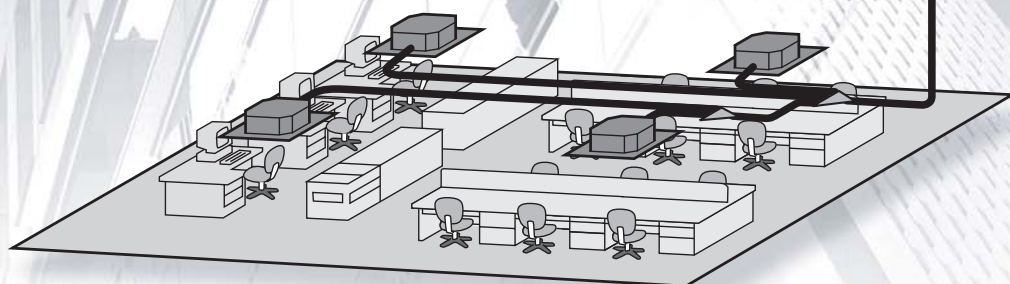
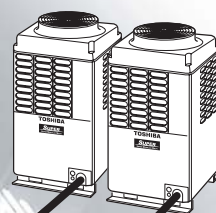


# TOSHIBA

FILE NO. A04-016

## TCS-NET AIR CONDITIONING CONTROL SYSTEM (TOUCH SCREEN CONTROLLER)



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# 1

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## OUTLINE

- 1-1 TCS-Net Air conditioning control system outline**
- 1-2 Component**
  - 1-2-1 TCS-Net control system component**
  - 1-2-2 Application control component**
- 1-3 Basic system component**
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  - 1-3-4 Software**
- 1-4 Touch screen controller function**
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- 1-6 Input/Output**

## 1-1 TCS-Net Air conditioning control system outline

The TCS-Net Air conditioning control system achieves an easy-to-operate central air conditioning control with the LCD Touch Screen Controller integrating advanced functions. The system allows operation status monitoring, operation control, scheduled operation and error code display of up to 512 indoor units with one controller. It is also equipped with functions for energy monitoring and billing (Individual indoor units) and for operation control using external input/output signals.



### **Operation status monitoring**

Monitors operation status of all air conditioners collectively.

### **Operation control**

Controls operation of devices with the LCD touch panel. Allows detailed operation settings, such as collective operation of an entire building or each block/tenant/area, as well as individual operation of each indoor unit.

### **Operation schedule**

Allows detailed operation schedule settings for each area.

### **Error code display**

Displays failure information, location, time when the failure occurs and displays fault log information.

### **Energy monitoring and billing**

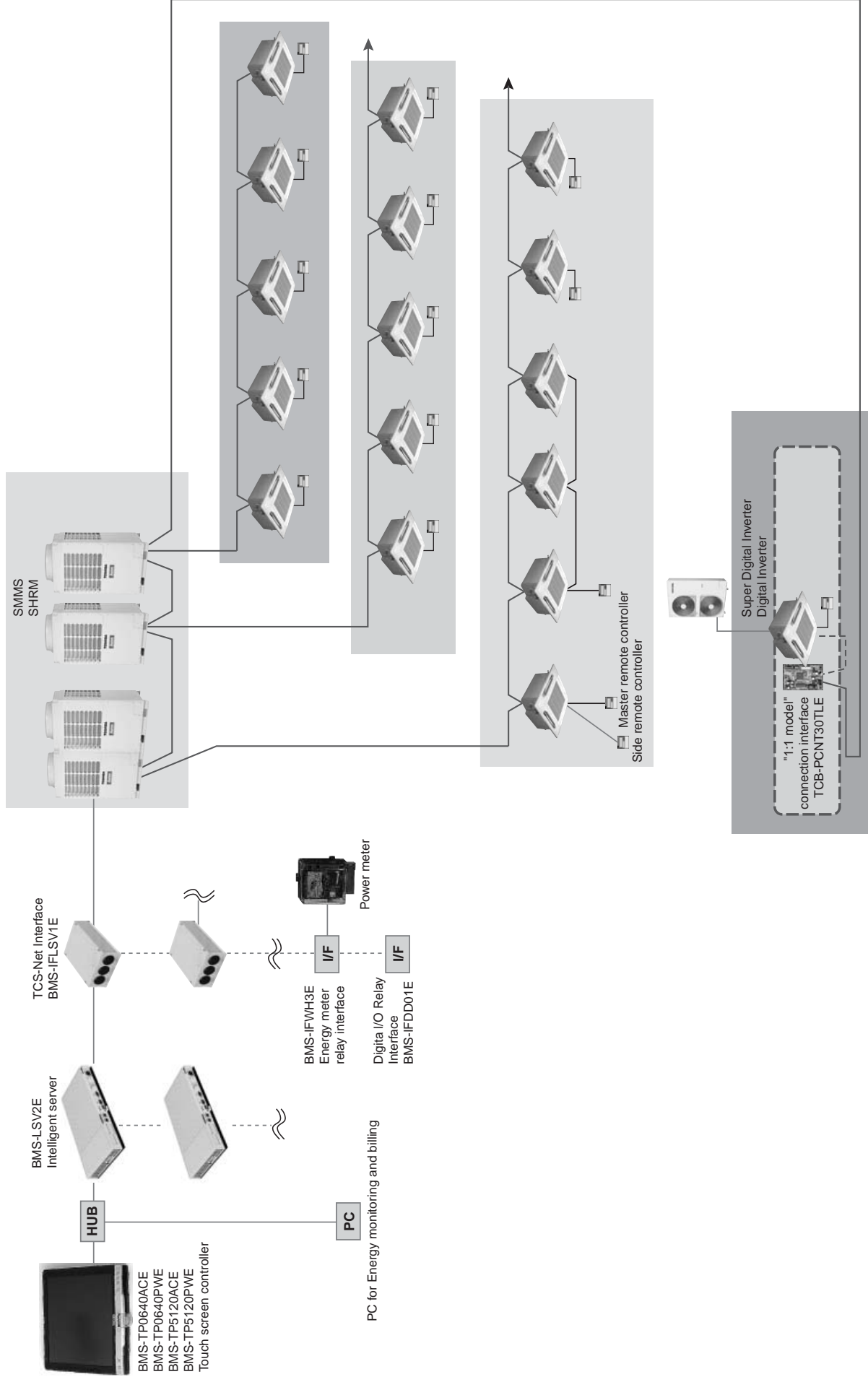
Determines power usage for each indoor unit and outputs the calculation results as daily/monthly reports.

### **I/O function**

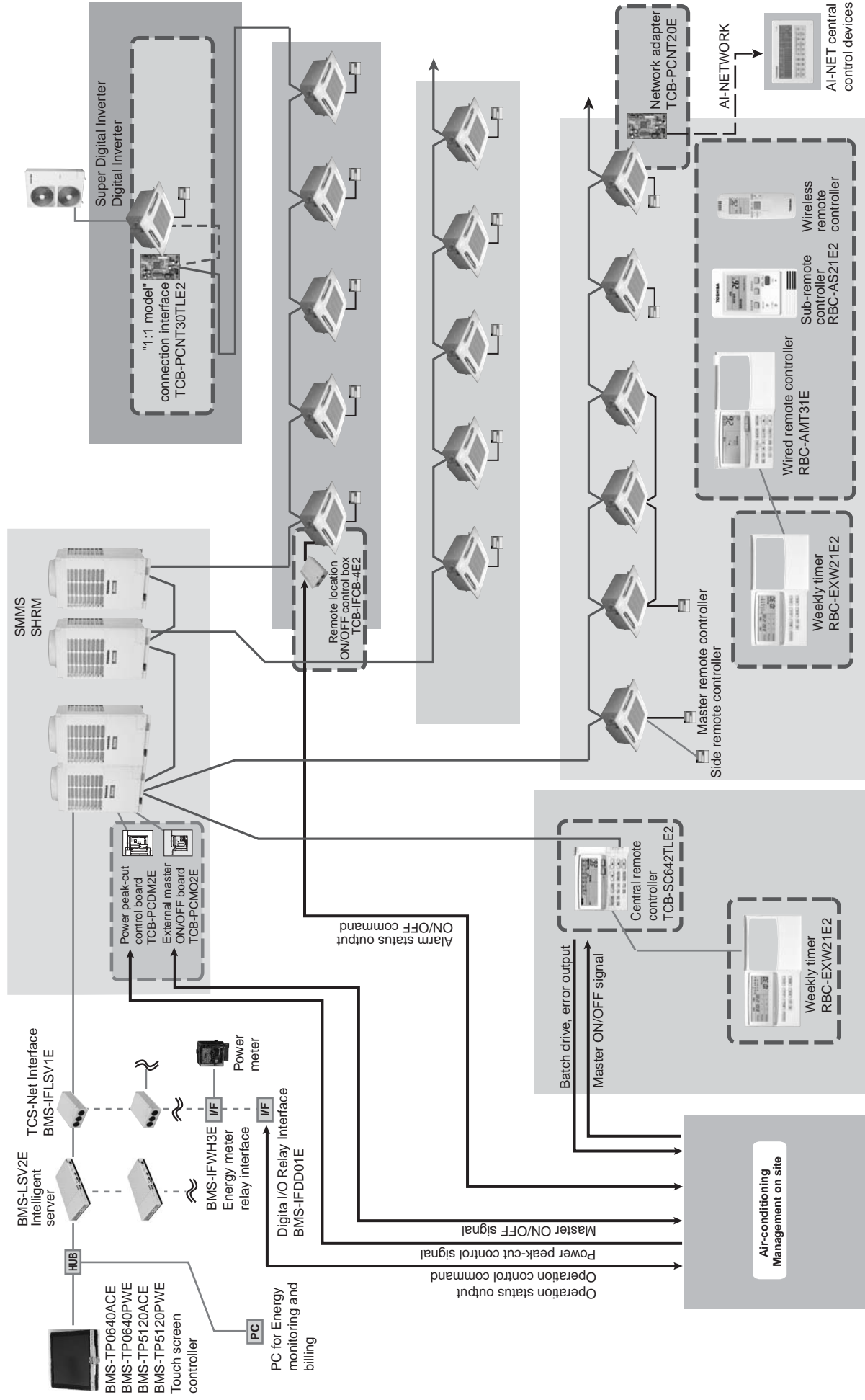
Provides operation control using external input signals and outputs emergency signals to external devices.

# 1-2 Component

## 1-2-1 TCS-Net control system component

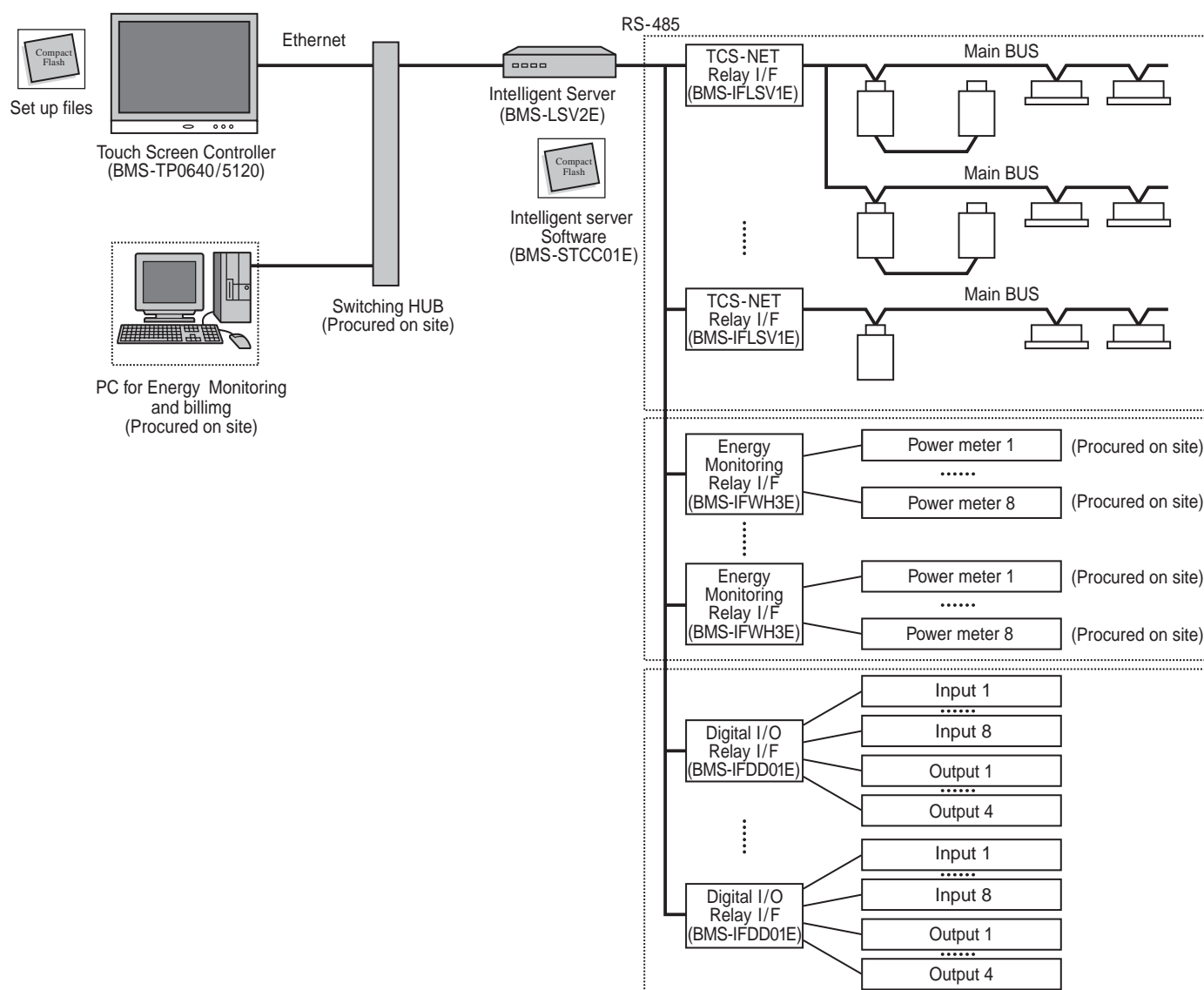


## 1-2-2 Application control component



# 1-3 Basic system component

## 1-3-1 Apparatus component









**System Configuration Table**

Function	Monitoring/Control/Scheduling/Fault code display	x		x		x		x	
	Energy monitoring and billing			x				x	
	Indoor units connected	Max. 64 units		Max. 64 units		Max. 512 units		Max. 512 units	
	Digital I/O	x		x		x		x	
Devices	Touch Screen Controller	BMS-TP0640ACE		BMS-TP0640PWE		BMS-TP5120ACE		BMS-TP5120PWE	
	Intelligent Server	BMS-LSV2E	x	x	x	x	x	x	x
	Intelligent Server Software	BMS-STCC01E	x	x	x	x	x	x	x
	TCS-NET Relay I/F	BMS-IFLSV1E	x	x	x	x	x	x	x
	Energy Monitoring Relay I/F	BMS-IFWH3E			x	x		x	x
	Digital I/O Relay I/F	BMS-IFDD01E		x		x	x		x
	PC (for Energy monitoring and billing)	Procured on site			x	x		x	x
	Switching HUB	Procured on site	x(*)	x(*)	x(*)	x(*)	x(*)	x(*)	x(*)

(\*) A Switching HUB is required when using two or more Intelligent servers or when connecting to a PC for Energy Monitoring and billing.



### 1-3-2 The control system devices

Name	Model name	Appearance	Performance
Touch Screen Controller	BMS-TP0640ACE BMS-TP5120ACE BMS-TP0640PWE BMS-TP5120PWE		Operation monitoring Operation control Operation schedule Error code display Fire alarm input Energy monitoring data saving to CF card
Intelligent Server	BMS-LSV2E		Data collection
Intelligent Server Software	BMS-STCC01E		Data collection software (This software is used for the Intelligent server)
TCS-Net Relay Interface	BMS-IFLSV1E		Protocol transformation Main BUS to RS-485
Energy Monitoring Relay Interface	BMS-IFWH3E		Power meter interface
Digital I/O Relay Interface	BMS-IFDD01E		Input and output interface Fire alarm input Key input Error output



### 1-3-3 The control system devices (Procured on site)

Name	Performance	Specification
Power meter	Mesurement of power consumption. Output data by pulse signal	Pulse output type Pulse generator constants: 1kWh/pulse or 10kWh/pulse Pulse duration: 50 - 1000 ms Output terminal: ON/OFF contactor
Switching HUB and Ethernet wire	Network with Touch screen controller Intelligent server Energy monitoring PC	HUB: 10BASE-T compliant (*) Number of ports: as required  Ethernet wire: Category5 UTP straight cable (with HUB) Category5 UTP cross cable (without HUB)
PC for energy monitoring and billing	Energy monitoring calculation Electricity billing calculation Monthly report creation	Microsoft Excel is required for the energy monitoring and billing function  OS: Windows 2000 or newer Excel: Excel 2000 or newer

\* 100BASE-T compliant HUB is required when using 5 or more servers, or 2 or more controllers.

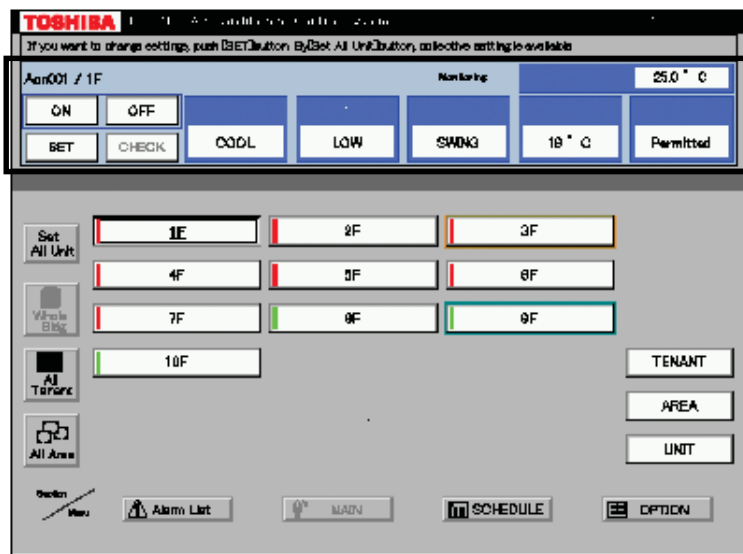
### 1-3-4 Software

Name	Performance	Note
Monthly report creation software	Monthly report creation Power distribution calculation Billing calculation Daily sum report creation	This software is provided on CD-ROM

# 1-4 Touch screen controller function

## Monitoring

All Indoor unit conditions can be monitored by the controller.

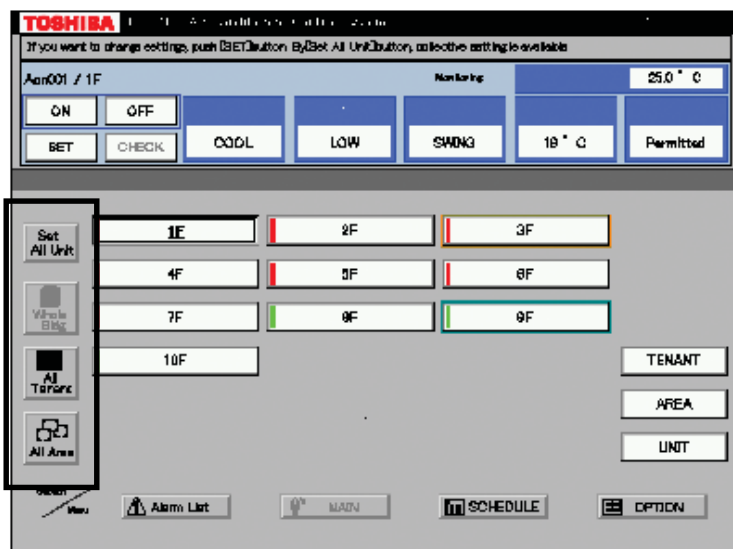


## Monitoring Items

Mode  
FAN mode  
Louver setting  
Set Temperature  
Inlet air temperature  
R/C control prohibition

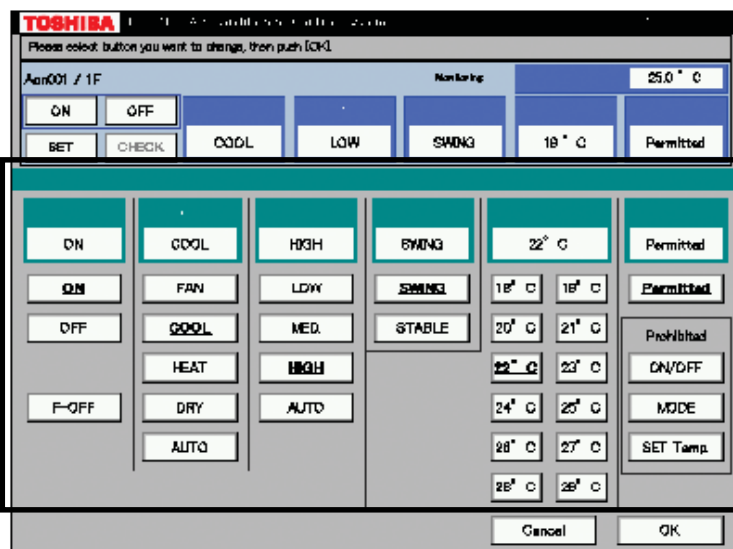
## Control

All Indoor unit operations can be controlled within the user's selected division.



## Controlable division

Whole building  
All tenant  
All area  
Unit

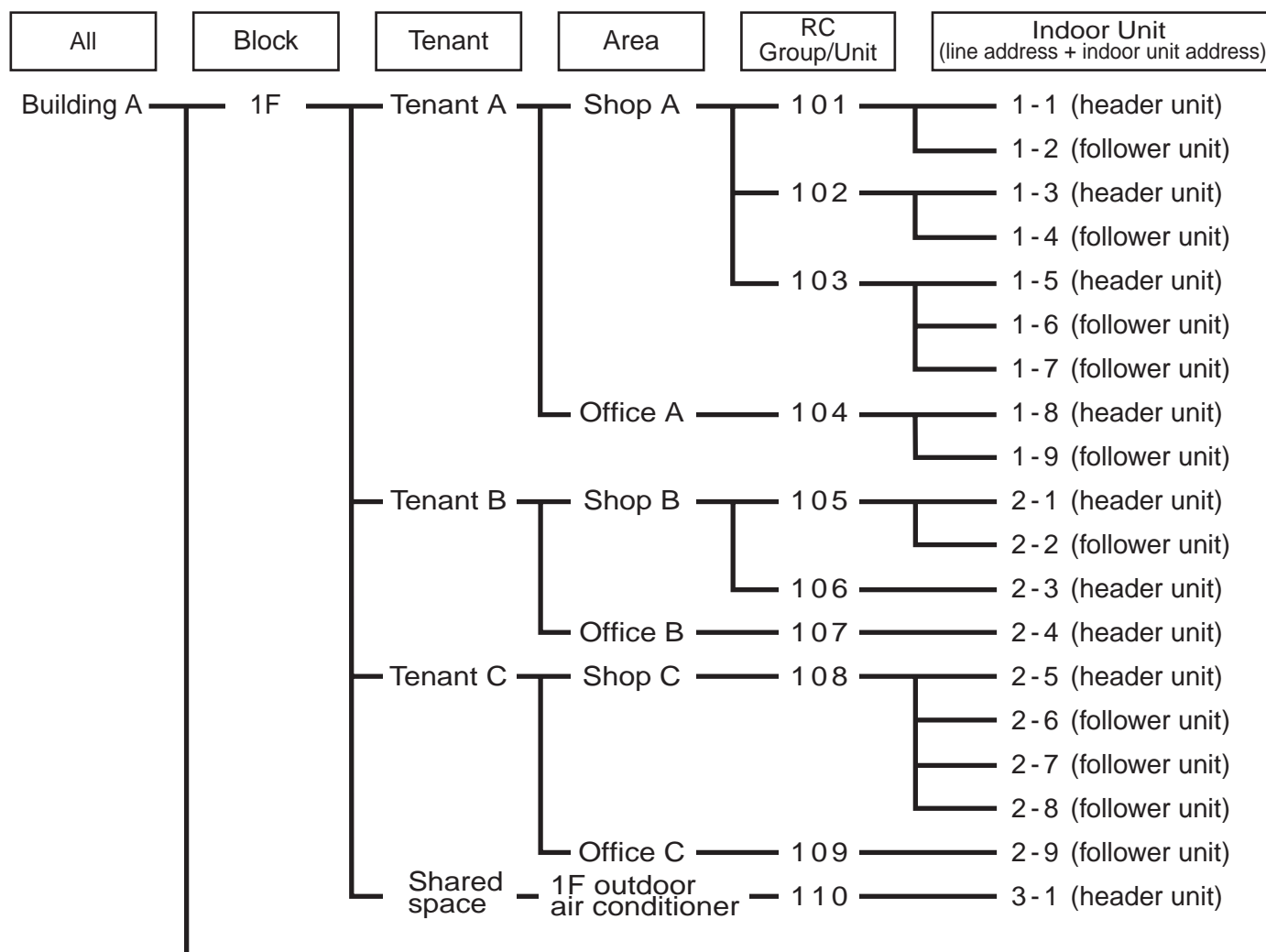


## Setting Items

Mode  
Fan mode  
Louver setting  
Set temperature  
Inlet air temperature  
R/C control prohibition (7 combinations)

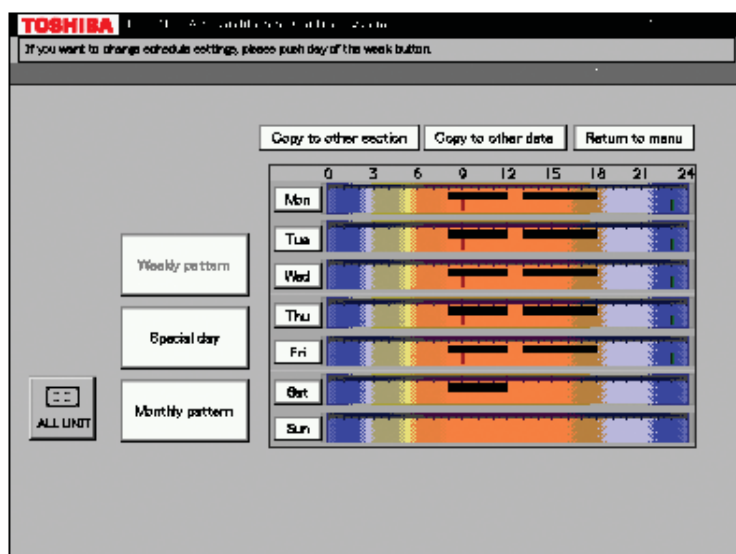
	ON/OFF prohibition	MODE prohibition	SET TEMP prohibition
1	x	—	—
2	—	x	—
3	—	—	x
4	x	x	—
5	x	—	x
6	—	x	x
7	x	x	x

## Management zone categories



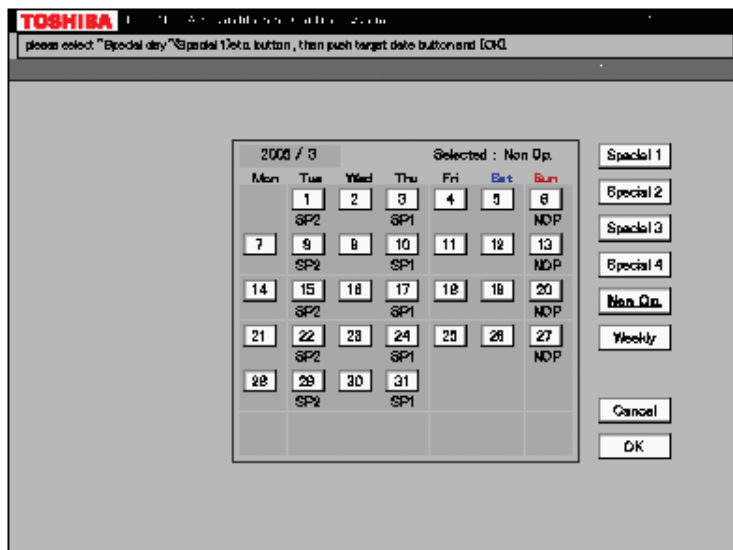
## Scheduling

A basic operation schedule pattern is determined by setting the weekly and monthly operation schedules. The schedules can be set for each area.



### Weekly schedule setting

Up to 20 patterns a day (including ON and OFF) can be set.



### Monthly schedule setting

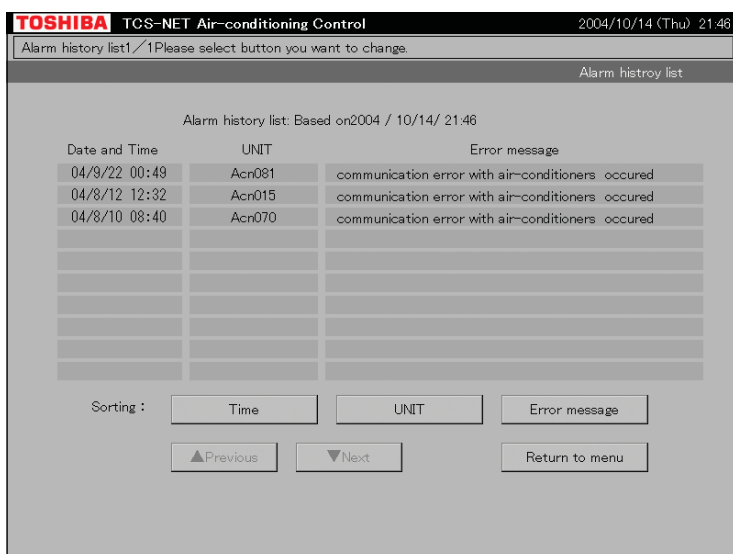
Schedule patterns except for weekly schedule patterns can be set as special-days. Up to four special-day patterns can be set. Non-operation dates can also be set.

### Error code display



When an error occurs on a device, an error code is displayed.

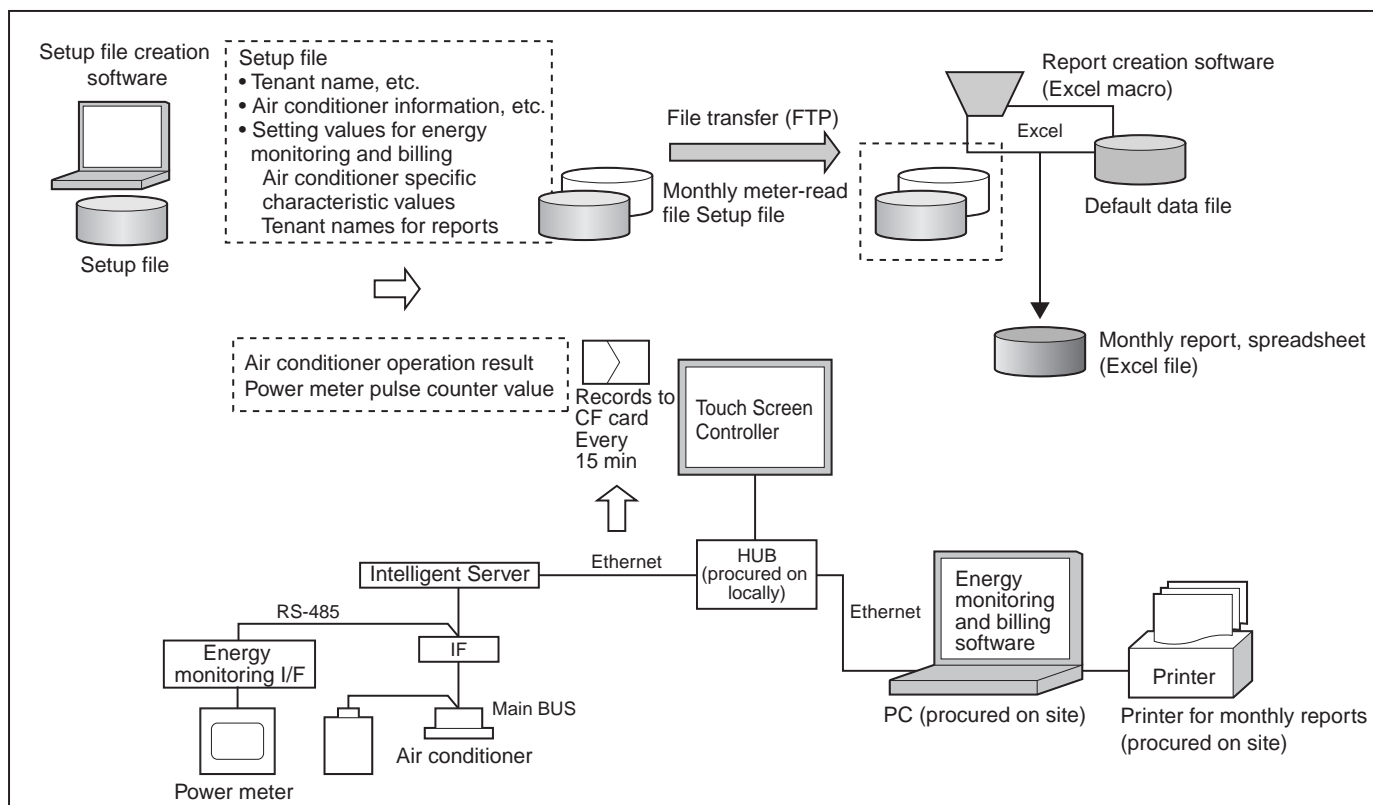
### Fault log display



# 1-5 Energy monitoring and billing function

Distributes the total power consumption for each indoor unit according to the billing schedule that has been set by the Touch Screen Controller. The system setup file and the operation result file saved on the CF card of the Touch Screen Controller are uploaded onto the PC. The PC calculates the power distribution result using the dedicated report creation software (Excel macro) to create spreadsheets and monthly reports.

## Data flow



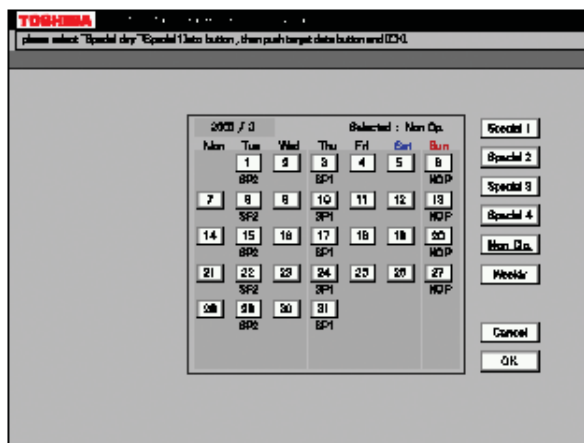
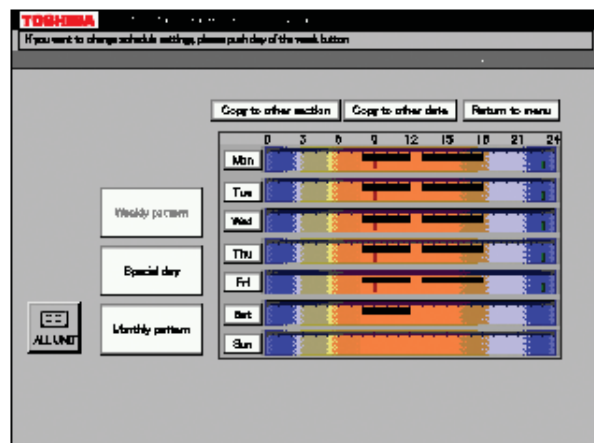
## Specification

PC operating system	OS	Windows 2000 or newer
	Excel	Excel 2000 or newer is required separately.

A PC and printer for energy monitoring and billing should be procured on site.

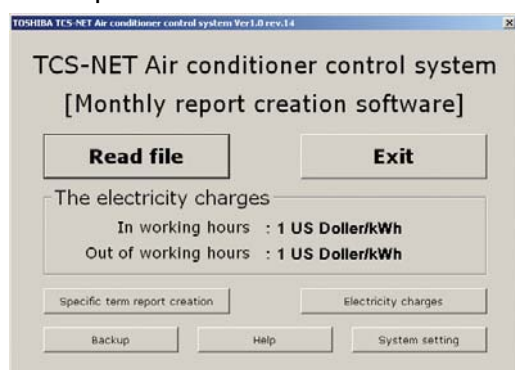
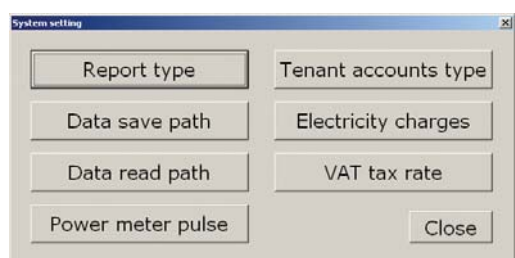
## Electricity billing schedule

Touch Screen Controller sets a billing schedule for monthly reports.



## Monthly Report

The report creation software creates monthly reports in an Excel file format.

## Monthly report printout example

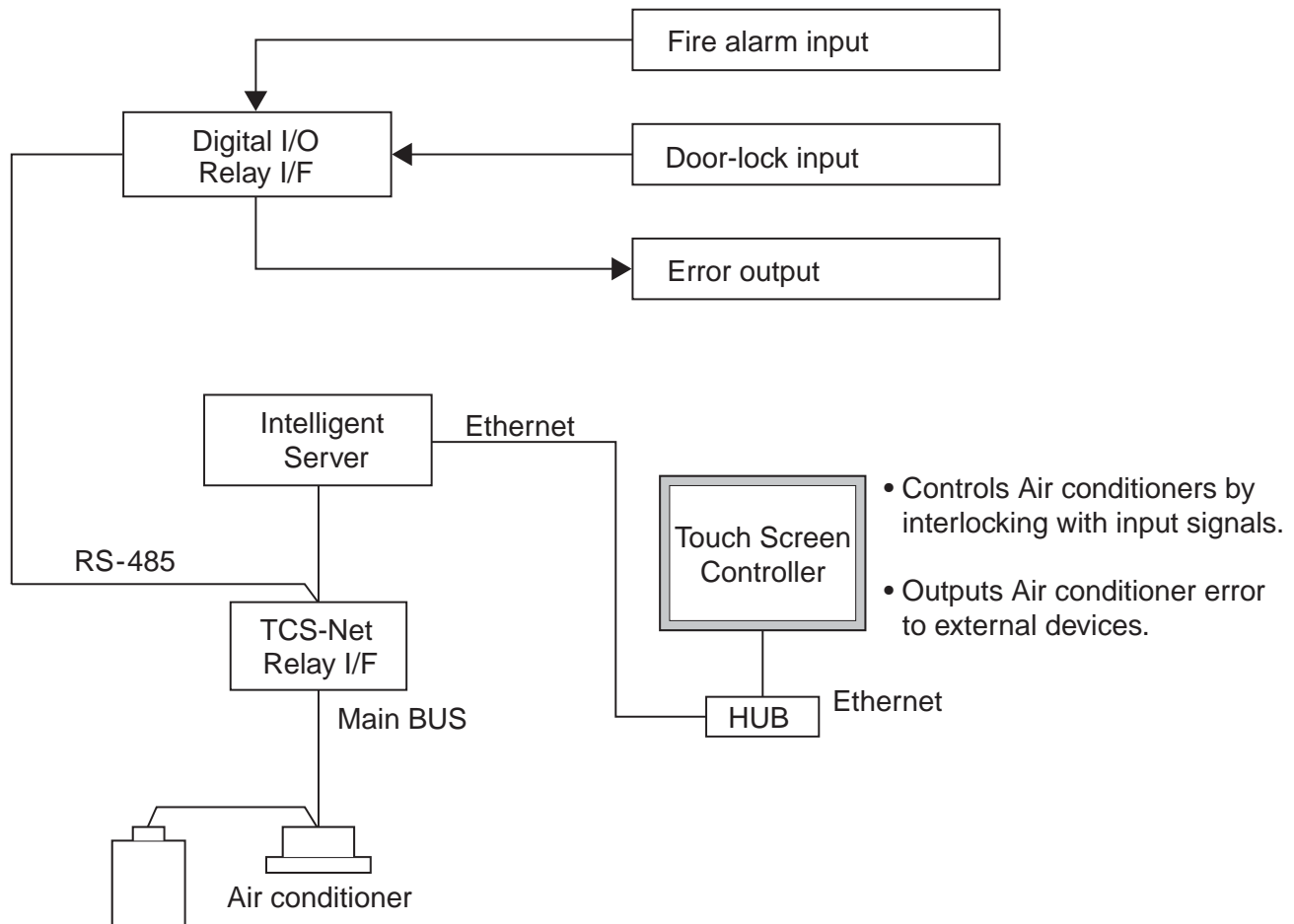
Toshiba BUILDING.							
	Air Conditioner Monthly Report						
	Metering term						
	From	10/01/2004					
	To	10/31/2004					
							Date 01/07/2005
No.	Classification			Air conditioner	Result		
	Block	Tenant	Area	RC Group/Unit	Operation hours[h]	Power[kWh]	Expenses[*]
1	7F	Tenant A	no name	7A-1	0.1	0.10	0
2	7F	Tenant A	no name	7A-2	0.1	0.15	0
3	7F	Tenant B	no name	7B	2.0	0.50	1
4	7F	Tenant B	no name	7C	2.0	0.50	1
5	7F	Tenant B	no name	7D	0.3	0.03	0
6	7F	OfficeA	Meeting room	8A	0.1	0.01	0
7	8F	OfficeA	Office	8B	5.3	0.70	1
8	8F	OfficeA	Office	8C	5.3	0.50	1
9	8F	Vacancy	no name	8D	0.0	0.00	0
10	9F	Vacancy	no name	8D	0.0	0.00	0
total					15.2	2.5	2

## Report creation software functions

Function	Description	Remarks
Monthly report creation	Creates operation result reports for each indoor unit group. These can be totalled by the touch screen controller based upon the setup files.	Operation result report type: <ul style="list-style-type: none"> <li>• Display operation hours</li> <li>• Display operation hours, display by In/Out working hours</li> <li>• Display operation hours/consumption/billing</li> <li>• Display operation hours/consumption/billing, display by In/Out working hours</li> </ul>
	Creates 4 types of spreadsheets for monthly reporting.	Spreadsheet type: <ul style="list-style-type: none"> <li>• Operation result for all the units</li> <li>• Operation result without tenant, Area name</li> <li>• Operation result sum by tenant, block</li> <li>• Accounts sum by tenant</li> </ul>
Power distribution calculation	Calculates power distribution for each indoor unit group	
Billing calculation	Calculates expenses for each indoor unit group	
Daily sum report creation	Totals daily reports in specified range to create a monthly report.	

## 1-6 Input/Output

This system controls the air conditioners by interlocking them with electric lock signals and fire alarm signals and can transmit air conditioner emergency signals to other devices.







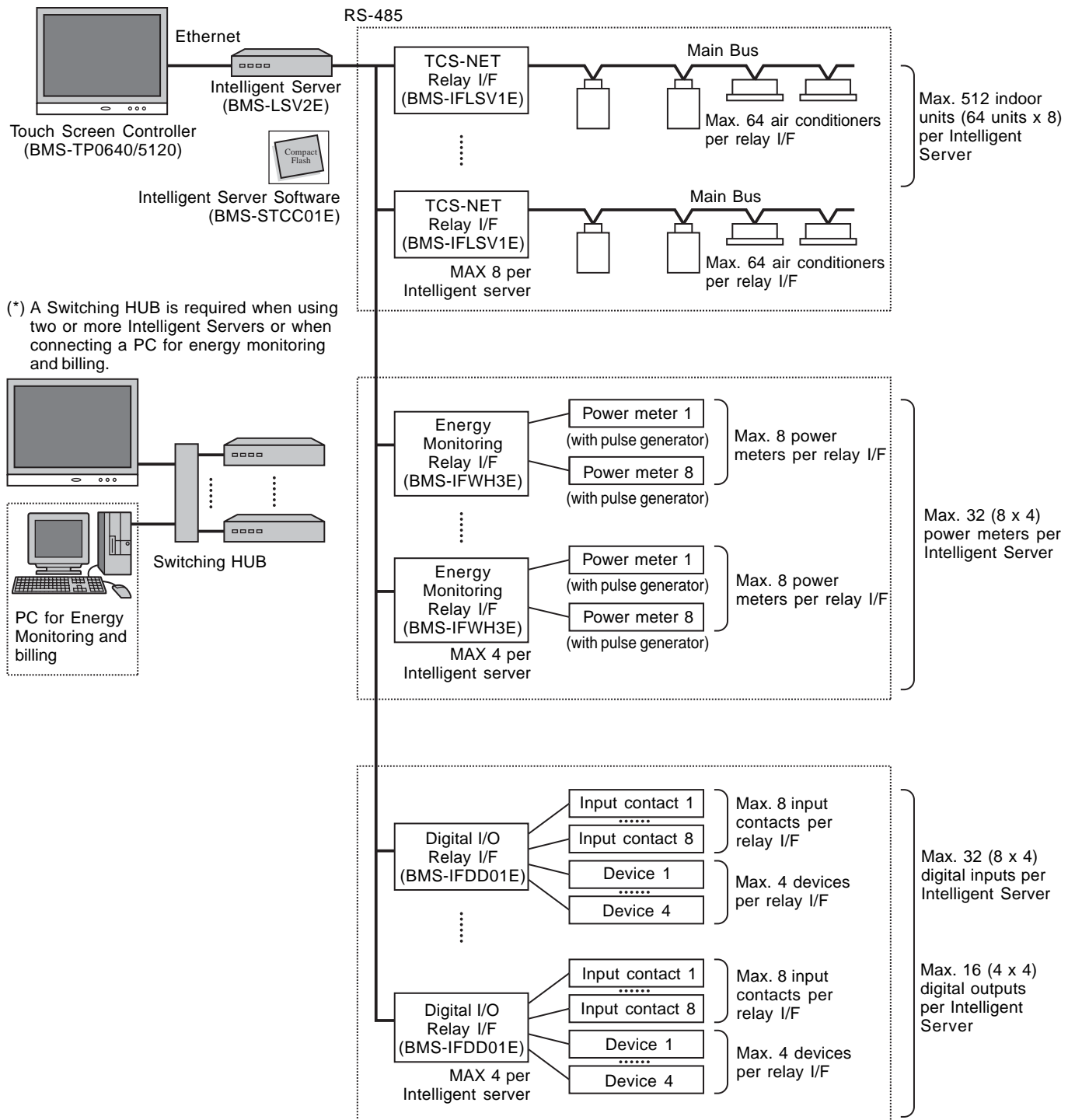
# 2

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## SYSTEM CONFIGURATION

### 2-1 Touch screen controller system configuration

## 2-1 Touch screen controller system configuration



## System Configuration Table

(x ... available – ... not available)

	Touch Screen Controller		BMS-TP0640ACE	BMS-TP0640PWE	BMS-TP5120ACE	BMS-TP5120PWE
Function	Air conditioning monitoring/control		x		x	
	Energy monitoring and billing		–	x	–	x
	Indoor units connected		Max. 64 units		Max. 512 units	
Component	Intelligent Server	BMS-LSV2E	1 unit		Max. 4 units	
	Intelligent Server Software	BMS-STCC01E	1 unit		1 unit per Intelligent Server (max. 4 units in total)	
	TCS-NET Relay I/F	BMS-IFLSV1E	Max. 8 units		Up to 8 units per Intelligent Server (max. 32 units in total)	
	Energy Monitoring Relay I/F	BMS-IFWH3E	–	Max. 4 units	–	Max. 4 units
	Digital I/O Relay I/F	BMS-IFDD01E	Max. 4 units		Max. 4 units	

Switching HUB	Procured on site	*1	Comply with 10BASE-T*2 Number of ports: As required
Ethernet wire	Procured on site		Category 5 UTP straight wire
PC	Procured on site		OS: Windows 2000 or newer, Excel 2000 or newer
Power meter	Procured on site	*3	Pulse output type Pulse generator constants: 1 kWh/pulse or 10 kWh/pulse Pulse duration: 50 - 1000 ms Output terminal: ON/OFF contactor

\*1: The number of ethernet wires and the number of switching HUB ports vary with the number of Intelligent Servers connected.

\*2: 100 BASE-T compliant is required when using 5 or more servers, or 2 or more controllers.

\*3: The number of power meters vary with power meter specifications.

- Two or more refrigerant systems can be connected to one power meter.
- For heat recovery VRF (SHRM) and “Super digital inverter”, “Digital inverter”, it is necessary to install the power meter independently.
- All power meters connected to the same controller must be set to the same pulse generator constants.

## System configuration examples

The following lists detail the required component devices for each category.

### 1. Without energy monitoring

(A) Up to 64 indoor units

Device	Model	Quantity	Remarks
Touch Screen Controller	BMS-TP0640ACE	1	
Intelligent Server	BMS-LSV2E	1	
Intelligent Server Software	BMS-STCC01E	1	
TCS-NET Relay Interface	BMS-IFLSV1E	Max. 8	Up to 8 units per Intelligent Server
Digital I/O Relay Interface	BMS-IFDD01E	Max. 4	
Ethernet wire	Procured on site	*1	Category5 UTP cross cable

(B) Up to 512 indoor units

Device	Model	Quantity	Remarks
Touch Screen Controller	BMS-TP5120ACE	1	
Intelligent Server	BMS-LSV2E	Max. 4	
Intelligent Server Software	BMS-STCC01E	Max. 4	Same quantity as Intelligent Server required
TCS-NET Relay Interface	BMS-IFLSV1E	Max. 32*2	*2 Up to 8 units per Intelligent Server
Digital I/O Relay Interface	BMS-IFDD01E	Max. 16*3	*3 Up to 4 units per Intelligent Server
Ethernet wire	Procured on site	*1	Category5 UTP straight cable
Switching HUB	Procured on site	1	10 BASE-T compliant *4 number of ports: As required

### 2. With energy monitoring

(A) Up to 64 indoor units

Device	Model	Quantity	Remarks
Touch Screen Controller	BMS-TP0640PWE	1	
Intelligent Server	BMS-LSV2E	1	
Intelligent Server Software	BMS-STCC01E	1	
TCS-NET Relay Interface	BMS-IFLSV1E	Max. 8	Up to 8 units per Intelligent Server
Energy Monitoring Relay Interface	BMS-IFWH3E	Max. 4	
Digital I/O Relay Interface	BMS-IFDD01E	Max. 4	
Ethernet wire	Procured on site	*1	Category5 UTP straight cable
Switching HUB	Procured on site	1	10 BASE-T compliant *4 number of ports: As required
PC	Procured on site	1	OS: Windows 2000 or newer Excel: Excel 2000 or newer
Power meter	Procured on site	*5	Pulse output type Pulse generator constants: 1kWh/pulse or 10kWh/pulse Pulse duration: 50 - 1000 ms Output terminal: ON/OFF contactor

(B) Up to 512 indoor units

Device	Model	Quantity	Remarks
Touch Screen Controller	BMS-TP5120PWE	1	
Intelligent Server	BMS-LSV2E	Max. 4	
Intelligent Server Software	BMS-STCC01E	Max. 4	Same quantity as Intelligent Server required
TCS-NET Relay Interface	BMS-IFLSV1E	Max. 32*2	*2 Up to 8 units per Intelligent Server
Energy Monitoring Relay Interface	BMS-IFWH3E	Max. 16*3	*3 Up to 4 units per Intelligent Server
Digital I/O Relay Interface	BMS-IFDD01E	Max. 16*3	*3 Up to 4 units per Intelligent Server
Ethernet wire	Procured on site	*1	Category5 UTP straight cable
Switching HUB	Procured on site	1	10 BASE-T compliant *4 number of ports: As required
PC	Procured on site	1	OS: Windows 2000 or newer Excel: Excel 2000 or newer
Power meter	Procured on site	*5	Pulse output type Pulse generator constants: 1kWh/pulse or 10kWh/pulse Pulse duration: 50 - 1000 ms Output terminal: ON/OFFcontactor

\*1 The number of ethernet wires and the number of switching HUB ports vary with the number of Intelligent servers connected.

\*4 100BASE-T compliant HUB is required when using 5 or more servers, or 2 or more controllers.

\*5 The number of power meters vary with power meter specifications.

- Two or more refrigerant systems can be connected to one power meter.
- For heat recovery VRF (SHRM) and "Super digital inverter", "Digital inverter", it is necessary to install the power meter independently.
- All power meters connected to the same controller must be set to the same pulse generator constants.





# 3

---

## INSTALLATION

- 3-1 Installation work flow**
- 3-2 Setup file data preparation**
  - 3-2-1 Control wiring diagram (Connection example)**
  - 3-2-2 Power meter wiring diagram (Connection example)**
  - 3-2-3 Air conditioner address table**
  - 3-2-4 Schedule table**
- 3-3 Setup file creation**
  - 3-3-1 Setup file creation software (Excel macro)**
  - 3-3-2 Setup file contents**
- 3-4 Control system Installation**
  - 3-4-1 External view**
  - 3-4-2 Installation method**
  - 3-4-3 Device specifications**
- 3-5 Wiring**
  - 3-5-1 Wiring specifications**
  - 3-5-2 Wiring diagram**
- 3-6 Network connection**
- 3-7 Control system configuration**

## 3-1 Installation work flow

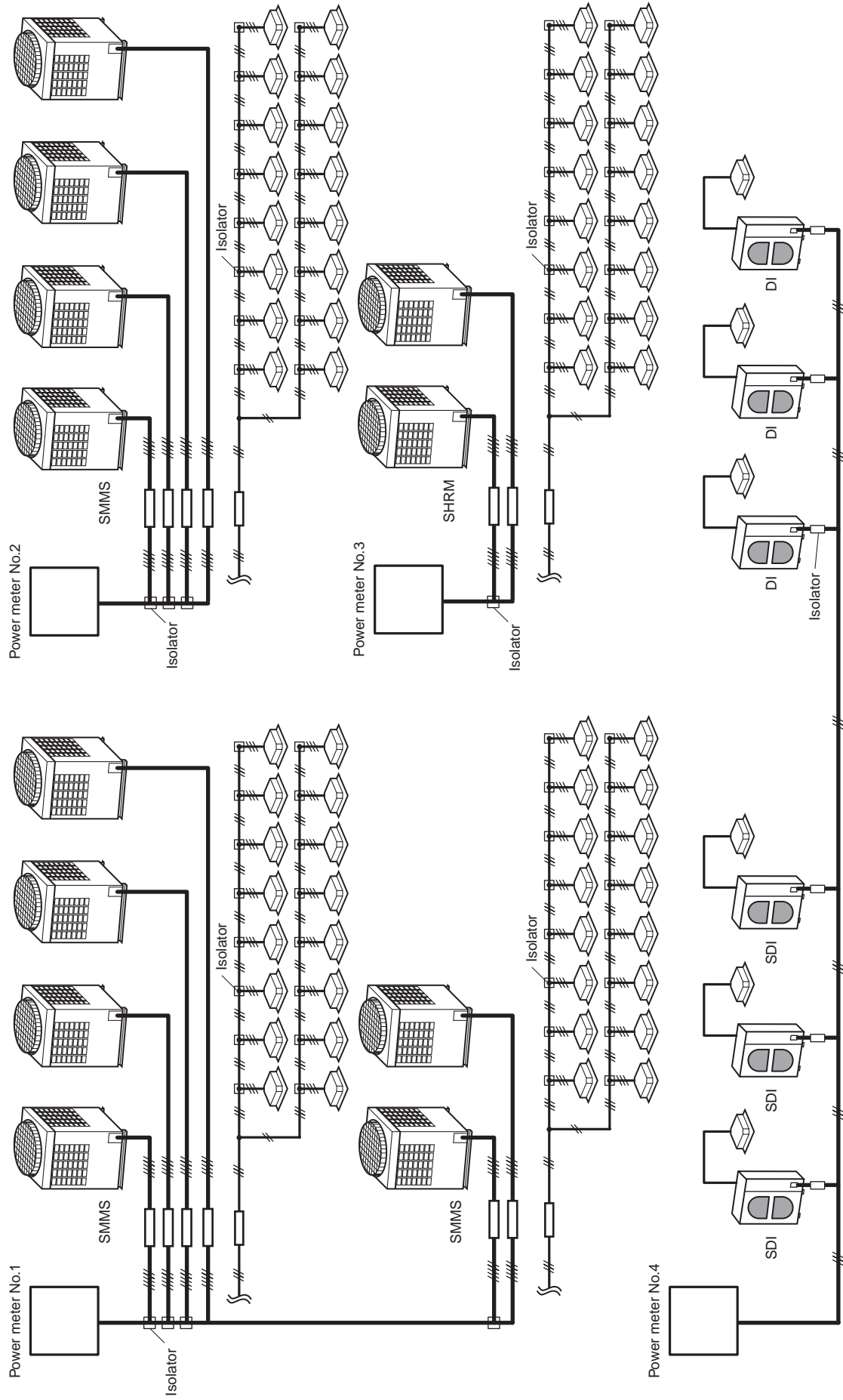
Work flow	Contents	Reference No.
0. System planning	Air conditioner equipment selection Control system device selection	Chapter. 2
1. Setup file data preparation	System wiring diagram Power meter wiring diagram Address list Schedule list	3-2
2. Setup file creation	Create setup files by excel macro software	3-3
3. On site installation (Construction work)	Control system installation	3-4
4. On site installation (Wiring)	Wiring power cable/ communication line Network connection	3-5 3-6
5. On site installation (Control system configuration)	Energy monitoring PC configuration Intellignet server configuration Setup file installation	3-7
6. On site installation (Address setting)	Air conditioner address setting Control system device address setting	Chapter. 4
7. Trial operation and adjustment		Chapter. 5
8. Commissioning		

Before starting the installation, prepare the materials for creating the setting files.

- Control wiring diagram
- Power meter wiring diagram
- Air conditioner address table
- Schedule table

The diagram illustrates the BMS architecture, showing the connection between the Touch Screen Controller, the Switching HUB, and the Intelligent Servers (BMS-LSV2E) for the 9th-16th floor and 1st-8th floor. It also shows the connection to the Intelligent server software (BMS-STCC01E), the PC for creating monthly reports, and the Printer. The system is divided into three main sections: 16th floor, 15th floor, and 2nd floor. Each floor section includes a BMS-IFLSV1E interface, a TCS-NET Relay Interface, and a U3,U4 unit. A legend indicates that the Outdoor unit is represented by a diagonal split box and the Indoor unit by a solid grey box. The inputs include 8 door-lock control signal inputs, 8 fire alarm inputs, 8 power meter inputs, and 8 power meter inputs.

### 3-2-2 Power meter wiring diagram (Connection example)



- Two or more refrigerant systems can be connected to one power meter.
- For heat recovery VRF (SHRM) and "SDI\*" "DI\*" it is necessary to install the power meter independently.
- All power meters connected to the same controller must be set to the same pulse generator constants.

\*1: Super digital inverter

\*2: Digital inverter

3-2-3 Air conditioner address table

- ① Intelligent Server address
- ② TCS-NET relay I/F address
- ③ Line address
- ④ Indoor unit address
- ⑤ Group address

• Building name:

	Air Conditioner List				Address Information					Display name				Power meter No. and Input/Output data No.		
	Outdoor refrigerant system	Outdoor unit model name	Indoor unit model name	Header unit	①	②	③	④	⑤	Block name	Tenant name	Area name	R.C. group/unit	Power meter No.	Key input No.	Fire alarm No.
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
15																
16																
17																
18																
19																
20																

1	Header indoor unit of group control.
0	Indoor unit on individual control.
0	Follower indoor unit of group control.

- ① Intelligent Server address
- ② TCS-NET relay I/F address
- ③ Line address
- ④ Indoor unit address
- ⑤ Group address

## ● Building name: XXX Building

(Example)

Air Conditioner List				Address Information					Display name				Power meter No. and Input/Output data No.		
Outdoor refrigerant system	Outdoor unit model name	Indoor unit model name	Header unit	①	②	③	④	⑤	Block name	Tenant name	Area name	R.C. group/unit	Power meter No.	Key input No.	Fire alarm No.
PAC-B	MMY-AP1401HT8	MMU-AP0091H	1				1	1	1F	Tenant A	Shop A	PAC-B•1F-1	1	1	1
		MMU-AP0091H	0					2	1F	Tenant A	Shop A	PAC-B•1F-1	1	1	1
		MMU-AP0091H	0					3	1F	Tenant A	Shop A	PAC-B•1F-1	1	1	1
		MMU-AP0091H	0					4	1F	Tenant A	Shop A	PAC-B•1F-1	1	1	1
PAC-B	MMY-AP1401HT8	MMU-AP0091H	0	1	1	1		5	1F	Tenant A	Shop A	PAC-B•1F-1	1	1	1
		MMK-AP0091H	1					6	1F	Tenant B	Shop B	PAC-B•1F-2	1	1	1
		MMK-AP0091H	1					7	1F	Tenant B	Shop C	PAC-B•1F-3	1	1	1
		MMK-AP0091H	1					8	1F	Tenant B	Shop D	PAC-B•1F-4	1	1	1
PAC-M	MMY-AP1401HT8	MMK-AP0091H	1					9	1F	Tenant B	Shop E	PAC-B•1F-5	1	1	1
		MMK-AP0091H	1					1	1F	Tenant C	Shop F	PAC-M•1F-1	2	1	1
		MMK-AP0091H	1					2	1F	Tenant C	Shop F	PAC-M•1F-2	2	1	1
		MMK-AP0091H	1					3	1F	Tenant C	Shop G	PAC-M•1F-3	2	1	1
PAC-S	MMY-AP1401HT8	MMK-AP0091H	1	1	1	2		4	1F	Tenant C	Shop G	PAC-M•1F-4	2	1	1
		MMK-AP0091H	1					5	1F	Office A	Office	PAC-M•1F-5	2	1	1
		MMK-AP0091H	1					6	1F	Office A	Office	PAC-M•1F-6	2	1	1
		MMK-AP0091H	1					7	1F	Office A	Meeting room	PAC-M•1F-7	2	1	1
PAC-S	MMY-AP1401HT8	MMK-AP0091H	1					8	1F	Office A	Meeting room	PAC-M•1F-8	2	1	1
		MMK-AP0091H	1					1	2F	Shared space	A	PAC-S•2F-1	3	2	2
		MMK-AP0091H	0	1	1	3		2	2F		B		3	2	2
		MMK-AP0091H	1					3	2F	Tenant D	Shop H	PAC-S•2F-2	3	2	2

1	Header indoor unit of group control. Indoor unit on individual control.
0	Follower indoor unit of group control.

3-2-4 Schedule table

Schedule Table ( / )

• Building name:

R.C. group/unit			
Area			
Tenant			
Block			
Day of the week			
1	:	:	:
2	:	:	:
3	:	:	:
4	:	:	:
5	:	:	:
6	:	:	:
7	:	:	:
8			

Schedule Table (Example)

• Building name: XXX Building

R.C. group/unit	PAC-B, 1F-1	PAC-B, 1F-3 to 1F-5	PAC-B, 1F-6
Area	Consultation room	Warehouse	
Tenant	XX Dental Clinic	XX Electric Co., Ltd.	Night-duty room
Block	B1	B1	B1
Day of the week	Monday to Saturday	Monday to Friday	Monday to Saturday
1	8:00	Run	8:00
2	19:00	Stop	9:30
3	21:00	Stop	10:00
4	:		16:30
5	:		22:00
6	:		23:58
7			.
8			



## 3-3 Setup file creation

Create setup files according to the control wiring system diagram and the address table.

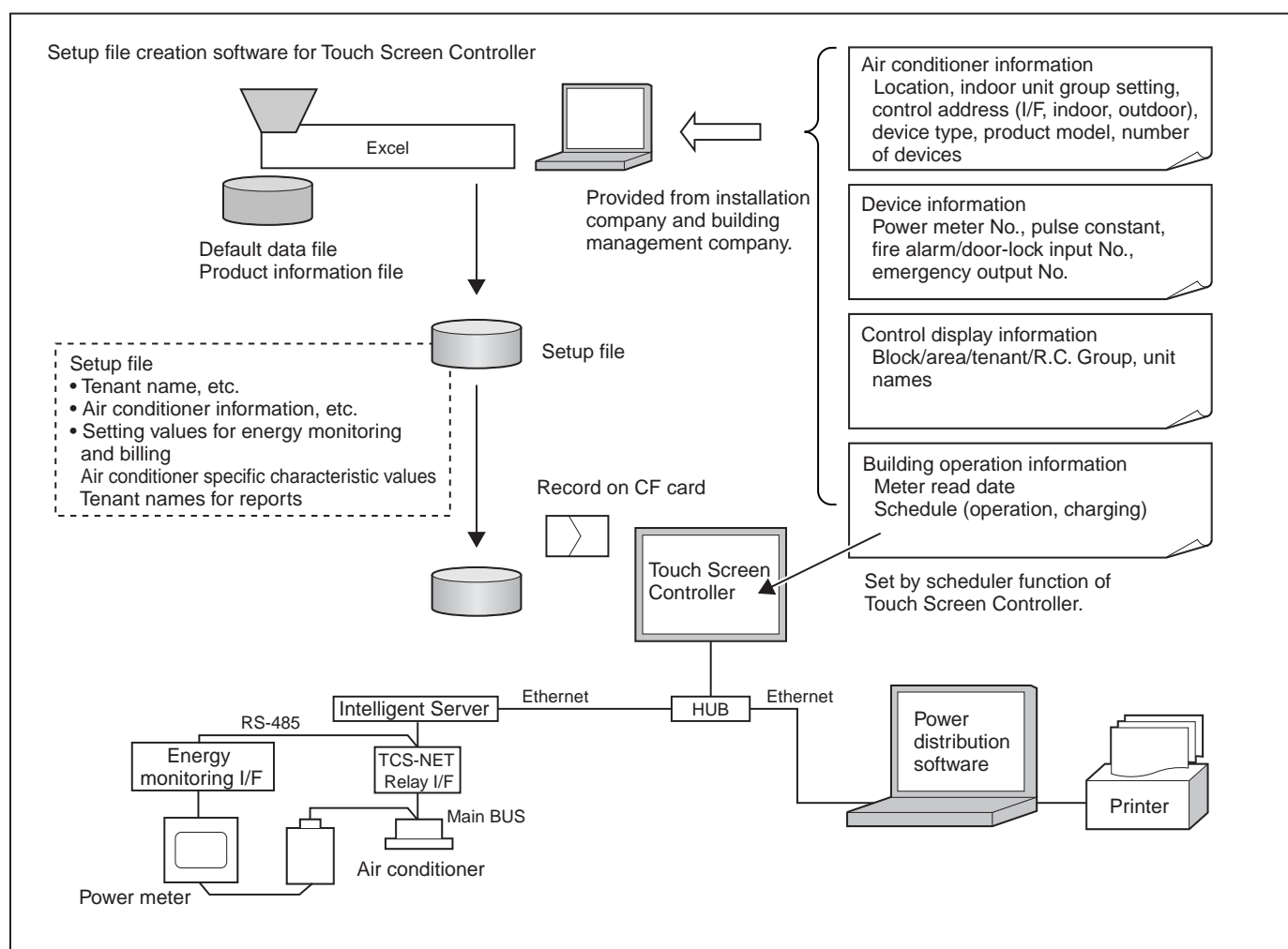
### 3-3-1 Setup file creation software (Excel macro)

- The setup file creation software is used to create setup files to be installed on the Touch Screen Controller.
- In the air conditioning control system, setting values are defined in accordance with the air conditioner installation conditions within the building. If a wrong value is set, a problem such as an interruption in communication with the air conditioner will occur.
- Setting items: Air conditioner information, device information, Touch Screen Controller display information.
- A operator enters details on the Excel spreadsheet and then creates 23 setup files using the information entered.

### Operating environment and others

Operating environment	OS	Windows 2000 or newer
	Excel	Excel 2000 or newer is required separately.

### System Configuration



## 3-3-2 Setup file contents

### (1) Display setup file

- File name: DISP\_FORM.DEF
- Enter the entire building display mode, number of block display buttons, number of tenant display buttons, number of area display buttons, number of R.C. group/indoor display buttons, and the schedule setting unit.
- For the entire building display mode, specify display unit when the entire building button is pressed. [0: block, 1: tenant, 2: area, 3: R.C. group/indoor]
- For the number of buttons, enter the number of lateral buttons in each display mode. The number of vertically arranged buttons is always 6.
- Specify schedule setting unit. [0: area, 1: R.C. group/indoor]
- Specify filter sign display mode. [0: no display, 1: display]

### (2) Error code definition file

- File name: ERROR\_CODE.DEF
- Enter reception code (hexadecimal), error code, error code name, display mode, and external output.
- Specify display mode [0: no display (normal), 1: display].
- Specify external output [0: no output emergency, 1-64: emergency output No. (output to corresponding number)].

### (3) Touch Screen Controller IP address definition file

- File name: CONT\_IP.DEF
- Enter the Touch Screen Controller IP address.

### (4) Intelligent Server IP address definition file

- File name: LSV\_IP.DEF
- Enter an Intelligent Server number and IP address.

### (5) I/O Controller IP address definition file

- File name: IO\_IP.DEF
- Enter the I/O Controller IP address.
- Only one address can be entered. Do not enter a IP address when the I/O Controller is not used.

### (6) Building name definition file

- File name: BUILD\_NAME.DEF
- Enter a building name.

### (7) Block name definition file

- File name: BLOCK\_NAME.DEF
- Enter a block number/name.
- Specify font size. [0 (small) -3 (large) 2 (standard)]

### (8) Tenant name definition file

- File name: TENANT\_NAME.DEF
- Enter tenant numbers/names (up to 512).
- Specify font size. [0 (small) -3 (large) 2 (standard)]

### (9) Area name definition file

- File name: AREA\_NAME.DEF
- Enter area numbers/names (up to 512).
- Specify font size. [0 (small) -3 (large) 2 (standard)].

### (10) R.C. group/indoor name definition file

- File name: AC\_NAME.DEF
- Enter R.C. group/indoor numbers/names (up to 512).
- Specify font size. [0 (small) -3 (large) 2 (standard)]

**(11) Door-lock input definition file**

- File name: KEY\_CH.DEF
- Enter door-lock input numbers (1-64), input device IDs, input channels, and signal logic (up to 64).
- When no door-lock input is used, do not enter.
- An input device ID means the following:
  - 0 to 7: I/O module device ID
  - 10: general-purpose input to the touch panel
  - 100 or more: digital I/O interface (Second digit: Intelligent Server No., first digit: Relay Interface No.)
- Specify signal logic. [0: negative logic, 1: positive logic]

**(12) Fire alarm input definition file**

- File name: FIRE\_CH.DEF
- Enter fire alarm input numbers (1-64), input device IDs, input channels, and signal logic (up to 64).
- When no fire alarm input is used, do not enter.
- An input device ID means the following:
  - 0 to 7: I/O module device ID
  - 10: general-purpose input to the touch panel
  - 100 or more: digital I/O interface (Second digit: Intelligent Server No., first digit: Relay Interface No.)
- Specify signal logic. [0: negative logic, 1: positive logic]

**(13) Emergency external output definition file**

- File name: EMGOUT\_CH.DEF
- Enter external emergency output numbers (1-64), output device IDs, and output channels (up to 64).
- When no external emergency output is used, do not enter.
- An output device ID means the following:
  - 0 to 7: I/O module device ID
  - 20: general-purpose output to the touch panel
  - 100 or more: digital I/O interface (Second digit: Intelligent Server No., first digit: Relay Interface No.)

**(14) R.C. group/indoor setup file**

- File name: AC\_MAP.DEF
- R.C. group/indoor No., Intelligent Server No., Relay Interface No., outdoor system No., indoor unit address, device type, block No., tenant No., area No., key No., fire alarm No.
- Device type
  - 0: SMMS, SHRM, 1: SDI, DI, 2: HA interface
- Key No.
  - 0: no door-lock interlocking, 1-64: When a signal is input from the number defined in (11), a stop command is sent to the system.
- Fire alarm No.
  - 0: no fire alarm interlocking, 1-64: When a signal is input from the number defined in (12), a stop command is sent to the system.
- Indoor unit set in this file is for the header unit only.

**(15) Indoor unit group config file**

- File name: AC\_GROUP.DEF
- R.C. group/indoor No., Intelligent Server No., Relay Interface No., outdoor system No., indoor unit address, device type, outdoor unit No., header/follower, tenant No.
- Used for energy monitoring and billing. No data is provided when energy monitoring and billing is not performed.

**(16) Outdoor unit group config file**

- File name: OUT\_GROUP.DEF
- Outdoor unit No., Intelligent Server No., Relay Interface No., system No., outdoor unit address, device type
- Used for energy monitoring and billing. No data is provided when energy monitoring and billing is not performed.

**(17) Power meter input definition file**

- File name: WHM\_CH.DEF
- Power meter No. (1-64), interface address, channel No., pulse generator constants
- Used for energy monitoring and billing. No data is provided when energy monitoring and billing is not performed.
- An interface address means the following:  
1 to 31: energy monitoring interface  
100 or more: pulse counter interface (Second digit: Intelligent Server No., first digit: Relay Interface No.)
- Pulse generator constants (kWh/pulse): Used by the energy monitoring and billing Excel macro software, but not used by the controller.

**(18) Report setup file**

- File name: REPORT.DEF
- Daily report limit time (meter-read time), Monthly report limit date

**(19) Operation mode setup file**

- File name: RUN\_MODE.DEF
- Operation mode range, scheduled operation central setting, door-lock interlocking central setting
- Operation mode range 0: all enabled, 16: cooling/dry/fan only, 32: heating/fan only
- Scheduled operation central setting

Setting	Stop (10 minutes later)	Stop (within 10 minutes)	Run
0	Stop	Stop	Run
1	Stop + "run/stop" changeover prohibition reset	Stop + "run/stop" changeover prohibition reset	Run + "run/stop" changeover prohibition reset
2	Stop + "run/stop" changeover prohibition reset	Stop + "run/stop" changeover prohibited	"Run/stop" changeover prohibition reset
3	Stop + "run/stop" changeover prohibition reset	Stop + "run/stop" changeover prohibited	Run + "run/stop" changeover prohibition reset

- Door-lock interlocking central setting

Setting	Lock (OFF to ON)	Unlock (ON to OFF)
0	Stop	No operation
1	Stop	"Run/stop" changeover prohibition reset
2	Stop + "run/stop" changeover prohibited	"Run/stop" changeover prohibition reset
3	Stop	No operation

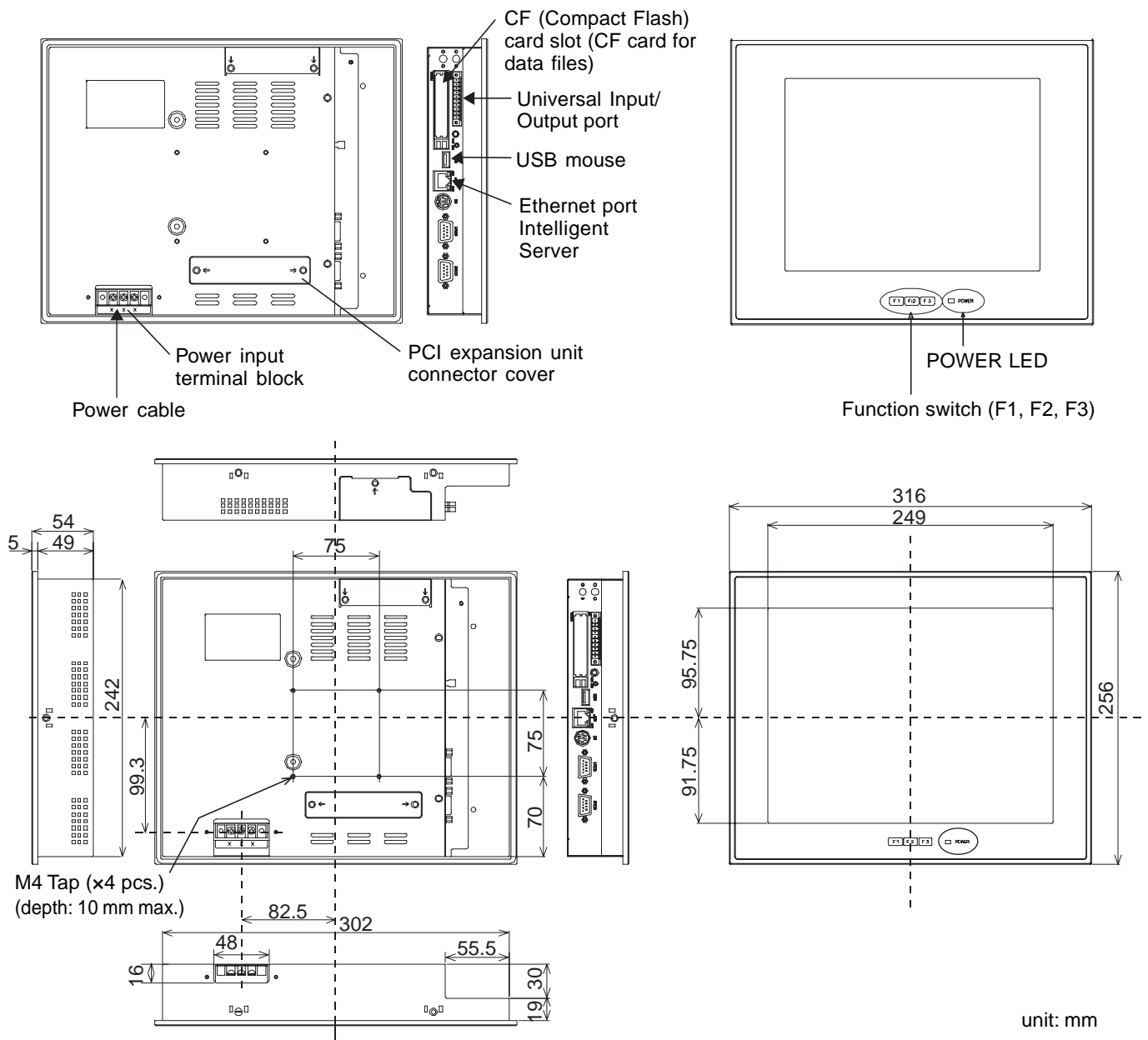
\* All these files must be included in the "¥DEF" folder.

## 3-4 Control system installation

### 3-4-1 External view

#### Touch Screen Controller

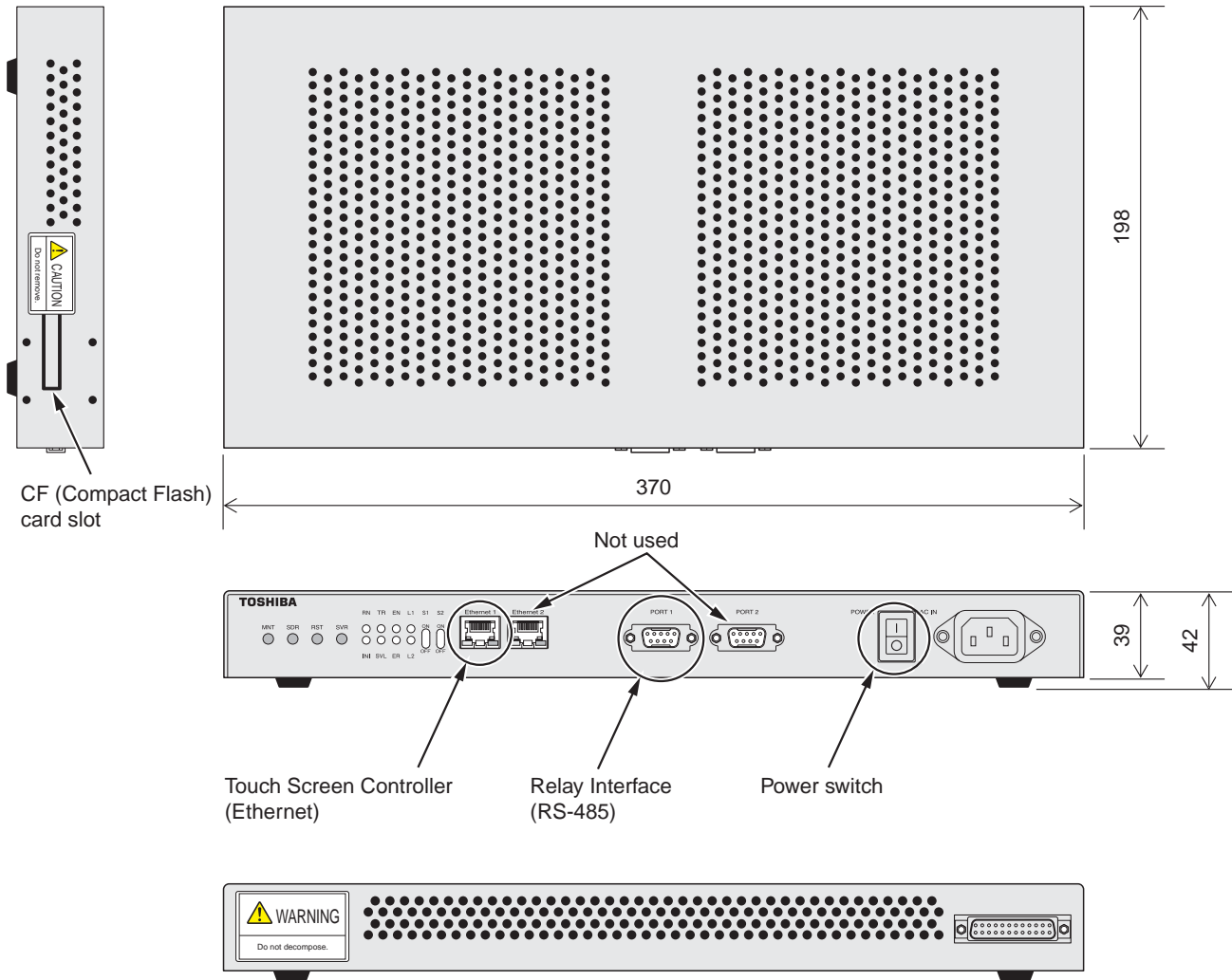
Model: BMS-TP0640ACE  
 BMS-TP5120ACE  
 BMS-TP0604PWE  
 BMS-TP5120PWE



**Intelligent Server**

Model: BMS-LSV2E

Metal case type

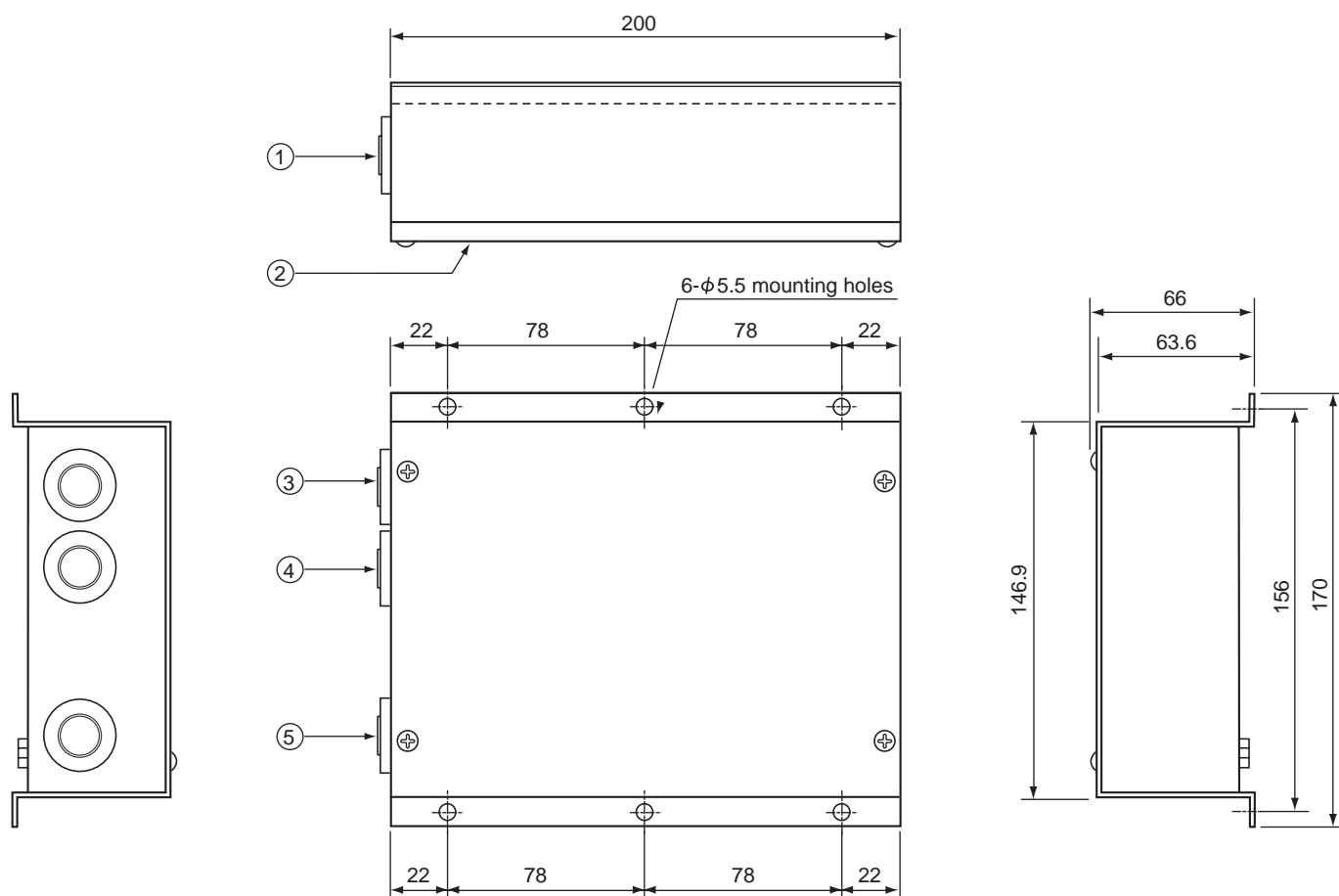


unit: mm

## TCS-NET Relay Interface

Model: BMS-IFLSV1E

	Parts name	Specifications
1	Case	Galvanized sheet metal
2	Case lid	Galvanized sheet metal
3	Grommet	C30-SG20A
4	Grommet	C30-SG20A
5	Grommet for power supply	C30-SG20A

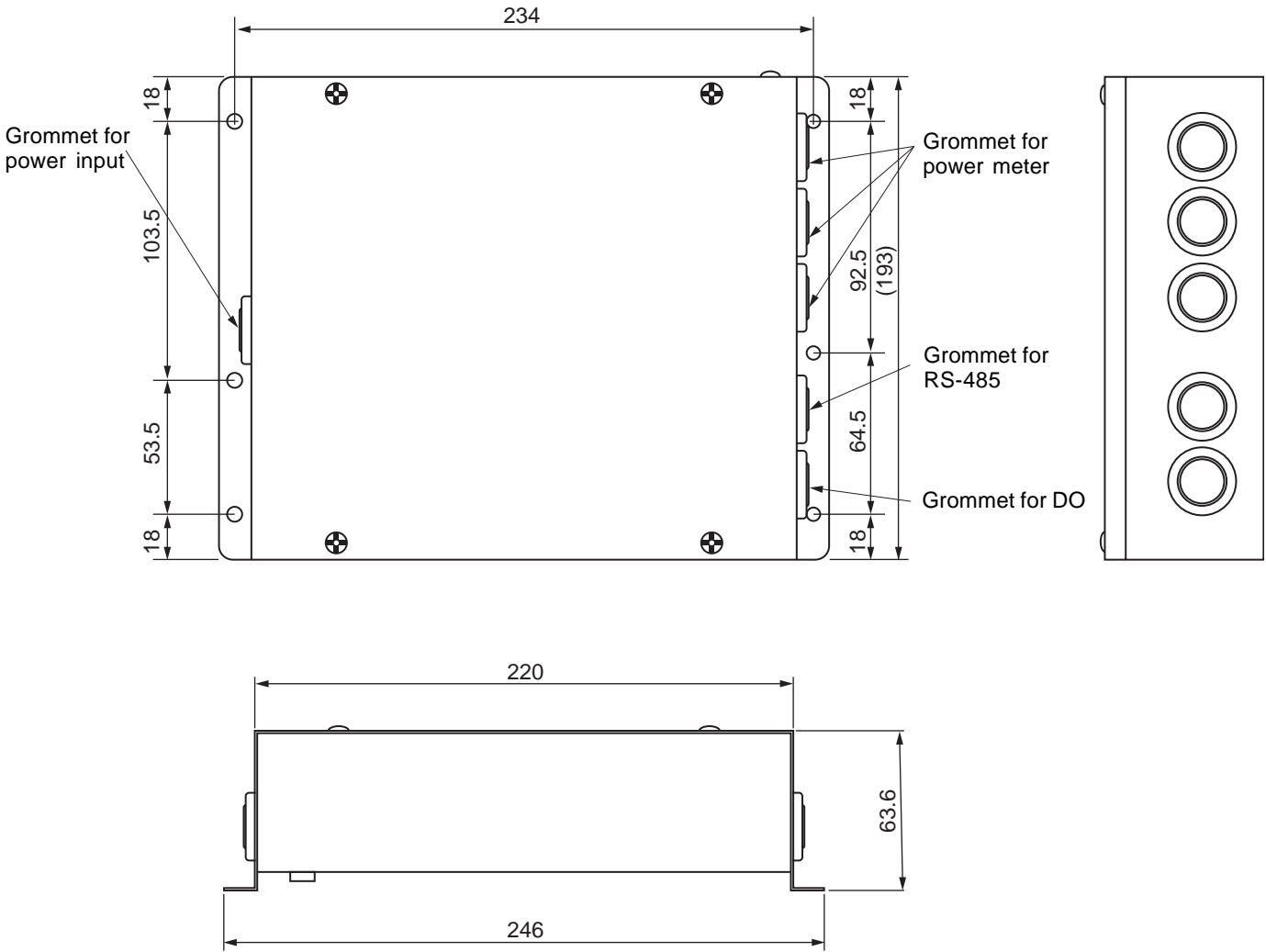


unit: mm



**Energy monitoring R I/F • Digital I/O R I/F**

Model: BMS-IFWH3E  
BMS-IFDD01E



unit: mm

## 3-4-2 Installation method

### Touch Screen Controller

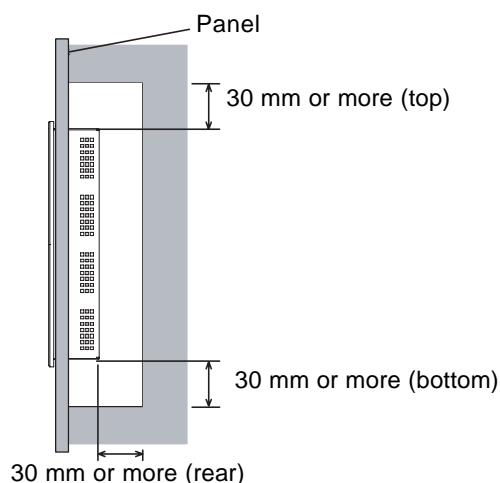
Make a space for the installation and service.

Install the Touch Screen Controller in a wall (standard) or on a dedicated stand (when available on site).

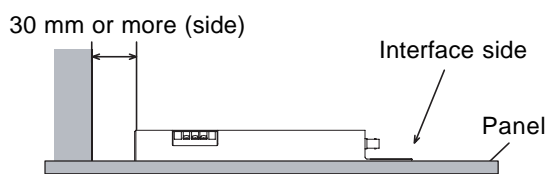
#### In-wall installation

##### ■Conditions for installation

A space of 30 mm or more between the controller and surrounding objects is required.



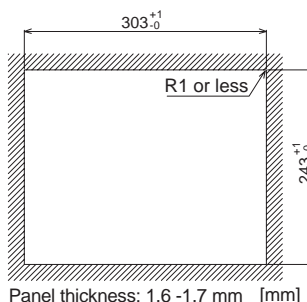
Top view



Bottom view

##### ■Attaching Fixture

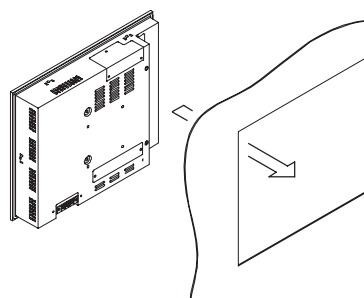
##### ■Panel cut size



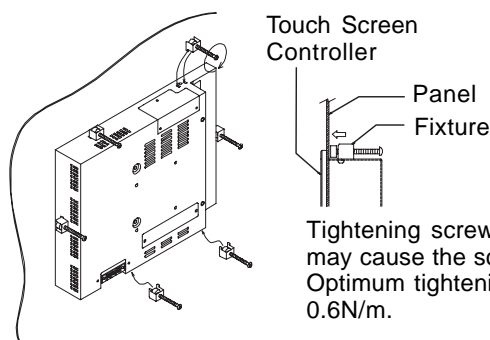
#### REQUIREMENT

Use a panel (procured on site) with a thickness of 1.6-1.7 mm.

1. Insert the controller from the outside of the panel.



2. Insert the fixtures from the inside of the panel.



## For reference

### Display stand (not supplied with the controller)

Use a CONTEC stand (model: IPC-SND-03).

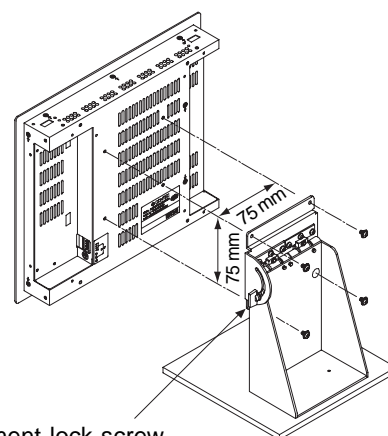
For details of the stand, visit the CONTEC web site.

Europe: <http://www.contec-europe.com>

China: <http://www.contec.sh.cn>

#### REQUIREMENT

- Check that the installation dimensions on the rear of the Touch Screen Controller match the installation dimensions on the CONTEC stand.
- Use the screws supplied with the stand to install the controller.



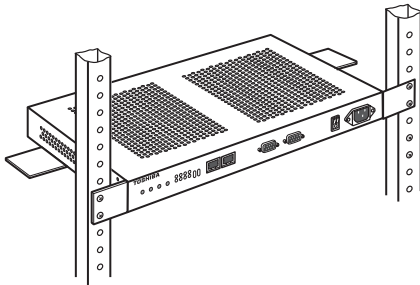
Angle adjustment lock screw.  
(Loosen the screw and adjust angle.)

## Intelligent Server Installation Method and Orientation

There are four ways to install the Intelligent Server as shown below: (1) rack mount (2) surface mount (3) wall mount A, and (4) wall mount B. The rack mount installation requires a support bracket for a 19-inch rack. Please contact distributor if you need the support bracket. Use the four bottom screw holes for the wall mount installation.

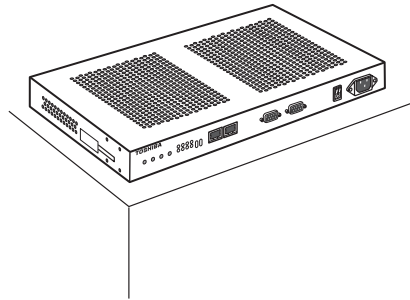
### (1) Rack mount

A support bracket is required to be fixed to the bottom (rear side) of the unit.



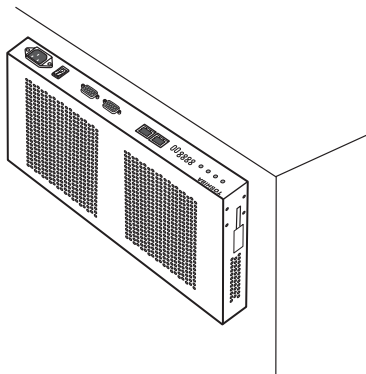
### (2) Surface mount

Standard installation



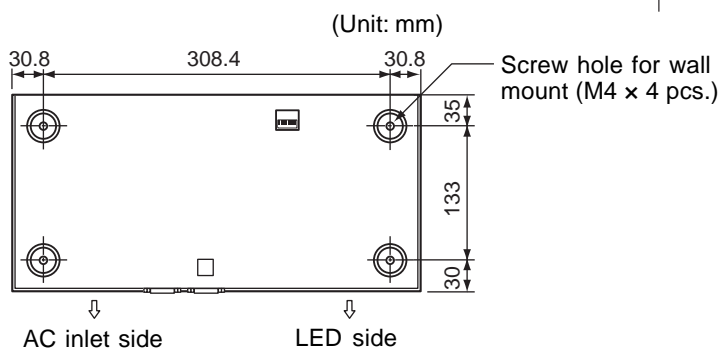
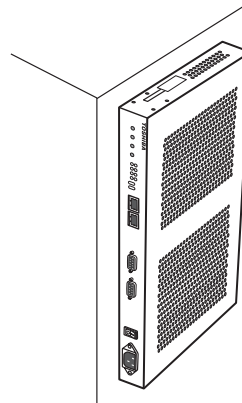
### (3) Wall mount -A

Wall mount with the front side upwards



### (4) Wall mount -B

Wall mount with the left side upwards



## REQUIREMENT

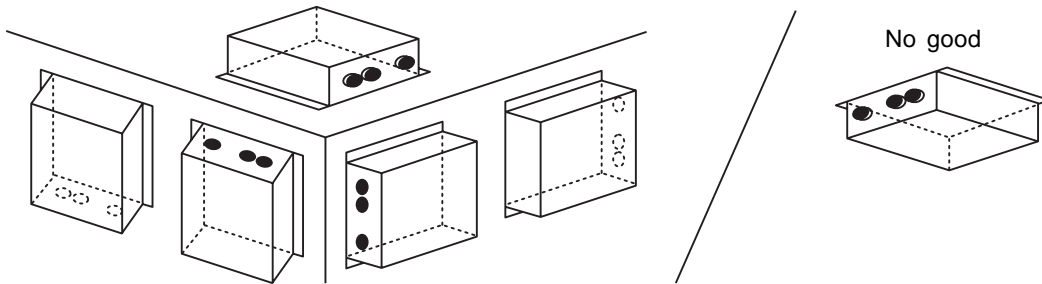
**Do not install the unit in any of the following places.**

- Humid or wet place
- Dusty place
- Place exposed to direct sunlight
- Place where there is a TV set or radio within one meter
- Place exposed to rain (outdoors, under eaves, etc.)

## TCS-NET Relay Interface

### ■ Installation Method and Orientation

There are five installation methods for this relay interface as shown below: surface mount and wall mount. Use the supplied screws.



#### REQUIREMENT

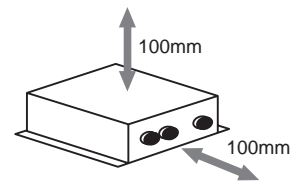
**Do not install the unit in any of the following places.**

- Humid or wet place
- Dusty place
- Place exposed to direct sunlight
- Place where there is a TV set or radio within one meter
- Place exposed to rain (outdoors, under eaves, etc.)

### ■ Installation Space and Maintenance Space

Ensure a minimum space of 100mm is left at the side and top of the device for connecting cables to enter the cable inlets and maintenance of the device. As shown in the figure.

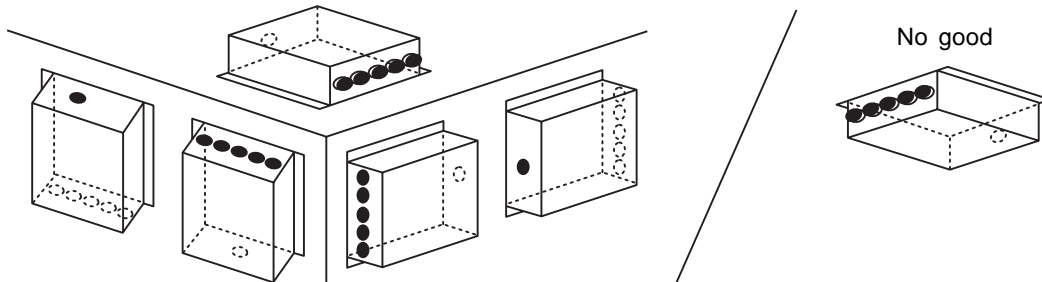
The other sides can be directly adjacent to surrounding objects.



## Energy monitoring Relay I/F • Digital I/O Relay I/F

### ■ Installation Method and Orientation

There are five installation methods for this relay interface as shown below: surface mount and wall mounts. Use the supplied screws.



#### REQUIREMENT

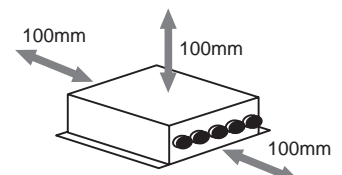
**Do not install the unit in any of the following places.**

- Humid or wet place
- Dusty place
- Place exposed to direct sunlight
- Place where there is a TV set or radio within one meter
- Place exposed to rain (outdoors, under eaves, etc.)

### ■ Installation Space and Maintenance Space

Ensure a minimum space of 100mm is left at the two sides and top of the device for connecting cables to enter the cable inlets and maintenance of the device. As shown in the figure.

The other sides can be adjacent to surrounding objects.



### 3-4-3 Device specifications

#### Touch Screen Controller

Device, model	Item	Specification
Touch Screen Controller  BMS-TP0640ACE BMS-TP5120ACE BMS-TP0640PWE BMS-TP5120PWE	Power supply	100 - 240 V, AC 50/60 Hz
	Power consumption	50 VA
	External dimensions	316 (W) x 256 (H) x 54 (D) mm
	Weight	3.5 kg
	Ambient temperature	0 to 40 °C
	Ambient humidity	20 to 85%RH

#### Intelligent Server

Device, model	Item	Specification
Intelligent Server  BMS-LSV2E	Power supply	85 - 132 V, 180 - 264 V, AC 50/60 Hz
	Power consumption	30 VA
	External dimensions	370 (W) x 42 (H) x 198 (D) mm
	Weight	2.5 kg
	Ambient temperature	0 to 40 °C
	Ambient humidity	10 to 90%RH

#### Relay Interface

Device, model	Item	Specification
TCS-NET Relay Interface  BMS-IFLSV1E	Power supply	220 - 240 V, AC 50/60 Hz
	Power consumption	2.4 W
	External dimensions	170 (W) x 66 (H) x 200 (D) mm
	Weight	1 kg
	Ambient temperature	0 to 40 °C
	Ambient humidity	10 to 90%RH (no condensation)
	Chassis material	Galvanized sheet metal 0.8t (no coating)

#### Energy Monitoring Interface

Device, model	Item	Specification
Energy monitoring Relay Interface  BMS-IFWH3E	Power supply	220 - 240 V, AC 50/60 Hz
	Power consumption	2.8 W (Energy monitoring)
	External dimensions	193 (W) x 66 (H) x 246 (D) mm
	Weight	1.65 kg
	Ambient temperature	0 to 40 °C
	Ambient humidity	10 to 90%RH
	Chassis material	Galvanized sheet metal 0.8t

#### Digital I/O Interface

Device, model	Item	Specification
Digital I/O Relay Interface  BMS-IFDD01E	Power supply	220 - 240 V, AC 50/60 Hz
	Power consumption	6.5 W
	External dimensions	193 (W) x 66 (H) x 246 (D) mm
	Weight	1.65 kg
	Ambient temperature	0 to 40 °C
	Ambient humidity	10 to 90%RH
	Chassis material	Galvanized sheet metal 0.8t (no coating)

## 3-5 Wiring

### 3-5-1 Wiring specifications

#### Power supply specifications

Device	Input voltage	Power consumption	Power cable wire size	Remarks
Touch Screen Controller	100 - 240 V, AC 50/60 Hz	50 VA	0.75 mm <sup>2</sup>	Procure on site
Intelligent Server	85 - 132 V, AC 50/60 Hz 180 - 264 V, AC 50/60 Hz	30 VA		
TCS-NET Relay Interface	220 - 240 V, AC 50/60 Hz	2.4 W		
Energy Monitoring Relay Interface		2.8 W		
Digital I/O Relay Interface		6.5 W		

#### Communication wiring specifications

Inter-device connection	Control wiring specifications	Number of cores	Diameter (mm <sup>2</sup> )	Length (m)	Polarity	Remarks
Intelligent Server ↔ TCS-NET Relay Interface	D-sub (9-pin) wire *1	4		Max. 500	With polarity	Supplied with Intelligent Server software
	(If length is short) Use a shield wire	2	1.25mm <sup>2</sup>			Procure on site
Intelligent Server ↔ Energy Monitoring Relay Interface	Shield wire	2	1.25mm <sup>2</sup>	Max. 500	With polarity	Procure on site
Intelligent Server ↔ Digital I/O Relay Interface	Shield wire	2	1.25mm <sup>2</sup>	Max. 500	With polarity	Procure on site
TCS-NET Relay Interface ↔ Air conditioner	Shield wire	2	1.25mm <sup>2</sup>	Max.1000*2	No polarity	Procure on site
	Shield wire	2	2.0mm <sup>2</sup>	Max.2000*2	No polarity	Procure on site
Energy Monitoring Relay Interface ↔ Power Meter		2	0.3mm <sup>2</sup>	Max. 100	No polarity	Procure on site
Digital I/O Relay Interface ↔ Digital Input/Output		2	0.3mm <sup>2</sup>	Max. 100	With polarity	Procure on site

\*1: Use the D-sub (9 pin) wire supplied with the Intelligent Server software. If the length is too short, use a shielded wire.

\*2: Total length per TCS-NET Relay Interface

#### Ethernet wire specifications

##### When Switching HUB is not used

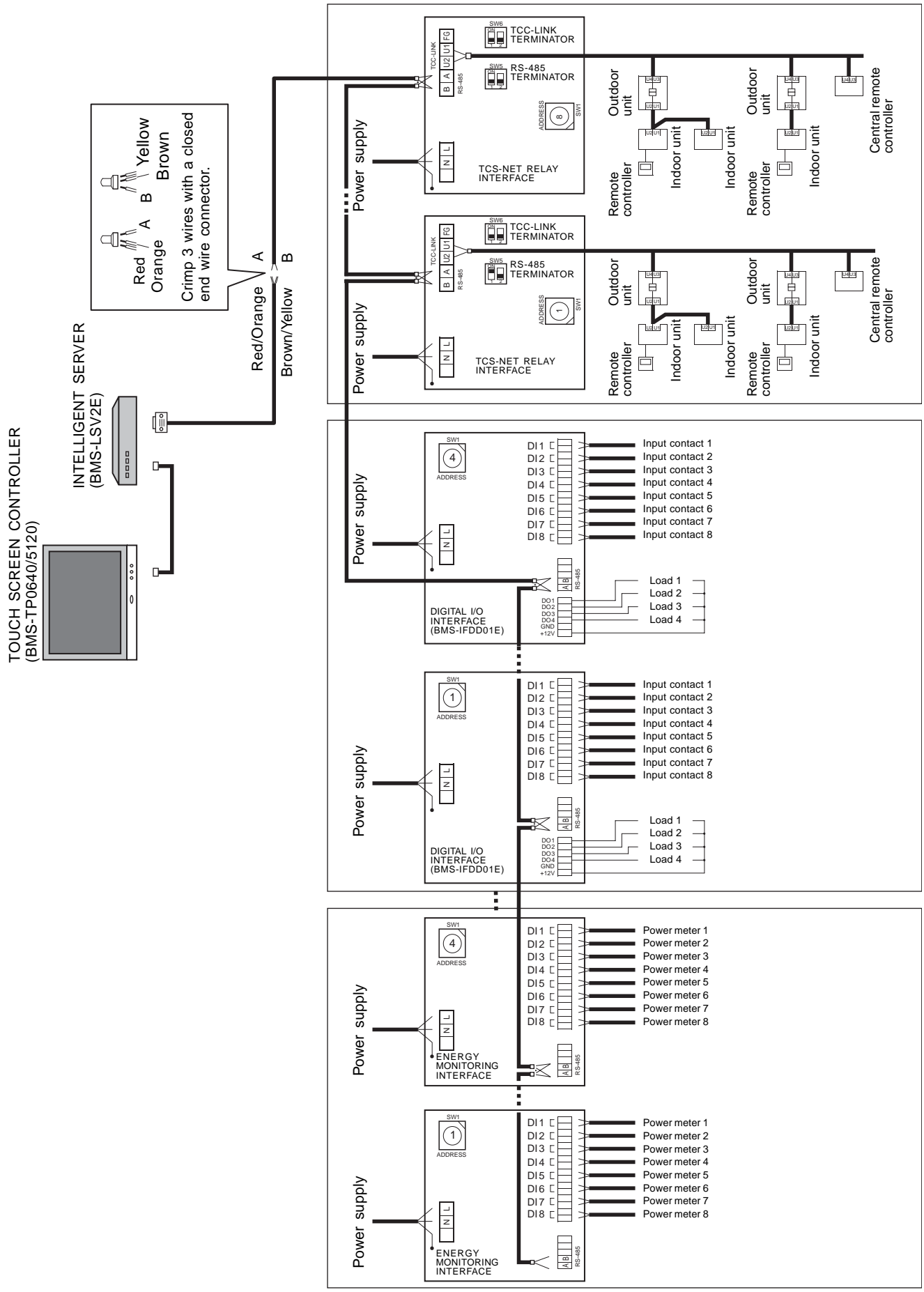
Inter-device connection	Control wiring specifications	Number of cores	Diameter (mm <sup>2</sup> )	Length (m)	Polarity	Remarks
Touch Screen Controller ↔ Intelligent Server	Ethernet (cross) Category 5 UTP cross wire	8	–	Max. 100	–	Procure on site

##### When Switching HUB is used

Inter-device connection	Control wiring specifications	Number of cores	Diameter (mm <sup>2</sup> )	Length (m)	Polarity	Remarks
Touch Screen Controller ↔ Switching HUB	Ethernet (straight) Category 5 UTP straight wire	8	–	Max. 100	–	Procure on site
Switching HUB ↔ Intelligent Server	Ethernet (straight) Category 5 UTP straight wire	8	–	Max. 100	–	Procure on site

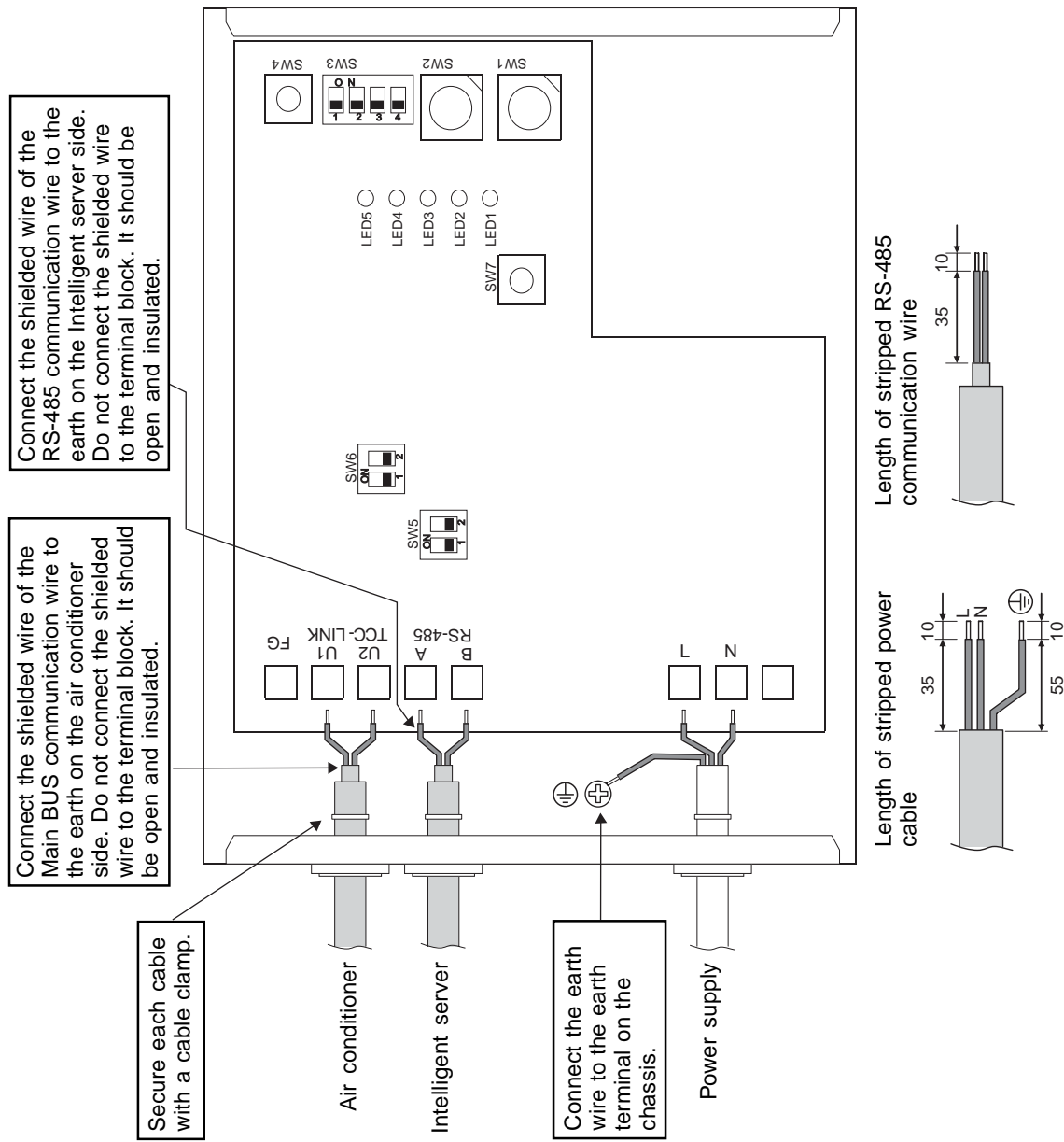
TOUCH SCREEN CONTROLLER CONNECTION DIAGRAM

3-5-2 Wiring diagram



## Connections (TCS-NET RELAY INTERFACE (BMS-IFLSV1E))

Connect power cables earth wires and signal cables to the specified terminals on the terminal block.



### CAUTION

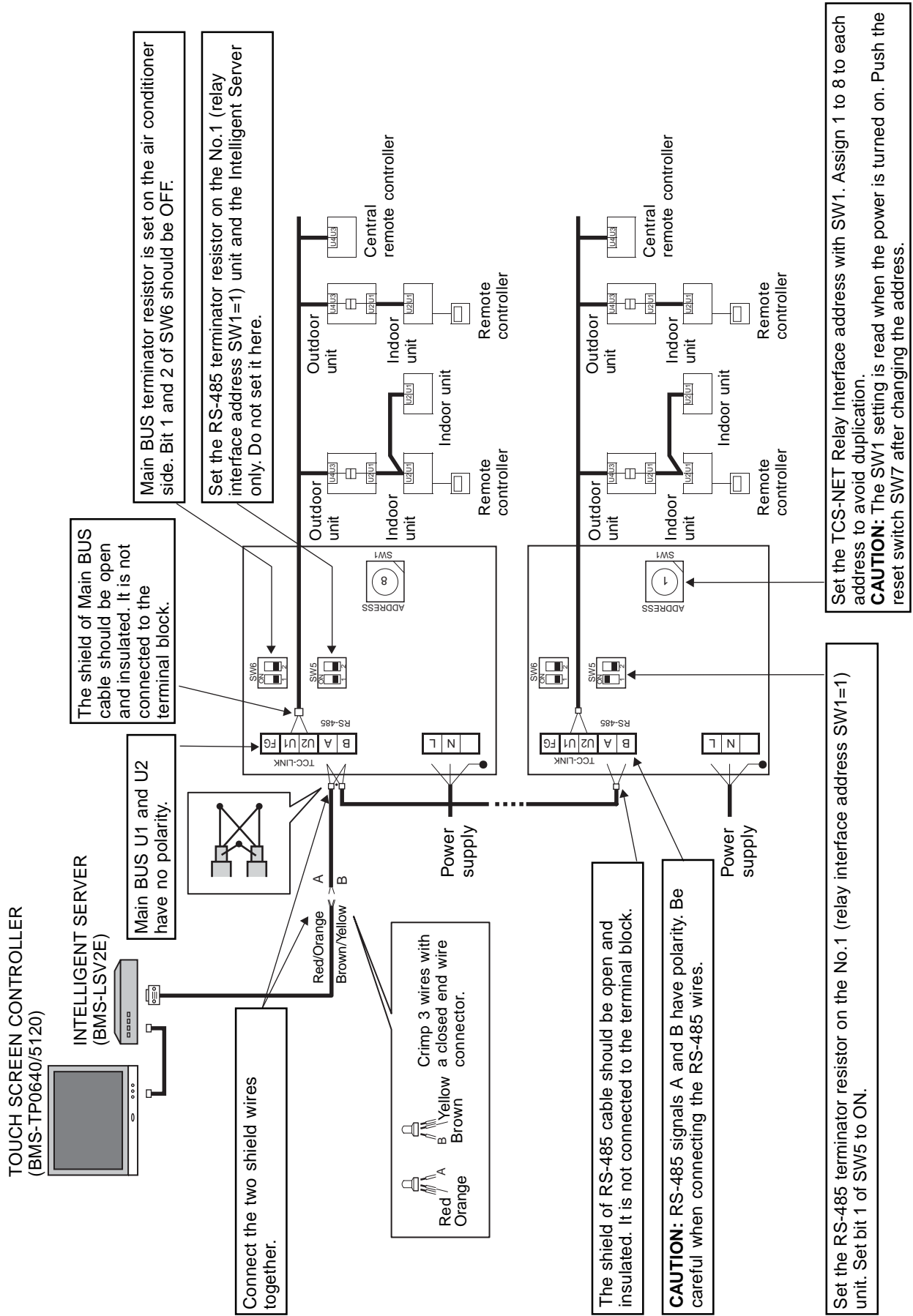
- The RS-485 signal lines have polarity. Connect A to A, and B to B. If connected with incorrect polarity, the unit will not work.
- The Main BUS signal lines have no polarity.

### REQUIREMENT

Install a breaker at the primary side of the power supply.

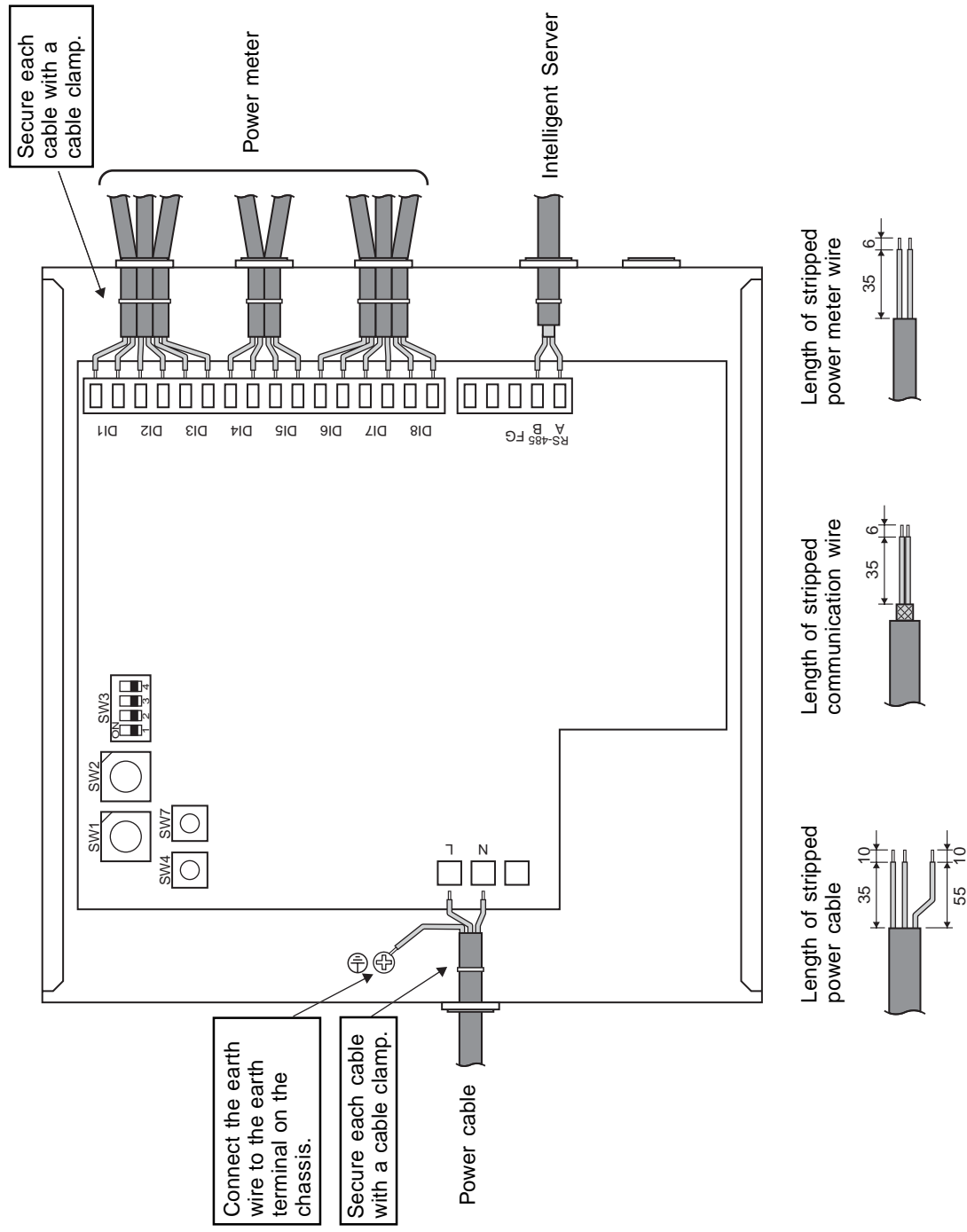


# Connection diagram (TCS-NET RELAY INTERFACE (BMS-IFLSV1E))

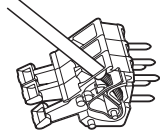


## Connections (ENERGY MONITORING RELAY INTERFACE (BMS-IFWH3E))

Connect power cables, earth wires, and signal wires to the specified terminals on the terminal block.



Insert the wire by pushing the lever with a screwdriver. Check that the wire is inserted securely.



When inserting two RS-485 communication wires into a single terminal for connection to another interface, crimp them using the supplied pin terminal.



### CAUTION

The RS-485 signal wire has polarity. Connect A to A, and B to B. If connected with incorrect polarity, the unit will not work.

### REQUIREMENT

Install a breaker on the primary side of the power supply.

## Wiring Connection

The following describes the wiring connections of the Energy Monitoring Relay Interface when it is used in the air conditioner control system.

- **Terminator resistor setting**

Set the RS-485 terminator resistor on the TCS-NET Relay Interface.  
Do not set it by the Energy Monitoring Relay Interface.

- **Shield earthing**

The shield earth of the RS-485 signal wires should be single-point earth. Earth the wires on the Intelligent server side.

Other shield lines should be closed and the terminal end should be open and insulated.

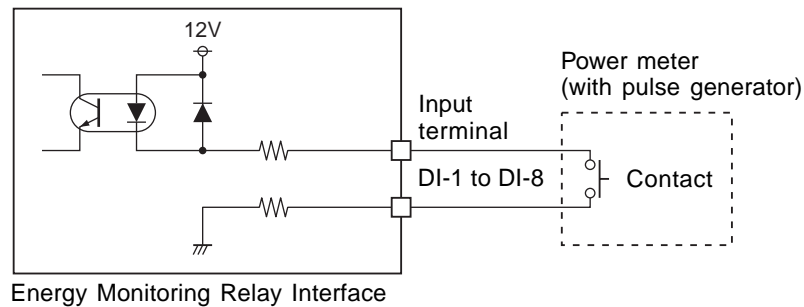
- **Connection of power meter**

Use a power meter with a pulse generator.

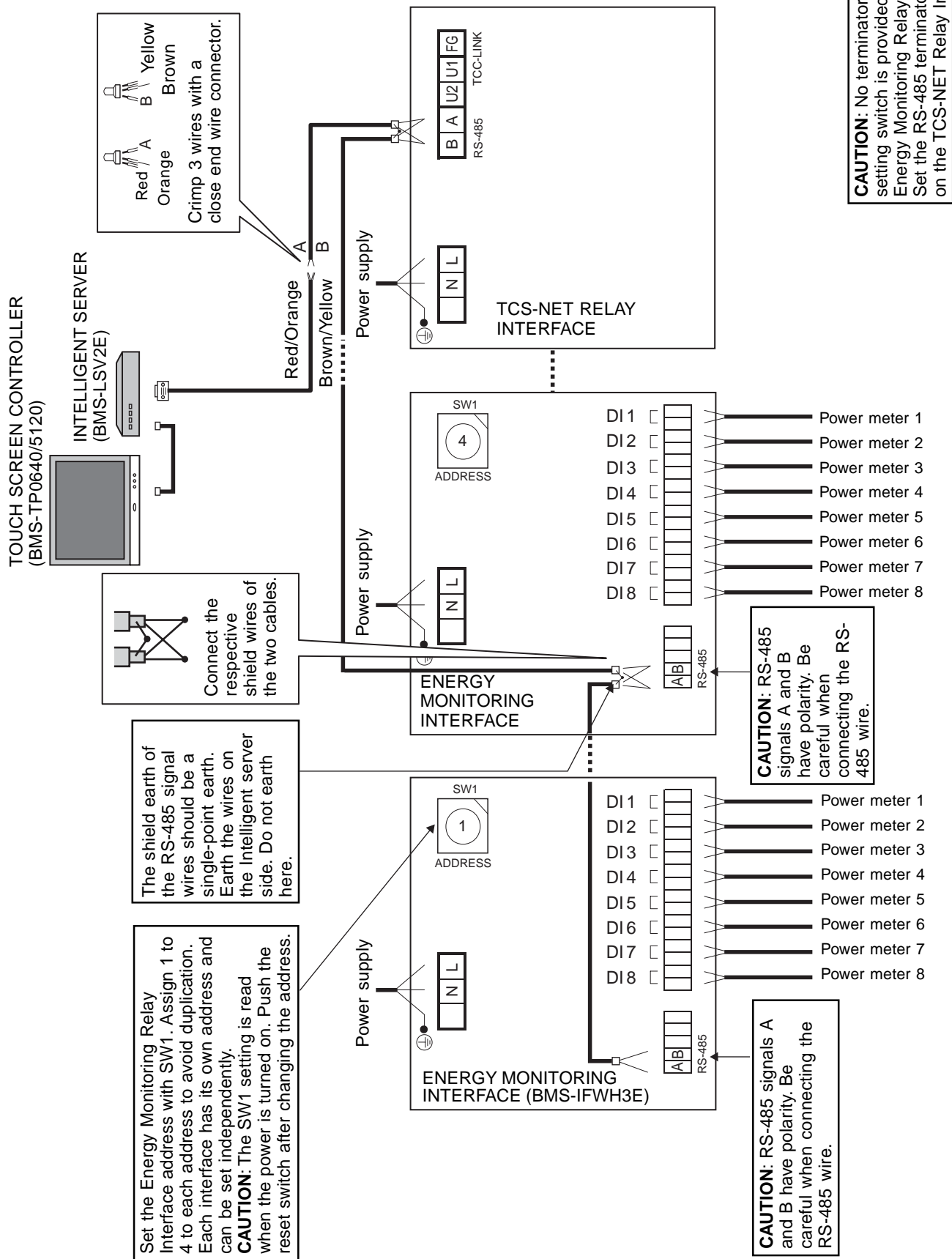
Connect the non-voltage contact output of the power meter to the Energy Monitoring Relay Interface.

An external input circuit is shown below.

Input signal is electrically isolated by a photo-coupler.

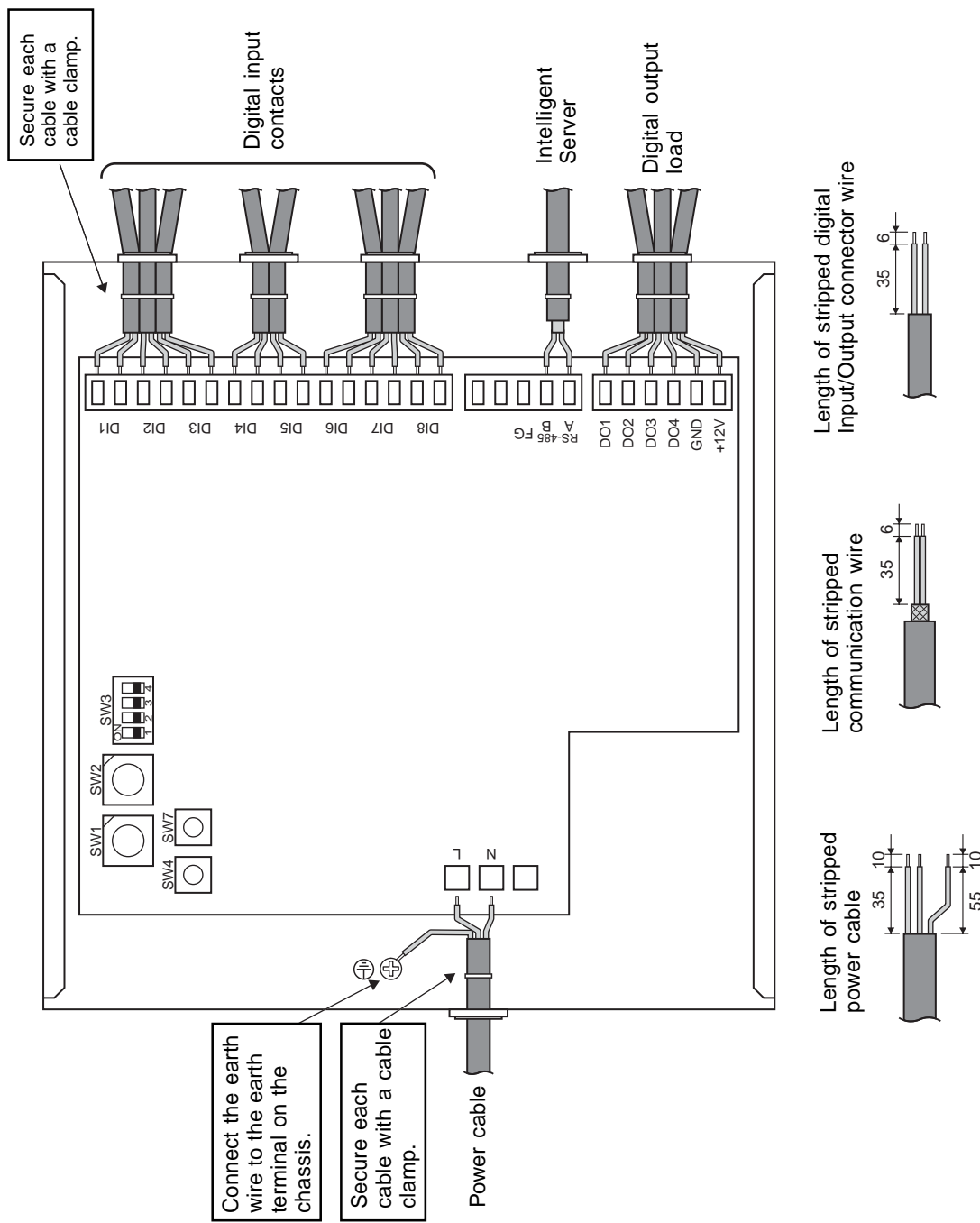


## Connection diagram (ENERGY MONITORING RELAY INTERFACE (BMS-IFWH3E))

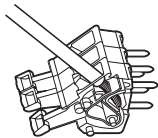


## Connections (DIGITAL I/O RELAY INTERFACE (BMS-IFDD01E))

Connect power cables, earth wires, and signal wires to the specified terminals on the terminal block.



Insert the wire by pushing the lever with a screwdriver. Check that the wire is inserted securely.



When inserting two RS-485 communication cables into a single terminal for connection to another interface, crimp them using the attached pin terminal.



### CAUTION

The RS-485 signal wire has polarity. Connect A to A, and B to B. If connected with incorrect polarity, the unit will not work.

### REQUIREMENT

Install a breaker at the primary side of the power supply.

## Wiring Connection

### ⚠ CAUTION

If an inductive load (relay coil) or a bulb is connected, a voltage surge or rush of current will be generated. Take adequate measures against these scenarios.

The following describes wiring connections of the Digital I/O Relay Interface when it is used in the air conditioner control system.

#### • Terminator resistor setting

Set the RS-485 terminator resistor on the TCS-NET Relay Interface.  
Do not set it by the Digital I/O Relay Interface.

#### • Shield earthing

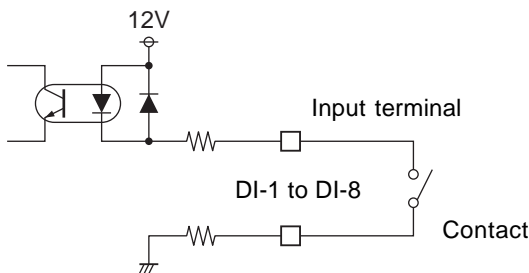
The shield earth of the RS-485 signal wires should be a single-point earth. Earth the wires on the Intelligent Server.

Other shield lines should be closed and the terminal end should be open and insulated.

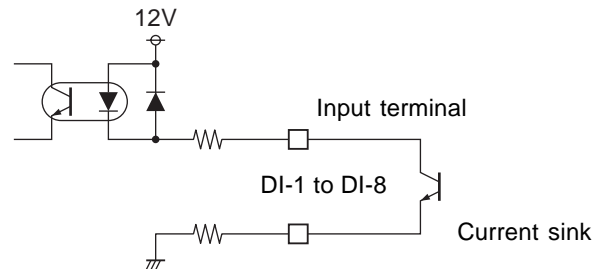
#### • Connection of external digital inputs

Input circuit examples are shown below (electrically isolated using a photo-coupler).

(1) Example of contact input connection



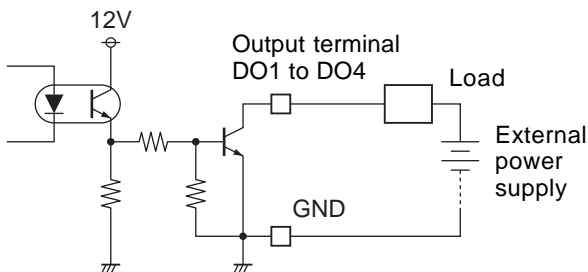
(2) Example of current sink connection



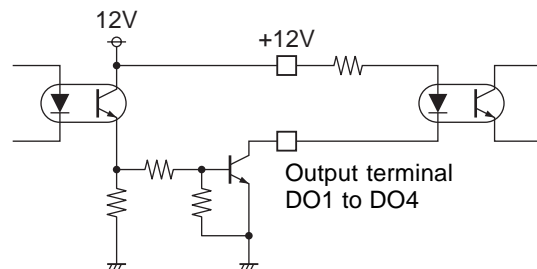
#### • Connection of external digital outputs

Output circuit examples are shown below (open collector output electrically isolated using a photo-coupler).

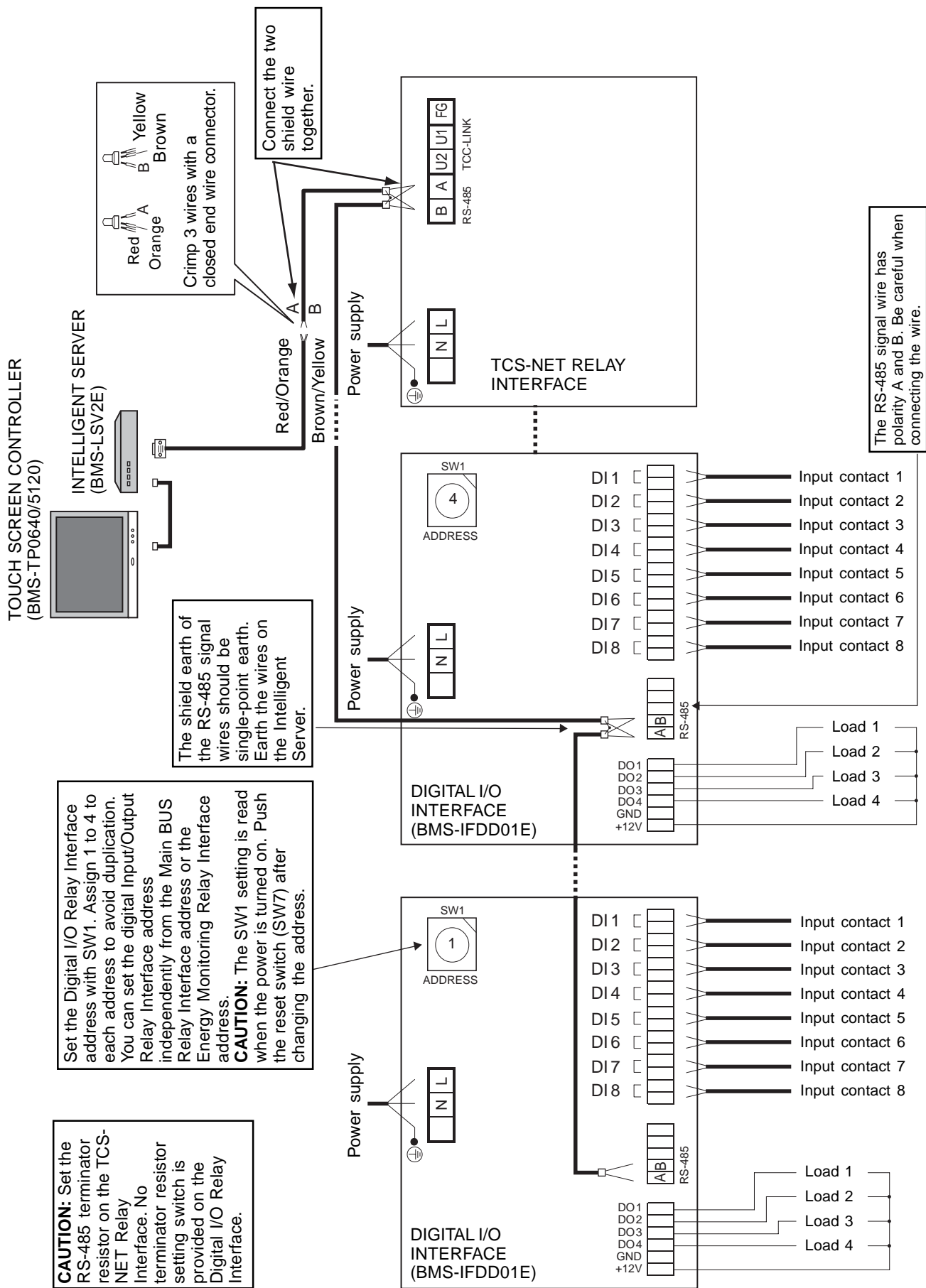
(1) Example of load connection



(2) Example of load connection



**Connection diagram (DIGITAL I/O RELAY INTERFACE (BMS-IFDD01E))**



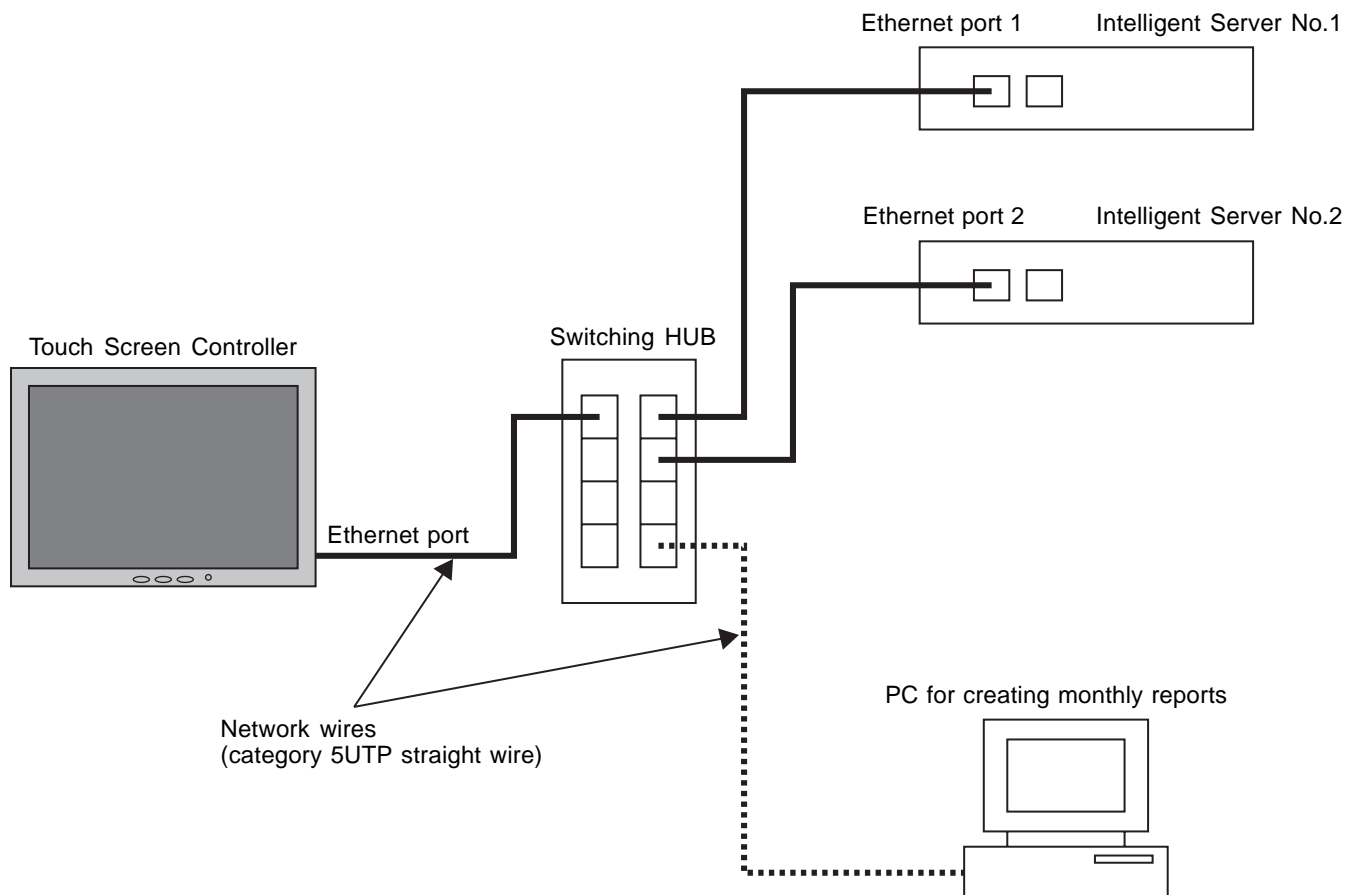
## 3-6 Network connection

### Connecting the Network Wires

Connect the Touch Screen Controller to the Intelligent Servers and to an optional PC for creating monthly reports using network wires (category 5UTP straight wire), via a Switching HUB (procured on site).

- Connect the Ethernet port of the controller to a port of the HUB with a network wire.
- Connect the Ethernet port 1 on the Intelligent Server to a port on the HUB with a network wire.
- Connect the PC's Ethernet port to a port on the HUB with a network wire. (Not required if there is no requirement to create reports.)

### Ethernet





## 3-7 Control system configuration

To connect the touch screen controller, intelligent server, and PC for energy monitoring and billing via switching HUB, setting of IP addresses on all devices is necessary.

Device	IP address
Touch screen controller:	192.168.2.69 (default address) 192.168.2.70 • •
Intelligent server:	192.168.2.100 (default address) 192.168.2.101 • •
PC for energy monitoring and billing:	192.168.2.** (**: Set number except from 69 to 149)



# 4

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## ADDRESS SETTING

### 4-1 Address setting flow

### 4-2 Definition of address

### 4-3 Address setting for air conditioner

#### 4-3-1 Setting for VRF system

- (1) Check at main Power-ON
- (2) Manual setting from wired remote controller
- (3) Line (system) address setting
- (4) Power reset
- (5) Indoor unit address check
- (6) Trial operation
- (7) Setup of relay connector and terminator
- (8) Central control address setting
- (9) Trial operation for central controller (TCB-SC642TLE2)
- (10) Automatic address setting (for reference)
- (11) Clearance of address
- (12) Confirmation of indoor unit address and position by using the remote controller
- (13) Address change from remote controller
- (14) In case of increase the address-undefined indoor units (Extension, etc.)
- (15) Address setup example (VRF system)

#### 4-3-2 Setting for 1 to 1 system

- (1) Address re-setup
- (2) Indoor address change example

### 4-4 Address setting for control system devices

#### 4-4-1 Address setting flow

#### 4-4-2 Setting for Intelligent Server

#### 4-4-3 Setting for TCS-Net relay interface

#### 4-4-4 Setting for Energy monitoring relay interface

#### 4-4-5 Setting for Digital I/O relay interface

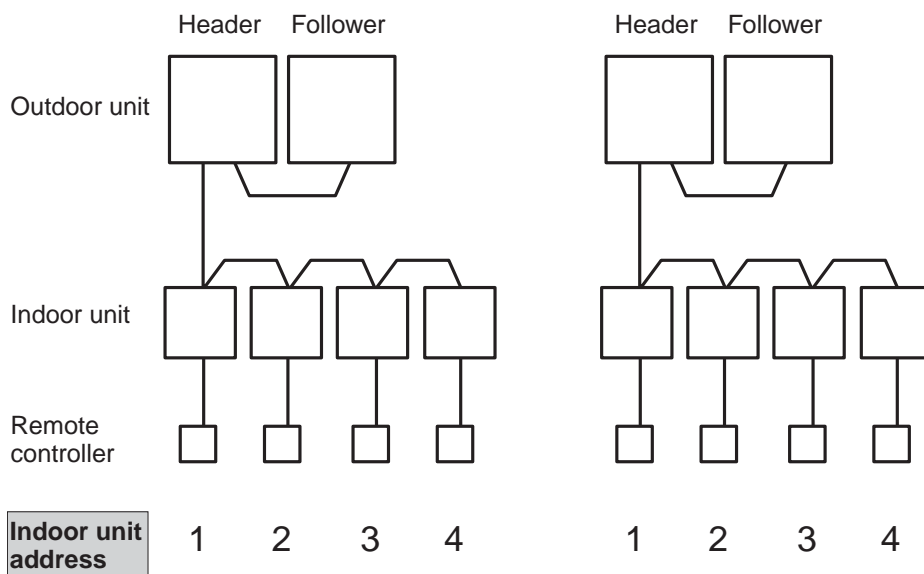
## 4-1 Address setting flow

Setting flow	Contents	Reference No.
Power ON	Indoor units/Outdoor units	4-3-1 (1)
Manual address setting	Setting from main wired remote controller (Line/Group/Indoor address setting)	4-3-1 (2)
Line address setting	Dip Switch setting on outdoor interface P.C. board	4-3-1 (3)
Power reset	Power reset to activate line address	4-3-1 (4)
Indoor unit address check	7 segment display on outdoor interface P.C. board check line/indoor address on remote controller	4-3-1 (5)
Trial operation (Refrigerant system)	Test operation in each refrigerant system one by one	4-3-1 (6)
Setup of relay connector and SW30-2	Central control wiring and terminator setting	4-3-1 (7)
Central controller exist ?		
Central control device setting	Local central remote controller setting (Central remote controller, ON/OFF controller, etc)	4-3-1 (8)
Trial operation (Central control device)	Test for local central control device	4-3-1 (9)
TCS-NET control system address setting Local server TCS-NET relay I/F Energy monitoring relay I/F Digital I/O relay I/F	Switch setting CF (Compact Flash) card mounting	4-4
Trial operation for Touch panel controller	Operation from touch screen controller	Chapter. 5

## 4-2 Definition of address

### Indoor unit address

- “Indoor unit address” is to enable the outdoor unit to recognize an individual indoor unit.  
This indoor unit address is allocated to every indoor unit one by one, for each refrigerant system.  
(At shipment=99, Address unset)



### Group address

- “Group address” is the address that recognizes group control and determines the header indoor unit and follower indoor unit.

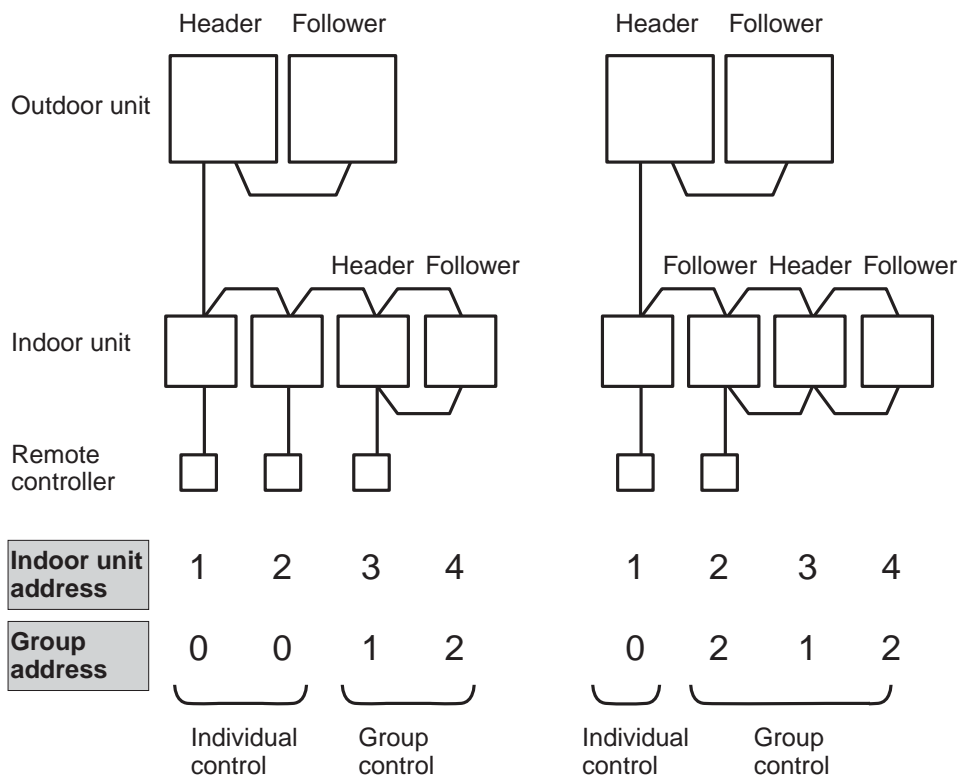
Group address and header indoor unit is determined automatically when automatic address setting is performed.

(The indoor unit that becomes the header unit is indefinite, when automatic address setting is performed.)

Indoor unit on individual control : Group address = 0 (At shipment=99, Address unset)

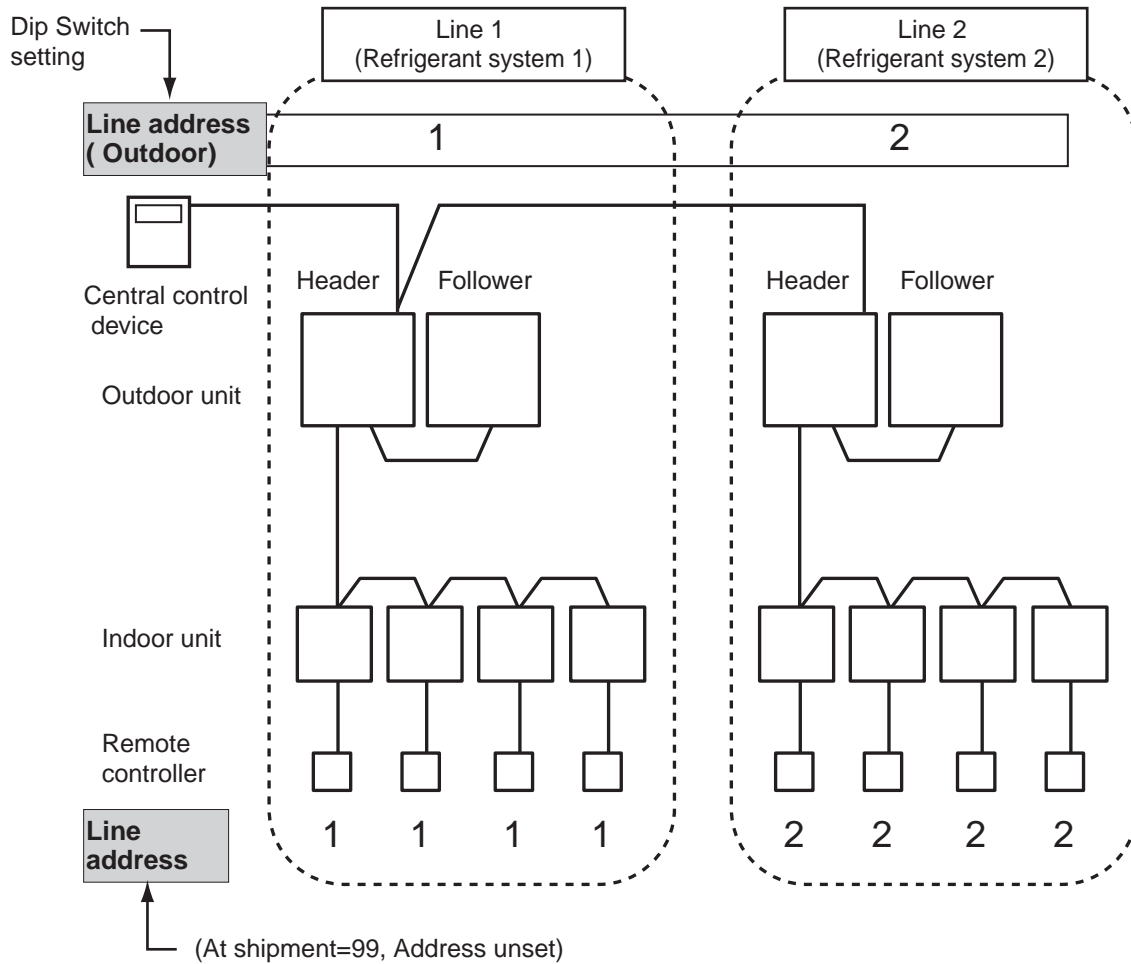
Header indoor unit in group control : Group address = 1

Follower indoor unit in group control : Group address = 2



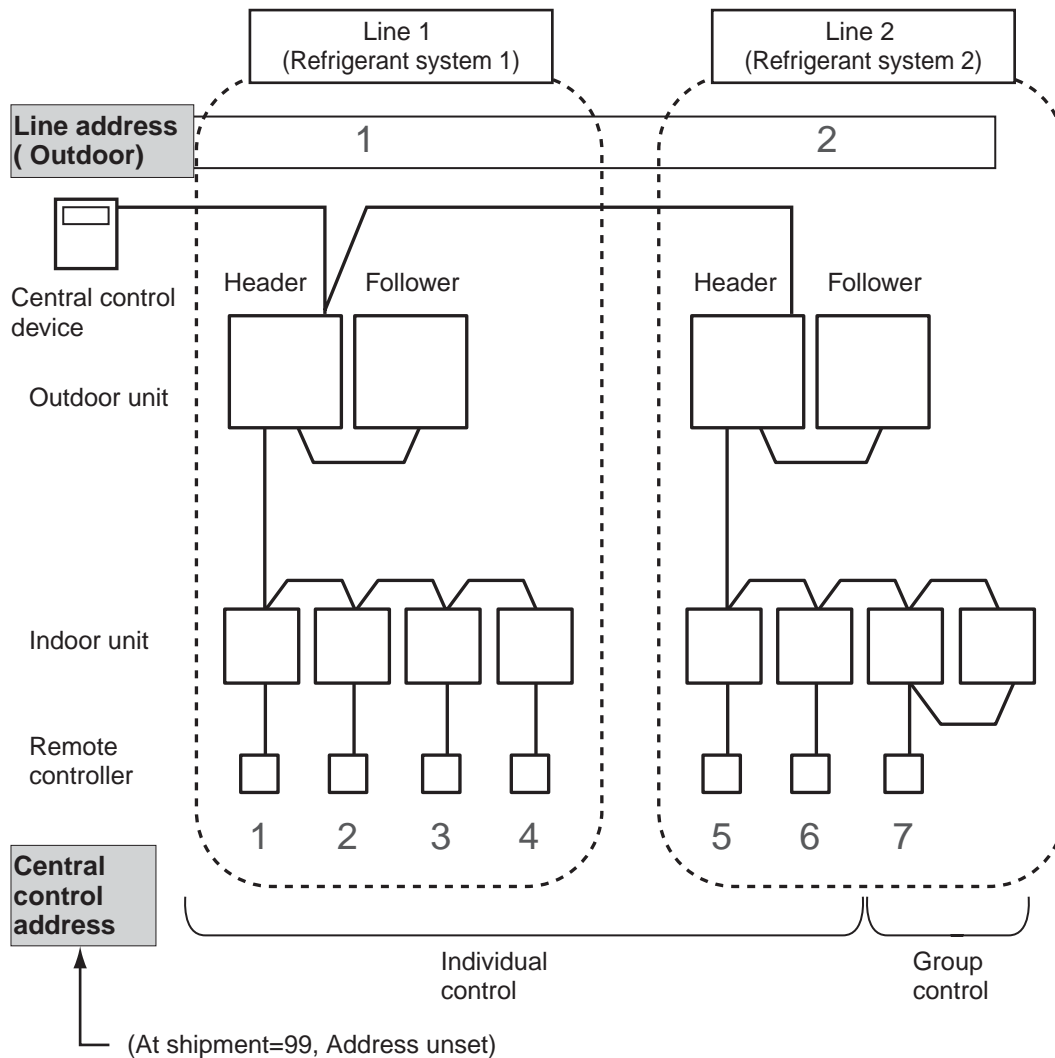
## Line address (System address)

- “Line address” is the address in which a line (refrigerant system) of indoor units are connected.  
This line address is set by Dip switch setting on the interface P.C. board of the header outdoor unit.



## Central control address

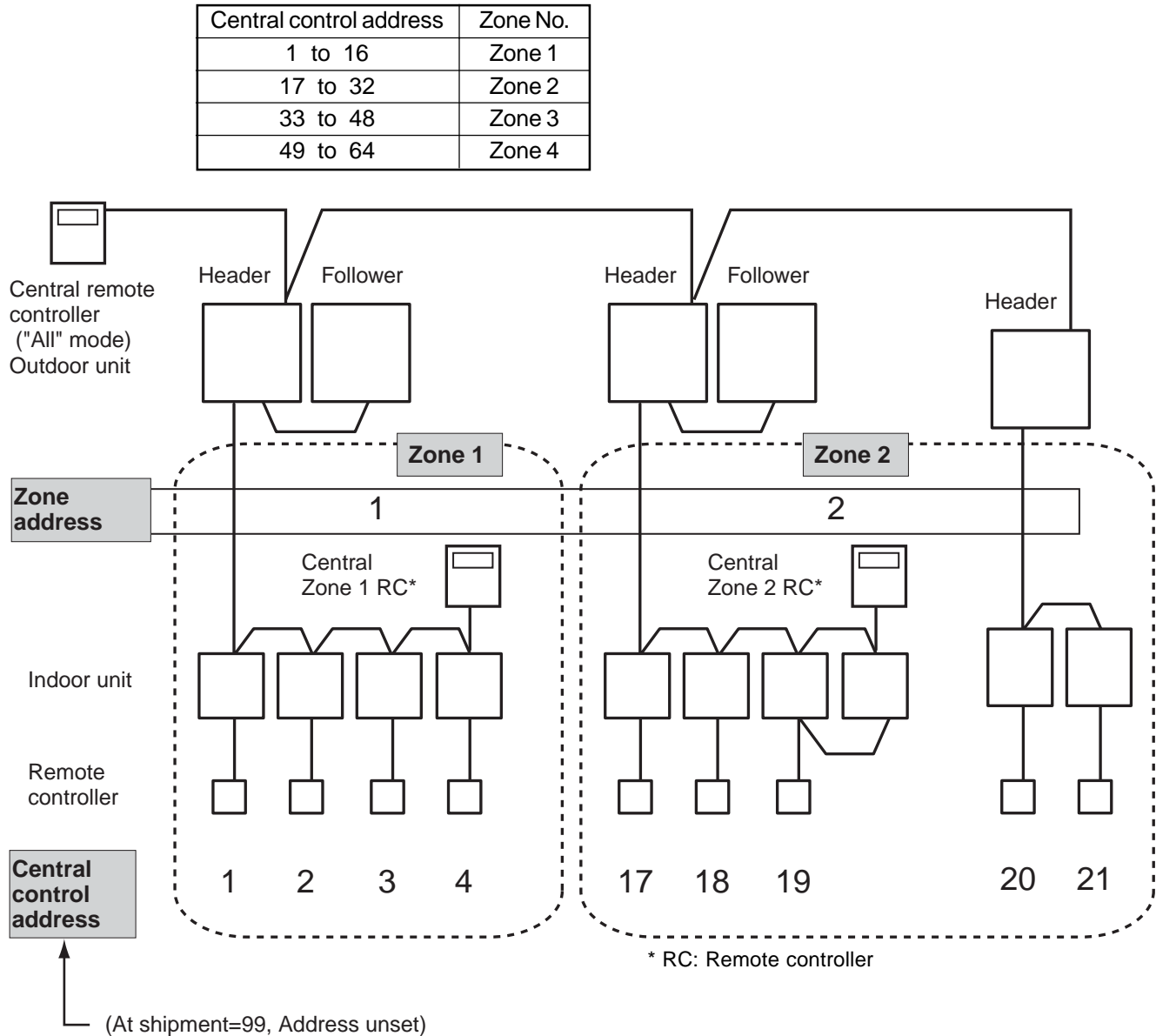
- “Central control address” is to enable central control devices to recognize each indoor unit.  
This address can be set from the central control devices automatically or manually.  
In case of group control on a VRF system, one central control address is allocated to each indoor unit in a group control.



## Zone address (Zone No.)

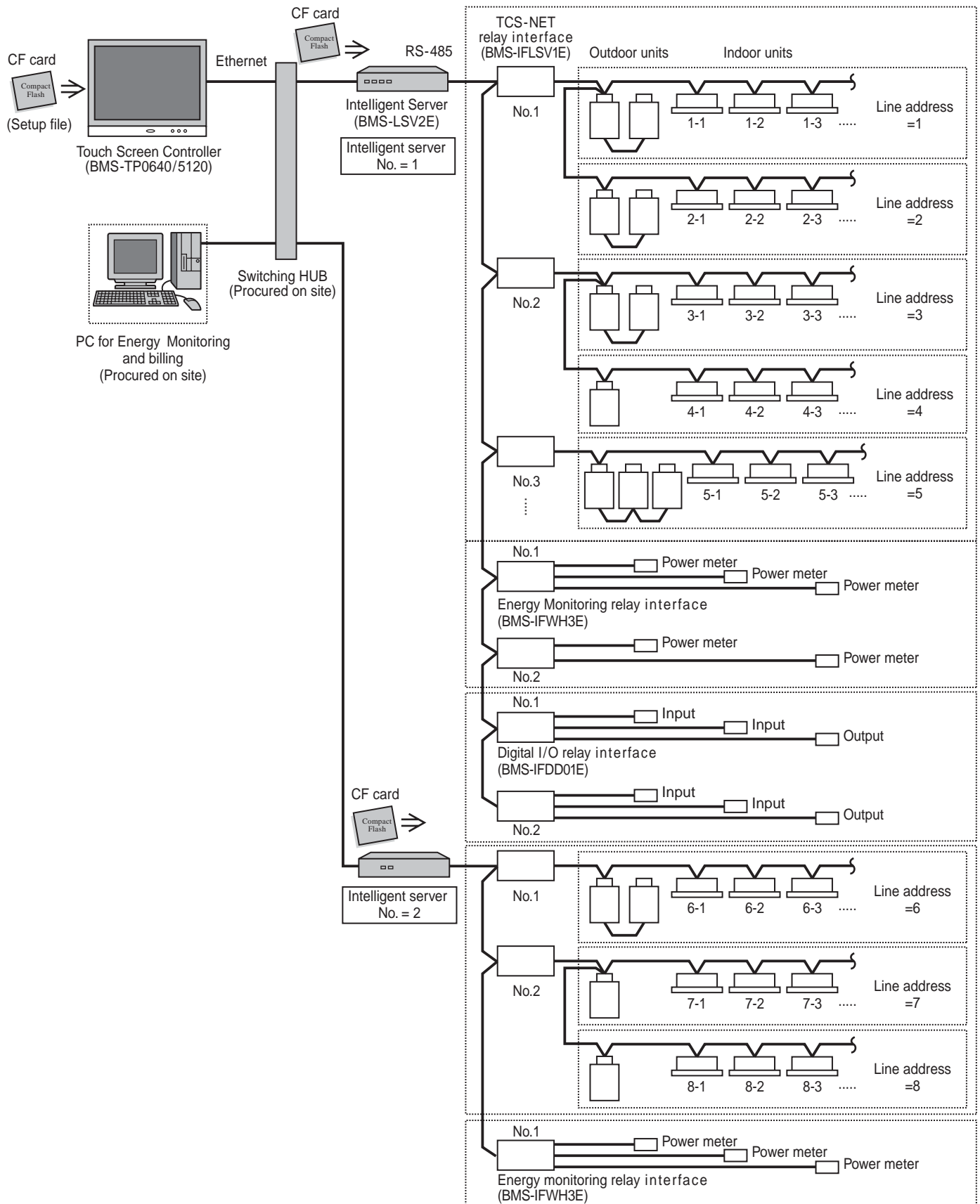
- “Zone address” is to be set when a central remote controller is used for each zone.  
Zone address is set by a switch setting on the central remote controller.

Central remote controller can divide all indoor units into a maximum of 4 zones.  
The zone to which the indoor unit belongs is determined by the central control address.





## TCS-NET control system address



TCS-NET control system address	Number	Setting method
TCS-NET relay interface No.	1 to 8	Set by SW1 on P.C. board.
Energy monitoring relay interface No.	1 to 4	Set by SW1 on P.C. board.
Digital I/O relay interface No.	1 to 4	Set by SW1 on P.C. board.
Intelligent server No.	1 to 4	Set based on the setup data on the CF card of the touch panel controller.

## 4-3 Address setting for air conditioner

### 4-3-1 Setting for VRF system

In this air conditioner, it is required to set up addresses on the indoor units before starting operation. Set up the addresses according to the following setup procedure.

#### CAUTION

1. Set up address after wiring work.
2. Be sure to turn on the power in order of indoor unit → outdoor unit. If turning on the power in a reverse order, a check code [E19] (Error of No. of header units) is output.  
When a check code is output, turn the power on again.
3. To set up an address, it is unnecessary to operate the air conditioner.
4. Manual address setting is recommended for TCS-NET control system.  
Manual address: Setup from the wired remote controller.  
\* It is temporarily necessary to set the indoor unit and wire 1 by 1.  
(In group operation and when remote controller is not connected.)
5. Automatic address setup is also possible.  
Automatic address: Setup from SW15 on the interface P.C. board of the header unit  
It requires a maximum of 10 minutes (Usually, approx. 5 minutes) to set up automatically an address to 1 refrigerant line.
6. To set up an address automatically, setup at the outdoor unit is necessary.  
(Address setup cannot be performed by power-ON only.)

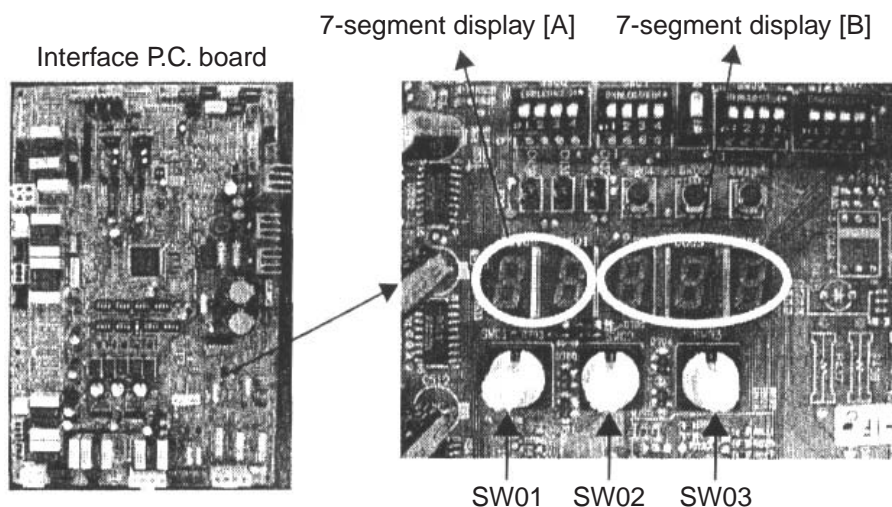
### 4-3-1 (1) Check at main power-ON

After turning on the main power of the indoor units and outdoor units in the refrigerant system. Prior to starting test operation, check the following items in each outdoor and indoor unit.

**(After turning on the main power, be sure to check in order of indoor unit → outdoor unit.)**

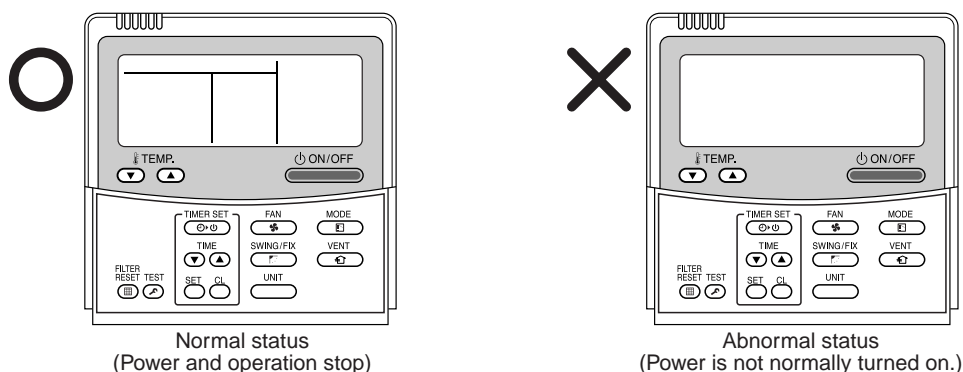
#### Check on outdoor unit

1. Check that all the rotary switches, SW01, SW02 and SW03 on the interface P.C. board of the header outdoor unit are set to "1".
2. If an error code is displayed on 7-segment [B], remove the cause of the fault .
3. **Check that [L08] is displayed on the 7-segment display [B]** on the interface P.C. board of the header outdoor unit. (L08: Indoor address unset up)  
(If the address setup operation has already been finished during service time, etc, the above check code is not displayed and only [U1] is displayed on the 7-segment display [A].)



#### Check on indoor unit

1. Display check on remote controller (In case of wired remote controller)  
Check that a frame as shown in the following below figure is displayed on the LCD section of the remote controller.



If a frame is not displayed as shown in the above right figure, there is normally no power to the remote controller. Therefore check the following items.

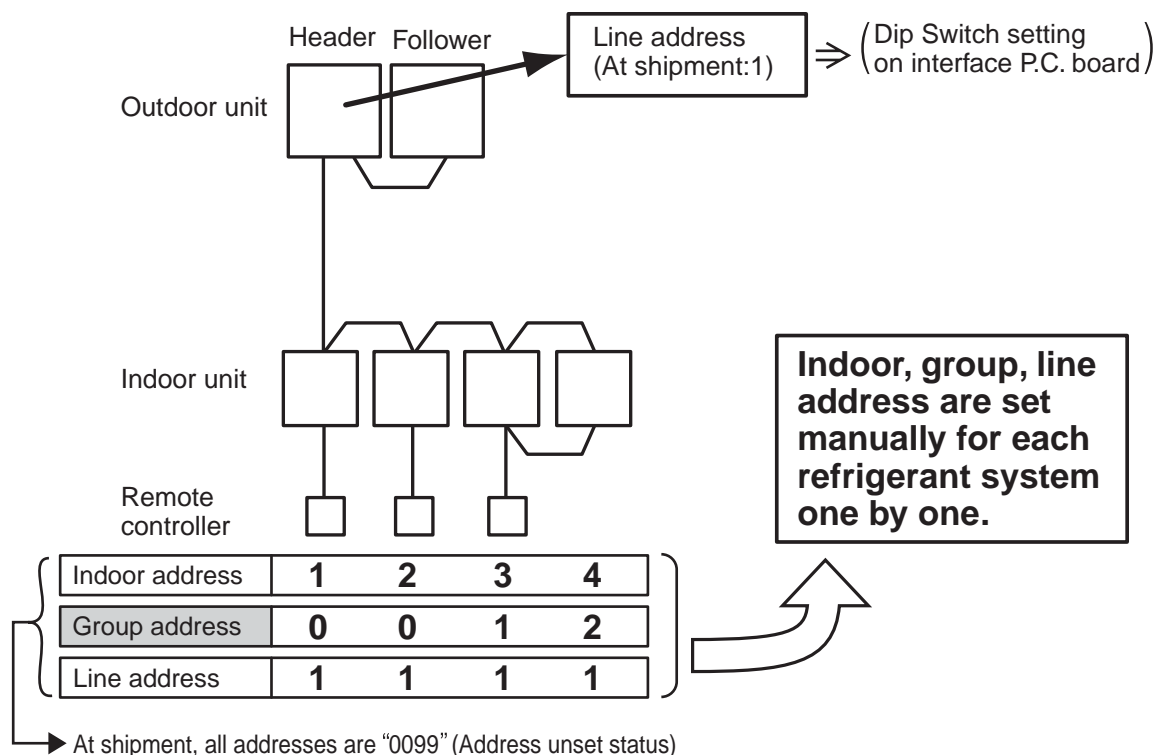
- Check power supply of the indoor unit.
- Check wiring between indoor unit and the remote controller.
- Check control wiring connection to the indoor control P.C. board and check for connection failure of connectors.
- Check failure of transformer on the indoor P.C. board.
- Check indoor control P.C. board failure.

### 4-3-1 (2) Manual setting from the wired remote controller

#### ⚠ CAUTION

Be sure to allocate Line (system) /Group/Indoor address one by one to match the address setting table and setup file that has been prepared beforehand.

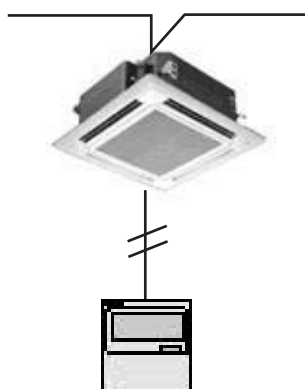
If a incorrect value is set, a problem such as error communication with the air conditioner will occur.



#### (Step 1)

Arrange one indoor unit and one remote controller (RBC-AMT21E, RBC-AMT31E) set as 1 to 1.

**Note:** Do not use a simple remote controller or wireless remote controller.  
(Address setting is not available.)



Connect wired remote controller individually when manual address setting

## (Step 2)

### Note)

When setting the line address from the remote controller, do not use address 29 or 30.

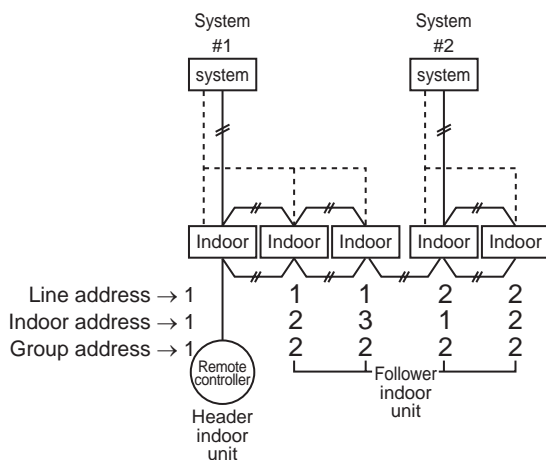
The address 29 and 30 cannot be set up in the outdoor unit. Therefore if they are incorrectly set up a check code [E04] (Indoor/outdoor communication circuit error) is output.

### Turn on the power.

Item code

Line (system) address	12
Indoor address	13
Group address	14

### (Wiring example in 2 systems)



In the above example, under condition that indoor units do not have individual remote controllers, set the address after connecting a wired remote controller.

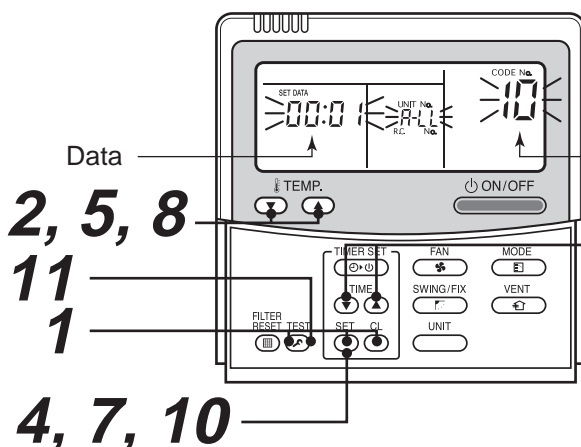
### Group address

Individual : 0000  
Header unit : 0001  
Follower unit : 0002

In case of group control

### Operation procedure

1 → 2 → 3 → 4 → 5 → 6 →  
7 → 8 → 9 → 10 → 11 End



**1** Push simultaneously the **SET** + **CL** + **TEST** buttons for 4 seconds or more.  
LCD changes to flashing.

### (Line address)

**2** Using the **TEMP.** buttons, set **12** on the item code.

**3** Using the **TIME** buttons, set up the line address.  
(Match it with the line address on the interface P.C. board of the header unit in the identical refrigerant system.)

**4** Push the **SET** button.  
(OK when display goes on.)

### (Indoor address)

**5** Using the **TEMP.** buttons, set **13** on the item code.

**6** Using the **TIME** buttons, set up the indoor address.

**7** Push the **SET** button.  
(OK when display goes on.)

### (Group address)

**8** Using the **TEMP.** buttons, set **14** on the item code.

**9** Using the **TIME** buttons, set Individual = 0000, Header unit = 0001, Follower unit = 0002.

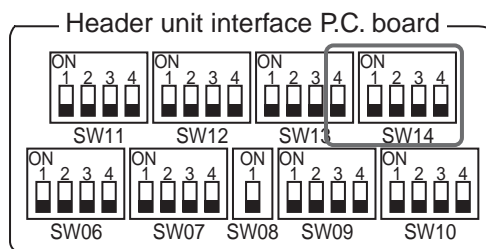
**10** Push the **SET** button.  
(OK when display goes on.)

**11** Push the **TEST** button.  
Setup operation finished.  
(Status returns to the normal stop status.)

### 4-3-1 (3) Line (System) address setting

- Using SW13 and 14 on the interface P.C. board of the header unit in each system, set up the system address for each system.  
(At shipment from factory: Set to Address 1)

**Note)** Be careful not to duplicate with other refrigerant line.



### System address switch on outdoor interface P.C. board

(○: Switch ON, ×: Switch OFF)

System address	SW13				SW14			
	1	2	3	4	1	2	3	4
1				×	×	×	×	×
2				×	○	×	×	×
3				×	×	○	×	×
4				×	○	○	×	×
5				×	×	×	○	×
6				×	○	×	○	×
7				×	×	○	○	×
8				×	○	○	○	×
9				×	×	×	×	○
10				×	○	×	×	○
11				×	×	○	×	○
12				×	○	○	×	○
13				×	×	×	○	○
14				×	○	×	○	○

System address	SW13				SW14			
	1	2	3	4	1	2	3	4
15				×	×	○	○	○
16				×	○	○	○	○
17				○	×	×	×	×
18				○	○	×	×	×
19				○	×	○	×	×
20				○	○	○	×	×
21				○	×	×	○	×
22				○	○	×	○	×
23				○	×	○	○	×
24				○	○	○	○	×
25				○	×	×	×	○
26				○	○	×	×	○
27				○	×	○	×	○
28				○	○	○	×	○

 : Is not used for setup of system address. (Do not change setup.)

- Check that the relay connectors between [U1U2] and [U3U4] terminals are connected to all the header units to which the central control is connected.  
(At shipment from factory: No connection of connector)

### ⚠ CAUTION

Be sure to allocate different line addresses for each refrigerant system even if there are two or more TCS-NET relay interfaces.

### 4-3-1 (4) Power reset

- To activate the line address on both the outdoor and indoor unit side, power supply is temporarily reset.
- When power returns, be sure to power up the indoor units prior to the outdoor unit.

#### 4-3-1 (5) Indoor unit address check

Step	Item	Operation and check contents																																																			
1	Power - on	Initial communication takes a couple of minutes. During initial communication, 7-segment display section is as follows. Display [A] --- [U1], flashing    Display [B] --- [ - - 0] --> [ - - i] flashing																																																			
2	Display check	After initial communications, [U1] is displayed on the 7-segment display section. (If an error code is displayed in the display section [B], remove the cause referring to “trouble shooting” of installation or the service manual.)																																																			
3	System information check (Outdoor side)	<div> <table> <tr> <th rowspan="2"></th><th colspan="3">Rotary switch setup</th><th colspan="2">7-segment display</th></tr> <tr> <th>SW01</th><th>SW02</th><th>SW03</th><th>[A]</th><th>[B]</th></tr> <tr> <td>System capacity</td><td>1</td><td>2</td><td>3</td><td>[No. of HP]</td><td>[HP]</td></tr> <tr> <td>No. of connected outdoor units</td><td>1</td><td>3</td><td>3</td><td>[No. of indoor units]</td><td>[   ]</td></tr> <tr> <td>No. of connected indoor units</td><td>1</td><td>4</td><td>4</td><td>[No. of outdoor units]</td><td>[   ]</td></tr> <tr> <td>Indoor address No. and capacity</td><td>6</td><td>1 to 16</td><td>1 to 3</td><td>[Indoor unit address]</td><td>[Capacity (HP)]</td></tr> </table> <div> <p>Note) Indoor unit address No. is chosen by changing SW02 and SW03.</p> <table> <tr> <th>SW02</th><th>SW03</th><th>Indoor address</th><th>7-segment [A]</th></tr> <tr> <td>1 to 16</td><td>1</td><td>SW02 setup number</td><td>[01] to [16]</td></tr> <tr> <td>1 to 16</td><td>2</td><td>SW02 setup number +16</td><td>[17] to [32]</td></tr> <tr> <td>1 to 16</td><td>3</td><td>SW02 setup number +32</td><td>[33] to [48]</td></tr> </table> </div> <p>On the header outdoor interface P.C. board</p> <div> </div> </div>		Rotary switch setup			7-segment display		SW01	SW02	SW03	[A]	[B]	System capacity	1	2	3	[No. of HP]	[HP]	No. of connected outdoor units	1	3	3	[No. of indoor units]	[   ]	No. of connected indoor units	1	4	4	[No. of outdoor units]	[   ]	Indoor address No. and capacity	6	1 to 16	1 to 3	[Indoor unit address]	[Capacity (HP)]	SW02	SW03	Indoor address	7-segment [A]	1 to 16	1	SW02 setup number	[01] to [16]	1 to 16	2	SW02 setup number +16	[17] to [32]	1 to 16	3	SW02 setup number +32	[33] to [48]
	Rotary switch setup			7-segment display																																																	
	SW01	SW02	SW03	[A]	[B]																																																
System capacity	1	2	3	[No. of HP]	[HP]																																																
No. of connected outdoor units	1	3	3	[No. of indoor units]	[   ]																																																
No. of connected indoor units	1	4	4	[No. of outdoor units]	[   ]																																																
Indoor address No. and capacity	6	1 to 16	1 to 3	[Indoor unit address]	[Capacity (HP)]																																																
SW02	SW03	Indoor address	7-segment [A]																																																		
1 to 16	1	SW02 setup number	[01] to [16]																																																		
1 to 16	2	SW02 setup number +16	[17] to [32]																																																		
1 to 16	3	SW02 setup number +32	[33] to [48]																																																		
4	Address information check (indoor side)	<p><b>Procedure</b> (Operation while the air conditioner operates)</p> <ol style="list-style-type: none"> <li><b>1</b> If it stops, push  button.</li> <li><b>2</b> Push  button.</li> </ol> <p>The unit NO  is displayed on the LCD. (Disappears after several seconds) The displayed unit No indicates the line address and indoor address. (If there is other indoor units connected to the same remote controller (Group control unit), other unit No is displayed on each push of  button.)</p> <div> <p><b>Operation procedure</b> 1 → 2 → 3 End</p> </div>																																																			

#### 4-3-1 (6) Trial operation

Please refer to the trial operation in the manual of the air conditioner.

### 4-3-1 (7) Setup of relay connector and terminator

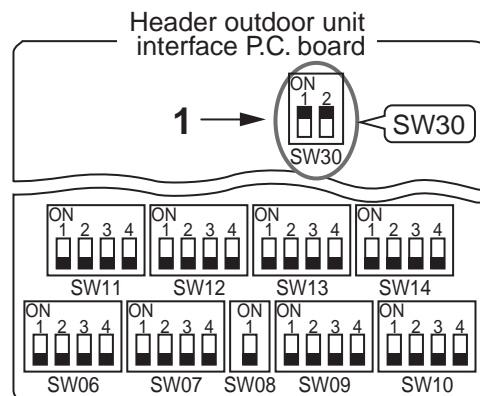
- After trial operation of each refrigerant system, set the relay connector and terminator resistor on all refrigerant systems which are connected to one TCS-NET relay interface.

#### Procedure

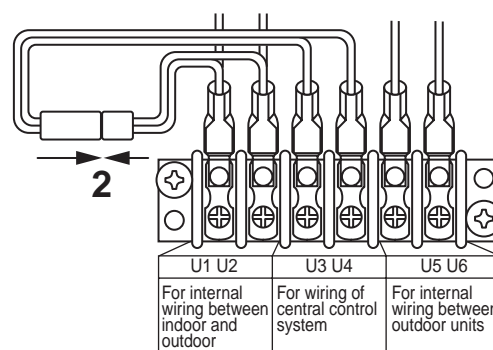
#### 1 How to set up the terminator resistor (SW30)

When all the address setups have finished in the same refrigerant system, put the terminator resistor (SW30) in the same central control line to one.

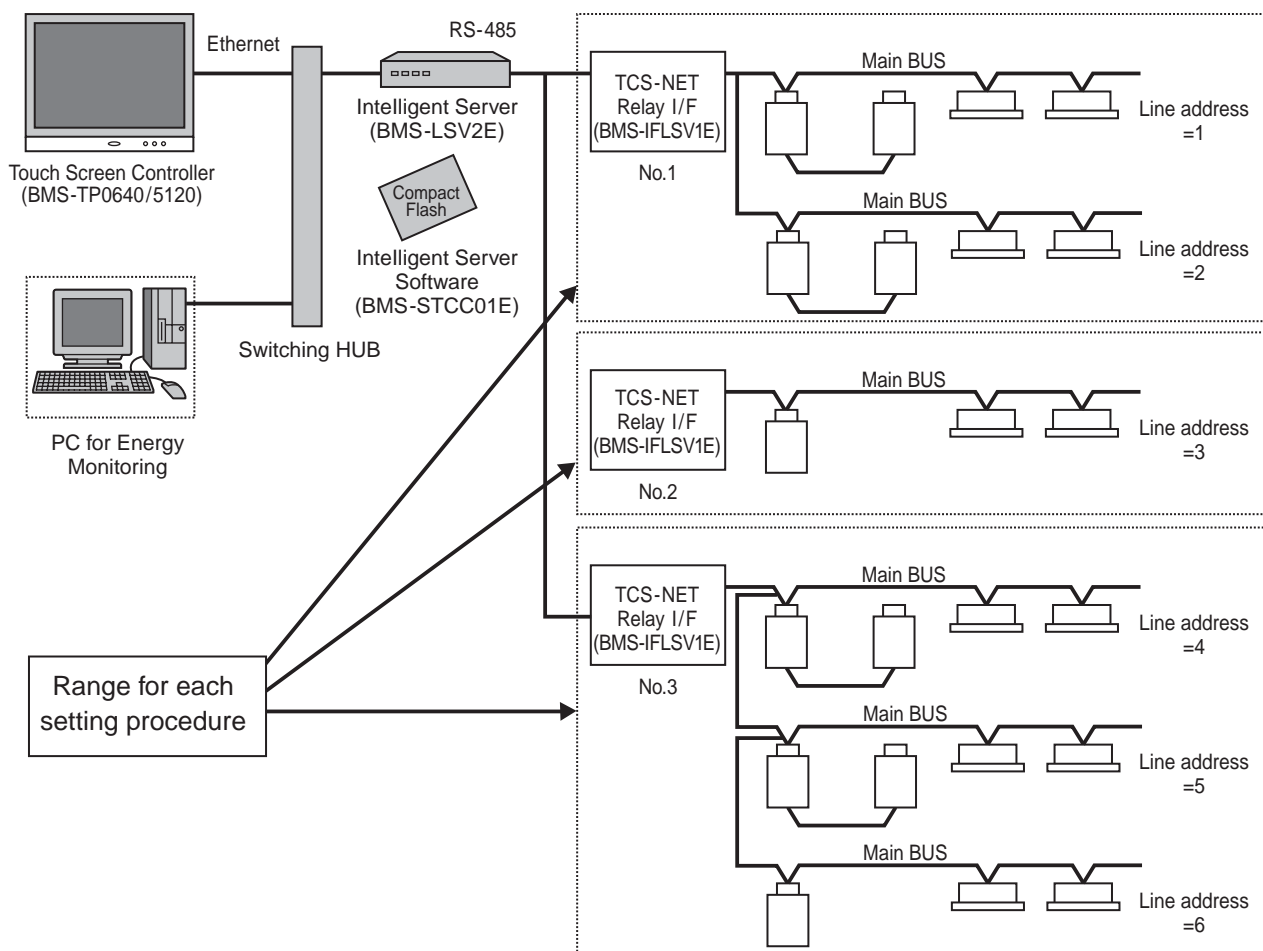
- Remain only SW30-2 of the header outdoor unit with the lowest line address number as it is ON.  
(With terminal resistor)
- Set up SW30-2 of the other header outdoor units to OFF.  
(Without terminal resistor)



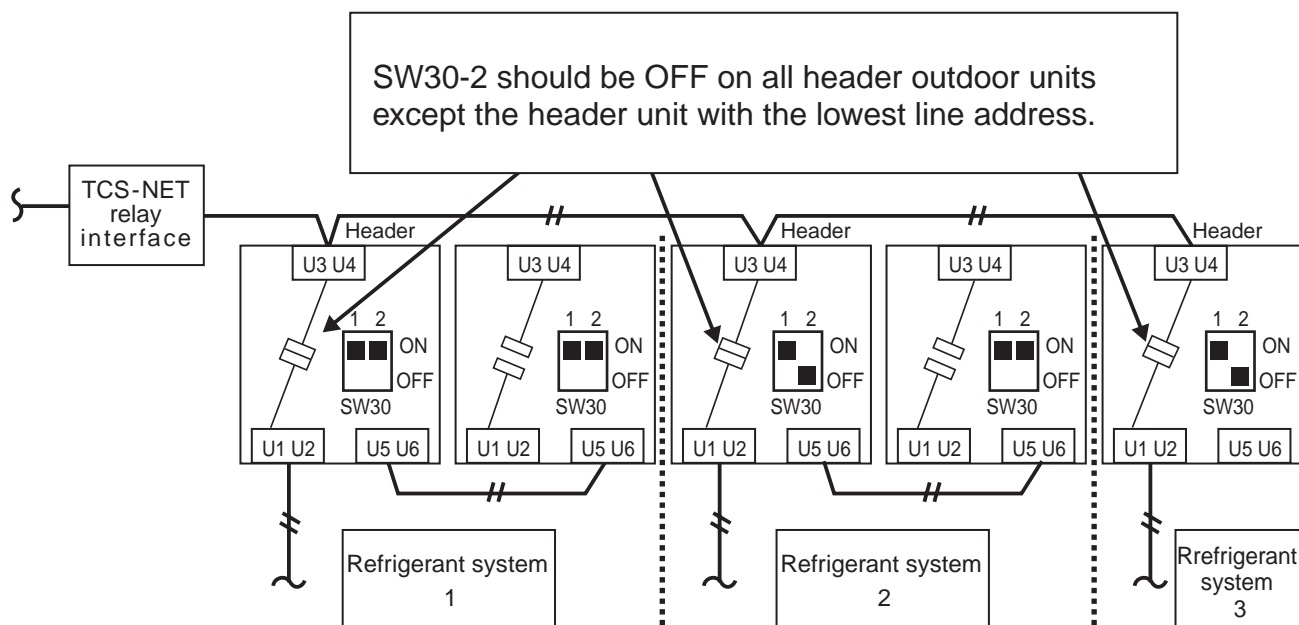
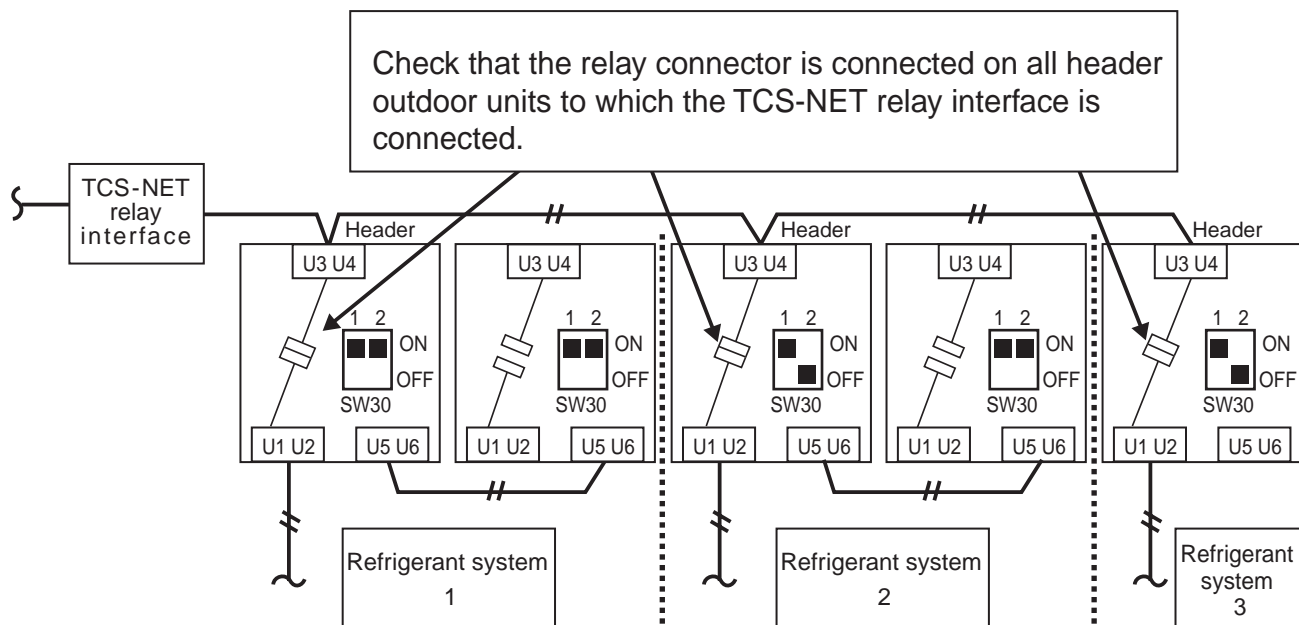
#### 2 Connect the relay connector between [U1U2] and [U3U4] of the header outdoor unit for each refrigerant system.

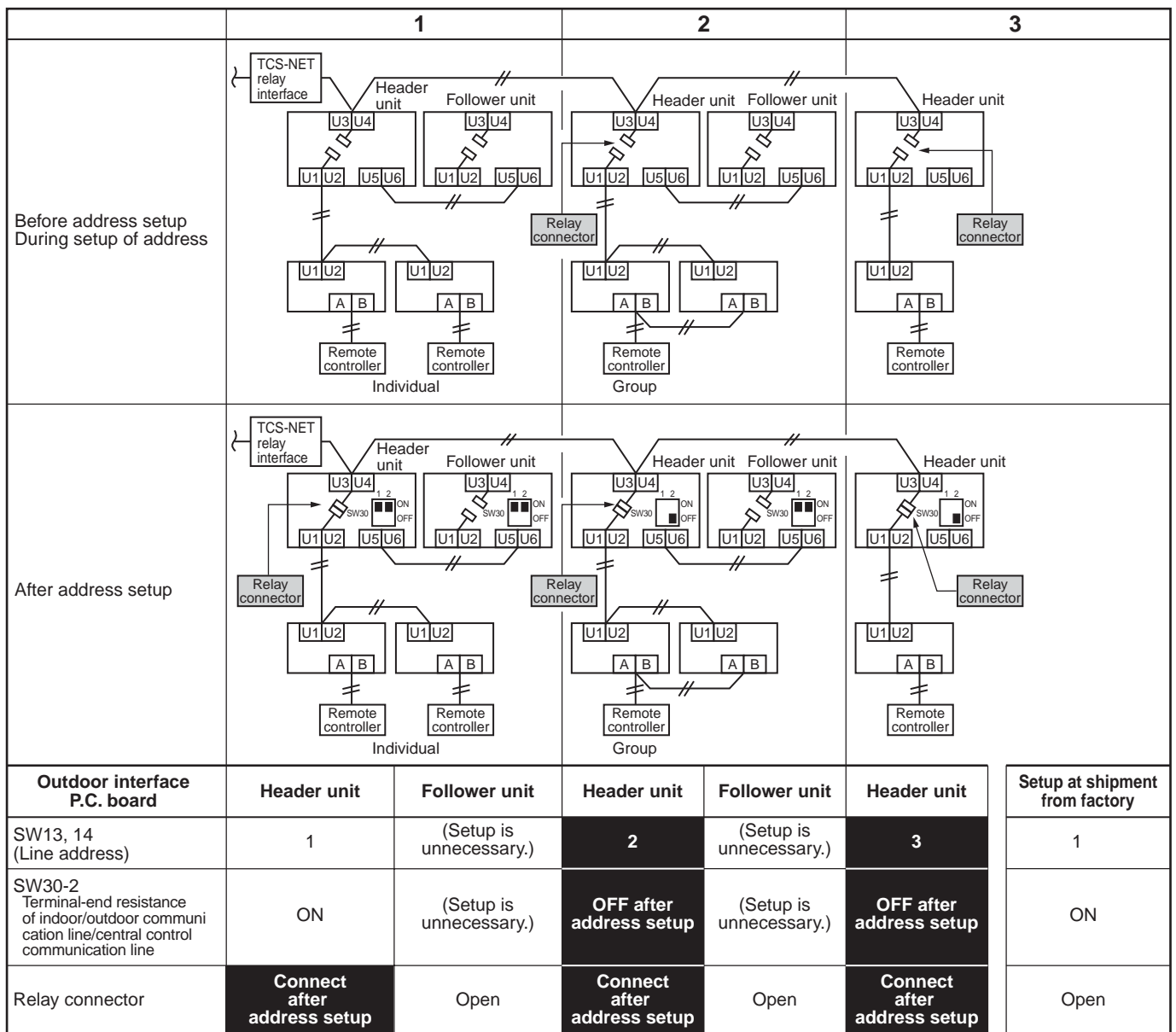


#### System diagram (example)









#### Indoor side

Line address	1	1	2	2	3
Indoor unit address	1	2	1	2	1
Group address	0	0	1	2	0

#### POINT

Never connect a relay connector before address setup of all the refrigerant systems has finished; otherwise address cannot be correctly set up.

After setting, if central control devices (central remote controller or ON/OFF controller) are connected, set up the central control address.

(For the central control address setup, refer to “4-3-1 (8) Central control address setting” in the installation manual of the central control devices.)

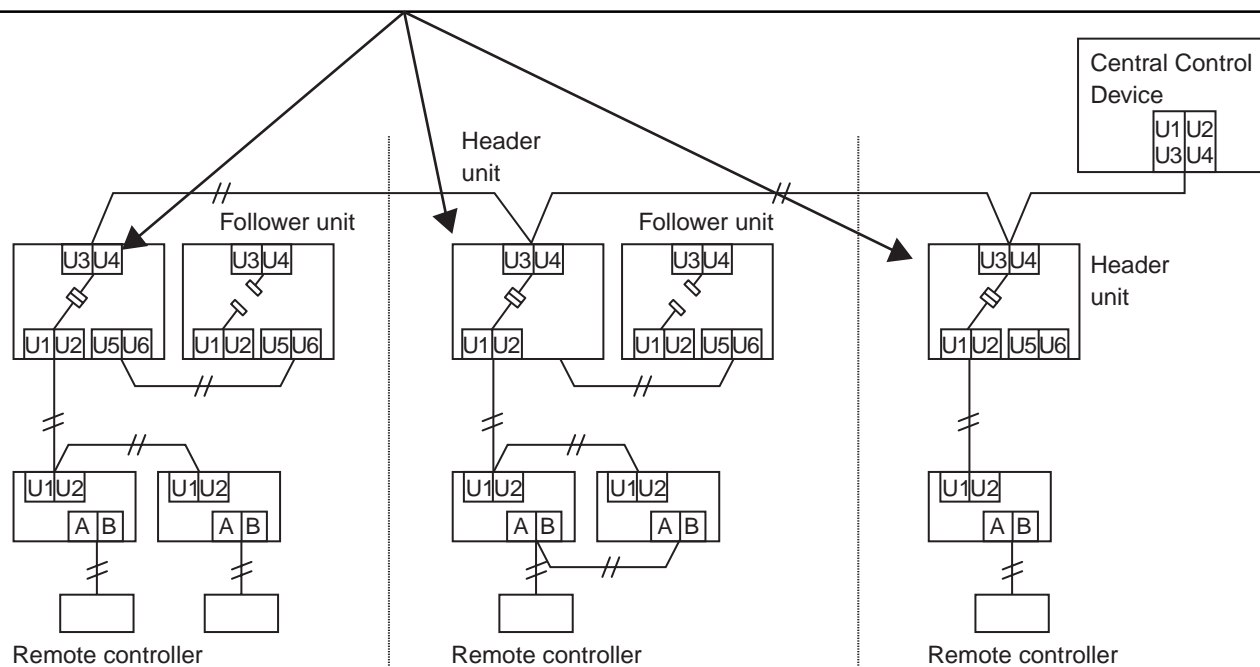
## 4-3-1 (8) Central control address setting

### (Note)

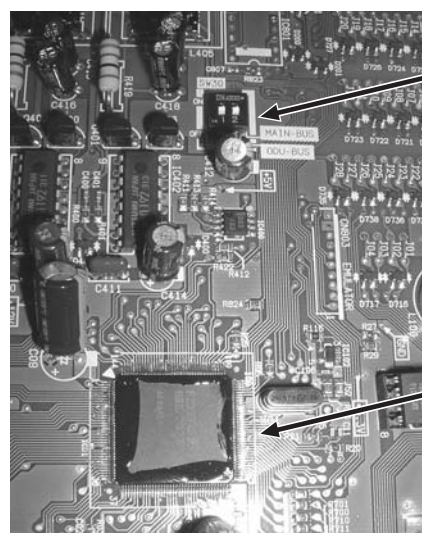
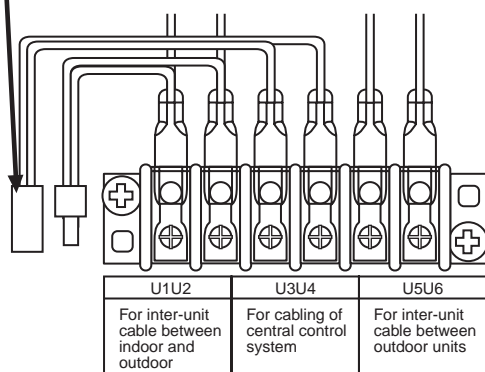
- 1) Perform after the setting of indoor and outdoor unit address (Indoor/group/line address).
- 2) Three setting address method can be selected.
  - ① Manual setting from wired main remote controller (RBC-AMT21E, RBC-AMT31E)
  - ② Manual setting from central control remote controller (TCB-SC642TLE2)
  - ③ Automatic setting from central remote controller (TCB-SC642TLE2)

### REQUIREMENT

- Be sure to reconfirm the following status of all header outdoor units before the central control address setting.
  - [1] Check that the relay connectors between [U1,U2] and [U3,U4] terminals are connected on all header outdoor units to which the central control is connected.  
(At the shipment from factory : No connection of connector)
  - [2] SW30-2 should be OFF on all header units except the header unit with the lowest line address number. (At the shipment from factory : Set to ON)
- Correct address setting cannot be conducted without the above settings being correct.
- The above procedure mentioned should be conducted after address setting of all indoor and outdoor units.



Relay connector

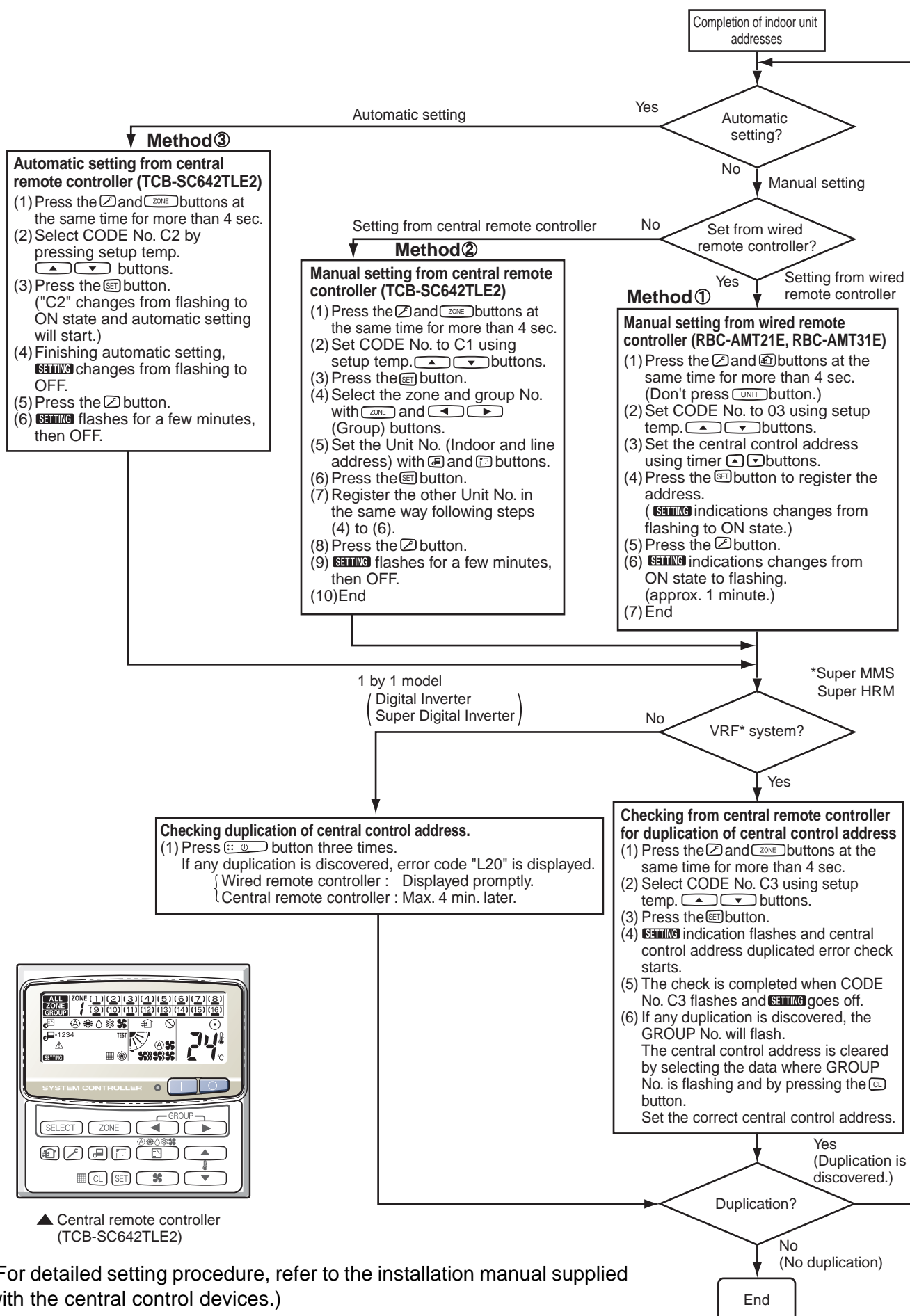


Terminator resistor (SW30)  
Left :SW30-1  
Right :SW30-2

CPU

Interface P.C. board on the outdoor unit.

## Flow chart of setting central control address (In case of central remote controller TCB-SC642TLE2)



#### 4-3-1 (9) Trial operation for central controller (TCB-SC642TLE2)

### 1 Test run of the central controller

(1) Power on for all the indoor units. Next, power on the central controller.

**SETTING** will flash, checking the indoor unit addresses automatically.

(2) If the group No. displayed on the central controllers is not the same as the indoor unit No.\*

\* In case of group control, main unit No. only.

### 2 How to perform an air conditioner test run

(1) Hold down the  button on the central controller for at least four seconds.

- During the test run, "TEST" appears on the LCD display.

(2) Press the  and  buttons.

- The temperature cannot be adjusted in the "TEST" position.

Do not use this procedure except when performing a test run as it will strain the equipment.

(3) Upon completion of the operation, press the  button and check that "TEST" on the LCD display has gone off.

### 4-3-1 (10) Automatic address setting (for reference)

#### ⚠ CAUTION

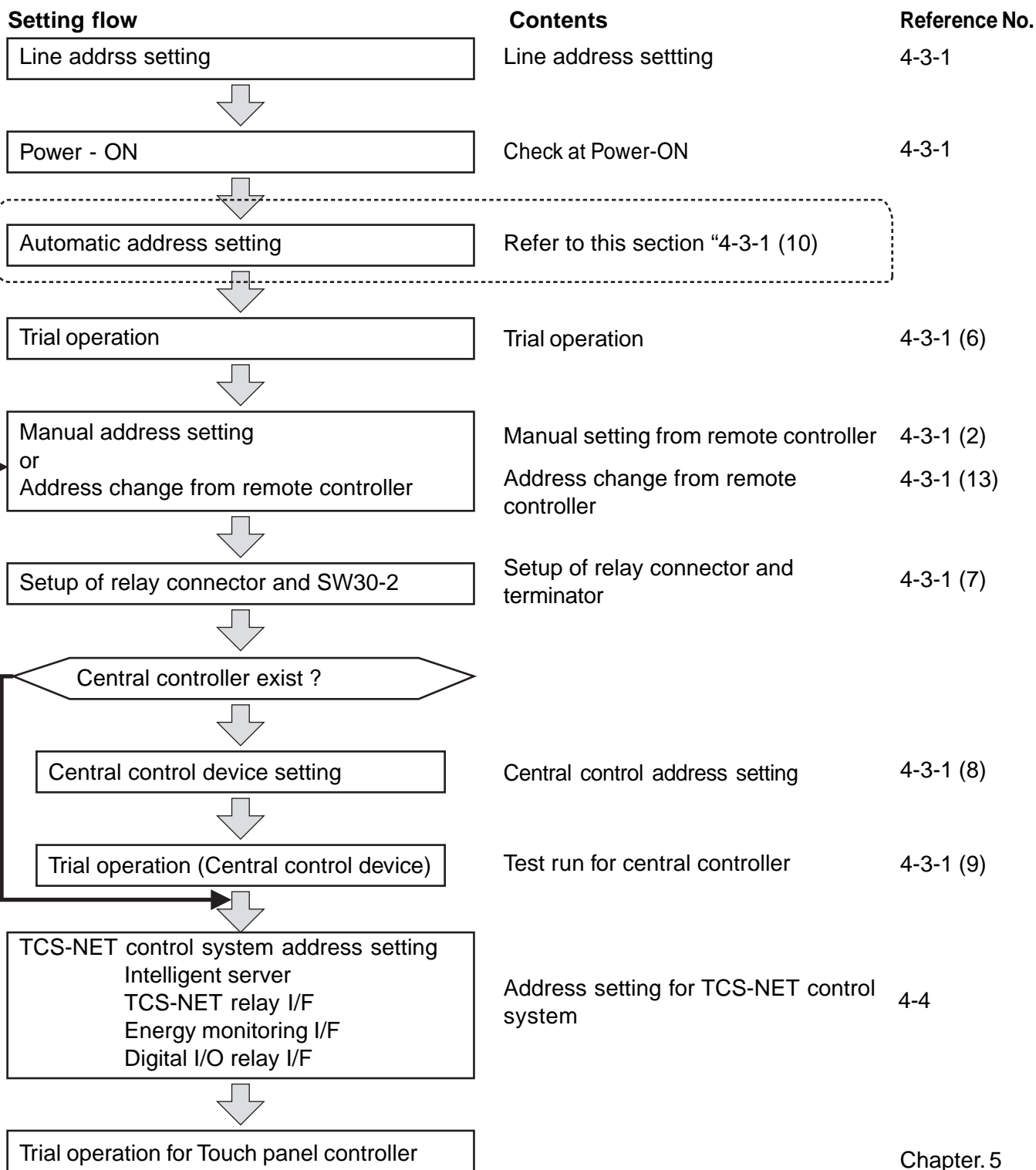
In case of addressing (Line / Group / Indoor address) by automatic address setup, be sure to change the addresses to match the address setting table as per the TCS-NET control system.

→ “4-3-1 (2) Manual setting from wired remote controller”,

→ “4-3-1 (13) Address change from remote controller”

If unmatched addresses are allocated, a problem such as an error of communication within the air conditioner will occur.

#### Address setup flow (In case of automatic address setup)



## • Automatic address setup procedure

**Without central control : Address setup procedure 1**

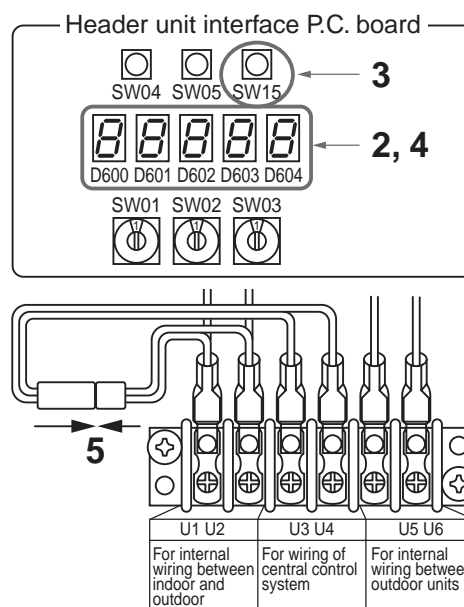
**With central control : Address setup procedure 2**

(However, go to the procedure 1 when the central control is performed in a single refrigerant system.)

(Example)	In case of central control in a single refrigerant system	In case of central control with more than one refrigerant system
<b>Address setup procedure</b>	<b>Procedure 1</b>	<b>Procedure 2</b>
Cable systematic diagram		

### Address setup procedure 1

1. Turn on power of indoor/outdoor units.  
(In order of indoor → Outdoor)
2. After approx. 1 minute, check that **U. 1. L08 (U. 1. flash)** is displayed on the 7-segment display section of the interface P.C. board on the header outdoor unit.
3. Push SW15 and start setup of the automatic address.  
(Max. 10 minutes for 1 refrigerant system (Usually, approx. 5 minutes))
4. When the count **Auto 1 → Auto 2 → Auto 3** is displayed on the 7-segment display section, and it changes from **U. 1. - - - (U. 1. flash)** to **U. 1. - - - (U. 1. lit)**, the setup has finished.
5. When centrally controlled, connect the relay connector between [U1, U2] and [U3, U4] terminals on the header unit.



### REQUIREMENT

- When group control is performed over multiple refrigerant systems, be sure to turn on the power supplies of all the indoor units connected in a group at the time of address setup.
- If turning on the power of each refrigerant system to set up the address, a header indoor unit is set on each line. Therefore, an alarm code "L03" (Duplicated indoor header units) is output during operation after the address setup. In this case, change the group address from the wired remote controller so that only one header indoor unit is set up.

(Example)	Group control over multiple refrigerant systems
Wiring systematic diagram	

## Address setup procedure 2

- Using SW13 and 14 on the interface P.C. board of the header outdoor unit in each system, set up the line (system) address for each system.

(At shipment from factory: Set to Address 1)

**Note)** Be careful not to duplicate with other refrigerant systems.

Line (system) address switch on the outdoor interface P.C. board

Line address	SW13				SW14			
	1	2	3	4	1	2	3	4
1				x	x	x	x	x
2				x	o	x	x	x
3				x	x	o	x	x
4				x	o	o	x	x
5				x	x	x	o	x
6				x	o	x	o	x
7				x	x	o	o	x
8				x	o	o	o	x
9				x	x	x	x	o
10				x	o	x	x	o
11				x	x	o	x	o
12				x	o	o	x	o
13				x	x	x	o	o
14				x	o	x	o	o

Line address	SW13				SW14			
	1	2	3	4	1	2	3	4
15				x	x	o	o	o
16				x	o	o	o	o
17				o	x	x	x	x
18				o	o	x	x	x
19				o	x	o	x	x
20				o	o	o	x	x
21				o	x	x	o	x
22				o	o	x	o	x
23				o	x	o	o	x
24				o	o	o	o	x
25				o	x	x	x	o
26				o	o	x	x	o
27				o	x	o	x	o
28				o	o	o	x	o

  : Is not used for setup of line address. (Do not change setup.)

- Check that the relay connectors between [U1U2] and [U3U4] terminals are disconnected on all the header outdoor units to which the central control is connected.

(At shipment from factory: No connection of connector)

- Turn on power of indoor/outdoor.

**(In order of indoor → outdoor)**

- After approx. 1 minute, check that the 7-segment display is

U.1.L08 (U.1. flash) on the interface P.C. board on the header outdoor unit.

- Push SW15 and start setup of the automatic address.**

(Max. 10 minutes for 1 refrigerant system)

(Usually, approx. 5 minutes))

- When the count Auto 1 → Auto 2 → Auto 3 is displayed on the 7-segment display section and it changes from

U. 1. - - - (U. 1. flash) to U. 1. - - - (U. 1. light) , the setup has finished.

- Procedure 4. to 6. are repeated on other refrigerant systems.

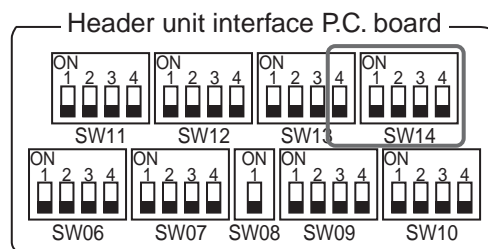
- How to set up the terminator resistor (SW30)

When all the address setups have finished in the same refrigerant system, position the terminator resistor (SW30) in the same central control line to one.

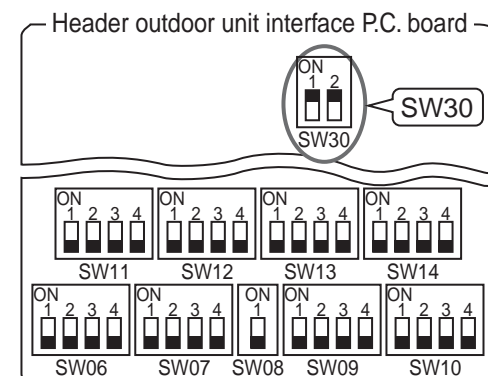
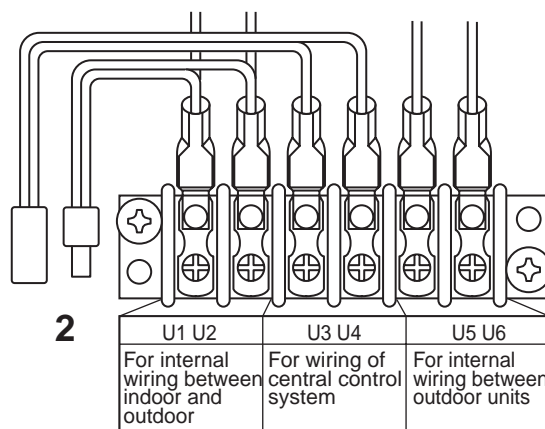
- Only SW30-2 of the header outdoor unit with the lowest line address number is set to ON.
- (With terminator resistor)

- Set up SW30-2 on the other header outdoor units to OFF. (Without terminator resistor)

- Connect the relay connector between [U1U2] and [U3U4] on the header outdoor units for each refrigerant system.



(O : Switch ON, x : Switch OFF)





## 4-3-1 (11) Clearance of address

### Method 1

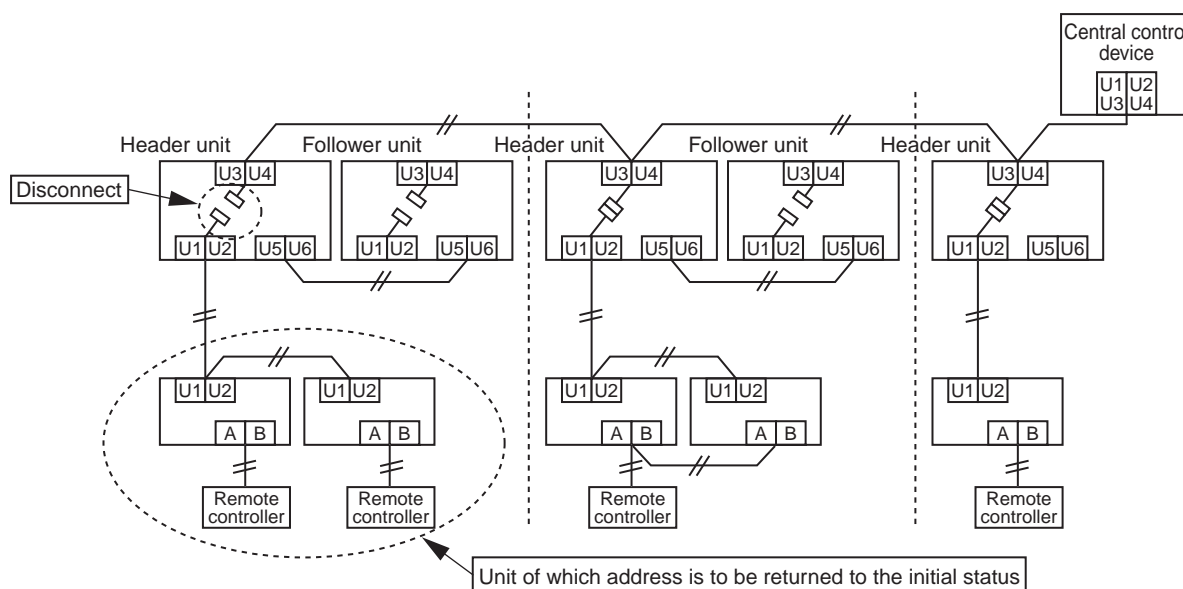
An address is individually cleared from a wired remote controller.

“0099” is set up to line address indoor address, and group address data from the remote controller.  
(For the setup procedure, refer to the above mentioned address setup from the remote controller.)

### Method 2

Clear the indoor addresses in the same refrigerant line from the outdoor unit.

1. Turn off the power of the refrigerant system to be returned to the status at shipment and change the header outdoor unit to the following status.
  - 1) Remove the relay connector between [U1U2] and [U3U4].  
(If it has been already removed, leave it as it is.)
  - 2) Turn on SW30-2 on the interface P.C. board on the header outdoor unit if it is ON.  
(If it is already ON, leave it as it is.)



2. Turn on the indoor/outdoor power of which the address is to be cleared. After approx. 1 minute, check that “U.1. - - -” is displayed and then execute the following operation on the interface P.C. board of the header outdoor unit of which the address is to be cleared in the refrigerant system.

SW01	SW02	SW03	SW04	Address which can be cleared
2	1	2	After checking that “A.d.buS” is displayed on 7-degment display, push SW04 for 5 seconds or more.	Line + Indoor + Group address
2	2	2	After checking that “A.d.nEt” is displayed on 7-degment display, push SW04 for 5 seconds or more.	Central control address

3. After “A.d. c.L.” has been displayed on the 7-degment display, return SW01/SW02/SW03 to 1/1/1.
4. When the address clearing has correctly finished, “U.1.L08” is displayed on the 7-degment display after a while. If “A.d. n.G.” is displayed on the 7-degment display, there is a possibility of connection with other refrigerant systems. Re-check the relay connector between [U1U2] and [U3U4] terminals.  
**Note)** Be careful that other line addresses may be also cleared if clearing operation is not correctly executed.
5. After clearing of the address, reset the address.

#### 4-3-1 (12) Confirmation of indoor unit address and position by using the remote controller


##### [Confirmation of indoor unit address and the position]

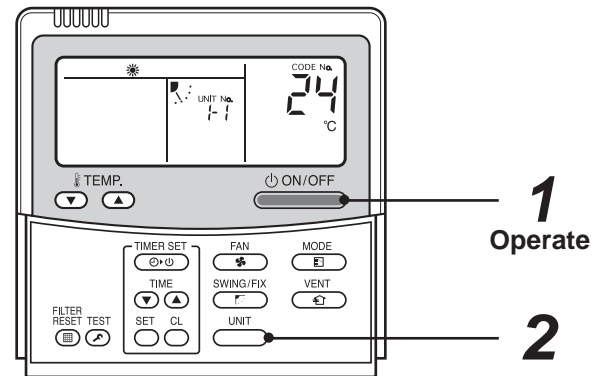
##### 1. When you want to know the indoor address though position of the indoor unit itself is unknown:

Procedure (Operation while the air conditioner operates)

**1** If it stops, push the  button.

**2** Push the  button.

The unit NO *1-1* is displayed on the LCD. (Disappears after several seconds) The displayed unit No indicates the line address and the indoor address. (If there is other indoor unit connected to the same remote controller (Group control unit), other unit No is displayed at each push of the  button.)



Operation procedure

**1 → 2**

##### 2. When you want to know position of the indoor unit using the address

- To confirm the unit numbers in a group control;

Procedure (Operation while the air conditioner stops)

The indoor unit numbers in a group control are successively displayed and the corresponding indoor fan is turned on. (Operation while the air conditioner stops)

**1** Push the  +  buttons simultaneously for 4 seconds or more.

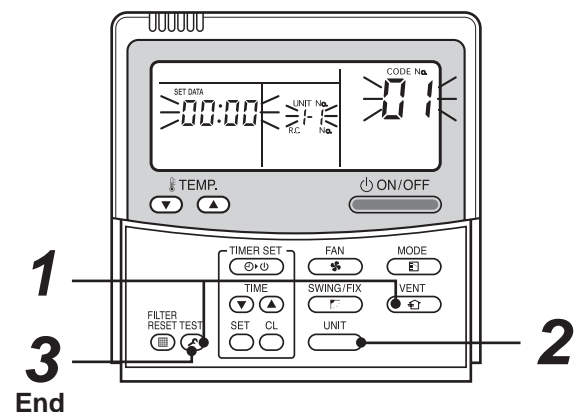
- Unit No *ALL* is displayed.
- The fans of all the indoor units in the group control are turned on.

**2** Every pushing of the  button, the indoor unit numbers in the group control are successively displayed.

- The first displayed unit No indicates the address of the header unit.
- Only the fan of the selected indoor unit is turned on.

**3** Push the  button to finish the procedure.

All the indoor units in the group control stop.



Operation procedure

**1 → 2 → 3 End**

• **To confirm all the unit numbers from an arbitrary wired remote controller;**

**Procedure** (Operation while the air conditioner stops)

The indoor unit No and position in the same refrigerant circuit can be confirmed. An outdoor unit is selected, the indoor unit numbers in the same refrigerant circuit are successively displayed and the indoor unit fan is turned on.

**1** Push the + buttons simultaneously for 4 seconds or more.

Firstly, line 1, **item code** (Address Change) is displayed. (Select outdoor unit.)

**2** Using the + buttons, select the line address.

**3** Using the button, determine the selected line address.

- The indoor unit address, which is connected to the refrigerant circuit of the selected outdoor unit is displayed and the fan is turned on.

**4** Every push of the button, the indoor unit numbers in the identical circuit are successively displayed.

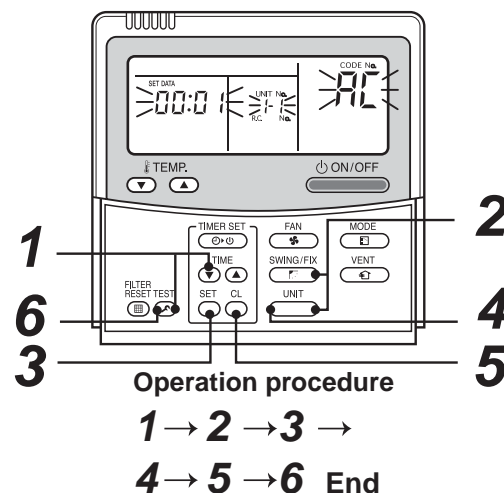
- Only the fan of the selected indoor unit operates.

[To select another line address]

**5** Push the button and return to procedure 2.

- The indoor address of another line can be successively confirmed.

**6** Push the button to finish the procedure.



#### 4-3-1 (13) Address change from remote controller

**Change of indoor address from a wired remote controller**

- To change the indoor address in individual operation (Wired remote controller : Indoor unit = 1 : 1) or group control (When the setup operation with automatic address has finished, this change is available.)

**Procedure** (Operation while air conditioner stops)

**1** Push simultaneously the + + buttons for 4 seconds or more.

(The firstly displayed unit No indicates the header unit in group control.)

**2** In group control, select an indoor unit No to be changed by the button.

(The fan of the selected indoor unit is turned on.)

**3** Using the buttons, set 13 on the item code.

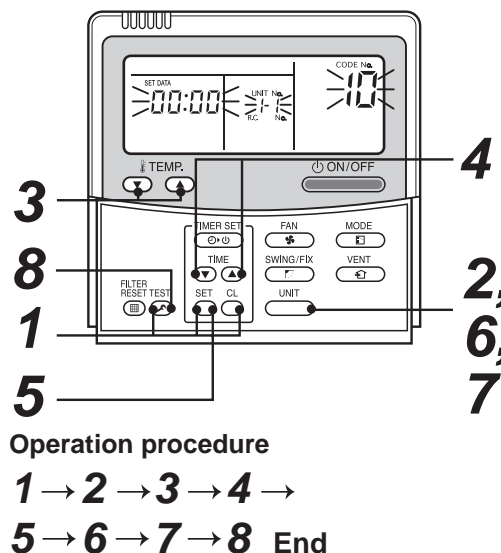
**4** Using the buttons, change the displayed setup data to the data which you want to change.

**5** Push the button.

**6** Using the button, select the next unit No. to change. Repeat the procedure 4 to 6 and change the indoor address so that it is not duplicated.

**7** After the above change, push the button to confirm the changes.

**8** If it is acceptable, push the button to finish confirmation.



• **To change all the indoor addresses from an arbitrary wired remote controller;**

(When the setup operation with automatic address has finished, this change is available.)

**Contents** : Using an arbitrary wired remote controller, the indoor unit address can be changed within the same refrigerant system

**\* Change the address in the address check/change mode.**

**Procedure** (Operation while air conditioner stops)

**1** Push the + buttons simultaneously for 4 seconds or more.

Firstly, line 1 **item code** (Address Change) is displayed.

**2** Using the + buttons, select the line address.

**3** Push button.

- The indoor unit address, which is connected to the refrigerant system of the selected outdoor unit is displayed and the fan is turned on.

The current indoor address is displayed on the setup data. (Line address is not displayed.)

**4** The indoor address of the setup data moves up/down by the buttons.

Change the setup data to a new address.

**5** Push the button to determine the setup data.

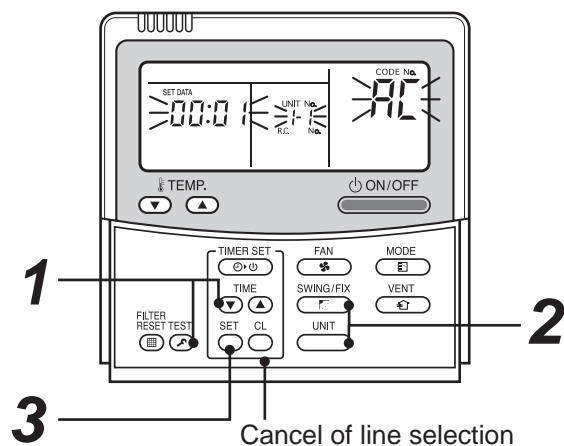
**6** Every press of the button, the indoor unit numbers in the identical circuit is successively displayed. Only the fan of the selected indoor unit operates.

Repeat the procedure **4** to **6** and change all the indoor addresses so that they are not duplicated.

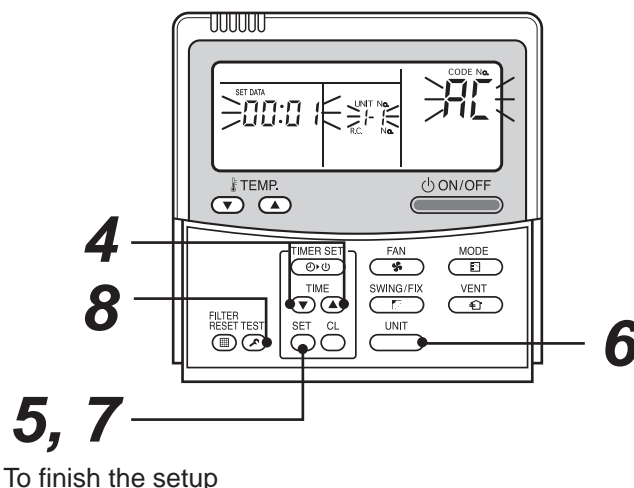
**7** Push the button.

(All the displays on the LCD go on.)

**8** Push the button to finish the procedure.



Cancel of line selection



To finish the setup

If the unit No is not displayed, the outdoor unit in this line does not exist.

Push button and then select a line according to procedure **2**.

**Operation procedure**

**1** → **2** → **3** → **4** →  
**5** → **6** → **7** → **8** End

### 4-3-1 (14) In case of increasing the address of undefined indoor units (Extension, etc.)

If set up of indoor address is necessary due to additional indoor units, replacement of P.C. board, etc, follow the methods below.

#### Method 1

Set up an address individually from a wired remote controller.

(Line address, Indoor address, Group address, Central control address)

For the setup method refer to “Manual address setup from remote controller” within this manual.

#### Method 2

Set up an address from the outdoor unit.

\* Leave the addresses of the units to which the addresses have already been setup.

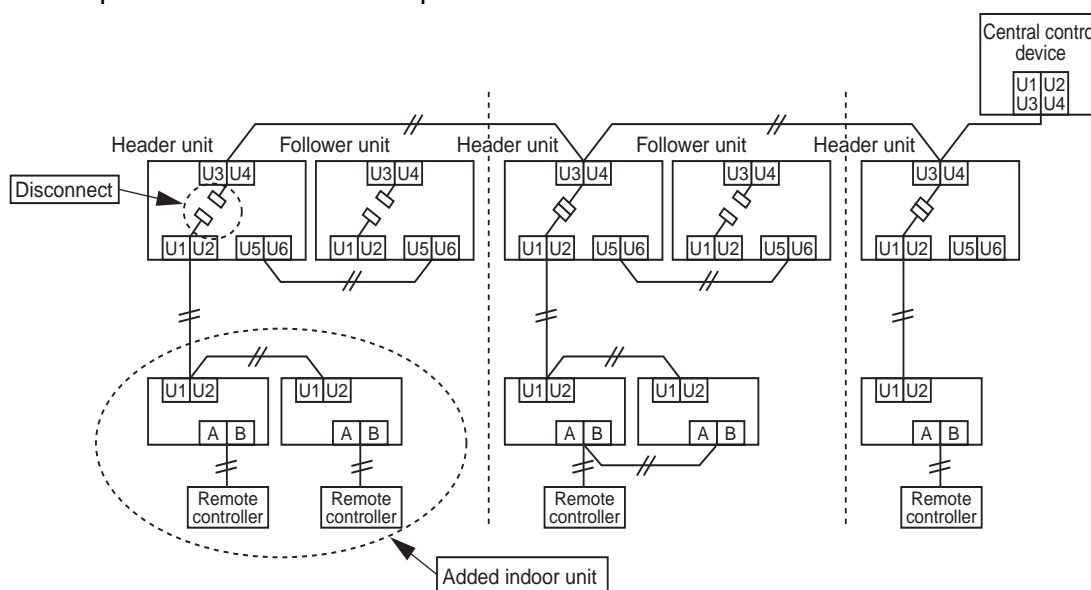
Set up the address only to the unit of which the address is undefined.

The addresses are allocated from the lowest number.

#### Setup procedure

Arrange the outdoor header units in the refrigerant line to which the indoor units are connected. (Figure below)

1. Remove the relay connector between [U1U2] and [U3U4].
2. Turn on SW30-2 on the interface P.C. board on the outdoor header unit side.
  - \* Turn off the power and execute the operation.



3. Turn on the indoor/outdoor power of which address is to be set up. After approx. 1 minute, check that “U.1.---” is displayed on the 7-segment display.
4. Execute the following operation on the interface P.C. board on the header outdoor unit.

SW01	SW02	SW03	SW04
2	14	2	After checking that “In.At” is displayed on the 7-segment display, push SW04 for 5 seconds or more.

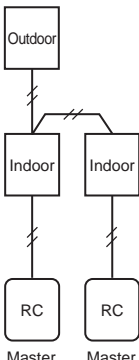
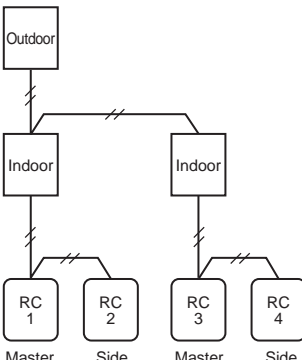
“AUTO1” → “AUTO2” → “AUTO3” ... is counted and displayed on the 7-degment display.

5. When “U.1. - - -” is displayed on the 7-segment display, the setup operation has finished. Turn off the indoor/outdoor power.
6. Return the following setup as before.
  - Relay connector
  - SW30-2
  - SW01, 02, 03

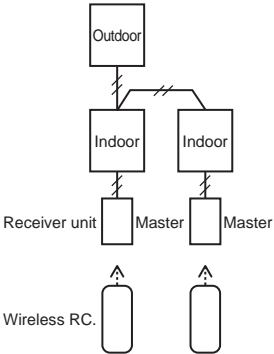
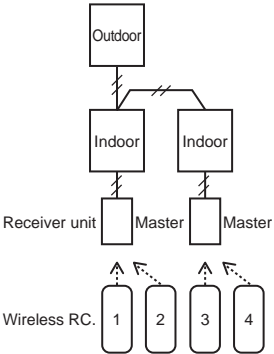
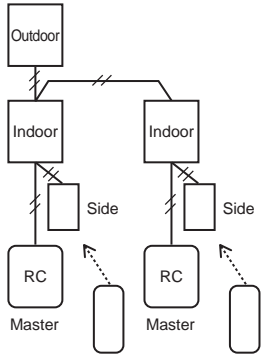
## 4-3-1 (15) Address setup example (VRF system)

### [Automatic address / Manual address setup example]

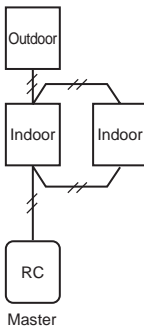
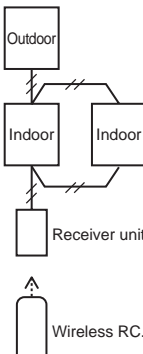
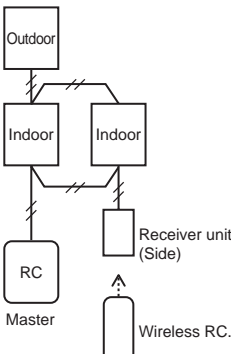
#### Individual control

Automatic address setting		Available		Available			
Outdoor	Line address	1		1			
Configuration							
		MasterMaster		MasterSideMasterSide			
		Line address		1	1	1	1
		Indoor unit address		1	2	1	2
Group address		0	0	0	0		

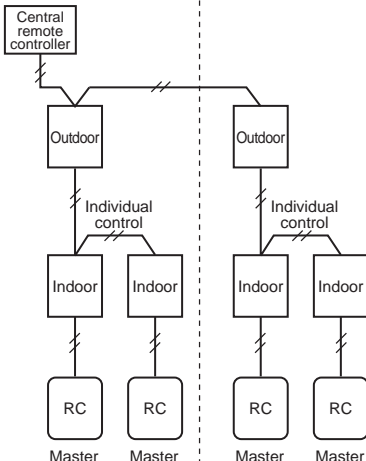
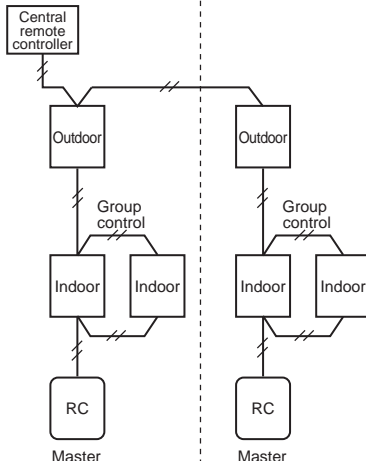
\* RC: Remote controller

Automatic address setting		Available		Available		Available	
Outdoor	Line address	1		1		1	
Configuration							
		Receiver unit Master Master		Receiver unit Master Master		Side Side	
		Wireless RC.		Wireless RC. 1 2 3 4		RC Master	
Indoor	Line address	1	1	1	1	1	1
	Indoor unit address	1	2	1	2	1	2
	Group address	0	0	0	0	0	0

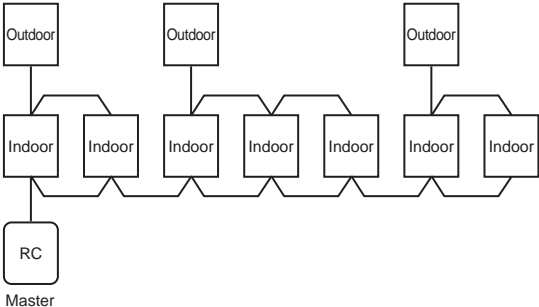
## Group control

Automatic address setting		Available		Available		Available	
Outdoor	Line address	1		1		1	
Configuration							
Indoor	Line address	1	1	1	1	1	1
	Indoor unit address	1	2	1	2	1	2
	Group address	1	2	1	2	1	2

## Central control (Multiple refrigerant systems)

Automatic address setting		Available				Available			
Outdoor	Line address	1		2		1		2	
Configuration									
		1		1		1		1	
		2		2		2		2	
		0		0		0		0	
Indoor	Line address	1	1	2	2	1	1	2	2
	Indoor unit address	1	2	1	2	1	2	1	2
	Group address	0	0	0	0	1	2	1	2

### Group control over other R.C. group/indoor names)

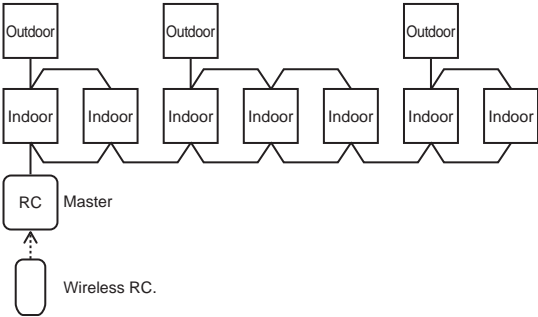
Automatic address setting		Available (*1)						
Outdoor	Line address	1		2			1	
Configuration								
Indoor	Line address	1	1	2	2	2	3	3
	Indoor unit address	1	2	1	2	3	1	2
	Group address	1	2	2	2	2	2	2
	Group address	1	2	1 → 2*	2	2	1 → 2*	2

\*1

In case of group control over refrigerant systems, automatic address setting is available only when all indoor units connected to a group control are turned on during address setting.

If an automatic address setting is conducted under the condition of power-ON only in the refrigerant system in which the address is set up. It will cause an error code "L03" (Duplicated indoor header units) because indoor header units exist for each refrigerant system. In this case, change the group address on the wired remote controller so that only one indoor unit becomes the header unit in one group control.

→ It is necessary to change the group address where marked with \*.

Automatic address setting		Available (*1)						
Outdoor	Line address	1		2			1	
Configuration								
Indoor	Line address	1	1	2	2	2	3	3
	Indoor unit address	1	2	1	2	3	1	2
	Group address	1	2	2	2	2	2	2
	Group address	1	2	1 → 2*	2	2	1 → 2*	2

\*1

In case of group control over refrigerant systems, automatic address setting is available only when all indoor units connected to a group control are turned on during address setting.

If an automatic address setting is conducted under the condition of power-ON only in the refrigerant system in which the address is set up. It will cause an error code "L03" (Duplicated indoor header units) because indoor header units exist for each refrigerant system. In this case, change the group address on the wired remote controller so that only one indoor unit becomes the header unit in one group control.

→ It is necessary to change the group address where marked with \*.



## 4-3-2 Setting for 1 to 1 system

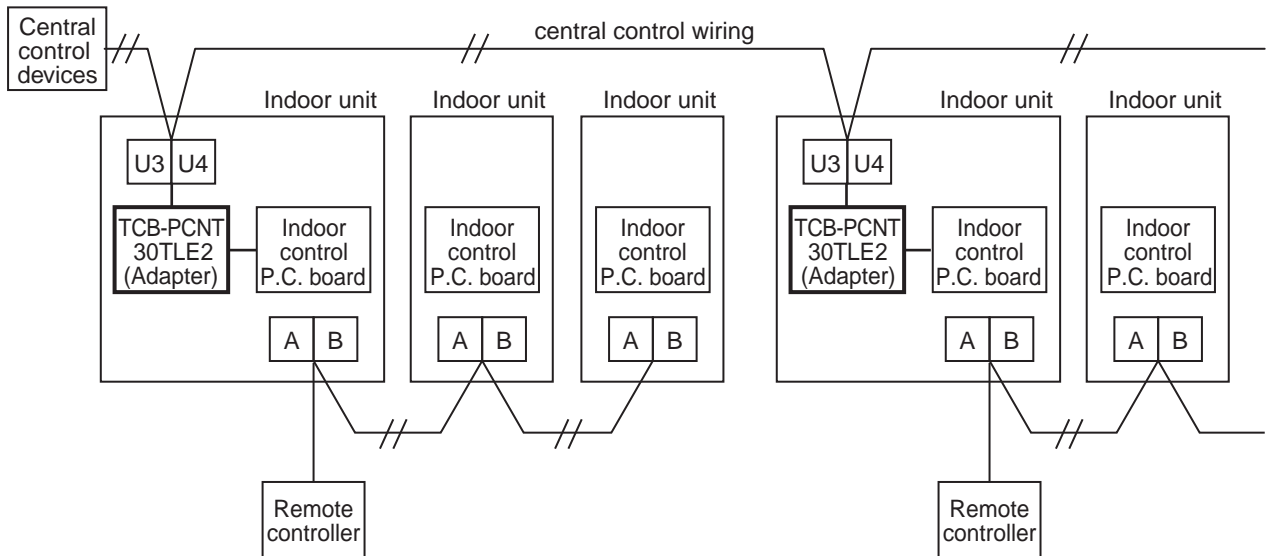
### 4-3-2 (1) Address re-setup

#### POINT 1

When controlling the super-digital inverter and the digital inverter, the adaptor named “1:1 model” connection interface (TCB-PCNT30TLE2) is necessary.

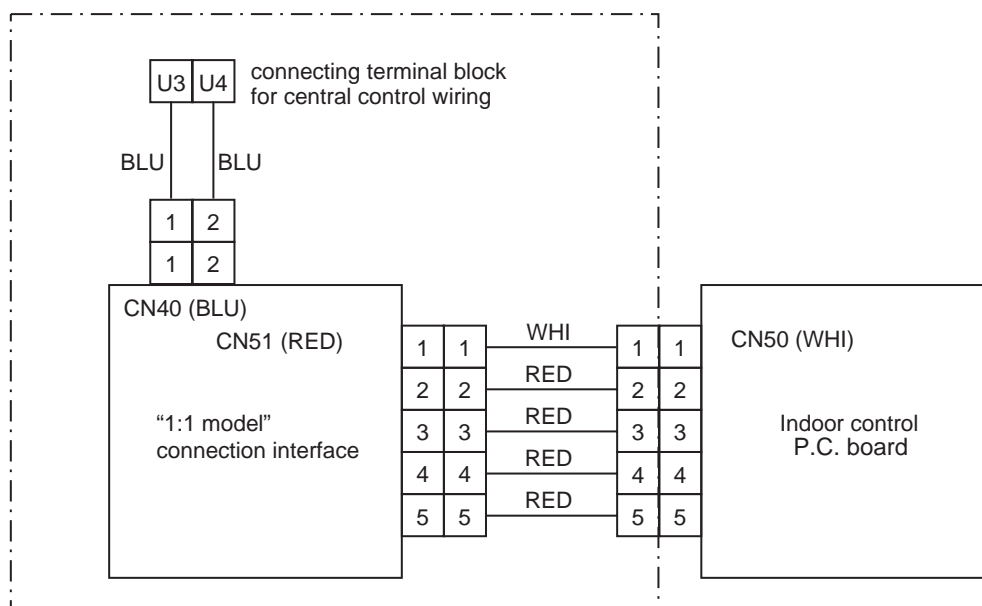
#### 1. Cabling connection of control wiring

Attach an adaptor for each group in group control operation (including individual control).  
Connect the adaptor to the header indoor unit in the group control. (For details, see **POINT 3.**)



#### 2. Cabling connection diagram with indoor control P.C. board

- For details, refer to the Installation Manual.

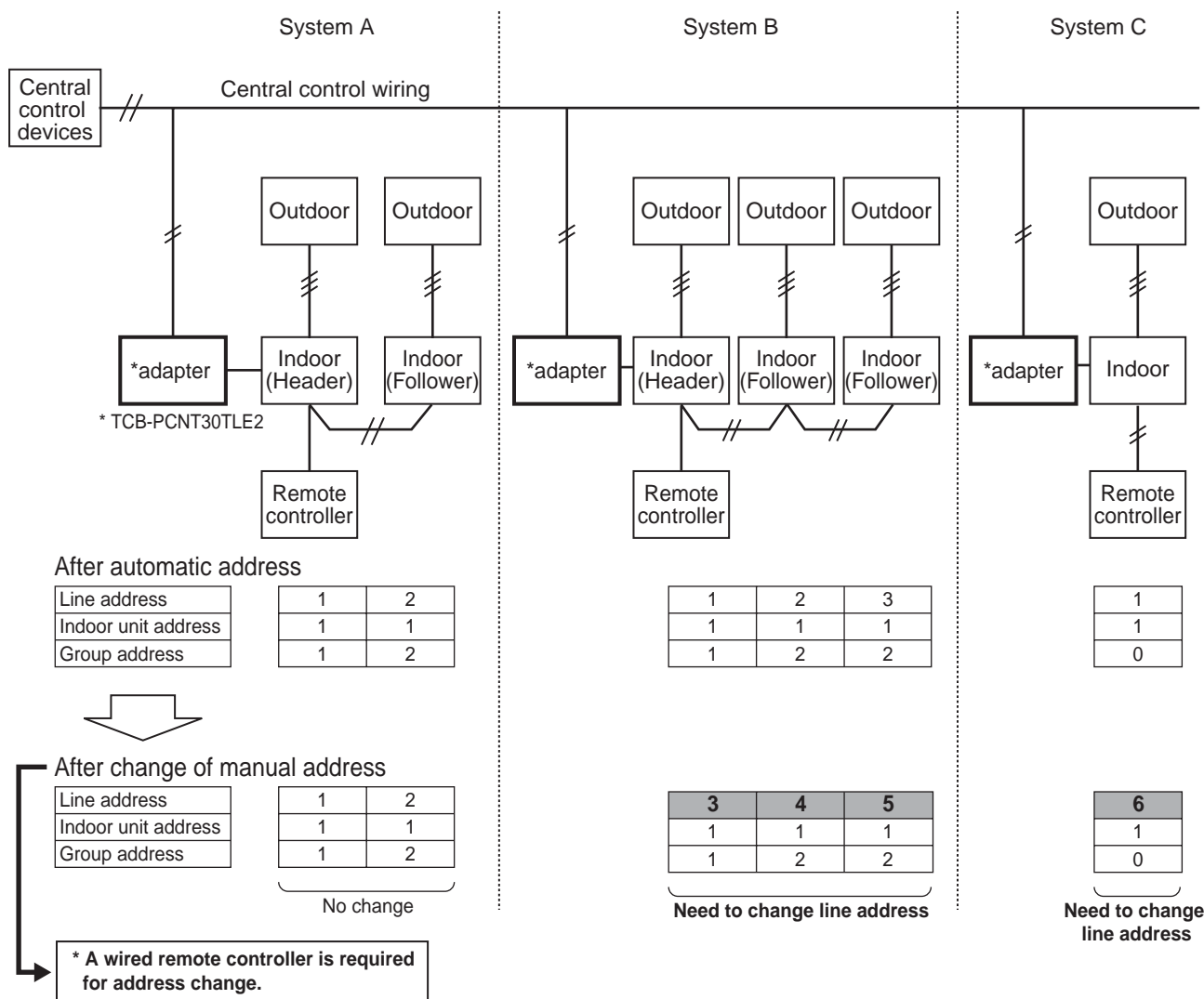


- The enclosed section shown above includes the attached parts.
- The cables connected between U3 and U4 are non polarity.

## POINT 2

After automatic address setup, it is necessary to change the line address from the wired remote controller on each system. (Manual re-setup)

**Reason :** After automatic address setup, all the line addresses become “1” except a group control and then a duplicated address error “E08” is output.

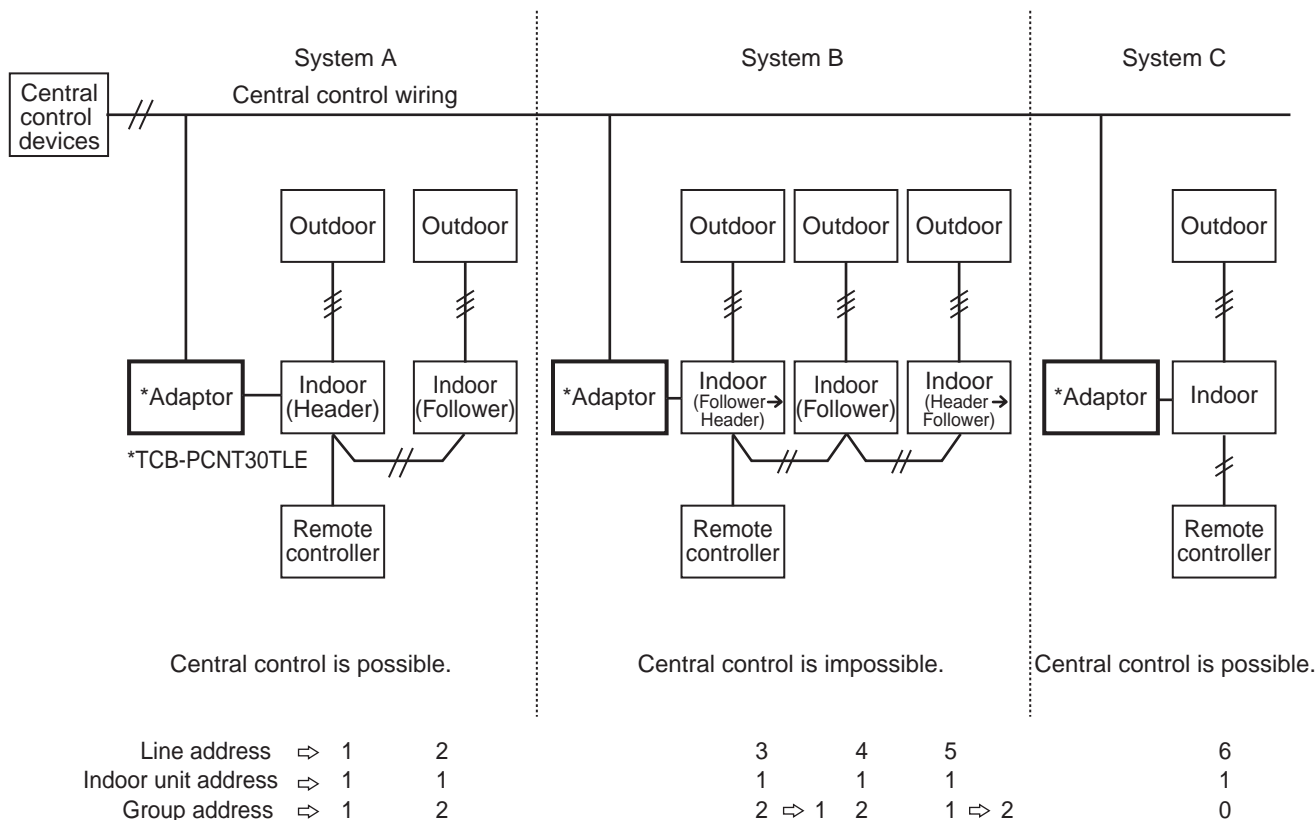


- Set up a line address for each refrigerant system.
- Set up a line address so that it is not duplicated with other systems.  
(If the central control is conducted with VRF systems, set up a line address so that it is not duplicated with line addresses of VRF systems.)
- When performing a central control over 30 systems, it is necessary to change the address setup.  
(including VRF system)

### POINT 3

When the central control is performed on indoor units with twin control and are in a group, it may be necessary to change the group address. (Adaptor is attached to the header indoor unit.)

**Reason :** The central control device communicates with individual indoor units, header indoor unit of the group control, and header indoor unit with twin control. However, as the address automatically sets up which unit will become the header unit is indefinite. Therefore the unit with the adaptor may not become the header indoor unit, central control would not be available.



\* A wired remote controller (RBC-AMT21E, RBC-AMT31E) is required for address change.

### How to check group address (Header/Follower indoor unit setup)

\* Check the group address after confirming which unit is attached with the adaptor.

### Procedure Operation while air conditioner stops.

- 1 Push the SET + CL + TEST buttons simultaneously for 4 seconds or more.
- 2 The indoor unit in which the fan is turned on is the header indoor unit.




Indoor unit in which the fan is turned on = Indoor unit with the adaptor : **Case 1**  
 Indoor unit in which the fan is turned on ≠ Indoor unit with the adaptor : **Case 2**


### Case 1

(In case that the indoor unit in which the fan is turned on and the unit with the adaptor are the same)

#### 3 As the central control is available, push the button. (Setup is determined.)

When pushing the  button, the display disappears and the status returns to the normal stop status.

(The operation on the remote controller is not accepted for approx. 1 minute after the  button has been pushed.)

If the operation on the remote controller is not accepted for 1 minute or more after  button has been pushed an incorrect address setup must be considered.

In this case, automatic address is performed again. After approx. 5 minutes or more, set up the group address again from procedure 1.

### Case 2

(In case that the indoor unit in which the fan is turned on and the unit from procedure 1 with the adaptor are different)

As the central control is unavailable, change the address in the following procedure.

Indoor unit without the adaptor : Header indoor unit → Follower indoor unit.

#### 3 Using the buttons, select Item code 14.

#### 4 Check the setup data is 0001 and change the setup data from 0001 to 0002 using the buttons.

#### 5 Push the button. In this time, the setup has finished if the display changes from flashing to lit.

Indoor unit with the adaptor : Follower indoor unit → Header indoor unit.

#### 6 Push the button to turn on the fan of the indoor unit attached with the adaptor.

#### 7 Using the buttons, select Item code 14.


#### 8 Check the setup data is 0002 and change the setup data from 0002 to 0001 using the buttons.

#### 9 Push the button.


### Reconfirmation of re-set up


In this time, the setup has finished if the display changes from flashing to lit.


#### 10 When the above setup operation has finished, push the button to select the indoor unit of which setup has been changed. Using the buttons, specify the Item code 14 and check the contents has changed.

Pushing the  button enables the clearance of setup contents until now.  
(In this case, repeat the from procedure 1.)

#### 11 Push the button. (Setup is determined.)

When pushing the  button, the display disappears and the status returns to the normal stop status.

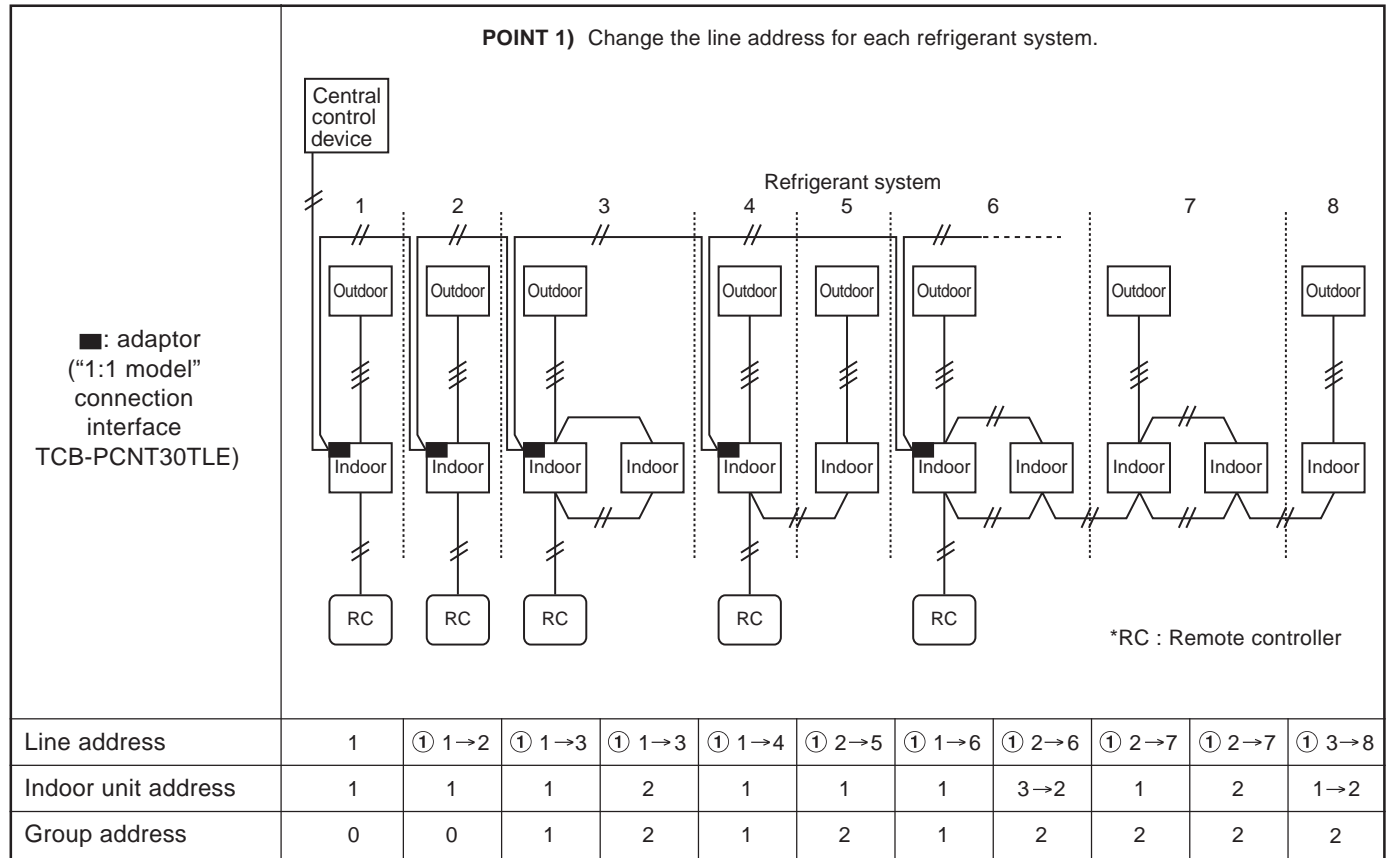
(The operation on the remote controller is not accepted for approx. 1 minute after the  button has been pushed.)

If the operation on the remote controller is not accepted for 1 minute or more after  button has been pushed, an incorrect address setup must be considered.

In this case, automatic address is performed again. After approx. 5 minutes or more set up the group address again from procedure 1.

## 4-3-2 (2) Indoor address change example

### 1 In case of central control up to 29 refrigerant systems (including No. of VRF systems)

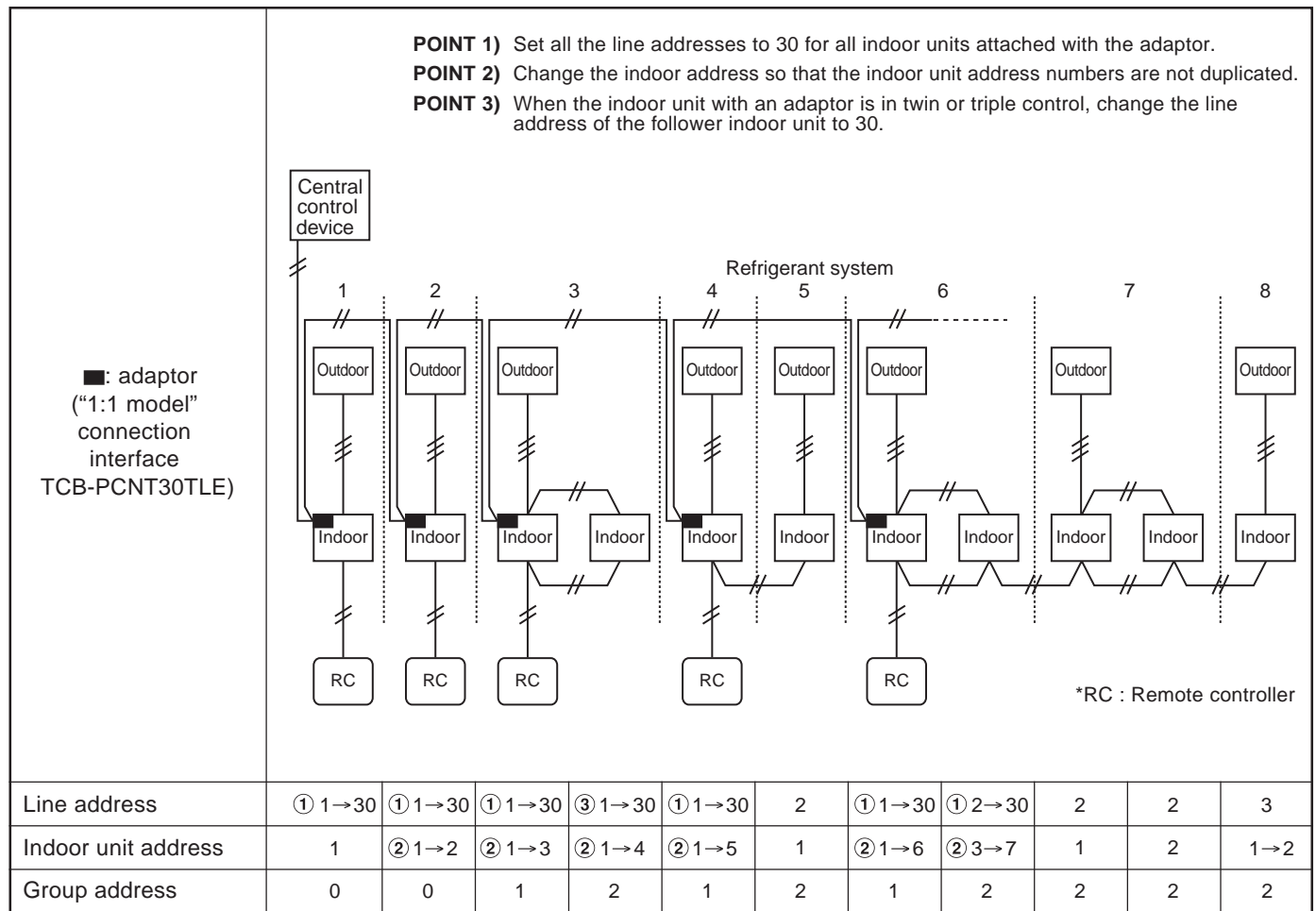


Change the line address on the wired remote controller after automatic address setting.

Automatic address is impossible.  
Set up the address again manually on the wired remote controller.

## 2 In case of central control over 30 refrigerant systems (including No. of VRF systems if any)

\* Change operation is same to the above 1 up to the 29th refrigerant system.



Change the line address on the wired remote controller after automatic address setting.

Automatic address is impossible.  
Set up the address again manually  
on the wired remote controller.

## 4-4 Address setting for Control System devices

### 4-4-1 address setting flow

#### ⚠ CAUTION

Before setting the TCS-NET air conditioning system, be sure to complete address setting and trial operation of each air conditioning system.

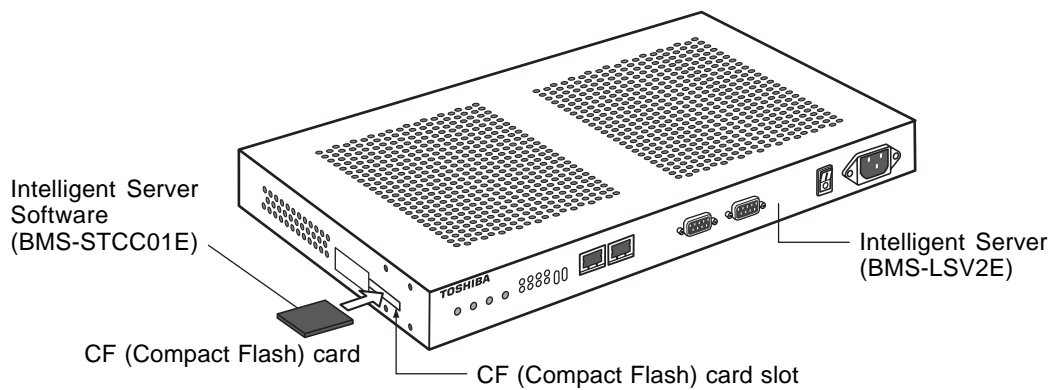
(Address setting --- Line/Group/indoor unit address, central control address if central controller exists  
Trial operation --- Test operation should be performed on each refrigerant system one by one.)

Setting flow	Contents	Reference No.
Intelligent Server setting	CF card mounting, Dip switch setting	4-4-2
TCS-Net relay I/F setting	Address setting (SW01 on P.C. board, address 1 to 8) Terminator Resistor setting (SW06 on P.C. board)	4-4-3
Energy monitoring exist ?		
Energy monitoring relay I/F setting	Address setting (SW01 on P.C. board, address 1 to 4)	4-4-4
Digital I/O relay I/F exist ?		
Digital I/O Relay I/F setting	Address setting (SW01 on P.C. board, address 1 to 4)	4-4-5
Power ON (Trial Operation)		Chapter. 5

## 4-4-2 Setting for Intelligent server

### Installing CF (Compact Flash) card

Insert the CF (Compact Flash) card fully into the CF (Compact Flash) card slot on the side of the Intelligent Server.



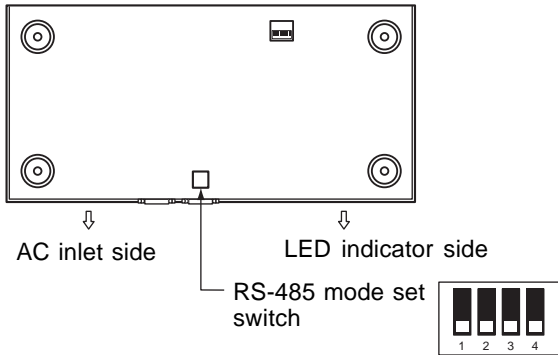
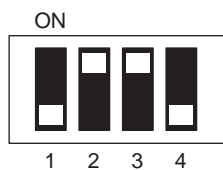
#### REQUIREMENT

- Do not insert or remove the CF (Compact Flash) card when the intelligent server power is on. Doing so may cause a failure.
- If the CF (Compact Flash) card is not inserted properly, the Intelligent Server will not work.

### RS-485 operation mode setting

The RS-485 mode set dip switch is located on the underside of the Intelligent Server. Set the switch as follows:

1	2	3	4
OFF	ON	ON	OFF



#### NOTE

If the RS-485 mode set switch is set incorrectly, the Intelligent Server will not work.

1	ON	A terminator resistor is connected between TX(+) and TX(-).
	OFF	No terminator resistor is connected between TX(+) and TX(-).
2	ON	A terminator resistor is connected between RX(+) and RX(-).
	OFF	No terminator resistor is connected between RX(+) and RX(-).
3	ON	Half-duplex mode (Note 1)
	OFF	Full-duplex mode (Note 2)
4	Not used	

(Note 1) Transmit data sent from the Intelligent Server is not received by the same server during transmission.

(Note 2) Transmit data sent from the Intelligent Server is also received by the same server during transmission.



### 4-4-3 Setting for TCS-NET relay interface

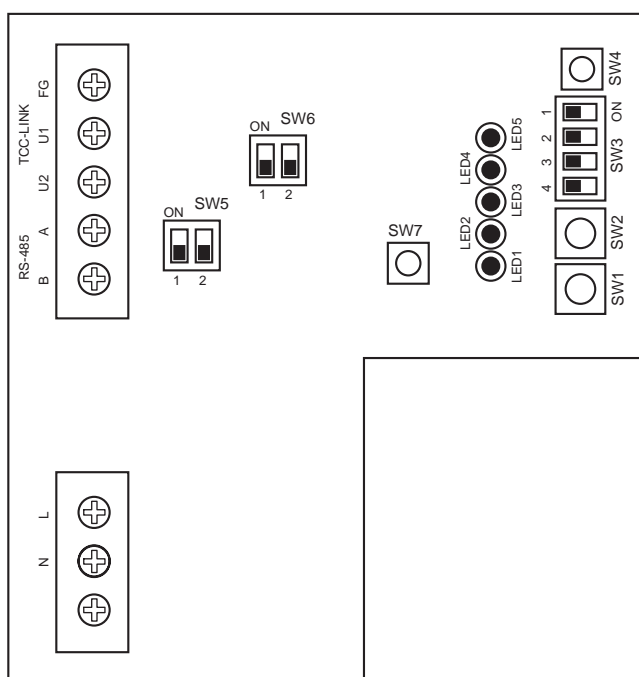
The following settings are necessary to use the TCS-NET Relay Interfaces.







- **SW1** TCS-NET Relay Interface address set switch  
When two or more TCS-NET Relay Interfaces are used, set a different address on SW1 to avoid address duplication.  
Assign addresses in ascending order.

#### ⚠ CAUTION

- **Set relay interface addresses according to the air conditioner address table.**  
For the relay interface whose address SW1=1, perform terminator resistor setting.
- **When the SW1 setting has been changed, push the reset switch SW7. The new address setting is read.**

- **SW2** Test switch
- **SW3** Test switch
- **SW4** Test switch  
Not used during operation.  
Set these switches to zero (0) or “all OFF”.
- **SW5** RS-485 terminator resistor select switch  
Set “120 ohm” only when the relay interface address SW=1, and set “open” for other relay interfaces.
- **SW6** Main BUS terminator resistor select switch  
The Main BUS terminator resistor is set on the air conditioner side. Set SW6 to “open”.
- **SW7** Reset switch  
When performing an address setting with SW1, push this reset switch after the address setting to read the set value.

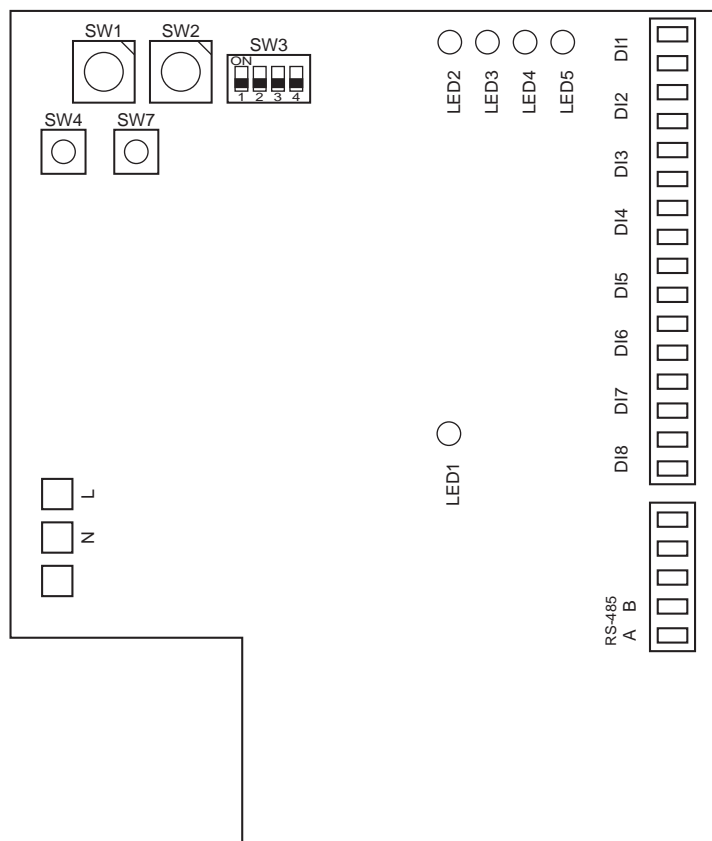


SW1	Relay interface address set switch			
	1-8	Relay interface address		
	0, 9-F	Not used		
SW2	Test switch (0 usually)			
SW3	Test switch (all OFF usually)			
SW4	Test switch			
SW5	RS-485 terminator resistor select switch			
	<div>ON  1 2</div>	<div>ON  1 2</div>	<div>ON  1 2</div>	<div>ON  1 2</div>
	60 ohm	120 ohm	120 ohm	Open
SW6	Main BUS Terminator resistor select switch			
	<div>ON  1 2</div>	<div>ON  1 2</div>	Note:Bit 2 is not used.	
	100 ohm	Open		
SW7	Reset switch			
LED1	Power indicator			
LED2	RS-485 communication status indicator			
LED3	Main BUS Communication status indicator			
LED4	Main BUS Communication error indicator			
LED5	Test indicator			

#### REQUIREMENT

- **RS-485 terminator resistor select switch SW5.**  
Set “120 ohm” only when the TCS-NET Relay Interface address SW=1 and set “open” for other relay interfaces.
- **The Main BUS terminator resistor is set on the air conditioner side. Set SW6 to “open”.**

## 4-4-4 Setting for Energy monitoring relay interface



SW1	Address set switch	
	1 - 4	Address
	0,5 - F	Not used
SW2	Operating mode set switch (0 usually)	
SW3	Test switch (all OFF usually)	
SW4	Test switch	
SW7	Reset switch	
LED1	Power indicator	
LED2	RS-485 communication status indicator	
LED3	Not used	
LED4	Test indicator	
LED5	Test indicator	

The following settings are necessary to use Energy Monitoring Relay Interfaces.

- **SW1** Address set switch  
When two or more Energy Monitoring Relay Interfaces are used, set a different address for each unit to avoid address duplication.  
Assign addresses in an ascending order. (from 1, 2, 3 . . . n)

### ⚠ CAUTION

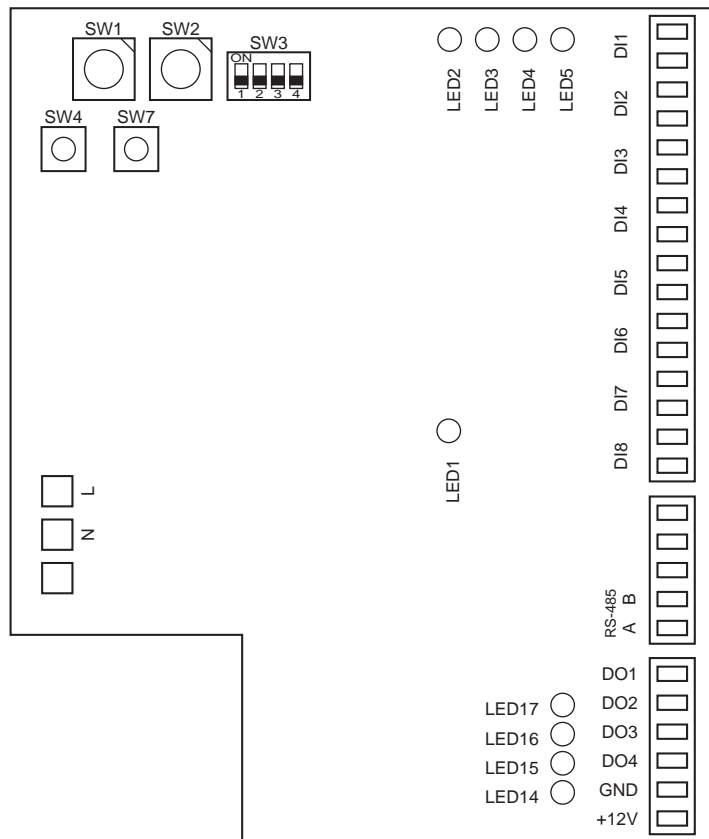
- Set the relay interface addresses according to the air conditioner address table.
- When the SW1 setting has been changed, push reset switch SW7. The new address setting is read.
- You can set the Energy Monitoring Relay Interface address independently from the TCS-NET Relay Interface address or the Digital I/O Relay Interface address.

- **SW2** Operation mode set switch
- **SW3** Test switch
- **SW4** Test switch
- **SW7** Reset switch

These switches are not used during normal operation. Set zero (0) or "all OFF".

When performing a address setting with SW1, push this reset switch after the address setting to read the set value.

## 4-4-5 Setting for Digital I/O relay interface



SW1	Address set switch	
	1 - 4	Address
	0,5 - F	Not used
SW2	Operating mode set switch (0 usually)	
SW3	Test switch (all OFF usually)	
SW4	Test switch	
SW7	Reset switch	
LED1	Power indicator	
LED2	RS-485 communication status indicator	
LED3	Not used	
LED4	Test indicator	
LED5	Test indicator	
LED14 - LED17	Digital output indicator	

The following settings are necessary to use the Digital I/O Relay Interfaces.

- **SW1 Address set switch**  
When two or more Digital I/O Relay Interfaces are used, set a different address for each unit to avoid address duplication.  
Assign addresses in ascending order.

### ⚠ CAUTION

- Set relay interface addresses according to the air conditioner address table.
- When the SW1 setting has been changed, push the reset switch SW7. The new address setting is read.

- SW2 Operation mode set switch
  - SW3 Test switch
  - SW4 Test switch
  - SW7 Reset switch
- When performing address setting with SW1, push this reset switch after address setting to read the set value.

These switches are not used during normal operation. Set zero (0) or "all OFF".



# **5**

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## **TRIAL OPERATION**

- 5-1 Trial operation**
- 5-2 Air conditioning control system troubleshooting**
  - 5-2-1 Faults on the air conditioner**
  - 5-2-2 Faults on the air conditioning control system**

## 5-1 Trial operation

Item	Description	Check point
Preparation	Preparation of necessary documents	<ul style="list-style-type: none"> <li>● Meeting with the customer on setting information</li> <li>Creation of control wiring system diagram</li> <li>Creation of air conditioner address table</li> <li>Creation of schedule table for each R.C. group/indoor</li> </ul>
Entering names	Entry of setting conditions	<ul style="list-style-type: none"> <li>● Create a setting file including setting data.</li> <li>● Set the setting data in the Touch Screen Controller by overwriting (copy) the data on the CF (Compact Flash) card.</li> </ul>
Checks before trial operation (control wiring)	Checking installation work	<ul style="list-style-type: none"> <li>● Power supply wiring</li> <li>● Control wiring</li> <li>● Earthing of units</li> </ul>
	Checking control wiring using the before-trial operation check list. Checking block/tenant/area names Checking schedules	<ul style="list-style-type: none"> <li>● Check control wiring specifications and wire sizes.</li> <li>● Check block/tenant/area names using the air conditioner address table.</li> <li>● Check schedules using the schedule table for each R.C. group/indoor.</li> </ul>
Trial operation startup	Power on Initial screen System initialization	<ul style="list-style-type: none"> <li>● Turn on the Touch Screen Controller with the Intelligent Server and the relay interface turned on.</li> <li>● The controller software starts automatically and the total building control screen appears.</li> <li>● Select "System Initialize" from the option to initialize the system.</li> </ul> <div> <p>When "System Initialize" is selected, a message "Will you re-cold start all intelligent server?" appears. Select "Yes". The setting file is transmitted from the Intelligent Server to the relay interface.</p> <p>The L1 or L2 LED on the Intelligent Server blinks during the startup process. When the startup process ends successfully, the L1 and L2 LEDs turn off. If the startup process fails, the L1 LED lights up. Retry "System Initialize" from the Touch Screen Controller in this case. Or select "TPC-CON" on the hidden Windows task bar at the bottom of the LCD screen. You can see a message on the screen during the system reset. The "Access Start" message appears at the end of several message lines. It takes several minutes for system initialization.</p> </div>
Trial operation	Checking communication status (referring to the control wiring system diagram)	<ul style="list-style-type: none"> <li>● Select air conditioning screen after System Initialize, to check communication status and connection of air conditioners.</li> </ul> <div> <p>Check that there is no orange frame on the command button of the air conditioner, this indicates a communication error. If an orange frame is present, check the power is on (or off), control line wiring, and address setting of the air conditioner.</p> </div>
	Checking operation status using the before-trial operation check list.	<ul style="list-style-type: none"> <li>● Check operation status for each block, tenant, area and R.C. group/indoor. <ul style="list-style-type: none"> <li>- ON/OFF</li> <li>- Operation mode</li> <li>- Set temperatures</li> </ul> </li> </ul> <div> <p>Check all indoor units whether controls can be changed from the Touch Screen Controller and whether the setting changed by the remote controller is reflected on the Touch Screen Controller on both the Touch Screen Controller side and the on-site remote controller side.</p> </div>

Trial Operation Check list

• Building name:

		R.C. group/indoor	Display name			Check list																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
			Block name	Tenant name	Area name	ON/OFF			Operation mode			Set temperature																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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• A ..... ON  
 • B ... ON/OFF  
 • C ..... OFF

• D ..... COOL  
 • E ... COOL/HEAT  
 • F ..... HEAT

## Trial Operation Check list (Example)

• Building name:

	R.C. group/indoor	Display name		Check list									
		Block name	Tenant name	Area name	ON/OFF			Operation mode			Set temperature		
					R.C. group/ indoor	Area	Tenant	Block	R.C. group/ indoor	Area	Tenant	Block	Tenant
1	PAC-B•1F-1	1F	Tenant A	Shop A	B	B	B	B	E	E	E	OK	OK
2	PAC-B•1F-1	1F	Tenant A	Shop A	B	B	B	B	E	E	E	OK	OK
3	PAC-B•1F-1	1F	Tenant A	Shop A	B	B	B	B	E	E	E	OK	OK
4	PAC-B•1F-1	1F	Tenant A	Shop A	B	B	B	B	E	E	E	OK	OK
5	PAC-B•1F-1	1F	Tenant A	Shop A	B	B	B	B	E	E	E	OK	OK
6	PAC-B•1F-2	1F	Tenant B	Shop B	B	B	B	B	E	E	E	OK	OK
7	PAC-B•1F-3	1F	Tenant B	Shop C	B	B	B	B	E	E	E	OK	OK
8	PAC-B•1F-4	1F	Tenant B	Shop D	B	B	B	B	E	E	E	OK	OK
9	PAC-B•1F-5	1F	Tenant B	Shop E	B	B	B	B	E	E	E	OK	OK
10	PAC-M•1F-1	1F	Tenant C	Shop F	B	B	B	B	E	E	E	OK	OK
11	PAC-M•1F-2	1F	Tenant C	Shop F	B	B	B	B	E	E	E	OK	OK
12	PAC-M•1F-3	1F	Tenant C	Shop G	B	B	B	B	E	E	E	OK	OK
13	PAC-M•1F-4	1F	Tenant C	Shop G	B	B	B	B	E	E	E	OK	OK
14	PAC-M•1F-5	1F	Office A	Office	B	B	B	B	E	E	E	OK	OK
15	PAC-M•1F-6	1F	Office A	Office	B	B	B	B	E	E	E	OK	OK
16	PAC-M•1F-7	1F	Office A	Meeting room	B	B	B	B	E	E	E	OK	OK
17	PAC-M•1F-8	1F	Office A	Meeting room	B	B	B	B	E	E	E	OK	OK
18	PAC-S•2F-1	2F	Shared space	A	B	B	B	B	E	E	E	OK	OK
19	PAC-S•2F-2	2F			B	B	B	B	E	E	E	OK	OK
20	PAC-S•2F-3	2F	Tenant D	Shop H	B	B	B	B	E	E	E	OK	OK

• A ..... ON  
 • B ..... ON/OFF  
 • C ..... OFF  
 • D ..... COOL  
 • E ..... COOL/HEAT  
 • F ..... HEAT



## 5-2 Air conditioning control system troubleshooting

Regarding faults that may occur after installation, trial operation and adjustments of Air conditioning control system and their remedies

### 5-2-1 Faults on the air conditioner

- The Touch Screen Controller displays an error code and description that are the same as those displayed on the remote controller.
- Check the faulty air conditioner according to the check points of each error code of the air conditioner.

### 5-2-2. Faults on the air conditioning control system

#### Faults detected by Touch Screen Controller

- Touch Screen Controller displays an error code and description. (Not displayed on the remote controller)
- Take remedial action according to the description and possible causes of each error code in the table below.

Error code	Description	Possible causes	Remedy
S00	Intelligent server communication error.	Intelligent Server is not powered on. Switching HUB is not powered on. Improper connection of network cable. Malfunction of Intelligent Server.	Remove the cause and then power on the Intelligent Server, Switching HUB and Touch Screen Controller.
S01	Communication error between Indoor and BMS.	Air conditioner is not powered on. Improper TCC-LINK connection. Malfunction of Intelligent Server. Malfunction of Relay Interface.	Remove the cause and then power on the air conditioner, Intelligent Server and Relay Interface.
S06	BMS-IFWH communication error.	Energy Monitoring Relay Interface is not powered on. Improper RS-485 cable connection. Malfunction of Energy Monitoring Relay Interface. Malfunction of Intelligent Server.	Remove the cause and then power on the Energy Monitoring Relay Interface and Intelligent Server.
S07	BMS-IFDD communication error.	Digital I/O Relay Interface is not powered on. Improper RS-485 cable connection. Malfunction of Digital I/O Relay Interface. Malfunction of Intelligent Server.	Remove the cause and then power on the Digital I/O Relay Interface and Intelligent Server.

## Other faults

No.	Description	Possible causes	Remedy
1	Nothing is displayed on the Touch Screen Controller screen.	Touch Screen Controller is not powered on.	Power on the Touch Screen Controller.
		Backlight turns off automatically due to no touch-screen operation for 10 minutes.	Touch the Touch Screen Controller screen.
		Malfunction of Touch Screen Controller.	Power off and on the Touch Screen Controller.
2	Remote controller does not work. (Central control in progress)	Air Conditioning Control System malfunctioned or stopped after local prohibition is set by the system.	Power off and on the air conditioner.
3	Remote controller does not work. (Operation switchover control in progress)	Operation mode range selection is set by the Air Conditioning Control System.	Check the operation mode range selection setting and correct it if wrong.
4	Scheduled operation of air conditioners is disabled.	Air Conditioning Control System is not working.	Power on the equipment of the system.
		Scheduled operation is not set or non-operation date/special day setting is not updated. (The setting must be updated every year.)	Perform setting for scheduled operation.
5	Air conditioner stops (out of control).	Scheduled operation is not set correctly.	Check the scheduled operation setting and correct it if wrong.
		Incorrect input of door-lock signal.	Correct the signal connection.
6	Energy monitoring and billing result is incorrect.	Improper connection between power meter and BMS-IFWH3E.	Correct the connection.
		Charging schedule is not set correctly. Non-operation date/special day setting is not updated. (The setting must be updated every year.)	Check the charging schedule setting and correct it if wrong.

## Fault judgment by Intelligent Server

No.	Indication	Possible causes	Remedy
1	An LED other than "RN" LED at the upper left is lighting or flashing after 10 minutes passed from power on of Intelligent Server.	No Relay Interface is powered on.	Check whether every Relay Interface is powered on (shown by LED1 lighting red) and turn on if powered off.
		Communication with any Relay Interface fails due to improper RS-485 connection or disconnection of connector.	Correct the connection.
		Malfunction of Intelligent Server.	Power off and on the Intelligent Server.

## Faults of TCS-Net Relay Interface

No.	Indication	Possible causes	Remedy
1	LED2 (green) does not light. (RS-485 communication error)	Intelligent Server is not powered on.	Power on the Intelligent Server.
		Improper RS-485 connection or disconnection of connector.	Correct the connection.
2	LED3 (orange) does not light.	Improper connection of Main BUS due to disconnection or lack of terminating resistors, etc.	Correct the connection.



