric energy used from distribution calculation of air-conditioner A	If the electric energy pulse [1kWh/pulse] inputted for an hour from the formal time is multiplied by the distribution ratio of every indoor unit, the actual electric energy used can be determined. Electric energy used of air-conditioner A (Distribution calculation) t = Distribution ratio of indoor unit A u = Number of pulses for 1 hour With this formula, the electric energy used for an hour of air-conditioner A can be calculated and determined. Then, if the same calculation is made for all the air-conditioners, the distribution value for an hour of each air-conditioner can be determined.
5. Determination of electric energy distribution value in 1-day unit	For 1-day used power distribution value, the calculation result every hour (1 hour) in r is summed up. For end of one day, 12:00 am (mid-night) is fixed. [Rate calculation] One day to be set in a menu is from 12:00 am to 11:59 pm.

The calculation result of the power proportional distribution function is made using the original method of Daikin and is not under law.
Collected data are saved in s daily report around midnight.

- Basic functions

- The system is that the rate of use of each indoor unit is calculated and determined from the electric energy used of the outdoor unit.
- For calculation, the power consumption of the outdoor unit is counted as a pules signal, and this value is distributed depending on the load situation of the indoor unit. (Mentioned later)

Supplement:

Pattern 1: System of connecting three watthour meters to one iPU

If three watthour meters are connected with one iPU, the electric power port is to be specified individually.

Pattern 2: System of using some/many watthour meters with some/many units of iPU
By specifying of power ports, it is also allowed to collectively specify of some/many units.
Example: Of the four iPU, two units are group-specified with one watthour meter, and the remaining two units are group-specified with each unit individually.

5 Functions

5 - 2 Detailed Explanation of Functions

5 - 2 - 7 Power Proportional Distribution

Pattern 3: Combinations as above
As a combination system, some/many watthour meters can be connected to one iPU for use of some/many units. The precautions and the relation between the calculated value and the indicated value of watthour meter are the same as those in Pattern 1 and Pattern 2.

- Number of integrating watthour meter with pulse oscillator
  As a standard system, one integrating watthour meter with pulse oscillator (abbreviated “Watthour meter” hereafter) is to be provided.
  If more then 19 units are connected, the following treatment (two ways) is effective for it:

  1) The mounting position of watthour meter is to be changed:
     In most cases, if watthour meter mounting position is changed to the main body side (toward near cubicle) of the receiving equipment, the number of watthour meter can be set within 12 units. If the number of units is increased, theequipment cost will be increased by more than hundreds of thousands yen.

  2) The specification of watthour meter is to be changed, together with use of pulse synthesizer:
     In this case, because some/many watthour meters and the to pulse synthesizer are used, the cost goes up. For this reason it is basically not recommended.However, if more than 19 units is connected by all means, the pulse synthesizer should be used and the specification of watthour meter should also be different from the standard one. For more detail, you can consult with our Technical Sales Section.

(3) Setting of the period with no electric energy distributing

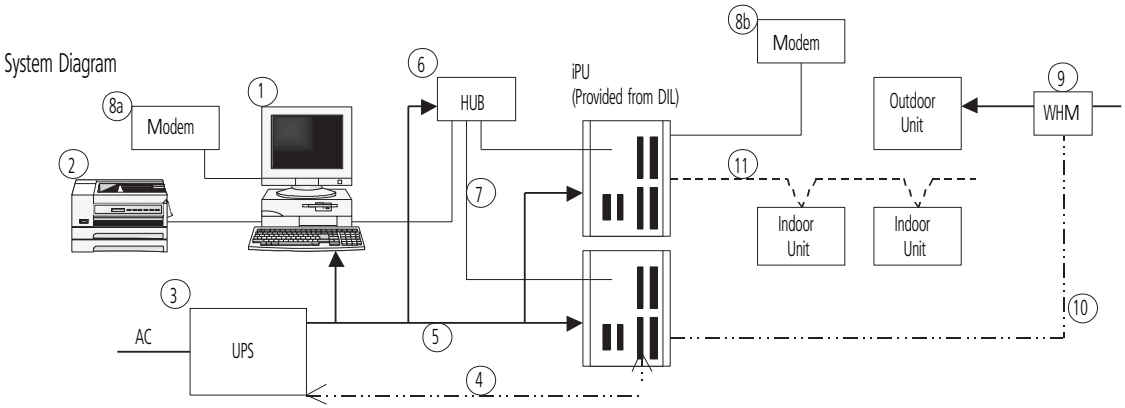
- For period of electric energy distributing, the usual (continuous) calculating system is normally adopted, but it is also allowed to set the time zone and days of the week in which no rate calculation is made. For setting, specifying collectively is done, therefore, it is not possible to set the time zone every each tenant.
- Within the period of no electric energy distributing, the calculation result is 0 kWh. If the electric power is used with the outdoor unit in no-calculation time zone, the calculation result, by this electric energy rate, is less than the meter reading.
- As an example, the above is used in the following case:
  In ordinary regular time, the flat rate (fixed rate) is collected from the tenants, and only in other time, the electric energy distributing is made as an overtime and holiday rate.
- The no-calculation period can be set by combining the following. (Tenants individual not allowed)
- Optional start to end time (1 min. unit)
- Optional day of the week (Unit of day of the week)
- Reversely, if the optional date (month/day) is specified, the rate can forcibly be calculated with 1-day unit.
  Regardless of specifying of no-calculation period, the rate calculation is made. (Tenants individual not allowed)
- Optional date (month/day) with 1-day unit (1 year)

(4) Data Back-Up

- The set data in the dues control unit is not deleted even if the electric power is turned off, because the data is stored in the non-volatile (flash) memory.

6 System Architecture

6 - 1 Requirement spec and the recommendation of other equipment

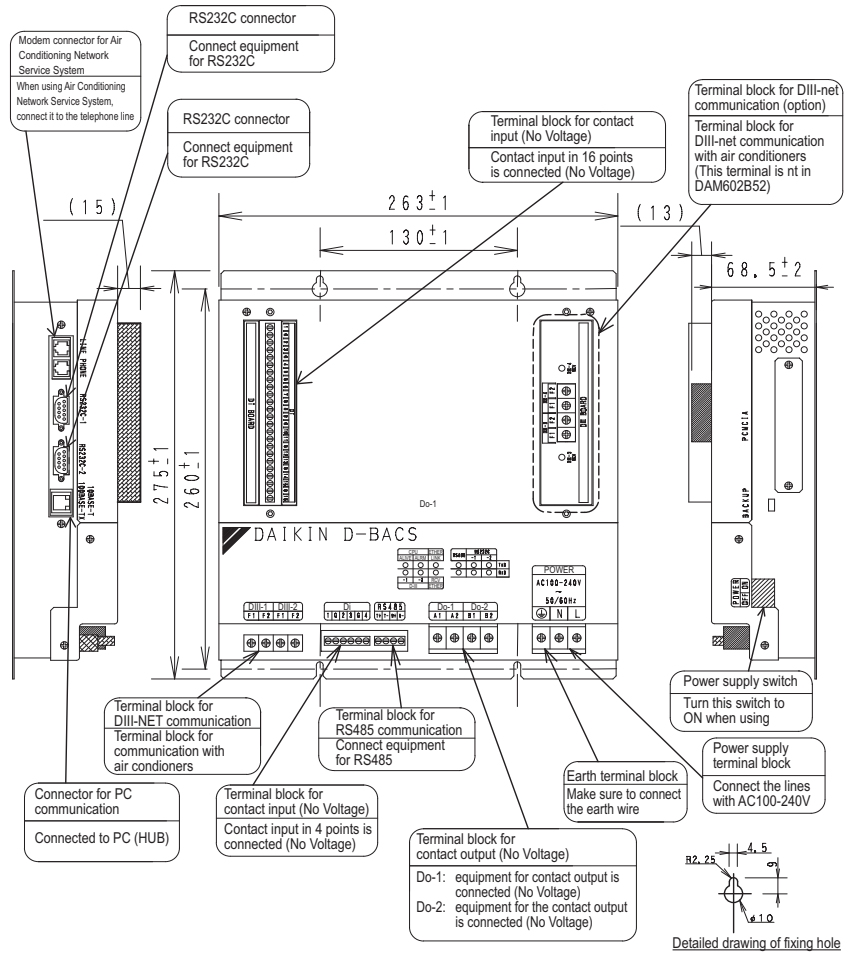


		Requirement Specifications	Recommendations	Remarks
PC	1	[Hardware] CPU : Pentium 500MHz or above recommended Memory: 256MB or above HDD: 4GB minimum, 8GB or above Keybord/Mouse Network: 100Base/T Ethernet SVGA (800 x 600, 1,024 x 768, 1,280 x 1,024) Monitor (15',17') Sound & Speaker	We recommend makers such as IBM, Compaq or Dell, etc.	In the case of an alternative maker, correct operation should be checked before shipment.
		[Software] Windows XP (Professional SP2 or later), Windows 2000 (Professional SP4 or later) Microsoft Excel 2000	The intelligent Manager is executing on the English version.	The Windows NT 2 bytes encoded characters (Chinese, etc.) are not supported.
		[Other equip.]		
	2	LBP (not indispensable.) - It must be supported by Windows NT. - Require A4 size paper	We recommend makers such as HP, Canon, etc.	
UPS	3	Capacity: 200-250 W / 20 min Voltage: as required on the field	APC SU 700, SU 1000 Series	
	4	Control Signals - Power failure signal (from UPS) - UPS shutdown signal (to UPS)	+ Relay I/O module (AP9610)	
	5	AC power lines		
NETWORK EQUIP.	6	Multi-port HUB (4 or more ports) 10 Base/T cables (category 5)	We recommend makers such as 3 com, etc.	Hub should be used even when one iPU is connected to PC.
	7	A required distance and a number	The cable for networks is required.	
MODEM	8a	33.6 kbps communication speed and reception function are required.	We recommend makers such as 3 com, etc.	Required for remote monitoring. However, we recommend it to be included as a standard.
	8b	Air Conditioning Network Service System		
WHM	9	1pulse / 1kWh output is required.	As specified in the D-BACS system design guide.	Required for powerproportional-division.
	10	WHM - iPU connection cable		
OTHER	11	D3 network cables	As specified in the D-BACS system design guide.	

6 System Architecture

6 - 1 Requirement spec and the recommendation of other equipment

<iPU External View>



Detailed view of Attachment Hole

(1) Electrical rating

1) Rated voltage: Single phase AC 200 to 240 V 50/60 Hz

2) Power consumption: Max. 20 W

(2) Conditions of Use

1) Power voltage variation: ±10% of rated value
2) Ambient temperature of use: -10 to 50°C
3) Ambient humidity of use: 0 to 98% (However, there must be no humidity.)
4) Storage temperature: -20 to 60°C

(3) Performance : Insulation resistance: Min. 50 MΩ at DC 500 V M

(4) Mass : 4 kg

(5) Painting color : light ivory

Item		Requirement Specification
UPS (e.g.APC SU700, 1000 series)	Capacity	200-250 W/20min
	Voltage	As required on the field
	Control signals	Power failure signal (from UPS) UPS shut down signal (to UPS)
	Relay	I/0 module (AP9610)

6 System Architecture

6 - 2 Confirmation of Watthour Meter

For distribution of electric energy, the integrating watthour meter with pulse transmitter is required.

It is important to confirm that the specifications coincide with each other, and also to confirm with the division in charge (normally, electrical work division, not air-conditioning div.).

6 - 2 - 1 Specifications of watthour meter to be connected to intelligent Manager

1) To be an integrating watthour meter with pulse transmitter.

2) The output pulse unit (pulse weight) is to be 1 pulse to 1kWh (1Wh/pulse).

3) The pulse width is to be within 40 to 400 msec.

4) The mercury relay is to be used for pulse output, and it to be no-voltage output.

5) If even any of the mechanical or electrical type conforms to the above “1)” to “4)”, it can be used.

If the specifications are not coincident, there is a possibility that the following imperfections are caused:

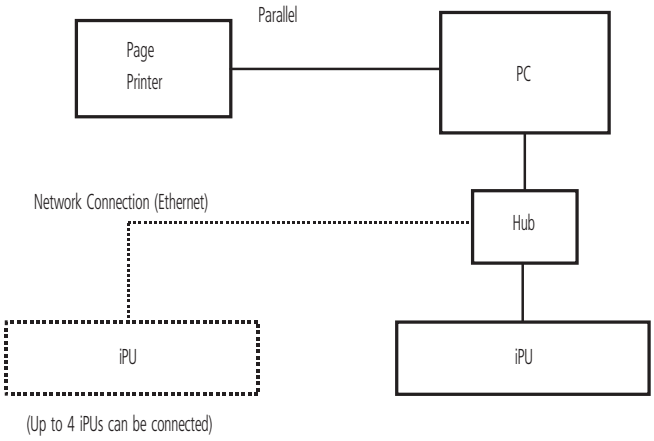
- If the output pulse unit is not 1kWh/pulse.
  It results a large difference between the reading (value) of watthour meter and the total value of distribution of electric energy.
  For the charge calculation, the number of pulse input is counted and the power consumption of the outdoor unit is monitored, therefore, for example, if the large value, 10 kWh/pulse, is inputted, the electric energy calculated is the value of one tenth (1/10) times.
- If the pulse width is not within 40 to 400 msec. If it is less than 40 msec., the pulse input cannot be detected, and the result of calculation is smaller than the real value. In addition, if more than 400 msec., more than 2 pulses is detected for 1-pulse input, and the result of calculation is larger than the real value.
- If use of contact other than mercury relay.
  If it is a general relay, the pulse may not accurately be detected due to relay chattering.

Confirm the following items for the construction process.

- Construction of pulse signal line is kept away from power cables. For this pulse signal line, the voltage DC24V should be applied from the intelligent Manager side. It should be constructed separating from the power cables.
- Max. distance to be 200 m. Confirm that the distance with the watthour meter~intelligent Manager is within 200 m.

7 Wiring Image

7 - 1 System Connection



7 - 1 - 1 Use of Printers

(1.) Standard Setting: With only the page printer: Parallel port connection

- Printing of daily, monthly, annual reports and cost calculations: Automatically prints at the set time.
- Display of errors and changes of states etc: Printer at error or at determined build up of data, or freely.

(2.) 2Units of Page Printer and Line Printer (Optional)

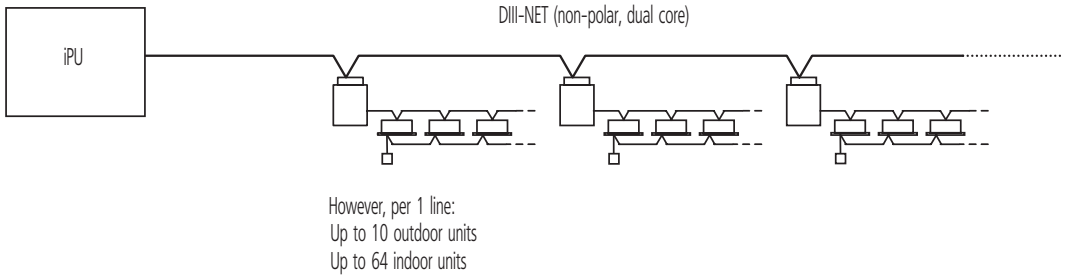
* Page printer: Network connection

- Daily, monthly, annual reports: Automatically prints at the set time
- Cost calculation

7 - 1 - 2 Connecting to iPU

Wiring varies according to the equipment to be connected, as shown below.

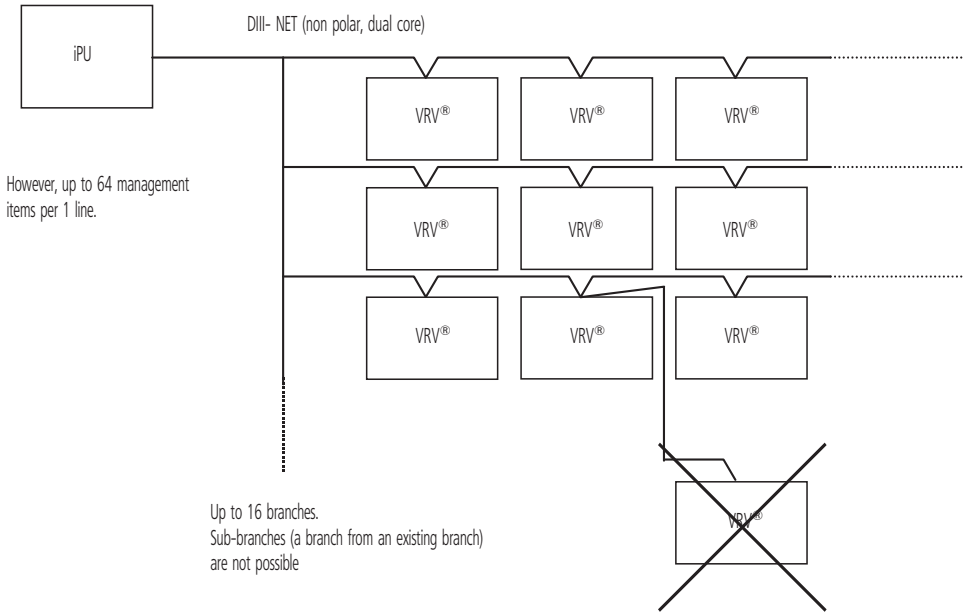
* DIII-NET Compatible Air Conditioners



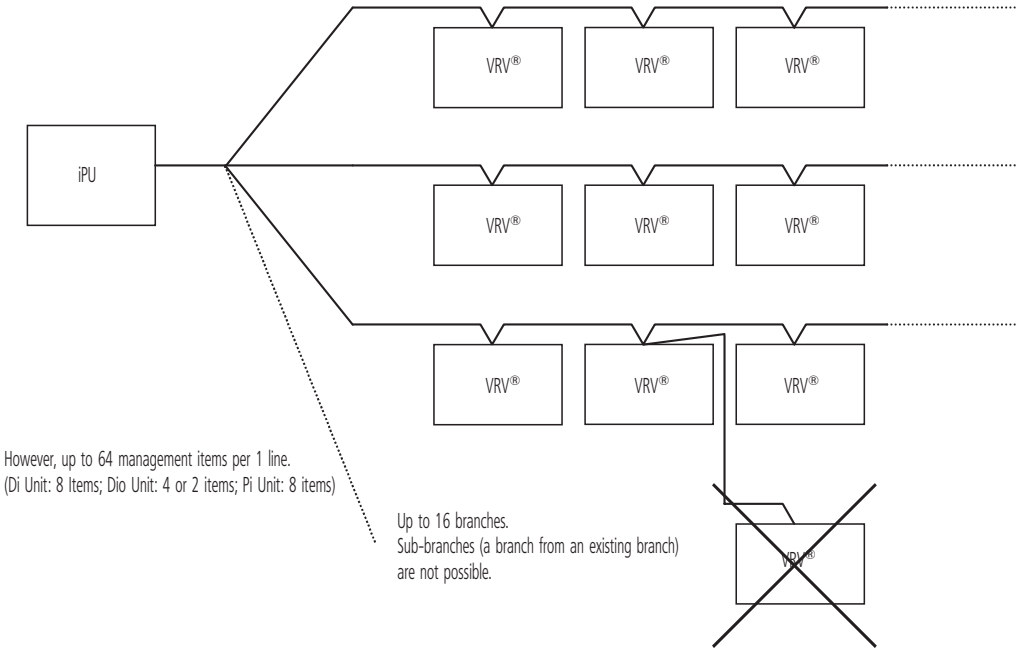
7 Wiring Image

7 - 1 System Connection

(1) Bus Method



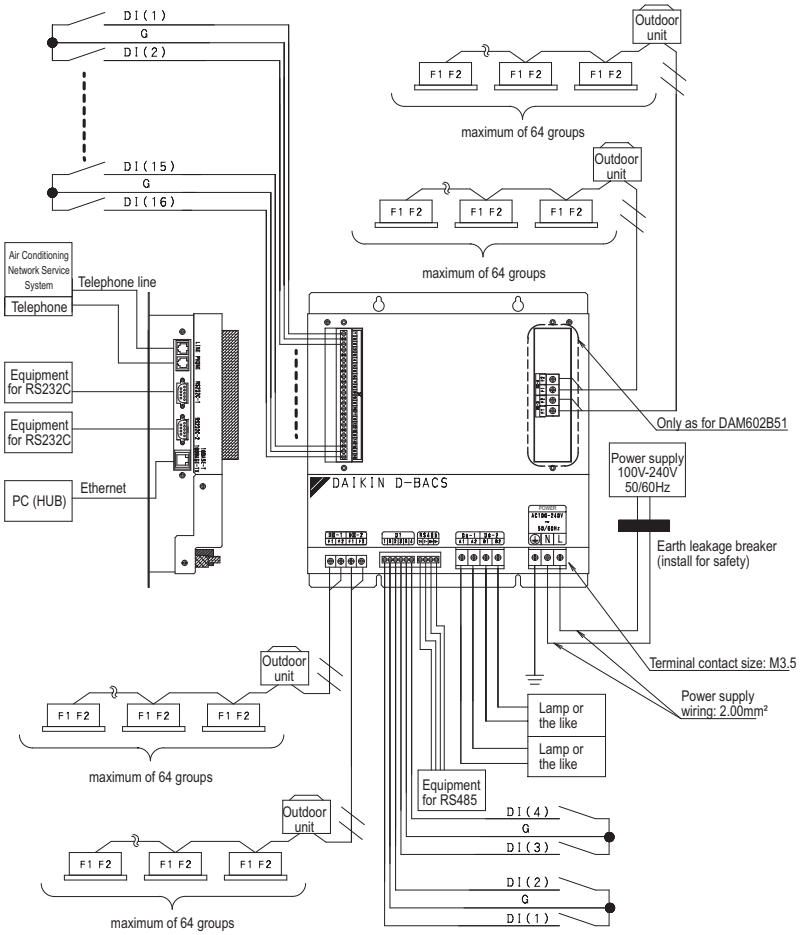
(2) Star Method



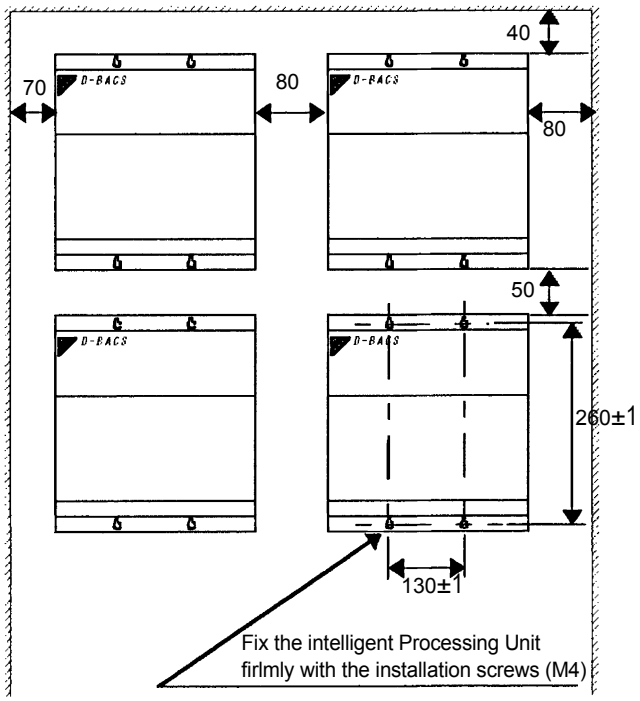
7 Wiring Image

7 - 2 Wiring Diagram

7 - 2 - 1 Intelligent Manager Electric Wiring Diagram



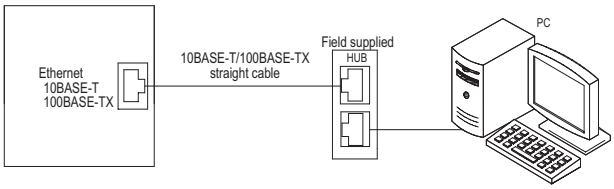
7 - 2 - 2 Required Installation Space

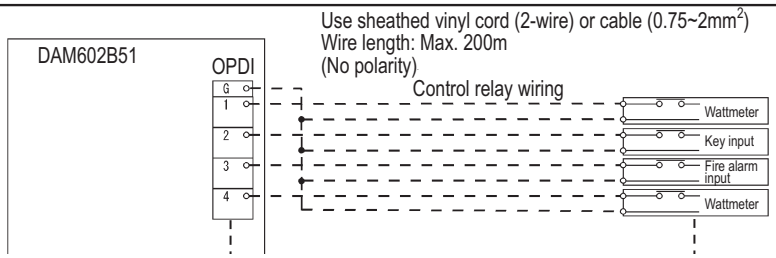


7 Wiring Image

7 - 3 Wiring Specifications

● Ethernet communication wiring





NOTES

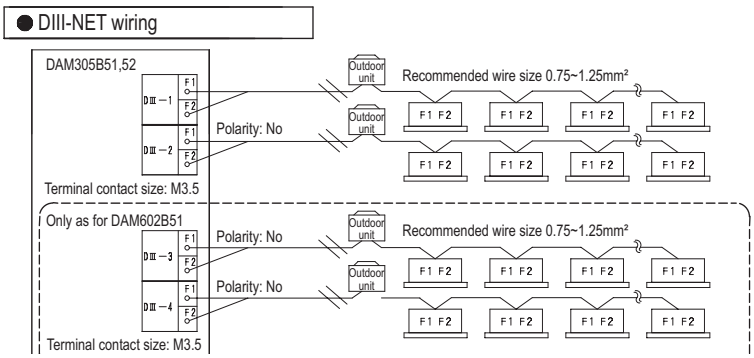
1 Up to four input devices can be connected to each G terminal. Do not connect three or more wires togheter to one terminal.

2 Use micro-current contacts for no-voltage input contacts. (Voltage and current to be at DC 16 V and below 10 mA with the contact closed)

3 The order of connections may flexibility be modified depending on the test-run settngs.

With a combination of OPDI, Di-2 and Di-3, total of 18 input devices can be connected.

● DIII-NET wiring



CAUTIONS FOR WIRING

1 Do not use multicore cables with three or more cores

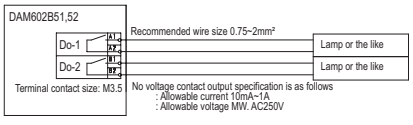
2 Use wires of sizes between 0.75mm² and 1.25mm²

3 Do not bind the wire for DIII-NET

4 Wirings for DIII-NET must be isolated from the power lines

5 Wire length: Max 1000m

● Do-1 and Do-2 Settings



CAUTIONS FOR WIRING

1 Do not use multicore cables with three or more cores

2 Use wires of sizes between 0.75mm² and 1.25mm²

3 Do not bind the wire for control

4 Wirings for control must be isolated from the power lines

5 Wire length: Max 150m

8 Setting Up

8 - 1 Precautions for Setup

The intelligent Manager Monitor System PC and printer are used in the same way as general OA equipment.
iPUs are set up within the system.

However, avoid setting up in the following locations.

- Locations that are exposed to direct sunlight, or that are subject to radiation from heat generating equipment such as a boiler.
- Locations with high humidity or where there could be contact with water.
- Locations that are corrosive or where inflammable gas is generated.

Ambient temperature and humidity conditions of location of setup

10 - 35°C 20 - 80% RH (intelligent Manager Monitor System PC, Printer, Display, UPS)

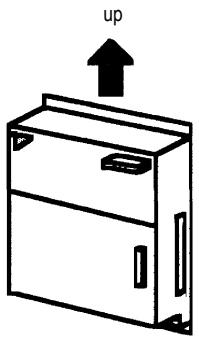
0 - 50°C - 95%RH (iPU)

Separate our air conditioning power (electrical) lines and the communications lines for control a minimum of 50 mm. In other cases, separate from the power lines to meet the following conditions.

Power Line Electrical Capacity		Distance of Separation of Power Lines and Communication Lines for Control	
		Daikin Air Conditioners	Other Equipment
Max. 220 V	Max. 10A	Min. 50 mm	Min. 300 mm
	Max. 50A		Min. 500 mm
	Max. 109A		Min. 1000 mm
	Exceeding 100A		Min. 1500 mm

8 - 2 Summary of Attachment

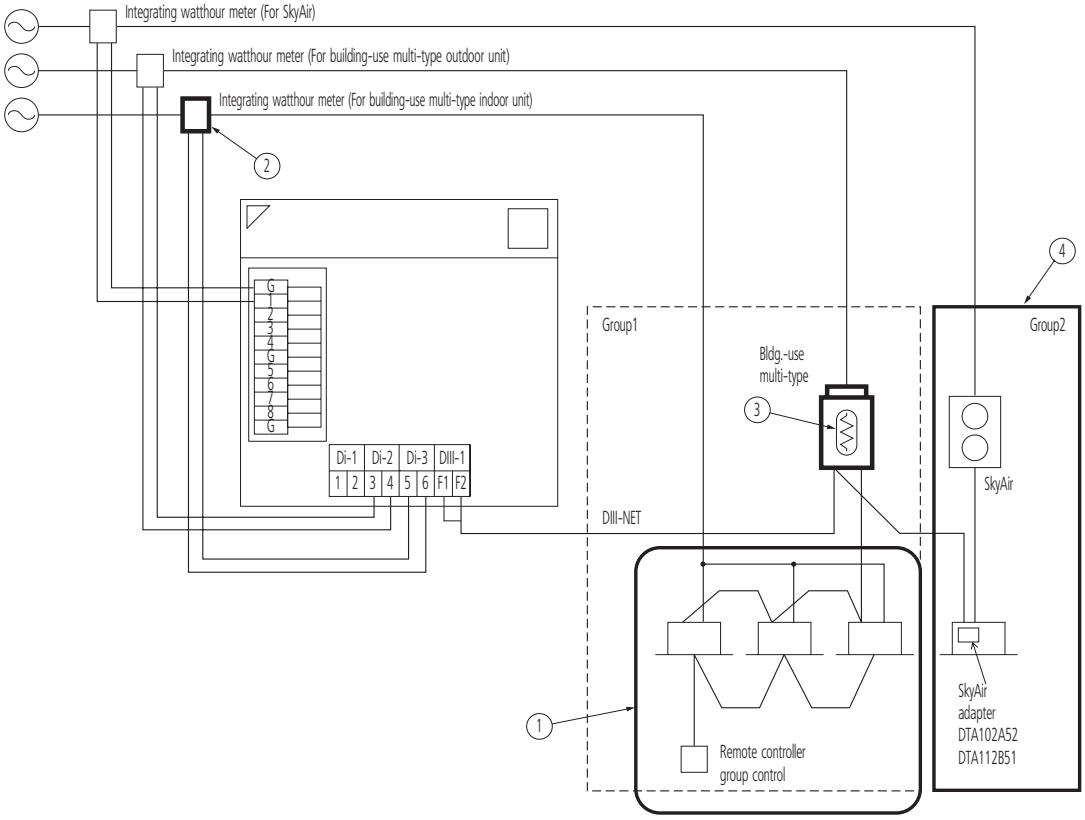
- Always attach inside a locked electrical equipment box (or somewhere that cannot be opened without the use of a special tool) so that indoor equipment cannot be easily tampered. The location should not allow the equipment to be subjected to the influence of electromagnetic waves or to be exposed to dust.
  Minimum depth dimension necessary for setup is 100 mm.
- The figure at right shows the minimum spacing between equipment when setting up consecutively and the wall.
- Attach as shown in the following figure.



Always attach in the vertical direction. Attaching horizontally will cause failures so do not attach in that direction.

9 Design Precautions

9 - 1 Rate calculation



9 - 1 - 1 Remote controller group control

Also in the indoor unit (sub-unit) with remote controller group control, set the centralized address for correct electric energy distributing.

(The centralized address for sub-unit can be set in the site set mode “30” of the remote controller.

However, after setting with “30”, if set with “00”, the sub-unit address will be deleted.)

→ An imperfection in case collective distribution is done with main-unit running state without setting of centralized address at sub-unit .

Even if the remote controller group control is done, each indoor unit has different thermostat state depending on its installation place.

Therefore, the distribution result will differ depending on the decision which indoor unit is to be as main unit.

9 - 1 - 2 In case power consumption of indoor unit to be distributed

In distributing the power consumption of the indoor unit, it is necessary to connect the integrating watthour meter to the power system of the indoor unit and input its pulse output to intelligent Manager.

If such a wiring is connected, in making equipment setting in test run, set at “To make distribution calculation for indoor fan” with intelligent Manager calculation conditions.

9 - 1 - 3 Calculation of electric power (Crankcase heater/PC Board power consumption) at stopping

1. In the case of calculation for crank case heater and PC Board when not in operation.
   The electric power consumed by crank case heater of the outdoor unit is divided by the capacity of each indoor unit.
   N.B. The calculation also includes the indoor units which are not in operation. (eg.vacant)
2. In the case of not calculating for crank case heater and PC Board when not in operation.
   It is possible to exclude the power consumed by crank case heater and PC Board.
   Therefore the power won’t be added to each indoor unit.

9 Design Precautions

9 - 1 Rate calculation

9 - 1 - 4 Electric energy distributing of SkyAir

The SkyAir electric energy distributing cannot be included with the case of building-use multi-type.

Therefore, it is necessary to separate the group for rate calculation by group setting.

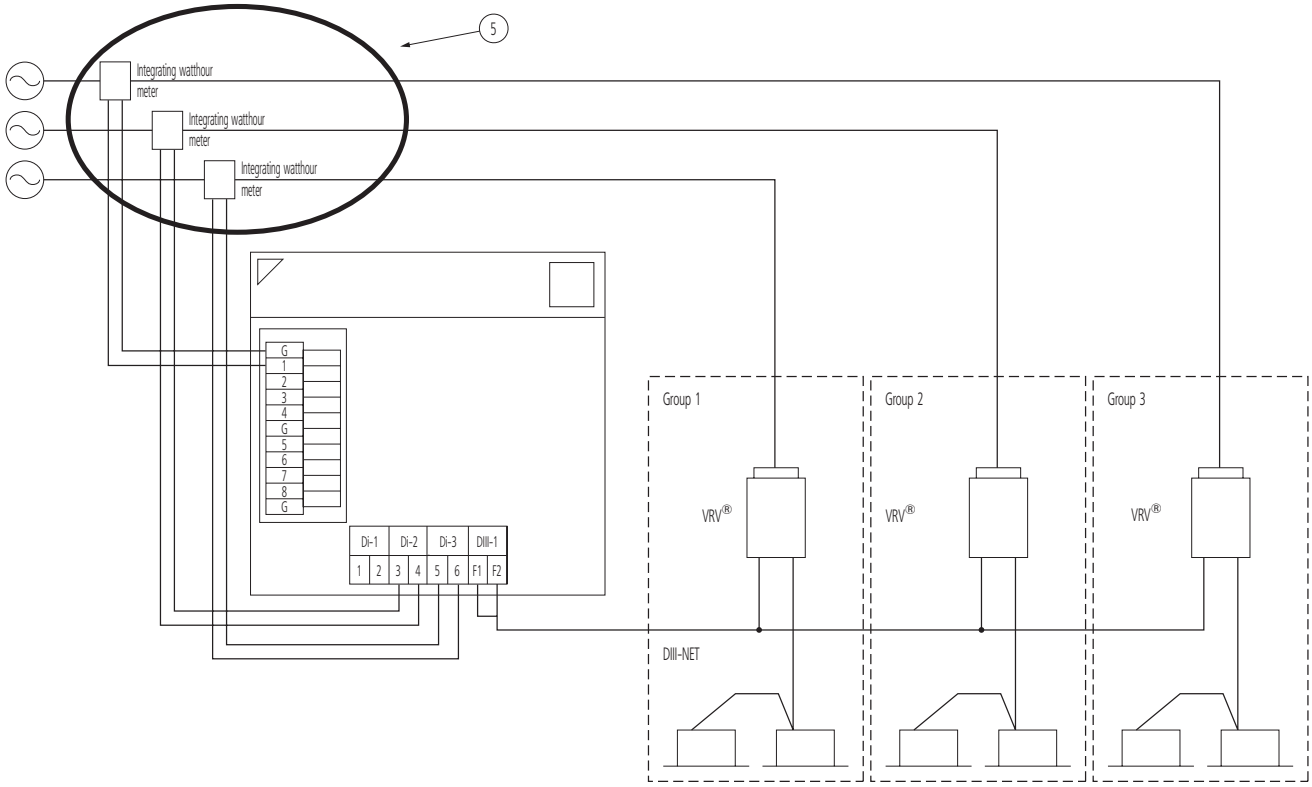
Further, the applicable model is also limited.

9 - 1 - 5 Setting of electric power group

For iPU, the electric energy can be distributed with one unit of integrating watthour meter, but if some/many integrating watthour meters are connected as shown below, after setting of electric power group, if the electric energy is distributed every electric power group, the electric energy distributing accuracy can be improved.

9 - 2 Setting of each electric power group

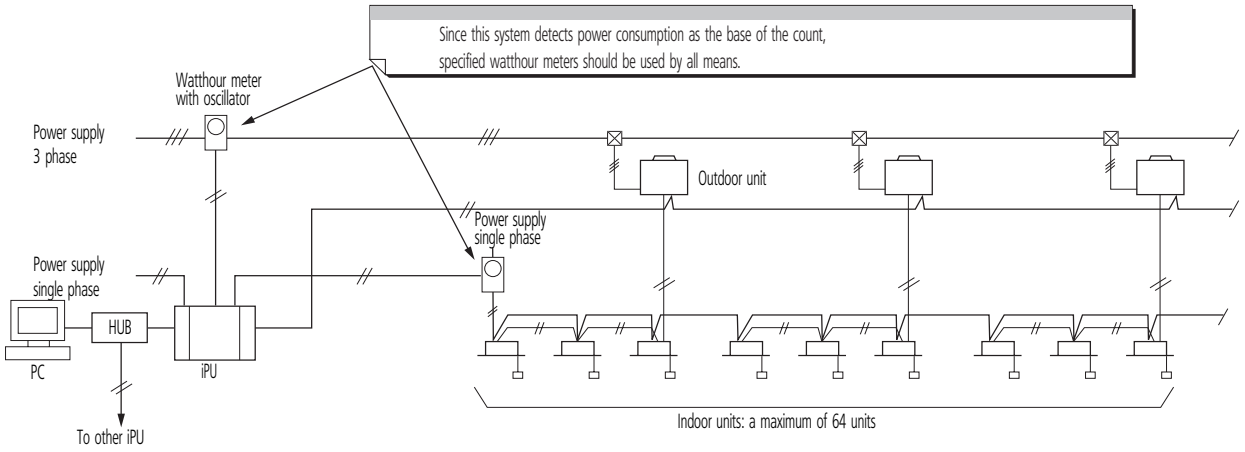
Although the iPU unit allows electric energy distributing with one integrating watthour meter, if some/many integrating watthour meters are connected as shown below, the electric energy distributing accuracy can be improved.



10 Explanations of Power Proportional Distribution

10 - 1 What is the Power Proportional Distribution.

(System Ex.: Normal VRV)



- Previously the general way for requesting the electricity charge at rental buildings was that a management staff read a watthour meter and billed the tenants by manual-account based on the operation time which were counted through time-counters.
  However, this method takes a lot of time for the management staff. In addition, as airconditioning consumes much different electricity for either the operation of airconditioning (thermostat-on) or the operation of fan only (thermostat-off), it might cause to give unfair sense to the tenants inhabited in the spaces with different heat load, though “operation-time” itself is the same.
  For instance, even if a certain higher preset temperature is applied in summer for energy saving, fee for airconditioning may equal to the fee without preset temperature so far as it is counted based on the operation time.
- Electric energy distributing function of intelligent Manager carries out the proportional division computation in consideration of those thermostat-on and thermostat-off operations and saves time for building management staffs to read watthour meters, and also supplies tenants printed data useful for making the bills.
  Namely, iPU is the products created by the concept to help the assignment of bill-issuing and offers users the reasonable price of the products.
- Yet, since iPU is persistently the system assuming each indoor unit’s power consumption based on the data which is transferred from indoor units, depending on the power consumption of the airconditioner in the standard installation conditions, it should be noticed that iPU is not the products which complies with the Weight and Measure Act as shown in the catalogue.
  The details of the cause to count error is described at chapter 2.

10 - 1 - 1Count method (for a conventional VRV system)

1) The following proportional division computation is carried out every one hour and assigns the power consumption of airconditioning system to each indoor unit.

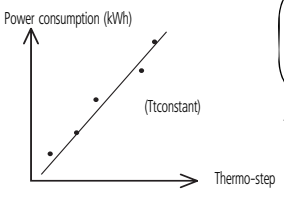
Heat load depending on the operation conditions of airconditioner = power consumption of indoor unit’s fan
+ power consumption of optional heater
+ the rated power consumption in cooling (*1) ×a
+ the rated power consumption in heating (*1) ×b

*1:The value which is registered at the test run, adapting the indoor unit’s capacity

$a = (a1 + a2¥T) \frac{\text{Thermo-step (*2)}}{10}$

$b = (b1 - b2¥T) ¥ \frac{\text{Thermo-step (*2)}}{10}$

a1, a2:correction factor for cooling
b1, b2:correction factor for heating
T:indoor unit’s suction air temperature



As shown in the left, heat load is calcuated from an equation of the first degree which approximates the correlation, among thermo-step, indoor unit’s suction air temperature and power consumption, into the linear line under the standard conditions of the unit.

*2:“Thermo-step” signifies that an airconditioning capacity is expressed in a range of the values 0-5 mainly based on the opening grade of an electronic expansion valve in an indoor unit.

$\text{Indoor units N's power consumption (kWh)} = \text{total pulse input from wattmeters} \times ¥ \frac{\text{Heat load by one hour calculated through the operating of airconditioner N}}{\text{Total heat load by one hour caiculated through the operating conditions of all the airconditioners}}$

10 Explanations of Power Proportional Distribution

10 - 1 What is the Power Proportional Distribution.

2) Calculation of the proportional division value for a daily power consumption.

The proportional division value for a dairy power consumption is stored with factors of each indoor unit's number and a calendar date as a table shown below after adding the count result of hourly power consumption from 00:00 through 23:59. (with a graduation of 10 W)

Indoor unit No. / Date	001	002	003	004
April 1st	000150	000211	000741	004402
April 2nd	002004	005202	009205	005902
April 3rd	000313	001103	000086	008173

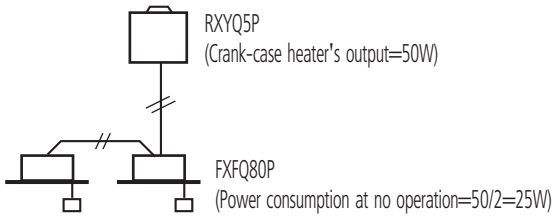
The set data in the dues control unit is not deleted even if the electric power is turned off, because the data is stored in the non-volatile (flash) memory.

3) Counting the electricity at the ceased condition of the unit

Even if an airconditioner is stopped or in the condition of thermostat -off (the condition that the compressors are stopped as the temperature in the space where all the indoor units are installed falls down to the preset temperature), the airconditioner consumes energy due to the energy consumption mainly by the crank-case heater in the outdoor unit.

When the iPU is used, the rated power consumption of the crank-case heater is divided by the number of indoor units in usual connection (for instance two indoor units of 2.5 HP are connected to an outdoor unit of 5 HP etc.) and the value is registered at the test run ,adapting each indoor unit's capacity.

(Example)



The iPU counts the indoor unit's operating conditions every 20 seconds.

Since the indoor units send ON/OFF data of the crank-case heater the to iPU, it adds one(+1) to the power counter inside iPU at no operation of the airconditioner when the crank-case heater is ON.

When this counter reaches 180, it judges that the crank-case heater was on for one hour, and in case of the above mentioned indoor unit, the counter goes back to zero after 25 Wh is added to the counting result .

This calculation process is conducted separately from the proportional division computation and this input is got rid of from the pulse input of the watthour meter. Because of this procedure, the power consumption in the space where the airconditioner is not used at all is counted constantly every month.

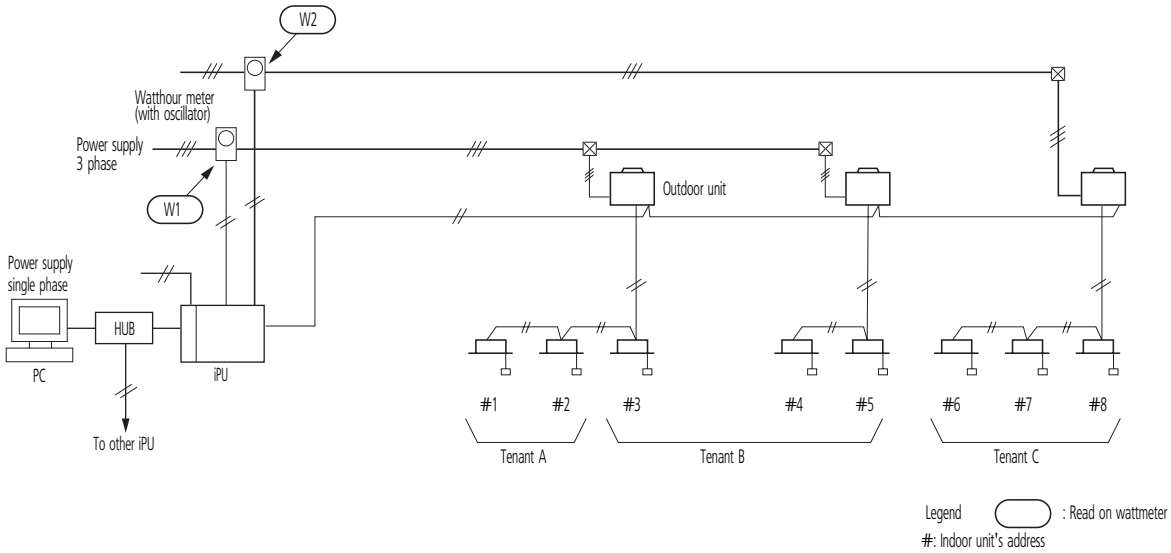
(However, as this airconditioning system is a multi-system, in case that one outdoor unit is shared to another tenant, the count output can be seen in lower value rather than the crank-case heater's power consumption registered, because the crank-case heater doesn't actuate when another tenant operates the airconditioner.)

10 Explanations of Power Proportional Distribution

10 - 2 Count Accuracy

10 - 2 - 1 Cause of error

System example



<Case of arising error>

1 (W1) + (W2) ≠ Count conclusive total for indoor unit #1~#8 → Refer to the next page

2 (W1) ≠ Count conclusive total for indoor unit #1~#5

(W2) ≠ Count conclusive total for indoor unit #6~#8 → Refer to the next page

1 (W1) ≠ (W2) ≠ Count conclusive total for indoor unit #1~#8*: The reason to get and the error size.

- REASON 1

iPU counts every one hour's power consumption.

Though fraction in case of computation occurs at this time, it is computed after leaving off a 1-W figure to avoid the risk for the owners. As a result, the error by the leaving-off occurs by 0.5W/ hour in average value of all indoor units.

Calculation example

(1) Count for errors in 8-day

Tenant A + B: 0.5 (Wh) × 24 hours × 8 days × 5 units = + 0.480 kWh

Tenant C : 0.5 (Wh) × 24 hours × 8 days × 3 units = + 0.288 kWh

total = + 0.768 kWh

(2) Assuming that the reads on watthour meters are as follows:

W1: read on watthour meter = 490 kWh

W2: read on watthour meter = 200 kWh

total = 690 kWh

(3) Finally it is concluded as total error = 0.768/690 × 100 = 0.11%

10 Explanations of Power Proportional Distribution

10 - 2 Count Accuracy

10 - 2 - 1 Cause of error

- REASON 2

When airconditioners of all the tenants cease operation, the power consumption which were preliminarily registered to all the airconditioners are being added as described on the section 10.1.1).

(Example)

In case of 2 HP indoor unit (FXCQ50M8), it brings the watts for one month during the ceased operation = 20 Wh × 24 hours × 30 days = 14.4 kWh. But for the different case that 10 HP outdoor unit (RXYQ10P) is connected to three indoor units with 100 % combination rate, it will show as follows;

Outdoor unit RXYQ10P one unit	Crankcase heater's power consumption : 66 W	Monthly actual power consumption of outdoor unit 47.52 kWh (66×24×30 = 47520 Wh)
Indoor unit FXCQ50M8	The watts at the ceased operation (registered data) 20 W	Monthly count value 43.2 kWh (14.4×3 = 43.2 kWh)

2 (W1) ≠ Count conclusive total for indoor unit #1~#5 :

(W2) ≠ Count conclusive total for indoor unit #6~#8 :

iPU counts the power consumption as the following conditions (1)~(6) for the standards. So, the gap to be raised from these conditions may cause the error. Since these errors vary depending on the surrounded situations, the worst error value can't be drawn out from the computing.

(1) Combination rate of indoor units connected to an outdoor unit (100%)
(2) Outdoor temperature (35°C)
(3) Indoor unit's suction air temperature (19°C)
(4) Piping length (5 m)
(5) Level difference (0 m)
(6) Pipe diameter (ø22.2)

10 Explanations of Power Proportional Distribution

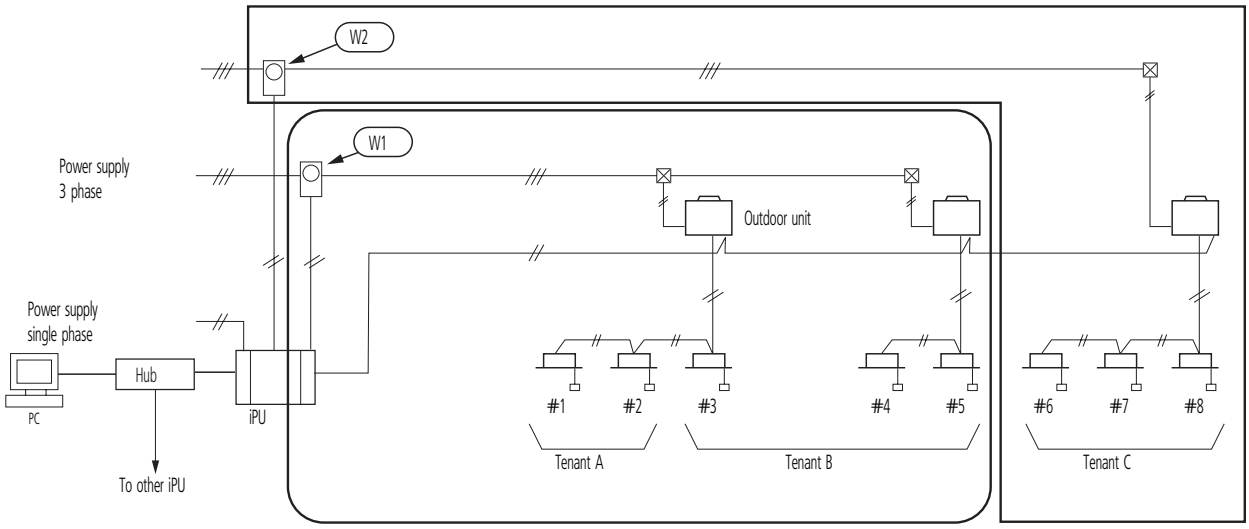
10 - 2 Count Accuracy

10 - 2 - 2 The way to reduce errors

The error 1 can't be reduced, yet this error is small and appears to be positive always, so it can generally get rid of troubles if excusing the reason caused to tenants.

The way to reduce the error 2 will be described as follows.

As shown in the drawing below, when the relation between a wattmeter and indoor units are clear, "the setting to make grouping for power ports" should be carried out at the test run of intelligent Manager. (The actual site job will be conducted by persons of service dept networks responsible for the test run.)



The power input to iPU can be counted with the proportional division system based on the every input of wattmeter. On the above example, watts at W1 and watts at W2 are shared by indoor units #1~#5 and indoor units #6~#8, respectively. (Before the test run goes on, it is necessary to enter the exact power port No. on the address table.)

The above setting results in the followings:

(W1) = Count conclusive total for indoor unit #1~#5

(W2) = Count conclusive total for indoor unit #6~#8

(Except for the error at 1). Furthermore, since iPU watt input has just 18 ports, additional divisional counting is no longer possible.

10 Explanations of Power Proportional Distribution

10 - 2 Count Accuracy

10 - 2 - 2The way to reduce errors

CAUTION

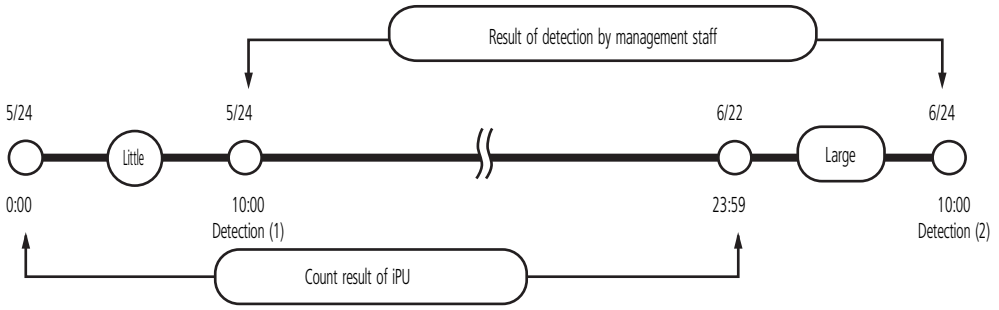
When management staff checks the watts in the procedure mentioned below, they would find the calculation to be incorrect due to an incomplete cycle.

Example:

(1) May/24th, read wattmeter and records the watts at 10:00 am

(2) June/24th, read wattmeter and records the watts at 10:00 am

(3) When the count in a period of may/24th to June/23rd is printed out, the total value doesn't meet the value detected mentioned above on (2) - (1).



iPU stores the information collected in a period of 0:00 am through 23:59 pm as one day information as shown above.

It results in the fact that there are ten hours gaps between on the first day of the counting and on the last day of the count in the above mentioned column of "Result of detection by management staff" and "Count result".

As shown in the figure above, this error increases in the season from the intermediate forwarding to the season in which airconditioning is highly required.

For more accuracy, it is nessary to compare with the value detected at 0:00 am.

TABLE OF CONTENTS

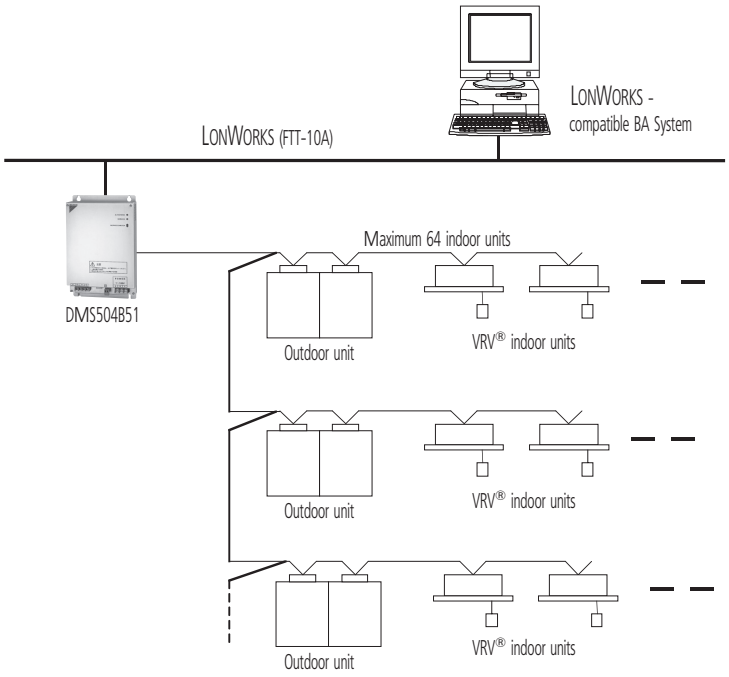
LonWorks Interface

1 Introduction

This publication represents the specifications relating to the LONWORKS Networks functions and specifications used when Daikin's VRV or DIII-NET compatible A/C is hooked up to a LONWORKS Networks.

2 System configuration

LONWORKS Networks can be connected to a maximum of 64 groups.



NOTES

1 The LONWORKS Networks functions as an interface for a building monitoring system and cannot be co-installed on the DIII-NET along with the following equipment/devices that have similar functions.
- Master Station II (BACnet Interface for overseas markets)
- DDS
- i-Manager for overseas markets
- Adapter for remote control
- Parallel interface

3 Quick and easy installation

The open protocol specification gives local system integrators complete design freedom. Also, the ability to combine individual items of equipment into a LONWORKS networks reduces the time and costs required for wiring work

4 Unlimited site size

The new network adapter can be connected to up to 64 groups, depending on the number of control and monitoring functions used :

300 > (number of indoor units) x (number of SNVT)

Maximum value is set by the LON BMS manufacturer: in this case 300

Number of connected indoor units: 1 ~ 64.

SNVT: Number of LON network variables

Please consult your Daikin representative for details.

5 Survey of Functions

	Function	Description
Controlling items	ON/OFF Command	Starts/stops air conditioner operation.
	Operation Mode Setting	Sets operation mode (heating/cooling/ventilation/auto).
	Temperature Setting	Sets room temperature.
	Airflow Rate Setting	Sets airflow rate.
	Filter Sign Reset	Resets filter sign.
	Forced Thermostat OFF Setting	Sets forced thermostat OFF.
	Remote ON/OFF Control Rejection	Sets whether permit/prohibit ON/OFF control rejection of the air conditioner with a hand-held remote control.
	Remote Operation Mode Control Rejection	Sets whether permit/prohibit operation mode control rejection of the air conditioner with a hand-held remote control.
	Remote Temperature Setting Control Rejection	Sets whether permit/prohibit room temperature setting control rejection of the air conditioner with a hand-held remote control.
	System Forced OFF Setting	Forcibly stops the air conditioner connected to the DIII-NET /Resets the Forced OFF setting.
	Sub Group Address Control Rejection Setting	Permits/prohibits controlling of the centralized device connected to the DIII-NET.
Monitoring items	ON/OFF Status Report	Monitors ON/OFF status of the air conditioner.
	Operation Mode Status Report	Monitors operation mode status (heating/cooling/ventilation) of the air conditioner.
	Temperature Setting Report	Monitors the set room temperature.
	Room Temperature Report	Monitors the room temperature.
	Airflow Rate Setting Report	Monitors the set airflow rate.
	Filter Sign Report	Checks limit of filter use and monitors if it has reached the limit.
	Error Status Report	Monitors error status of the air conditioners.
	Error Code Report	Displays the manufacturer-specified error codes if any errors occur.
	Thermostat Status Report	Monitors whether the air conditioner's thermostat is working.
	Forced Thermostat OFF Setting Status Report	Monitors the forced thermostat OFF status.
	Remote ON/OFF Operation Rejection Report	Monitors the status if the air conditioner is permitting/prohibiting remote ON/OFF control with a hand-held control.
	Remote Control Operation Mode Setting Rejection Report	Monitors the status if the air conditioner is permitting/prohibiting remote control operation mode with a hand-held control.
	Remote Control Temperature Setting Operation Rejection Report	Monitors the status if the air conditioner is permitting/prohibiting remote control temperature setting with a hand-held control.
	System Forced OFF Setting Report	Monitors the status of the forced OFF setting of the air conditioner connected to the DIII-NET.
	Sub Group Address Control Operation Rejection Setting Report	Monitors the status if the air conditioner is permitting/prohibiting control of a centralized device connected to the DIII-NET.
	A/C Communication Status Report	Monitors the communication status (No Occupancy/ Communication normal/ Communication error) of the air conditioner.

6 Applicable Models

Function	Air Conditioners					
	VRV	Large Sky Air Multi	Sky Air (Adapter for Sky Air)	Facility A/C (Centralized control adapter)	HRV	RA (General purpose adapter)
ON/OFF operation and monitoring	G	G	G	G	G	G
A/C error report	G	G	G	G	G	G
Room temperature monitoring	G	G	G	G	u	u
Temperature setting and monitoring	G	G	G	G	u	u
Operation mode setting and monitoring (Note 3)	G	G	G	G	u	u
Remote control mode setting and monitoring	G	G	G	G	G	u
Filter sign monitoring and reset	G	G	G	u	G	u
Thermostat status Monitoring	G	G	G	u	u	u
Airflow rate setting and monitoring	G	G	G	u	Only monitoring (Note 2)	u
Forced thermostat OFF setting and monitoring	G (Note 1)	G	G	u	u	u

NOTES

1 When this is set from a remote control, it is not reported to the upper system and, therefore, this setting cannot be monitored by the upper system.

2 The triangle (G) denotes a function that is only available for some models.

3 Operation mode can be changed only on indoor units that allow a selection between heating and cooling.

7 Specifications

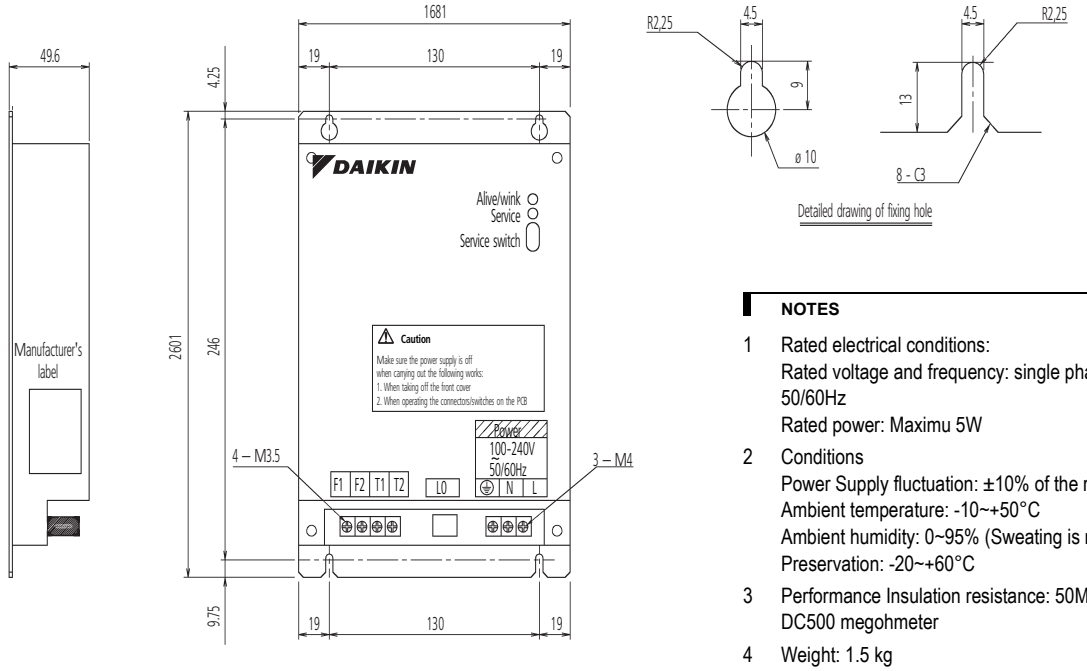
Item		Specifications
MODEL		DMS504B51
DIMENSIONS	mm	168 (W) x 260 (H) x 50 (D) mm
WEIGHT	kg	1.5 kg
POWER SUPPLY		Single phase AC100-240V 50/60Hz
POWER CONSUMPTION		Max. 5W
OPERATION RANGE		–10 to 50 °C
STORAGE TEMPERATURE RANGE		–20 to 60 °C
HUMIDITY		Up to 95% (no condensation)
PROTOCOL		LonTalk
TRANSMISSION SPEED		78Kbps
INSTALLATION		Mounted to indoor distribution board
TOPOLOGY		FTT-10A (Free topology)
TRANSMISSION MEDIUM		Twisted pair wire
CONTACT INPUT		Forced OFF x 1 (A/Cs en bloc)

8 Accessories

Item		Description
INTERFACE ADAPTERS	KRP928A2S	For connection to Split units
	DTA102A52	For connection to R-22/R-407C Sky Air units
	DTA112B51	For connection to R-410A Sky Air units

9 Dimensional drawing

DMS504B51



NOTES

1 Rated electrical conditions:
Rated voltage and frequency: single phase AC100~240V 50/60Hz
Rated power: Maximu 5W

2 Conditions
Power Supply fluctuation: ±10% of the rated value
Ambient temperature: -10~+50°C
Ambient humidity: 0~95% (Sweating is not acceptable)
Preservation: -20~+60°C

3 Performance Insulation resistance: 50MΩ or more by DC500 megohmeter

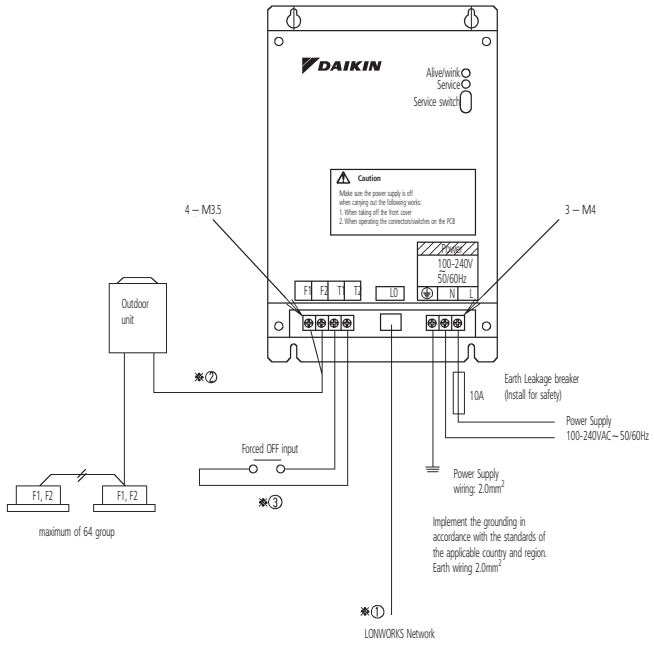
4 Weight: 1.5 kg

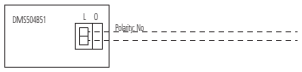
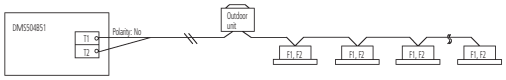
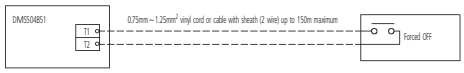
3D040973

6
9

10 External connection diagram

DMS504B51



No.	Wiring specifications
	LonWorks Network Communication wiring Use the dedicated line for the LonWorks Network 
	DIII-net wiring  Cautions for wiring 5 Do not use multicore cables with three or more cores 6 Use wires of sizes between 0.75mm² and 1.25mm² 7 Wire length: MAX 1,000m 8 Do not bind the wire for DIII-net 9 Wirings for DIII-net must be isolated from the power lines. 10 Terminal contact size: M3.5
	Forced OFF input  When forced OFF input is kept on, the indoor units connected to this system are unable to be operated because they are forced off. 11 Use a no voltage contact 12 Use a contact which can guarantee mimimum application load DC16V and 10 mA 13 Do not use multicore cables with three or more cores 14 Wirings must be isolated from the power lines 15 Terminal contact Size: 3.5

3D040974

11 Definition of LED and switch

11 - 1 LED

ALIVE/WINK	CPU normal monitor	Green	Normal	Blinking every 0.4 sec
		Red	WINK command reception	Blinking every 0.2 sec.
SERVICE	LON status	Yellow	Normal	Light off
			Unconfigurate state	Blinking every 0.5 sec
			SERVICE SW on	Light on
			Error	Blinking/flashing every 0.84 sec

11 - 2 Switch

SERVICE SW: Neuron ID is sent upon pushing this switch

TABLE OF CONTENTS

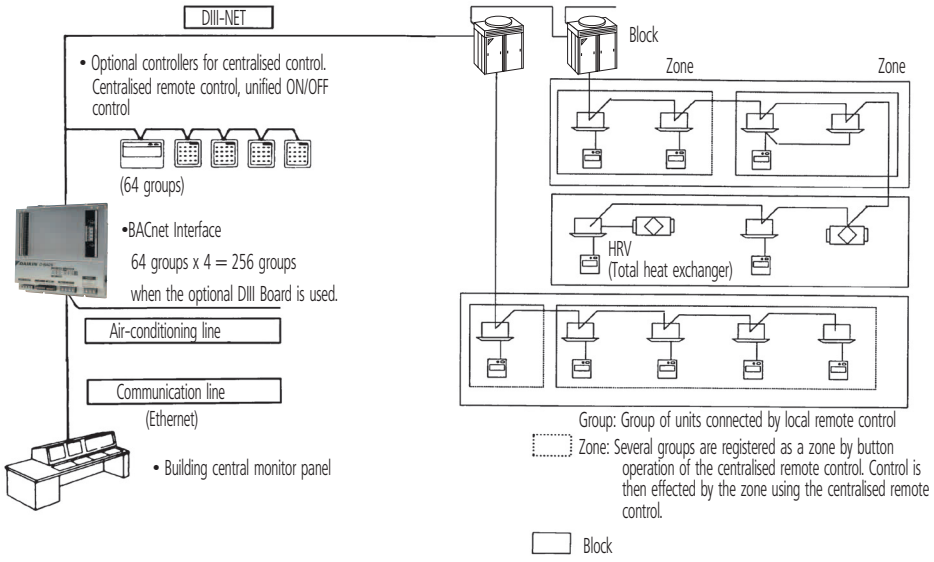
BACnet Interface

BACnet Interface

1 Outline and Features

1. Managing the information on 128 groups of air-conditioners (main units only).
2. Up to 256 groups manageable and controllable at once by adding the optional DIII board.
3. Packaging of air-conditioner objects
   * Compatible with BACnet (ANSI/ASHRAE-135)
   * Compatible with BACnet/IP (ANSI/ASHRAE-135a)
   * Compatible with IEIEJ/p-0003-2000 (plan)
     (IEIEJ is Institue of Electrical Installation Engineers of Japan)
4. Conforming to European Safety and EMC rules and regulations.

2 System Outline



Name	Functions
BACnet Interface (DMS502A51)	Interface unit to allow communications between VRV and BMS. BMS ready to run and monitor the air-conditioning systems through BACnet communications. Up to 128 groups.
Optional DIII board (DAM411B51)	Expansion kit, installed on the BACnet Interface (DMS502A51), to provide 3 more DIII-NET communication ports. Not usable independently. Up to 256 groups.

NOTES

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 control. For units without remote control, each unit is treated as a group.

2 Several groups are registered as a zone with the centralised remote control. By pushing 1 button of the centralised remote control, all groups within the same zone can be turned on or off simultaneously.

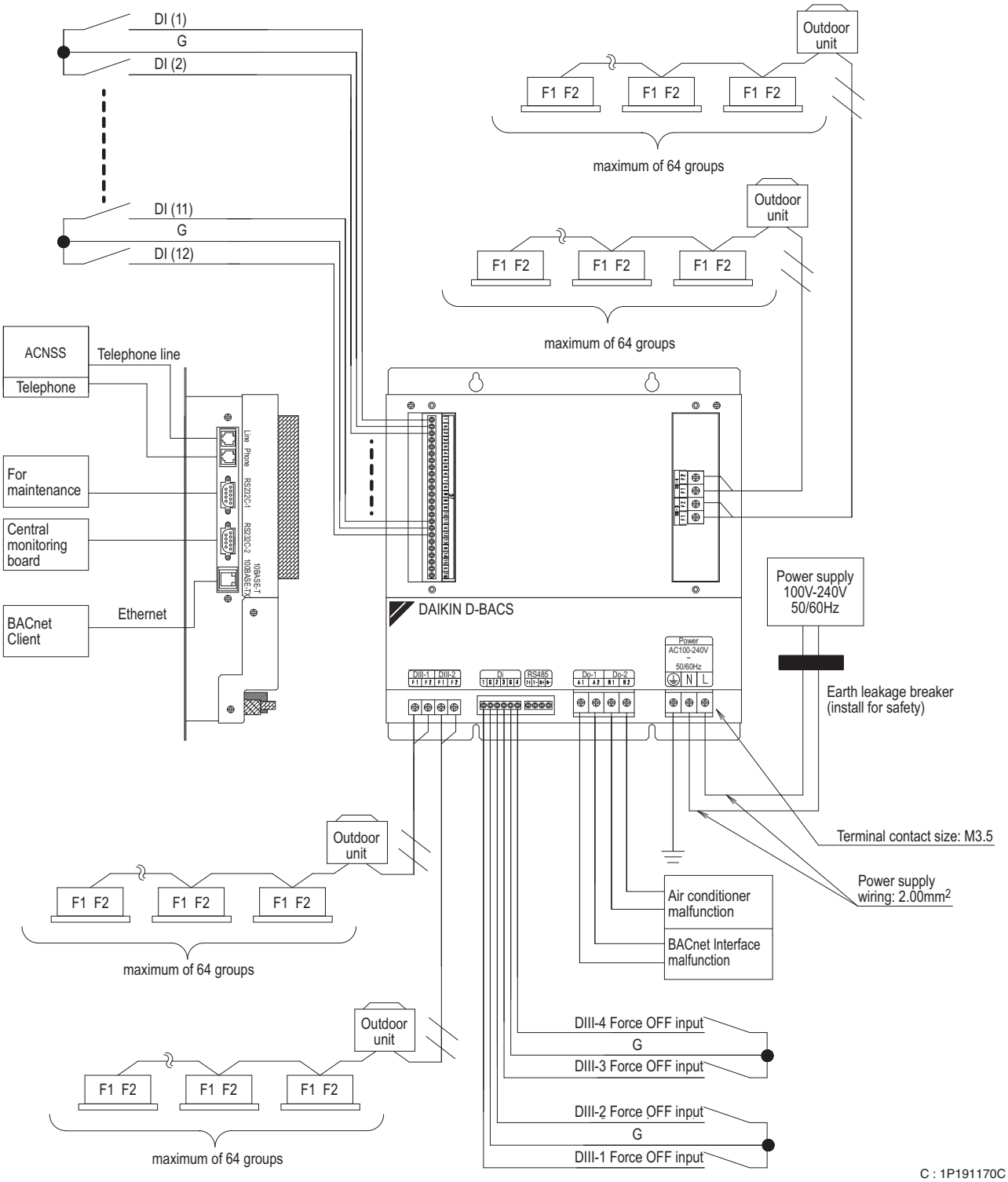
Building management 1 system controls and monitors air-conditioning equipment by the block. A block consists of 1 or more groups (max. 16), and can be set without regard for the zones mentioned above. You must, how-ever, take the following things into consideration:

3 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.

4 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.

3 System Configuration



4 Compatibility with leading BMS systems

Manufacturer*	Type	
Andover Controls	Continuum ver. 1.6	1.6
Cinmetrics Sauter	OPC Server	
Honeywell	EBI	V2.0
Iconix Sauter	OPC Server	
Invensys (Sacthwell) Polar Soft	 System Manager BACdoor	
Johnson Controls	Metasys BSI	V9.01C
Johnson Controls	Metasys N30	
Priva		
Reliable Systems	Mach	
Siemens	System 600 Apoaee Insight	V3.2
Siemens	System 600 Apoaee Insight	V3.4
Siemens	Desigo Insight	V1.01
Siemens	PX Desigo Insight	V2.2
TAC Pacific	OPC Server	
Trane	Tracer Summit	
Trend		
Tridium	Niagara Framework	2.301.321.v1
Trilogy		

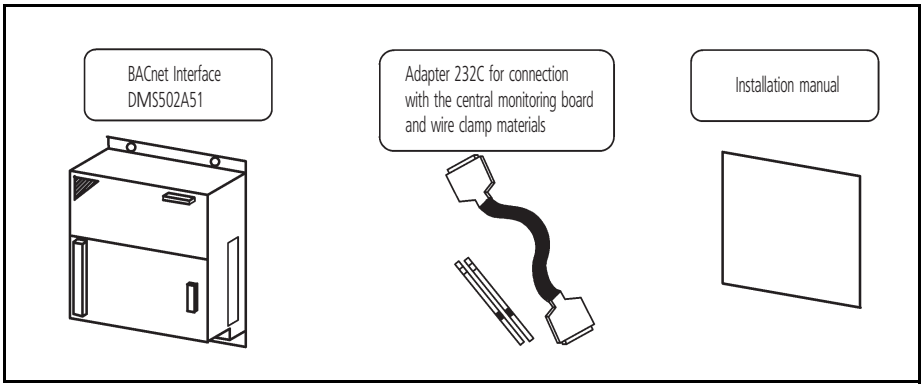
(*) Please contact your Daikin distributor for further details or other manufacturers concerning compatibility.

5 Specifications

BACnet Interface (DMS502A51)		Description
Rated Electrical conditions	Rated Voltage and Frequency	Single Phase AC 200-240, 50/60 Hz
	Rated Power	Maximum 20 W
Conditions for Use	Power Supply Fluctuation	±10% of the Rated Value
	Ambient Temperature	-10~+50°C
	Ambient Humidity	0~98° (Sweating is not acceptable)
	Preservation Temperature	-20~+60°C
Performance	Insulation Resistance	50MΩ or more by DC500 megohmmeter
Mass		2.8 kg

Components

The following parts are attached to this unit. Make sure to check them before installation.



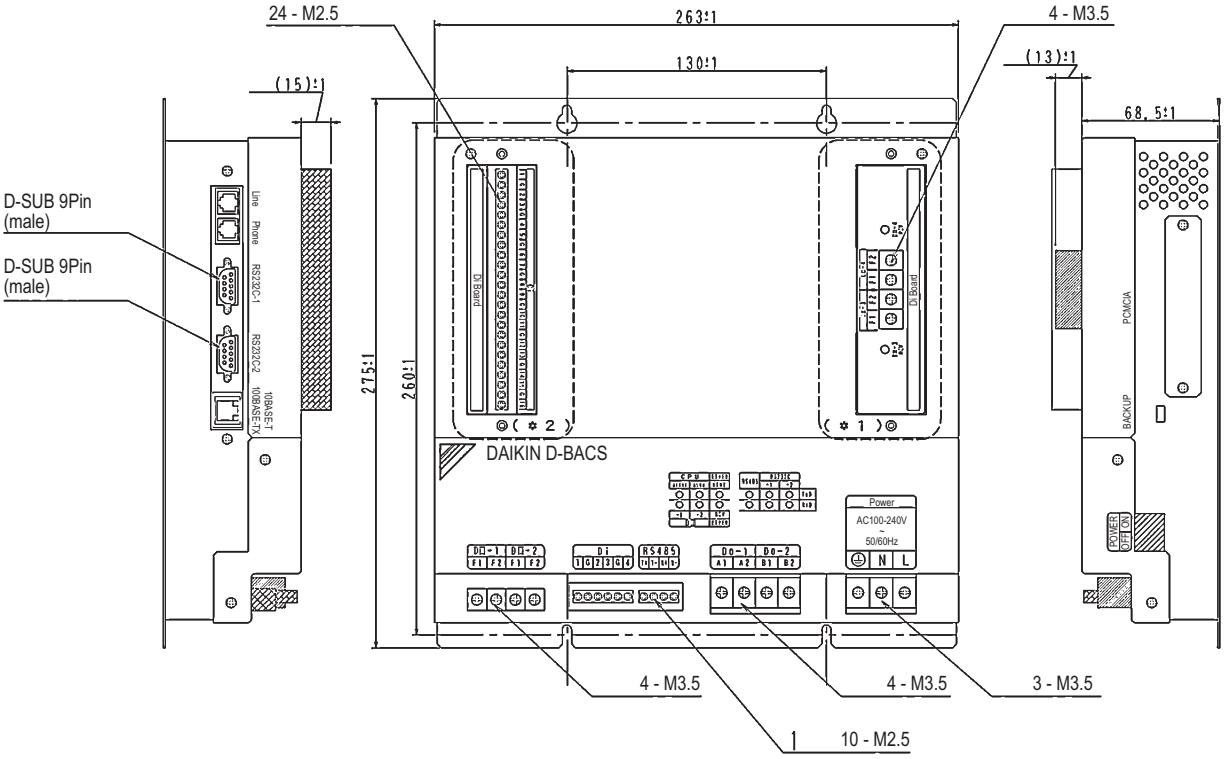
6 Accessories

Item		Description
DIII board	DAM411B51	Extension of 2 x DIII lines (2 x 64) indoor groups
Digital input /output	DAM412B51	In case of PPD to provide up to 12 pulse input points
Interface adapters	KRP928B2S	For connection to Split units
	DTA102A52	For connection to R-22/R-407C Sky Air units
	DTA112B51	For connection to R-410A Sky Air units

7 Dimensions

7 - 1 BACnet Interface (DMS502A51)

BACnet Interface outside drawing
(DMS502A51)



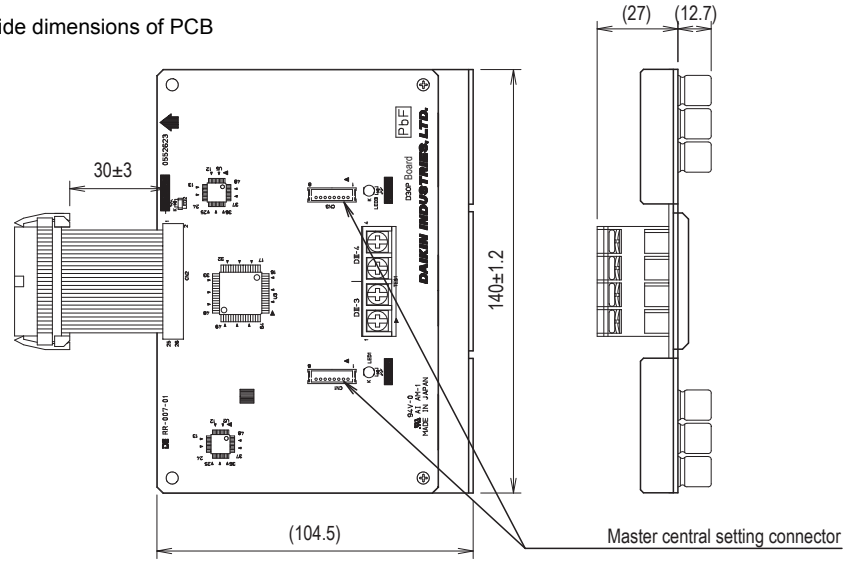
3D056945

7 Dimensions

7 - 2 Option DIII board (DAM411B51)

This kit is for adding 2 ports to the DIII-NET communication port by installing it on the BACnet Interface DMS502A51. The kit can not be solely used.

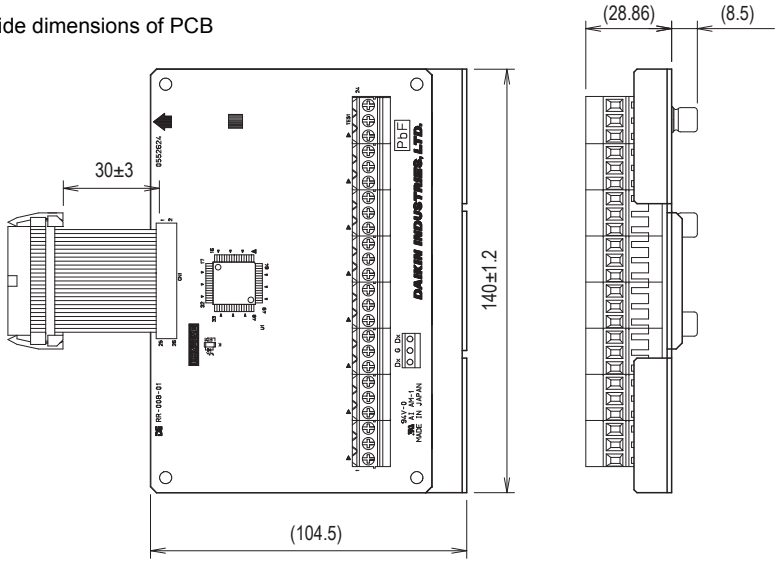
Outside dimensions of PCB



C : 1P191165B

7 - 3 Option Digital Input / Output (DAM412B51)

Outside dimensions of PCB



C : 1P191166C

8 Communications Check Sheet

8 - 1 BACnet object list

Memner number	Name	Object name (XXX: Air Con Logical Group Number)	Object type	Unit			
				Inactive	Active		
				Text-1	Text-2	Text-3	Text-4
1	Start/stop (setting) (Note 2)	Start stop command_XXX	BO	Stop	Operation		
2	Start/stop (status)	Start stop status_XXX	BI	Stop	Operation		
3	Alarm	Alarm_XXX	BI	Normal	Malfunction		
4	Malfunction code	Malfunction code_XXX	MI	Normal	Manufacturer specific		
5	Air conditioner mode (Setting) (Note 2)	AirConModeCommand_XXX	MO	Cooling	Heating	Fan	Auto
6	Air-conditioning mode (status)	AirConModeStatus_XXX	MI	Cooling	Heating	Fan	
7	Air flow rate level (setting) (Note 2)	Air flowRate command_XXX	MO	Low	High		
8	Air flow rate level (status)	AirFlowRateStatus_XXX	MI	Low	Gigh		
9	Measured room temperature (Note 1)	Roomtemp_XXX	AI	°C			
10	Set room temerature (Note 2)	TempAdjust_XXX	AV	°C			
11	Filter sign signal	FilterSign_XXX	BI	No	Yes		
12	Filter sign segnal reset	FilterSignReset_XXX	BV	Reset			
13	Remote control enable / disable (start / stop)	RemoteControlStart_XXX	BV	Enabled	Disabled		
14	Remote control enable / disable (air-conditioning mode)	RemoteControlAirConModeSet_XXX	BV	Enabled	Disabled		
15	Blank						
16	Remote controller enable / disable (set temperature)	RemoteControlTempAdjust_XXX	BV	Enabled	Disabled		
(*)17	Central control 'lower central control disable)	CL_Rejection_XXX	BV	Enabled	Disabled		
18	Blank						
19	Accumulated power	ElecTotalPower_XXX	BV	Enabled	Disabled		
20	Communication status	CommunicationStatus_XXX	BI	Normal communication	Communication error		
(*)21	Forced system stop	SystemForcedOff_XXX	BV	Clearance	Forced stop		
22	Air direction (setting) (Note 2)	AirDirectionCommand_XXX	AV				
23	Air direction (status)	AirDirectionStatus_XXX	AI				
24	Forced thermostat disble (setting)	ForcedThermoOFFCommand_XXX	BO	Clearance	Set		
25	Forced thermostat disable (status)	ForcedThermoOFFStatus_XXX	BI	Clearance	Set		
26	Energy saving (setting)	Energy EfficiencyCommand_XXX	BO	Clearance	Set		
27	Energy saving (status)	EnergyEfficiencyStatus_XXX	BI	Clearance	Set		
28	Thermostat status	ThermoStatus_XXX	BI	OFF	ON		
29	Compressor status	CompressorStatus_XXX	BI	Stop	Operation		
30	Indoor fan status	IndoorFanStatus_XXX	BI	Stop	Operation		
31	Heater operation status	HeaterStatus_CCC	BI	Stop	Operation		

Central control (lower central control disable) and orced systemm stop are obly available for 000, 064, 128, and 192.

NOTES

1 The room temperature is measured with the suction air. Since the indoor unit fan stops when the thermostat is disabled or the air conditioner is stopped, or in z special operation such as defrosting, temperature measurement may be affected by the heat exchanger, and may detect and transmit a different temperature from the actual room temperature, For this reason, this value should be considered as a reference for the room temperature.
If the building management system manufacturer uses this value for system control (e.g., switching the airconditioning mode or preset temperature), the manufactureer must take on the whole responsibility.

2 The air conditioner saves the settings for the temperature, start/stop status, air-conditioning mode, air direction, and air flow rate in the nonvolatile memory each time they are changed, so that the settings will not be lost when a power cut occurs. This nonvolatile memory has a write count limit and may cause a failure if it is written exceeding the limit count.
Therefore when the temperature, start / stop status, air-conditioning mode, air direction, and air flow rate of each indoor unit are automatically controlled from the central monitoring panel, be sure that the number of changes for each setting **should not exceed 7,000 timer per year.**

9 Function

9 - 1 Outline of functions

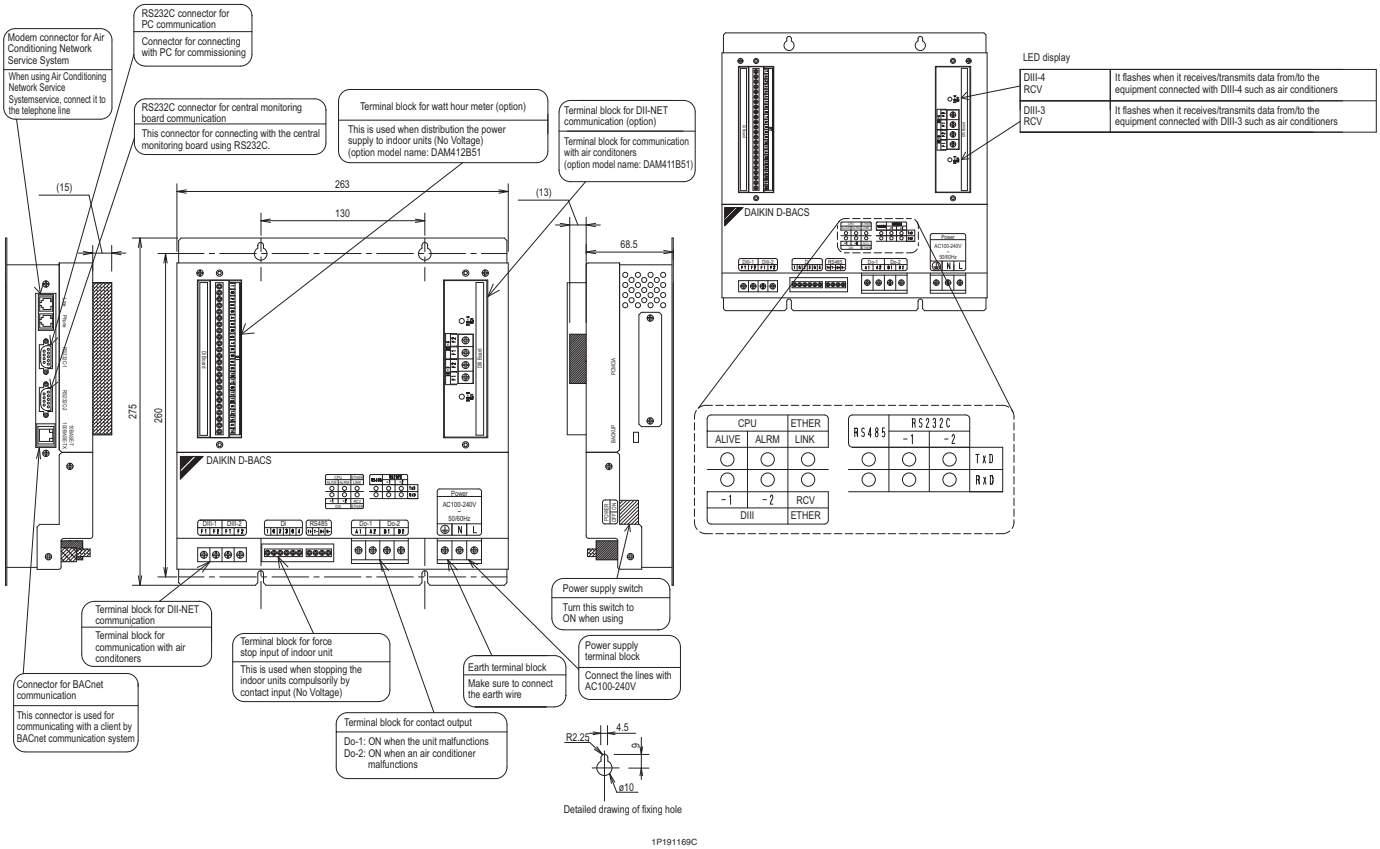
- This BACnet Interface enables interfacing between the VRV system and central monitoring board.
- Data of up to 256 groups of air conditioner (when the option DIII board is used) are controllable by the BACnet Interface.
- Air conditioners are operable and the state can be monitored from the central monitoring board by BACnet communication.

9 - 2 Main functions

The BACnet Interface can monitor and control air conditioners from a maximum of 256 groups, on a unit by unit basis.
Major features are listed below.

1. Switches the ON/OFF operation and monitors operational state.
2. Monitors indoor units for malfunctions.
3. Monitors and changes temperature.
4. Monitors indoor unit temperature.
5. Monitors and resets filter clean sign.
6. Switches the operation mode.
7. Sets remote control operation
8. PPD data is available on BMS-system

9 - 3 Names and functions of each part



LED display

CPU ALIVE	It flashes when the unit is in normal operation.
CPU ALRM	It flashes when the unit is abnormal operation.
D III -1	It flashes when it receives/transmits data from/to the equipment connected with DIII-1 such as air conditioners
DIII-2	It flashes when it receives/transmits data drom/to the equipment connected with DIII-2 such as air conditioners
Ether RCV	It flashes when it receives/tranmits data from/to BACnet client.
Ether link	It lights when the 10BASE-T acable or 100BASE-TX cable
RS485 (TxD)	This LED display cannot be used with this unit
RS485 (RxD)	This LED display cannot be used with this unit
RS232C-1 (TxD)	It flashen when it tramits data to PC
RS232C0-1 (RxD)	It flashen when it receives data from PC
RRS232C-2(TxD)	It flashes when it tranmits data to the central minitoring board.
RS232C-2(RxD)	It flashes when it receives data from the central minotoring board.

9 Function

9 - 4 Major functions of air-conditioner devices

Function	Air-conditioning equipment				Remarks
	VRV Inverter series	Interface adapter for Sky Air series (SA Heat Pump)	HRV	Wiring adapter for other air-conditioners	
Start/stop control and monitoring	0	0	0	0	
Air-conditioner error notification	0	0	0	0	
Indoor air temperature monitoring	0	0	X	X	
Temperature setting and monitoring	0	0 16~32	X	X	
Air-conditioning mode setting and monitoring	0	0	X	X	Air-conditioning mode switching is effective only for indoor units for which cool/heat selection is permitted.
*1 Remote control mode setting and monitoring	0	0	X	X	
Filter sign monitoring and reset	0	X	X	X	
Cumulative power value monitoring	0	X	X	0	
Thermostat status monitoring	0	X	X	X	
Compressor operation status monitoring	0	X	X	X	
Indoor fan operation status monitoring	0	X	X	X	
Heater operation status monitoring	0	X	X	X	
Air direction setting and monitoring	0	X	X	X	
Air flow rate setting and monitoring	0	X	X	X	
Forced thermostat off setting and monitoring	0 *2	X	X	X	
Forced thermostat on setting and monitoring	0 *2	0 *2	X	X	
Energy efficiency command (Setting temperature shift)	0	X	X	X	

NOTES

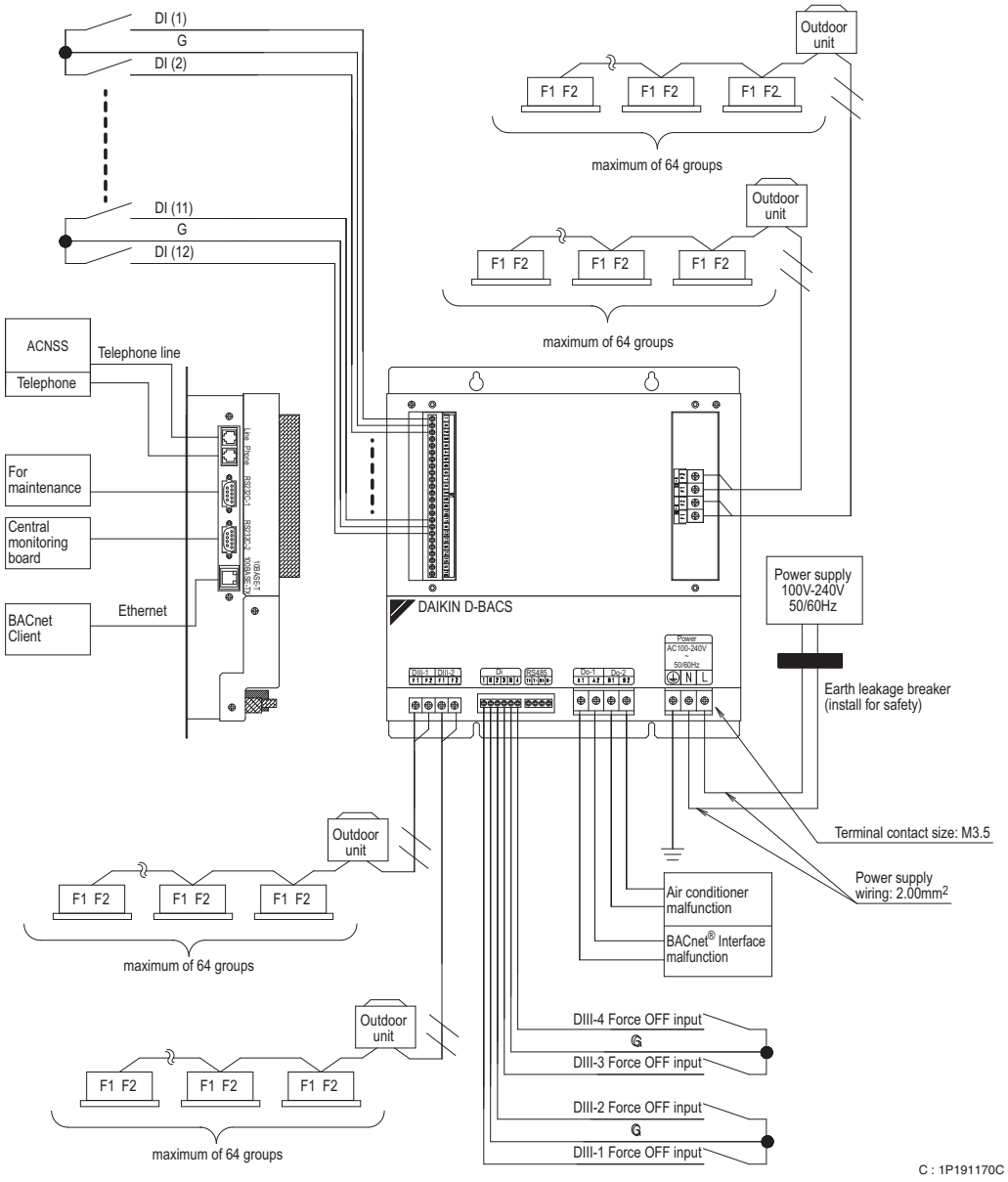
1 *1: Remote control mode is for acceptance or rejection of on/off operation, temperature setting and air conditioning mode setting by remote control.

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

3 The meaning of 0, X are as follows
0: Possible functions
X: Impossible functions

10 Wiring and Setting Procedures

10 - 1 System Wiring



10 - 2 [DIII-NET master] setting

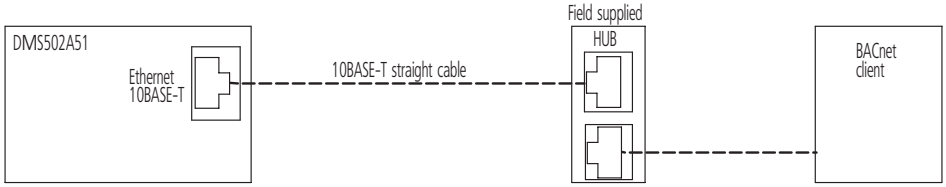
Make sure to connect the unit with [DIII-NET master]. Do not remove the master central setting connector.
Remove the master central setting connectors of the centralised management controllers or ON/OFF controllers when using togheter with other centralised controllers such as centralised management controllers or ON/OFF controllers.

10 Wiring and Setting Procedures

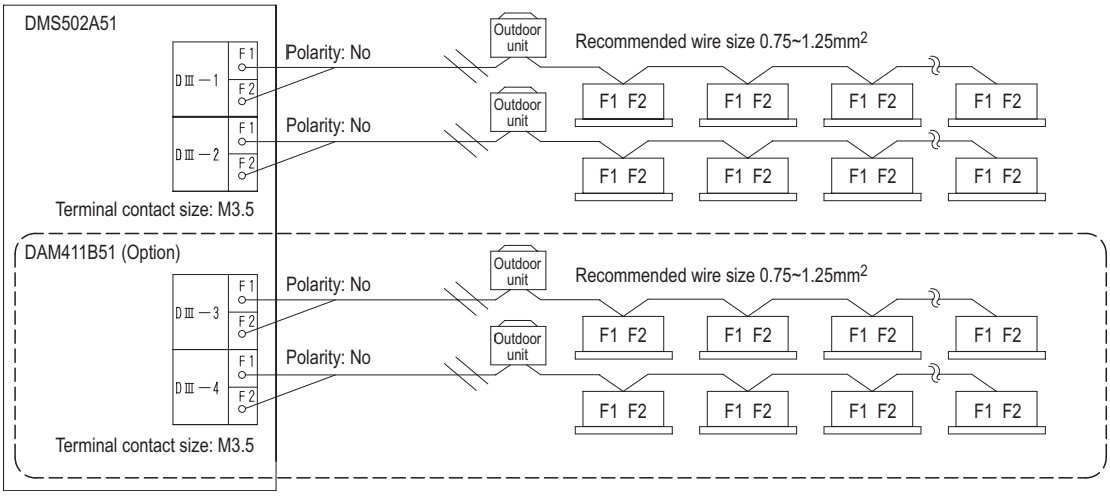
10 - 3 External wiring

Everything relating with field wiring must be supplied in the field.

10 - 3 - 1 Ethernet communication wiring



10 - 3 - 2 DIII-NET wiring



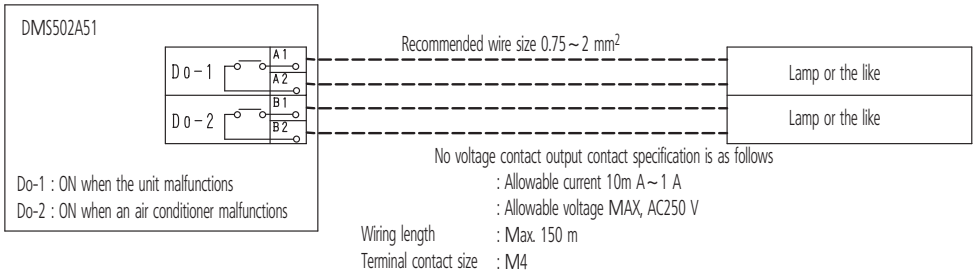
CAUTIONS

1 Do not use multicore cables with three or more cores.
2 Use wires of sizes between 0.75 mm^2 and 1.25 mm^2.
3 Wire length: Max 1,000 m
4 Do not bind the wire for DIII-NET
5 Wirings for DIII-NET must be isolated from the power lines.

10 Wiring and Setting Procedures

10 - 3 External wiring

10 - 3 - 3 Do-1 and 2



Main specifications

Temperature range	-10~50°C
Humidity range	0~98% (No frost formation)
Power supply	1~AC200-240V 50/60Hz
Power consumption	Max.20 W
Weight	4.0 Kg

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.

EEDEN12-100

Daikin products are distributed by:

DAIKIN EUROPE N.V. Naamloze Vennootschap - Zandvoordestraat 300, B-8400 Oostende - Belgium - www.daikin.eu - BE 0412 120 336 - RPR Oostende

EEDEN12-100 • 11/12 • Copyright © Daikin
The present publication supersedes EEDEN11-100
Printed on non-chlorinated paper. Prepared by Goekint Graphics NV, Belgium
Responsible Editor: Daikin Europe N.V., Zandvoordestraat 300, B-8400 Oostende