MITSUBISHI ELECTRIC

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Air Conditioning Control System
AE-200A/AE-50A
AE-200E/AE-50E(1st edition)

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1. Safety precautions

► Thoroughly read the following safety precautions prior to installation.

► Observe these precautions carefully to ensure safety.

► After reading this manual, pass the manual on to the end user to retain for future reference.

► The user should keep this manual for future reference and refer to it as necessary. This manual should be made available to those who repair or relocate the units. Make sure that the manual is passed on to any future air conditioning system user.

⚠ WARNING	: indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	: indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
CAUTION	: addresses practices not related to personal injury, such as product and/or property damage.

1-1. General precautions

⚠ WARNING

Do not install the controller in areas where large amounts of oil, steam, organic solvents, or corrosive gases (such as ammonia, sulfuric compounds, or acids), or areas where acidic/alkaline solutions or special chemical sprays are used frequently. These substances may significantly reduce the performance and corrode the internal parts, resulting in electric shock, malfunction, smoke, or fire.

To reduce the risk of short circuits, current leakage, electric shock, malfunction, smoke, or fire, do not wash the controller with water or any other liquid.

To reduce the risk of electric shock, malfunction, smoke, or fire, do not touch the electrical parts, USB memory, or touch panel with wet fingers.

To reduce the risk of injury or electric shock, before spraying a chemical around the controller, stop the operation and cover the controller.

To reduce the risk of injury, keep children away while installing, inspecting, or repairing the controller.

If you notice any abnormality (e.g., burning smell), stop the operation, turn off the controller, and consult your dealer. Continuing the operation may result in electric shock, malfunction, or fire.

Properly install all required covers to keep moisture and dust out of the controller. Dust accumulation and the presence of water may result in electric shock, smoke, or fire.

⚠ CAUTION

To reduce the risk of fire or explosion, do not place flammable materials or use flammable sprays around the controller.

To reduce the risk of electric shock or malfunction, do not touch the touch panel, switches, or buttons with a sharp object.

To avoid injury from broken glass, do not apply excessive force to the glass parts.

To reduce the risk of injury, electric shock, or malfunction, avoid contact with the sharp edges of certain parts.

Consult your dealer for the proper disposal of the controller. Improper disposal will pose a risk of environmental pollution.

1-2. Precautions for relocating or repairing the unit

⚠ WARNING

The controller must be repaired or moved only by qualified personnel. Do not disassemble or modify the controller. Improper installation or repair may result in injury, electric shock, or fire.

1-3. Additional precautions

CAUTION

To avoid discoloration, do not use benzene, thinner, or chemical rag to clean the controller. When the controller is heavily soiled, wipe the controller with a well-wrung cloth that has been soaked in water with mild detergent, and then wipe off with a dry cloth.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

I Contents of This Document

This document describes the changes made in AE-200 and AE-50 from AG-150 and EB-50 and the additional functions in Chapter IV “Energy Management Function” and Chapter V “Connection of AHC.”

[Throughout this document:]

- Centralized Controller AE-200A/AE-200E is referred to as AE-200.
- Centralized Controller AE-50A/AE-50E is referred to as AE-50.
- PAC-YG66DCA is referred to as DIDO controller.
- PAC-YG60MCA is referred to as PI controller.
- PAC-YG63MCA is referred to as AI controller.
- Advanced HVAC Controller is referred to as AHC.
- Heating, Ventilation and Air Conditioning is referred to as HVAC.
- Booster Unit and Water HEX unit are referred to as Air To Water (PWFY) unit.
- ** in the model names indicates the capacity of outdoor unit or indoor unit or the wind volume of LOSSNAY (when ** is 50, the wind volume is 500m³/hr at a High notch).

Ⅱ Outline of Product

AE-200/AE-50 is a centralized air conditioning control system provided with a 10.4-inch color LCD panel, on which air conditioners and general-purpose devices can be controlled and monitored.
Up to 50 indoor units can be controlled and monitored with one set of AE-200.
When more than 50 indoor units are connected, AE-50 can be added (Up to 3 sets) to control and monitor up to 200 indoor units.
When the controller is connected with a personal computer through LAN, the units can be controlled and monitored on the personal computer.
* To use the Web, a personal computer with Windows, Internet Explorer Ver8.0, 9.0 or 10.0 and JAVA is required.
In an environment where a router for Internet connection is connected on LAN, the units can be controlled and monitored remotely through the Internet. (To connect to the Internet, ensure the security.)
The energy management function displays the power consumption of the air conditioners in an easy-to-understand graphic form.
Data on power consumption, etc. can be output to the personal computer.
When AHC is connected, it is possible to monitor the operation condition, errors, temperatures and humidities of the general-purpose devices connected to AHC.
Daily, season (the first to fifth weeks) and annual schedules can be set.
Optional functions, such as energy saving control and peak cut control, can be used by registering the licenses.

[Differences between AG-150 and EB-50]

AE-200/AE-50 differ from AG-150 (old model) and EB-50 (old model) in the following points.

Table 2.1 Differences between AG-150 and EB-50

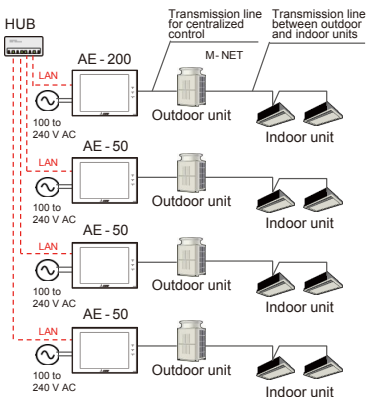
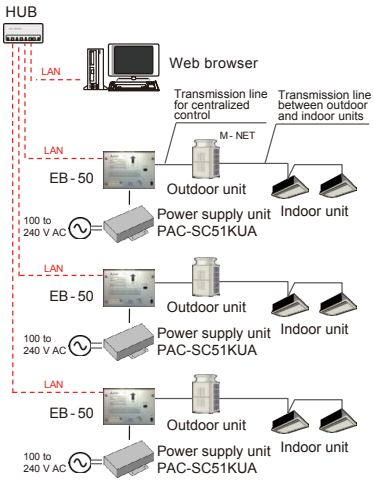
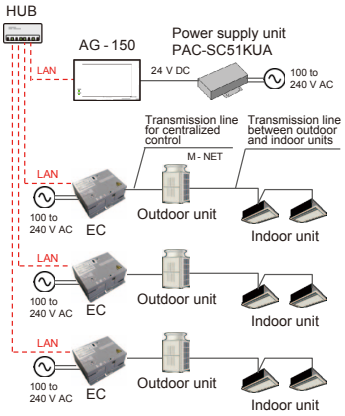
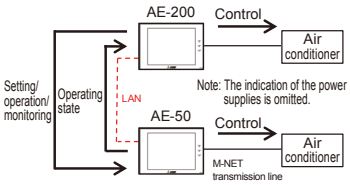
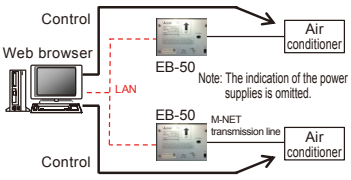
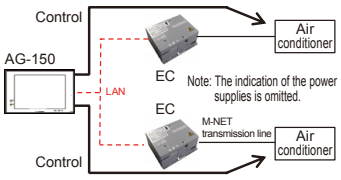
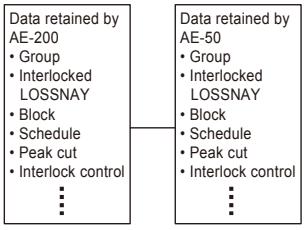
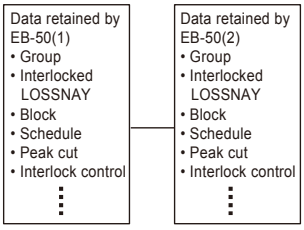
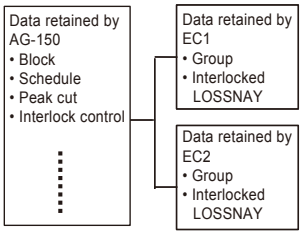
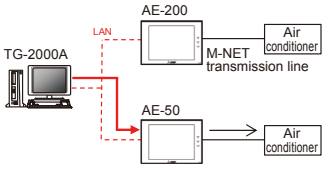
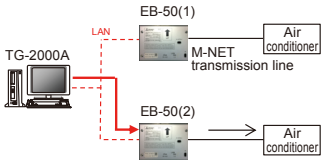
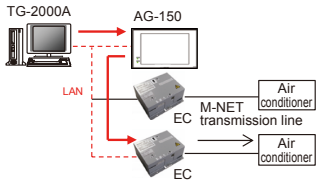
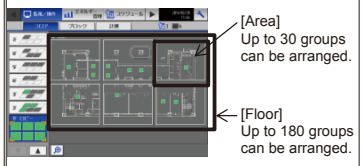
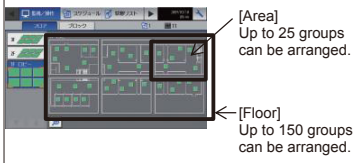
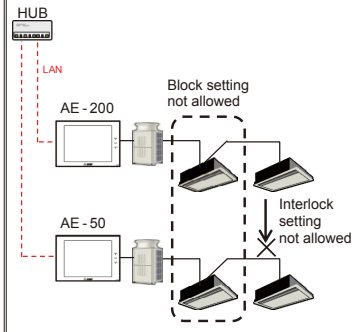
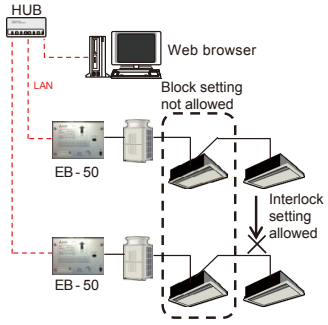
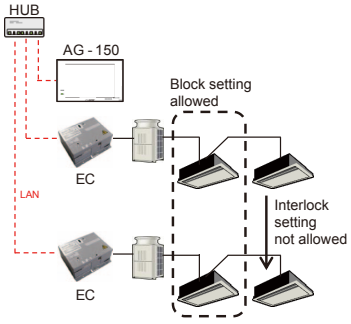
	New model AE-200	Old model EB-50	Old model AG-150
Appearance	Screen size: 10.4 in. Number of pixels: 800 dots × 600 dots 	Without LCD Control and monitoring only via Web browser 	Screen size: 9 in. Number of pixels: 800 dots × 480 dots 
Number of connected units	Up to 200 units	Up to 50 units	Up to 150 units
Connection	M-NET of AE-200 can be used even when AE-50 is connected to increase the number of units. AE-200/AE-50 must be supplied with 100 to 240 V AC.  Note: The indication of the power supplies for the outdoor and indoor units is omitted. Note: To connect a system controller or the like to the transmission line for centralized control, a power supply unit (PAC-SC51KUA) is necessary.	Up to 50 units can be connected to one set of EB-50. For EB-50, a power supply unit (PAC-SC51KUA) is necessary.  Note: The indication of the power supplies for the outdoor and indoor units is omitted. Note: The indication of 100 to 200 V AC and 24 V DC is omitted in the following drawings.	To connect an expansion controller (PAC-YG50ECA), M-NET line of AG-150 cannot be used. For AG-150, a power supply unit (PAC-SC51KUA) is necessary.  Note: The indication of the power supplies for the outdoor and indoor units is omitted.
Control	Each set of AE-200 and AE-50 controls the air conditioner. (Decentralized control) 	Each set of EB-50 controls the air conditioner. (Centralized control from Web browser) 	AG-150 controls all air conditioners connected to the expansion controller (PAC-YG50ECA). (Centralized control) 
Retained data	Each of AE-200/AE-50 retains the data only on its own system. AE-200 does not retain the data on AE-50 system. AE-200 collects and uses the data on AE-50 as needed. When a communication error occurs in AE-50, the data retained by AE-50 cannot be displayed or set on AE-200. 	Each set of EB-50 retains the data only on its own system. It does not retain the data on other EB-50 systems. The PC collects the data on EB-50 as needed, so that the operator can control and monitor the system on the PC. 	The data retained by the expansion controller includes only the data on group and interlocked LOSSNAY. AG-150 retains the data on all other systems. 

Table 2.1 Differences between AG-150 and EB-50 (continued)

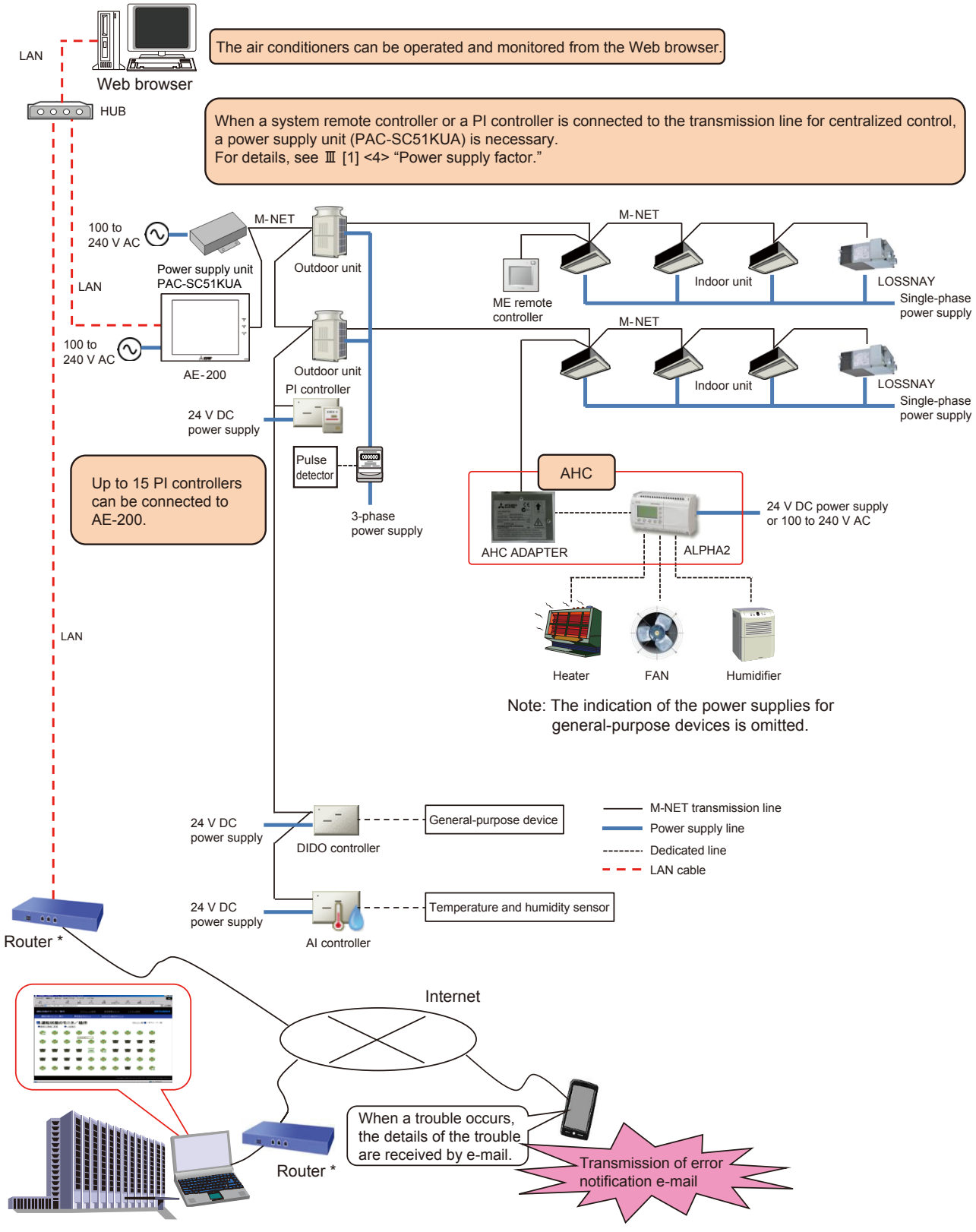
	New model AE-200	Old model EB-50	Old model AG-150
Communication with host device	Commands from TG-2000A are transmitted to each of AE-200 and AE-50.  Note: The indication of the power supplies is omitted.	Commands from TG-2000A are transmitted to each of EB-50(1) and EB-50(2).  Note: The indication of the power supplies is omitted.	Commands from TG-2000A are transmitted only to AG-150 and transmitted to the expansion controller by AG-150.  Note: The indication of the power supplies is omitted.
Energy management function	○ See Chapter IV "Energy Management Function."	○	×
AHC connection	○	○	×
Number of floors	10 floors (in any case of 1 to 6 divisions)	×	3 floors (6 divisions), 5 floors (4 or 3 divisions), 8 floors (2 divisions) or 10 floors (1 division)
Number of groups which can be arranged on one floor	Up to 180 groups (The maximum number of groups arranged in one area is 30 groups, and the maximum number of groups can be arranged when one floor is divided into 6 areas.) 	×	Up to 150 groups (The maximum number of groups arranged in one area is 25 groups, and the maximum number of groups can be arranged when one floor is divided into 6 areas.) 
Number of conditions for interlock control	150 conditions for each set of AE-200/AE-50 Interlock control across some sets of AE-200/AE-50 cannot be made.	50 conditions for each set of EB-50 Interlock control across some sets of EB-50 cannot be made.	150 conditions for whole AG-150 system Interlock control across some sets of EC can be made.
Updating of software on LCD main unit using USB	○	×	×
Block setting/interlock control across some expansion controller systems	×  Note: Block setting and interlock setting across some sets of AE-200/AE-50 cannot be performed even if TG-2000A is used. Note: The indication of the power supplies is omitted.	×  Note: Block setting and interlock setting across some sets of EB-50 cannot be performed even if TG-2000A is used. Note: The indication of the power supplies is omitted.	○  Note: The indication of the power supplies is omitted.
Registration of license	Registration for each set of AE-200/AE-50	Registration for each set of EB-50	Registration only for AG-150
Display of Web page	Each set of AE-200/AE-50 has a different Web page address.	Each set of EB-50 has a different Web page address.	One Web page address for AG-150 (switching among EC(1) to EC(3) with tags)
HOLD function (only North American models)	○ Turning on HOLD will disable both the schedule set by AE-200/AE-50 and the schedule set by the system controller or the remote controller.	○ Turning on HOLD will disable both the schedule set by AE-200/AE-50 and the schedule set by the system controller or the remote controller.	×

Ⅲ System Configuration

[1] System Configuration

<1> Connection diagram (operation and monitoring of 50 units or less)

Up to 50 units can be operated and monitored by one set of AE-200.

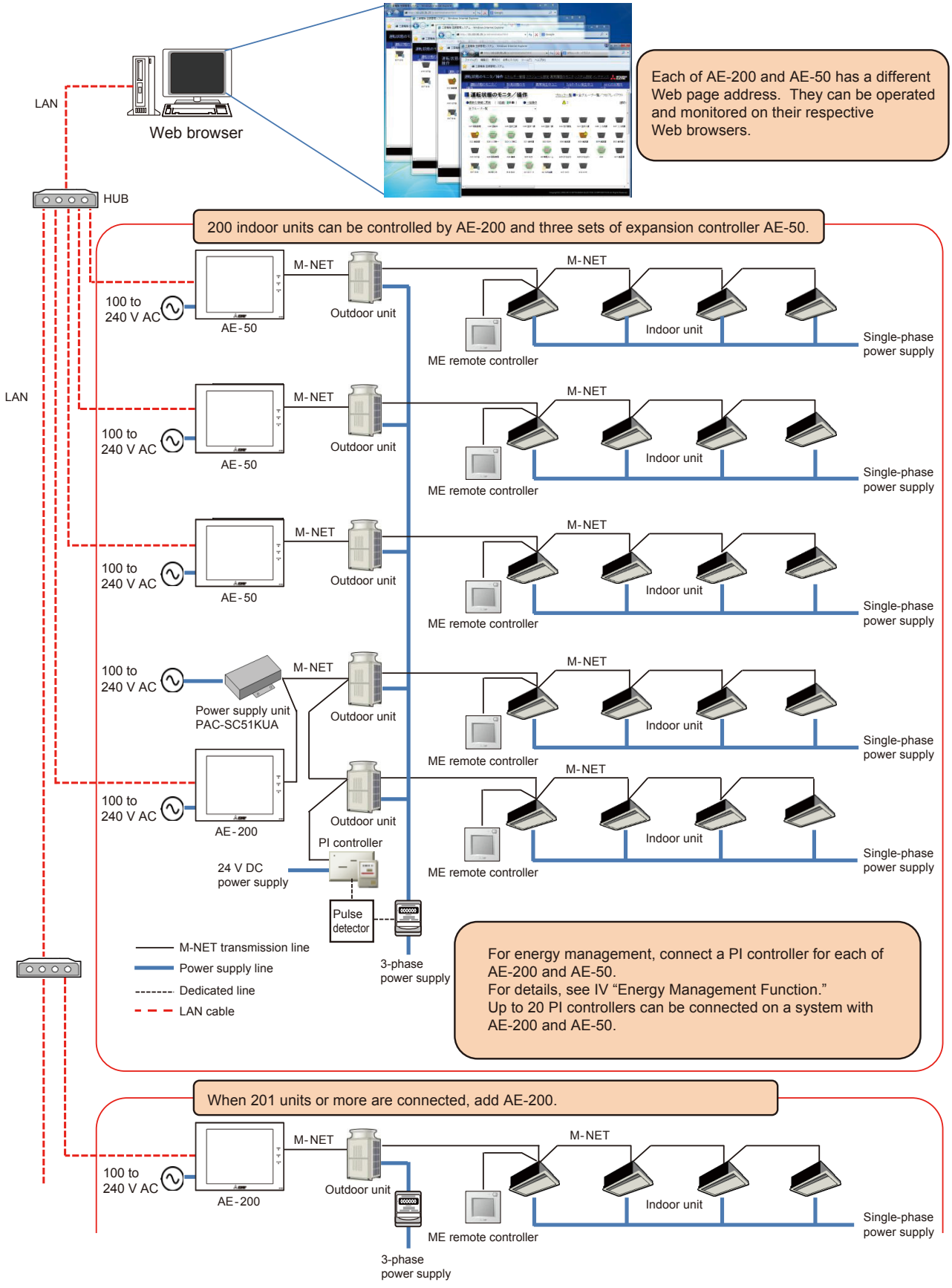


* When AE-200JAE-50 is connected via the Internet, ensure the security.
When connecting it to the corporate intranet, make sure that the VPN routers can be used.

Fig. 3.1 Image of system configuration with AE-200 (control of 50 units or less)

<2> Connection diagram (operation and monitoring of 51 to 200 units)

To control 51 to 200 units, connect AE-50 for expansion in addition to AE-200.
Up to 50 units can be connected to one set of AE-50, and 3 sets of AE-50 can be connected to a system with AE-200. So, up to 200 units can be connected.



Note: The indication of the power supplies for the outdoor and indoor units is omitted on the following pages.

Fig. 3.2 Image of system configuration with AE-200 and AE-50 (control of 51 to 200 units)

Remarks

- ○ AE-50 cannot be used independently. Use it as an expansion device for AE-200.
- ○ The expansion controller (PAC-YG50ECA) cannot be connected with AE-200.
- ○ On a system with AG-150, AE-50 cannot be connected in place of the expansion controller (PAC-YG50ECA).
- ○ Perform the initial setting, including group registration, after normal communication with AE-200/AE-50 is established.
- ○ It is impossible to set a block across AE-200 and AE-50. It is impossible to do so even if TG-2000A is used.

<3> List of connectable models

The following tables shows the devices which can be controlled by AE-200 and AE-50.

Table 3.1 Devices to be controlled
○: Applicable ×: Inapplicable

Model \ Function		Monitoring/ operation
City Multi	City Multi Y *1	○
	Zubadan-Multi Y *1	○
	Zubadan-Multi R2 *1	○
	City Multi R2 *1	○
	City Multi WR2 *1	○
	City Multi WY *1	○
	City Multi S	○
	HYBRID City Multi	○
Large capacity floor standing PAC		○
Air To Water (PWFY)		○
HWHP (CAHV) *3		○
HWHP (CRHV) *4		×
Mr. Slim/P-Series		○ *2
M-serirs (RAC)		○ *2
LOSSNAY (with M-NET)		○
Computer room air-conditioner (PFD)		○
K-control model		×

*1: Including Replace City Multi
*2: An adapter is required.
P-Series M-NET connecting adapter
M-Series M-NET control interface
*3: HWHP (CAHV) is the abbreviation for Hot Water Heat Pump unit of air-cooled system.
*4: HWHP (CRHV) is the abbreviation for Hot Water Heat Pump unit of geothermal system.

Remarks

- ○ The above-mentioned connectable models are subject to change for improvement without prior notice.
- ○ The applicable functions vary depending on the model connected.

<4> Power supply factor for M-NET

When system controllers or remote controllers are not connected to the M-NET transmission line for centralized control, it is unnecessary to connect the power supply unit (PAC-SC51KUA).

Table 3.2 Power supply and power consumption factor

Product name	Model name	Power consumption factor	Power supply factor
Centralized air conditioning control system	AE-200	0	0 *1
Centralized air conditioning control system (expansion controller)	AE-50	0	0 *1
Power supply unit for transmission line	PAC-SC51KUA	-	20

*1 Only one maintenance tool, MN converter (CMS-MNG-E/CMS-MNF-B), can be connected without the power supply unit.
When a system remote controller, etc. are connected to the transmission line for centralized control, connect the power supply unit.

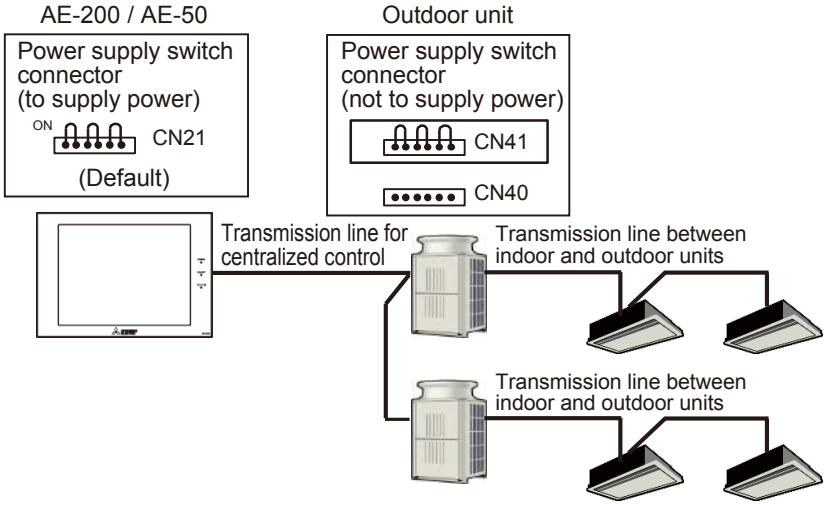
◆The following table shows the necessity of the power supply unit and the setting of the power supply connector.

Table 3.3 Necessity of power supply unit and setting of power supply connector

	Power supply unit for transmission line	Power supply connector of AE-200	Power supply connector of outdoor unit
(1) Without other system controller	Unnecessary	With CN21 (Default)	All CN41 (Default)
(2) With other system controller (connected to transmission line for centralized control)	Necessary	Without CN21 (Remove CN21.)	All CN41 (Default)
(3) With other system controller (connected to transmission line between indoor and outdoor units)	Unnecessary	With CN21 (Default)	All CN41 (Default)

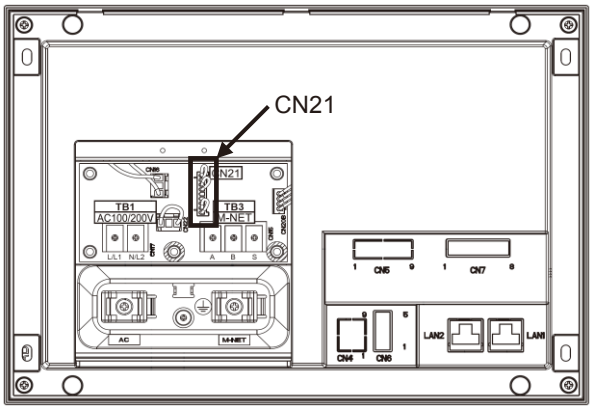
* Connect AE-200/AE-50 to the transmission line for centralized control.

(1) Without other system controller

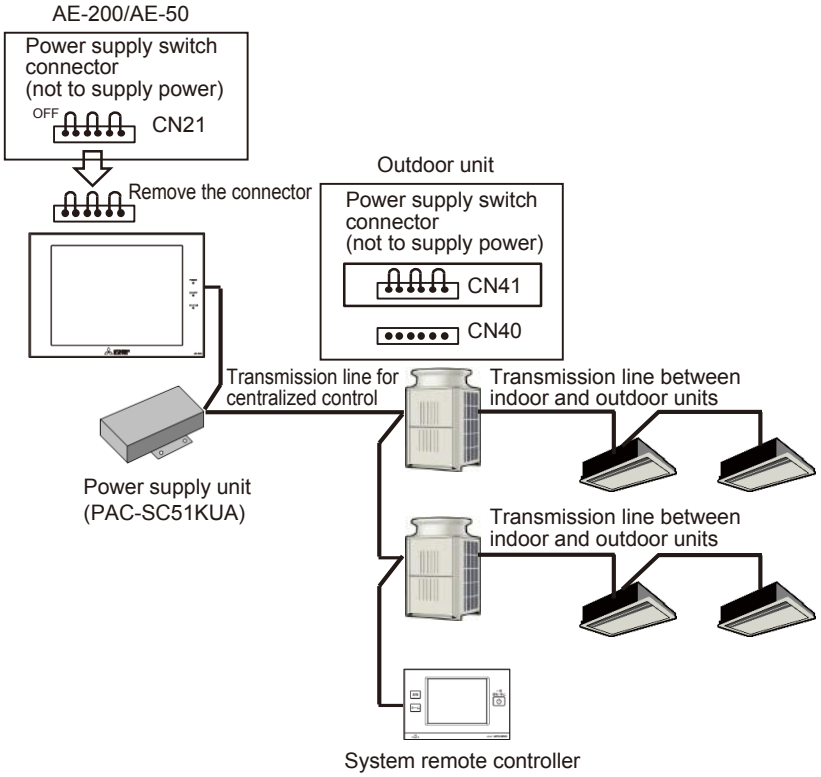


Remarks

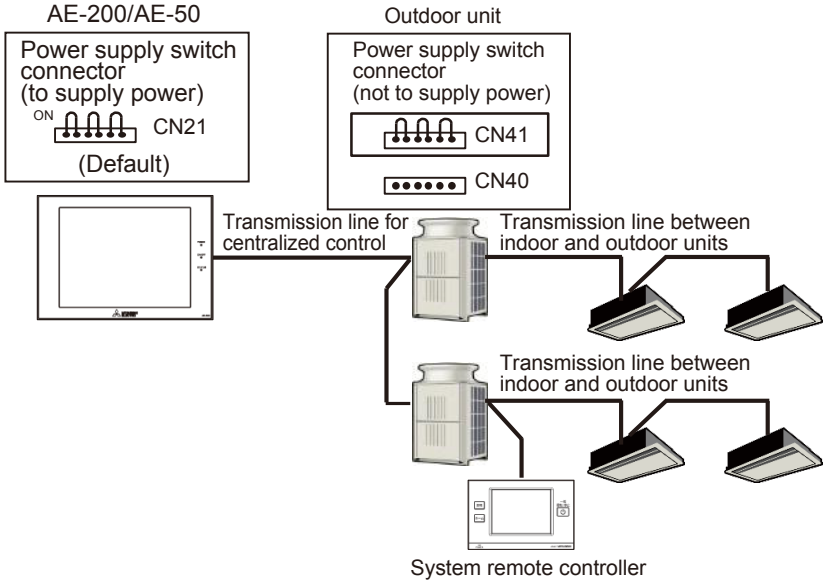
○ To access the power supply connector (CN21) of AE-200/AE-50, remove the service cover on the back of the main unit. It is in the position shown below.



(2) With other system controller (connected to transmission line for centralized control)
The power supply unit (PAC-SC51KUA) is required.



(3) With other system controller (connected to transmission line between indoor and outdoor units)



Note: When the power supply capacity for the outdoor units through the transmission line between indoor and outdoor units is insufficient, connect the transmission booster (PAC-SF46EPA) to the transmission line between indoor and outdoor units.

<5> Restrictions

On the screen of the main unit of AE-200, you can monitor the operating state of the AE-50 system, operate it and perform the group setting, etc.
However, it is necessary to set the items, such as the IP address, for each set of AE-50.
The following table shows whether or not setting, monitoring and operation of the system controlled by AE-50 can be performed on the screen of AE-200.

Note: Setting, monitoring and operation of AE-200 cannot be performed on the screen of AE-50.

Note: Items (interlock control setting, history of transmission of error notification e-mails, etc.) which can be monitored or set only via the Web browser can be monitored or set via the Web browser of each of AE-200 and AE-50.

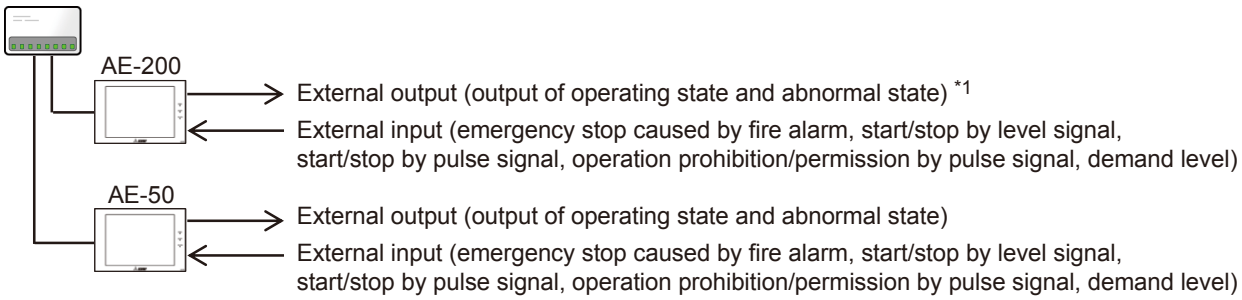
Table 3.4 Restrictions

[Explanatory notes] ○: Possible ×: Impossible

Item			Operation on AE-200		Operation on AE-50		Restriction
			AE-200	AE-50	AE-200	AE-50	
Setting	Group setting		○	○	○	○	
	Block setting		○	○	○	○	It is impossible to set a block across AE-200 and AE-50 systems.
	Interlocked LOSSNAY setting		○	○	○	○	
	Setting for prohibition of remote operation		○	○	○	○	
	External input function setting		○	○	○	○	
	Measurement setting		○	○	○	○	
	Schedule setting		○	○	○	○	
	Enable/disable schedule		○	○	○	○	
	Outdoor temperature interlock control		○	○	○	○	An AI controller is necessary for each set of AE-200 and AE-50.
	Night setback function		○	○	○	○	
	Target value setting		○	○	○	○	
	Floor layout setting		○	×	○	○	The floor layout set on AE-50 is displayed only on the screen of AE-50.
	Multi-language display setting		○	×	○	○	Set this item for each set of AE-200 and AE-50.
	Present date and time setting		○	○	○	○	
	Registration of license		○	○	○	○	
	Unit information (basic system)		○	×	○	○	Set this item for each set of AE-200 and AE-50.
	Advanced setting	Time Master/sub	○	×	○	○	Set this item for each set of AE-200 and AE-50.
		Old model compatibility mode	○	○	○	○	The setting made on AE-200 will be reflected also on AE-50.
		Schedule Season setting	○	○	○	○	The setting made on AE-200 will be reflected also on AE-50.
	Network setting	IP address setting	○	×	○	○	Set this item for each set of AE-200 and AE-50.
		M-NET address	○	○	○	○	
		Operation prohibition range	○	○	○	○	
		External input setting	○	○	○	○	
	User information setting		○	×	○	○	Set this item for each set of AE-200 and AE-50.
Monitor	Monitor operation screen		○	○	×	○	
	Monitoring of measurement condition		○	○	○	○	
	Display of refrigerant system		○	○	○	○	The system is displayed on the initial setting screen.
	Monitoring of status of use of energy		○	○	○	○	
	Ranking		○	○	○	○	The ranking is displayed for each of AE-200 and AE-50. (The ranking of all of AE-200 and AE-50 cannot be displayed.)
	State of peak cut control		○	○	○	○	
	Display of filter sign		○	○	○	○	
	Monitoring of prohibition of remote operation		○	○	○	○	
	Display of current error		○	○	○	○	
	Monitoring of error history		○	○	○	○	
	History of transmission of error notification e-mails		○	○	○	○	
	Floor layout screen		○	○	○	○	
	Monitoring of state of AHC		○	○	○	○	
Operation	Start/stop		○	○	○	○	
	Reset of filter sign		○	○	○	○	
	Error reset		○	○	○	○	
	Error history reset		○	○	○	○	
	Cancelation of emergency stop		○	○	○	○	
Data	Backup		○	○	○	○	
	Loading of data		○	○	○	○	
	CSV output		○	○	○	○	
	Updating		○	×	○	○	Update for each set of AE-200 and AE-50.
External input/ output	Emergency stop		○	×	○	○	See (1) “Restrictions on external input/ output” on the following page.
	Operating state		○	○	○	○	See (1) “Restrictions on external input/ output” on the following page.
	Abnormal state		○	○	○	○	See (1) “Restrictions on external input/ output” on the following page.
	Demand input		○	×	○	○	See (2) “Restrictions on peak cut control” on the following page.

(1) Restrictions on external input/output

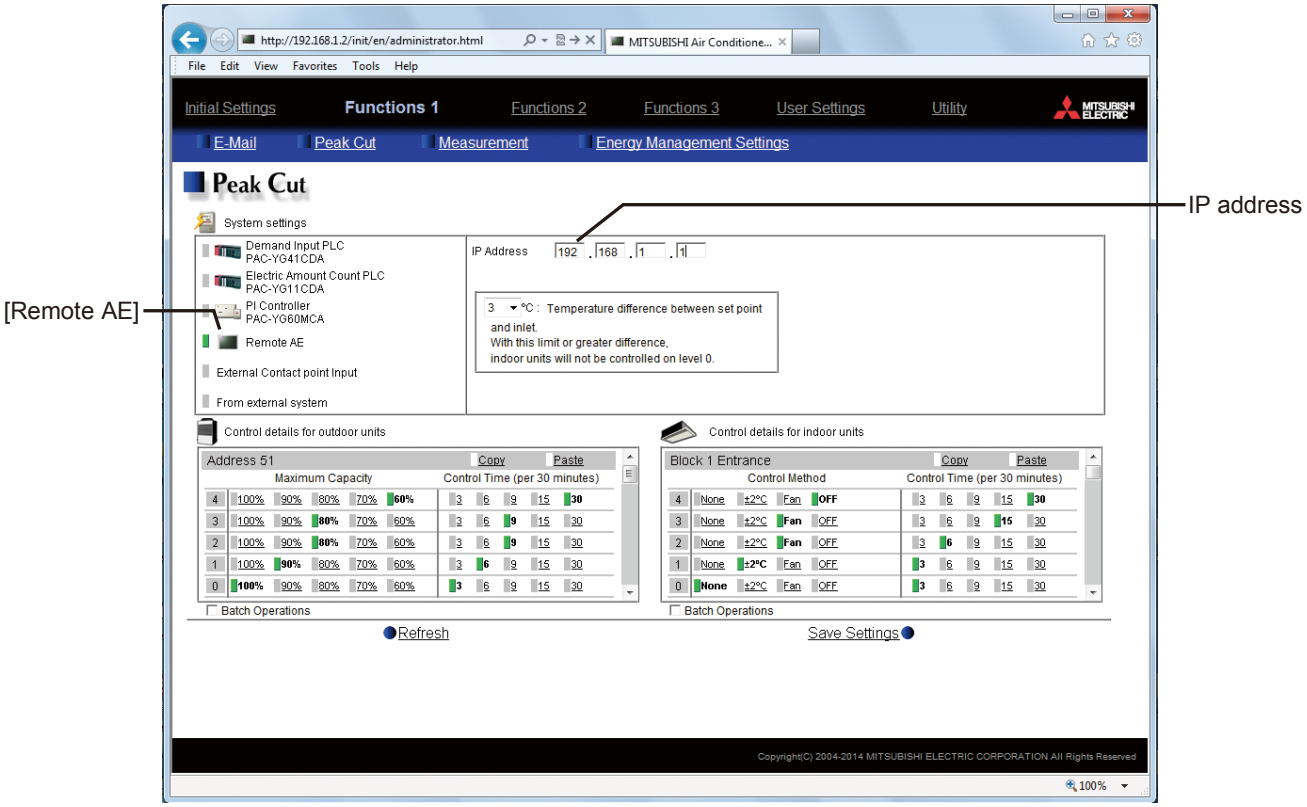
The external input/output for emergency stop, etc. must be connected to each set of AE-200 and AE-50.



*1: The external output of AE-200 includes the operating state and abnormal state of AE-50.

(2) Restrictions on peak cut control

For peak cut control, it is necessary to connect a PI controller or a demand controller for each set of AE-200 and AE-50.
If the peak cut method is set to [Other AE] on the peak cut setting screen of the Web browser for initial setting, up to 3 sets of AE-200/AE-50 in addition to AE-200/AE-50 to which the PI controller or demand controller is connected can be subject to peak cut control.
However, in this case, the peak cut control of AE-200/AE-50 specified in [Other AE] will be started with a delay of up to 1 minute after that of AE-200/AE-50 to which the PI controller or demand controller is connected.
For the details of setting procedure, see Chapter 5.2 “Peak Cut (Energy-save control function)” of the instruction manual for operation on Web browser for initial setting.

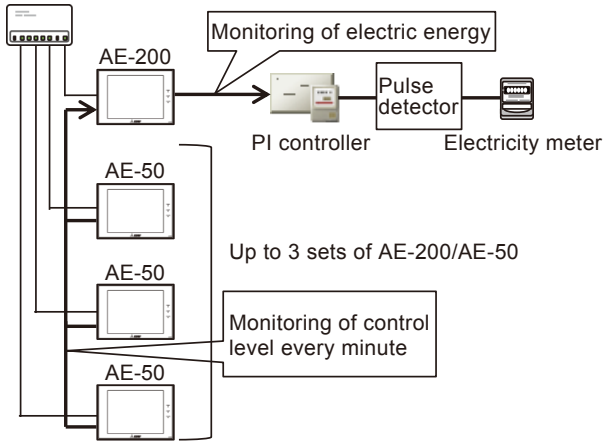


The configurations with PI controller and demand controller are shown below.

* The demand controller is a device which monitors the power consumption and sends 4-stage demand signals to AE-200/AE-50 to keep the power consumption within the preset target range.

Note: The indication of the power supplies is omitted in the configurations.

PI controller method

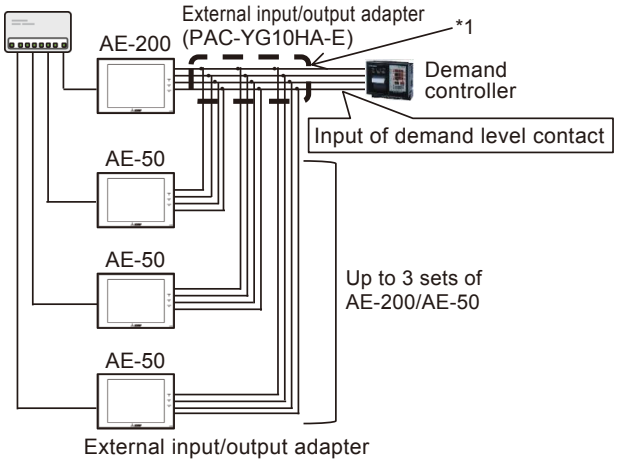


Note: The following restrictions are imposed on AE-200/AE-50 set as Other AE.
- The start of peak cut control is later by up to 1 minute than on AE-200/AE-50 connected with the PI controller.
- If a communication error occurs on the system of AE-200/AE-50 connected with the PI controller, peak cut control will not be performed.
- If a communication error occurs on the LAN of AE-200/AE-50 connected with the PI controller, peak cut control will not be performed.
- Up to 15 PI controllers can be connected for one set of AE-200/AE-50.
  Up to 20 PI controllers can be connected for one AE-200/AE-50 system.

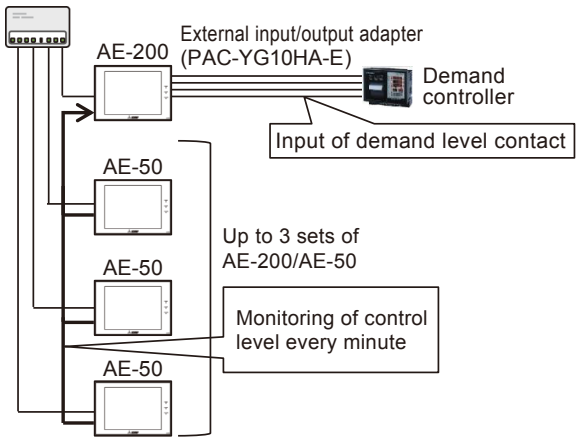
External contact input method

The demand controller can be connected by the following two methods.

Case (1)



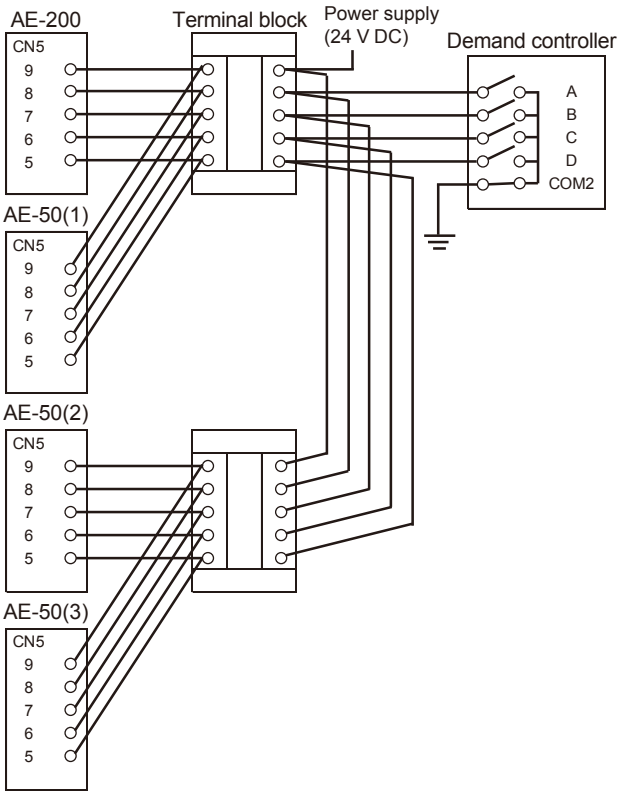
Case (2)



*1 For branching of the signals from the demand controller, terminal blocks or relays can be used.

An example of use of a non-voltage contact demand controller is shown below.

Note: For the power supply, see the instruction manual for the applied demand controller.



Note: The following restrictions are imposed on AE-200/AE-50 set as Other AE.
- The start of peak cut control is later by up to 1 minute than on AE-200/AE-50 connected with the demand controller.
- If a communication error occurs on the system of AE-200/AE-50 connected with the demand controller, peak cut control will not be performed.
- If a communication error occurs on the LAN of AE-200/AE-50 connected with the demand controller, peak cut control will not be performed.

<6> Differences in system configuration between AG-150 and AE-200/AE-50

This section describes the differences between (notes on) the system configuration with AE-200/AE-50 and that with AG-150.

(1) Power supply
When system remote controllers, etc. are not connected to the transmission line for centralized control, AE-200 does not require a power supply unit. When the controllers, etc. are connected, see Ⅲ [1] <4> “Power supply factor for M-NET.”

(2) Connection
When AE-50 is connected, up to 50 indoor units can be connected to AE-200.
[Example] Devices necessary for connection of 150 indoor units
AG-150 system: One set of AG-150 and 3 expansion controllers
AE-200 system: One set of AE-200 and 2 sets of AE-50

(3) Setting data migration
The data on AG-150 (name, group setting, schedule setting, etc.) cannot be migrated to AE-200/AE-50.
Set these data on the main unit or the Web browser of AE-200/AE-50.
Note: It is necessary to log in to the Web browser of each set of AE-200 and AE-50.

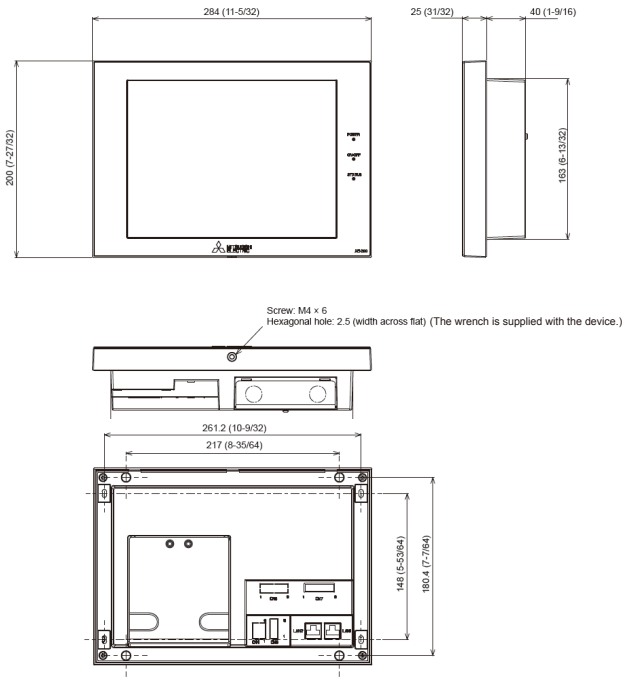
(4) Floor layout
The screen size is larger than that of AG-150.
Prepare the drawing on the 1890 (horizontal) × 900 (vertical) dots screen (for each floor).

(5) External dimensions
External dimensions (width × height × depth) of AE-200/AE-50 … 284mm × 200mm × 65mm [25mm]
External dimensions (width × height × depth) of AG-150 … 300mm × 185mm × 70.3mm [25.6mm] The values in brackets [ ] are the size of the parts protruded when they are embedded.

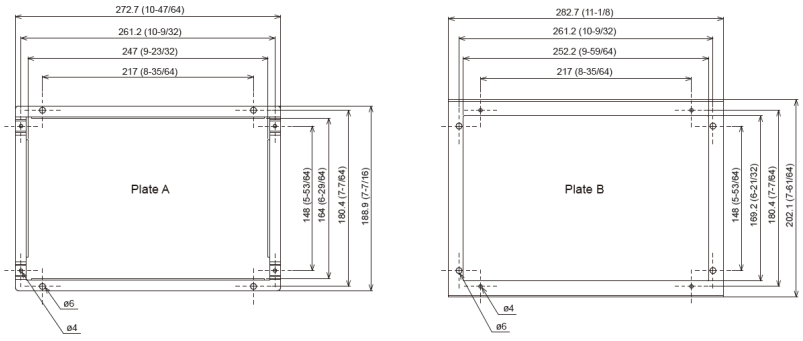
AE-200 and AE-50 have the same dimensions.

(1) External dimensions of AE-200/AE-50

Unit: mm (in)



(2) Mounting plate (included part)



<7> Restrictions on wiring length and cable length

(1) Wiring length of M-NET transmission line

There are the following restrictions on the length of the transmission line for centralized control and the length of the transmission line between indoor and outdoor units per system.

(i) Restriction by voltage drop: 200m

The distance between the power source and destination must be 200m or less.

If the distance is longer than 200m, communication cannot be made owing to voltage drop.

a+b ≤ 200m c+d ≤ 200m e ≤ 200m f ≤ 200m

* When a system remote controller or the like is connected to the transmission line for centralized control, the power supply unit (PAC-SC51KUA) is necessary. In this case, the maximum wiring length from the power supply unit to the outdoor unit and AE-200/AE-50 must be 200m or less.
* The source and destination of the M-NET power supply may be changed depending on the M-NET supply connector setting.
* The conditions in the initial setting state are shown above.

(ii) Restriction by attenuation of signal waveform: 500m

The distance between the signal source and destination must be 500m or less.

If the distance is longer than 500m, communication cannot be made owing to attenuation of waveform.

a+c+d ≤ 500m a+e ≤ 500m a+b+f ≤ 500m c+d+b+f ≤ 500m e+b+f ≤ 500m

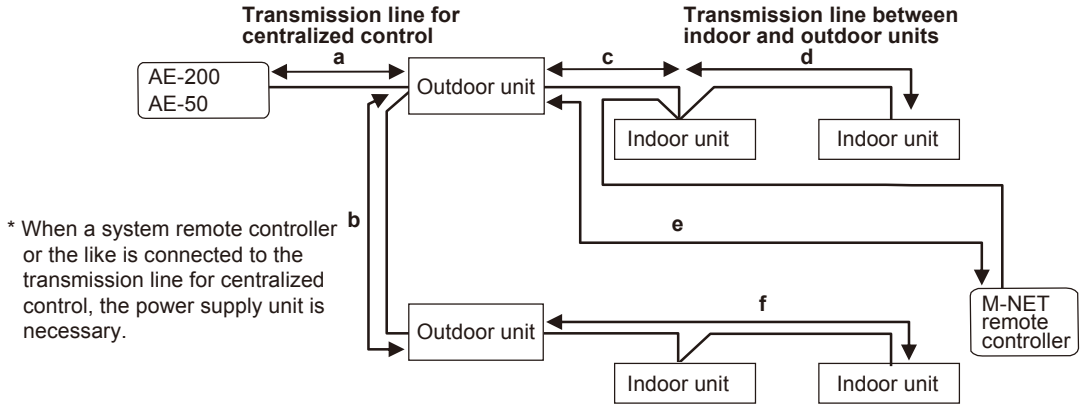


Fig. 3.3 Restriction on wiring length of M-NET transmission line

(2) LAN wiring length

The maximum wiring length of 100BASE-TX connected to AE-200/AE-50 is 100m.

If the LAN wiring length exceeds 100m, the distance between the personal computer for centralized control and AE-200/AE-50 or between AE-200 and AE-50 can be increased by using switching hubs.

The number of connected switching hubs is not restricted. However, an excessively high load is applied to the network, a delay may occur, and the network may not be normally connected.

Note: Use a LAN cable of category 5 or higher (100BASE-TX).

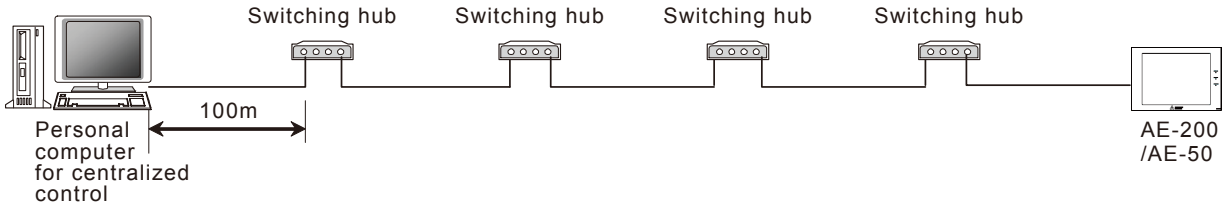
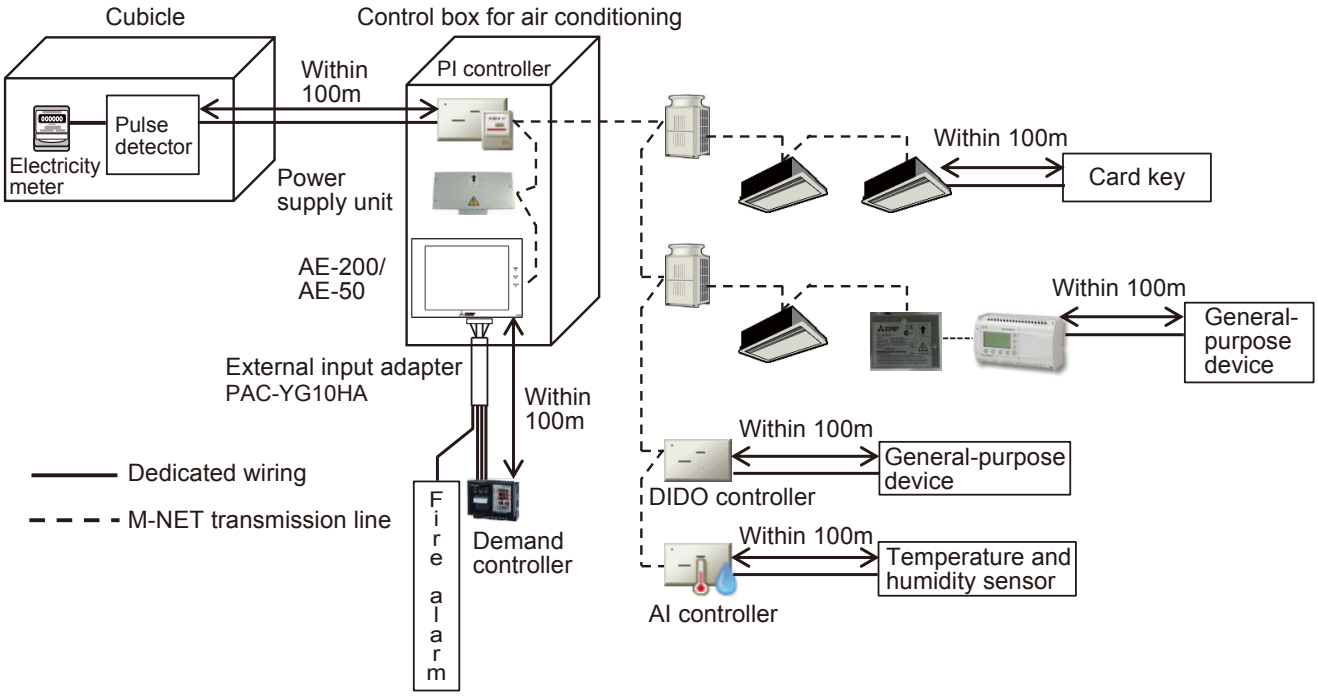


Fig. 3.4 Restriction on LAN wiring length

(3) Length of other lines

The length of the contact signal line of external input/output of AE-200/AE-50 and the free contact line from the indoor unit must be 100m or less.

However, do not lay these lines parallel to other lines, such as an AC power line, to prevent entry of noise.



Note: The indication of the power supplies for the indoor and outdoor units is omitted.

Fig. 3.5 Restrictions on dedicated wiring length

<8> System restrictions

The following table shows the devices which can be connected to AE-200/AE-50 through LAN and the number of connectable units.

Table 3.5 System restrictions

Device to be connected	Possibility of connection	Max. number of connected units	Remark 1	Remark 2
Web browser for administrator	○	10 units	Up to 10 units per AE-200/AE-50	The maximum number of simultaneously connected units per AE-200/AE-50 is 10.*1 [Example] When TG-2000A and demand PLC are connected, up to 8 Web browsers for general users can be connected.
Web browser for personal use	○	10 units	Up to 10 units per AE-200/AE-50	
TG-2000A	○	1 unit	1 unit on whole system	
PLC for general-purpose	○	1 unit	1 unit per AE-200/AE-50	
PLC for demand	○	1 unit	1 unit per AE-200/AE-50	
PLC for electricity meter	○	1 unit	1 unit per AE-200/AE-50	
Maintenance tool	○	1 unit	1 unit per AE-200/AE-50	
BM adapter	○	1 unit	1 unit per AE-200/AE-50	

*1: The number of AE-200/AE-50 is not included.

<9> Connection of two sets of AE-200 and BM adapter

When two sets of AE-200 are connected on the same M-NET line or AE-200 and BM adapter are connected, there are restrictions on the functions and setting method.

(1) System configuration

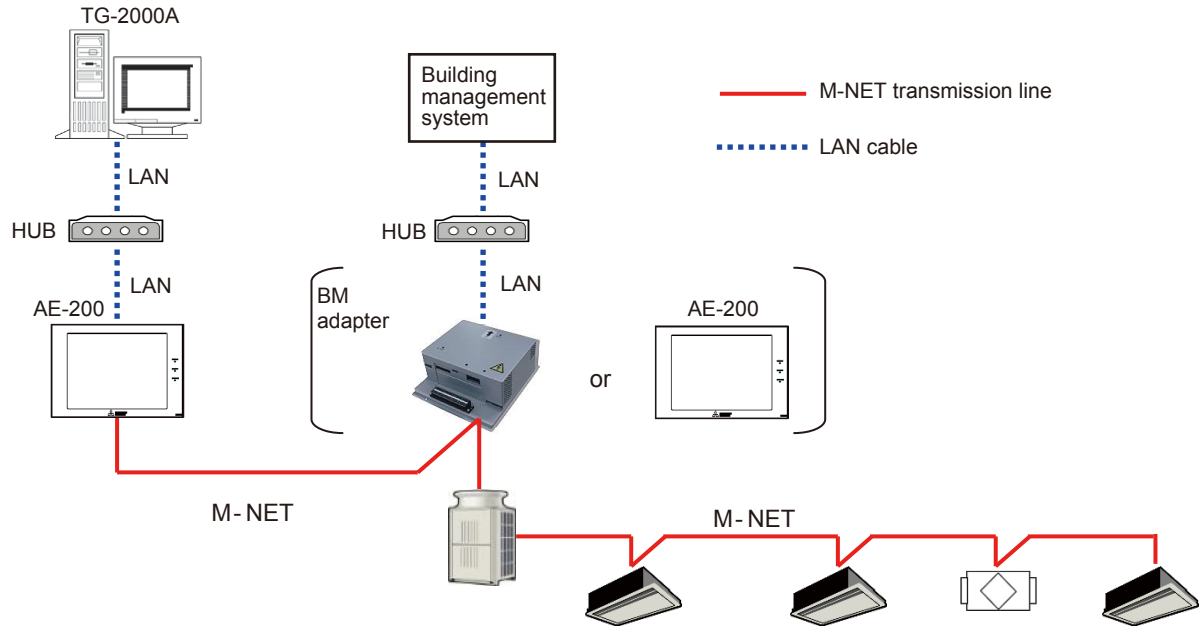
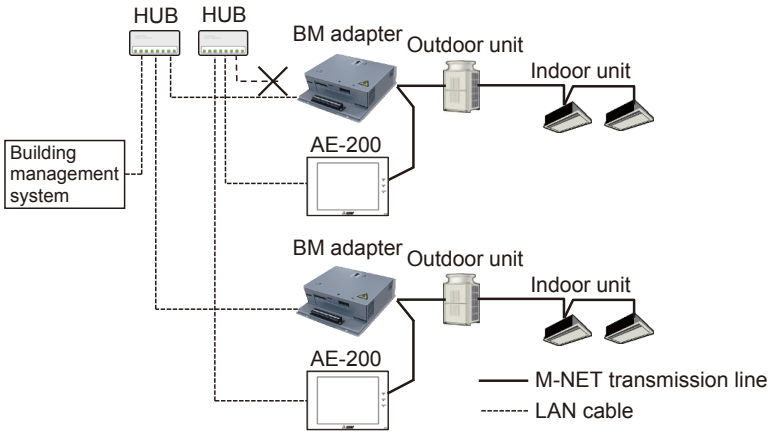


Fig. 3.6 System configuration

Remarks

- ○ The BM adapter cannot be added with the expansion unit (PAC-YG50ECA).
- ○ One set of AE-200 can be connected on one M-NET line.
  However, up to two sets can be connected with restrictions.
  Even when two sets are connected, the maximum number of indoor units which can be connected is 50.
- ○ One set of AE-200 and one BM adapter can be connected on one M-NET line.
- ○ It is impossible to connect AE-200 and AE-50 on one M-NET line.
- ○ The BM adapter has a power supply factor of 24.
- ○ When supplying power through the BM adapter, install the M-NET power supply connector of the outdoor unit to CN41 (not to supply power), and remove the M-NET power supply connector (CN21) of AE-200 (not to supply power).
- ○ When two sets of AE-200 are installed on one M-NET line, install the M-NET power supply connector (CN21) only to one of them (factory default), and remove that from the other.
- ○ Determine the M-NET address taking care not to duplicate an address.
- ○ Both AE-200 and BM adapter must be applicable to the models to be connected. For the models to which AE-200 is applicable, see Ⅲ[1]<3> “List of connectable models.”
  For the models to which the BM adapter can be connected, see the instruction manual for the BM adapter.
- ○ *When the BM adapter is connected, communication load is increased by an increased number of broadcasts. Divide the LAN into two systems for the BM adapter and AE-200.



Note: The indication of the power supplies is omitted.

(2) Restrictions on connection of more than one controller

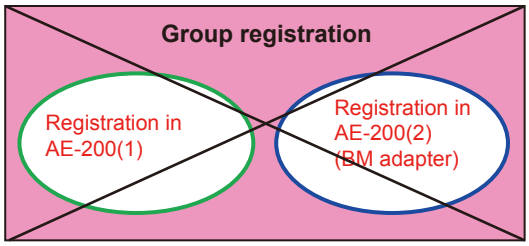
When two sets of AE-200 or one set of AE-200 and BM adapter are connected to M-NET, the contents of group registration in them must be identical.

However, the DIDO controller, PI controller and AI controller must be registered only in AE-200 because the BM adapter is not applicable to them.

All in same group

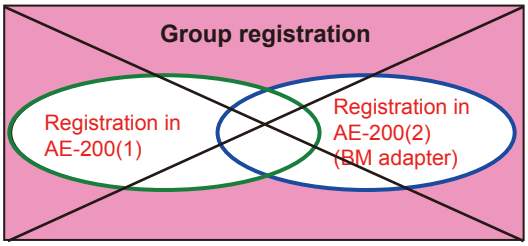
OK

All in different groups



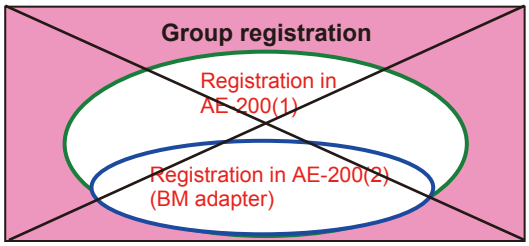
NG

Partially common



NG

AE-200(1) including all in AE-200(2) (BM adapter)



NG

The following table shows the restrictions on connection of more than one controller.

Table 3.6 Restrictions on connection of more than one controller

	Operational restrictions ○: None △: Operational and setting restrictions imposed	Restrictions	Subject ✓: Applicable	
			AE-200	BM adapter
Language displayed on AE-200 screen	○	The language can be set for each set of AE-200.	✓	
Group setting	△	The contents of group registration in both controllers must be identical.	✓	✓
Group name	○	It is necessary to set for each set of AE-200.	✓	
Registration in block Block name	○	It is necessary to set for each set of AE-200.	✓	
Floor layout	○	It is necessary to set for each set of AE-200.	✓	
Operation of air conditioners	○		✓	✓
Operation of DIDO controller	○		✓	
Monitoring of air conditioners	○		✓	✓
Monitoring of DIDO controller	○		✓	
Monitoring (AI controller and PI controller)	△	One AI controller or PI controller can be monitored only by one set of AE-200.	✓	
Energy management	○		✓	
Operation prohibition (screen operation and external input)	△	Only one controller can be set to the operation prohibition mode. While one controller is in the operation prohibition mode, the other controller can be used to operate the units. The operation prohibition mode is not displayed on the other controller.	✓	✓
Emergency stop	△	Input the external contact to one controller.	✓	✓
External input (start/stop, level signal)	△	Input the external contact to one controller.	✓	
External input (pulse signal)	○		✓	
External output	○		✓	
Demand level contact input	△	The input can be connected and set only on one controller.	✓	
Time setting and display	△	Use one controller as the master for time setting.	✓	✓

Table 3.6 Restrictions on connection of more than one controller (continued)

	Operational restrictions ○: None △: Operational and setting restrictions imposed	Restrictions	Subject ✓: Applicable	
			AE-200	BM adapter
Schedule	△	Set the schedule on one controller. (If schedules are set on some controllers (including a remote controller) for one group, priority will be given to the last schedule.)	✓	✓
Display of error history	○		✓	
Energy saving/peak cut Auto changeover	△	(1) Set the mode only on one controller. Register the license only for the controller for which the mode must be set. (2) When a unit in the energy saving/peak cut control mode is operated from another controller, priority will be given to the last operation. (3) In the energy saving/peak cut mode, the energy saving control icon is displayed only on the controller on which the mode was set.	✓	
Setback Outdoor temperature interlock Interlock control	△	(1) Set the mode only on one controller. Register the license only for the controller for which the mode must be set. (2) The setback control icon is displayed only on the controller on which the mode was set.	✓	
Connection of TG-2000A and billing function	△	Connect TG-2000A to one set of AE-200. Communication errors of AE-200 not connected to TG-2000A will not be displayed on it.	✓	
Display of icons on AE-200	△	Displayed only on specified AE-200 With schedule / Schedule invalid / Energy saving ON*1 / Night setback mode  *1:The icon of energy saving function by outdoor unit is displayed on all sets of AE-200. During demand control by external input to indoor unit, the icon is displayed on all sets of AE-200. Displayed on all sets of AE-200 During operation of interlocked LOSSNAY / During stop of interlocked LOSSNAY (Gray) / Display of room temperature*2 Occupied/Vacant*2 (Blue) (Gray) / Bright/dark*2 (Yellow) (Gray) / Error  *2:These icons are displayed or not displayed depending on the setting. Displayed on AE-200 being started Starting up 	✓	

(3) Setting procedure

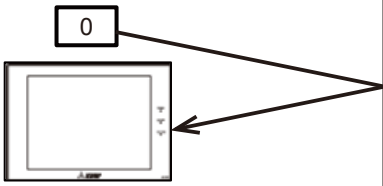
When two sets of AE-200 are connected, it is necessary to register each M-NET address in the system controller registration button on the other side.

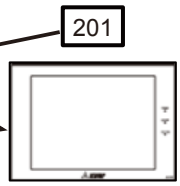
When the BM adapter is connected, register the address of the BM adapter in the system controller registration button on AE-200.

For the procedure for registering the BM adapter, see the instruction manual for the BM adapter.

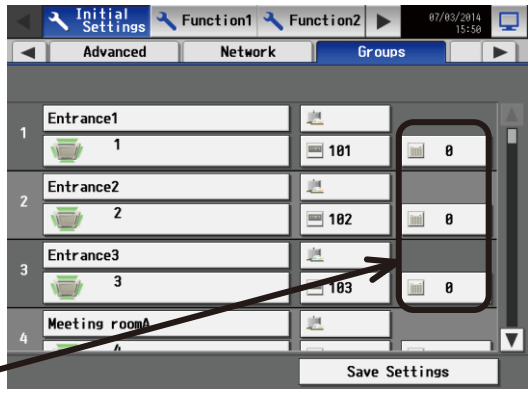
Select [Initial Setting] – [Group Setting], and input the address of the other controller in the system controller registration button.

[Example] Registration of AE-200 (1) (M-NET address 0) and AE-200 (2) (M-NET address 201)

<table>
<tr><td>Address</td><td>M-NET address of AE-200 (1)
 

Register the M-NET address of the other.</td><td>M-NET address of AE-200 (2)
 

Register the M-NET address of the other.</td></tr>
<tr><td>Operation</td><td>Register the address of AE-200 (2), 201, in the system controller registration button.
 

System controller registration button</td><td>Register the address of AE-200 (1), 0, in the system controller registration button.
 
</td></tr>
<tr><td>Caution</td><td colspan="2">It is necessary to register the addresses in the system controller registration buttons for all registered group numbers.</td></tr>
</table>

• It is necessary to register the addresses in the system controller registration buttons for all registered group numbers.
If the addresses are not registered, the air conditioners will stop when the power supply is reset.

Remarks

○ For the procedure for setting the address on the BM adapter, see the instruction manual for the BM adapter.

<10> Possibility of connection

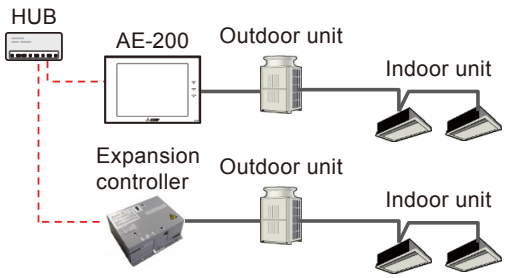
The following table shows whether or not AE-200/AE-50 can be connected with AG-150 and whether or not AE-200 and AE-50 can be connected in each case of combination.

Note: The indication of the power supplies is omitted.

(1) Connection of AG-150 and expansion controller (PAC-YG50ECA)

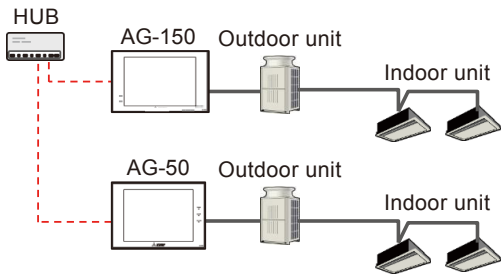
×

The expansion controller (PAC-YG50ECA) cannot be connected for expansion of AE-200.



×

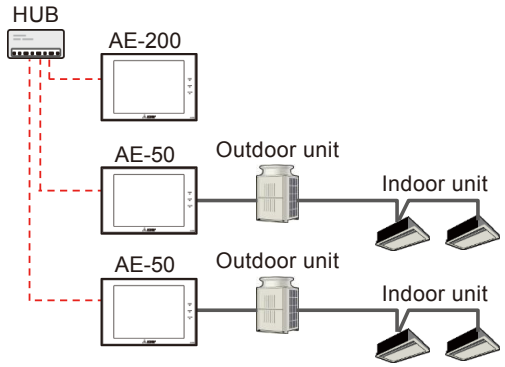
AE-50 cannot be connected for expansion of AG-150.



(2) Other connection methods

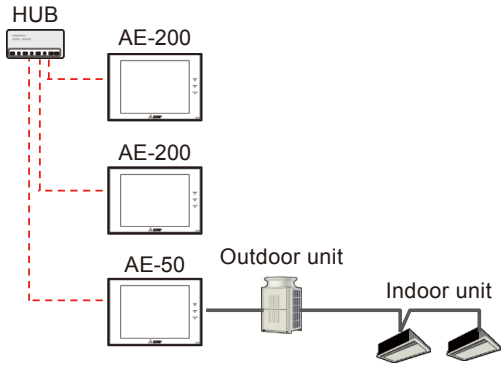
○

It is possible to monitor and operate the units from AE-50 not connected to AE-200 through M-NET.



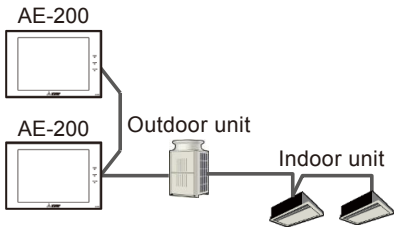
×

It is impossible to operate and monitor the units on the AE-50 system from more than one set of AE-200.



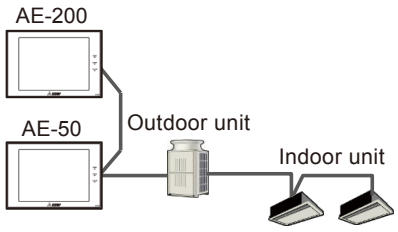
△

It is possible to connect more than one set of AE-200 on the same M-NET line. However, some restrictions are imposed on this connection.
See Ⅲ [1]<9> “Connection of two sets of AE-200 and BM adapter.”



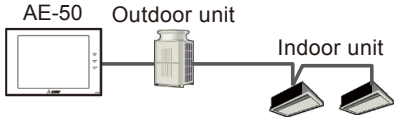
×

It is impossible to connect AE-200 and AE-50 on the same M-NET line.



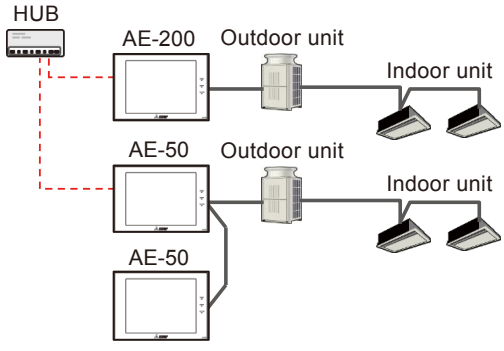
×

A system cannot be configured only with AE-50.



×

It is impossible to connect more than one set of AE-50 on the same M-NET line.



[2] Functions

<1> Function list

Table 3.7 shows the functions of the main units and Web browsers of AE-200 and AE-50.

Table 3.7 Function list

✓: Function provided

Item	Details	Main unit	Web browser
Start/Stop/Test run	It is possible to start and stop the units in each group, in each block or on each floor or all units collectively. In the test run mode, test run of the units can be performed. (Only on the main unit screen)	✓	✓
Operation mode	The operation mode can be switched to COOL, DRY, HEAT, FAN, AUTO and Setback for the units in each group, in each block or on each floor or all units collectively. Air To Water (PWFY) unit: Heating, Heating ECO, Hot Water, Anti-freeze, Cooling HWHP (CAHV) unit: Heating, Heating ECO, Hot Water, Anti-freeze Note: The Setback mode can be selected on the AE-200A/AE-50A,but not on the AE-200E/AE-50E.	✓	✓
Temperature setting	The indoor temperature can be set for the units in each group, in each block or on each floor or all units collectively (in steps of 0.5 °C). <Setting range> Air conditioning unit Cool/Dry: 19 °C–30 °C (67 °F–87 °F) Heat: 17 °C–28 °C (63 °F–83 °F) Air To Water (PWFY) unit (Booster unit) Heating: 30 °C–50 °C (87 °F–122 °F) Hot Water: 30 °C–70 °C (87 °F–158 °F) Anti-freeze: 10 °C–45 °C (50 °F–113 °F) Water HEX unit Heating: 30 °C–45 °C (87 °F–113 °F) Anti-freeze: 10 °C–45 °C (50 °F–113 °F) Cooling: 10 °C–30 °C (50 °F–87 °F) HWHP (CAHV) unit Heating: 25 °C–70 °C (77 °F–158 °F) Hot Water: 25 °C–70 °C (77 °F–158 °F) Note: The settable temperature ranges depend on the unit model. Note: If the indoor unit supports the dual set point function in the Auto mode and when the operation mode above is set to Auto or Setback, two set temperatures for Cool mode and Heat mode can be set. Note: The temperature unit (°C or °F) can be selected on the [Unit Info.] screen.	✓	✓
Wind speed/wind volume (LOSSNAY)	The wind speed can be switched among 4 steps for the units in each group, in each block or on each floor or all units collectively. (The speed can be switched steplessly or in two, three or four steps depending on the model. Models with the automatic function can be operated in the automatic mode.) (When LOSSNAY is used, the wind volume can be switched to very weak, weak, strong and auto. The selectable wind volumes vary depending on the model. In the case of interlocked LOSSNAY, the volume can be switched between two steps, weak and strong.	✓	✓
Air flow direction setting	The direction can be switched among 5 angles in the vertical direction, Auto and Swing for the units in each group, in each block or on each floor or all units collectively. (The selectable directions vary depending on the model.) The 5 angles in the vertical direction and Auto can be selected on models with such functions.	✓	✓
Ventilation mode (LOSSNAY)	The ventilation mode can be switched among normal, heat exchange and automatic modes for the units in each group, in each block or on each floor or all units collectively.	✓	✓
Start/stop of interlocked LOSSNAY	When interlocked LOSSNAY is connected, it is possible to operate (in the high or low mode) or stop the units in each group, in each block or all units collectively.	✓	✓
Status of energy use	The power consumption, outdoor temperature and operation time can be displayed in bar graphs or line graphs for comparison. Note: To display the electric energy, a PI controller and an electricity meter (pulse output type) must be connected. The electric energy cannot be displayed by connecting a PLC (electric power counting software). To display the outdoor temperature, an AI controller and a temperature sensor must be connected.	✓	✓
Ranking	The power consumption and FAN operation time can be displayed in rank order. Note: The ranking of electric energy can be displayed only by block.	✓	✓
Target value setting	It is possible to set the target values of power consumption for each year, month, day of the week and block. The set target values will be displayed on the energy use status screen and ranking screen.	✓	✓

Table 3.7 Function list

✓: Function provided

Item	Details	Main unit	Web browser
State of peak cut control	The peak cut control level and the average electric energy can be displayed. Note: The energy saving (peak cut) control license is required.	✓	✓
Schedule	It is possible to set the weekly schedule based on the day of the week pattern, annual schedule and daily schedule for the units in each group, in each block or on each floor or all units collectively. • 24 times of schedule items can be set per day. The items include “start/stop,” “operation mode,” “temperature setting,” “air flow direction,” “wind speed” and “prohibition of operation of remote controller.” (In the case of LOSSNAY, “start/stop,” “ventilation mode,” “wind volume” and “prohibition of operation of remote controller” can be set in the scheduled operation.) • Five weekly schedules can be retained, and season schedules can be set. • One of the weekly, annual and daily schedules which have been set for the day is executed. The order of priority is as follows: Daily → Annual → Weekly 1 → … → Weekly 5. • In the annual schedule, it is possible to set the operation patterns for 50 days, such as public holidays and summer holidays, not according to the weekly schedule in the range from the current month to the 24th month. 5 kinds of operation patterns can be set for each group. • The optimum start can be programmed to attain the set temperature at the set time. (Only indoor units) Note: The items which can be set depend on the air conditioner model (function).	✓	✓
Enable/disable schedule	It is possible to enable or disable the schedule for the units in each group, in each block or on each floor or all units collectively.	✓	✓
Hold	Touch [ON] or [OFF] to enable/disable the Hold function. When the Hold function is enabled, the scheduled operations are disabled. Note: The operations that have been scheduled on the remote controller will also be disabled. Note: [Hold type] can be specified on the [Advanced] screen. Note: The Hold function can be used on the AE-200A/AE-50A, but not on the AE-200E/AE-50E.	✓	✓
Setting to prohibit remote operation	Operation items by the remote controller to be prohibited can be selected for the units in each group, in each block or on each floor or all units collectively. (The items which can be prohibited are start/stop, operation mode, temperature setting, filter sign, fan speed, air flow direction and timer.) Note: The items which can be prohibited vary depending on the model of air conditioner, LOSSNAY, etc.	✓	✓
External input function setting *2	For all controlled air conditioners, the items, emergency stop/normal, start/stop, prohibition/permission of operation of remote controller and demand level can be set by external voltage contact signals (12 V DC or 24 V DC). (Separately, the external input/output adapter, PAC-YG10HA-E, is necessary.) Note: It is necessary to connect the external input/output adapter to each set of AE-200 and AE-50. (Emergency stop of the AE-50 system cannot be performed by the external input to AE-200.)	✓	✓
External output function setting *3	When one or more air conditioners are running, the “running” signal will be output. When an error has occurred in one or more air conditioners, the “error occurring” signal will be output. (The “running” signals of general-purpose devices (DIDO controller connection) are not output. The “error occurring” signals of the devices are output.) (Separately, the external input/output adapter, PAC-YG10HA-E, is necessary.) Note: If the output function is set to externally output errors on AE-200, errors in any of AE-200 and AE-50 will be output. If the function is set to output errors on AE-50, errors only in AE-50 will be output.	✓	✓
Reset of filter sign	The filter sign display can be reset for the units in each group, in each block or on each floor or all units collectively.	✓	✓
Water circuit sign reset (Air To Water (PWFY))	Water circuit sign (Air To Water(PWFY)) can be reset for each group or block of indoor units.	✓	✓
Error reset	The errors which have occurred can be reset.	✓	✓
Error history reset	The error history (unit errors and communication errors) can be erased.	✓	✓
Start/stop (collective)	The ON/OFF LED lamp indicates that the units in one or more groups are running (on) or the units in all groups are stopped (off). (Except general-purpose devices (DIDO controller connection))	✓	

Table 3.7 Function list

✓: Function provided

Item	Details	Main unit	Web browser
Operating state of each group	The items, start/stop, operation mode, temperature setting, fan speed, air flow direction, ventilation mode, start/stop of interlocked LOSSNAY, enable/disable scheduled operation, ON/OFF of hold function (only AE-200A/AE-50A), energy saving and setback, are displayed for each group. Note: The items which can be displayed depend on the models in the group.	✓	✓
Display of filter sign	The filter sign can be displayed for the units in each group, in each block or on each floor or all units collectively.	✓	✓
Display of prohibition of remote operation	The operations by the remote controller which have been prohibited by this controller or another system controller are displayed.	✓	✓
Display of current error	The address of the unit in which an error has occurred, the error code and the address of the unit which has detected the error are displayed.	✓	✓
Monitoring of error history	Up to 512 errors which occurred in the past are stored. 128 errors of each set of AE-200 and AE-50 (64 unit errors and 64 communication errors) are stored.	✓	✓
History of transmission of error notification e-mails	The history of transmission of error notification e-mails and e-mails upon recovery from error can be checked.	✓	✓
Monitoring of measurement state	The measurements on the temperature sensor and humidity sensor of AI controller, electricity meter of PI controller and water meter can be monitored.	✓	✓
AHC List	The input and output status of Advanced HVAC CONTROLLERs can be displayed.	✓	✓
Display of refrigerant systems	The list of the refrigerant systems connected to AE-200/AE-50 (information on connection between outdoor units and indoor units) can be displayed.	✓	
Present date and time setting	The present date and time can be set.	✓	✓
Registration of license	The purchased license can be registered.	✓	✓
Unit information (basic system)	Items common to main units and Web browsers of AE-200 and AE-50 The main unit name, identification number, expansion, date display format, time display format, temperature display format, pressure display format, room temperature display and availability of illuminance sensor and motion sensor can be set. Items only on main units of AE-200 and AE-50 The displayed language (English, French, German, Spanish, Italian, Russian, Chinese, Portuguese or Japanese) can be switched, and the LCD illuminance, sound volume, availability of test run and availability of screen lock function can be set. Items only on Web browsers The display of the group name on the list screen and the display or non-display of the filter sign can be set.	✓	✓
Network setting	The IP addresses, subnet masks and gateways relating to the LAN of AE-200/AE-50 can be set, and the M-NET addresses, range of prohibition of remote operation and external input relating to M-NET can be set.	✓	✓
Advanced setting	The time master and sub controllers can be set, the old model compatibility mode can be turned on or off, the hold type can be set to Normal or ON (AE-200/AE-50A only), and the season schedule setting can be enabled or disabled.	✓	✓
Group setting	The indoor units, LOSSNAY, general-purpose devices, Air To Water (PWFY) units, HWHP (CAHV) units, remote controllers and sub system controllers are registered in groups.	✓	✓
Block setting	Set groups are registered in each block. Note: A block across the AE-200 and AE-50 systems cannot be set.	✓	✓
Interlocked LOSSNAY setting	For interlocked LOSSNAY, the indoor units are registered as interlocking sources.	✓	✓
Floor layout setting	The basic floor plan, group display positions and plan view can be set.	✓	
Error notification e-mail setting	Various items, such as the mail server to use the notification of errors through e-mail and the error notification e-mail destinations, can be set.		✓
Energy saving/peak cut control setting *4 *5	The method to use the energy saving/peak cut control and the method of controlling indoor and outdoor units can be set.		✓
Measurement setting	The conditions of the temperature and humidity sensors of AI controller and the electricity meter and water meter of the PI controller can be set.	✓	✓
Temperature setting range limit setting	When the temperature ranges to be controlled by the remote controllers are limited, the temperature range can be set for each remote controller. Note: The ranges which can be monitored and controlled vary depending on the model. This function is unusable on P/M/S series.		✓
Energy management setting	The outdoor temperature measuring unit, apportionment mode and electricity meter used as the base of apportionment can be set.		✓

Table 3.7 Function list

✓: Function provided

Item	Details	Main unit	Web browser
Night mode schedule setting	When the night mode (low-noise operation) of outdoor units is used, the time period in which the units will be operated in the night mode can be set. Note: This mode cannot be set for P/M/S sereis.		✓
Auto changeover setting	All indoor units (cooling/heating) connected to one outdoor unit can be automatically switched according to the change in room temperature. (Except R2 Series) The outdoor units to be automatically switched between cooling and heating and the switch mode (automatic/representative group) can be set.		✓
Outdoor temperature interlock control	The outdoor temperature measuring unit to be used to use the outdoor temperature interlock control function can be selected, and the control level can be set for each group.	✓	✓
Night setback function	The control time period to use the night setback function can be set, and the upper and lower limit temperatures can be set for each group.	✓	✓
Interlock control	Interlock control is provided between connected devices for which the interlock conditions have been set. (Up to 150 interlock conditions can be registered for each set of AE-200 and AE-50.) Note: A block cannot be set across the AE-200 and AE-50 systems.		✓
Maintenance user	The maintenance user name and password can be set.	✓	✓
Building administrator (administrator user)	The building administrator name (administrator user), password and available functions can be set.	✓	✓
Data backup	Setting data and user information can be saved.	✓	✓
Data loading	Setting data can be loaded.	✓	✓
CSV output	Operation data (billing parameters and electric energy data) for up to 62 days can be saved in a USB memory.	✓	✓
Output of energy management data	The energy management data can be output. Note: It is necessary to output the data on each set of AE-200 and AE-50.		✓
Correction of touch panel	The touching positions on the touch panel can be corrected.	✓	
Software updating	The software can be updated by two methods: inserting a USB memory stick into the main unit of AE-200/AE-50 and operating on the LCD, and inserting a CD into the PC and operating on the Web browser.	✓	✓
Gas amount check	The amount of refrigerant gas can be checked.		✓
Backup of group setting information/ interlocked LOSSNAY information	Even if power is disconnected, the group setting information and interlocked LOSSNAY setting information are retained.	✓	
Backup of error information	Even if power is disconnected, the error history data is retained.	✓	
Backup of schedule setting	Even if power is disconnected, the schedule information set for each group is retained.	✓	
Backup of present date and time	When power is disconnected, the present time is backed up for approx. 3 days by the built-in capacitor. (It takes approx. 1 day to charge the built-in capacitor. It is unnecessary to replace the capacitor.)	✓	
Locking function	The touch panel can be locked to prevent unintentional operation. It cannot be operated until the user name and password are input.	✓	
Cleaning of touch panel	The touch panel can be locked and cleaned.	✓	
Time control	The time of the controlled controllers and units is adjusted once a day. (Applicable only to controllers and units with time adjustment function)	✓	

* The above-mentioned functions may be unavailable depending on the connected devices or the combination of devices.
*1: LOSSNAY and OA Processing unit (AE-200E/AE-50E only)
*2: The external input functions for emergency stop, start/stop and demand level are not capable of emergency stop, start/stop and peak cut control of general-purpose devices (connected to DIDO controller).
However, the emergency stop input can be used for emergency stop of general-purpose devices (connected to DIDO controller) by setting DIDO controller switch.
*3: The state of operation of general-purpose devices (connected to DIDO controller) cannot be output.
*4: On some models, these methods cannot be set.
*5: The energy saving/energy saving (peak cut) license must be separately obtained.
*6: The interlock control license must be separately obtained.

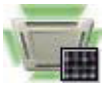
Remarks

- ○ When performing the setting to prohibit operation of remote controller on another system controller, set the range of prohibition of operation in the network setting of AE-200/AE-50 to “Only RC.”
- ○ However, since AE-200/AE-50 is the top-level controller, the operation of AE-200/AE-50 cannot be prohibited from any other system controller in any case.
- ○ In the group controlling LOSSNAY, only the start/stop and filter sign reset operations can be prohibited.
- ○ The prohibition of operation to reset the filter sign is displayed only while the filter sign is on.

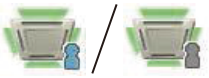
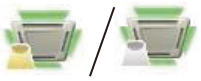
<2> Icons

The following icons will be displayed on the LCDs and Web browsers.

(1) Air conditioner group

ON	OFF	Error	Filter sign *1	Interlocked LOSSNAY ON *2, *3, *7
				

Interlocked LOSSNAY OFF *3, *7	Schedule set *5	Schedule disabled	HOLD ON *14	Energy saving ON *4,*12
				

Night setback mode *10	Starting up *11	Occupied/Vacant *5, *6, *7	Bright/dark *8, *9, *10	Room temperature *12, *13
		 (Blue) (Gray)	 (Yellow) (Gray)	

Humidity *12, *13
 (Red) (Blue)

*1: Displayed only on the Web browsers

*2: When LOSSNAY is interlocked with Slim air conditioner, the “Interlocked LOSSNAY ON” icon is displayed also while only LOSSNAY is operating.
(Applicable M-NET adapter model: PAC-SF48/50/60/70/80/81MA-E)

*3: When LOSSNAY is interlocked with indoor units in more than one group, LOSSNAY may be running even if the “Interlocked LOSSNAY OFF” icon is displayed.

*4: The “Energy saving control” icon is displayed in the following case.
The peak cut control is performed for the group or the outdoor units connected in the group.

*5: The “Occupied/Vacant” icon is displayed only when [ ] (blue), [ ] (gray) or [ ] (blue/gray) has been selected in “Motion sensor display” in “Display setting” on the unit information screen or the basic system setting screen of the Web browser for initial setting.

*6: The “Occupied/Vacant” icon is displayed only when an ME remote controller (PAR-U01MEDU/PAR-U02MEDA) provided with a motion sensor is used for the group.

*7: The “Occupied/Vacant” icon is displayed in priority to the “Interlocked LOSSNAY ON” and “Interlocked LOSSNAY OFF” icons.

*8: This icon is displayed only when [ ] (yellow), [ ] (gray) or [ ] (blue/gray) has been selected in “Brightness sensor display” in “Display setting” on the unit information screen or the basic system setting screen of the Web browser for initial setting.

*9: The “Bright/dark” icon is not displayed when the remote controller for the group is not provided with an Brightness sensor.

*10: The “Night setback mode” icon is displayed in priority to the “Bright/dark” icon.

*11: If the air conditioner is not recognized after startup, this icon keeps being displayed. Check the connection and group setting of the air conditioner.

*12: The “Energy saving control” icon is displayed in priory to the “Room temperature” and “Humidity” icons.

*13: The display and non-display of room temperature and humidity can be switched on the initial setting screen.

*14: The Hold function can be used on the AE-200A/AE-50A, but not on the AE-200E/AE-50E.

Remarks

○ The icons of the air conditioner group can be displayed not only in four directions, but also in two directions or in a suspended style. The icon display type can be set on the group setting screen.

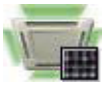
(2) LOSSNAY group

ON	OFF	Error	Schedule set	Schedule disabled
				

HOLD ON *1	Energy saving ON *2	Filter sign *3
		

*1 The Hold function can be used on the AE-200A/AE-50A, but not on the AE-200E/AE-50E.
*2 The “Energy saving control” icon is displayed when the peak cut control is performed for the LOSSNAY group.
*3 This icon is displayed only on the Web browsers.

(3) OA Processing unit group (AE-200E/AE-50E only)

ON	OFF	Error	Filter sign *1	Schedule set
				

Schedule disabled	Energy saving control *2
	

*1 This icon is displayed only on the Web browsers.
*2 The “Energy saving control” icon is displayed when the peak cut control is performed for the group or the outdoor units connected in the group.

(4) Air To Water (PWFY) unit group and HWHP (CAHV) unit group

OIN	OFF	Error	Schedule set	Schedule disabled
				

Energy-saving ON *1	Water temperature display *2	HOLD ON *3
		

*1 The “Energy-saving ON” icon will appear while the Peak Cut control is performed on the Air To Water (PWFY) unit group. This icon will not appear for the HWHP (CAHV) unit groups.
*2 The “Water temperature display” icon will not appear for the HWHP (CAHV) unit groups.
*3 The Hold function can be used on the AE-200A/AE-50A, but not on the AE-200E/AE-50E.

(5) General-purpose device group

ON	OFF	Error	Schedule set*1	Schedule disabled
				

HOLD ON*2


*1 When schedule has been set for the DIDO controller prohibited from being operated ([Prohibited] has been specified in [Operation setting] on the group setting screen), the “Schedule set” icon is displayed, but the DC will not be operated according to the schedule.

*2 The Hold function can be used on the AE-200A/AE-50A, but not on the AE-200E/AE-50E.

Remarks

- ○ Connecting the DIDO controller enables to turn on and off the lights and pumps and perform interlock control with a card key. In this case, the light and pump icons and card key can be selected.
- ○ The icons can be selected on the group setting screen.

<3> License list

Table 3.8 List of functions and required licenses

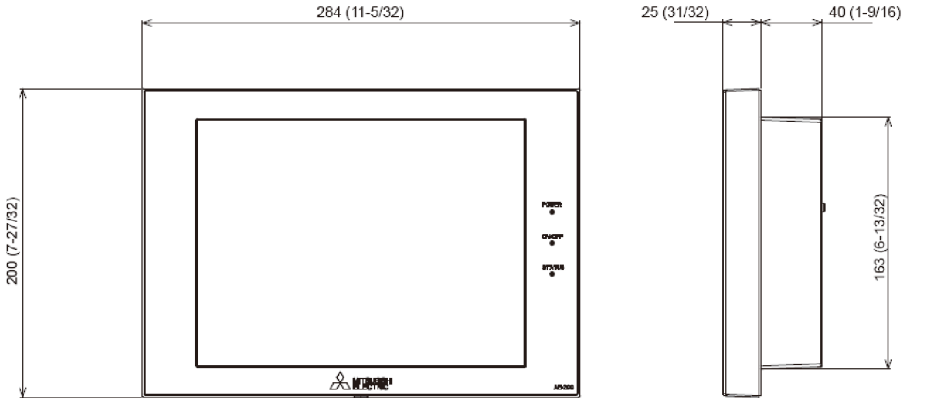
[Explanatory note] ✓: License

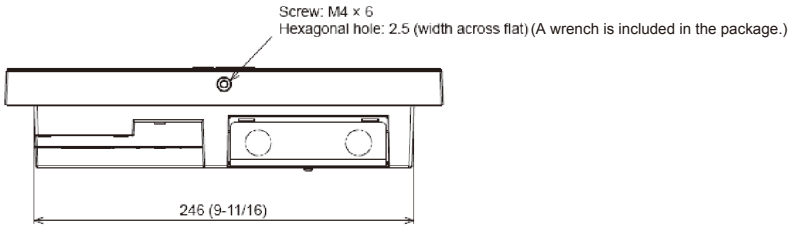
Function		Supplementary note	License not required	Support for apportionment of electric energy and billing	Energy saving	Energy saving (peak cut)	General-purpose control PLC	Interlock control	Individual browser	Energy management license pack
Web browser			✓							
Individual browser		The indoor groups which can be operated can be limited.							✓	
Notification of error by e-mail		Information on errors of air conditioners, etc. and recovery can be sent by e-mail from AE-200/AE-50.	✓							
Comprehensive management (TG-2000A)		More than one set of AE-200/AE-50 can be comprehensively managed.	✓							
Annual/weekly schedule			✓							
Electric energy billing (manual input of electric energy)		Method not using electricity meter		✓						
Electric energy billing (counting of electric energy)		Method of charging based on electric energy consumed by air conditioner		✓						
Billing by meters (counting of electric energy)		Function for charging for general electric energy, gas and water		✓						
Operation and monitoring of general-purpose devices	DIDO controller method		✓							
	Free contact method	TG-2000A is required.	✓							
	PLC method	TG-2000A is required.	✓							
Interlock control of general-purpose devices	DIDO controller method	When interlock control of AE-200/AE050 is used						✓		
	Free contact method	When interlock control of AE-200/AE050 is used						✓		
	PLC method (between PLCs)	TG-2000A is required.	✓							
	PLC method (between air conditioner and PLC)	TG-2000A is required.					✓			
Night mode			✓							
Outdoor temperature interlock control			✓							
Night setback function			✓							
Limitation of temperature setting range			✓							
Measurement of temperature and humidity			✓							
Upper/lower limit alarm e-mail			✓							
Energy management function										✓
Energy saving control		The energy saving (peak cut) license includes the energy saving license.			✓	✓				
Peak cut control (electric energy monitoring method)						✓				
Peak cut control (demand level contact input)		Method by inputting the demand level from the demand controller directly to the external input of AE-200/AE-50				✓				

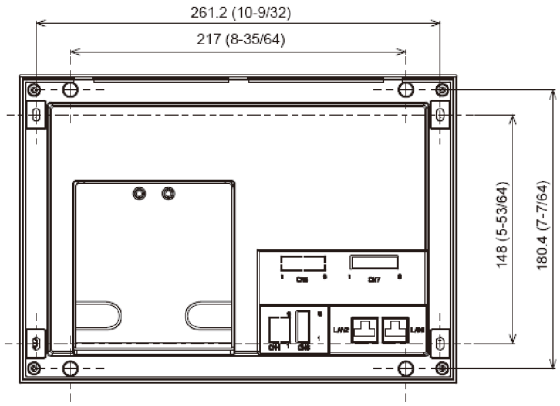
- The above-mentioned functions are subject to change for improvement without prior notice.
- The licenses must be registered on each set of AE-200 and AE-50.

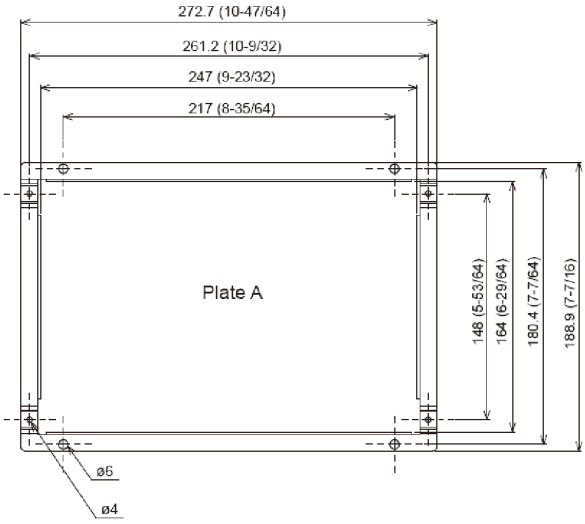
<4> Outline drawing

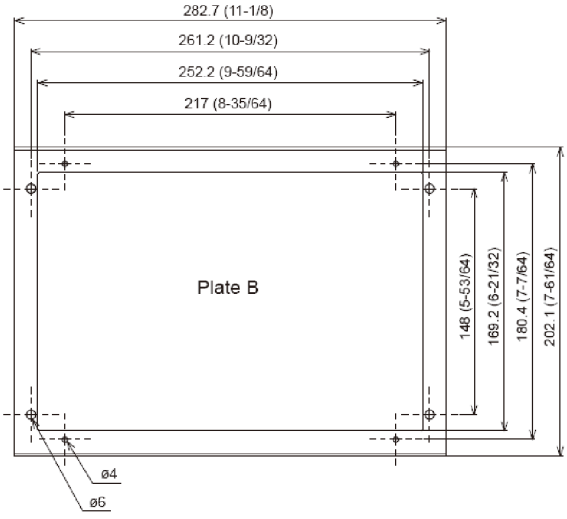
Unit: mm (in)









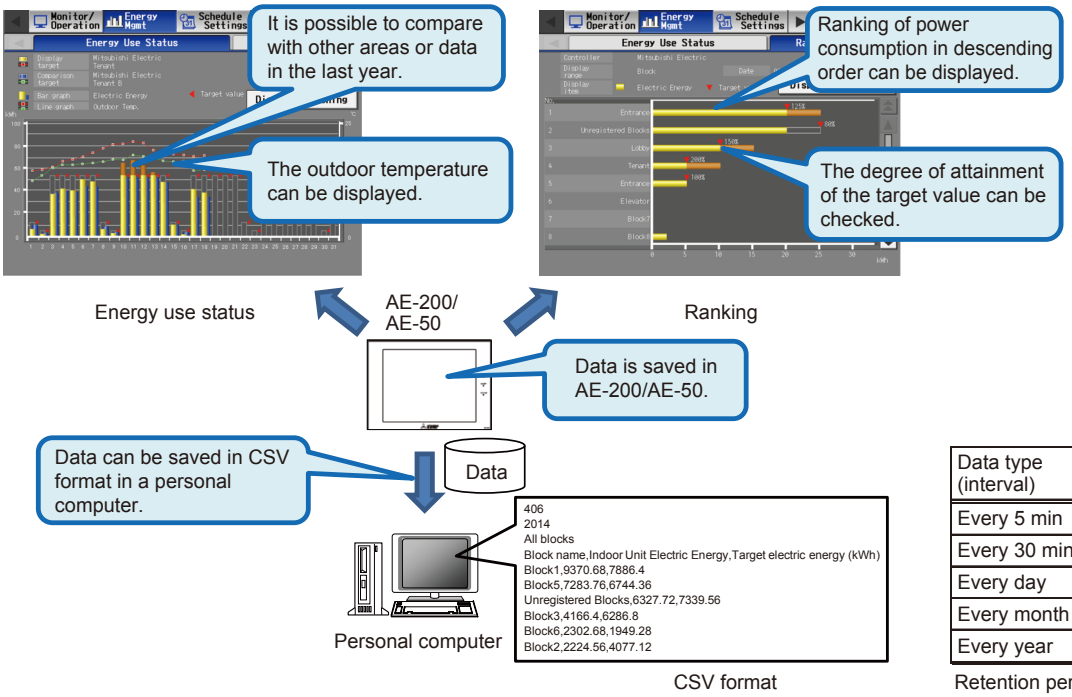


Ⅳ Energy Management Function

[1] Outline

The energy management function can graphically display the conditions relating to energy management, such as power consumption, operation time and outdoor temperature.
The energy management data is saved in AE-200/AE-50 and can be output in CSV format to a personal computer.
5-minute, 30-minute, daily, monthly and yearly data are saved. The data are retained for 2 months (5-minute), 25 months (30-minute, daily and monthly) and 5 years (yearly).
For more information, see Ⅳ [11]<5> “List of energy management data.”
It is possible to display the data of each block, group or unit address specifying the day, month and year and check the status of use of energy by the relevant indoor unit in detail.
It is possible to display the status of use of energy by indoor units in different areas (blocks) on the same screen for comparison.
The data can be compared with the data in the last year.
This function visualizes the energy and, therefore, can be used for the following purposes.

1. Understanding of current status
   The actual energy (electric energy) use status and operation condition (operation time, temperature setting, etc.) can be understood.
   According to the operation condition, it is possible to check for wasteful factors (failure to turn off, excessive temperature setting, etc.) and examine the energy saving measures.
2. Confirmation of effect of energy saving
   The reduction in power consumption after the energy saving measures are taken and the effect of improvement of operation condition can be confirmed.
3. Understanding of condition of air conditioner
   It is possible to check that the power consumption of each air conditioner is appropriate to the operation time.
   If the power consumption of any air conditioner is not appropriate, the capability of the air conditioner may have decreased, or the external environment may have affected it. Checking the condition can give an opportunity to examine the air conditioner.



Data type (interval)	Data retention period
Every 5 min	Last 2 months
Every 30 min	Last 25 months
Every day	Last 25 months
Every month	Last 25 months
Every year	Last 5 years

Retention period of CSV data

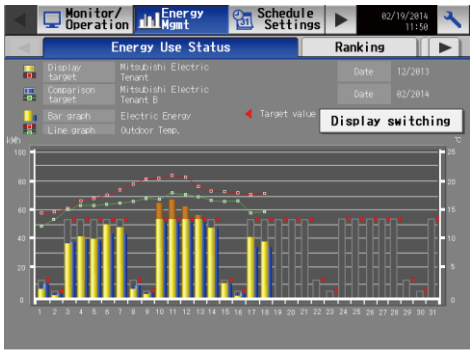
Remarks

- In case of failure of AE-200/AE-50, periodically save the energy management data in a personal computer. For the saving procedure, see Ⅳ[10] “Data downloading” and Ⅳ[11] “CSV output.”
- For more information on the retention period of CSV data, see Ⅳ[11]<5> “Energy management data list.”
- The power consumption is calculated based on the electric energy consumed by outdoor units. The power consumption of indoor units is not taken into account. The power consumption data shall be used for reference only.
- The power consumption calculated by the energy management function must not be used for charging tenants for air conditioning fee.
  The data cannot be used for transactions or certifications (by measurement) prescribed by the Measurement Act.
- The energy management function cannot be used for air feeding fans, devices connected to DIDO controller or devices connected to general-purpose PLC.
  For the possibility of apportionment of electric energy, see Ⅳ[4]<3> “Selection of apportionment mode when more than one models are connected.”

[2] Transition of energy management screens

To display the energy use status and ranking, it is necessary to set the date, display device and display item.
To display the target values on a graph, it is necessary to set the target values.
Transition of these screens is shown below.

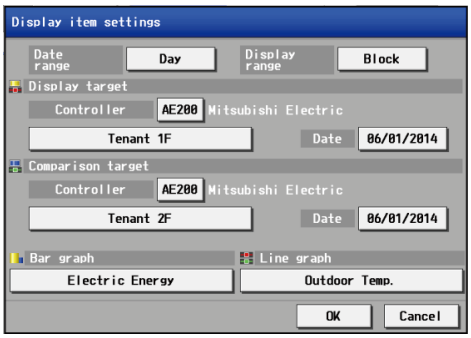
(1) Energy use status



Touch [Display switching].

Touch [OK] or [Cancel].

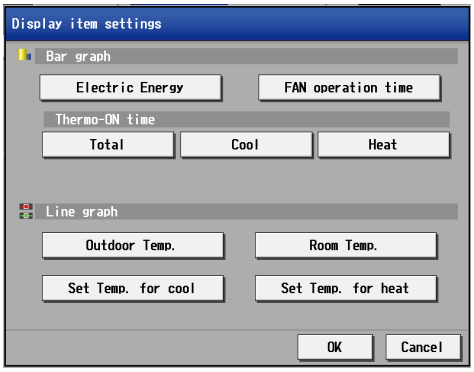
Set the target to be displayed on the graph and the period.



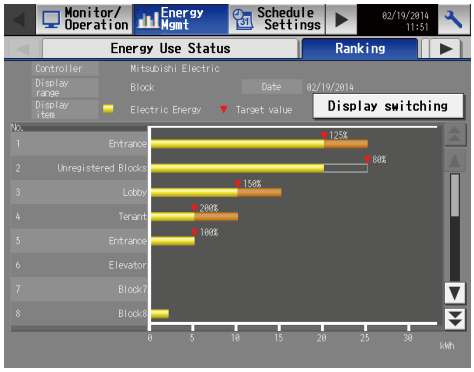
Touch [Bar graph] or [Line graph].

Touch [OK] or [Cancel].

Select the item to be displayed in bar graph or line graph.



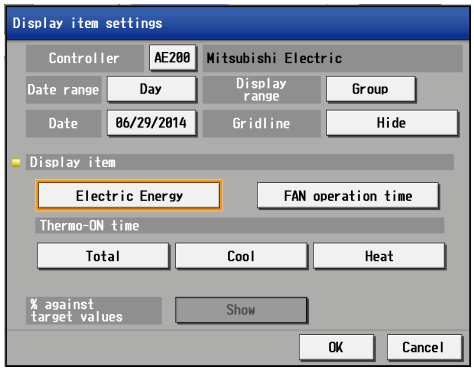
(2) Ranking



Touch [Display switching].

Touch [OK] or [Cancel].

Set the target of ranking to be displayed, date and display item.

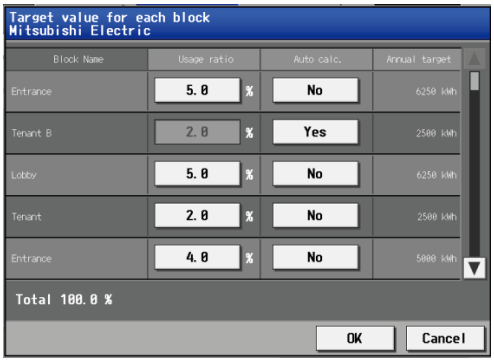


(3) Setting of target values

Touch [Edit] of [Target value for each block].

Touch [OK] or [Cancel].

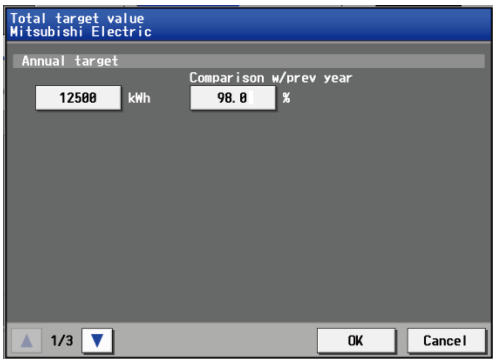
Set the usage ratio of each block.



Touch [Edit] of [Total target value].

Touch [OK] or [Cancel].

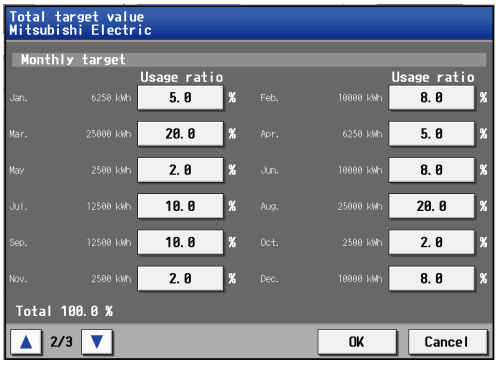
Set the usage ratio in each month.



Touch [▼].

Touch [▲].

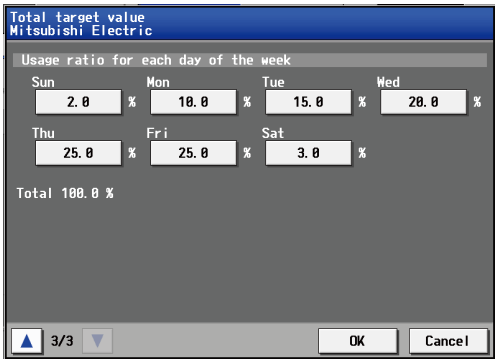
Set the usage ratio in each month.



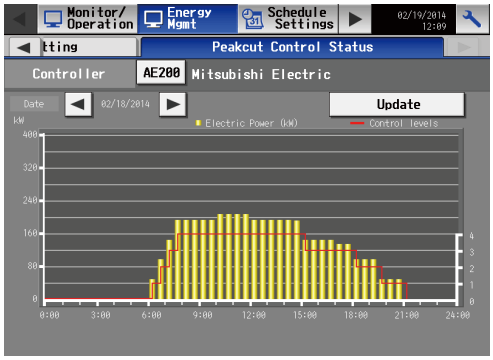
Touch [▼].

Touch [▲].

Set the usage ratio on each day of the week.



(4) Peak cut control status



[3] Basic configuration and required devices

<1> Connected devices

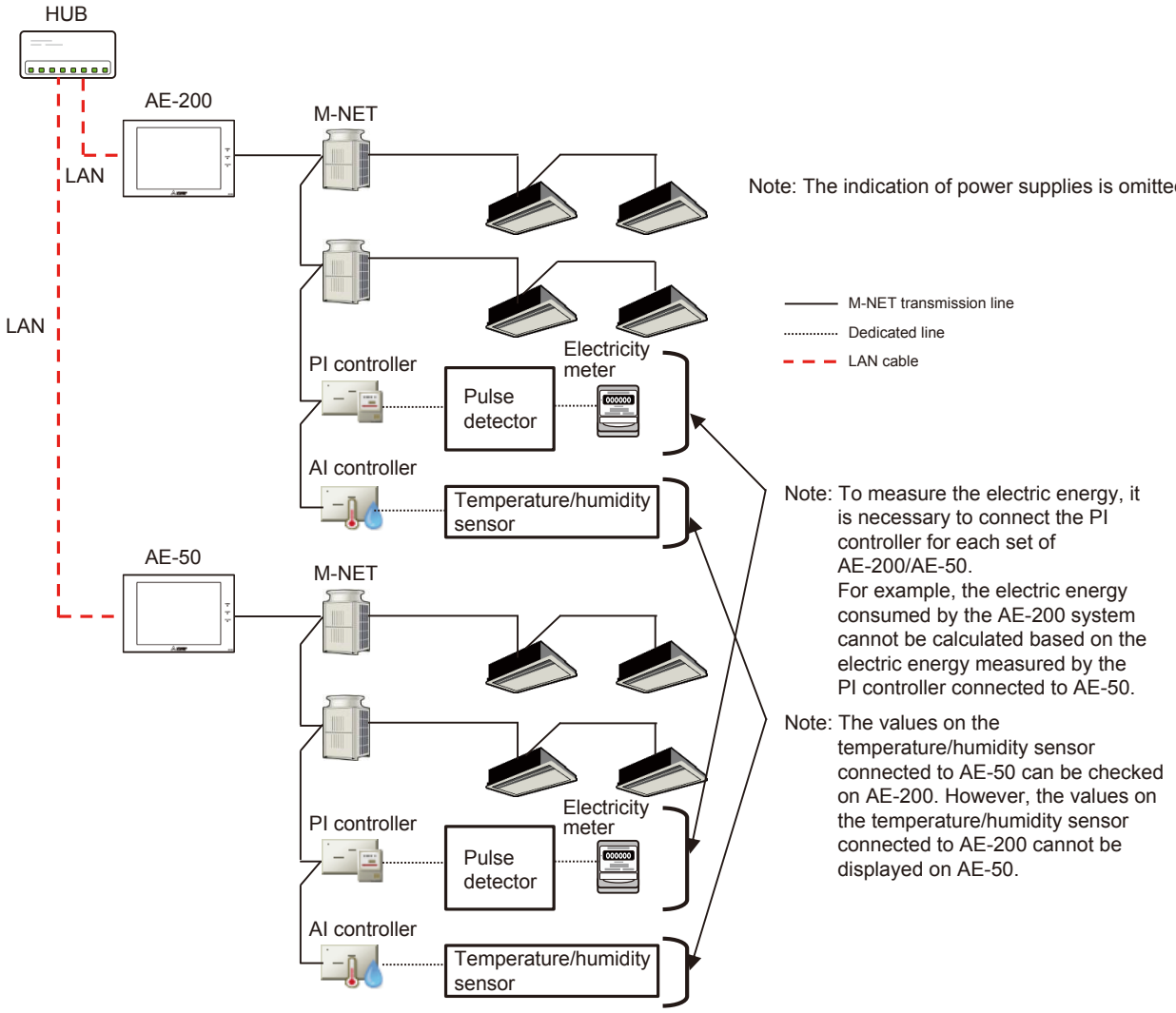


Fig. 4.1 Connected devices

Remarks

○ In the case of peak cut control, one PI controller can control up to 3 sets of AE-200/AE-50 not connected to PI the controller.
For details, see Ⅲ[1]<5> “Restrictions.”

<2> Required devices

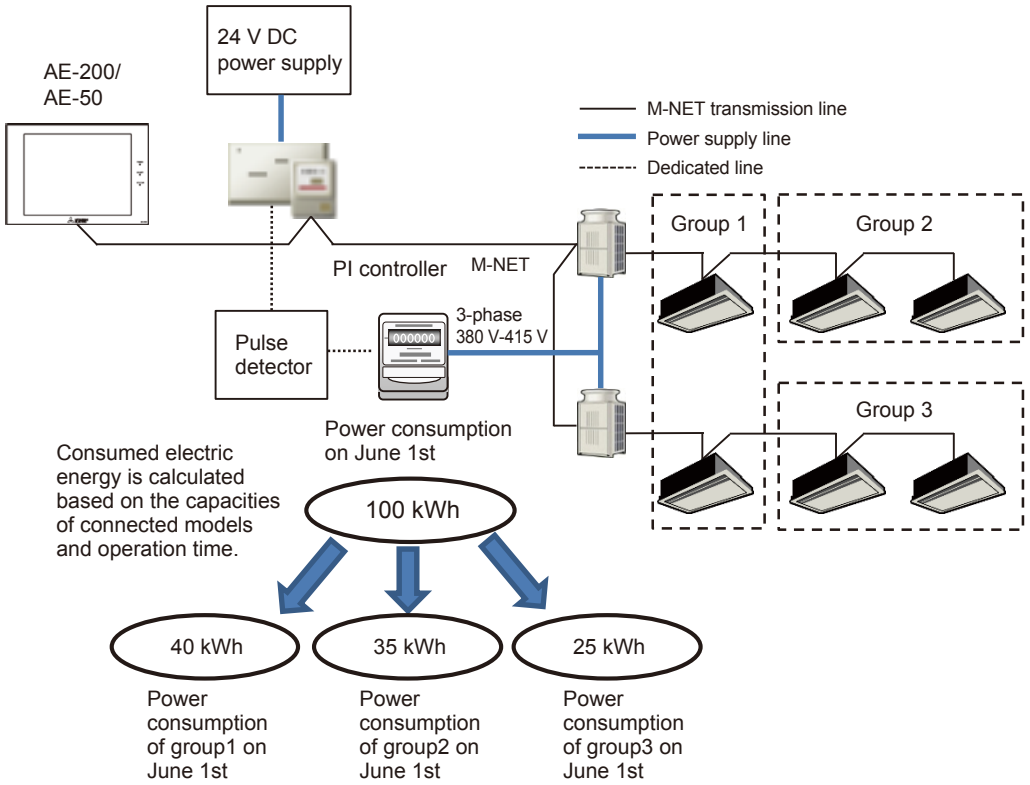
Table 4.1 Required devices

Device (model)	Manufacturer	Remarks
PI controller (PAC-YG60MCA)	Mitsubishi Electric	A separate 24 V DC power supply is required. It is necessary to connect the PI controller to each set of AE-200/AE-50.
Electricity meter	Mitsubishi Electric	When the electricity meter is provided with a pulse generator and the pulse generator conforms to the following pulse width and pulse unit, the pulse detector is unnecessary.
Pulse detector	Mitsubishi Electric	Pulse width: 100 to 300 ms Pulse unit: 0.1 kWh/pulse and 1.0 kWh/pulse are recommended. When the electricity meter is provided with the above pulse generator, the pulse detector is unnecessary.
AI controller (PAC-YG63MCA)	Mitsubishi Electric	A separate 24 V DC power supply is required. To measure the outdoor temperature, it is necessary to connect the AI controller to each set of AE-200/AE-50.
Temperature/humidity sensor	–	Input to AI controller (PAC-YG63MCA)

[4] Electric energy calculation method

<1> Calculation of electric energy

The energy management function apportions the power consumption of the outdoor units according to the amount of operation (usage) of each indoor unit and calculates the electric energy consumed by each indoor unit.
The calculated power consumption is displayed graphically on the energy use status and ranking screens.
Only the power consumption of outdoor units is included in the calculation.
The power consumption of indoor units is not included.



Note: The indication of the power supplies for the indoor units is omitted.

Fig. 4.2 Image of calculation of electric energy

<2> Apportionment mode (base data for apportionment)

Select the base data for apportionment among outdoor units from the following three items.
Set the mode on the Web browser for initial setting.
For the setting procedure, see Ⅳ [5]<2>“Setting of apportionment mode for indoor units.”
(1) Capacity save amount … Default
(2) Thermo ON time (time of use of refrigerant)
(3) FAN operation time (working time)

The differences among these apportionment modes are shown in the following table.

Table 4.2 Differences among apportionment modes

	Capacity save amount	Thermo ON time	FAN operation time
Measurement method	Value approximate to amount of refrigerant used by each indoor unit	Time during which refrigerant is being fed into each indoor unit	Operation time of indoor unit
Accuracy of apportionment	◎	○	△
	Since the calculation is based on values approximate to the amounts of refrigerant fed into the indoor units, the power consumption can be calculated with the highest accuracy.	The time during which the cooling thermostat is on or the heating thermostat is on is counted. The time of air blowing (the refrigerant is not used) is not counted.	Since the FAN operation time is counted, the time of air blowing is also counted.

<3> Selection of apportionment mode when more than one models are connected

The applicable apportionment modes vary depending on the connected models.
Select the apportionment mode for each set of AE-200/AE-50 according to the following table.
[Example] When CITY MULTI and Slim are connected → Select the thermo ON time applicable to both models.

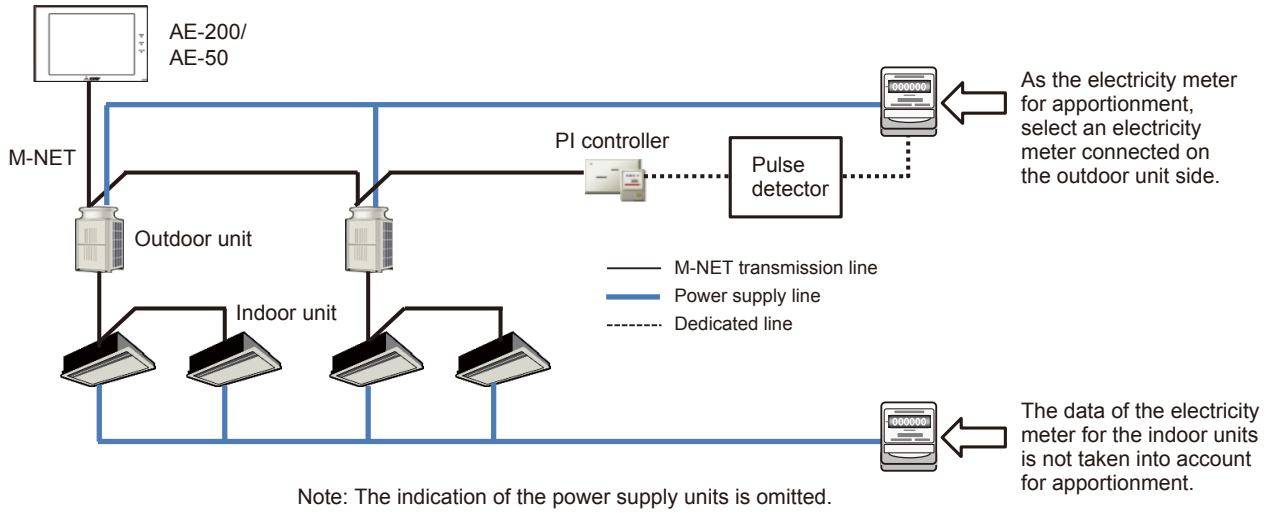
Note: If an apportionment mode inapplicable to a connected model is selected, the electric energy cannot be calculated correctly. Select an apportionment mode applicable to all connected models.

Table 4.3 Applicability of apportionment modes to models

Electric energy apportionment mode	CITY MULTI *Including Multi S	Equipment PAC	A-control	RAC/HAC		Free plan LOSSNAY		Free plan LOSSNAY with adapter (incl. independent humidifying unit) and air feeding fan	Air To Water (PWFY)	HWHP (CAHV)	Device connected to DIDO controller	Device connected to general-purpose PLC	Heat storage model
			Slim (simulta-neous)	Indepen-dent	Multi	Inter-locked	Indepen-dent						
Capacity save amount	○	○	–	–	–	–	–	–	○	–	–	–	–
Thermo ON time	○	○	○	–	–	–	–	–	○	–	–	–	–
FAN operation time	○	○	○	–	–	–	–	–	○	–	–	–	–

<4> Setting of electricity meter for apportionment

Set the electricity meter for apportionment.
Select an electricity meter on the outdoor unit side.
Set the meter on the Web browser for initial setting.
For the setting procedure, see Ⅳ [5]<3> “Setting of electricity meter for apportionment to indoor units.”

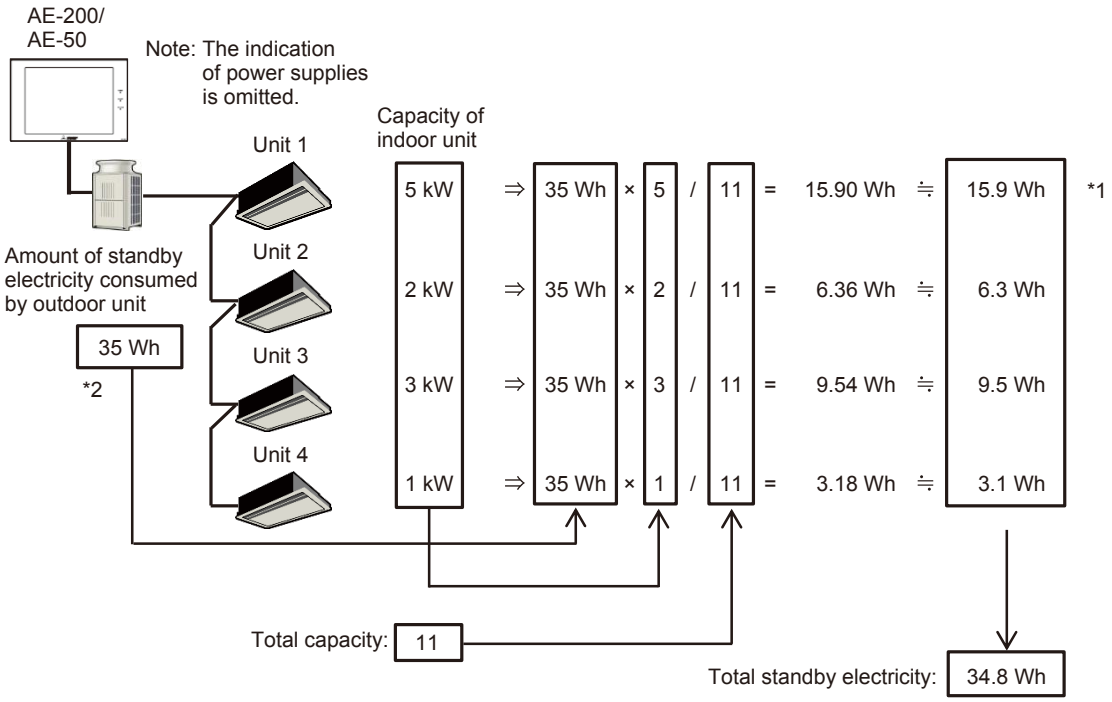


Note: The indication of the power supply units is omitted.

<5> Method of calculating amount of standby electricity (in the case of connection only of CITY MULTI)

The amount of standby electricity consumed by one outdoor unit for 30 minutes is calculated as a fixed amount, 35 Wh (70 Wh for 1 hr).
(The amount is fixed regardless of model, capacity and operating state.)
The amount of standby electricity is distributed according to the indoor unit capacities.
When only CITY MULTI is connected, the amount of standby electricity is calculated as stated below.

[Example] Method of calculating the amount of standby electricity for 30 minutes (An example for 30 minutes is shown because the apportionment calculation is performed every 30 minutes.)

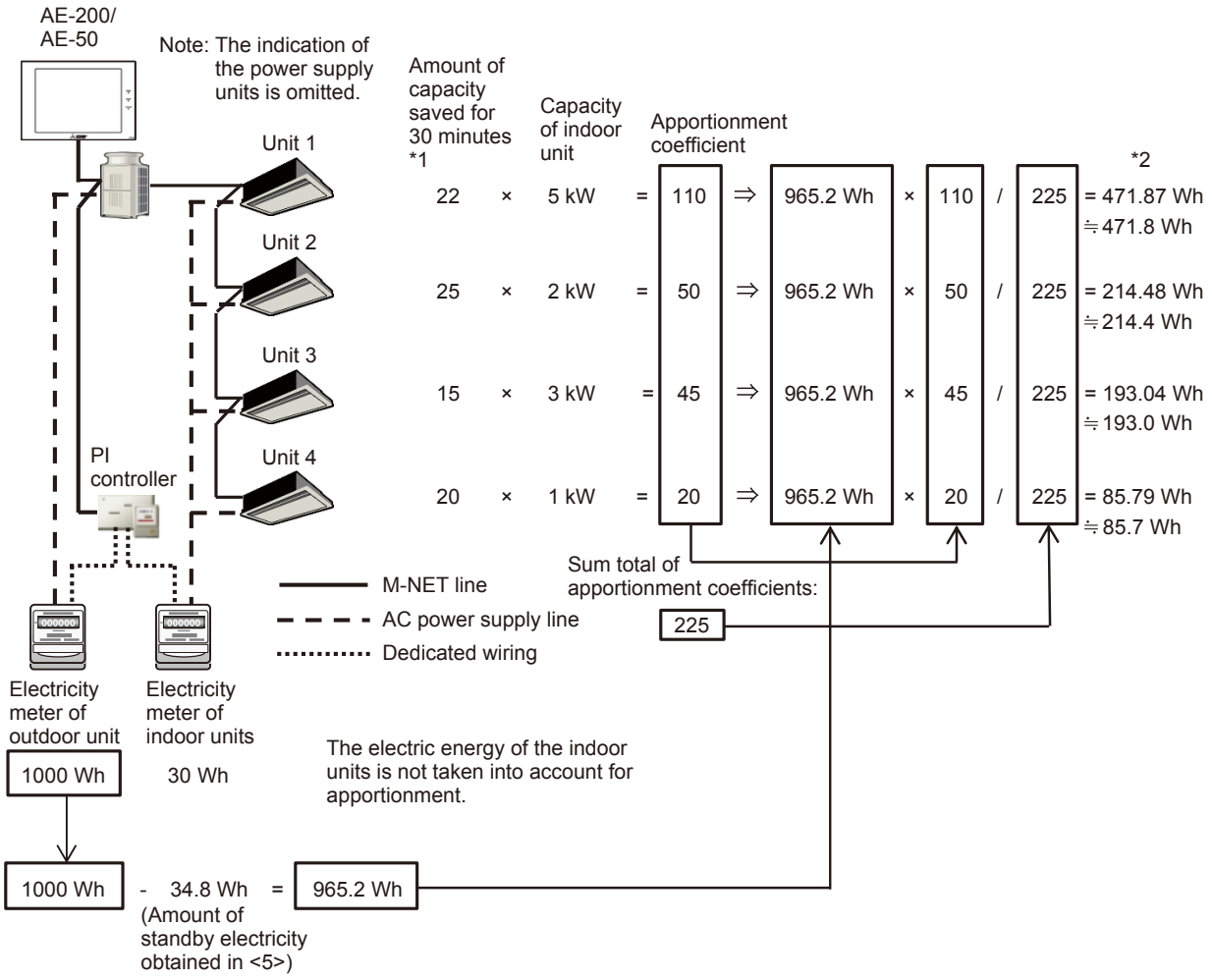


*1: The values are rounded down to one decimal place.
Therefore, the total standby electricity is 34.8 Wh, and there is a difference from the amount before calculation (35 Wh).
*2: When the outdoor units are connection type, the amount of standby electricity is 35 Wh per unit.
[Example]
When one unit of OC and two units of OS are connected, the amount of standby electricity is:
35 Wh × 3 = 105 Wh.

<6> Method of calculating electric energy (in the case of connection only of CITY MULTI)

When only CITY MULTI is connected, the electric energy for 30 minutes is calculated as stated below.
Note: In the case where the capacity save amount has been selected as the apportionment mode

[Example] Method of calculating the electric energy for 30 minutes (An example for 30 minutes is shown because the apportionment calculation is performed every 30 minutes.)



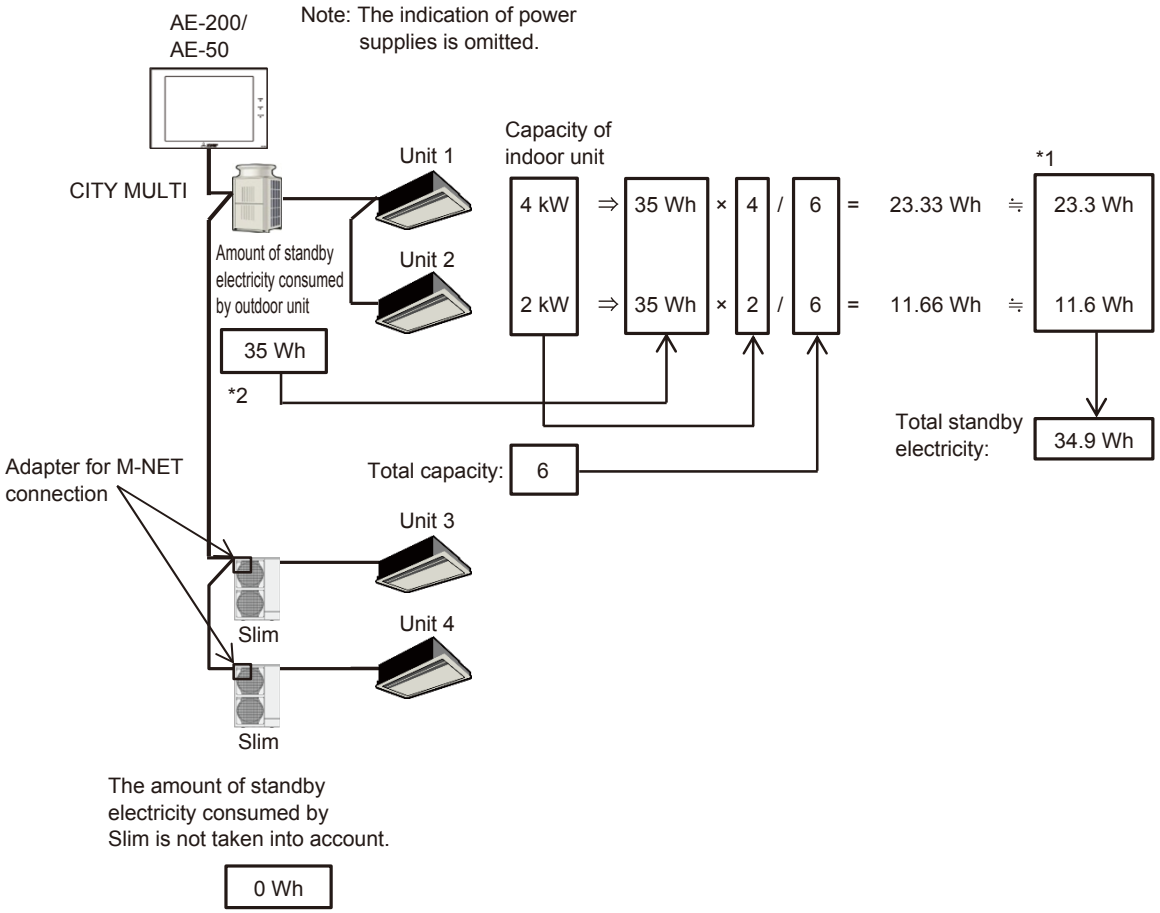
	Amount of standby electricity consumed by outdoor unit obtained in <5>		Results of apportionment		
Unit 1:	15.9 Wh	+	471.8 Wh	=	487.7 Wh
Unit 2:	6.3 Wh	+	214.4 Wh	=	220.7 Wh
Unit 3:	9.5 Wh	+	193.0 Wh	=	202.5 Wh
Unit 4:	3.1 Wh	+	85.7 Wh	=	88.8 Wh

*1 The capacity save amount (100 to 0%) is counted every minute, and the integrated value for 30 minutes is divided by 100.
[Example] 1 minute: 100 %, 2 minutes: 0 %, … 30 minutes: 100 %
(100 + 0 + … 100) /100 = capacity save amount for 30 minutes
*2 The values are rounded down to one decimal place.

<7> Method of calculating amount of standby electricity (in the case of connection of CITY MULTI and Slim)

When CITY MULTI and Slim are connected, the amount of standby electricity for 30 minutes is calculated as stated below.
Note: The standby electricity of Slim is not taken into account.

[Example] Method of calculating the amount of standby electricity for 30 minutes

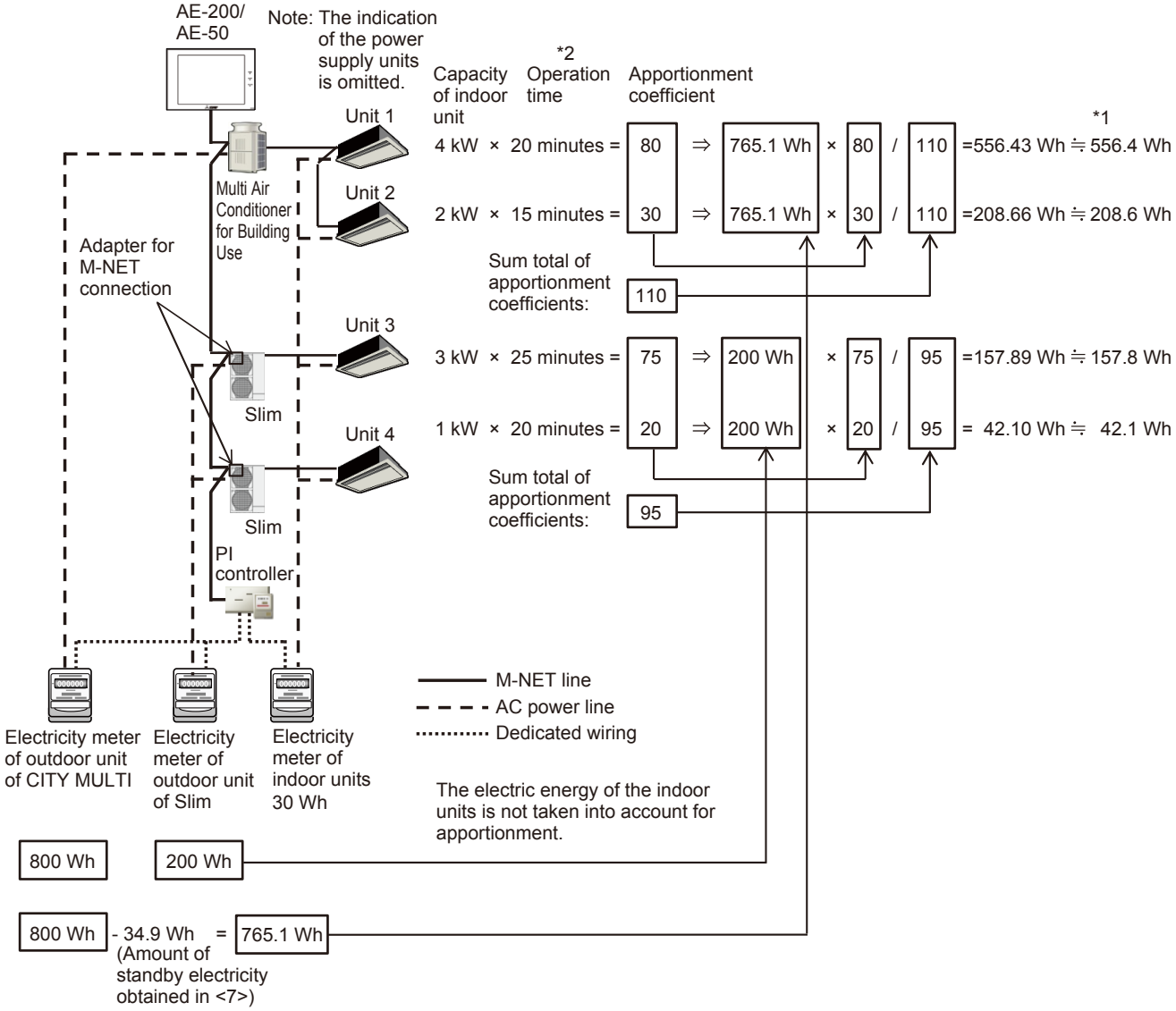


*1 The values are rounded down to one decimal place.
Therefore, the total standby electricity is 34.9 Wh, and there is a difference from the amount before calculation (35 Wh).
*2 When the outdoor units are connection type, the amount of standby electricity is 35 Wh per unit.
[Example]
When one unit of OC and two units of OS are connected, the amount of standby electricity is:
35 Wh × 3 = 105 Wh.

<8> Method of calculating electric energy (in the case of connection of CITY MULTI and Slim)

When CITY MULTI and Slim are connected, the electric energy for 30 minutes is calculated as stated below.
Note: In the case where the capacity save amount has been selected as the apportionment mode

[Example] Method of calculating the electric energy for 30 minutes



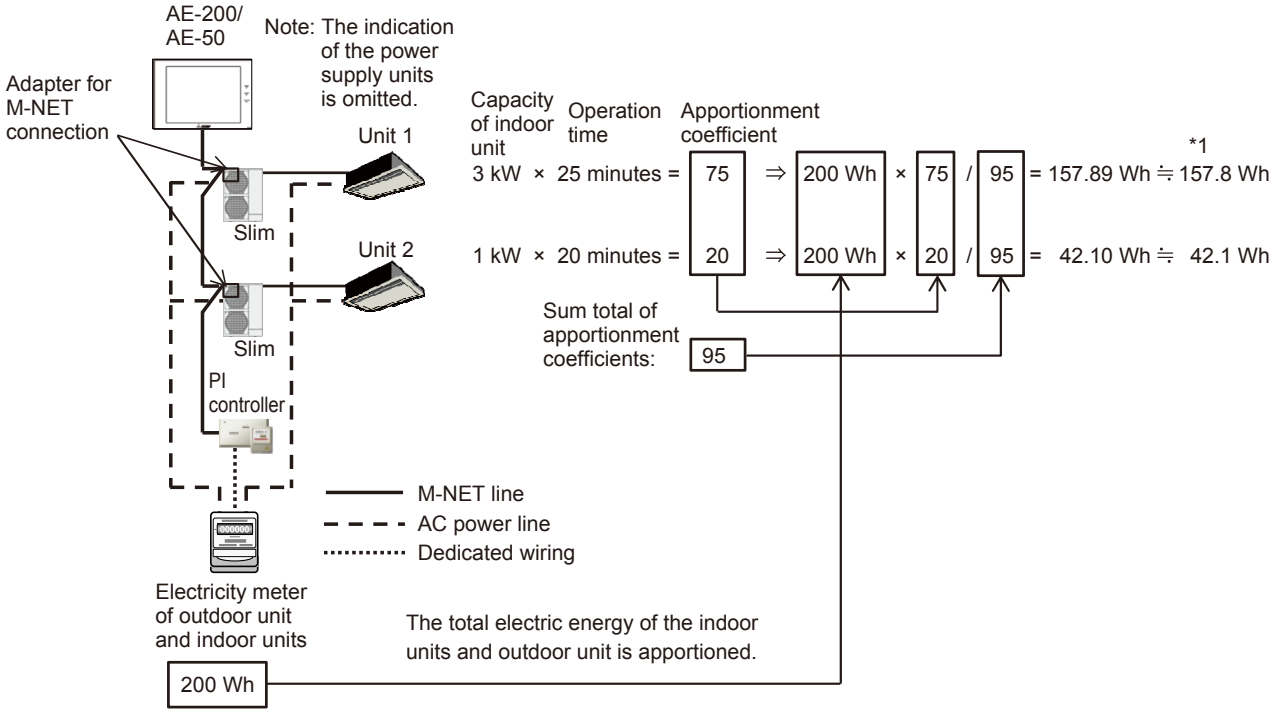
	Amount of standby electricity consumed by outdoor unit obtained in <7>		Results of apportionment		
Unit 1:	23.3 Wh	+	556.4 Wh	=	579.7 Wh
Unit 2:	11.6 Wh	+	208.6 Wh	=	220.2 Wh
Unit 3:	0 Wh	+	157.8 Wh	=	157.8 Wh
Unit 4:	0 Wh	+	42.1 Wh	=	42.1 Wh

*1 The values are rounded down to one decimal place.
*2 When two or three Slim Air Conditioners are connected, if even one of the indoor units is operating, the operation time of the unit will be counted.

<9> Method of calculating electric energy (in the case of connection only of Slim) (When the outdoor unit and indoor units are powered by the same power supply)

When Slim is connected and the outdoor unit and indoor units are powered by the same power supply, the electric energy is calculated as stated below.

[Example] Method of calculating the electric energy for 30 minutes



Unit 1 : 157.8 Wh

Unit 2 : 42.1 Wh

*1 The values are rounded down to one decimal place.

*2 When two or three Slim Air Conditioners are connected, if even one of the indoor units is operating, the operation time of the unit will be counted.

[5] Initial Setting of Energy Management Function

To use the energy management function, it is necessary to set the conditions on the Web browser for initial setting.
Without the initial setting, the graphs of outdoor temperature, electric energy and target values will not be displayed on the energy use status screen or ranking screen.
The conditions cannot be set on the screen of any of AE-200 and AE-50 main units. The conditions for each set of AE-200 and AE-50 must be set individually on each Web browser. Set them on AE-50 without fail.
The energy management function requires the AI controller (PAC-YG63MCA) or AHC for measurement of outdoor temperature and the PI controller (PAC-YG60MCA) for measurement of electric energy. (The AI controller or AHC is required only when the outdoor temperature must be displayed.)
For each set of AE-200 and AE-50, one or more AI controllers or AHCs and one or more PI controllers are required. The power consumption measured by the PI controller(s) connected to each set of AE-200/AE-50 will be apportioned only among the indoor units connected to the same set of AE-200/AE-50. The power consumption cannot be apportioned across some AE-200/AE-50 systems.

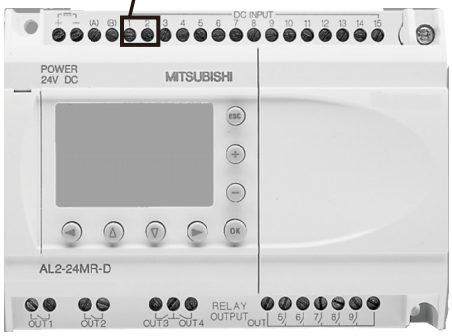
The initial setting items are shown below.

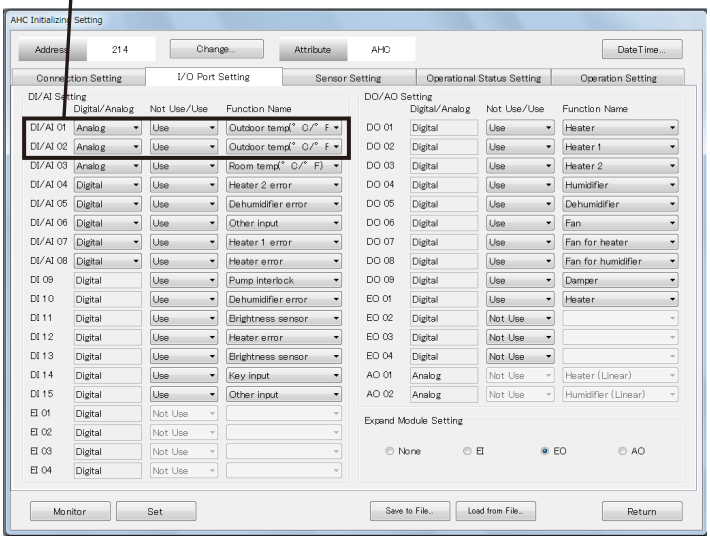
1. Setting of outdoor temperature measurement unit
2. Setting of apportionment mode for indoor units
3. Setting of electricity meter for apportionment among indoor units
4. Setting of target values

Before performing the initial setting of the energy management function, set the conditions of the AI controllers, AHCs and PI controllers. To set the conditions of the AI controllers and PI controllers, select Functions 1 – Measurement setting on the initial setting screen on the main unit to open the Measurement setting screen, or select Functions 1 – Measurement setting on the Web browser for initial setting to open the Measurement setting screen.
The conditions of AHCs must be set with the maintenance tool.
The temperature sensor to be used for the energy management function must be connected to Input1 or Input2 of DC power type α2 (AL2-14MR-D/AL2-24MR-D) of AHC.
If it is connected to another input, the temperature cannot be displayed on the energy management screen.

Set the conditions of DI/AI 01 and 02 on the I/O Port Setting screen of the maintenance tool.
Digital/Analog: Select Analog.
Not Use/Use: Select Use.
Function Name (°C/°F): Select Room Temp (°C/°F) or Outdoor (°C/°F).
For details, see Chapter 3.18 “Initial Settings and Monitoring AHC ADAPTER” of the manual for Maintenance Tool for MN Converter & Centralized Controller.

Connect to the temperature sensor.



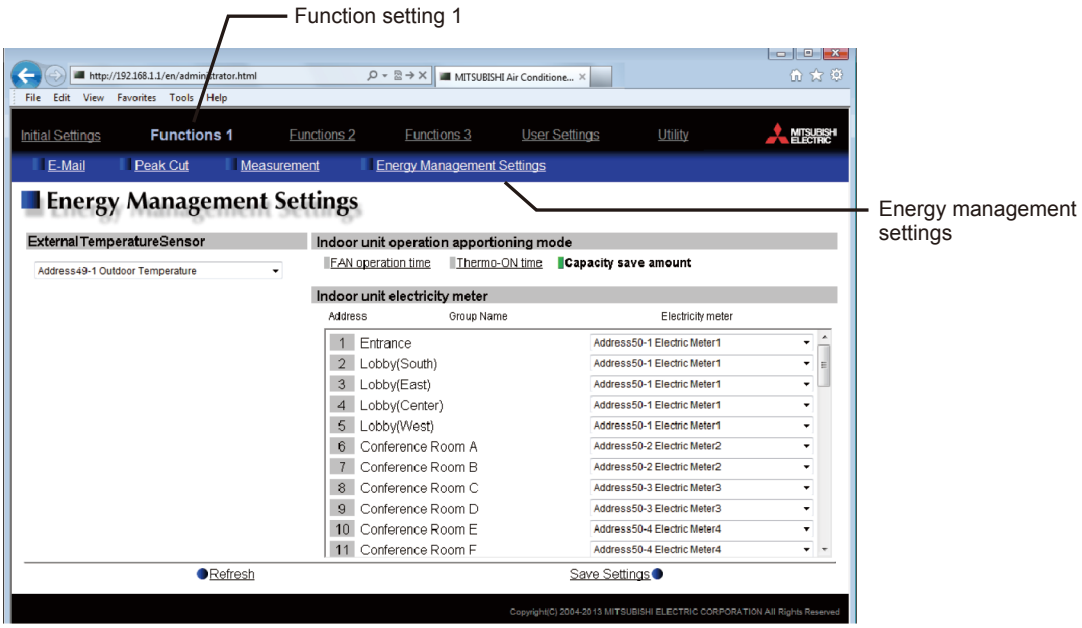


- The temperature sensor cannot be connected to AC power type α2 (AL2-14MR-A/AL2-24MR-A).
- Before the initial setting of the energy management function, make sure that all units have been started up and correctly connected.

Remarks

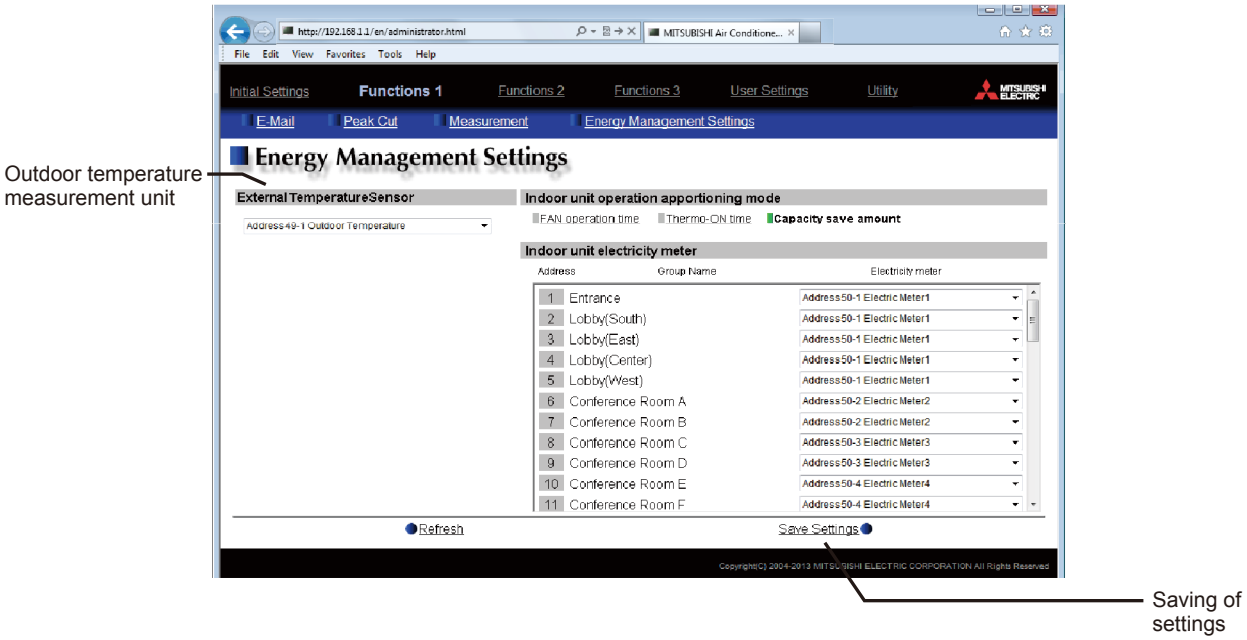
- ○ The initial setting of the energy management function can be performed only on the Web browsers for initial setting.
  (Only the target values can be set on the main unit screens.)
- ○ One or more AI controllers or AHCs and one or more PI controllers are required for each set of AE-200 and AE-50.
  (The PI controllers and AHCs are required only when the outdoor temperature must be displayed.)
- ○ “Energy Management License Pack” is required.
- ○ The electric energy counting PLC cannot be used for the energy management function.

Click Functions 1 – Energy Management Setting on the Web browser for initial setting to open the energy management setting screen.



<1> Setting of outdoor temperature measurement unit

Specify the sensor for the AI controller (PAC-YG63MCA) or AHC which measures the outdoor temperature.
When the outdoor temperature is selected on the energy use status screen, the outdoor temperature measured by the outdoor temperature measurement unit specified on this screen will be displayed in a line graph.
Considerations of energy saving can be made by comparing the electric energy, FAN operation time and thermo ON time (bar graph) with the outdoor temperature.
If it is unnecessary to display the line graph of outdoor temperature, this setting is unnecessary.



Select a temperature sensor for measuring the outdoor temperature in External Temperature Sensor.
The pull-down menu shows the temperature sensors connected to the AI controller or AHC. Only one of the temperature sensors can be selected.

Click the Save Settings button to save the settings in AE-200/AE-50.

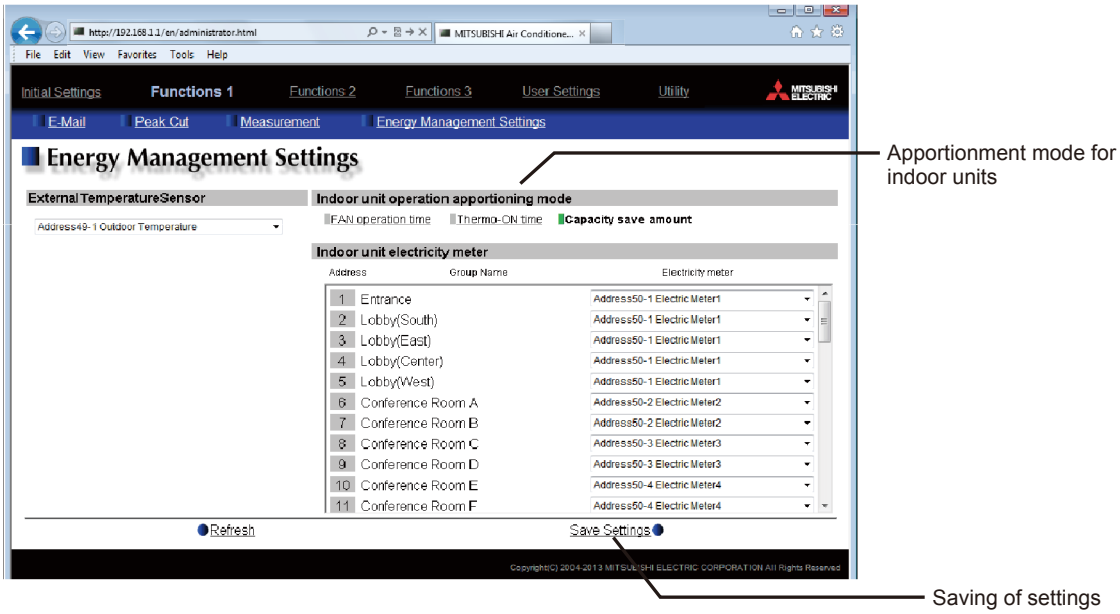
<2> Setting of apportionment mode for indoor units

Set the apportionment mode for the indoor units. The electric energy measured by the PI controller will be apportioned to the indoor units in the apportionment mode set on this screen, and the power consumption in each block, group or unit address will be displayed graphically on the energy use status screen and ranking screen.

The following three apportionment modes for indoor units are available. Select one of them. The capacity save amount mode is recommended.

(1) Capacity save amount (default) : Usage of capacity of outdoor unit (converted to time)
(2) Thermo ON time : Time during which indoor unit thermo was on
(3) FAN operation time : Time during which indoor unit was running

For the details of each mode, see Ⅳ [4]<2> “Apportionment modes” and Ⅳ [4]<3> “Selection of apportionment mode when more than one models are connected.”

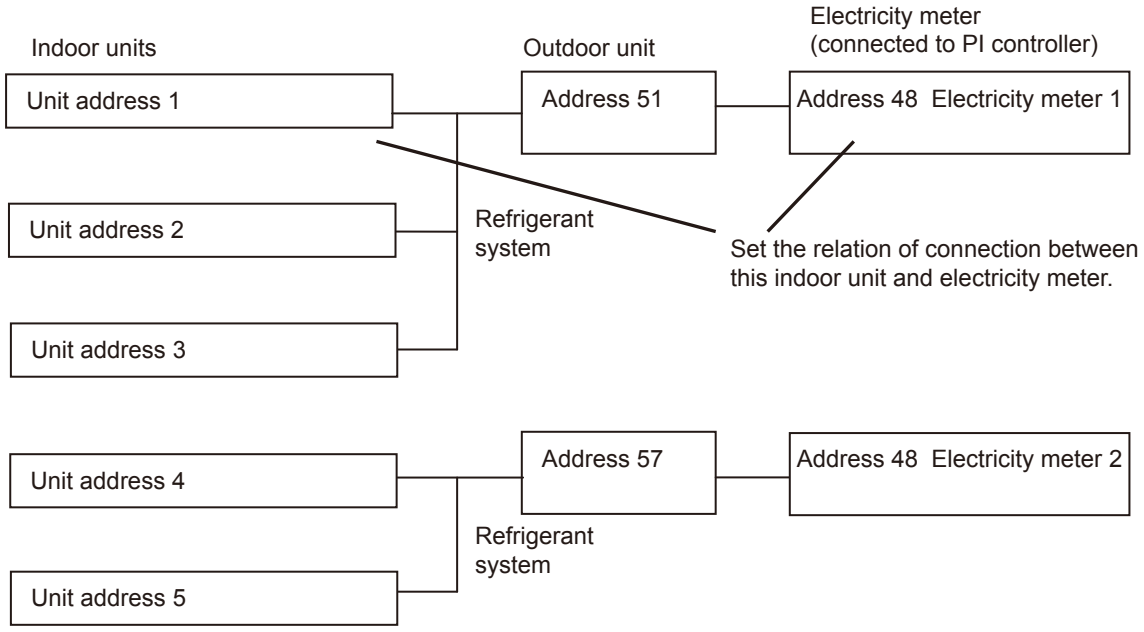


Select one of FAN operation time, Thermo ON time and Capacity save amount in Indoor unit operation apportioning mode.

Click the Save Settings button to save the settings in AE-200/AE-50.

<3> Setting of electricity meter for apportionment to indoor units

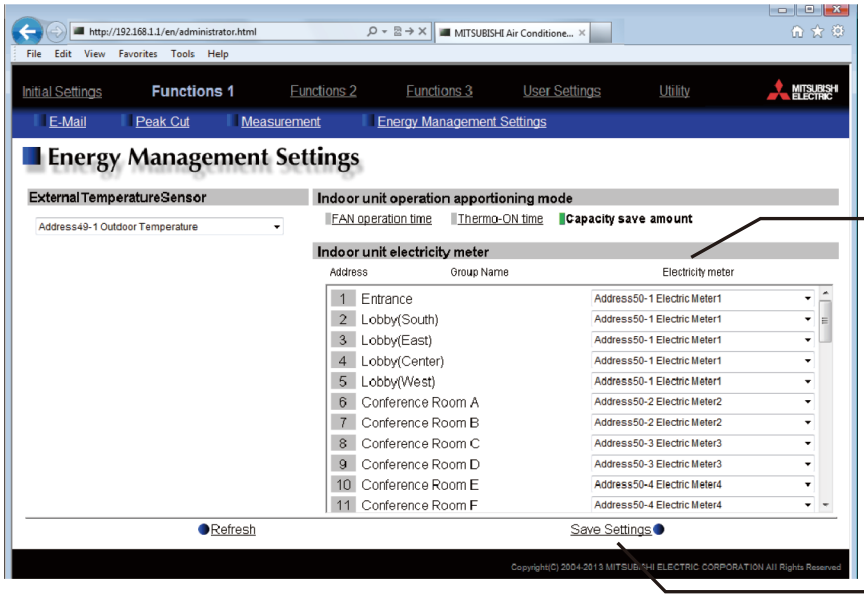
Specify the electricity meter for measuring the power consumption of the outdoor unit to which the indoor units in the group are connected (refrigerant system).
The power consumption of the outdoor unit measured by the specified electricity meter will be apportioned to the connected indoor units (refrigerant system). Correctly set all indoor units.



Remarks

- ○ The power consumption of the outdoor unit will be apportioned. The power consumption of the indoor units is not included in the apportionment calculation.
- ○ When the PI controller gets out of order and is replaced with a new one, the power consumption during replacement may be counted abnormally largely. (Since the integrated value of power consumption of the PI controller is 0 on the counter, the difference from the integrated value on the counter of the previous PI controller is large.)
- ○ Set an electricity meter for each indoor unit. If any meter is not set for a unit, the apportionment calculation cannot be performed correctly.

- Before operating, make sure that the outdoor unit and electricity meter are correctly connected. If they are connected improperly, the apportionment calculation will not be performed correctly.
  Run the indoor units connected to the outdoor unit, and make sure that the power consumption of the outdoor unit is correctly counted on the electricity meter.



In Electricity meter, select the electricity meter to be used to measure the power consumption of the indoor units in each group.
The pull-down menu will show [Address + address of PI controller + "-" + electricity meter number + electricity meter name].

Click the Save Settings button to save the settings in AE-200/AE-50.

Remarks

- ○ Some group names may not be displayed completely depending on the length.
- ○ If a group name has not been registered, [Group + group number] will be displayed.
- ○ Only the electricity meters whose measurement unit has been set to kWh on the measurement setting screen can be selected.
- ○ Groups with LOSSNAY or DIDO controller only are not displayed (they are out of the scope of apportionment calculation).

<4> Setting of target values

See Ⅳ [8] "Setting of target values."

[6] Energy use status

On the energy use status screen, the conditions relating to energy management, such as power consumption, operation time and outdoor temperature, are graphically displayed. The energy use status of the target indoor units can be checked in detail by displaying the data of each group, block or unit address on the specified date. In addition, it is possible to display the energy use status of other indoor units on the screen for comparison.
The energy use status every hour, day or month can be displayed graphically to visualize the energy saving status. It is possible to make an energy saving plan according to the transition of power consumption and room temperature with time. If the target values are set, energy saving measures can be taken timely by comparing the current energy use status with the target value.
Note: For some display items, the energy management license pack is required.
For details, see Ⅳ [6]<5> “Display range and items which can be displayed in graphs.”

The data will be saved in each set of AE-200 and AE-50. The data on AE-50 will not be saved in AE-200.
In each of AE-200 or AE-50, the data only on the units connected to M-NET of the controller will be saved. When the screen is displayed on AE-200, it will receive the data from AE-50 and display the data.
The retention periods of the data are shown below.

Table 4.4 Retention periods of energy use status data

Period of display	Data retention period
Day	For last 24 months *
Month	For last 24 months *
Year	For last 2 years

(* The data for 25 months are retained internally. However, the data for 24 months can be displayed in graphs.)

The data is saved in an SD card (= a nonvolatile memory: data will not be deleted even if power is turned off from AE-200/AE-50) every hour and 30 minutes.

To display the graphs, the initial setting is required. The initial setting can be performed only on the Web browser for initial setting. (For the initial setting procedure, see Ⅳ [5] “Initial setting of energy management function.”)
The initial setting cannot be performed on the main unit screens of AE-200/AE-50. It is necessary to perform the initial setting individually on the Web browser for initial setting of each set of AE-200 and AE-50.
On the main unit screen of AE-200, the energy use status of connected AE-50 can be displayed by switching the display mode.
On the main unit screen of AE-50, the energy use status only of AE-50 can be displayed.
On the Web browser, the status of each set of AE-200/AE-50 can be displayed. On the browser of each set of AE-200/AE-50, the status of the units connected to M-NET of the controller can be displayed.

Remarks

- ○ The initial setting must be performed on the Web browsers for initial setting.
- ○ In case of failure of AE-200/AE-50, it is recommended to periodically save the data on the energy use status screen on each Web browser in a file in CSV format with the download function or from the CSV output screen.
  For details, see Ⅳ [10] “Data Downloading” and Ⅳ [11] “CSV Output.”

<1> Contents displayed on screens

Main unit screen

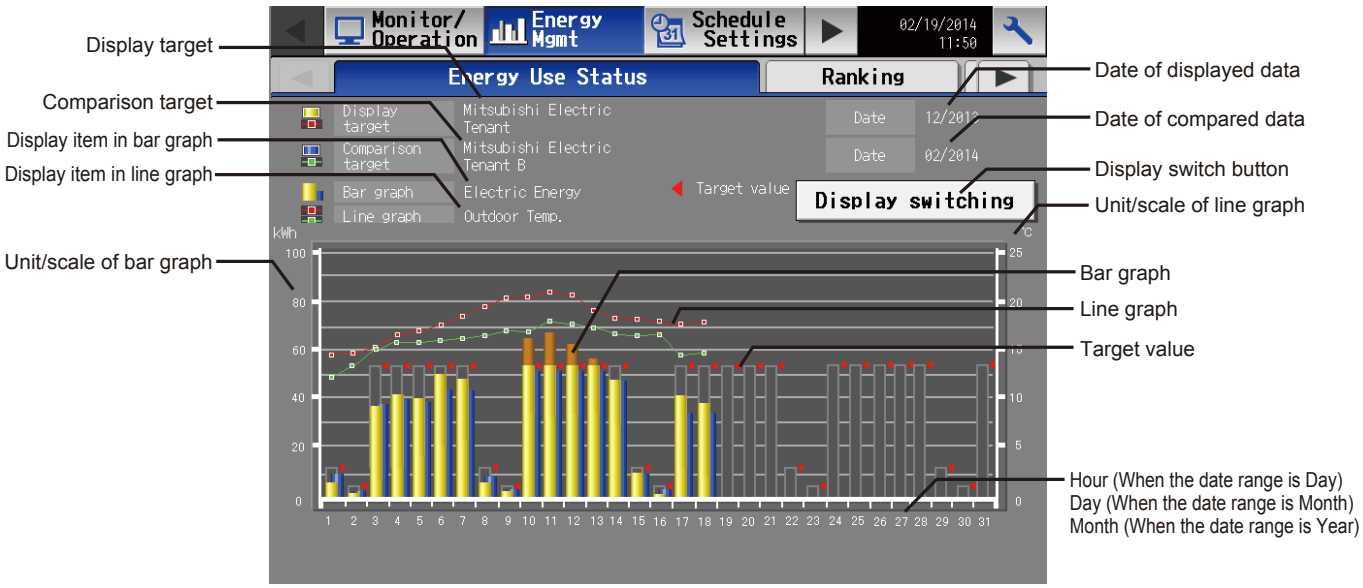


Table 4.5 Contents displayed on main unit screen

Item	Details		Remarks
Display target	Upper stage	The name of AE-200/AE-50 is displayed.	● If AE-50 has been selected when AE-50 was connected, the name of AE-50 is displayed.
	Lower stage	The block name, group name or address number of the displayed bar graph or line graph is displayed.	
Comparison target	Upper stage	The name of AE-200/AE-50 is displayed.	● If AE-50 has been selected when AE-50 was connected, the name of AE-50 is displayed.
	Lower stage	The block name, group name or address number of the bar graph or line graph displayed for comparison is displayed.	● This graph can be displayed to compare the displayed data with the data on another indoor unit.
Bar graph	The item displayed in a bar graph is displayed.		
Line graph	The item displayed in a line graph is displayed.		
Date of displayed data	The date of displayed data is displayed.		
Date of compared data	The date of data displayed for comparison is displayed.		● The displayed data can be compared with the previous data by specifying the same block, group or address as that of the Display target for the Comparison target and changing the date of data to be compared.
Display switching	To display a graph, first touch this button. Then, the screen for setting the contents of graph will appear. The graph will be displayed according to the contents set on the display item setting screen.		● For details, see IV[6]<5> “Display range and items which can be displayed in graphs.”
Unit/scale of bar graph	The unit and scale of the bar graph are displayed.		● The unit appropriate to the Display item is displayed. ● The scale is automatically adjusted according to the maximum value of the data.

Table 4.5 Contents displayed on main unit screen (continued)

Item	Details	Remarks
Unit/scale of line graph	The unit and scale of the line graph are displayed.	● The unit appropriate to the Display item is displayed. ● The scale is automatically adjusted according to the data range. The temperature is displayed in the range for 25 °C in 5 °C steps. When the data are not included in the range for 25 °C, the range will be automatically increased. (The humidity is displayed in the range for 50 % in 10 % steps.)
Bar graph	The bar graph is displayed.	● For the display format, see Ⅳ [6]<4> “Graph display formats.” ● When any Comparison target has not been selected, only the data on the selected Display target will be displayed in a graph. ● If a time period during which there is no data is caused by changing the present time setting, the data during the period will not be displayed. If time is duplicated by changing the present time setting, the last data will be displayed in a graph as the data at the duplicated time.
Line graph	The line graph is displayed.	
Target value	The target value graph is displayed.	● This graph is displayed only when the Display range is Block and the Date range is Month or Year. ● For the display format, see Ⅳ [6]<4> “Graph display formats.”
Hour Day Month	The time axis is displayed according to the date range.	● When the Date range is Day, the scale is graduated in hour, but the time is displayed in intervals of 3 hours. ● The date is displayed in the format specified on the unit information screen.

Web browser screen

Table 4.6 Contents displayed on Web browser screen

Item	Details	Remarks
Date range	Select Day, Month or Year.	● When Day is selected, the graph from 0:00 to 24:00 on the day will be displayed on an hourly basis. ● When Month is selected, the graph from the 1st to the 31st in the month will be displayed on a daily basis. ● When Year is selected, the graph from January to December in the year will be displayed on a monthly basis.
Display range	Select the unit of the display target from Block, Group and Address.	● Click, and the pull-down menu will be displayed.
Display target	Select the block name, group name or address number of the display target.	● Click, and the pull-down menu will be displayed. ● The selectable display targets change depending on the unit selected in Display range.
Date of displayed data	Specify the date of data to be displayed in a graph.	● Click, and the pull-down menu or the setting screen will be displayed. ● When Day has been selected as the date range, the setting screen will appear. Specify the year, month and day in the range of the last 24 months from this day. ● When Month has been selected as the Date range, select the year and month as yyyy/mm in the range of the last 24 months from this month. ● When Year has been selected as the Date range, select the year as yyyy in the range of the last two years from this year. ● The date will be displayed in the format specified on the basic system setting screen on the Web browser for initial setting.
Comparison target	Select the block name, group name or address number of the comparison target.	● Click in the field, and the pull-down menu will be displayed. ● The selectable targets change depending on the item selected in Display range. ● The displayed data can be compared with the previous data by specifying the same block, group or address as that of the Display target for the Comparison target and changing the date of data to be compared.

Table 4.6 Contents displayed on Web browser screen (continued)

Item	Details	Remarks
Date of compared data	Specify the date of data to be compared.	● Click in the field, and the pull-down menu will be displayed. ● The same rules of specification of date as those for Date of data to be display are applied. ● The date will be displayed in the format specified on the basic system setting screen on the Web browser for initial setting.
Updating of display	Click this button, and the graph will be displayed based on the specified conditions.	● If the data to be displayed does not exist, the graph will not be displayed.
Display item	Select the item to be displayed in a bar graph from the upper stage in the display item field, and select the item to be displayed in a line graph from the lower stage.	● The selectable display items vary depending on the items selected in Display range and Display target. For details, see Ⅳ [6]<5> “Display range and items which can be displayed in graphs.”
Bar graph	The data to be displayed and the data to be compared are displayed in bar graphs.	● For the display format, see Ⅳ [6]<4> “Graph display formats.” ● When any Comparison target has not been selected, only the data on the selected Display target will be displayed in graphs. ● If a time period during which there is no data is caused by changing the present time setting, the data during the period will not be displayed. If time is duplicated by changing the present time setting, the last data will be displayed in a graph as the data at the duplicated time.
Line graph	The data to be displayed and the data to be compared are displayed in line graphs.	
Target value	The target value graph is displayed.	● This graph is displayed only when the Display range is Block and the Date range is Month or Year. ● For the display format, see Ⅳ [6]<4> “Graph display formats.”
Hour Day Month	The time axis is displayed according to the date range.	● When the Date range is Day, the scale is graduated in hour, but the time is displayed in intervals of 3 hours. ● The date is displayed in the format specified on the basic system setting screen on the Web browser for initial setting.
Download	Click Download, and the displayed measurement data will be output in CSV format.	● For details, see Ⅳ [10] “Data downloading.”

<2> Items which can be displayed in graphs

Two kinds of graphs, bar graph and line graph, can be displayed on the energy use status screen.
Only one item can be displayed in each of bar graph and line graph. Two different items cannot be displayed simultaneously. For example, the bar graphs of electric energy and FAN operation time cannot be displayed simultaneously. (The target values for two items can be displayed simultaneously.)
The line graphs of temperature setting and room temperature cannot be displayed simultaneously.
The following table shows the items which can be displayed in each graph.

Table 4.7 Items which can be displayed in bar graph

Type of graph	Display target	Display item	Remarks
Bar graph	Indoor unit	Target values	● The target electric energy automatically calculated from the annual total power consumption, ratio of power consumption in each month and ratio of power consumption on each day of the week set on the target setting screen is displayed. ● Since the target values are determined for each block, the values are displayed only when the display range is Block. ● Also the future target values can be displayed. ● When target values are changed, the target value graph in the past will be unchanged, but the graphs on and after this day will be displayed with the new target values.
		Electric energy	● The power consumption of an outdoor unit is apportioned to the indoor units, and the obtained electric energy is displayed. The power consumption of the indoor unit is not displayed. ● Only the electric energy measured by the PI controller (PAC-YG60MCA) is displayed. ● The electric energy consumed by an outdoor unit is measured by the PI controller and apportioned based on the air conditioner usage of indoor units, and the obtained results are displayed. ● To display the graph of electric energy, it is necessary to preliminarily set the electricity meter (name of PI controller electricity meter) for each unit on the energy management setting screen of the Web browser for initial setting. ● The air conditioner usage of indoor units is calculated based on the indoor unit apportionment mode which has been set on the energy management setting screen of the Web browser for initial setting. The following three indoor unit apportionment modes are available. Select one of the modes. The capacity save amount mode is recommended. (1) Capacity save amount (default) (2) Thermo ON time (3) FAN operation time (working time) For the details of each mode, see Ⅳ [4]<2> “Apportionment modes.” ● The power consumption is calculated from the capacities of the indoor units and the air conditioner usage. Since the capacity of each indoor unit is automatically obtained from the indoor unit (through M-NET), it is unnecessary to set the capacities on AE-200/AE-50. ● The power consumption includes the standby electricity of each indoor unit obtained by apportionment of the standby electricity of outdoor unit. For details, see Ⅳ [4]<5> “Method of calculating standby electricity.” ● Insignificant power consumption may be displayed on the graph although no indoor units are used. This is because the standby electricity is apportioned to the units, and there is no problem. ● The electric energy consumed by LOSSNAY cannot be displayed.
		FAN operation time	● Time during which the indoor unit is running ● AE-200/AE-50 obtains the operating state of the indoor unit (through M-NET) and counts the time every minute. ● When the display range is Group, the data on the unit having the lowest number in the group is displayed. ● The data on LOSSNAY can be displayed.
		Thermo ON time (total)	● Time during which the indoor unit is in the thermo ON state. ● AE-200/AE-50 obtains the thermo ON state from the indoor unit (through M-NET) and counts the time every minute. ● When the display range is Group, the data on the unit having the lowest number in the group is displayed. ● The data on LOSSNAY cannot be displayed.

Table 4.7 Items which can be displayed in bar graph (continued)

Type of graph	Display target	Display item	Remarks
Bar graph	Indoor unit	Thermo ON time (cooling)	● Time during which the indoor unit is in the thermo ON state in the cooling mode. ● AE-200/AE-50 obtains the thermo ON state and mode from the indoor unit (through M-NET) and counts the time every minute. ● When the display range is Group, the data on the unit having the lowest number in the group is displayed. ● The data on LOSSNAY cannot be displayed.
		Thermo ON time (heating)	● Time during which the indoor unit is in the thermo ON state in the heating mode. ● AE-200/AE-50 obtains the thermo ON state and mode from the indoor unit (through M-NET) and counts the time every minute. ● When the display range is Group, the data on the unit having the lowest number in the group is displayed. ● The data on LOSSNAY cannot be displayed.
	PI controller (PAC-YG60MCA)	Measurements	● Measurements (electric energy, quantity of water and quantity of heat) measured by the PI controller (PAC-YG60MCA) ● The measurements can be displayed only for the channels for which the units have been set to kWh, m3 and MJ on the measurement setting screen.

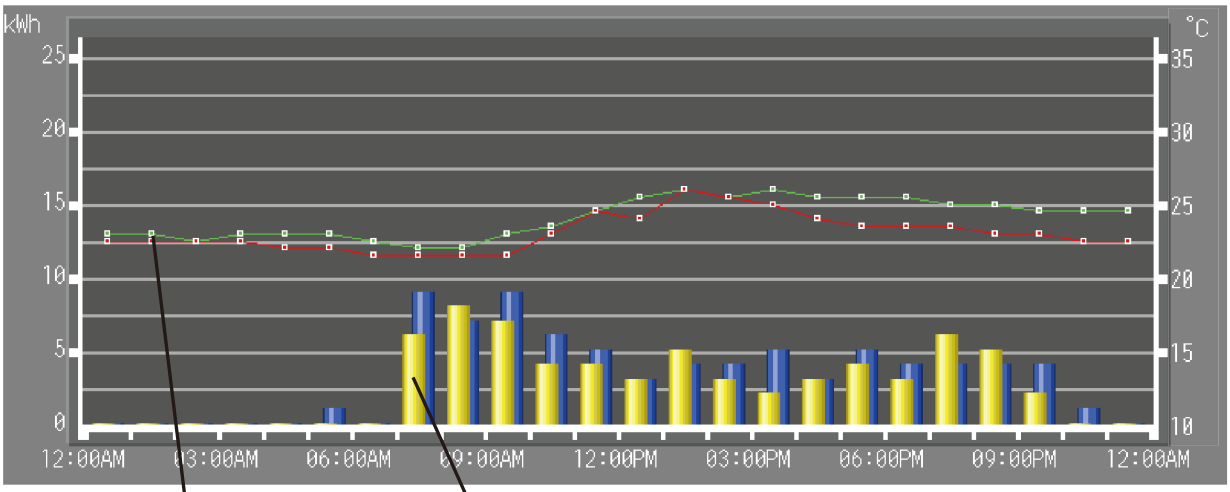
Table 4.8 Items which can be displayed in line graph

Type of graph	Display target	Display item	Remarks
Line graph	–	Outdoor temperature	● The temperature measured by the AI controller or AHC which has been specified as the outdoor temperature measurement unit on the energy management setting screen of the Web browser for initial setting. ● It is necessary to preliminarily set on the energy management setting screen of the Web browser for initial setting. ● One sensor (connected to the channel of AI controller or AHC) can be specified for each set of AE-200/AE-50. ● To display the outdoor temperature graph for each set of AE-200/AE-50, it is necessary to measure the outdoor temperature with the AI controller or AHC of each set of AE-200/AE-50. ● The outdoor temperature can be displayed in a graph regardless of the display target.
	Indoor unit	Cooling temperature setting	● The temperature setting in the cooling mode is displayed. ● When the unit is running in the heating mode, the marker and line graph are not displayed. ● In the case of a model on which the cooling and heating temperatures in the automatic mode can be individually set, the cooling temperature setting is constantly displayed. ● The data on LOSSNAY cannot be displayed.
		Heating temperature setting	● The temperature setting in the heating mode is displayed. ● When the unit is running in the heating mode, the marker and line graph are not displayed. ● In the case of a model on which the cooling and heating temperatures in the automatic mode can be individually set, the heating temperature setting is constantly displayed. ● The data on LOSSNAY cannot be displayed.
		Indoor temperature	● The indoor temperature (suction temperature) is obtained from the indoor unit (through M-NET) and displayed. ● The data on LOSSNAY cannot be displayed.
	AI controller (PAC-YG63MCA)	Temperature	● The temperature is displayed.
		Humidity	● The humidity is displayed.
	AHC	Temperature	● The temperature is displayed.

<3> Data for graphs

The values displayed in bar graph and line graph vary depending on the date range.
Select the date range from Day, Month and Year.
When Day is selected, the graph from 0:00 to 24:00 on the day will be displayed on an hourly basis.
When Month is selected, the graph from the 1st to the 31st in the month will be displayed on a daily basis.
When Year is selected, the graph from January to December in the year will be displayed on a monthly basis.
The data only during the period during which power was supplied to AE-200/AE-50 are displayed in graphs. The data during the period during which power was not supplied to AE-200/AE-50 are not displayed.
The values displayed in each mode are shown below.

When the date range is Day

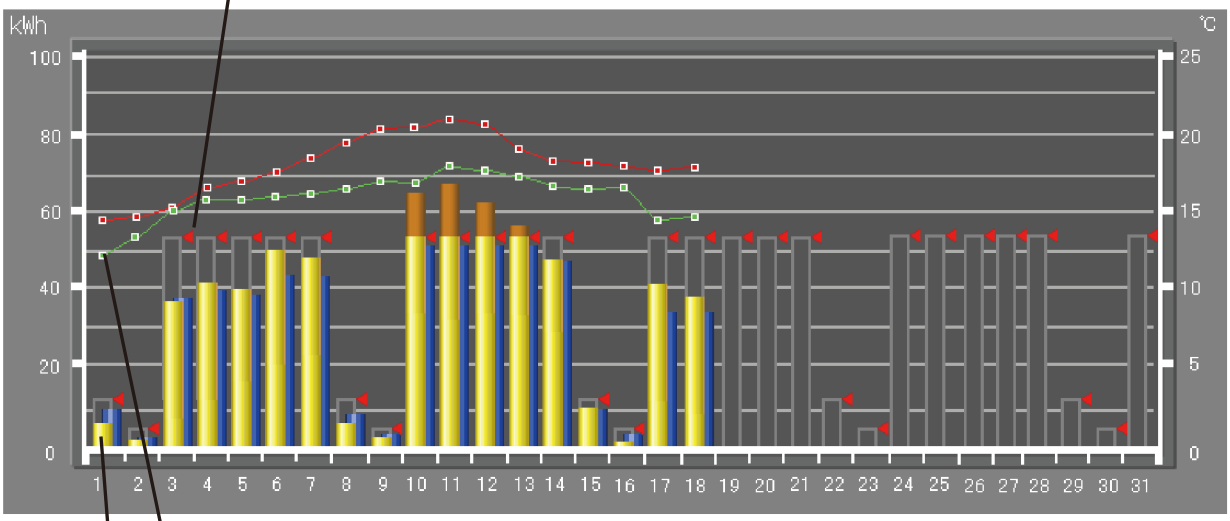


Bar graph The integrated value for 1 hour is displayed.

Line graph The instantaneous value on the hour (00 min) is displayed.
If the data was not obtained owing to a communication error or a sensor trouble, the value is not displayed.
The line of the graph is not displayed in the period before and after the time at which the data was not obtained.

When the date range is Month

Bar graph, target value — The target electric energy in one day is displayed.
The target electric energy automatically calculated from the ratio of power consumption on each day is displayed.

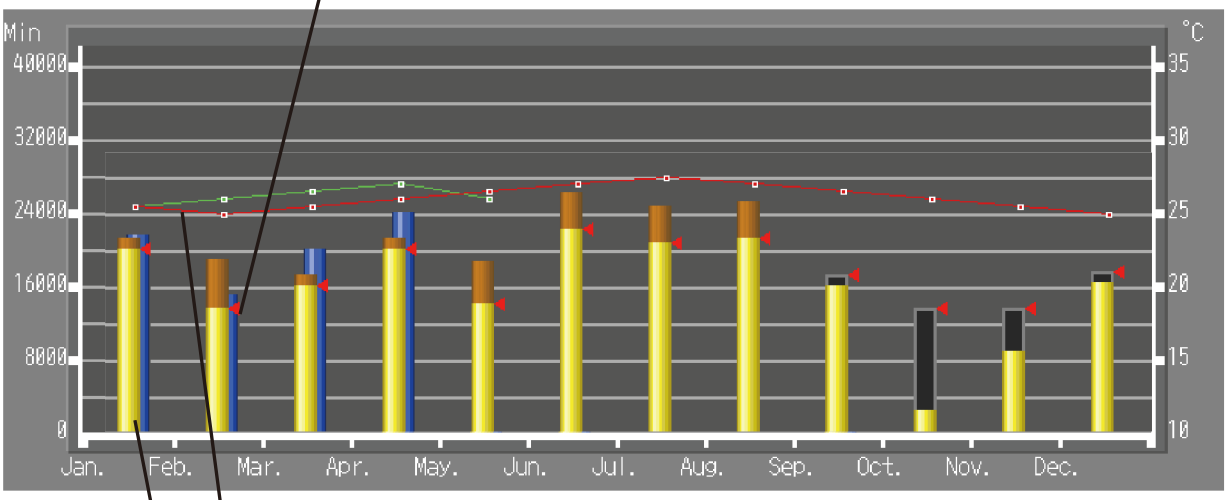


Line graph — The average value in one day is displayed.
The average value is determined from the instantaneous values on the hours from 0 to 23.
The displayed value for this day is the average of the values obtained by the hour just before the time when the graph was displayed.
Example: When the graph is displayed at 6:40, the displayed value for this day is the average value of the instantaneous values obtained at 0:00, 1:00, 2:00, 3:00, 4:00 and 5:00.

Bar graph — The sum of the hourly integrated values on the day is displayed.
The displayed value for this day is the sum of the values obtained by the hour just before the graph was displayed.

When the date range is Year

Bar graph, target value — The target electric energy in one month is displayed.
The target electric energy automatically calculated from the ratio of power consumption in each month is displayed.



Line graph — The average value in one month is displayed.
The displayed value for this month is the average of the values in one month including the average value on this day on which the graph was displayed.
(The average value on this day is the average of the instantaneous values on the day including the instantaneous value on the hour just before the time when the graph was displayed.)

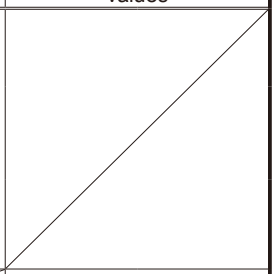
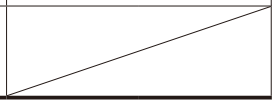
Bar graph — The sum of the daily integrated values in one month is displayed.
The displayed value for this month is the sum of integrated values in the month including the integrated value on this day on which the graph was displayed.

<4> Graph display formats

The bar and line graph display formats and colors are shown below.
The bar graph of the comparison target is displayed on the right side of the graph of the display target. When the comparison target has not been selected, its bar graph is not displayed.
The line graph of the comparison target is displayed on the same horizontal axis as that of the display target. When the line graph of the comparison target overlaps with that of the display target, the graph of the display target comes to the front.
The target value is displayed when the display range is Block and the display item is Electric energy. The upper and lower limit values are displayed when the display target is the AI controller (PAC-YG63MCA) and the upper and lower limit values have been set.
Note: For the AHC, the upper and lower limit values cannot be set.

Main unit screen

Table 4.9 Display of graphs on main unit screen

Graph type	Display target	Comparison target	Target value	Upper and lower limit values
 Bar graph	 (Yellow) When the target value is exceeded, the part over the target value is displayed in orange.)  (Orange)	 (Blue)	 (Gray frame and red triangle on top)	
 Line graph	 (Red)	 (Green)		(Orange)

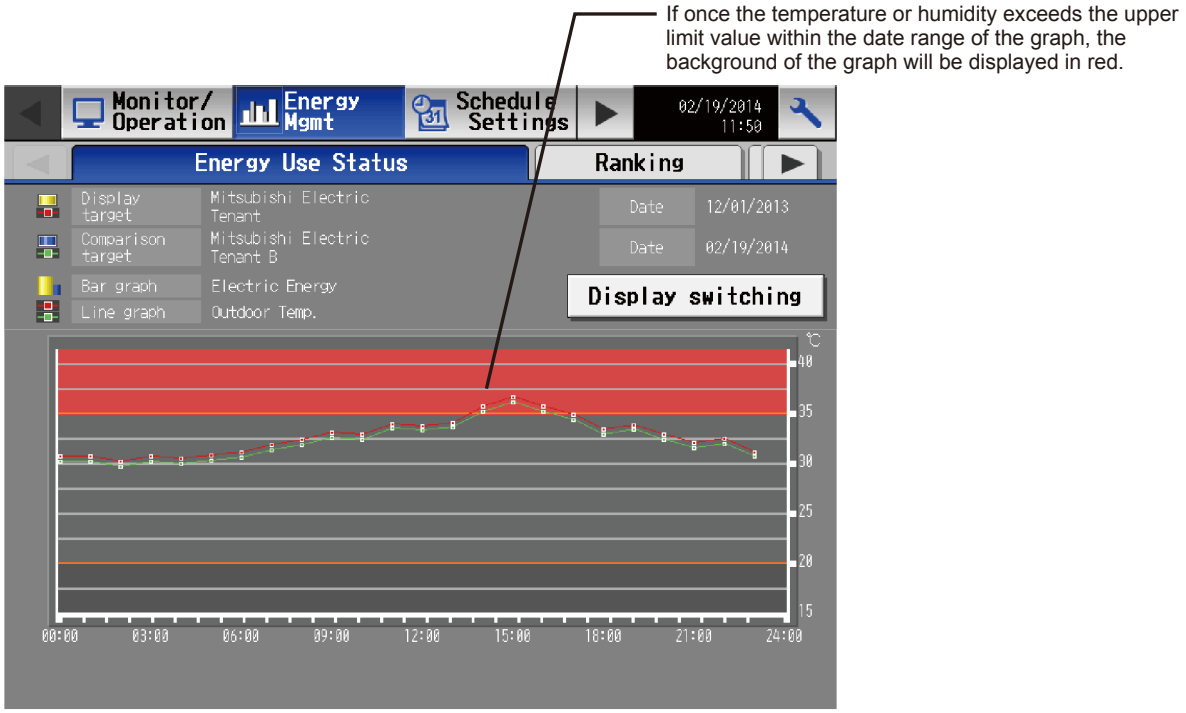
Web browser screen

Table 4.10 Display of graphs on Web browser screen

Graph type	Display target	Comparison target	Target value	Upper and lower limit values
Bar graph	(Yellow) When the target value is exceeded, also the part over the target value is displayed in the same color.	(Brown)		
Line graph	(Orange)	(Blue)	(Red)	(Red)

If once the temperature or humidity exceeds the upper or lower limit value after the graph of temperature or humidity measured by the AI controller (PAC-YG63MCA) is displayed, the whole background of the graph above the upper limit or under the lower limit will be displayed in red on the main unit screen. Even if the temperature or humidity returns to the range between the upper and lower limit values, the background will be kept in red. On the Web browser screen, the background will be displayed in dark gray.

Note: For the AHC, the upper and lower limit values cannot be set.



<5> Display range and items which can be displayed in graphs

Select the display range from Address, Group and Block. Some items cannot be displayed in graphs depending on the display range. After the display range is selected, the selection buttons for the items which cannot be displayed will not be displayed on the screen.
The items which can be displayed in graphs in each range are shown below.

Table 4.11 Display range and items which can be displayed in graphs

○: Displayed –: Not displayed

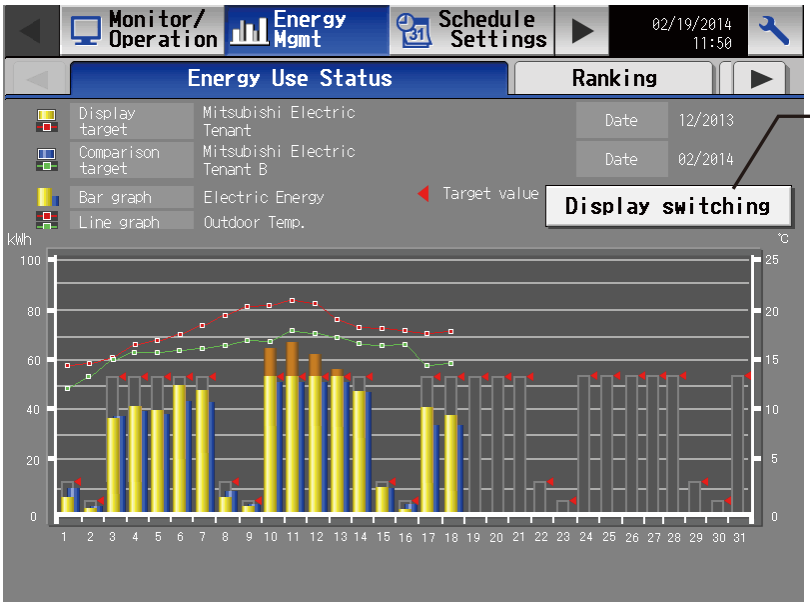
Type of graph	Display target	Display item	Display range		
			Address	Group	Block
Bar graph	Indoor unit	Target value (kWh)	–	–	○ *1
		Electric energy (kWh)	○ *1	○ *1	○ *1
		FAN operation time (min)	○ *1	○ *1	–
		Thermo ON time (total) (min)	○ *1	○ *1	–
		Thermo ON time (cooling) (min)	○ *1	○ *1	–
		Thermo ON time (heating) (min)	○ *1	○ *1	–
	PI controller (PAC-YG60MCA)	Measurements (kWh, m3, MJ)	○ *2	–	–
Line graph	–	Outdoor temperature (°C) (°F)	○	○	○
	Indoor unit	Cooling temperature setting (°C) (°F)	○ *1	○ *1	–
		Heating temperature setting (°C) (°F)	○ *1	○ *1	–
		Indoor temperature (°C) (°F)	○ *1	○ *1	–
	AI controller (PAC-YG60MCA)*3	Temperature (°C) (°F)	○ *2	–	–
		Humidity (%)	○ *2	–	–
	AHC *3	Temperature (°C) (°F)	○ *1	–	–

*1 “Energy Management License Pack” is required.
*2 If “Energy Management License Pack” has not been registered, only Day is available for selection as a Date range. To select Month or Year, “Energy Management License Pack” is required.
*3 When the temperature sensor of the AI controller or AHC is set to measure the outdoor temperature (°C) (°F), the line graph will be displayed in any display range of Address, Group and Block.
For the setting procedure, see Ⅳ[5]<1> “Setting of outdoor temperature measurement unit.”

<6> Procedure for displaying graphs

Main unit screen

To display graphs on the main unit screen, touch the Display switching button on the energy use status screen.



The display item setting screen will appear. Set the display item, touch the OK button, and the graphs will be displayed.

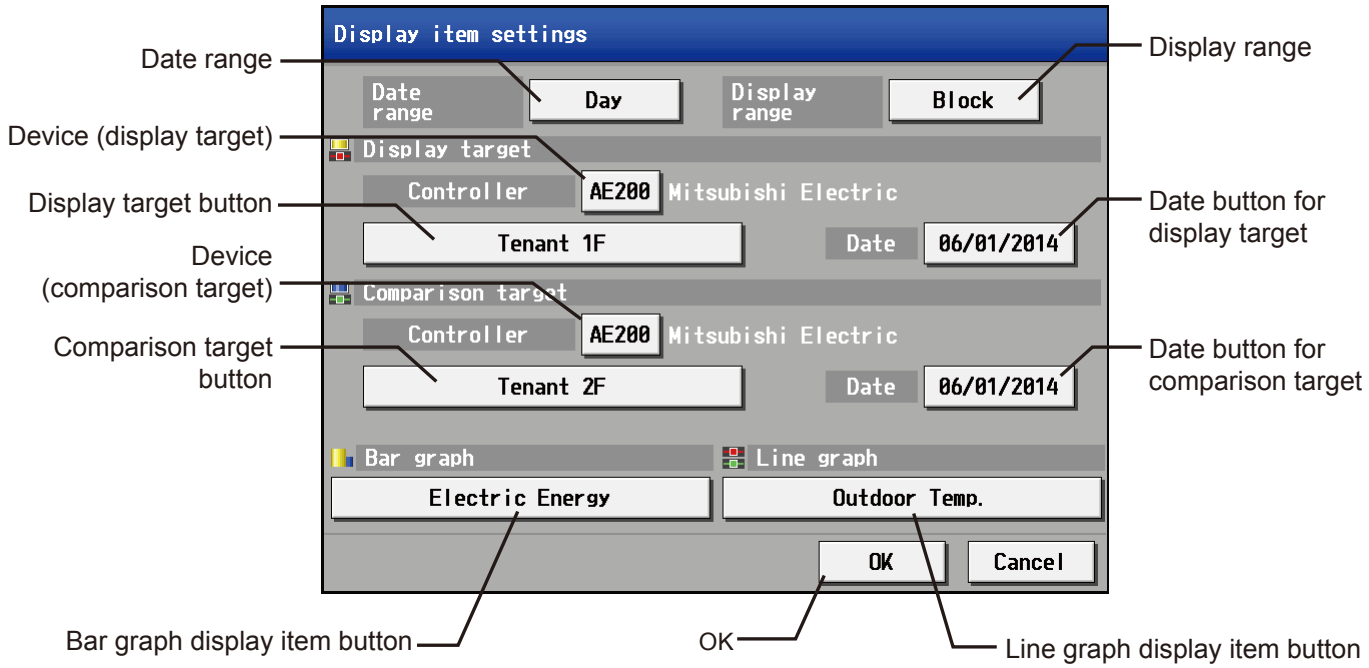


Table 4.12 Display item setting screen

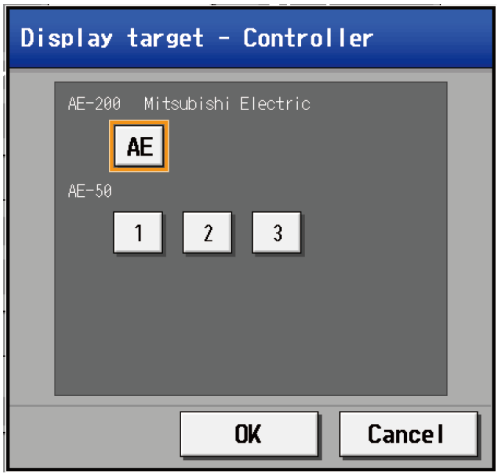
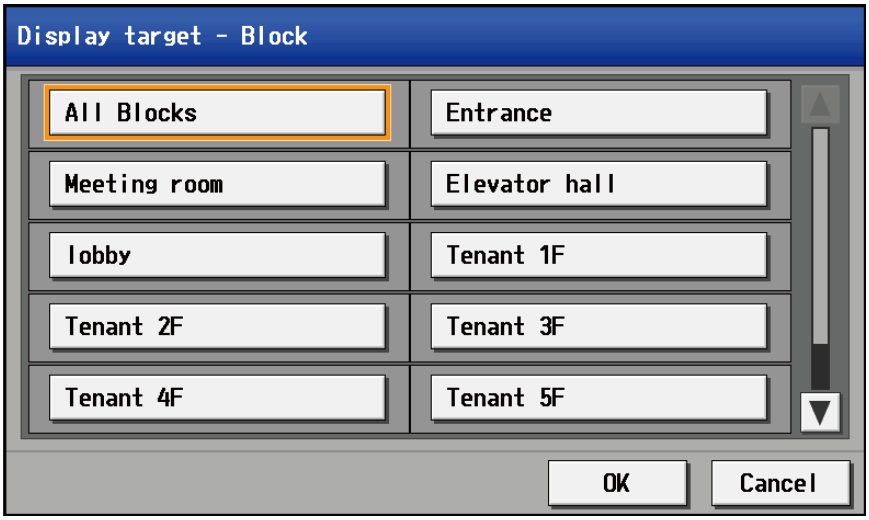
Item		Details	Remarks
Date range		Select Day, Month or Year.	● When Day is selected, the hourly data from 0:00 to 24:00 on the day will be displayed in graphs. ● When Month is selected, the daily data from the 1st to 31st in the month will be displayed in graphs. ● When Year is selected, the monthly data from January to December in the year will be displayed in graphs.
Display range		Select the range of data to be displayed from Block, Group and Address.	
Display target	Device	To display the data on AE-200, select AE. To display the data on each set of AE-50, select 1, 2 or 3.	
			

Table 4.12 Display item setting screen (continued)

Item		Details	Remarks
Display target	Display target	Select the block name, group name or address number of the display target.	

● When Display range is Block:



The block name list will be displayed.
“All blocks” will be shown in the upper left corner. The blocks will be shown in the first line in the left column, in the first line in the right column, in the second line in the left column, in the second line in the right column, in the third line in the left column, … in the order of block number. “Unregistered block” will be shown in the last field. For blocks whose names have not been registered, [Block + block number] will be displayed.
The blocks of DIDO controller will not be displayed.

● When Display range is Group:

The group name list will be displayed.
The group names will be shown in the first line in the left column, in the first line in the right column, in the second line in the left column, in the second line in the right column, in the third line in the left column, … in the order of group number.
For groups whose names have not been registered, [Group + group number] will be displayed.
The groups of DIDO controller will not be displayed.

Table 4.12 Display item setting screen (continued)

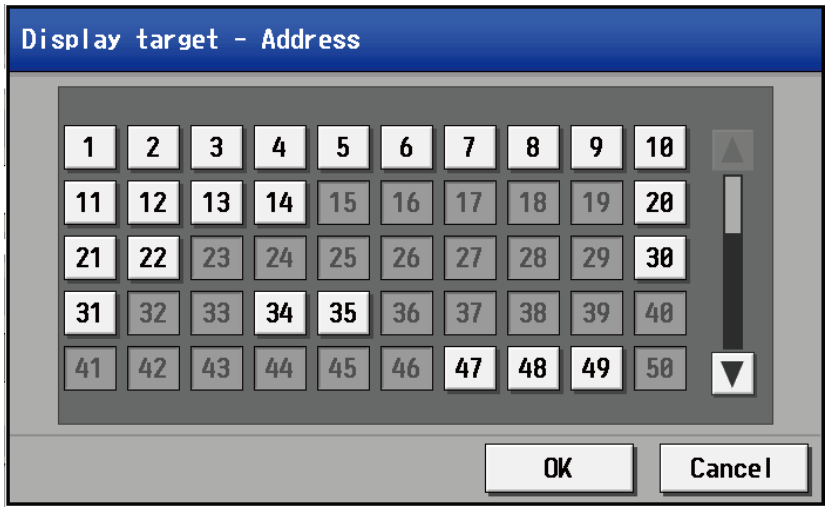
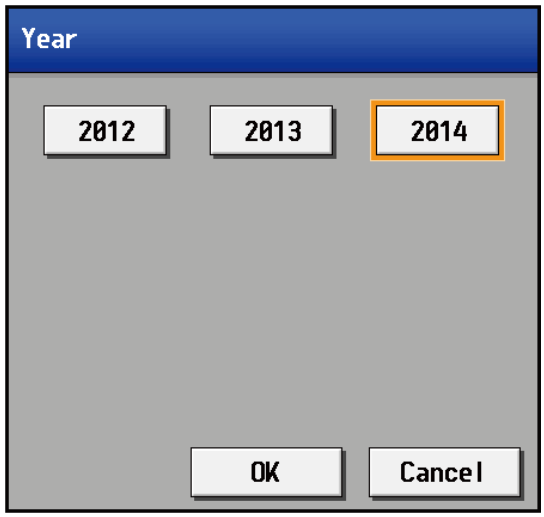
Item		Details	Remarks
Display target	Display target	● When Display range is Address  The address list will be displayed.	
	Date	Specify the date of the data to be displayed in graphs.	
		● When Date range is Year  	

Table 4.12 Display item setting screen (continued)

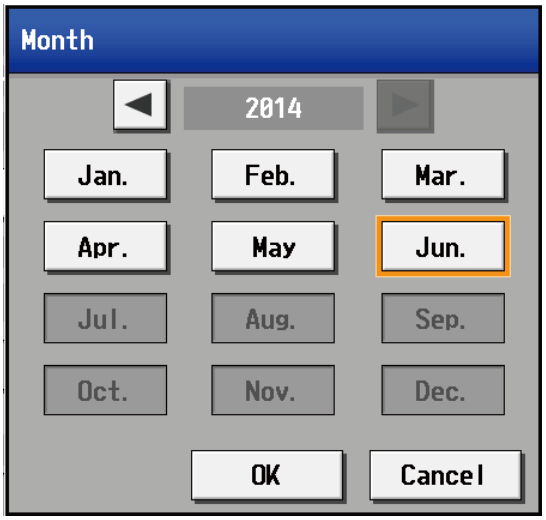
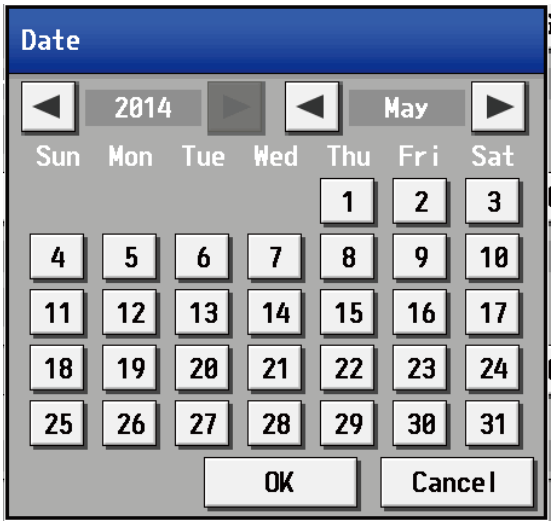
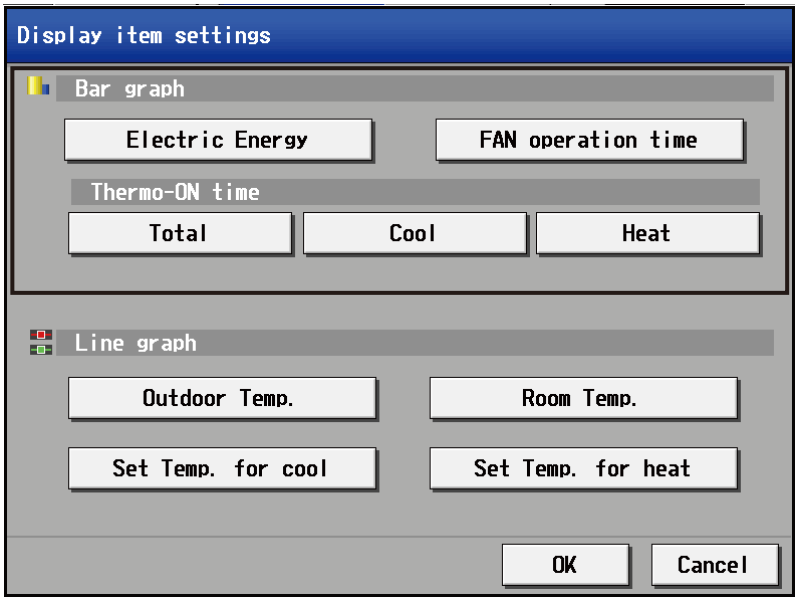
Item		Details	Remarks
Display target	Date	● When Date range is Month  ● When Date range is Day  	
Comparison target	Device	To display the data on AE-200, select AE. To display the data on each set of AE-50, select 1, 2 or 3. (The screen is the same as that for the display target.)	
	Comparison target	Select the block name, group name or address of the comparison target. (The screen is the same as that for the display target.)	● Only the Display range (block, group or address) selected for the display target can be selected.
	Date	Specify the date of the data to be displayed in graph. (The screen is the same as that for the display target.)	

Table 4.12 Display item setting screen (continued)

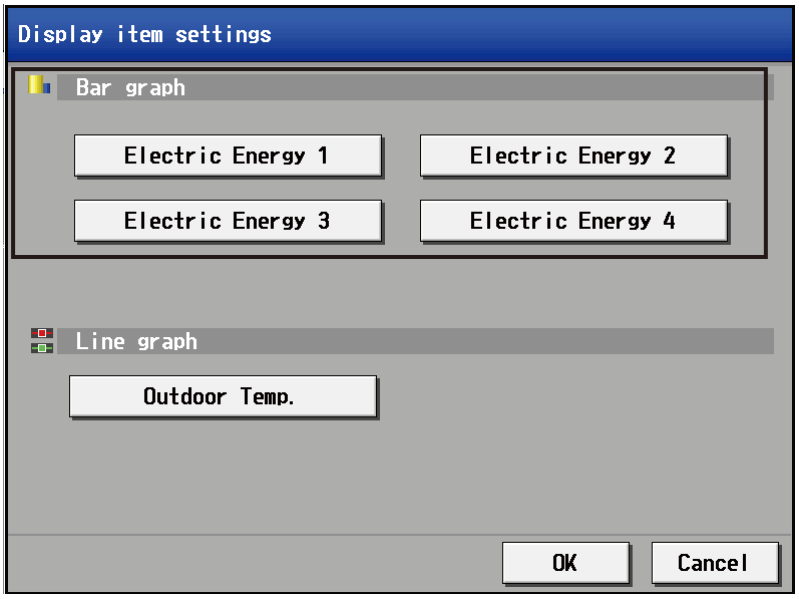
Item	Details	Remarks
Bar graph	Select the item to be displayed in a bar graph.	● Only one item can be selected from the bar graph field. ● The item to be displayed in a line graph can be selected at the same time.

● To display the data on indoor units



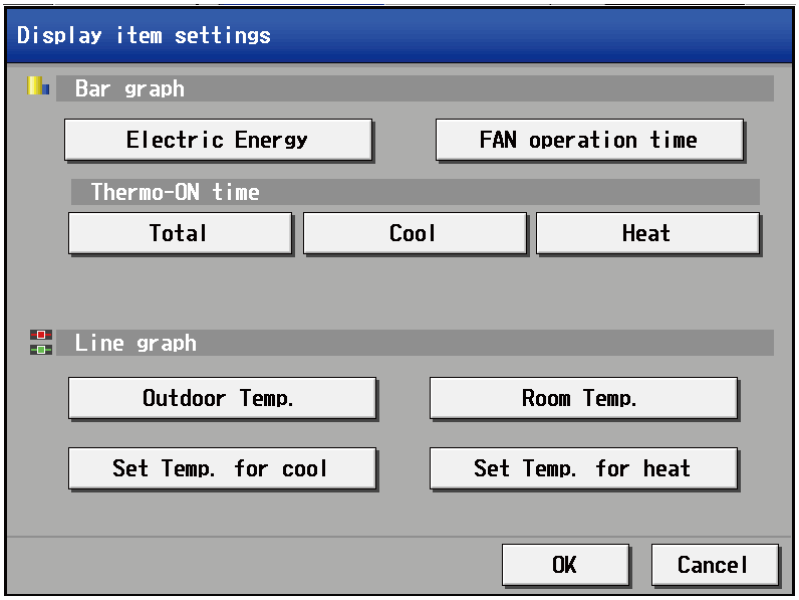
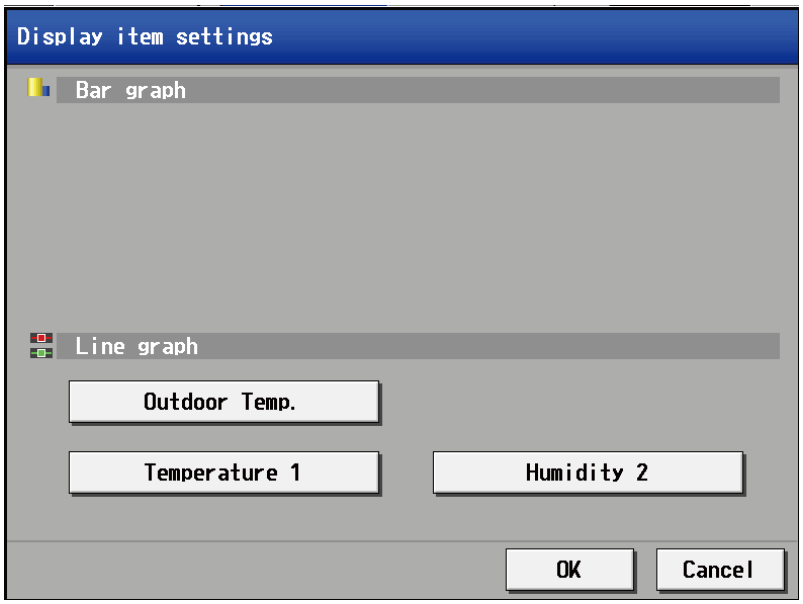
The display item buttons, Electric Energy, FAN operation time and Thermo-ON time Total, Cool and Heat, will be displayed. The buttons of the items which cannot be displayed for the selected display range will not be displayed.
When Display range for LOSSNAY is Group or Address, only the FAN operation time button will be displayed.

● To display the data on PI controller (PAC-YG60MCA)



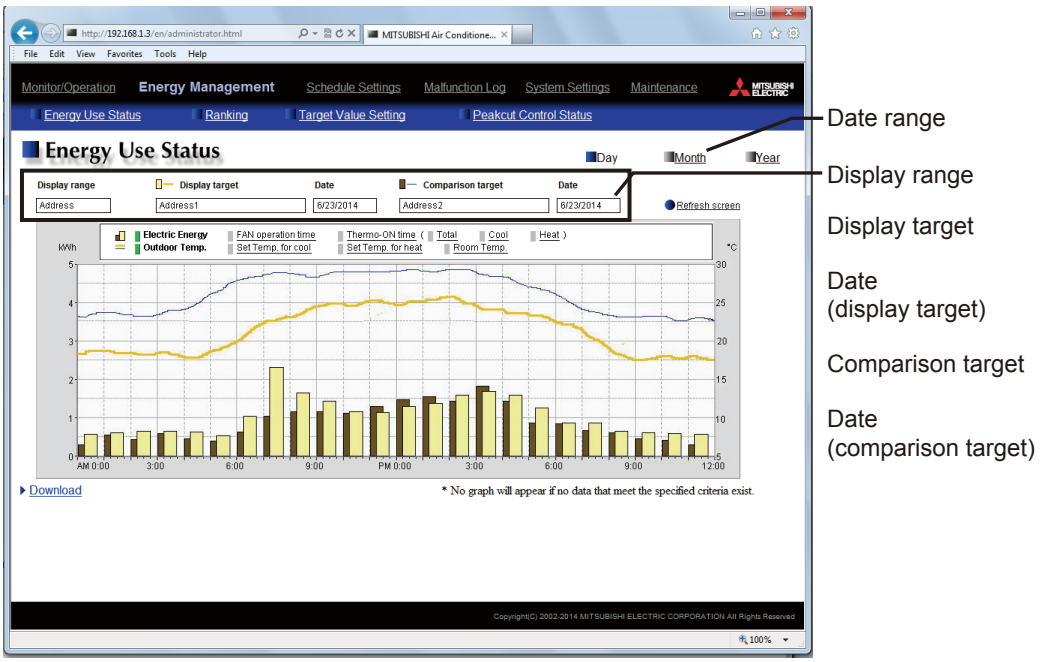
The display item buttons of the names of the meters connected to the PI controller will be displayed. The names have been set on the measurement setting screen.
If the names have not been registered, Electric Energy 1 to Electric Energy 4, Water quantity 1 to Water quantity 4 and Heat quantity 1 to Heat quantity 4 will be displayed when the meter unit is kWh, m3 and MJ, respectively.

Table 4.12 Display item setting screen (continued)

Item	Details	Remarks
Line graph	Select the item to be displayed in a line graph.	● Only one item can be selected from the line graph field. ● The item to be displayed in a bar graph can be selected at the same time.
	● To display the data on indoor units  The display item buttons, Outdoor Temp., Room Temp., Set Temp. for cool and Set Temp. for heat, will be displayed. The buttons of the items which cannot be displayed for the selected Display range will not be displayed. The Outdoor Temp. button will be displayed only when an outdoor temperature measurement unit has been set on the energy management setting screen on the Web browser for initial setting. For LOSSNAY, only the Outdoor Temp. button will be displayed. ● To display the data on AI controller (PAC-YG63MCA) or AHC  The Outdoor Temp. button and the display item buttons of the names of the sensors connected to the AI controller or AHC will be displayed. The names have been set on the measurement setting screen. The Outdoor Temp. button will be displayed only when an outdoor temperature measurement unit has been set on the energy management setting screen on the Web browser for initial setting.	
OK button	Touch the OK button, and the graphs will be displayed.	

Web browser screen

To display graphs on the Web browser screen, click one of the date range buttons first on the energy use status screen, and set the display range, display target, date, comparison target and date.
If the date range is changed, other selections will be cleared.



The Display items which can be displayed for the selected Display range and Display target will be displayed. Select a Display item, click Refresh screen, and the graphs will be displayed.

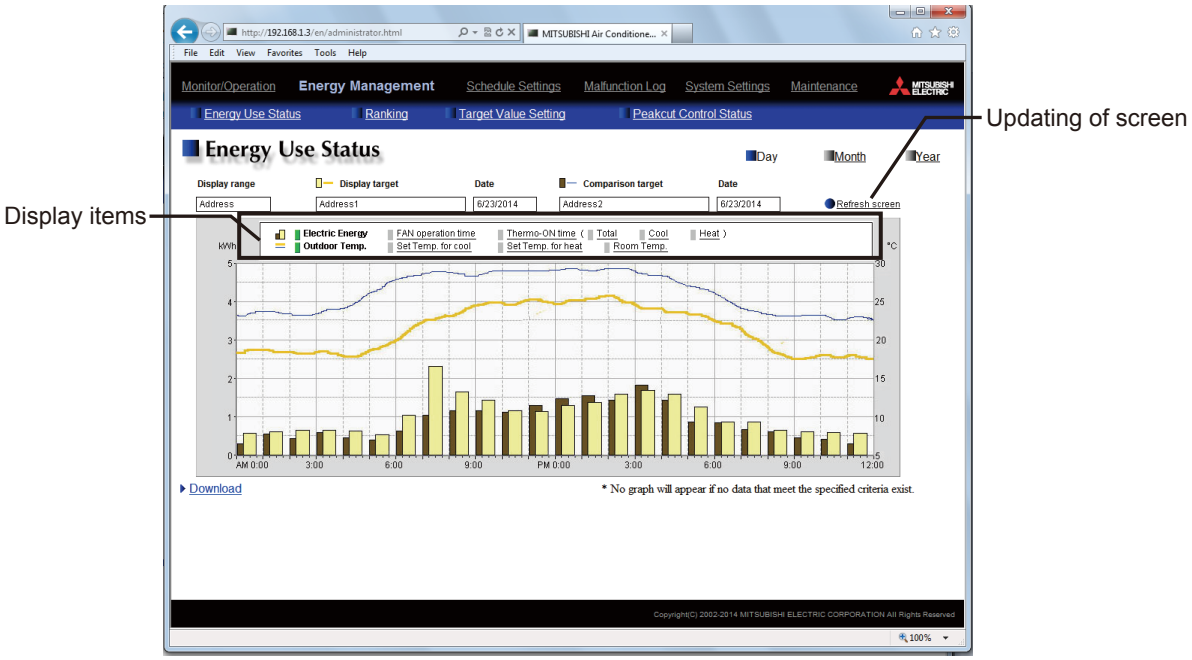


Table 4.13 Web browser screen

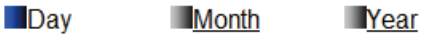
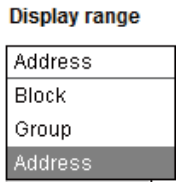
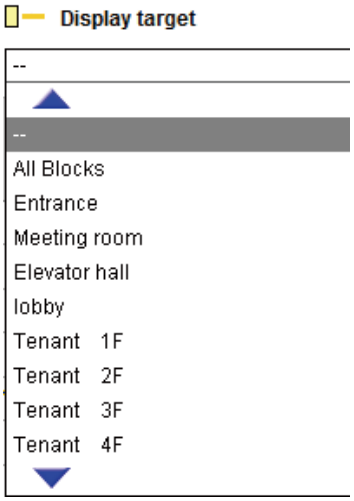
Item	Details	Remarks
Date range	Select Day, Month or Year. 	● When Day is selected, the hourly data from 0:00 to 24:00 on the day will be displayed in graphs. ● When Month is selected, the daily data from the 1st to 31st in the month will be displayed in graphs. ● When Year is selected, the monthly data from January to December in the year will be displayed in graphs. ● If the Date range is changed, the selected Display range, Display target, Date, Comparison target, Date and Display item will be all cleared.
Display range	Select the range of data to be displayed from Block, Group and Address. Click in the field, and the pull-down menu will be displayed. 	
Display target	Select the block name, group name or address number of the display target.	
	● When the Display range is Block  Click in the field, and the block names will be displayed in the pull-down menu. All Blocks will be displayed in the uppermost line, and blocks will be displayed in ascending order of block number. Unregistered block will be displayed in the last line. The blocks of DIDO controller will not be displayed.	

Table 4.13 Web browser screen (continued)

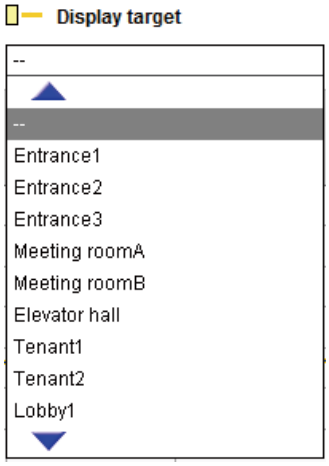
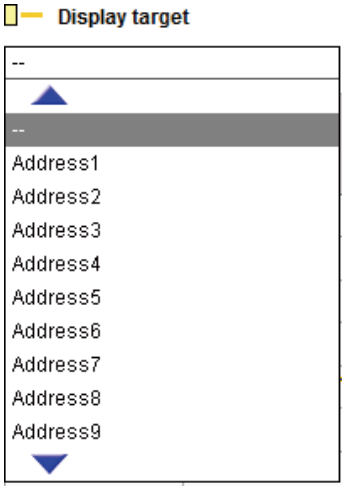
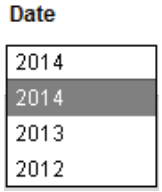
Item	Details	Remarks
Display target	● When Display range is Group  Click in the field, and the group names will be displayed in the pull-down menu. The group names will be displayed in ascending order of group number. The groups only of DIDO controller will not be displayed. ● When Display range is Address  Click in the field, and the address numbers will be displayed in the pull-down menu. The address numbers will be displayed in ascending order.	
Date (display target)	Specify the date of data to be displayed in a graph.	
	● When Date range is Year  Click in the field, and the years will be displayed in the pull-down menu.	

Table 4.13 Web browser screen (continued)

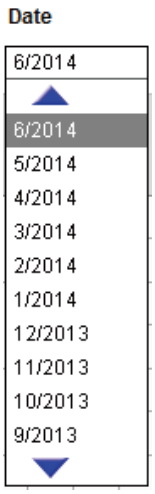
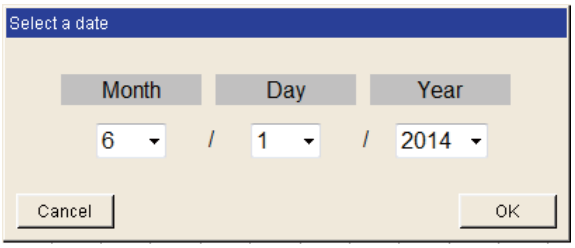
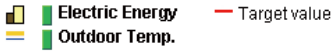
Item	Details	Remarks
Date (display target)	● When Date range is Month  Click in the field, and the months will be displayed in the pull-down menu. ● When Date range is Day  Click in the field, and the date specification window will appear. Specify the date, and click the OK button.	
Comparison target	Select the block name, group name or address number of the comparison target. (The screen is the same as that for the display target.)	● Only the Display range (block, group or address) selected for the Display target can be selected.
Date (comparison target)	Specify the date of the data to be displayed in a graph. (The screen is the same as that for the display target.)	
Display item	Select the items to be displayed in bar graph and line graph. Upper stage: Bar graph Lower stage: Line graph	● It is possible to select one display item for each of bar graph and line graph.
	● To display data on indoor units When Display range is Group or Address  Bar graph: Electric Energy, FAN operation time, Thermo-ON time Total, Cool and Heat Line graph: Outdoor Temp., Set Temp. for cool, Set Temp. for heat and Room Temp. The above display item buttons will be displayed. The buttons of the items which cannot be displayed for the selected Display range will not be displayed. The Outdoor Temp. button will be displayed only when an outdoor temperature measurement unit has been set on the energy management setting screen on the Web browser for initial setting. For LOSSNAY, only the FAN operation time and Outdoor Temp. buttons will be displayed.	

Table 4.13 Web browser screen (continued)

Item	Details	Remarks
Display item	● To display data on indoor units (continued) When Display range is Block  Bar graph: Electric Energy and Target value Line graph: Outdoor Temp. The above display item buttons will be displayed. The Outdoor Temp. button will be displayed only when an outdoor temperature measurement unit has been set on the energy management setting screen on the Web browser for initial setting. For blocks only with LOSSNAY, only the Outdoor Temp. button will be displayed. ● To display data on PI controller (PAC-YG60MCA)  Bar graph: The display item buttons of the names of the meters connected to the PI controller will be displayed. The names have been set on the measurement setting screen. If the names have not been registered, Electric Energy 1 to Electric Energy 4, Water quantity 1 to Water quantity 4 and Heat quantity 1 to Heat quantity 4 will be displayed when the meter unit is kWh, m3 and MJ, respectively. Line graph: The Outdoor Temp. button will be displayed. The Outdoor Temp. button will be displayed only when an outdoor temperature measurement unit has been set on the energy management setting screen on the Web browser for initial setting. ● To display the data on AI controller (PAC-YG63MCA) or AHC  Bar graph: No buttons will be displayed. Line graph: The Outdoor Temp. button and the display item buttons of the names of the sensors connected to the AI controller or AHC will be displayed. The names have been set on the measurement setting screen. The Outdoor Temp. button will be displayed only when an outdoor temperature measurement unit has been set on the energy management setting screen on the Web browser for initial setting.	

<7> Display updating

The main unit screen and Web browser screen will not be automatically updated.
The main unit screen will be updated when the energy use status screen is displayed from a screen other than the energy use status screen or when the Display switching button is touched and the OK button is touched on the display item setting screen.
The Web browser screen will be updated when the Refresh screen button is clicked.
The graphs displayed on the main unit screen and Web browser screens will be updated with new data after 00 minute of every hour because data is saved on the hour every hour.
Also when the date range is Month or Year, the graphs plotted with the data obtained by each hour will be displayed after 00 minute of every hour.

[7] Ranking

On the ranking screen, the power consumption, FAN operation time and thermo ON time (total, cooling and heating) of indoor units in each block or group or unit address can be displayed in bar graphs in descending order to visualize the energy saving state. Blocks and groups which consume more electric energy will be visually indicated to facilitate preparation of an energy saving plan.
Energy saving measures can be taken timely by setting the target values and comparing the present energy use status with the target value.

Note: To display the ranking screen, the energy management license pack is required.

The data will be saved in the internal memory in each set of AE-200 and AE-50. In AE-200, the data on AE-50 will not be saved. The data only on the units connected to M-NET of each controller will be saved in it. The ranking of units on the AE-50 system can be displayed on the screen of AE-200. AE-200 will receive the data from AE-50 when the ranking screen for AE-50 is displayed.
The retention periods of data are shown below.

Table 4.14 Retention periods of data for ranking graph

Period of display	Data retention period
Day	For last 24 months *
Month	For last 24 months *
Year	For last 5 years

(* The data for 25 months are retained internally. However, the data for 24 months can be displayed in graphs.)

The data is saved in an SD card (= a nonvolatile memory: data will not be deleted even if power is turned off from AE-200/AE-50) every hour and 30 minutes.

To display the graph, the initial setting is required. The initial setting can be performed only on the energy management setting screen on the Web browser for initial setting. The initial setting cannot be performed on the main unit screen of AE-200/AE-50. It is necessary to perform the initial setting individually on the Web browser for initial setting of each set of AE-200 and AE-50.
To display the target values, it is necessary to set the target values for each unit on the target value setting screen on the main unit (in percentage against all units).
On the main unit screen of AE-200, the ranking of the units connected to AE-50 can be displayed by switching the display mode.
On the main unit screen of AE-50, the ranking of the units only of AE-50 can be displayed.
On the Web browser, the ranking of the units of each set of AE-200/AE-50 can be displayed. On the browser of each set of AE-200/AE-50, the ranking of the units connected to M-NET of the controller can be displayed.

Remarks

- ○ The initial setting must be performed on the Web browsers for initial setting.
- ○ In case of failure of AE-200/AE-50, it is recommended to periodically save the data on the energy use status screen on each Web browser in a file in CSV format with the download function or from the CSV output screen.
  For details, see Ⅳ[10] “Data Downloading” and Ⅳ[11] “CSV Output.”

<1> Contents displayed on screens

Main unit screen

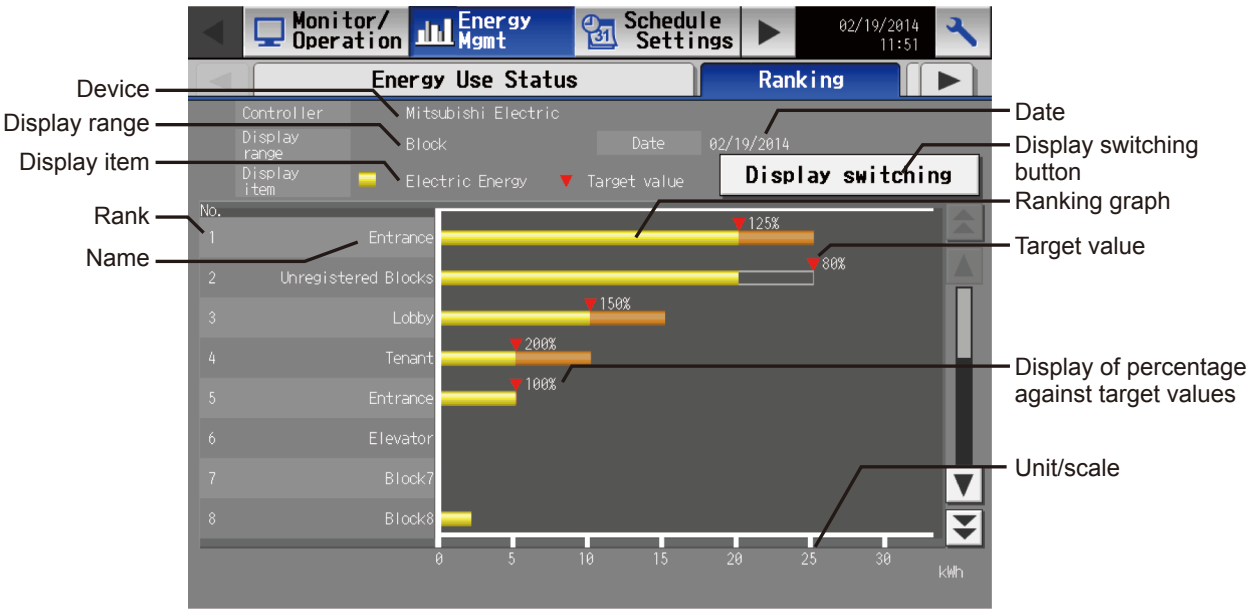


Table 4.15 Contents displayed on main unit screen

Item	Details	Remarks
Device	The name of AE-200/AE-50 is displayed.	● When AE-50 is selected after AE-50 is connected, the name of AE-50 will be displayed.
Display range	The display range of ranking graph is displayed. The graph can be displayed in an address, group or block unit.	
Display item	The item displayed in the ranking graph is displayed.	● The display item is one of electric energy, FAN operation time, thermo ON time (total), thermo ON time for cooling and thermo ON time for heating.
Rank	The units are displayed in ascending order of power consumption or operation time from the first one.	● Even if some units show the same power consumption, FAN operation time or thermo ON time, the units will not be displayed in the same rank. The unit having a lower block number, group number or unit address number will be ranked higher.
Name	The block name, group name or unit address number is displayed.	● The name changes depending on the item selected in Display range. ● For a block whose block name has not been registered, [Block + block number] will be displayed. ● For a group whose group name has not been registered, [Group + group number] will be displayed.
Date	The date of the ranking graph is displayed.	
Display switching	To display a graph, touch this button first of all. Then, the screen for setting the data to be displayed in a graph will appear. The graph will be displayed with the data set on the display item setting screen.	For details, see Ⅳ [7]<5> “Display range and items which can be displayed in graphs.”
Ranking graph	The ranking graph is displayed.	● For the display format, see Ⅳ [7]<4> “Graph display format.”
Target value	A red triangle is displayed at the position of each target value.	● The target values will be displayed only when Display range is Block and Date range is Month or Year. ● For the display format, see Ⅳ [7]<4> “Graph display format.” ● When the target values have not been set or are 0, they will not be displayed.
Display of percentage against target values	The ratio (percentage) of the present value to the target value is numerically displayed. When the present value exceeds the target value, the percentage will be more than 100 %.	● The target values will be displayed only when Display range is Block and Date range is Month or Year. ● For the display format, see Ⅳ [7]<4> “Graph display format.” ● When the target values have not been set or are 0, they will not be displayed. ● The display and non-display can be switched on the display item setting screen. (The default is Display.)
Unit/scale	The unit and scale of the ranking graph are displayed.	● The unit appropriate to the Display item will be displayed. ● The scale will be automatically adjusted according to the maximum value in the data.

Web browser screen

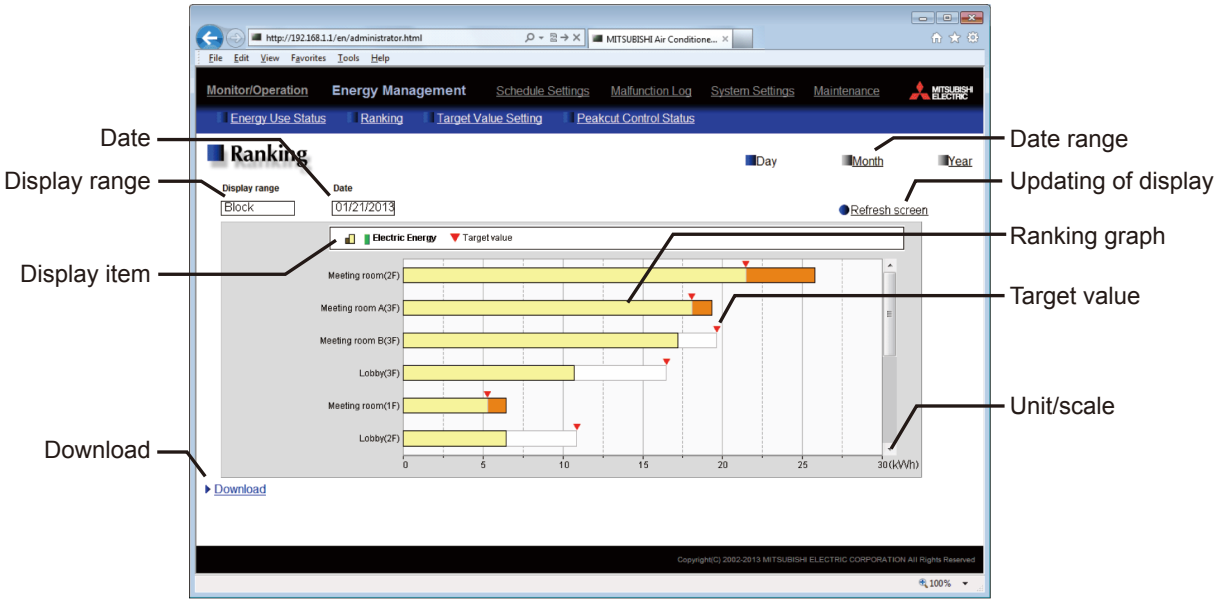


Table 4.16 Contents displayed on Web browser screen

Item	Details	Remarks
Date range	Select Day, Month or Year.	● When Day is selected, the ranking graph on the day will be displayed. ● When Month is selected, the ranking graph in the month will be displayed. ● When Year is selected, the ranking graph in the year will be displayed.
Display range	Select the range of the units to be displayed from Block, Group and Address.	● Click in the field, and the pull-down menu will be displayed.
Date	Specify the date of the data to be displayed in a graph.	● Click in the field, and the pull-down menu or the setting window will be displayed. ● When Day has been selected in Date range, the setting window will be displayed. Select a year, month and day in the last 24 months from the current date. ● When Month has been selected in Date range, select a year and month (yyyy/mm) in the last 24 months from the current month. ● When Year has been selected in Date range, select a year (yyyy) in the last 5 years from the current year. ● The date will be displayed in the format set on the basic system setting screen on the Web browser for initial setting.
Display item	Select the item to be displayed in a graph.	● The selectable display items vary depending on Display range. ● For details, see Ⅳ [7]<5> “Display range and items which can be displayed in graphs.”
Updating of display	Click the button, and the graph will be displayed based on the specified conditions.	● If the relevant data does not exist, the graph will not be displayed.
Ranking graph	The data is displayed in a bar graph.	For the display format, see Ⅳ [7]<4> “Graph display format.”
Target value	A red triangle is displayed at the position of each target value.	● The target values will be displayed only when Display range is Block and Date range is Month or Year. ● For the display format, see Ⅳ [7]<4> “Graph display format.” ● When the target values have not been set or are 0, they will not be displayed.
Unit/scale	The unit and scale of the ranking graph are displayed.	● The unit appropriate to the Display item will be displayed. ● The scale will be automatically adjusted according to the maximum value in the data.
Download	Click Download, and the displayed data will be output in CSV format.	For details, see Ⅳ [10] “Data downloading.”

<2> Items which can be displayed in graphs

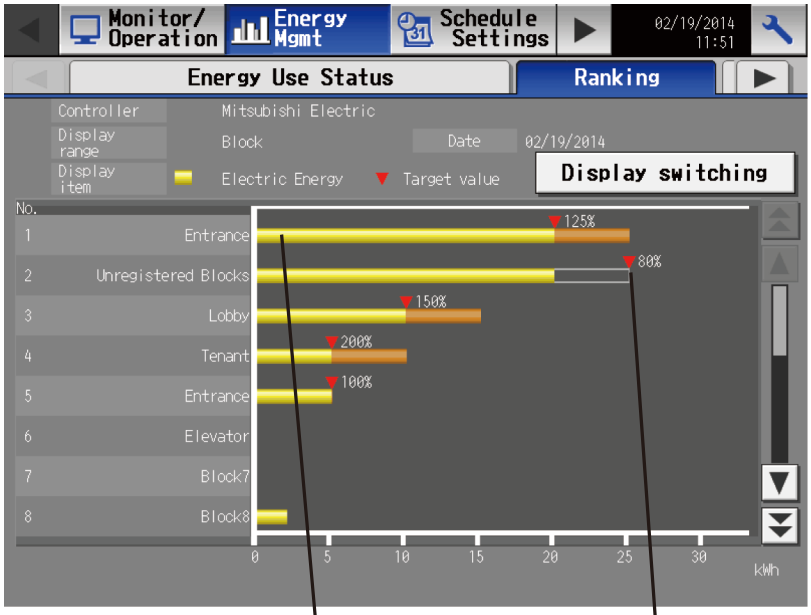
On the ranking screen, only one of the display items, electric energy, FAN operation time and thermo ON time, can be displayed in a graph. The items which can be displayed in graphs are shown below.

Table 4.17 Items which can be displayed in ranking graph

Display item	Remarks
Target values	● The target electric energy automatically calculated from the annual total power consumption, ratio of monthly power consumption and ratio of daily power consumption set on the target value setting screen is displayed. ● The target values are displayed only when Display item is electric energy. ● When the target values are changed, the displayed target values in the past will not be changed, but the new target values will be displayed on and after the day of change.
Electric energy	● The displayed electric energy is obtained by apportioning the power consumption of the outdoor unit to the indoor units. The power consumption of the indoor units is not displayed. ● Only the electric energy measured by the PI controller (PAC-YG60MCA) is displayed. The electric energy cannot be displayed by connecting the PLC (electric energy counting software). ● The results of apportionment of the electric energy of the outdoor unit measured by the PI controller according to the air conditioner usage of the indoor units are displayed. ● To display the electric energy graph, it is necessary to set the electricity meter (name of electricity meter of PI controller = Ch) for each indoor unit in advance on the energy management setting screen on the Web browser for initial setting. ● The air conditioner usage of each indoor unit is calculated in advance based on the apportionment mode of indoor units set on the energy management setting screen on the Web browser for initial setting. The following three apportionment modes are available for indoor units. Select one of them. The capacity save amount mode is recommended. (1) Capacity save amount (default) (2) Thermo ON time (3) FAN operation time For the details of these modes, see Ⅳ [4]<2> “Apportionment mode.” ● The power consumption is calculated from the capacity and usage of each indoor unit. Since the capacity of each indoor unit is automatically obtained from the indoor unit (through M-NET), it is unnecessary to set the capacity on AE-200/AE-50. ● The power consumption includes the standby electricity determined by apportionment of the standby electricity of outdoor unit. For details, see Ⅳ [4]<5> “Method of calculating standby electricity.” ● Insignificant power consumption may be displayed on the graph although no indoor units are used. This is because the standby electricity is apportioned to the units, and there is no problem. ● The electric energy for LOSSNAY cannot be displayed.
FAN operation time	● Time during which the indoor unit is running ● AE-200/AE-50 obtains the operating state of the indoor unit (through M-NET) and counts the time every minute. ● When the display range is Group, the data on the unit having the lowest number in the group is displayed. ● The data on LOSSNAY can be displayed.
Thermo ON time (total)	● Time during which the indoor unit is in the thermo ON state ● AE-200/AE-50 obtains the thermo ON state from the indoor unit (through M-NET) and counts the time every minute. ● When the display range is Group, the data on the unit having the lowest number in the group is displayed. ● The data on LOSSNAY can be displayed.
Thermo ON time (cooling)	● Time during which the indoor unit is in the thermo ON state in the cooling mode. ● AE-200/AE-50 obtains the thermo ON state and mode from the indoor unit (through M-NET) and counts the time every minute. ● When the display range is Group, the data on the unit having the lowest number in the group is displayed. ● The data on LOSSNAY can be displayed.
Thermo ON time (heating)	● Time during which the indoor unit is in the thermo ON state in the heating mode. ● AE-200/AE-50 obtains the thermo ON state and mode from the indoor unit (through M-NET) and counts the time every minute. ● When the display range is Group, the data on the unit having the lowest number in the group is displayed. ● The data on LOSSNAY can be displayed.

<3> Data for graph

Select the date range from three types, Day, Month and Year.
The integrated values in the selected day, month or year including the selected date will be displayed in a bar graph.



The integrated value is displayed.

The target value is displayed.
The target value may be changed according to operation.
The target value which was set at the time is displayed.
(Even if the target value is changed, that in the past will not be changed.)
The graph of data in the date range including the day of change will be displayed with the new target value.

<4> Graph display format

The graph display formats and colors are shown below. The target values will be displayed when the display range is Block.

Main unit screen

Table 4.18 Display of graph on main unit screen

Integrated value	Integrated value (excess from target value)	Target value
(Yellow)	(Orange) The part over the target value is displayed in orange.	(Gray frame + red triangle at upper right corner)

Web browser screen

Table 4.19 Display of graph on Web browser screen

Integrated value	Integrated value (excess from target value)	Target value
(Yellow)	(Orange) The part over the target value is displayed in orange.	(Gray frame + red triangle at upper right corner)

<5> Display range and items which can be displayed in graphs

Select the display range from Address, Group and Block. Some items cannot be displayed in graphs depending on the display range. After the display range is selected, the selection buttons for the items which cannot be displayed will not be displayed on the screen.
The items which can be displayed in graphs in each range are shown below.

Table 4.20 Display range and items which can be displayed in graphs

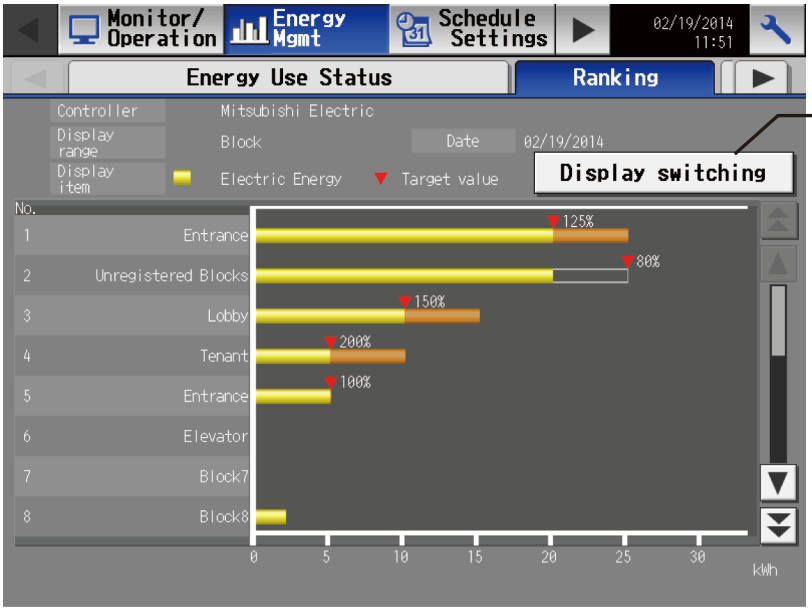
○: Displayed –: Not displayed

Display item	Display range		
	Address	Group	Block
Target value (kWh)	–	–	○
Electric energy (kWh)	○	○	○
FAN operation time (min)	○	○	–
Thermo ON time (total) (min)	○	○	–
Thermo ON time (cooling) (min)	○	○	–
Thermo ON time (heating) (min)	○	○	–

<6> Procedure for displaying graphs

Main unit screen

To display a graph on the main unit screen, touch the Display switching button on the energy use status screen.



The display item setting screen will appear. Set the display item, touch the OK button, and the graph will be displayed.

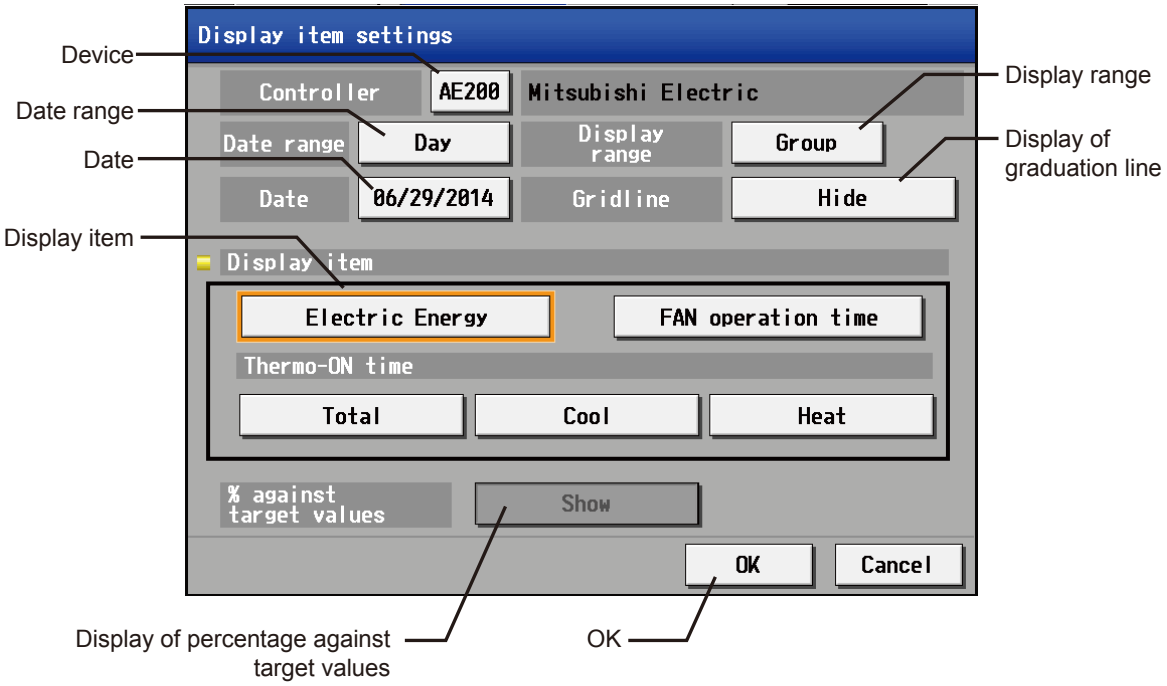


Table 4.21 Display item setting screen

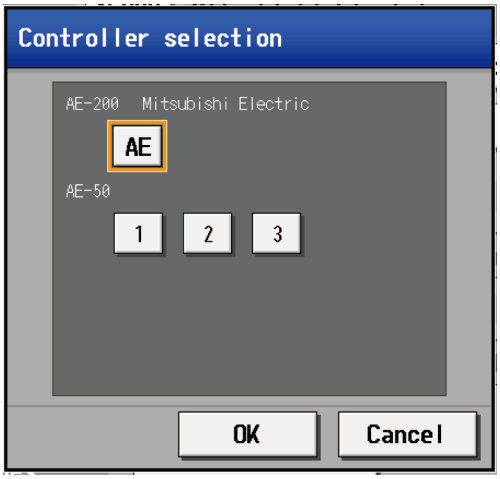
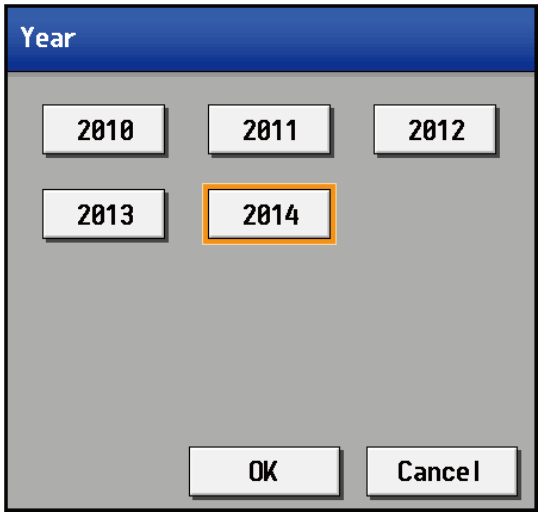
Item	Details	Remarks
Device	The name of AE-200/AE-50 is displayed. Touch the button, and a controller can be selected. To display the data of AE-200, select AE. To display the data of any set of AE-50, select 1, 2 or 3.	● If AE-50 is selected when AE-50 has been connected, the name of AE-50 will be displayed. ● On the screen of AE-50, no buttons or names will be displayed.
		
Date range	Select Day, Month or Year.	● When Day is selected, the daily ranking graph on the day will be displayed. ● When Month is selected, the monthly ranking graph in the month will be displayed. ● When Year is selected, the annual ranking graph in the year will be displayed.
Display range	Select the block name, group name or address number of the display target.	

Table 4.21 Display item setting screen (continued)

Item	Details	Remarks
Date	Specify the date of the data to be displayed in a graph.	

● When Date range is Year



● When Date range is Month

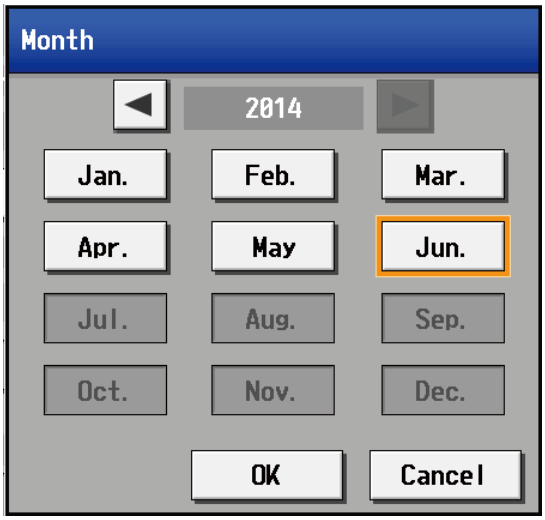
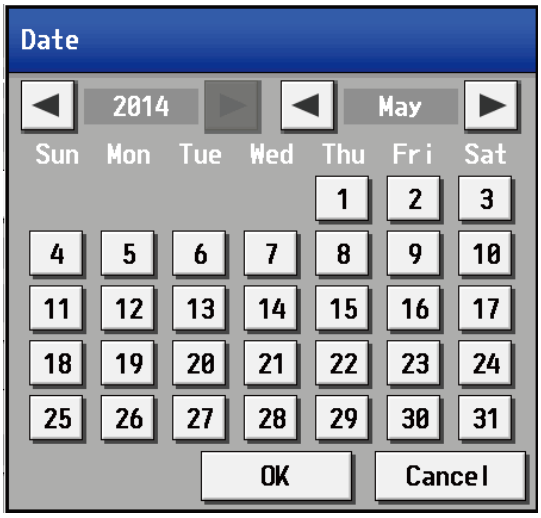
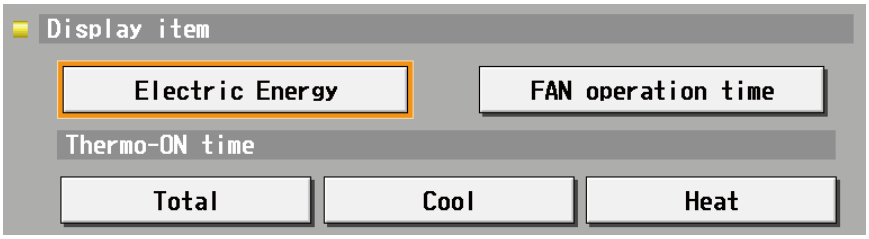
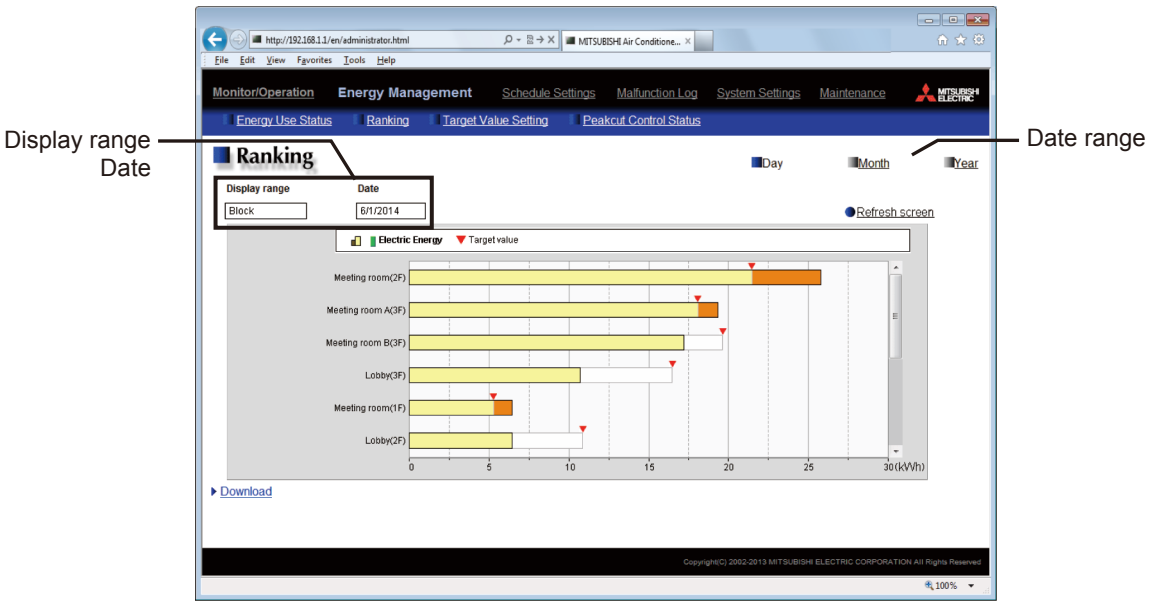


Table 4.21 Display item setting screen (continued)

Item	Details	Remarks
Date	● When Date range is Day 	
Display of graduation line	To display the graduation line of the ranking graph, select Show. Not to display, select Hide.	● The default is Hide. The setting will be returned to the default by turning off the power to AE-200/AE-50.
Display item	Select the item to be displayed in a ranking graph.  The display item buttons, Electric Energy, FAN operation time and Thermo-ON time Total, Cool and Heat, will be displayed. When Display range is Block, the display item buttons except Electric Energy will not be displayed.	
Display of percentage against target values	To display the percentages against target values in the ranking graph, select Show. Not to display, select Hide.	● The default is Show. The setting will be returned to the default by turning off the power to (restarting) AE-200/AE-50. ● The percentage of the present integrated value against each target value is displayed. If the value exceeds the target value, the percentage will exceed 100 %.
OK button	Touch the OK button, and the graph will be displayed.	

Web browser screen

To display a ranking graph on the Web browser screen, click one of the Date range buttons, and set the Display range and Date.
If the Date range is changed, other selections will be cleared.



The Display items which can be displayed for the selected Display range will be displayed. Select a Display item, click Refresh screen, and the graph will be displayed.

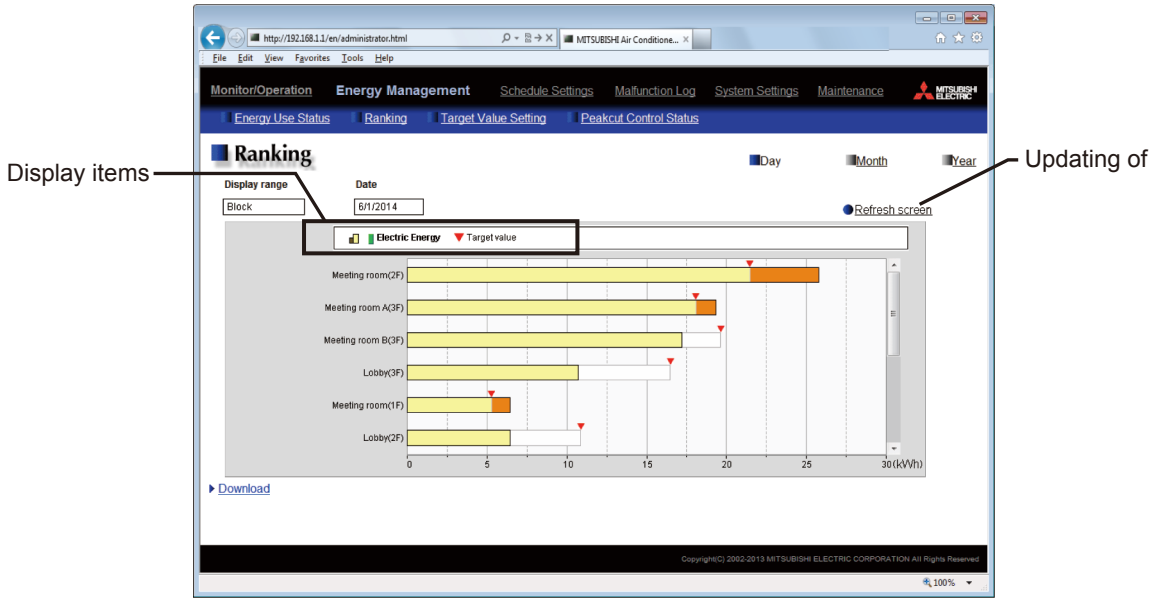


Table 4.22 Web browser screen

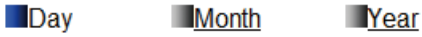
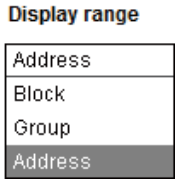
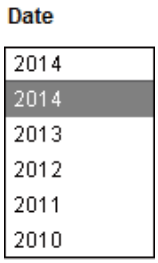
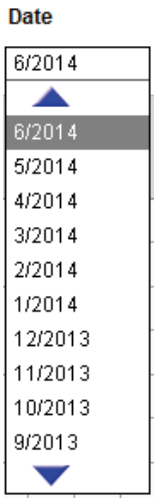
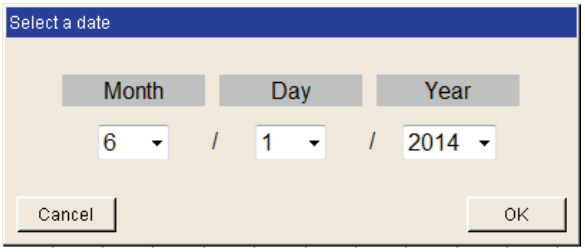
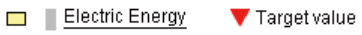
Item	Details	Remarks
Date range	Select Day, Month or Year. 	● When Day is selected, the ranking graph on the day will be displayed. ● When Month is selected, the ranking graph in the month will be displayed. ● When Year is selected, the ranking graph in the year will be displayed. ● If the Date range is changed, the selected display range, date and display item will be all cleared.
Display range	Select the range of data to be displayed from Block, Group and Address. Click in the field, and the pull-down menu will be displayed. 	
Date	Specify the date of data to be displayed in a graph.	
	● When Date range is Year  Click in the field, and the years will be displayed in the pull-down menu.	

Table 4.22 Web browser screen (continued)

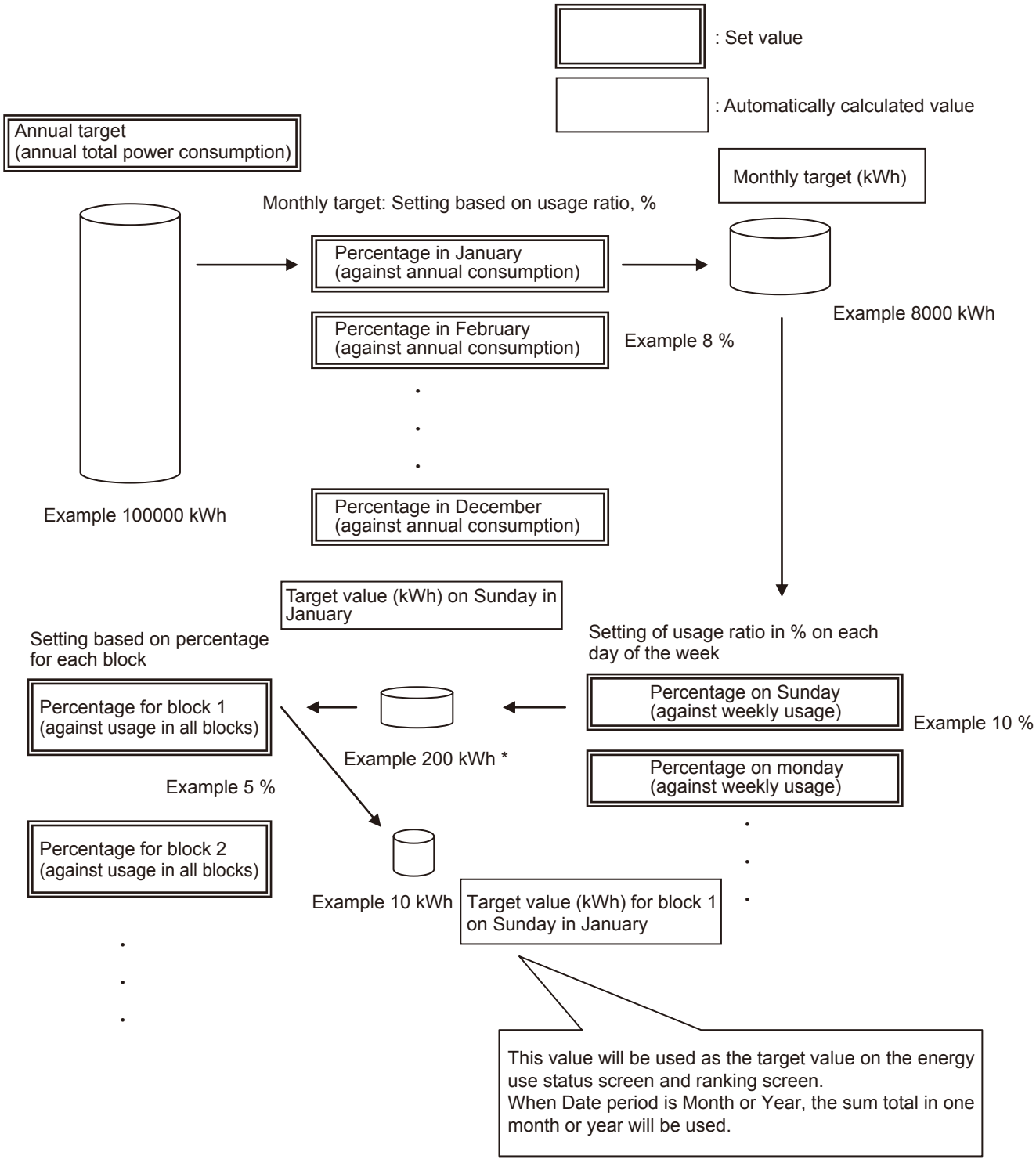
Item	Details	Remarks
Date (display target)	● When Date range is Month  Click in the field, and the months will be displayed in the pull-down menu. ● When Date range is Day  Click the button, and the date specification window will appear. Specify the date, and click the OK button.	
Display item	Select the item to be displayed in a ranking graph.	● Only one display item can be selected.
	● When Display range is Group or Address  The display item buttons, Electric Energy, FAN operation time and Thermo-ON time Total, Cool and Heat, will be displayed. ● When Display range is Block  The display item button, Electric Energy, and Target value will be displayed.	

<7> Display updating

The main unit screen and Web browser screen will not be automatically updated.
The main unit screen will be updated when the Display switching button is touched and the OK button is touched on the display item setting screen. (When the ranking screen is displayed from another screen, it will not be updated.)
The Web browser screen will be updated when the Refresh screen button is clicked.
The graphs displayed on the main unit screen and Web browser screens will be updated with new data after 00 minute of every hour because data is collected on the hour every hour.
Also when the date range is Month or Year, the graphs plotted with the data obtained by the hour will be displayed after 00 minute of every hour.

[8] Setting of target values

On the target value setting screen, you can set the target values to be displayed on the energy use status screen and ranking screen.
First of all, set the target value of annual total power consumption, and set the percentage in each month or on each day of the week. Then, the daily target electric energy will be automatically calculated. The annual target value is the total power consumption in January to December.
Based on the automatically calculated daily target electric energy, the target electric energy in each block will be automatically calculated according to the percentage set for the block.
It is unnecessary to input the target electric energy for each day. Input only the percentage, and the target electric energy for each block will be automatically calculated. So, the target values (electric energy) can be set easily.



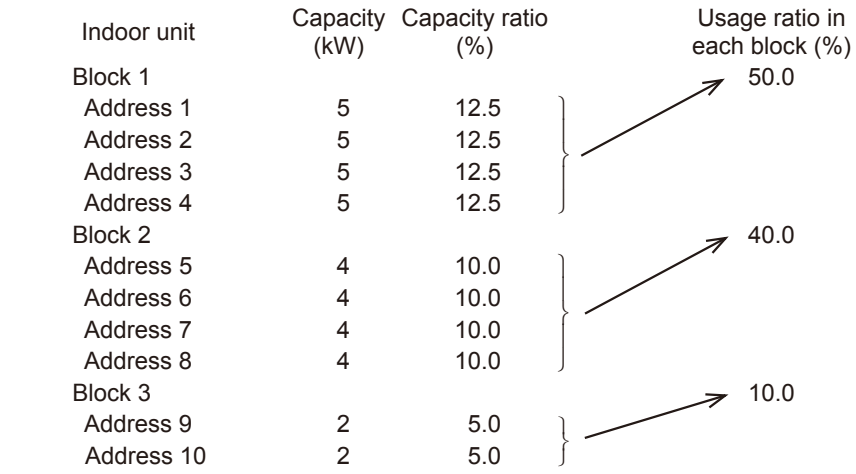
* Actually, the value is calculated simply based on the number of days of the week in one month.
In this example, the value is calculated on the condition that one month has 4 weeks (28 days) and there are four Sundays in a month.

Set the target values based on the energy saving plan for this year referring to the record in the previous year if available.
In the first year without the record in the previous year, use the monthly usage ratio and the daily usage ratio which have been preset as the default values, or make a plan of use, and change the preset values.
(By default, the percentages for cooling in the summer months and for heating in the winter months are set higher, and the percentages on the weekdays are set higher and those on Saturdays and Sundays are set lower. Change the values according to the actual usage conditions.)
The percentages can be set to one decimal place.
The default percentage for each block will be automatically calculated based on the ratio of the capacity of each indoor unit to the capacity obtained from the indoor unit through M-NET. If the target values cannot be determined properly because the record in the previous year is not available and the usages in the blocks are unclear, the usage ratio in each block can be set by the automatic calculation. When the record in the previous year is available, set the usage ratio in each block according to the usage condition in each block in the previous year based on the energy saving plan for this year.

Table 4.23 Default percentages of usage

Monthly usage ratio		Daily usage ratio		Usage ratio in each block	
Month	Default value (%)	Day of the week	Default value (%)	Block	Default value (%)
1	8.0	Sunday	2.0	Each block	Automatic calculation *
2	8.0	Monday	18.0		
3	2.0	Tuesday	18.0		
4	2.0	Wednesday	18.0		
5	2.0	Thursday	18.0		
6	6.0	Friday	18.0		
7	20.0	Saturday	8.0		
8	20.0				
9	20.0				
10	2.0				
11	2.0				
12	8.0				

* Procedure for automatic calculation of usage ratio in each block (in the case of automatic calculation of percentages for all blocks)



Remarks

○ When the usage ratio in each block is automatically calculated, the capacities of the indoor units to be used for the calculation will be obtained from the indoor units through M-NET. Therefore, it is unnecessary to set the capacities.

The target values can be set on any of the main unit screen and the Web browser for initial setting.
On the main unit screen of AE-200, the target values for connected AE-50 can be set by switching the display mode.
On the main unit screen of AE-50, the target values only for AE-50 can be set.
The target values must be set for each set of AE-200/AE-50. It is necessary to set the annual total power consumption, monthly usage ratio and daily usage ratio for each unit (block) connected to M-NET of each set of AE-200/AE-50.

If target values are changed after the start of operation, the target values on the graphs on the energy use status screen and ranking screen in the past will not be changed, but the graphs for the period including the day of the change and in the future will be displayed with the new target values.
The new target values will be reflected on the graphs on the energy use status screen and ranking screen after the next hour. (The graphs are updated on the hour every hour. However, the screens will not be automatically updated. It is necessary to refresh the screens.)

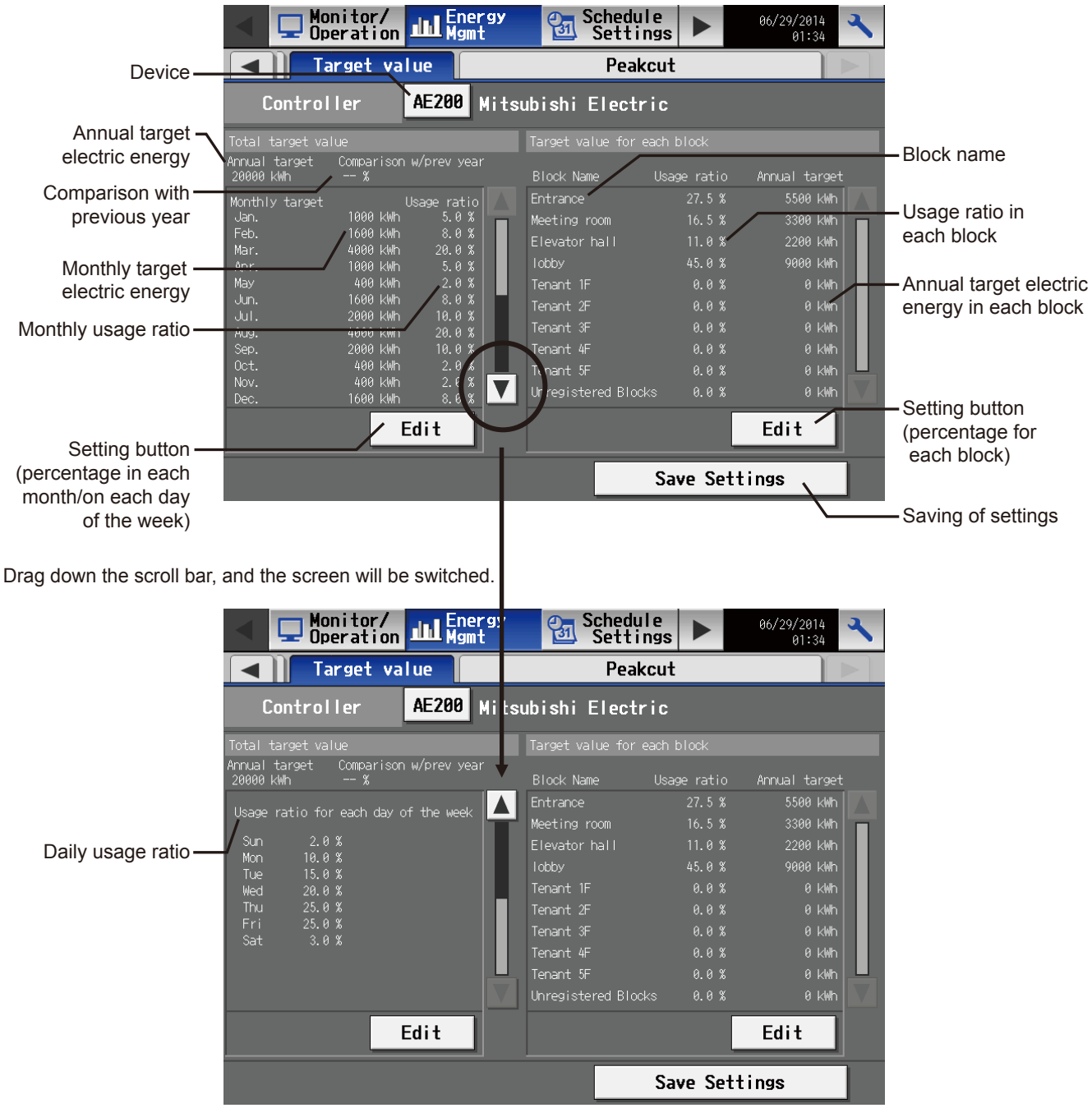
- Set the target values in the state where all units are correctly connected after they have started up.

Remarks

- ○ Set the target values on each set of AE-200 and AE-50.
- ○ When setting the monthly usage ratio, daily usage ratio or percentage for each indoor unit, ensure that the sum total of the percentages is 100 %. If the sum total is not 100 %, the values cannot be set.
- ○ When the percentage for each block is automatically calculated, if some blocks have the same number of units with the same capacity, the percentages may not be identical among the blocks for a reason of rounding, and differences may be caused among them.

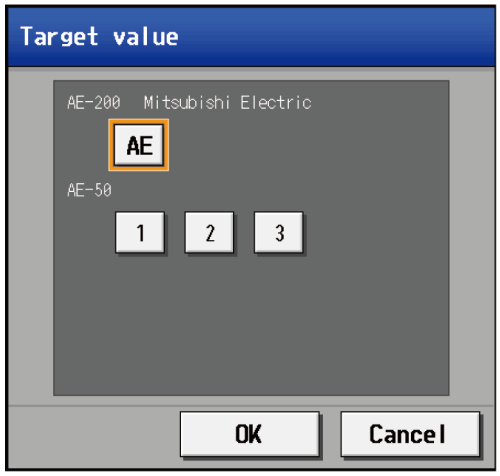
<1> Contents displayed on screens

Main unit screen



Drag down the scroll bar, and the screen will be switched.

Table 4.24 Contents displayed on main unit screen

Item	Details	Remarks
Device	The name of AE-200/AE-50 is displayed. Touch the button, and the device can be selected to display the data. To display the data of AE-200, select AE. To display the data of each set of AE-50, select 1, 2 or 3.	• If AE-50 is selected when AE-50 has been connected, the name of AE-50 will be displayed. • On AE-50, no buttons or names will be displayed.
		
Annual target electric energy	The set annual target electric energy is displayed.	
Comparison with previous year	The set percentage change from the previous year is displayed.	• When there is no record (data) in the previous year, -- will be displayed. • When the record in the previous year is available, the ratio of the actual value to the annual target electric energy in the previous year will be automatically displayed at the change of the year. When Comparison with previous year is set to 100 %, the annual target electric energy will be the same as the actual electric energy in the previous year. • The setting range is 0.0 % to 999.9 % in steps of 0.1 %.
Monthly target electric energy	The monthly target electric energy automatically calculated from the annual target electric energy and the monthly usage ratio is displayed.	• The calculated value is rounded off to the whole number and displayed in kWh.
Monthly usage ratio	The set monthly usage ratio is displayed.	• In steps of 0.1 %
Setting button (percentage for each period)	Touch the button, and the general target value setting screen will appear. On the screen, it is possible to set the Annual target electric energy, Monthly usage ratio and Daily usage ratio.	
Block name	The block names are displayed.	• The block names are displayed in the order of block number. • For blocks whose names have not been registered, [Block + block number] will be displayed.
Usage ratio in each block	The set usage ratio in each block is displayed.	• In steps of 0.1 %
Annual target electric energy in each block	The annual target electric energy in each block automatically calculated from the annual target electric energy and the usage ratio in each block is displayed.	• The calculated value is rounded off to the whole number and displayed in kWh.
Setting button (percentage for each block)	Touch the button, and the target value setting screen for each block will appear. On the screen, it is possible to set the Usage ratio in each block.	
Saving of settings	Touch the button to save the settings in AE-200/AE-50.	
Daily usage ratio	The set daily usage ratios are displayed.	

Web browser screen

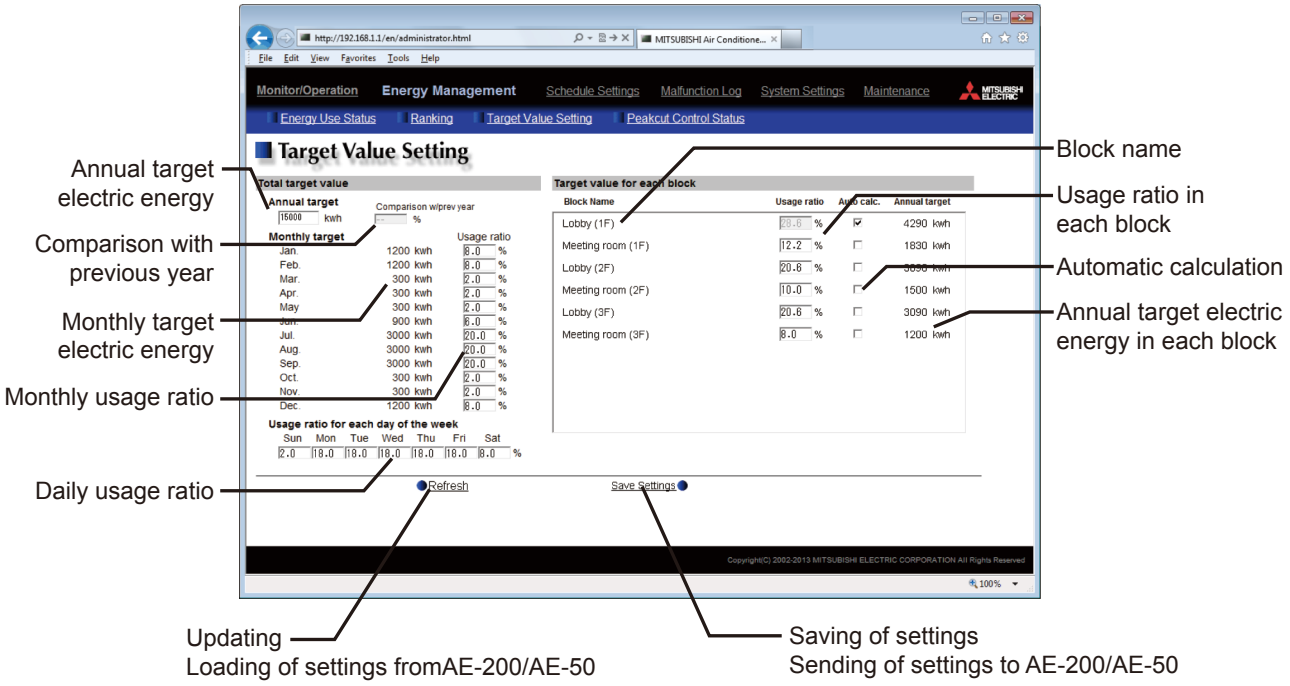


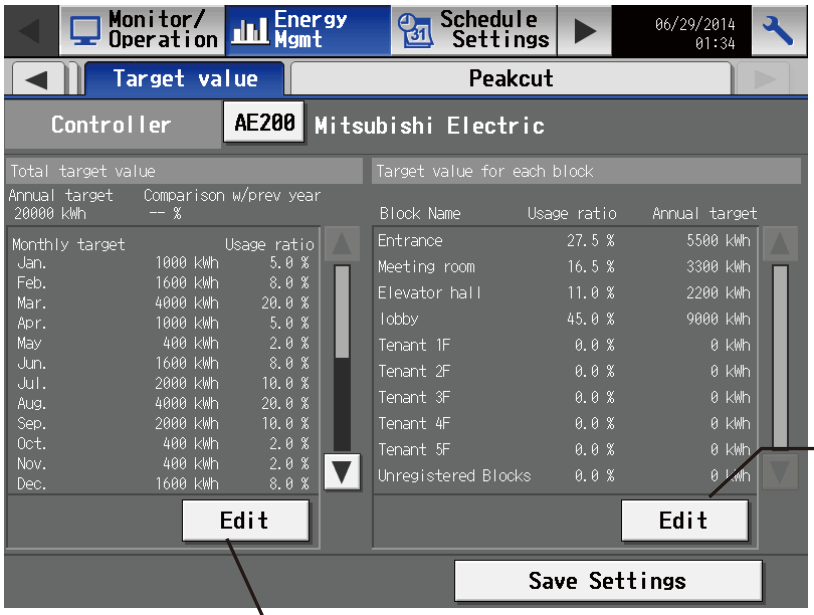
Table 4.25 Contents displayed on Web browser screen

Item	Details	Remarks
Annual target electric energy	Input the annual target electric energy.	
Comparison with previous year	Input the ratio of annual target electric energy in this year to the power consumption in the previous year.	• When there is no record (data) in the previous year, -- will be displayed. • When the record in the previous year is available, the ratio of the actual value to the annual target electric energy in the previous year will be automatically displayed at the change of the year. When Comparison with previous year is set to 100 %, the annual target electric energy will be the same as the actual electric energy in the previous year. • The setting range is 0.0 % to 999.9 % in steps of 0.1 %.
Monthly target electric energy	The monthly target electric energy automatically calculated from the annual target electric energy and the monthly usage ratio is displayed.	• The calculated value is rounded off to the whole number and displayed in kWh.
Monthly usage ratio	Input the target monthly usage ratio against the annual target electric energy.	• Set the percentage in the range from 0.0 to 100.0 % in steps of 0.1 %. • Set the percentages so that the sum total is 100 %.
Daily usage ratio	Input the daily usage ratios.	• Set the percentage in the range from 0.0 to 100.0 % in steps of 0.1 %. • Set the percentages so that the sum total is 100 %.
Block name	The block names are displayed.	• The block names are displayed in the order of block number. • For blocks whose names have not been registered, [Block + block number] will be displayed.
Usage ratio in each block	Input the usage ratio in each block. When the Auto Calc. box is checked, the percentages cannot be input. Input after unchecking the box.	• Set the percentage in the range from 0.0 to 100.0 % in steps of 0.1 %. • Set the percentages so that the sum total is 100 %.
Automatic calculation	When the Auto Calc. box is checked, the usage ratio in each block will be automatically calculated.	• When the automatic calculation function is activated, the ratio will be automatically calculated from the capacity of each indoor unit. The capacity of each indoor unit is received from the indoor unit through M-NET. • The usage ratio in each block is calculated based on the ratio of indoor unit capacity. • If the capacity of an indoor unit is larger, the calculated power consumption will be higher. • The ratios in the blocks except the blocks for which the Auto Calc. boxes are not checked are automatically calculated from the ratios of the capacity of the indoor units. • In the case of automatic calculation, the ratios for the units having the same capacity may not be identical for a reason of rounding.
Annual target electric energy in each block	The annual target electric energy in each block automatically calculated from the annual target electric energy and the usage ratio in each block is displayed.	• The calculated value is rounded off to the whole number and displayed in kWh.

<2> Procedure for setting target values

Main unit screen

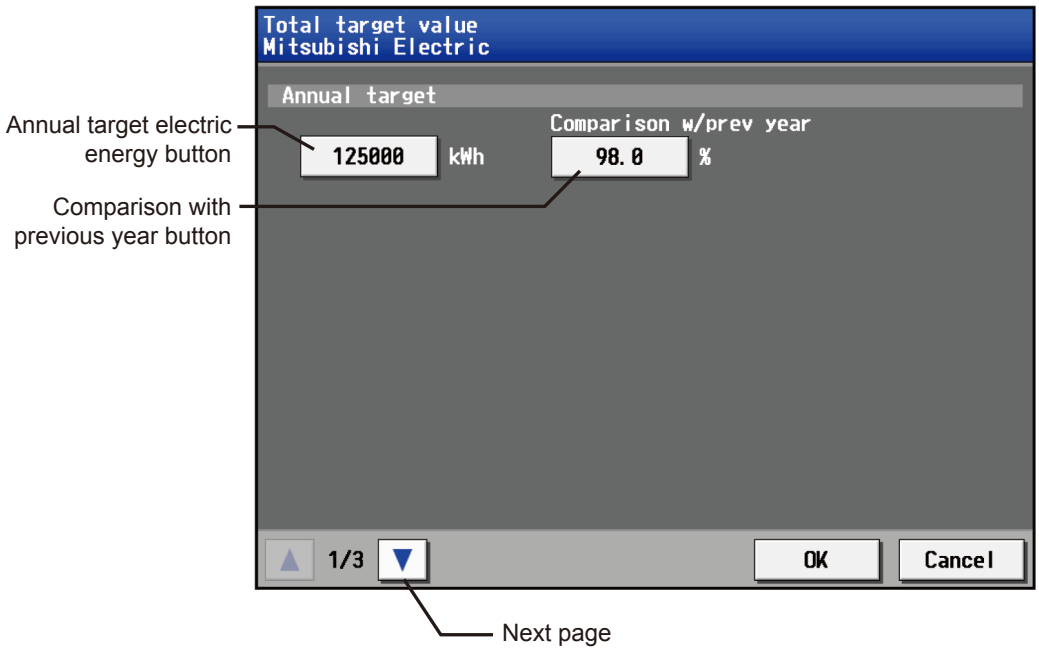
To set the target values on the main unit screen, touch the Edit button on the target value setting screen.
The Edit button on the left side of the screen is used to set the Annual target electric energy, Monthly usage ratio and Daily usage ratio.
The Edit button on the right side of the screen is used to set the Usage ratio in each block and Automatic calculation function.



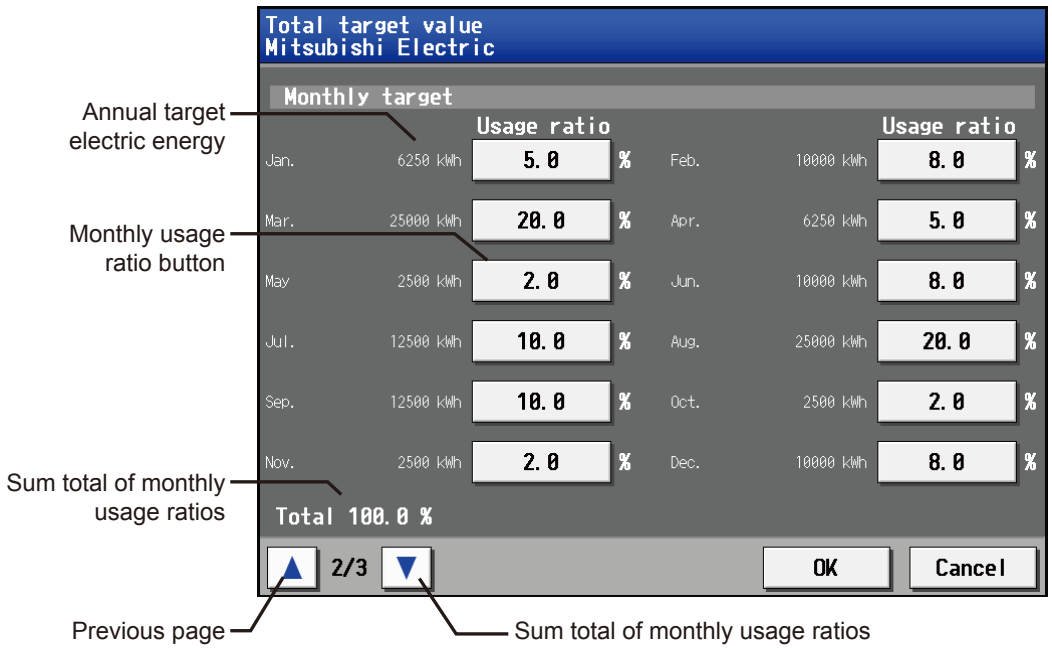
Setting of Annual target electric energy, Monthly usage ratio and Daily usage ratio

There are three pages of this screen.

1st page



2nd page



3nd page

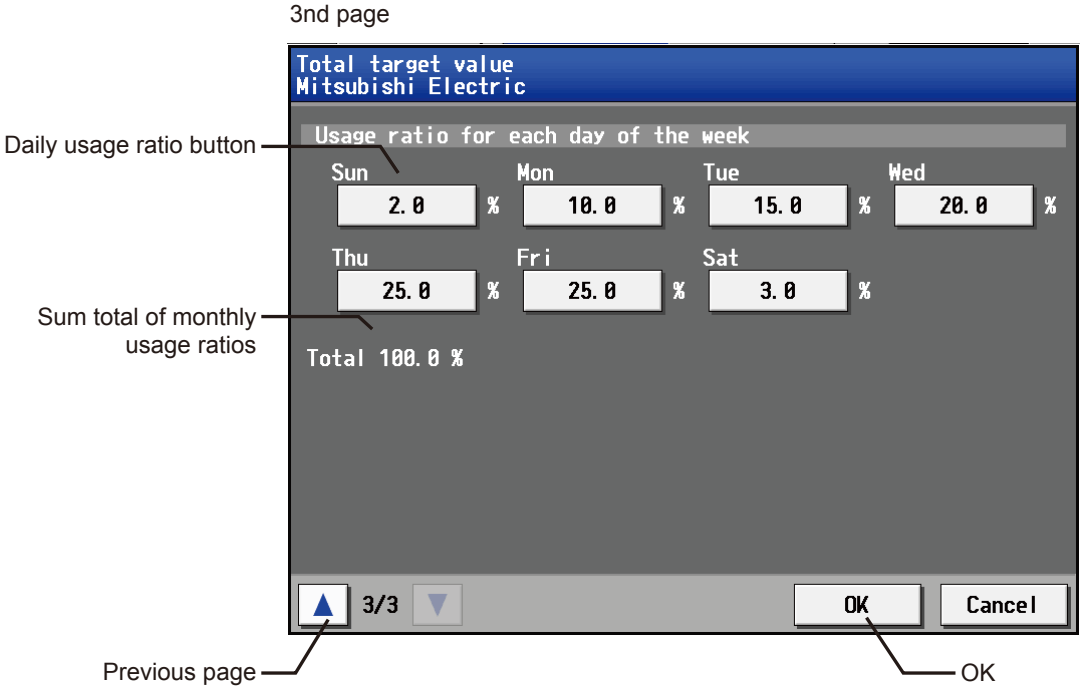


Table 4.26 General target value setting screen

Item	Details	Remarks
Annual target electric energy	Input the target value for annual power consumption.	• Set the target value in the range from 0 to 4294967 kWh. • When a ratio has been input in Comparison with previous year, the annual target electric energy will be automatically calculated based on the data on the power consumption in the previous year.
Comparison with previous year	Input the ratio of the annual target electric energy in this year to the power consumption in the previous year.	• Set the ratio in the range from 0.0 to 999.9 %. • When a value has been input in Annual target, the ratio will be automatically calculated based on the data on the power consumption in the previous year.
Monthly target electric energy	The target electric energy in each month is displayed.	• The value will be automatically calculated based on the ratio input in Usage ratio.
Monthly usage ratio	Input the target monthly usage ratio to the annual target electric energy.	• Set the ratio in the range from 0.0 to 100.0 % in steps of 0.1 %. • Set the ratios so that the sum total is 100 %. • When the ratio is input, the Monthly target electric energy will be automatically calculated based on the Annual target electric energy.
Daily usage ratio	Input the target usage ratio of electric energy on each day of the week.	• Set the ratio in the range from 0.0 to 100.0 % in steps of 0.1 %. • Set the ratios so that the sum total is 100 %. • Depending on the result of recalculation performed after the ratios are input, the Monthly target electric energy may change (because the number of days of the week varies from month to month).
OK button	Touch the OK button, and the screen will return to the target value setting screen.	• If the sum total of monthly usage ratios and the sum total of daily usage ratios are not 100 %, the OK button cannot be touched.

Setting of Usage ratio in each block

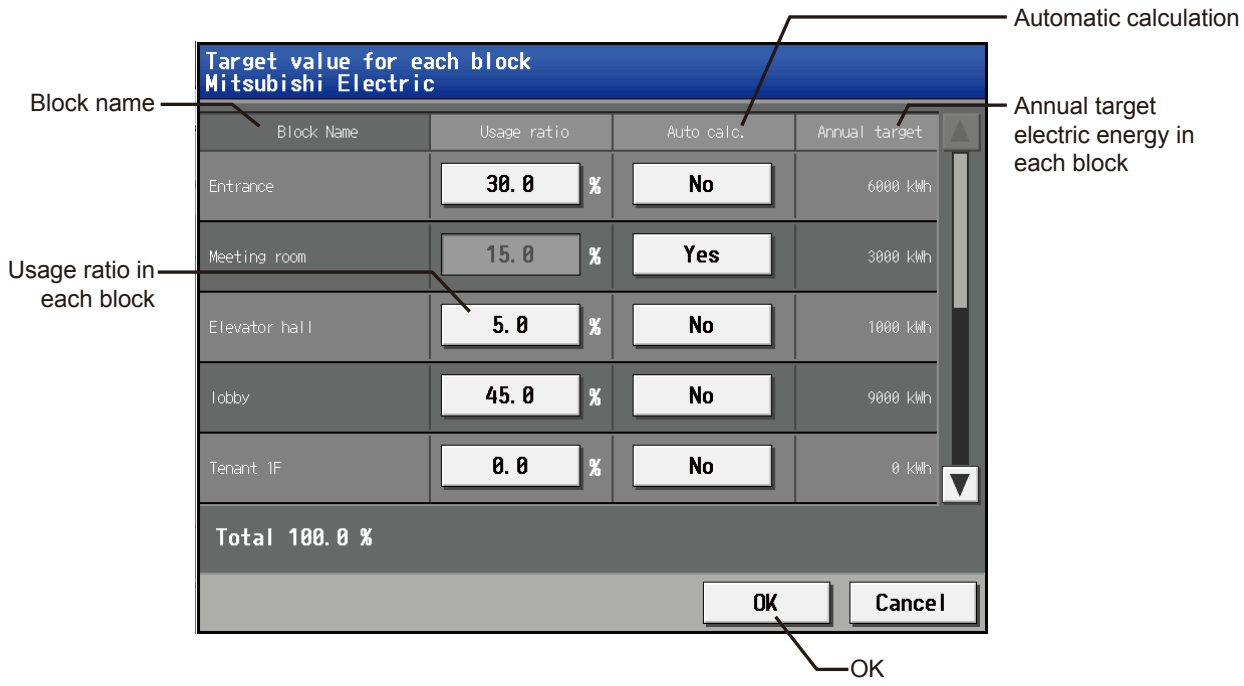


Table 4.27 Screen for setting target values for each block

Item	Details	Remarks
Block name	The block names are displayed.	• The block names are displayed in the order of block number. • For blocks whose names have not been registered, [Block + block number] will be displayed.
Usage ratio in each block	Input the usage ratio in each block. When the Auto calc. box is checked, the ratios cannot be input. Uncheck the box before inputting them.	• Set the ratio in the range from 0.0 to 100.0 % in steps of 0.1 %. • Set the ratios so that the sum total is 100 %.
Automatic calculation	When the Auto calc. box is checked, the usage ratio in each block will be automatically calculated.	• When the automatic calculation function is activated, the ratio will be automatically calculated from the capacity of each indoor unit. The capacity of each indoor unit is received from the indoor unit through M-NET. • The usage ratio in each block is calculated based on the ratio of indoor unit capacity. • If the capacity of an indoor unit is larger, the calculated power consumption will be higher. • The ratios in the blocks except the blocks for which the Auto calc. boxes are not checked are automatically calculated from the ratios of the capacity of the indoor units. • In the case of automatic calculation, the ratios for the units having the same capacity may not be identical for a reason of rounding.
Annual target electric energy in each block	The annual target electric energy in each block automatically calculated from the annual target electric energy and the usage ratio in each block is displayed.	• The calculated value is rounded off to the whole number and displayed in kWh.
OK button	Touch the OK button, and the screen will return to the target value setting screen.	• If the sum total of usage ratios in each block is not 100 %, the OK button cannot be touched.

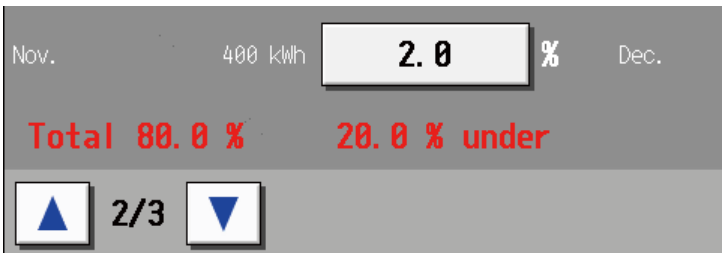
Web browser screen

Stated in <1> “Contents displayed on screens”

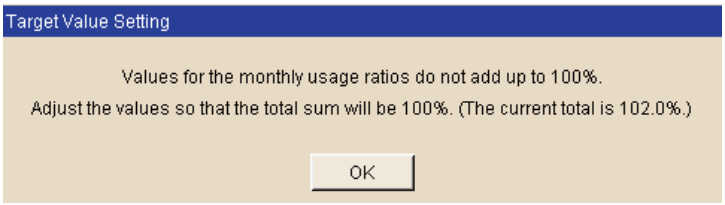
Remarks

○ If the sum total of any of the monthly usage ratios, daily usage ratios and ratios for indoor units is not 100 %, the following message will be displayed, and the values cannot be set.

Main unit screen



Web browser screen



[9] Peak cut control status

On the peak cut control status screen, the graph of average power (for 30 min) up to the present and the graph of peak cut control level (0 to 4) are displayed.
The daily energy saving condition can be seen from the transition of demand value, maximum demand value and transition of peak cut level.
The setting (power value) of each peak cut level can be adjusted by observing the peak cut control status.

Remarks

- ○ To perform the peak cut control, the registration of the energy saving control (peak cut) license is required.
- ○ Only the peak cut control status can be checked. Set the peak cut control conditions separately on the Web browser for initial setting.
- ○ On this screen, the peak cut control status is only displayed in a graph. The screen does not have an alarm function.
- ○ The average power based on the past data is displayed. The present average power is the average up to the present for 30 minutes (00 to 29 min or 30 to 59 min) including the present time.

The following four peak cut control methods are available.

1. Electric energy monitoring method (PLC)
2. Electric energy monitoring method (PI controller PAC-YG60MCA)
3. Other AE
4. External contact input method

The graph of average power can be displayed on the peak cut control screen only in the case of 1. Electric energy monitoring method (PLC) or 2. Electric energy monitoring method (PI controller PAC-YG60MCA).
(It can be displayed only when the peak cut method has been set to Electric energy count PLC or PI controller on the peak cut setting screen on the Web browser for initial setting.)
The control level graph can be displayed in any cases.

The peak cut control status data will be saved in the internal memory of each set of AE-200 and AE-50. The data of AE-50 will not be saved in AE-200. The data of each controller will be saved only in the controller. AE-200 will receive the data from AE-50 when the screen is displayed. The data retention periods are shown below.

Table 4.28 Retention periods of peak cut control status data

Retention period	Cautions
For last 3 days (including current day)	Data on average power and peak cut control level is saved in RAM* every minute and in a non-volatile memory (from which the data will not be deleted even if power is turned off from AE-200/AE-50) every 30 minutes. Therefore, if power is turned off from AE-200/AE-50, data for up to 30 minutes will be deleted. (The data for up to 30 minutes will not be displayed on the graph.)

*RAM: Abbreviation for Random Access Memory. Internal memory from which data will be deleted when power is turned off from AE-200/AE-50

Remarks

- ○ If an interruption of power supply to AE-200/AE-50 occurs, data for 30 minutes will be deleted.

On the main unit screen of AE-200, the peak cut control status of connected AE-50 can be displayed by switching the display mode.
On the main unit screen of AE-50, the peak cut control status only of AE-50 can be displayed.
On the Web browser screen of each set of AE-200/AE-50, only its own peak cut control status can be displayed.

<1> Contents displayed on screens

Main unit screen

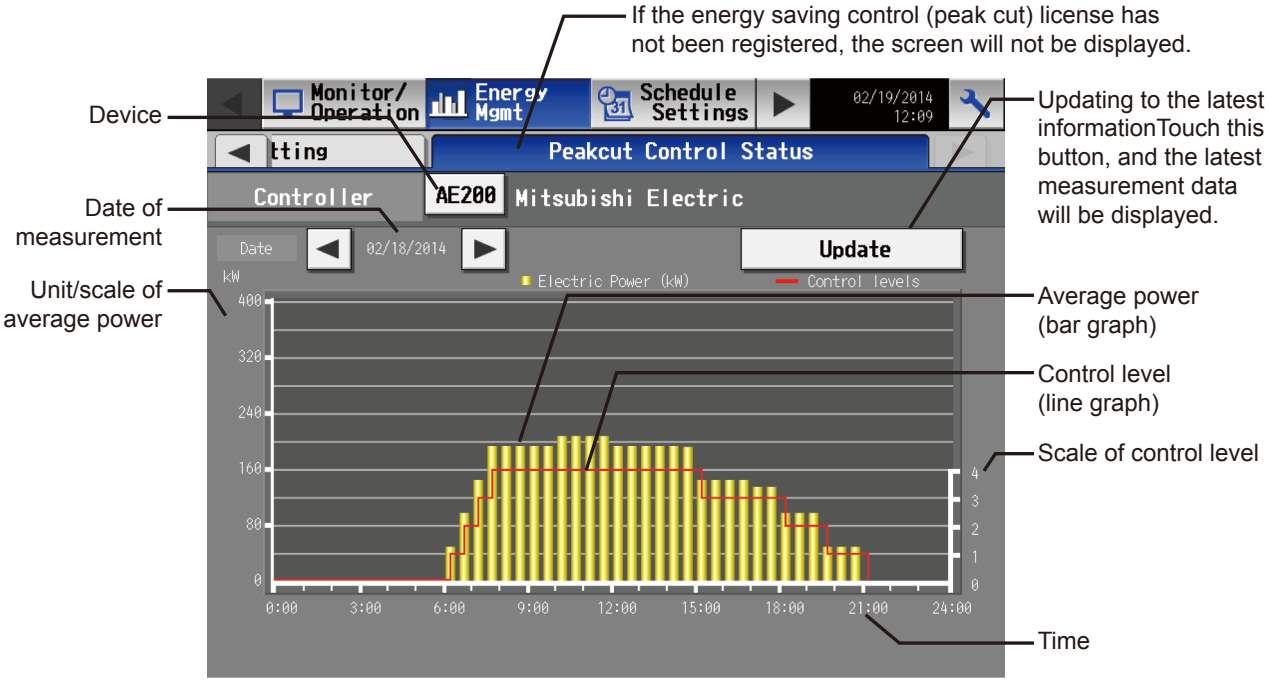
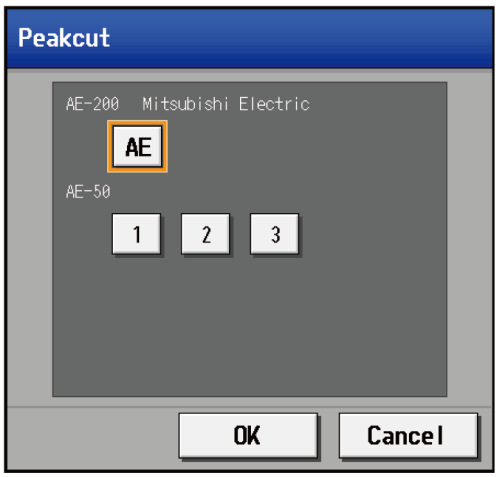


Table 4.29 Contents displayed on main unit screen

Item	Details	Remarks
Device	The name of AE-200/AE-50 is displayed. Touch the button, and the device to be displayed can be selected. To display the data of AE-200, select AE. To display the data of each set of AE-50, select 1, 2 or 3.	• If AE-50 is selected when AE-50 has been connected, the name of AE-50 will be displayed. • On AE-50, no buttons or names will be displayed.
		
Date of measurement	Select the date of measurement.	• The data for the last 3 days including the current day can be displayed.
Average power	The average power (kW) is displayed in a bar graph in units of 30 minutes.	• The graph is displayed every 30 minutes. • After 00 minute of every hour, the average power for 30 minutes from 30 to 59 minutes is displayed. After 30 minutes of every hour, the average power for 30 minutes from 00 to 29 minutes is displayed.
Control level	The peak cut control level is displayed in a line graph.	• The graph is displayed every 1 minute.

Web browser screen

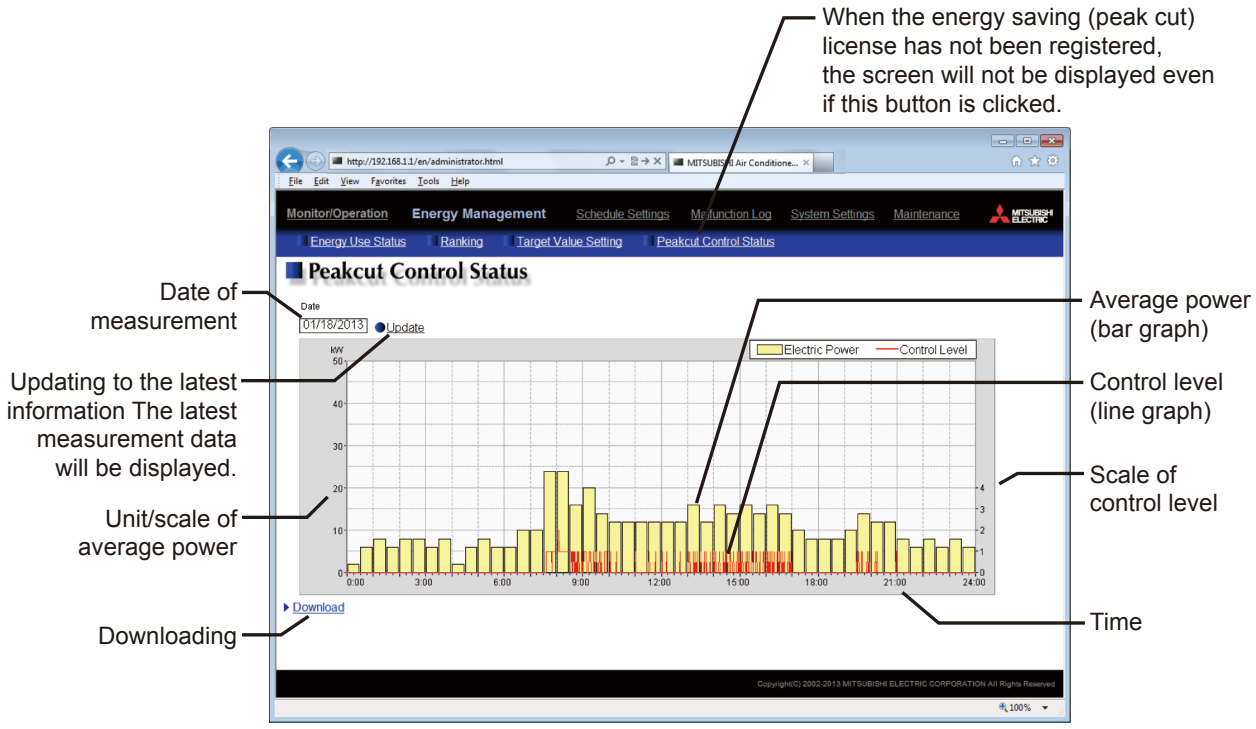


Table 4.30 Contents displayed on Web browser screen

Item	Details	Remarks
Updating to the latest information	Click the button, and the graph of the latest measurement data will be displayed.	
Date of measurement	Select the date of measurement.	• The data for the last 3 days including the current day can be displayed.
Average power	The average power (kW) is displayed in a bar graph in units of 30 minutes.	• The graph is displayed every 30 minutes. • After 00 minute of every hour, the average power for 30 minutes from 30 to 59 minutes is displayed. After 30 minutes of every hour, the average power for 30 minutes from 00 to 29 minutes is displayed.
Control level	The peak cut control level is displayed in a line graph.	• The graph is displayed every 1 minute.
Downloading	Click Download, and the displayed measurement data will be output in CSV format.	For details, see Ⅳ [10] “Data downloading.”

<2> Data for graph

For the graphs, the following data values are used.

Average power

Value in the first 30 minutes of one hour = (integrated value of electric energy at 30 minutes of every hour – integrated value of electric energy at 00 minute of every hour) × 2

Value in the second 30 minutes of one hour = (integrated value of electric energy at 60 minutes of every hour – integrated value of electric energy at 30 minutes of every hour) × 2

Example:
Value at 13:30 = (integrated value of electric energy at 13:30 – integrated value of electric energy at 13:00) × 2
Value at 14:00 = (integrated value of electric energy at 14:00 – integrated value of electric energy at 13:30) × 2

Value for 30 minutes including current time
= (integrated value of electric energy at present (in minutes) – integrated value of electric energy at 00 minute (or 30 minutes) of every hour × 2

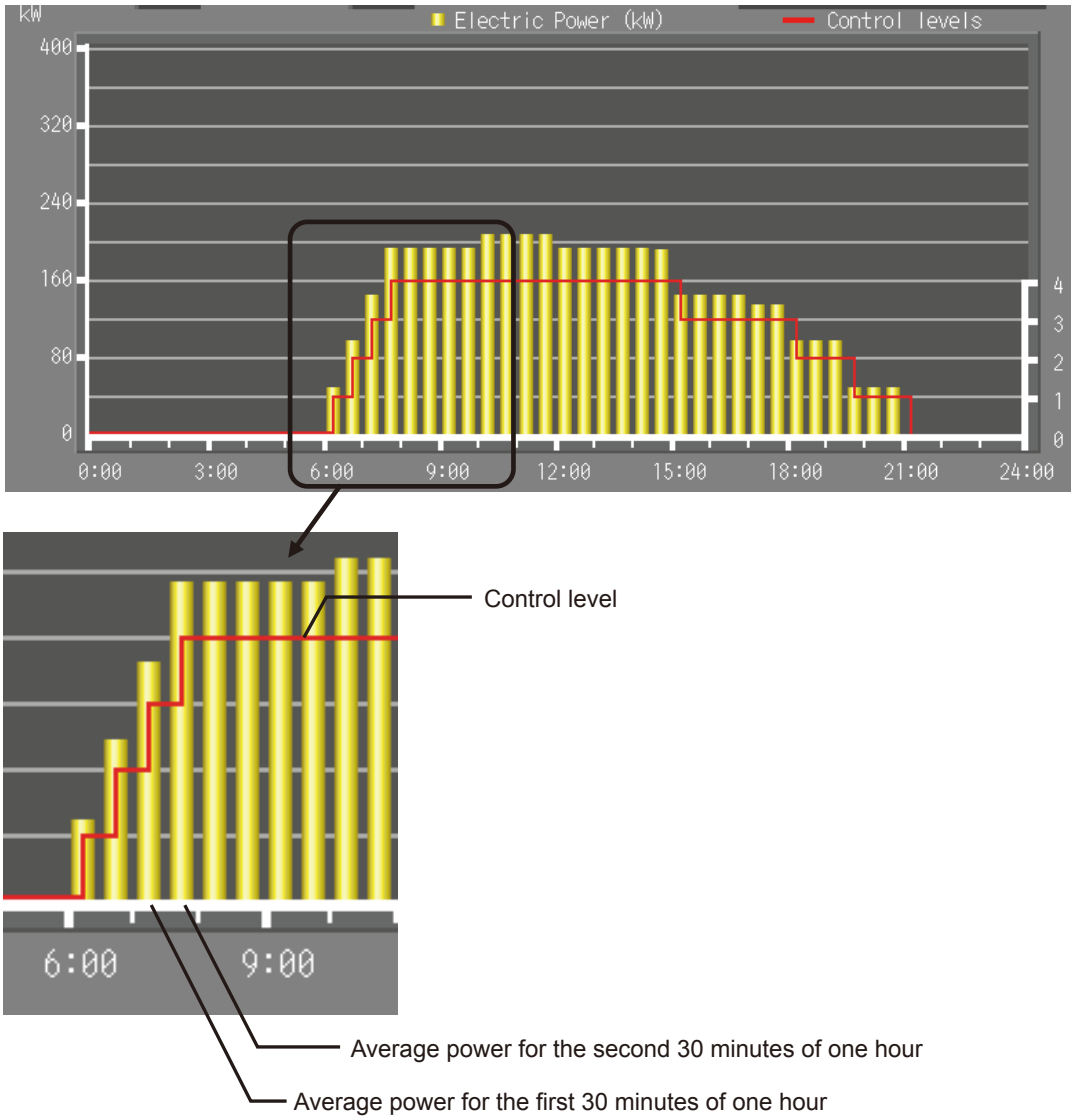
Example:
Value at 15:22 = (integrated value of electric energy at 15:22 – integrated value of electric energy at 15:00) × 2

Peak cut control level

Control level value at 00 second of every minute

Remarks

- ○ The data only during the period during which power is on AE-200/AE-50 will be displayed in graphs.
- ○ The average power after power failure will be calculated with the difference from the integrated value of electric energy at the first 00 second when data can be obtained after power failure. Therefore, the electric energy consumed in the range from 00 minute (or 30 minutes) of every hour to the time of recovery from power failure will not be included.



<3> Graph display formats

The peak cut control status graph is displayed in the following formats and colors.

Main unit screen

Table 4.31 Graph displayed on main unit screen

Type of graph	Display format
Average power	(Yellow)
Control level	(Red)

Web browser screen

Table 4.32 Graph displayed on Web browser screen

Type of graph	Display format
Average power	(Yellow)
Control level	(Red)

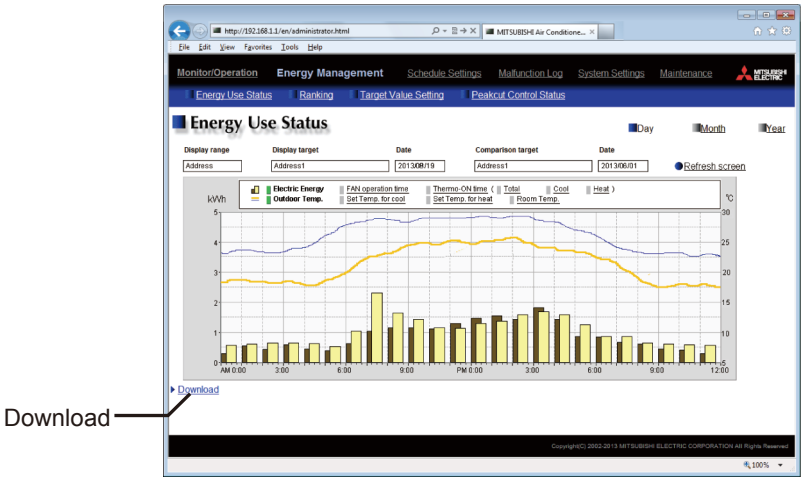
<4> Display updating

The main unit screen and Web browser screen will not be automatically updated.
The main unit screen will be updated when the Update button is touched.
The Web browser screen will be updated when the Update button is clicked.
The graphs displayed on the main unit screen and Web browser screens will be updated with new data after 00 second of every hour because data is collected on the second every minute.

[10] Data downloading

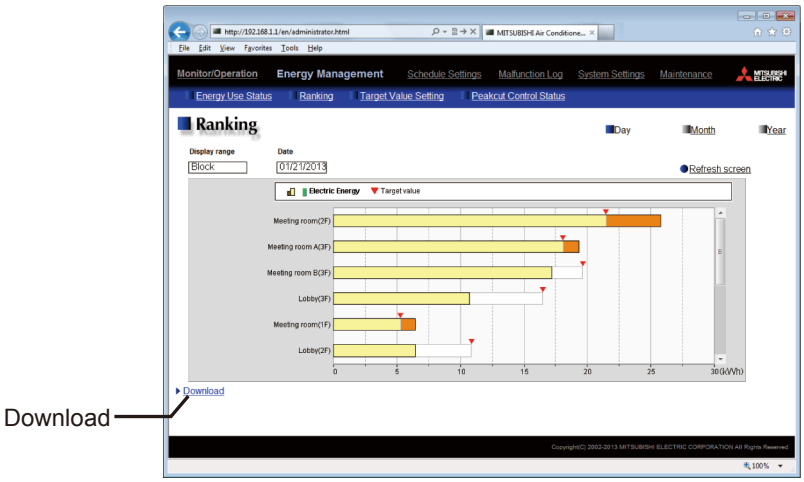
The energy management function can output the data on the energy use status screen, ranking screen and peak cut control status screen to files in CSV format.
The files in CSV format can be output only on the Web browser for administrator. They cannot be output from the main unit screen.
Click Download in the lower left corner of each screen, and the data will be output and downloaded to a file in CSV format.

Energy use status screen



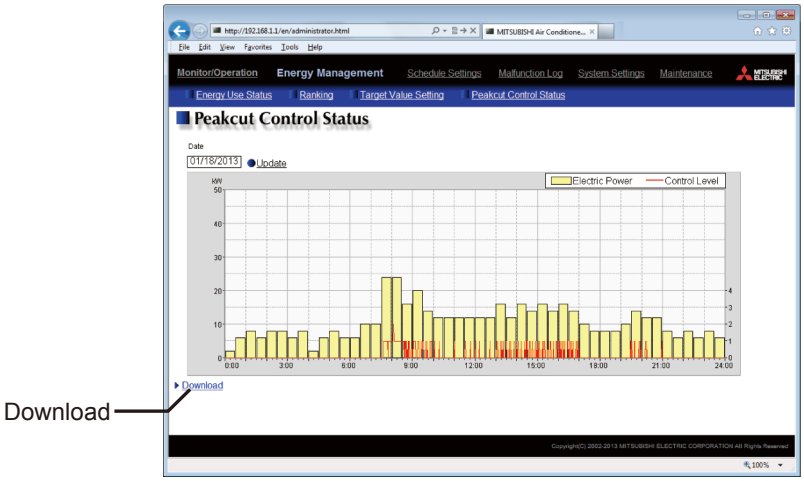
Download

Ranking screen



Download

Peak cut control status screen



Download

Remarks

- If the data cannot be normally output, select Tool – Internet options – Advanced, and uncheck the “Use passive FTP (for firewall and DSL modem compatibility)” check box. (In the case of Internet explorer)
- Out-of-date data will be automatically deleted. It is recommended to periodically save the data in a file in CSV format using the download function.
- It is recommended to periodically save the data in CSV format using the download function in case of failure of AE-200/AE-50.

<1> Energy use status screen

Click Download, and the displayed measurement data will be output in CSV format.

The data will be output in the following format with the following name according to the selected date range.

■ File name

[When a comparison target has been selected in Comparison target]

Date range: Day

EM_DailyTrend_(yyyy)-(mm)-(dd)_(display target)_(YYYY)-(MM)-(DD)_(comparison target)_(type of bar graph)_(type of line graph).csv

Date range: Month

EM_MonthlyTrend_(yyyy)-(mm)_(display target)_(YYYY)-(MM)_(comparison target)_(type of bar graph)_(type of line graph).csv

Date range: Year

EM_AnnualTrend_(yyyy)_(display target)_(YYYY)_(comparison target)_(type of bar graph)_(type of line graph).csv

[When a comparison target has not been selected in Comparison target]

Date range: Day

EM_DailyTrend_(yyyy)-(mm)-(dd)_(display target)_(type of bar graph)_(type of line graph).csv

Date range: Month

EM_MonthlyTrend_(yyyy)-(mm)_(display target)_(type of bar graph)_(type of line graph).csv

Date range: Year

EM_AnnualTrend_(yyyy)_(display target)_(type of bar graph)_(type of line graph).csv

■ Contents of file name

Contents of file name	Format	
(yyyy)	Year specified in Date of displayed data	
(mm)	Month specified in Date of displayed data	
(dd)	Day specified in Date of displayed data	
(Display target)	Address	“A” + M-NET address (001 to 005) + “_” + (In the case of indoor unit) “00” (In the case of PI controller, AI controller or AHC) meter No., sensor No. (01 to 04)
	Group	“G” + group No. (001 to 050) + “_” + “00”
	Block	“B” + block No. (001 to 050 or 999 *1) + “_” + “00”
(YYYY)	Year specified in Date of compared data	
(MM)	Month specified in Date of compared data	
(DD)	Day specified in Date of compared data	
(Comparison target)	Address	“A” + M-NET address (001 to 005) + “_” + (In the case of indoor unit) “00” (In the case of PI controller, AI controller or AHC) meter No., sensor No. (01 to 04)
	Group	“G” + group No. (001 to 050) + “_” + “00”
	Block	“B” + block No. (001 to 050 or 999 *1) + “_” + “00”
(Type of bar graph)	B01: Electric energy (indoor unit)	
	B02: FAN operation time	
	B03: Thermo ON time (total)	
	B04: Thermo ON time (cooling)	
	B05: Thermo ON time (heating)	
	B06: PI controller, electric energy	
	B08: PI controller, quantity of water	
	B09: PI controller, quantity of heat	
	B00: No selection	

*1 “B999” = Total of all blocks

Contents of file name	Format
(Type of line graph)	L00: No selection
	L01: Temperature setting (cooling)
	L02: Temperature setting (heating)
	L03: Indoor temperature
	L04: AI controller temperature
	L05: AHC temperature
	L06: Outdoor temperature
	L08: AI controller humidity

■ File format

Line	Item	Date range	Format		
1st line	Classification of file	Day	401		
		Month	402		
		Year	403		
2nd line	Date	Day	yyyy/mm/dd:YYYY/MM/DD *1		
		Month	yyyy/mm:YYYY/MM *1		
		Year	yyyy:YYYY		
3rd line	Target		Address	“Address” + address No. (display target)/“address” + (comparison target) * In the case of PI controller, AI controller or AHC, the address number is “address No. + meter No. or sensor No. (1 to 4).”	
			Group	Group name (display target)/group name (comparison target) *3	
			Block	Block name (display target)/block name (comparison target) *3	
4th line	Measurement item	Day	“Time”,	Address	“Address” + address No. (display target) (bar) + “-” + display item (bar) , “address” + address No. (bar) + “-” + display item (bar) , “address” + address No. (line) + “-” + display item (line) , “address” + address No. (comparison target) (line) + “-” + display item (line)
		Month	“Day”,	Group	Group name *3 (display target) (bar) + “-” + display item (bar) , group name *3 (bar) + “-” + display item (bar) , group name *3 (line) + “-” + display item (line) , group name *3 (comparison target) (line) + “-” + display item (line)
		Year	“Month”,	Address	Block name *3 (display target) (bar) + “-” + display item (bar) , block name *3 (bar) + “-” + display item (bar) , “target electric energy [kWh]” *2, block name *3 (line) + “-” + display item (line) , block name *3 (comparison target) (line) + “-” + display item (line)
5th line and following *5	Data *4	Day	hh:mm,	Data value (bar) , comparison data value (bar) , target electric energy value *2, data value (line) , comparison data value (line)	
		Month	dd,		
		Year	mm,		

*1 The dates will be displayed in the formats set on the basic system setting screen on the Web browser for initial setting.
*2 The “target electric energy [kWh]” and target electric energy value will be displayed only when the data is displayed in a graph.
*3 If the group name has not been given, [Group + group No.] will be shown. If the block name has not been given, [Block + block No.] will be shown.
*4 As the data delimiters and decimal point delimiters, the characters selected on the measurement setting screen on the Web browser for initial setting will be used.
*5 The number of lines varies depending on the selected date range. (Day: 5th to 28th lines, Month: 5th to 35th lines, Year: 5th to 16th lines)

■ Examples of files
(When Display range is Block)

Date range: Day

```
401
2014/08/19:2013/06/01
Block 1/Block 5
Time, block 1 – indoor unit electric energy [kWh] , block 5 – indoor unit electric energy [kWh] , block 1 – outdoor temperature [°C] , block 5 – outdoor temperature [°C]
00:00, 0.61, 0.25, 23.2, 17.8
01:00, 0.65, 0.51, 23.1, 17.6
02:00, 0.66, 0.48, 22.1, 18.1
03:00, 0.66, 0.58, 23.3, 18.2
04:00, 0.63, 0.47, 24.5, 17.5
05:00, 0.59, 0.39, 26.8, 19.1
06:00, 0.52, 0.52, 28.1, 22.1
:
23:00, 0.59, 0.23, 23.4, 17.1
```

Date range: Month

```
402
2014/08:2013/06
Block 1/Block 5
Day, block 1 – indoor unit electric energy [kWh], block 5 – indoor unit electric energy [kWh] , target electric energy [kWh] , block 1 – outdoor temperature [°C] , block 5 – outdoor temperature [°C]
01, 24.69, 8.74, 22, 26.2, 17.9
02, 25.31, 8.22, 22, 27, 17.4
03, 12.36, 22.33, 10, 25.2, 16.6
04, 10.37, 21.36, 10, 25.1, 19.3
05, 27.02, 17.55, 22, 27.7, 20.5
06, 24.55, 16.58, 22, 26.3, 19
07, 24.69, 17.96, 22, 24.9, 18.9
:
31, 13.2, 20.22,10, 27.3, 20.2
```

Date range: Year

```
403
2014:2013
Block 1/Block 5
Month, block 1 – indoor unit electric energy [kWh] , block 5 – indoor unit electric energy [kWh] , target electric energy [kWh] , block 1 – outdoor temperature [°C] , block 5 – outdoor temperature [°C]
01, 675.17, 661.93, 600, 0.4, 0.5
02, 697.38, 683.71, 700, 0.3, 3.2
03, 528.63, 518.26, 400, 4.5, 3.8
04, 403.67, 395.75, 500, 9.8, 10
05, 420.28, 412.04, 500, 15.9, 15.6
06, 450.33, 477.88, 500, 18.2, 20.6
07, 594.13, 582.48, 550, 22.8, 24.8
:
12, 602.58, 590.76, 550, 3.3, 3.4
```

Remarks

○ When data is output with the date range setting “Day,” the data of the bar graph to be output in each time line is the data obtained between the hour (00 minute) of the time and the hour (00 minute) after one hour. The data of the line graph is the instantaneous value at the hour (00 minute) of the time.

Example: When data is output at the present time 22:27, the data will be output as shown below.

```
22:00, 12, 15.0
21:00, 15, 15.2
22:00,,15.3          The data of bar graph at 22:00 is blank.
23:00,,
```

<2> Ranking screen

Click Download, and the displayed measurement data will be output in CSV format.

The data will be output in the following format with the following name according to the selected date range.

■ File name

Date range: Day
EM_DailyRanking_(yyyy)-(mm)-(dd)_(display range)_(type of ranking graph).csv
Date range: Month
EM_MonthlyRanking_(yyyy)-(mm)_(display range)_(type of ranking graph).csv
Date range: Year
EM_AnnualRanking_(yyyy)_(display range)_(type of ranking graph).csv

■ Contents of file name

Contents of file name	Format	
(yyyy)	Year specified in Date	
(mm)	Month specified in Date	
(dd)	Day specified in Date	
(Display range)	Address	"A999"
	Group	"G999"
	Block	"B999"
(Type of ranking graph)	B01: Electric energy (indoor unit)	
	B02: FAN operation time	
	B03: Thermo ON time (total)	
	B04: Thermo ON time (cooling)	
	B05: Thermo ON time (heating)	

■ File format

Line	Item	Date range	Format	
1st line	Classification of file	Day	404	
		Month	405	
		Year	406	
2nd line	Date	Day	yyyy/mm/dd *1	
		Month	yyyy/mm *1	
		Year	yyyy	
3rd line	Display range		Address	“All addresses”
			Group	“All groups”
			Block	“All blocks”
4th line	Measurement item		Address	“Address No.” , display item
			Group	“Group name *2”, display item
			Block	“Block name *2”, display item, “target electric energy [kWh]” *3
5th to 28th lines	Data *4		Address	Address No., data value
			Group	Group name *2, data value
			Block	Block name *2, data value, target electric energy value *3

*1 The dates will be displayed in the formats set on the basic system setting screen on the Web browser for initial setting.
*2 If the group name has not been given, [Group + group No.] will be shown. If the block name has not been given, [Block + block No.] will be shown.
*3 The “target electric energy [kWh]” and target electric energy value will be displayed only when the data is displayed in a graph.
*4 As the data delimiters and decimal point delimiters, the characters selected on the measurement setting screen on the Web browser for initial setting will be used.

■ Examples of files
(When Display range is Block)

Date range: Day

```
404
2014/06/01
All blocks
Block name, indoor unit electric energy [kWh] , target electric energy [kWh]
Block 1, 25.19, 21.2
Block 5, 19.58, 18.13
Block 3, 11.2, 16.9
Block 6, 6.19, 5.24
Block 2, 5.98, 10.96
```

Date range: Month

```
405
2014/06
All blocks
Block name, indoor unit electric energy [kWh] , target electric energy [kWh]
Block 1, 780.89, 657.2
Block 5, 606.98, 562.03
Block 3, 347.2, 523.9
Block 6, 191.89, 162.44
Block 2, 185.38, 339.76
```

Date range: Year

```
406
2014
All blocks
Block name, indoor unit electric energy [kWh] , target electric energy [kWh]
Block 1, 9370.68, 7886.4
Block 5, 7283.76, 6744.36
Block 3, 4166.4, 6286.8
Block 6, 2302.68, 1949.28
Block 2, 2224.56, 4077.12:
```

<3> Peak cut control status screen

Click Download, and the displayed measurement data will be output in CSV format.

The data will be output in the following format with the following name according to the selected date range.

■ File name
Peakcut_(yyyy)-(mm)-(dd).csv

■ Contents of file name

Contents of file name	Format
(yyyy)	Year specified in Date of measurement
(mm)	Month specified in Date of measurement
(dd)	Day specified in Date of measurement

■ File format

Line	Item	Format
1st line	Classification of file	123
2nd line	Date	yyyy/mm/dd *1
3rd line	Target	“Peak cut power”
4th line	Measurement items	“Time, electric energy (kW) , control level”
5th line and following	Data	hh:mm (at 1-min intervals) , average power *2, control level

*1 The dates will be displayed in the formats set on the basic system setting screen on the Web browser for initial setting.
*2 The average power (kW) will be output every 30 minutes. The same value of average power for 30 minutes will be output for 30 minutes. As the data from 00 to 29 minutes, the average power in the first half of one hour will be output. As the data from 30 to 59 minutes, the average power in the second half of one hour will be output.

■ Example of file

```
123
2014/06/01
Peak cut power
Time, power value (kW) , control level
00:00, 8, 1
00:01, 8, 0
00:02, 8, 0
:
:
23:58, 6, 0
23:59, 6, 0
```

Remarks

○ If an interruption of power supply to AE-200/AE-50 occurs, data during the power interruption will not be output.

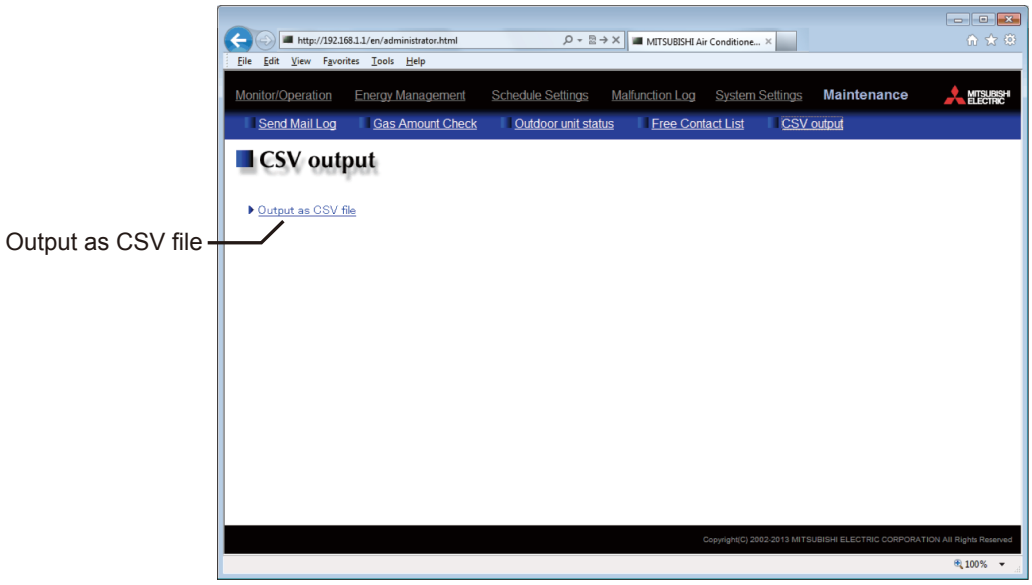
[11] CSV output

The energy management data is saved in each set of AE-200 and AE-50. However, old data will be overwritten when its retention period expires.
5-minute, 30-minute, daily, monthly and annual data are saved. The retention periods of these data are 2 months (5-minute), 25 months (30-minute, daily and monthly) and 5 years (annual).
For details, see Ⅳ [11]<5> “Energy management data list.”

The operation data of billing parameters, electric energy data and energy management data can be output in CSV format in units of 5 minutes to 1 year from the maintenance screen on the Web browser for administrator.
It is recommended to periodically save the data in a file in CSV format in case of failure of AE-200/AE-50.
Accumulation of energy management data by outputting in CSV format is helpful in preparing energy saving plans.

<1> CSV output screen

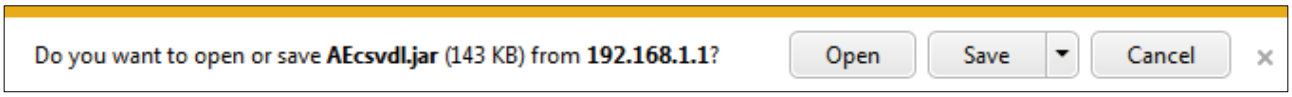
Click Maintenance – CSV output on the menu to open the CSV output screen.



Remarks

- ○ To output the billing parameters and electric energy data in CSV format, the electric energy apportionment support license is required.
- ○ If the license has not been registered, the Charge Parameters button cannot be selected.
- ○ Load the CSV file into Microsoft® Excel® 2007 or later.

1. Click Output as CSV file, and the standard file download dialog of Windows will be displayed.

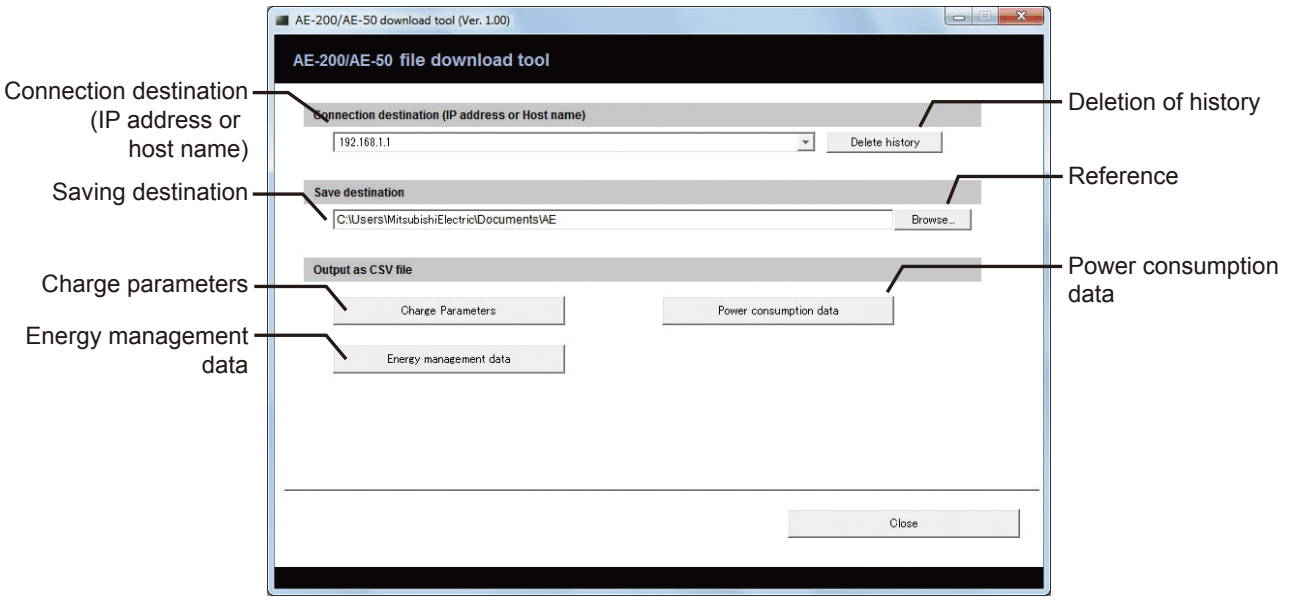


2. Click Open to start the CSV file download tool.

Remarks

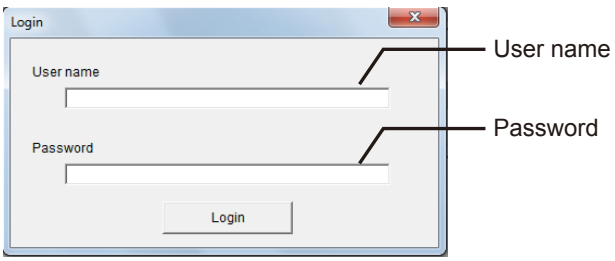
- ○ If the AEcsvdl.jar file is associated with another application, the CSV file download tool will not start. Release the association.
- ○ Click Save, and the AEcsvdl.jar file will be saved in the specified folder. Also when the file is double-clicked, the CSV file download tool will start.

CSV file download tool



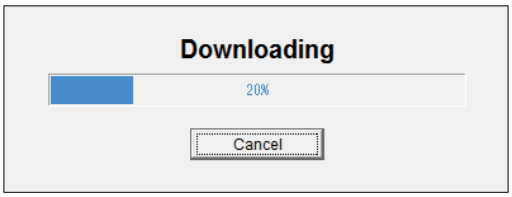
3. Specify the connection destination and saving destination referring to the following table, and click Charge Parameters, Power consumption data or Energy management data.
   The login window will appear. Input the user name and password, and click Login.

Item	Details
Connection destination	Input the IP address or host name of the destination AE-200/AE-50. When the CSV file download tool is started, the previously input value will be displayed. The last 20 input values will be displayed in the pull-down menu. • If there is no history data, “192.168.1.1” will be displayed.
Deletion of history	All history data displayed in the pull-down menu will be deleted.
Saving destination	Specify the destination to save the CSV file. • The default destination is the My Documents folder in the login user folder.
Reference	Click this button, and the dialog box for selecting the destination folder to save the CSV file will be displayed.



Remarks ○ The administrator user and maintenance user of the Web browser can log in to the tool.

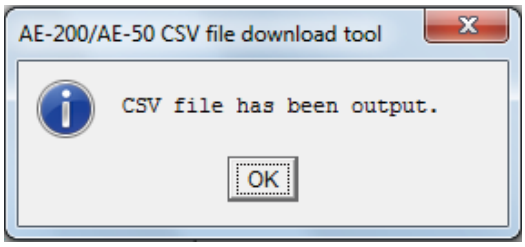
4. The selected data will be output to the specified destination in CSV format. The progress of downloading will be displayed in percentage.



Remarks

- The date will be displayed in the format specified on the basic system setting screen on the Web browser for initial setting.
- The time periods 1 to 5 can be set only on TG-2000A. Only the time period 1 can be set by the factory default setting.
- The time periods 1 to 5 can be identified with file names.

5. Click OK.



6. Click Close to terminate the CSV file download tool.

<2> Charge parameters

■ File name

ChargeParameter_(yyyy)_(mm)-(dd)A(indoor unit address)-(time period (1 to 5)).csv

Remarks

- ○ The date will be displayed in the format specified on the basic system setting screen on the Web browser for initial setting.
- ○ The time periods 1 to 5 can be set only on TG-2000A. Only the time period 1 can be set by the factory default setting.
- ○ The time periods 1 to 5 can be identified with file names.

■ File output destination

(Saving destination)\(serial No.)\OperationalData\ChargeParameters\(date)

■ File format

Line	Item	Format
1st line	File classification	201
2nd line	Date range *1	Start date + “-” + end date
3rd line	Address of indoor unit	“Address” + M-NET address
4th line	Item	"Date,SaveValue,ThermoTime,FanTime,SubHeaterTime"
5th to 66th lines	Data *2, *3, *4, *5	Date *1, capacity save amount (min) , thermo ON time (min) , FAN operation time (min) and sub-heater ON time (min) *6

*1 The date will be displayed in the format specified on the basic system setting screen on the Web browser for initial setting.

*2 As the data delimiters and decimal point delimiters, the characters selected on the measurement setting screen on the Web browser for initial setting will be used.

*3 The values are the integrated values up to the date (final time).
Each integrated value is a sum from 0 to 999999. When the value exceeds the maximum value, it will return to 0.

*4 When the relevant data does not exist, the values will not be displayed.

*5 Each file contains data for up to 62 days.

*6 The sub-heater ON time is counted when the conditions for turning on the auxiliary heater are met. (It is not the time for which the auxiliary heater was actually on.) The time will be counted even in indoor units which are not provided with auxiliary heaters.

■ Examples of files

```
201
2013/12/19-2014/1/10
Address 31
Date, SaveValue, ThermoTime, FanTime, SubHeaterTime
2013/12/19, 1258, 0, 465, 0
2013/12/20, 1260, 0, 468, 0
2013/12/21, 1262, 0, 472, 0
2013/12/22, 1264, 0, 477, 0
2013/12/23, 1266, 0, 490, 0
:
2014/01/10, 2058, 0, 1013, 0
```

<3> Power consumption data

■ File name

ChargeParameter_(yyyy)-(mm)-(dd)MCPA(address of PI controller)-(time period).csv

Remarks

- ○ The date will be displayed in the format specified on the basic system setting screen on the Web browser for initial setting.
- ○ The time periods 1 to 5 can be set only on TG-2000A. Only the time period 1 can be set by the factory default setting.
- ○ The time periods 1 to 5 can be identified with file names.

■ File output destination

(Saving destination)\(serial No.)\OperationalData\ChargeParameters\(date)

■ File format

Line	Item	Format
1st line	File classification	202
2nd line	Date range *1	Start date + “-” + end date
3rd line	Address of MCP (PI controller)	“CMP” + M-NET address + “-” + time period (1 to 5)
4th line	Item	"No.,Date,Count value(Ch1) ,Count value(Ch2) ,Countvalue(Ch3) ,Count value(Ch4)"
5th to 66th lines	Data *2, *3, *4, *5, *6	MCP address + time period, date *1, MCP1, MCP2, MCP3, MCP4

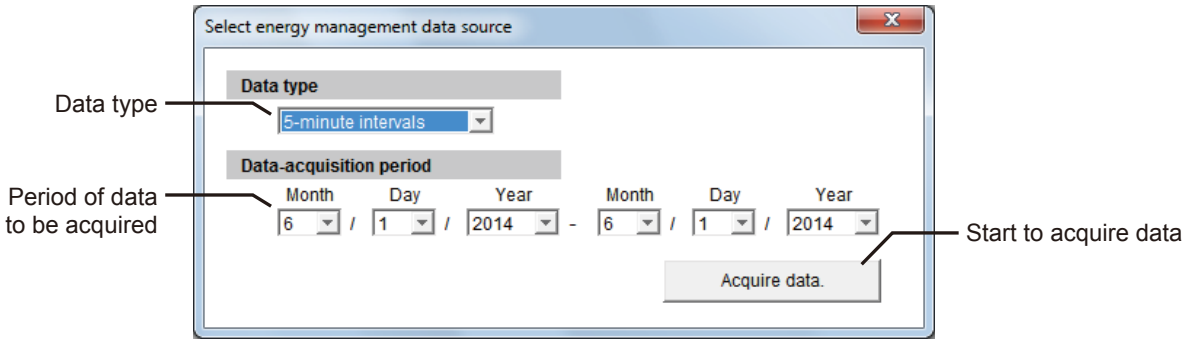
*1 The date will be displayed in the format specified on the basic system setting screen on the Web browser for initial setting.
*2 As the data delimiters and decimal point delimiters, the characters selected on the measurement setting screen on the Web browser for initial setting will be used.
*3 The values are the integrated values up to the date (final time).
*4 The range of the values is from 0.00 to 999999.99. When a value exceeds the maximum value, it will return to 0.
*5 When the relevant data does not exist, the value will not be displayed.
*6 Each file contains data for up to 62 days.

■ Examples of files

```
202
2013/12/19-2014/1/10
MCP 50-1
No., Date, Count value (Ch1) , Count value (Ch2) , Count value (Ch3) , Count value (Ch4)
501, 2013/12/19, 190887.43, 872411.43, 227424.88, 55515.50
501, 2013/12/20, 190899.16, 872420.12, 227428.63, 55526.70
501, 2013/12/21, 190905.22, 872442.23, 227435.74, 55537.90
501, 2013/12/22, 190910.38, 878449.77, 227448.19, 55549.84
:
501, 2014/01/10, 200014.38, 87950.36, 227925.19, 60111.63
```

<4> Energy management data

Click to download the CSV file of energy management data. The Select energy management data source window will appear. Select the data type, and specify the period to acquire the data.
For the data which can be output in CSV format, see Ⅳ [11]<5> “Energy management data list.”



Item	Details
Data type	Select 5-minute intervals, 30-minute intervals, Daily, Monthly or Annual.
Period	Specify the period of data to be acquired. • The date will be displayed in the format specified on the basic system setting screen on the Web browser for initial setting. • The date range which can be specified varies depending on the selected Data type. • When Monthly data or Annual data has been selected in Data type, the period cannot be specified. • The data obtained during period during which power is on AE-200/AE-50 can be output. The data during period during which power is not on AE-200/AE-50 cannot be output.
Acquire data	The CSV file will be output based on the selected conditions.

■ File names

Data type: 5-minute data
EnergyManagement_5MIN_(YYYY)-(MM)-(DD)_(yyyy)-(mm)-(dd).csv
Data type: 30-minute data
EnergyManagement_30MIN_(YYYY)-(MM)-(DD)_(yyyy)-(mm)-(dd).csv
Data type: Daily data
EnergyManagement_1DAY_(YYYY)-(MM)-(DD)_(yyyy)-(mm)-(dd).csv
Data type: Monthly data
EnergyManagement_1MONTH_(YYYY)-(MM)_(yyyy)-(mm).csv
Data type: Annual data
EnergyManagement_1YEAR_(YYYY)-(yyyy).csv

■ Contents of file name

Contents of file name	Format
[YYYY]	Start year
[MM]	Start month
[DD]	Start day
[yyyy]	End year
[mm]	End month
[dd]	End day

* The date will be displayed in the format specified on the basic system setting screen on the Web browser for initial setting.

■ File output destination
(Saving destination)\(serial No.)\OperationalData\EnergyManagementData\(date)

■ File formats

Data type: 5-minute data

<table>
<tr><th>Line</th><th>Item</th><th>Format</th></tr>
<tr><td>1st line</td><td>File classification</td><td>501</td></tr>
<tr><td>2nd line</td><td>Data range *1</td><td>Start date + “-” + end date</td></tr>
<tr><td>3rd line</td><td>Items *5, *8</td><td>"DateTime , Data1 (51) , ... Data1 (100) , Data2 (51) , ... Data2 (100) ,
Data3 (51) , ... Data3 (100) ,
OutdoorTemp (51) , ... OutdoorTemp (100) ,
CoolSetTemp (1) , ... CoolSetTemp (50) , HeatSetTemp (1) , ... HeatSetTemp (50) ,
RoomTemp (1) , ... RoomTemp (50) ,
MCP1 (1) , ... MCP1 (50) ,MCP2 (1) , ... MCP2 (50) ,
MCP3 (1) , ... MCP3 (50) ,MCP4 (1) , ... MCP4 (50) ,
MCT1 (1) , ... MCT1 (50) ,MCT2 (1) , ... MCT2 (50)"
AHC1 (201) , ... AHC1 (250) , AHC2 (201) , ... AHC2 (250)”</td></tr>
<tr><td>4th line</td><td>Measurement units *2, *3, *4, *5</td><td><table><tr><th>Items</th><th>Unit</th></tr><tr><td>Data1, Data2, Data3</td><td>-</td></tr><tr><td>OutdoorTemp,CoolSetTemp,HeatSetTemp, RoomTemp</td><td>°C, °F</td></tr><tr><td>MCP (PI controller)</td><td>kWh, m3, MJ</td></tr><tr><td>MCT (AI controller)</td><td>°C, °F, %</td></tr><tr><td>AHC (Advanced HVAC CONTROLLER)</td><td>°C, °F</td></tr></table></td></tr>
<tr><td>5th to 17860th lines</td><td>Data *5, *6, *7, *8</td><td>Date *1 and time, data 1 (51) , … (100) , data 2 (51) , … (100) , data 3 (51) , … (100) ,
outdoor temperature (51) , … (100) ,
cooling temperature setting (1) , … (50) , heating temperature setting (1) , … (100) ,
indoor temperature (1) , … (50)
MCP 1 (1) , ... (50) , MCP 2 (1) , ... (50) ,
MCP 3 (1) , ... (50) , MCP 4 (1) , ... (50) ,
MCT 1 (1) , ... (50) ,MCT 2 (1) , ... (50)
AHC temperature 1 (201) , ... (250) ,
AHC temperature 2 (201) , ... (250)</td></tr>
</table>

*1 The dates will be displayed in the format specified on the basic system setting screen on the Web browser for initial setting.
*2 The temperatures will be displayed in the unit (°C or °F) selected on the basic system setting screen on the Web browser for initial setting.
*3 The measurements of the MCP (PI controller) will be displayed in the unit selected on the measurement setting screen on the Web browser for initial setting.
*4 The measurement item of MCT (AI controller) depends on the selection (temperature or humidity) on the measurement setting screen on the Web browser for initial setting.
*5 As the data delimiters and decimal point delimiters, the characters selected on the measurement setting screen on the Web browser for initial setting will be used.
*6 When the relevant data does not exist, the values will not be displayed.
*7 Up to 17856 items (for 2 months) will be output in each file.
*8 The numbers in parentheses are the M-NET addresses.

Data type: 30-minute data

<table>
<tr><th>Line</th><th>Item</th><th>Format</th></tr>
<tr><td>1st line</td><td>File classification</td><td>502</td></tr>
<tr><td>2nd line</td><td>Data range *1</td><td>Start date + “-” + end date</td></tr>
<tr><td>3rd line</td><td>Items *5, *10</td><td>"Date,Data1 (51) , ... Data1 (100) ,Data2 (51) , ... Data2 (100) ,Data3 (51) , ... Data3 (100) ,
OutdoorTemp (51) , ... OutdoorTemp (100) ,
CoolSetTemp (1) , ... CoolSetTemp (50) , HeatSetTemp (1) , ... HeatSetTemp (50) , Room-
Temp (1) , ... RoomTemp (50) , FanTime (1) , ... FanTime (50) ,
CoolTime (1) , ... CoolTime (50) , HeatTime (1) , ... HeatTime (50) ,
ThermoTime (1) , ... ThermoTime (50) ,CoolThermoTime (1) , ... CoolThermoTime (50) ,
HeatThermoTime (1) , ... HeatThermoTime (50) ,
ThermoCount (1) , ... ThermoCount (50) , SaveValue (1) , ... SaveValue (50) , CoolSaveVal-
ue (1) , ... CoolSaveValue (50) , HeatSaveValue (1) , ... HeatSaveValue (50) ,
ApporionedElectricEnergy (1) , ... ApporionedElectricEnergy (50) ,
MCP1 (1) , ... MCP1 (50) , MCP2 (1) , ... MCP2 (50) , MCP3 (1) , ... MCP3 (50) , MCP4 (1) ,
... MCP4 (50) , MCT1 (1) , ... MCT1 (50) , MCT2 (1) , ... MCT2 (50)"
AHC1 (201) , ... AHC1 (250) , AHC2 (201) , ... AHC2 (250)”</td></tr>
<tr><td>4th line</td><td>Measurement units
*2, *3, *4, *5</td><td>
<table>
<tr><th>Items</th><th>Unit</th></tr>
<tr><td>ApportionedElectricEnergy</td><td>kWh</td></tr>
<tr><td>ThermoCount, Data1, Data2, Data3</td><td>-</td></tr>
<tr><td>OutdoorTemp, CoolSetTemp,
HeatSetTemp, RoomTemp</td><td>°C, °F</td></tr>
<tr><td>FanTime, CoolTime, HeatTime,
ThermoTime, CoolThermoTime,
HeatThermoTime, SaveValue,
CoolSaveValue, HeatSaveValue</td><td>minute</td></tr>
<tr><td>MCP (PI controller)</td><td>kWh, m3, MJ</td></tr>
<tr><td>MCT (AI controller)</td><td>°C, °F, %</td></tr>
<tr><td>AHC (Advanced HVAC CONTROLLER)</td><td>°C, °F</td></tr>
</table>
</td></tr>
<tr><td>5th to 37204th lines</td><td>Data *5, *6, *7, *8, *9, *10</td><td>Date *1 and time, data 1 (51) , … (100) , data 2 (51) , … (100) , data 3 (51) , … (100) ,
outdoor temperature (51) , … (100) ,
cooling temperature setting (1) , … (50) , heating temperature setting (1) , … (100) ,
room temperature (1) , … (50)
FAN operation time (min) (1) , … (50) ,
Cooling operation time (1) , … (50) , heating operation time (1) , … (50) , thermo ON time
(1) , … (50) , thermo ON time for cooling (1) , … (50) ,
thermo ON time for heating (1) , … (50) , thermo ON/OFF count (1) , … (50) ,
capacity save amount (1) , … (50) , cooling capacity save amount (1) , … (50) ,
heating capacity save amount (1) , … (50) , apportioned electric energy (1) , … (50) ,
MCP 1 (1) , ... (50) , MCP 2 (1) , ... (50) , MCP 3 (1) , ... (50) ,
MCP 4 (1) , ... (50) , MCT 1 (1) , ... (50) , MCT 2 (1) , ... (50)
AHC temperature 1 (201) , ... (250) ,
AHC temperature 2 (201) , ... (250)</td></tr>
</table>

*1 The dates will be displayed in the format specified on the basic system setting screen on the Web browser for initial setting.
*2 The temperatures will be displayed in the unit (°C or °F) selected on the basic system setting screen on the Web browser for initial setting.
*3 The measurements of the MCP (PI controller) will be displayed in the unit selected on the measurement setting screen on the Web browser for initial setting.
*4 The measurement item of MCT (AI controller) depends on the selection (temperature or humidity) on the measurement setting screen on the Web browser for initial setting.
*5 As the data delimiters and decimal point delimiters, the characters selected on the measurement setting screen on the Web browser for initial setting will be used.
*6 The Outdoor temperature, Cooling temperature setting, Heating temperature setting and Room temperature in the data are the values measured at 00 minute and 30 minutes of every hour.
*7 MCT 1 and MCT 2 in the data are the temperature or humidity values measured at 00 minute and 30 minutes of every hour.
*8 When the relevant data does not exist, the values will not be displayed.
*9 Up to 37200 items (for 25 months) will be output in each file.
*10 The numbers in parentheses are the M-NET addresses.

Data type: Daily data

<table>
<tr><th>Line</th><th>Item</th><th>Format</th></tr>
<tr><td>1st line</td><td>File classification</td><td>503</td></tr>
<tr><td>2nd line</td><td>Data range *1</td><td>Start date + “-” + end date</td></tr>
<tr><td>3rd line</td><td>Items *5, *10</td><td>"Data, Data1 (51) , ... Data1 (100) , Data3 (51) , ... Data3 (100) ,
OutdoorTemp (51) , ... OutdoorTemp (100) , CoolSetTemp (1) , ... CoolSetTemp (50)
,HeatSetTemp (1) , ... HeatSetTemp (50) , RoomTemp (1) , ... RoomTemp (50) ,
FanTime (1) , ... FanTime (50) , CoolTime (1) , ... CoolTime (50) ,
HeatTime (1) , ... HeatTime (50) , ThermoTime (1) , ... ThermoTime (50) ,
CoolThermoTime (1) , ... CoolThermoTime (50) ,
HeatThermoTime (1) , ... HeatThermoTime (50) ,
SaveValue (1) , ... SaveValue (50) , CoolSaveValue (1) , ... CoolSaveValue (50) ,
HeatSaveValue (1) , ... HeatSaveValue (50) ,
ApporionedElectricEnergy (1) , ... ApporionedElectricEnergy (50) ,
TargetElectricEnergy (1) , ... TargetElectricEnergy (50) ,
MCP1 (1) , ... MCP1 (50) ,MCP2 (1) , ... MCP2 (50) , MCP3 (1) , ... MCP3 (50) ,
MCP4 (1) , ... MCP4 (50) ,MCT1 (1) , ... MCT1 (50) , MCT2 (1) , ... MCT2 (50)"
AHC1 (201) , ... AHC1 (250) , AHC2 (201) , ... AHC2 (250)”</td></tr>
<tr><td>4th line</td><td>Measurement units *2, *3, *4, *5</td><td>
<table>
<tr><th>Items</th><th>Unit</th></tr>
<tr><td>ApportionedElectricEnergy,
TargetElectricEnergy</td><td>kWh</td></tr>
<tr><td>Data1, Data3</td><td>-</td></tr>
<tr><td>OutdoorTemp, CoolSetTemp,
HeatSetTemp,RoomTemp</td><td>°C, °F</td></tr>
<tr><td>FanTime, CoolTime, HeatTime,
ThermoTime,CoolThermoTime,
HeatThermoTime, SaveValue,
CoolSaveValue, HeatSaveValue</td><td>minute</td></tr>
<tr><td>MCP (PI controller)</td><td>kWh, m3, MJ</td></tr>
<tr><td>MCT (AI controller)</td><td>°C, °F, %</td></tr>
<tr><td>AHC (Advanced HVAC CONTROLLER)</td><td>°C, °F</td></tr>
</table>
</td></tr>
<tr><td>5th to 779th lines</td><td>Data *5, *6, *7, *8, *9, *10</td><td>Date *1, data 1 (51) , … (100) , data 3 (51) , … (100) ,
outdoor temperature (51) , … (100) , cooling temperature setting (1) , … (50) ,
heating temperature setting (1) , … (50) , room temperature (1) , … (50)
FAN operation time (1) , … (50) , cooling operation time (1) , … (50) ,
heating operation time (1) , … (50) , thermo ON time (1) , … (50) ,
thermo ON time for cooling (1) , … (50) , thermo ON time for heating (1) , … (50) ,
capacity save amount (1) , … (50) , cooling capacity save amount (1) , … (50) ,
heating capacity save amount (1) , … (50) , apportioned electric energy (1) , … (50) ,
target electric energy (1) , … (50) , MCP 1 (1) , … (50) , MCP 2 (1) , … (50) , MCP 3 (1) , ...
(50) , MCP 4 (1) , ... (50) , MCT 1 (1) , ... (50) , MCT 2 (1) , ... (50)
AHC temperature 1 (201) , ... (250) ,
AHC temperature 2 (201) , ... (250)</td></tr>
</table>

*1 The dates will be displayed in the format specified on the basic system setting screen on the Web browser for initial setting.
*2 Each temperature will be displayed in the unit (°C or °F) selected on the basic system setting screen on the Web browser for initial setting.
*3 The measurements of the MCP (PI controller) will be displayed in the unit selected on the measurement setting screen on the Web browser for initial setting.
*4 The measurement item of MCT (AI controller) depends on the selection (temperature or humidity) on the measurement setting screen on the Web browser for initial setting.
*5 As the data delimiters and decimal point delimiters, the characters selected on the measurement setting screen on the Web browser for initial setting will be used.
*6 The Outdoor temperature, Cooling temperature setting, Heating temperature setting and Room temperature in the data are the daily average values of the temperatures measured at 00 minute of every hour.
*7 MCT 1 and MCT 2 in the data are the daily average values of the temperatures or humidity values measured at 00 minute of every hour.
*8 When the relevant data does not exist, the values will not be displayed.
*9 Up to 775 items (for 25 months) will be output in each file.
*10 The numbers in parentheses are the M-NET addresses.

Data type: Monthly data

<table>
<tr><th>Line</th><th>Item</th><th>Format</th></tr>
<tr><td>1st line</td><td>File classification</td><td>504</td></tr>
<tr><td>2nd line</td><td>Data range *1</td><td>Start date + “-” + end date</td></tr>
<tr><td>3rd line</td><td>Items *5, *10</td><td>"Month,Data1 (51) , ... Data1 (100) , Data3 (51) , ... Data3 (100) ,
OutdoorTemp (51) , ... OutdoorTemp (100) ,CoolSetTemp (1) , ... CoolSetTemp (50) ,
HeatSetTemp (1) , ... HeatSetTemp (50) , RoomTemp (1) , ... RoomTemp (50) ,
FanTime (1) , ... FanTime (50) ,CoolTime (1) , ... CoolTime (50) ,
HeatTime (1) , ... HeatTime (50) ,ThermoTime (1) , ... ThermoTime (50) ,
CoolThermoTime (1) , ... CoolThermoTime (50) ,
HeatThermoTime (1) , ... HeatThermoTime (50) ,
SaveValue (1) , ... SaveValue (50) , CoolSaveValue (1) , ... CoolSaveValue (50) ,
HeatSaveValue (1) , ... HeatSaveValue (50) ,
ApporionedElectricEnergy (1) , ... ApporionedElectricEnergy (50) ,
TargetElectricEnergy (1) , ... TargetElectricEnergy (50) ,
MCP1 (1) , ... MCP1 (50) , MCP2 (1) , ... MCP2 (50) , MCP3 (1) , ... MCP3 (50) ,
MCP4 (1) , ... MCP4 (50) , MCT1 (1) , ... MCT1 (50) , MCT2 (1) , ... MCT2 (50)"
AHC1 (201) , ... AHC1 (250) , AHC2 (201) , ... AHC2 (250)”</td></tr>
<tr><td>4th line</td><td>Measurement units
*2, *3, *4, *5</td><td>
<table>
<tr><th>Items</th><th>Unit</th></tr>
<tr><td>ApportionedElectricEnergy,
TargetElectricEnergy</td><td>kWh</td></tr>
<tr><td>Data1, Data3</td><td>-</td></tr>
<tr><td>OutdoorTemp, CoolSetTemp,
HeatSetTemp, RoomTemp</td><td>°C, °F</td></tr>
<tr><td>FanTime, CoolTime, HeatTime,
ThermoTime, CoolThermoTime,
HeatThermoTime, SaveValue,
CoolSaveValue, HeatSaveValue</td><td>minute</td></tr>
<tr><td>MCP (PI controller)</td><td>kWh, m3, MJ</td></tr>
<tr><td>MCT (AI controller)</td><td>°C, °F, %</td></tr>
<tr><td>AHC (Advanced HVAC CONTROLLER)</td><td>°C, °F</td></tr>
</table>
</td></tr>
<tr><td>5th to 29th lines</td><td>Data *5, *6, *7, *8, *9, *10</td><td>yyyy/mm: *1, data 1 (51) , … (100) , data 3 (51) , … (100) ,
outdoor temperature (51) , … (100) , cooling temperature setting (1) , … (50) ,
heating temperature setting (1) , … (50) , room temperature (1) , … (50)
FAN operation time (1) , … (50) , cooling operation time (1) , … (50) ,
heating operation time (1) , … (50) , thermo ON time (1) , … (50) ,
thermo ON time for cooling (1) , … (50) , thermo ON time for heating (1) , … (50) ,
capacity save amount (1) , … (50) , cooling capacity save amount (1) , … (50) ,
heating capacity save amount (1) , … (50) , apportioned electric energy (1) , … (50) ,
target electric energy (1) , … (50) , MCP 1 (1) , … (50) , MCP 2 (1) , … (50) ,
MCP 3 (1) , … (50) , MCP 4 (1) , … (50) , MCT 1 (1) , … (50) , MCT 2 (1) , … (50)
AHC temperature 1 (201) , ... (250) ,
AHC temperature 2 (201) , ... (250)</td></tr>
</table>

*1 The dates will be displayed in the format specified on the basic system setting screen on the Web browser for initial setting.
*2 Each temperature will be displayed in the unit (°C or °F) selected on the basic system setting screen on the Web browser for initial setting.
*3 The measurements of the MCP (PI controller) will be displayed in the unit selected on the measurement setting screen on the Web browser for initial setting.
*4 The measurement item of MCT (AI controller) depends on the selection (temperature or humidity) on the measurement setting screen on the Web browser for initial setting.
*5 As the data delimiters and decimal point delimiters, the characters selected on the measurement setting screen on the Web browser for initial setting will be used.
*6 The Outdoor temperature, Cooling temperature setting, Heating temperature setting and Room temperature in the data are the monthly average values of the temperatures measured every day.
*7 MCT 1 and MCT 2 in the data are the monthly average values of the temperatures or humidity values measured every day.
*8 When the relevant data does not exist, the values will not be displayed.
*9 Up to 25 items (for 25 months) will be output in each file.
*10 The numbers in parentheses are the M-NET addresses.

Data type: Annual data

<table>
<tr><th>Line</th><th>Item</th><th>Format</th></tr>
<tr><td>1st line</td><td>File classification</td><td>505</td></tr>
<tr><td>2nd line</td><td>Data range *1</td><td>Start year + “-” + end year</td></tr>
<tr><td>3rd line</td><td>Items *2, *5</td><td>"Year, Data1 (51) , ... Data1 (100) , Data3 (51) , ... Data3 (100) ,
FanTime (1) , ... FanTime (50) ,CoolTime (1) , ... CoolTime (50) ,
HeatTime (1) , ... HeatTime (50) ,ThermoTime (1) , ... ThermoTime (50) ,
CoolThermoTime (1) , ... CoolThermoTime (50) ,
HeatThermoTime (1) , ... HeatThermoTime (50) , SaveValue (1) , ... SaveValue (50) ,
CoolSaveValue (1) , ... CoolSaveValue (50) ,
HeatSaveValue (1) , ... HeatSaveValue (50) ,
ApporionedElectricEnergy (1) , ... ApporionedElectricEnergy (50) ,
TargetElectricEnergy (1) , ... TargetElectricEnergy (50) ,
MCP1 (1) , ... MCP1 (50) ,MCP2 (1) , ... MCP2 (50) , MCP3 (1) , ... MCP3 (50) ,
MCP4 (1) , ... MCP4 (50) "</td></tr>
<tr><td>4th line</td><td>Measurement units *1, *2</td><td>
<table>
<tr><th>Items</th><th>Unit</th></tr>
<tr><td>ApportionedElectricEnergy,
TargetElectricEnergy</td><td>kWh</td></tr>
<tr><td>Data1, Data3</td><td>-</td></tr>
<tr><td>FanTime, CoolTime, HeatTime,
ThermoTime,CoolThermoTime,
HeatThermoTime, SaveValue,
CoolSaveValue, HeatSaveValue</td><td>minute</td></tr>
<tr><td>MCP (PI controller)</td><td>kWh, m3, MJ</td></tr>
</table>
</td></tr>
<tr><td>5th to 9th lines</td><td>Data *2, *3, *4, *5</td><td>yyyy, data 1 (51) , … (100) , data 3 (51) , … (100) ,
FAN operation time (1) , … (50) , cooling operation time (1) , … (50) ,
heating operation time (1) , … (50) , thermo ON time (1) , … (50) ,
thermo ON time for cooling (1) , … (50) , thermo ON time for heating (1) , … (50) ,
capacity save amount (1) , … (50) , cooling capacity save amount (1) , … (50) ,
heating capacity save amount (1) , … (50) , apportioned electric energy (1) , … (50) ,
target electric energy (1) , … (50) , MCP 1 (1) , … (50) , MCP 2 (1) , … (50) ,
MCP 3 (1) , ... (50) , MCP 4 (1) , ... (50)</td></tr>
</table>

*1 The measurements of the MCP (PI controller) will be displayed in the unit selected on the measurement setting screen on the Web browser for initial setting.

*2 As the data delimiters and decimal point delimiters, the characters selected on the measurement setting screen on the Web browser for initial setting will be used.

*3 When the relevant data does not exist, the values will not be displayed.

*4 Up to 5 items (for 5 years) will be output to each file.

*5 The numbers in parentheses are the M-NET addresses.

<5> Energy management data list

The following table “Data items” shows the energy management items which can be output in CSV format, measurement units and data ranges for the data types.
The following table “Data periods” shows the amount of data (number of months or years) which can be contained in each CSV file.

Table 4.33 Data items

Unit type	Item	Data type (interval)					Measurement unit	Data range *11
		5-minute	30-minute	Daily *6	Monthly *7	Annual *8		
Outdoor unit	Data 1 *1	○	○	○	○	○	–	0 to 999999.99
	Data 2 *1	○	○				–	0 to 9999.99
	Data 3 *1	○	○	○	○	○	–	0 to 99.99
	Outdoor temperature	○	○ *2	○ *3	○ *4		°C, °F	-100.0 to 1000.0
Indoor unit	Cooling temperature setting	○	○ *2	○ *3	○ *4		°C, °F	-100.0 to 1000.0
	Heating temperature setting	○	○*2	○ *3	○ *4		°C, °F	-100.0 to 1000.0
	Room temperature	○	○ *2	○ *3	○ *4		°C, °F	-100.0 to 1000.0
	FAN operation time		○ *9	○ *10	○ *10	○ *10	minute	0 to 2147483647
	Cooling operation time		○ *9	○ *10	○ *10	○ *10	minute	0 to 2147483647
	Heating operation time		○ *9	○ *10	○ *10	○ *10	minute	0 to 2147483647
	Thermo On time		○ *9	○ *10	○ *10	○ *10	minute	0 to 2147483647
	Thermo ON time for cooling		○ *9	○ *10	○ *10	○ *10	minute	0 to 2147483647
	Thermo ON time for heating		○ *9	○ *10	○ *10	○ *10	minute	0 to 2147483647
	Thermo ON/OFF count *5		○ *9				–	0 to 2147483647
	Capacity save amount		○ *9	○ *10	○ *10	○ *10	minute	0 to 21474836.47
	Cooling capacity save amount		○ *9	○ *10	○ *10	○ *10	minute	0 to 21474836.47
	Heating capacity save amount		○ *9	○ *10	○ *10	○ *10	minute	0 to 21474836.47
	Apportioned electric energy		○ *9	○ *10	○ *10	○ *10	kWh	0 to 999999.9999
	Target electric energy			○ *10	○ *10	○ *10	kWh	0 to 4294967
MCP (PI controller)	MCP1	○ *9	○ *9	○ *10	○ *10	○ *10	kWh, m3, MJ	0 to 999999.99
	MCP2	○ *9	○ *9	○ *10	○ *10	○ *10	kWh, m3, MJ	0 to 999999.99
	MCP3	○ *9	○ *9	○ *10	○ *10	○ *10	kWh, m3, MJ	0 to 999999.99
	MCP4	○ *9	○ *9	○ *10	○ *10	○ *10	kWh, m3, MJ	0 to 999999.99
MCT (AI controller)	MCT1	○	○ *2	○ *3	○ *4		°C, °F, %	-1000.0 to 1000.0
	MCT2	○	○ *2	○ *3	○ *4		°C, °F, %	-1000.0 to 1000.0
AHC	AHC temperature 1	○	○ *2	○ *3	○ *4		°C, °F	-1000.0 to 1000.0
	AHC temperature 2	○	○ *2	○ *3	○ *4		°C, °F	-1000.0 to 1000.0

*1 These values are for factory use only. Do not use them for any other purposes.
*2 These values are temperature or humidity values measured at 00 minute and 30 minutes of every hour.
*3 These values are the daily average values of the temperatures or humidity values measured at 00 minute of every hour.
*4 These values are the monthly average values of the temperatures or humidity values measured every day.
*5 The Thermo ON/OFF count indicates the number of times the unit was switched from the thermo OFF mode to the thermo ON mode.
*6 When the data to be output includes the data on the current day, the data up to the point of output of the CSV file will be output.
*7 The data in the current month includes the data up to the point of output of the CSV file.
*8 The data in the current year includes the data up to the point of output of the CSV file.
*9 These are the values accumulated since the start of operation. When any value exceeds the maximum value, it will return to 0.
*10 These values are the sum totals in the measurement period (1 day, 1 month or 1 year).
*11 The number of displayed decimal places varies depending on the data item. For example, when the data range is 0 to 99.99, the values will be displayed to two decimal places.

Table 4.34 Data period

Data type (interval)	Data retention period
Every 5 minutes	Last 2 months
Every 30 minutes	Last 25 months
Every day	Last 25 months
Every month	Last 25 months
Every year	Last 5 years

V Connection of AHC

[1] Outline

The operation condition, error status, temperature and humidity of the devices connected to the AHC can be monitored on the screen of AE-200/AE-50 or the Web browser.
Note: The devices connected to the AHC cannot be started or stopped from AE-200/AE-50.

The AHC (Advanced HVAC CONTROLLER) is a generic name for combinations of SIMPLE APPLICATION CONTROLLER α2 (hereinafter, referred to as α2) and AHC Adapter made by Mitsubishi Electric Corporation.
One AHC requires one α2 and one AHC Adapter. More than one α2 cannot be connected to one AHC Adapter.

On a PC on which the α2 programming tool has been installed, the interlock control can be set (programmed) for α2.
This enables the interlock control between M-NET devices and other manufacturers' devices or between other manufacturers' devices.
Note: The interlock control for devices connected to the AHC cannot be set (programmed) from AE-200/AE-50.

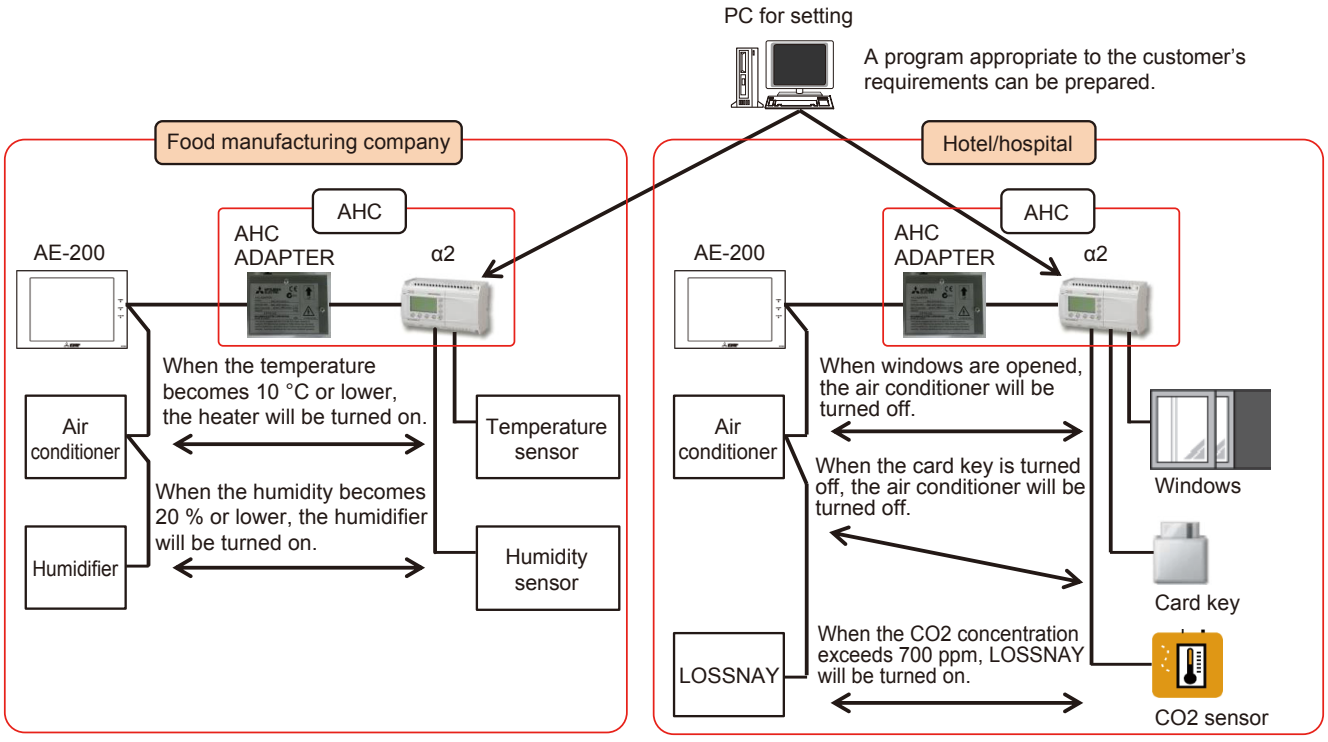
The following α2 controllers are applicable to the AHC.
- AL2-14MR-A
- AL2-14MR-D
- AL2-24MR-A
- AL2-24MR-D

Note: AL2-10MR-A and AL2-10MR-D cannot be connected with α2.

Up to 50 AHCs can be connected to each set of AE-200/AE-50. However, when air conditioners are connected, the following restrictions are imposed.
When the maintenance monitors are connected: The maximum number of indoor units and AHCs is 60.
When maintenance monitors are not connected: The maximum number of indoor units and AHCs is 70.

When using the AHC, connect at least one remote controller or centralized controller that is compatible with the AHC. As the AHC status cannot be displayed if no controller is connected, it may not be possible to observe the error status. The AHC must be set to a group containing at least one indoor unit. A maximum of one AHC can be connected to a group.

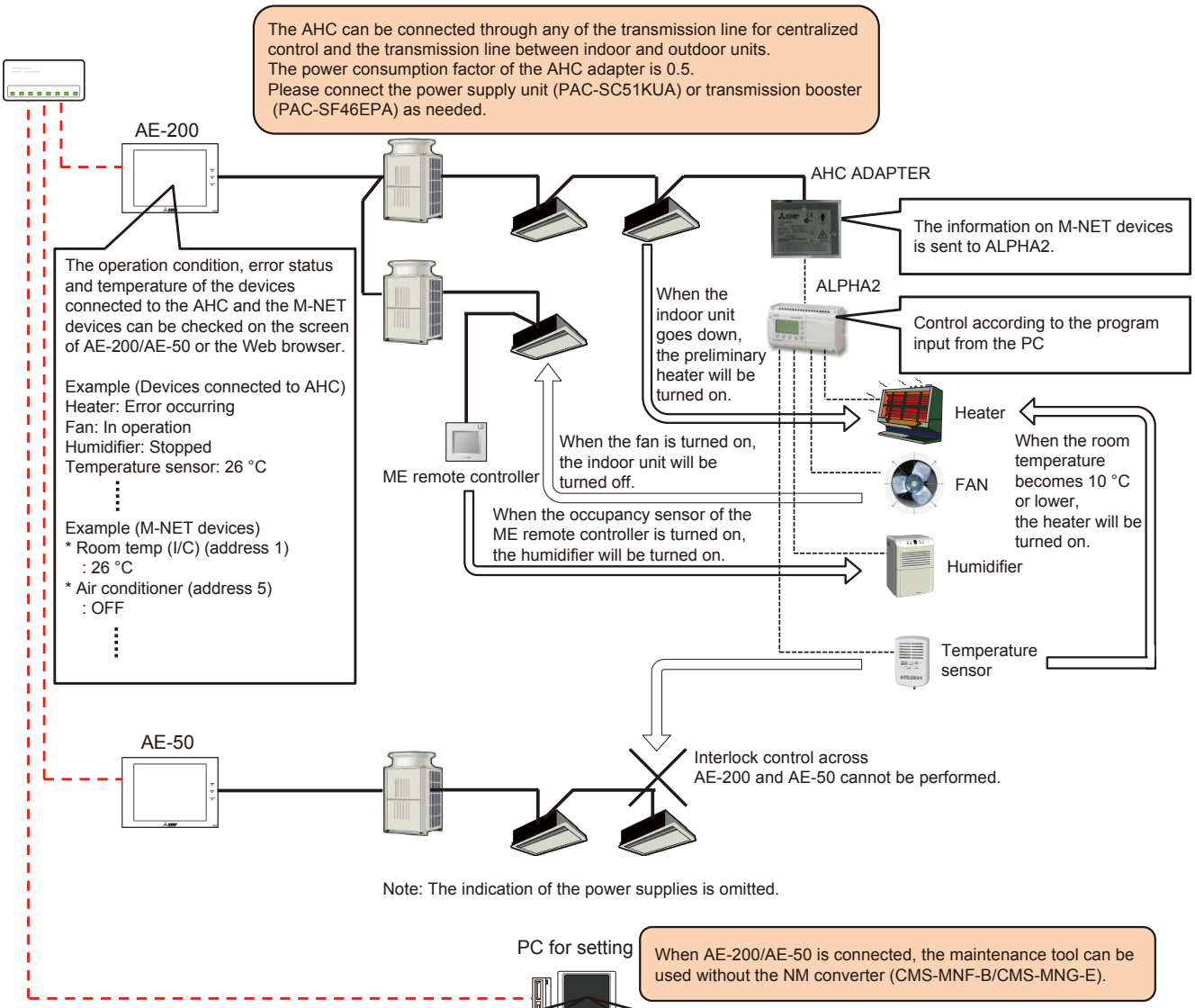
For the AHC, a program appropriate to the customer's requirements can be prepared on a PC.



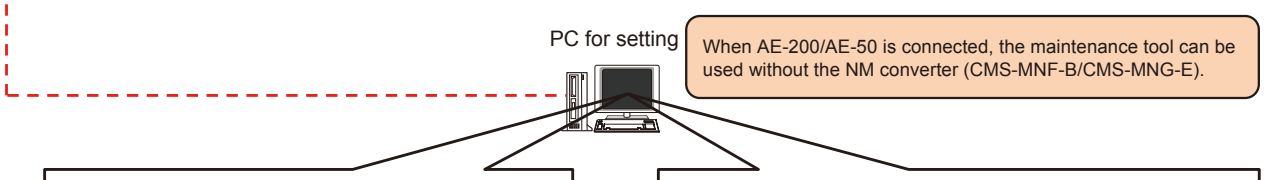
Note: The indication of the power supplies is omitted.

[2] System configuration

<1> Connected devices



Note: The indication of the power supplies is omitted.



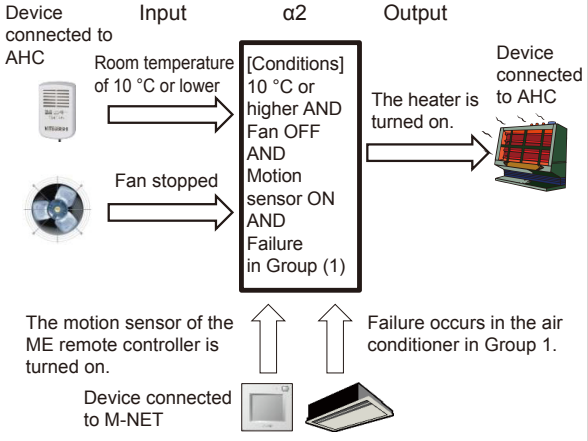
Register the devices connected to ALPHA2 and the information on M-NET to be displayed on the main unit of AE-200/AE-50 or the Web browser using the maintenance tool.

Example (Registration of AHC connection information)
DI1: Heater error
DI2: Start/stop of humidifier
AI1: Temperature sensor
DO1: Fan

Example (Information on M-NET devices)
* Room temp (I/C) (address 1)
* Outdoor temp (address 51)
* Air conditioner ON/OFF (address 5)

For the details of setting procedure, see Chapter 3.18 “Initial Settings and Monitoring AHC ADAPTER” of the manual for Maintenance Tool for MN Converter & Centralized Controller.
Note: After the completion of setting of the AHC, the PC for setting will not be required.

Register the program in α2 from the PC on which the programming tool has been installed.
AND or OR condition programming for devices connected to the AHC and M-NET are available.



For the details of setting procedure, see “AHC Technical Manual.”

<2> Required devices

Table 5.1 Required devices

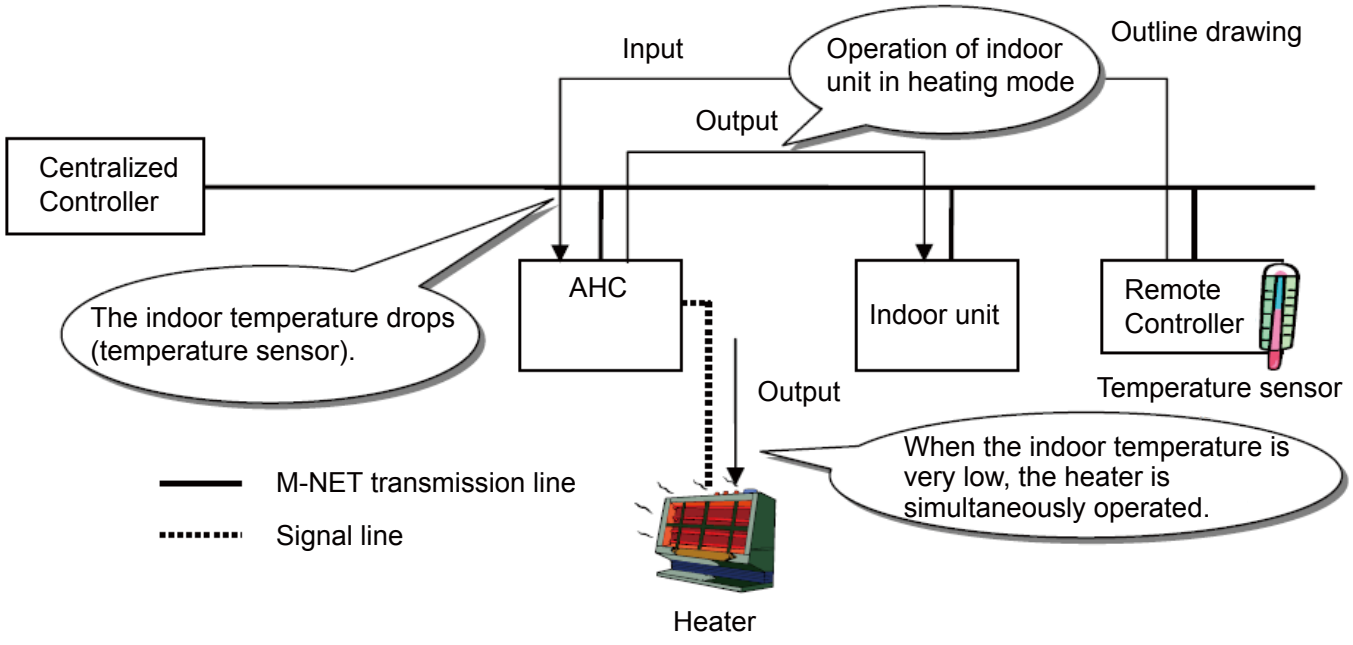
Device name	Manufacturer	Remarks
SIMPLE APPLICATION CONTROLLER α2	Mitsubishi Electric Corporation	The DC type and AC type are available. For the DC type, a 24 V DC power supply is required. To use analog input and output (temperature/humidity sensor and CO2 sensor), the DC type α2 is required.
AHC Adapter	Mitsubishi Electric Corporation	The power consumption factor is 0.5. Connect the power supply unit or transmission booster unit as needed.
Maintenance tool	Mitsubishi Electric Corporation	It is necessary to install the maintenance tool on the PC for setting. The maintenance tool must be installed without fail for the input of the devices connected to the AHC. It can be installed also on the PC for Web browser.
Maintenance tool license	Mitsubishi Electric Corporation	The license must be registered for each set of AE-200/AE-50. When connecting using the MN converter (CMS-MNF-B/CMS-MNG-E), the license is unnecessary.
α2 programming tool	Mitsubishi Electric Corporation	For programming, it is necessary to install this tool on the PC for setting. It can be installed also on the PC for Web browser.
Connection cable (AL-232CAB) between α2 and PC	Mitsubishi Electric Corporation	It is necessary to download the program prepared on the PC to α2. The connection cable is required only when the program is downloaded to α2.

<3> Examples of control

Table 5.2 Examples of control

AHC function	Example of control	Supplementary note
(1) Control of another manufacturer's device using suction sensor of indoor unit or remote controller sensor	● Another manufacturer's heater can be interlocked by using the temperature sensor of the indoor unit or remote controller.	Since the sensor of the indoor unit or remote controller can be used, it is unnecessary to install a new sensor.
(2) Control of another manufacturer's device interlocked with unit connected to M-NET	● Interlock control can be performed to run another manufacturer's heater when an indoor unit is running or in the heating mode. ● Interlock control can be performed to run another manufacturer's humidifier when even one of indoor units is running.	
(3) Control of unit connected to M-NET	● On/off control of indoor unit interlocked with connection and disconnection of card reader can be performed.	
(4) Control in combination of above (1) to (3)	● The drying operation of indoor unit can be controlled by using the humidity sensor on the remote controller.	
(5) Monitoring of input/output status of α2 on AE-200/AE-50		

[In the case of interlock control with another manufacturer's heater]



<4> List of functions which can be displayed on AE-200/AE-50

The data displayed on AE-200/AE-50 are shown below.
However, the names can be changed on the Web browser.
For details, see Ⅴ [3]<6> “Setting of AHC port names.”

Table 5.4 Function list

Digital Input (On/off display)	Analog Input	Digital Output (On/off display)	Analog Output (% display)
● Heater Error	● Room Temp (°C/°F)	● Heater	● Heater (Linear)
● Heater 1 Error	● Outdoor Temp (°C/°F)	● Heater 1	● Humidifier (Linear)
● Heater 2 Error	● SA Temp (°C/°F)	● Heater 2	● Damper (Linear)
● Humidifier Error	● Water Temp (°C/°F)	● Humidifier	● Fan (Linear)
● Dehumidifier Error	● Other Temp (°C/°F)	● Dehumidifier	● Valve (Linear)
● Fan Error	● Room Humidity (%)	● Fan	● Pump (Linear)
● Fan Error (Heater)	● Outdoor Humidity (%)	● Fan for Heater	● External Unit (Linear)
● Fan Error (Humidifier)	● CO2 Sensor (ppm)	● Fan for Humidifier	
● External Unit Error	● Static Pressure Sensor (%)	● Damper	
● Brightness Sensor	● Brightness Sensor (%)	● Valve	
● Occupancy Sensor	● Water Level (%)	● Pump	
● Pomp Interlock	● Other Sensor (%)	● Error Output	
● Key Input		● Light	
● Other Input		● Ventilation	
		● Key Output	
		● External Unit	

<5> List of connected models

The input/output data held by our air conditioners include information input from the units connected to M-NET and data output to operate the units connected to M-NET. Table 6 shows a list of the units holding input data and the units which can be operated.

Table 5.5 Possibility of interlock control

Unit name	Input (capture of information)	Output (unit operation)
Indoor Unit (I/U)	Possible	Possible
Outdoor Unit (O/U)	Possible	Possible
Remote Controller (R/C)	Possible	Impossible
LOSSNAY	Possible	Possible
Air to Water (PWFY)	Possible	Possible
Hot Water Heat Pump (CAHV) *	Possible	Possible
AHC	Impossible	Possible

* Hot Water Heat Pump (CAHV) is not available in North America.

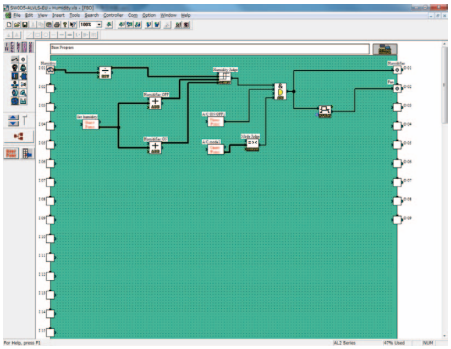
[3] Initial setting of AHC

<1> Transition of initial setting

To control the system with the AHC, it is necessary to perform programming with “ALVLS Programming Software”, initial setting for AHC ADAPTER and registration of the AHC group.

(1) Programming

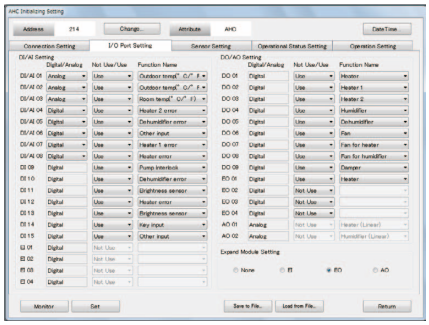
Program the interlock control between the devices connected to the AHC and the devices on M-NET using “ALVLS Programming Software”.



(2) Initial setting for AHC ADAPTER

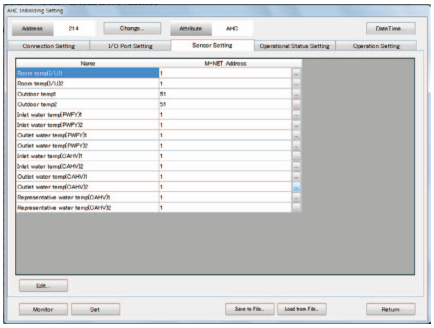
<I/O port setting>

Register other manufacturers’ devices connected to the AHC.



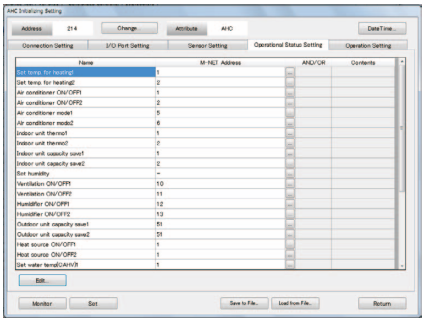
<Sensor information setting>

Register the information on the sensors to be controlled by the AHC among the M-NET devices.



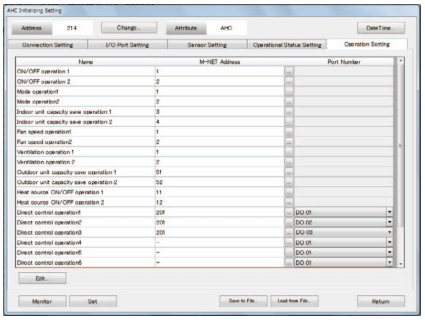
<Operation information setting>

Register the settings of operation information on the units to be controlled by the AHC among the M-NET devices.



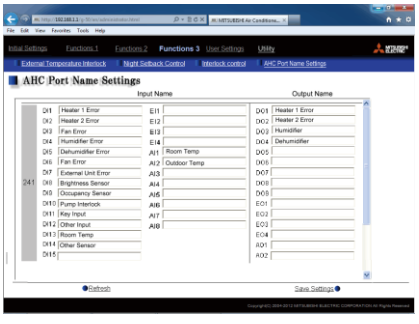
<Operation device setting>

Register the settings for operation of the M-NET devices from the AHC.



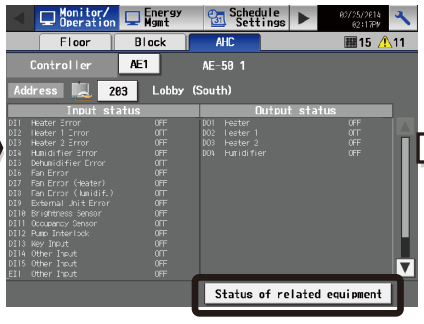
(3) Setting of individual names of devices connected to AHC

The data set by the maintenance tool will be displayed in “AHC port names” on the administrator Web browser. Change the names as needed.



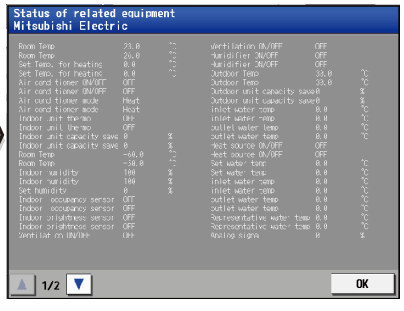
[LCD]

The operation condition of the devices connected to the AHC can be checked on the LCD or the administrator Web browser.



[LCD]

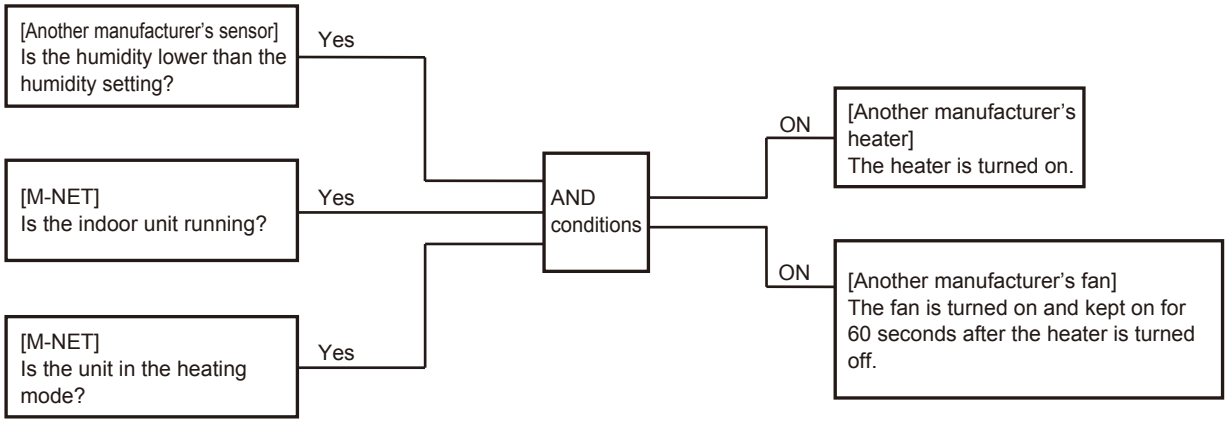
Touch Status of related equipment, and the operation condition, temperature, humidity and error status of the M-NET devices set by the maintenance tool can be checked.

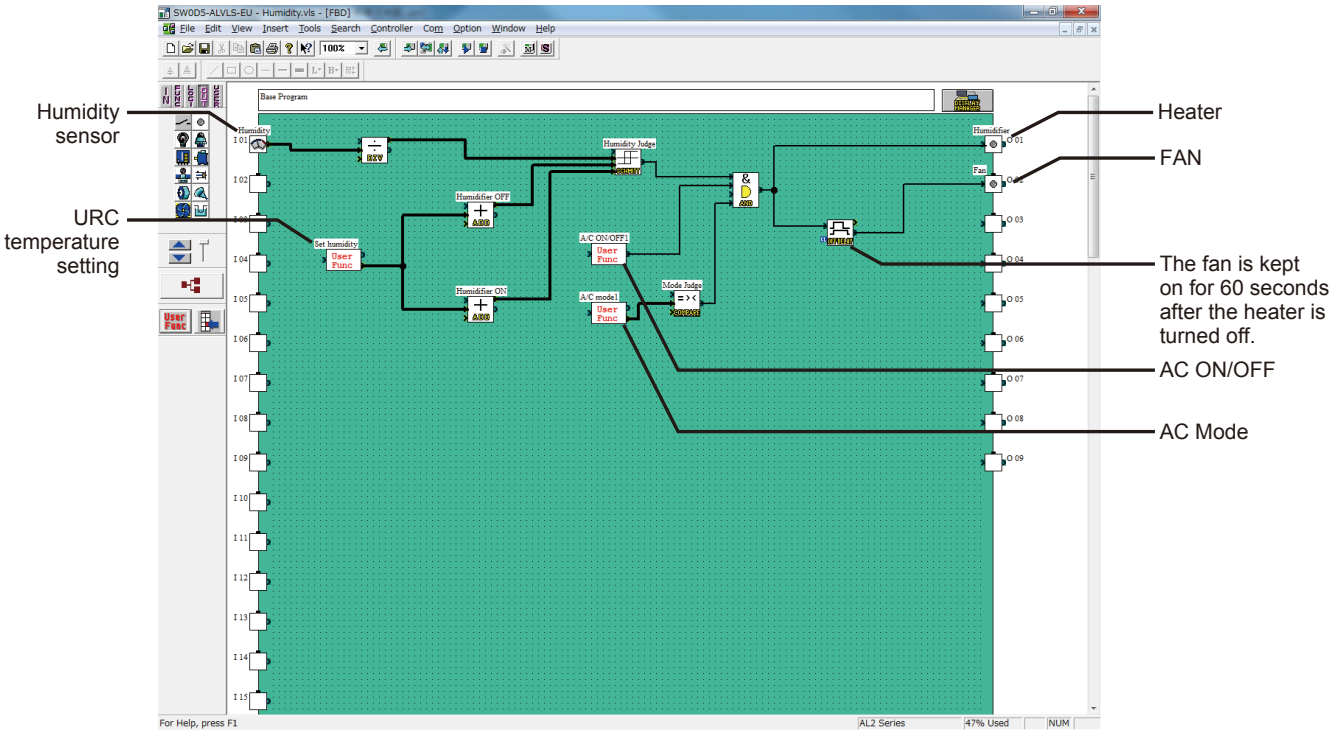


<2> Programming

To control the air conditioners connected to M-NET and other manufacturers' air conditioners by using the AHC, program the control on a PC on which "ALVLS Programming Software" has been installed.
For the details of programming, see the technical manual for AHC.

[Example]





<3> Registration of AHC in group

Register the M-NET address of the AHC in AE-200/AE-50.

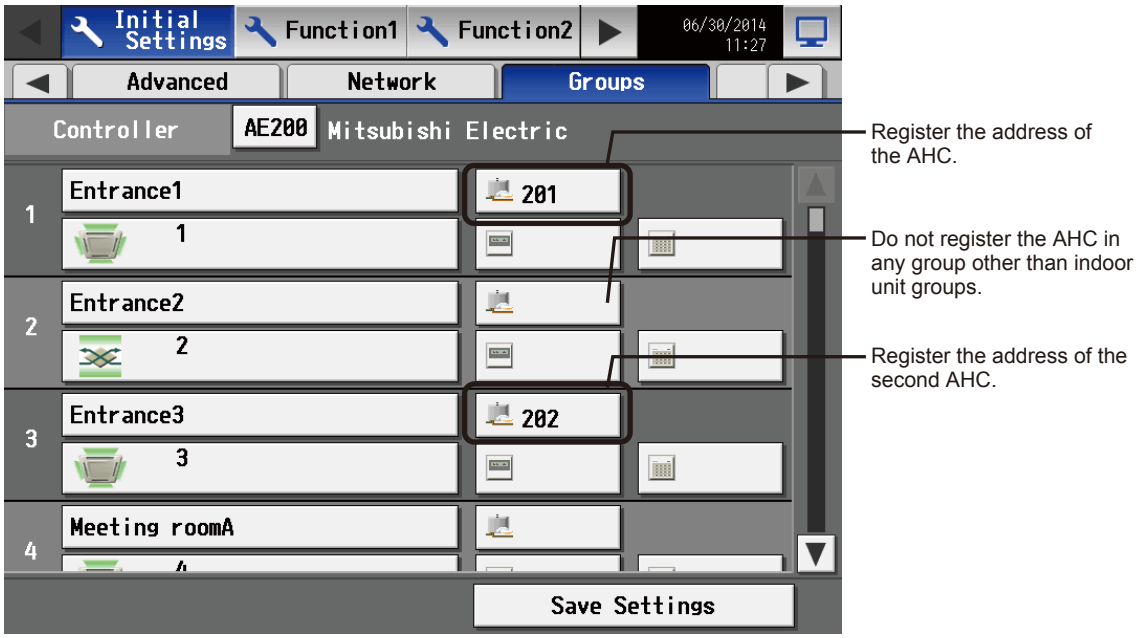
Note: Only one AHC can be registered in one group.

Note: Register the AHC in a group in which indoor units have been registered.
(The AHC can be registered in any group of indoor units.)

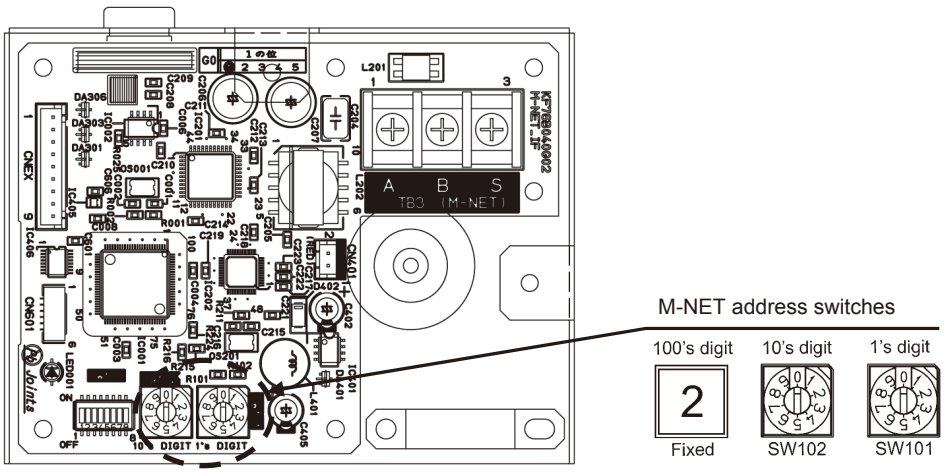
Note: Do not register the AHC in any group in which water heaters, LOSSNAY, HWHP (CAHV) or DIDO controller have been registered.

Note: When connecting more than one AHC, register each AHC in another group of indoor units.

Note: If the indoor units in a group in which the AHC has been registered are deleted, the registered AHC will be also deleted.



The M-NET address of AHC can be seen by removing the cover of α2.



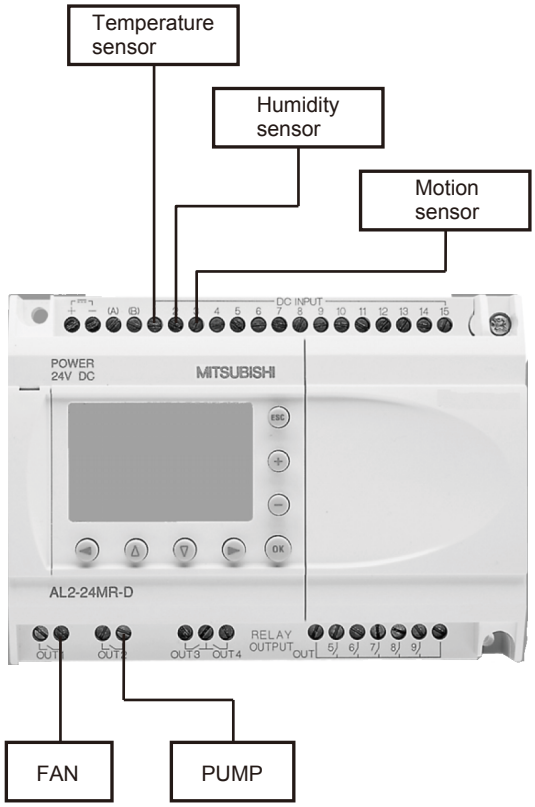
<4> Initial setting for AHC ADAPTER (devices connected to AHC)

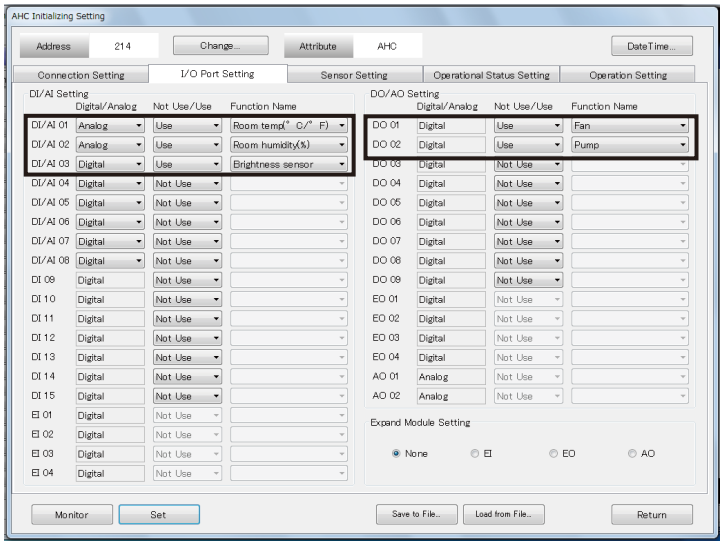
(1) I/O port setting

Associate the information on the devices connected to the ports of α2 on a PC on which the maintenance tool has been installed.

For the details of setting procedure, see Chapter 3.18 “Initial Settings and Monitoring AHC ADAPTER” of the manual for Maintenance Tool for MN converter & Centralized Controller.

The following example shows the registration in the case where a temperature sensor, a humidity sensor, a motion sensor, a fan and a pump are connected.





	Connected device	Digital/Analog	Not Use/Use	Function Name
DI/AI 01	Temperature sensor	Analog	Use	Room Temp (°C/°F)
DI/AI 02	Humidity sensor	Analog	Use	Room humidity (%)
DI/AI 03	Motion sensor	Digital	Use	Brightness sensor
DO 01	FAN	Digital	Use	FAN
DO 02	Pump	Digital	Use	Pump

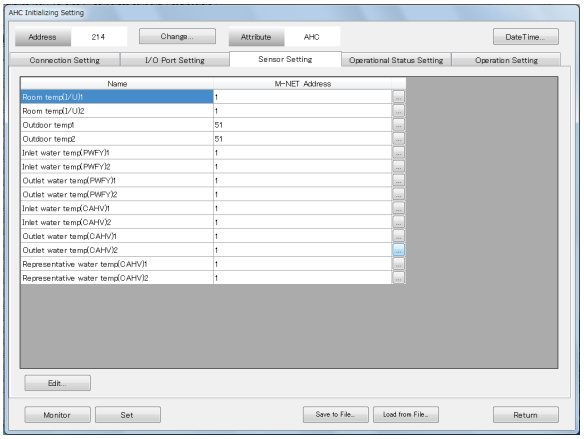
Remarks

- ○ To display the outdoor temperature by the energy management function, connect the temperature sensor to DI/AI 01 or DI/AI 02. If it is connected to another port, the outdoor temperature will not be displayed on the energy management screen.
- ○ The Function names to be displayed on the LCD screen or Web browser can be changed. For details, see Ⅴ[3]<6> “Setting of AHC port names.”

<5> Initial setting for AHC ADAPTER (devices connected to M-NET)

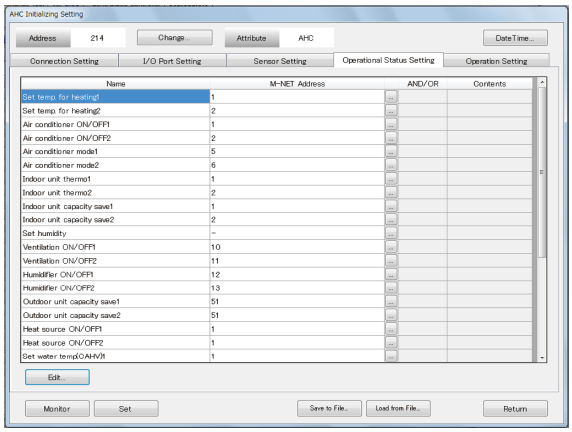
Set the operation information and contents of operations of the sensors and units to be controlled by the AHC among the M-NET devices.
For the details of setting procedure, see Chapter 3.18 “Initial Settings and Monitoring AHC ADAPTER” of the manual for Maintenance Tool for MN converter & Centralized Controller.

(1) Setting of sensor information
Click the Sensor Setting tag, and register the sensors and M-NET addresses of the M-NET devices to be controlled by the AHC.



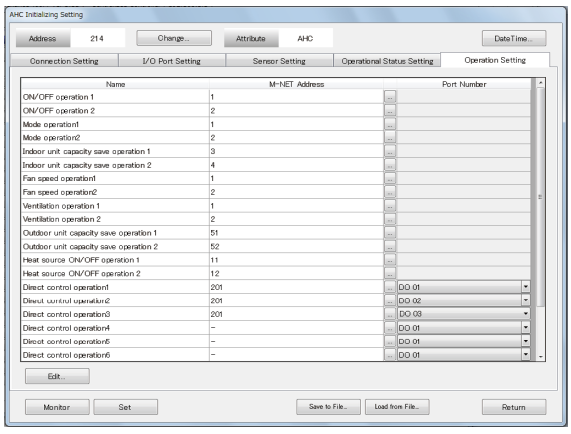
Name	M-NET address range
Room temp (I/U) 1 , 2	1 to 50
Room temp (R/C) 1 , 2	151 to 200
Indoor humidity 1 , 2	151 to 200
Indoor occupancy sensor 1 , 2	151 to 200
Indoor brightness sensor 1 , 2	51 to 100
Outdoor temp 1 , 2	1 to 50
Inlet water temp (PWFY) 1 , 2	1 to 50
Outletwater temp (PWFY) 1 , 2	1 to 50
Inletwater temp (CAHV) 1 , 2	1 to 50
Outletwater temp (CAHV) 1 , 2	1 to 50
Representative water temp (CAHV) 1 , 2	1 to 50

(2) Setting of operation information
Click the Operational Status Setting tag, and register the operational status and M-NET addresses of the M-NET devices to be controlled by the AHC.



Name	M-NET address range
Set temp.for heating 1 , 2	1 to 50
Set temp.for cooling 1 , 2	1 to 50
Air conditioner ON/OFF 1 , 2	1 to 50
Air conditioner mode 1 , 2	1 to 50
Indoor unit thermo 1 , 2	1 to 50
Indoor unit capacity save 1 , 2	1 to 50
Set humidity	–
Ventilation ON/OFF 1 , 2	1 to 50
Humidifier ON/OFF 1 , 2	1 to 50
Outdoor unit capacity save 1 , 2	51 to 100
Heat sorce ON/OFF 1 , 2	1 to 50
Set water temp (CAHV) 1 , 2	1 to 50
Analog signal 1 , 2	–
unit error 1 , 2	1 to 50
M-NET communication error	–
M-NET popwer supply status inf?	–
defrost 1 , 2	1 to 50

(3) Setting of operation devices
Click the Operational Setting tag, and register the contents of operations and M-NET addresses of the M-NET devices to be operated by the AHC.

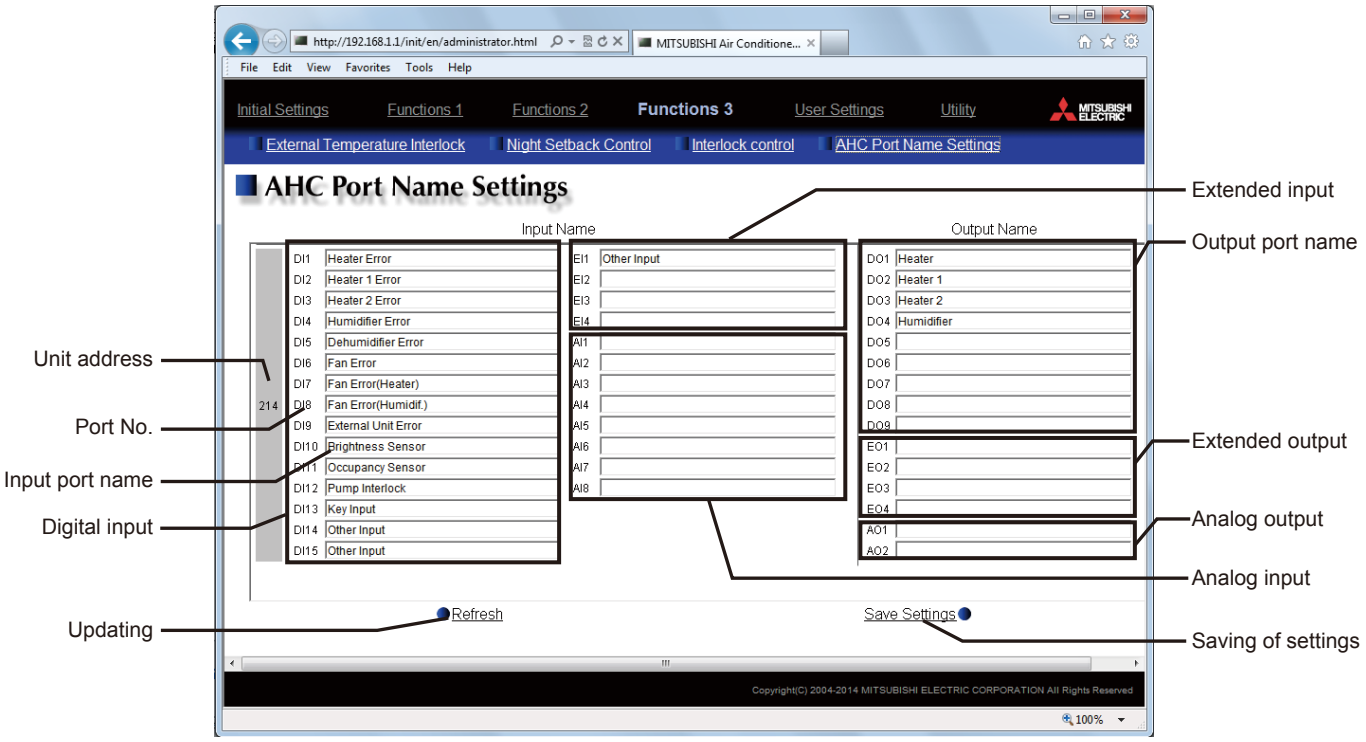


Name	M-NET address range
ON/OFF operation 1 , 2	1 to 50
Mode operation 1 , 2	1 to 50
Indoor unit capacity save operation 1 , 2	1 to 50
Fan speed operation 1 , 2	1 to 50
Ventilation operation 1 , 2	1 to 50
Outdoor unit capacity save operation 1 , 2	51 to 100
Heat source ON/OFF operation 1 , 2	1 to 50
Direct control operation 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , 10	201 to 250

<6> Setting of individual names of AHC ports

Set the names of the devices connected to the AHC and the error information names on the AHC port name setting screen.
The names set by the maintenance tool have been registered as the default names.

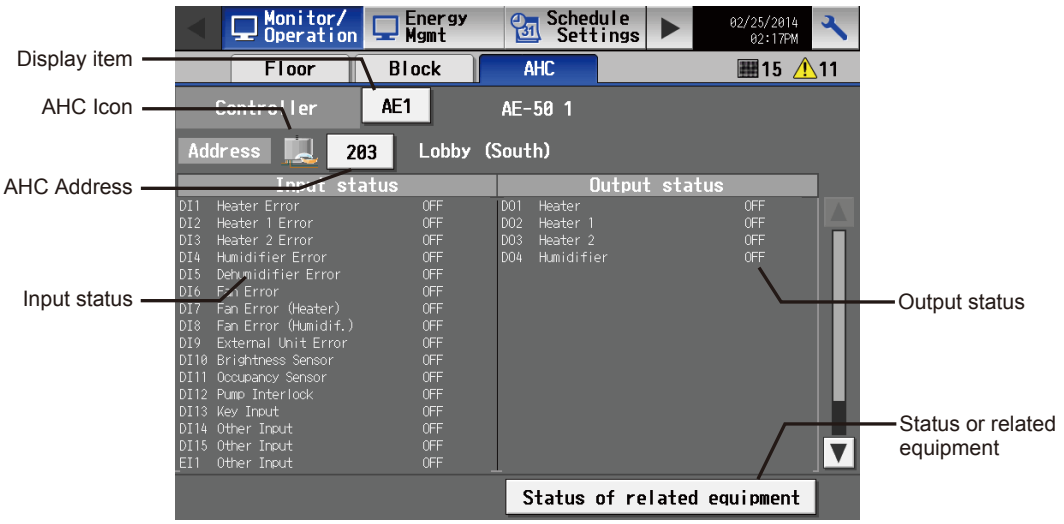
Note: If it is not required to change the default names, this setting is unnecessary.
Note: The names can be set only on the Web browser for initial setting.
Note: If an administrator who is not allowed to set the AHC conditions has logged in, the administrator cannot input the names.
Note: The set names will be displayed on the LCD screen, administrator Web browser and AHC monitor screen.
Note: On the AHC status monitors of the LCD screen and Web browser, the names of the port numbers not connected to the AHC will not be displayed.

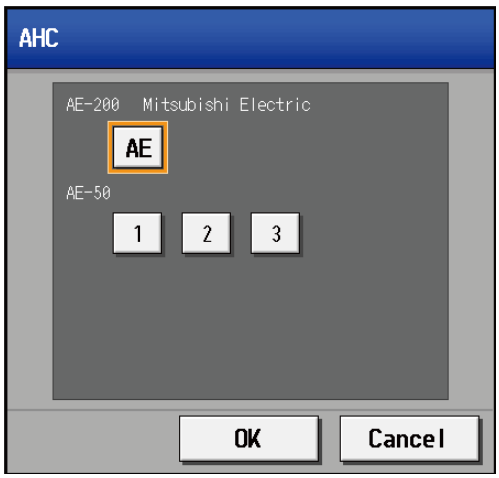


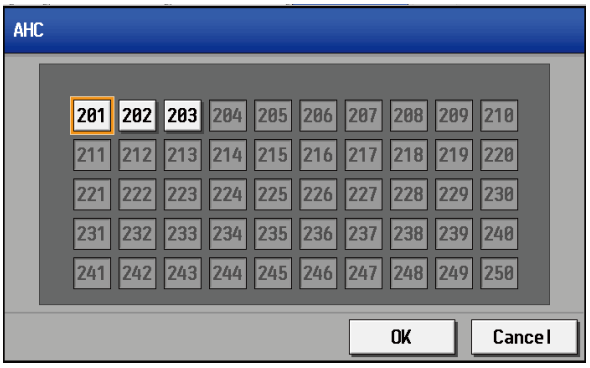
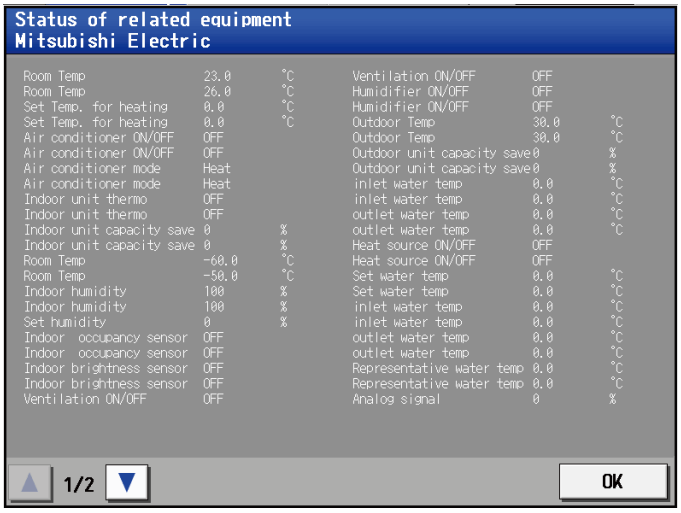
Item	Details	Remarks
Unit address	The M-NET address of the AHC is displayed.	
Port No.	The port number of the AHC is displayed.	The port number is displayed regardless of whether the AHC port is connected or not.
Input port name	Set the names to be displayed on the AHC monitor screen for the error status of the connected devices and input status of the illuminance sensors, etc.	Each name must be 20 characters or less long. In the Input port name column, the following characters cannot be used: < > + & ″ ’
Digital input	The data set in DI/AI01 to 08 and DI09 to 15 of the maintenance tool are displayed.	The digital input 1 to 8 or the analog output 1 to 8 can be used.
Extended input (1 to 4)	Up to four points of digital input can be added. The data set in EI01 to 04 of the maintenance tool are displayed.	The analog input cannot be extended. When the extended input is used, the extended output and analog output cannot be used.
Output port name	Set the names to be displayed on the AHC monitor screen for the error status and the operation condition output status of the connected devices.	Each name must be 20 characters or less long. In the Output port name column, the following characters cannot be used: < > + & ″ ’
Digital output	The data set in DO 01 to 09 of the maintenance tool are displayed.	
Extended output	Up to four points of digital output can be added. The data set in EO 01 to 04 of the maintenance tool are displayed.	When the extended output is used, the extended input and analog output cannot be used.
Analog input	The data set in AI01 to 08 of the maintenance tool are displayed.	To display the temperature and humidity, it is necessary to perform the setting with the α2 programming tool.
Analog output	Up to two points of analog output can be added. The data set in AO 01 and 02 of the maintenance tool are displayed.	When the analog output is used, the extended input and extended output cannot be used.

[4] AHC status monitor

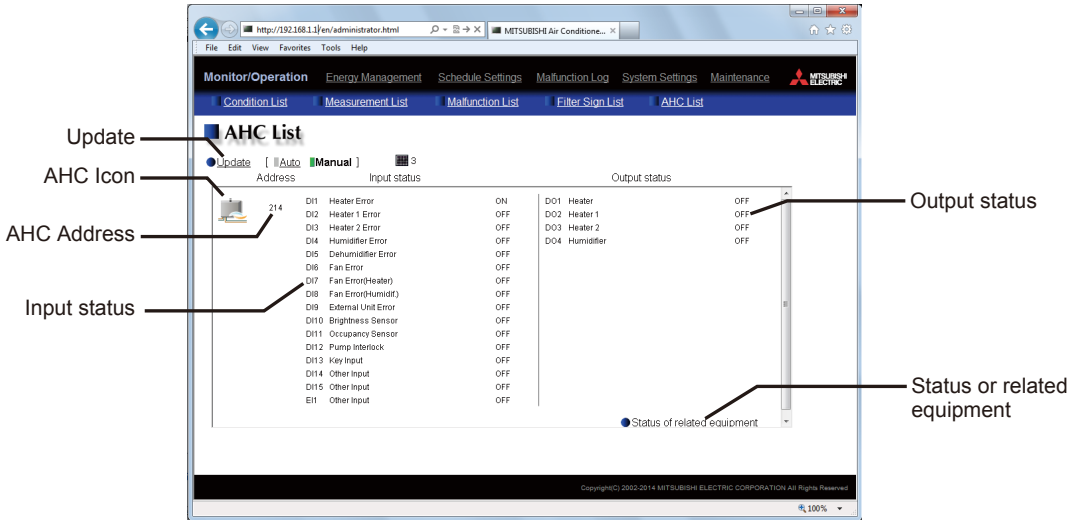
Main unit screen



Item	Details	Remarks
Display item	To display the data of AE-200, select AE. To display the data of AE-50, select 1, 2 or 3.	
		
AHC icon	The status of the AHC is displayed with one of the following icons.  :Normal  :When a communication error occurs or an error signal is input to the AHC	Even if an error occurs in any device connected to the AHC, the error icon will not be displayed. The display will be updated every minute.

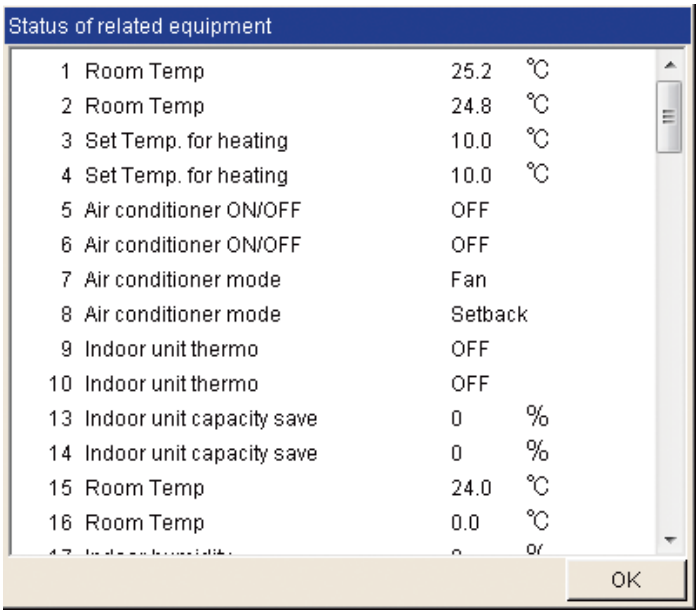
Item	Details	Remarks
AHC address	The M-NET address of the connected AHC is displayed. 	
Input status	Among the devices connected to the AHC, the items set in Ⅴ [3]<3> “Maintenance tool setting (devices connected to AHC)” are displayed in the format “input port No.* + input port name + input status.” * DI1 to DI15 are digital input ports, EI1 to EI4 are extended digital input ports, and AI1 to AI8 are analog input ports. When the names have been set in Ⅴ [3]<4> “Setting of AHC port names”, the names will be displayed.	● If the numbers of ports not connected to α2 have been set with the maintenance tool, the input status of the ports are displayed. However, the digital devices are kept OFF, and the analog devices are kept 0. ● For DI1 to DI15 and EI1 to EI4, the ON/OFF status is displayed. ● For AI1 to AI8, the values and units are displayed. ● When the AHC has been set to display the temperature, the values of AI1 to AI8 will be displayed in °C or °F. When it has been set to display the humidity, the values will be displayed in %. ● In the case of CO2, ppm will be displayed as the unit. In other cases, “-” (no unit) will be displayed. ● The display will be updated when the screen is switched.
Output status	Among the devices connected to the AHC, the items set in Ⅴ [3]<3> “Maintenance tool setting (devices connected to AHC)” are displayed in the format “output port No.* + output port name + output status.” * DO1 to DO9 are digital output ports, EO1 to EO4 are extended digital output ports, and AO1 to AO2 are analog output ports. When the names have been set in Ⅴ [3]<4> “Setting of AHC port names”, the names will be displayed.	● If the numbers of ports not connected to α2 have been set with the maintenance tool, the input status of the ports are displayed. However, the digital devices are kept OFF, and the analog devices are kept 0. ● DO1 to DO9 and EO1 to EO4: ON or OFF is displayed. ● AO1 to AO2: The values and units are displayed. (Unit: %, fixed) ● The display will be updated when the screen is switched.
Status of related devices	Click Status of related equipment, and the status of the related devices connected to the AHC will be displayed. The items set in Ⅴ [3]<3> “Setting of maintenance tool (devices connected to M-NET)” are displayed. For the displayed names and units, see the following page. Note: The display will be updated when Status of related equipment is touched. It cannot be updated by pressing the page changing button ▲ or ▼. 	

Web browser screen



Item	Details	Remarks
Update	Click to show the most recent conditions. When [Auto] is selected, the conditions are updated automatically every minute.	
AHC icon	The status of the AHC is displayed with one of the following icons.  :Normal  :When a communication error occurs or an error signal is input to the AHC	Even if an error occurs in any device connected to the AHC, the error icon will not be displayed.
AHC address	The M-NET address of the connected AHC is displayed. When some AHCs are connected, the next AHC addresses will be displayed by moving the scroll bar downward.	
Input status	Among the devices connected to the AHC, the items set in Ⅴ [3]<3> “Maintenance tool setting (devices connected to AHC)” are displayed in the format “input port No.* + input port name + input status.” * DI1 to DI15 are digital input ports, EI1 to EI4 are extended digital input ports, and AI1 to AI8 are analog input ports. When the names have been set in Ⅴ [3]<4> “Setting of AHC port names,” the names will be displayed.	● The status of the ports not in use is not displayed. ● When a communication error occurs in the AHC, the port information will not be displayed. ● For DI1 to DI15 and EI1 to EI4, the ON/OFF status is displayed. ● For AI1 to AI8, the values and units are displayed. ● When the AHC has been set to display the temperature, the values of AI1 to AI8 will be displayed in °C or °F. ● When the AHC has been set to display the humidity, the values will be displayed in %. ● In the case of CO2, ppm will be displayed as the unit. In other cases, “-” (no unit) will be displayed.
Output status	Among the devices connected to the AHC, the items set in Ⅴ [3]<3> “Maintenance tool setting (devices connected to AHC)” are displayed. The names set in Ⅴ [3]<4> “Setting of AHC port names” are displayed. The names are displayed in the format “output port No.* + output port name + output status.” * DO1 to DO9 are digital output ports, EO1 to EO4 are extended digital output ports, and AO1 to AO2 are analog output ports.	● The status of the ports not in use is not displayed. ● When a communication error occurs in the AHC, the port information will not be displayed. ● For DO1 to DO9 and EO1 to EO4, the ON/OFF status is displayed. ● For AO1 to AO2, the values and units are displayed. (Unit: %, fixed)

Item	Details	Remarks
Status of related devices	Click Status of related equipment, and the status of the related devices connected to the AHC will be displayed. The items set in Ⅴ [3]<3> “Setting of maintenance tool (devices connected to M-NET)” are displayed. For the displayed names and units, see Table 5.1 “List of related device statuses.” Note: The display will be updated when Status of related equipment is touched.	



Ⅵ Q&A

1. About the whole system

No.	Question	Answer
1	Can other manufacturers' air conditioners be controlled centrally?	The stop/start and error status can be controlled by connecting other manufacturers' air conditioners to the contacts of the DIDO controller and receiving the information in the contacts from the air conditioners through AE-200/AE-50.
2	What means are available for remote monitoring?	There are two methods, a method by connecting through a broadband router using a phone line and a method *1 by connecting through a router *2 using the Internet line. To use the Internet line, it is necessary to establish an account with an Internet provider and obtain a global IP for identification of the router on the Internet (or use a dynamic DNS). Error notification e-mails can be received on a mobile phone or personal computer which can receive e-mails*3 by establishing an account with a provider. *1:This method cannot be used when there is a proxy server on the communication pathway. (Note that the internal LAN cannot be connected to a remote router in many cases.) *2:Ensure the security. When connecting to the corporate intranet, make sure that the VPN routers can be used. *3:This function is not applicable to SMS.
3	Although an error occurred, an error notification e-mail was not sent. Why?	Check the followings. (1) Error notification e-mail setting Check that the error notification e-mail setting has been performed. For the setting procedure, see Section 5.1 "E-mail" of the instruction manual for operation of Web browser for initial setting. (2) LAN connection Check that AE-200/AE-50 is connected to the LAN of the personal computer. (3) Gateway address setting Check that the gateway addresses of AE-200/AE-50 and the personal computer for the Web browser have been set. For the setting procedure, see Section 2.1 "Setting the IP Address of the PC" of the instruction manual for operation of Web browser for initial setting. (4) Confirmation of port number For sending e-mails from AE-200/AE-50 and TG-2000A, the port No.25 is used. If the port No.25 is blocked by the mail server, e-mails cannot be sent. Contact the system administrator.

2. About Web browser

No.	Question	Answer
1	Is the Web browser compatible with Microsoft VM?	It is not compatible with Microsoft VM. * Java® runtime environment (Java Plug-in made by Oracle®) is necessary. The operations on Oracle®'s Java Plug-in Ver. 1.7.0_51 and Ver. 1.8.0_05 have been confirmed. * The version of Oracle's Java Plug-in can be checked in "Java" in the control panel. * Install Oracle's Java Plug-in appropriate to your operating system. When using Internet Explorer (64-bit), install Java Plug-in (64-bit).
2	We use Windows8.1. Can Internet Explorer (IE) on the start screen be used?	It cannot be used. Use Internet Explorer (IE) on the desktop screen. If IE is started on the start screen, once close IE, switch the screen to the desktop screen, and restart IE. For the screen switching procedure, see the instruction manual for Windows8.1.  Start screen  Desktop screen

3. About AE-200/AE-50

No.	Question	Answer
1	Is it necessary to register the license on each set of AE-50?	Register the license on each set of AE-200/AE-50. The licenses for AE-50 (1) to (3) can be registered on the main unit screen of AE-200.
2	When will the backlight of the main unit LCD go out? Can it be kept on constantly?	The backlight will go out when 3 minutes have passed without input of any operation. However, the backlight will be kept on while an error is pending. It cannot be kept on constantly.
3	Can error codes to be notified through e-mail be selected?	Error codes to be notified can be selected by the error code notification setting.
4	Can the K transmission converter (KA) be registered in a group?	The K transmission converter (KA) is not compatible.
5	Are there recommended USB memories?	● Use USB memories formatted with FAT16 or FAT32. ● Use those compatible with USB2.0. ● Use those without security function or which can be used without security function. The operations of the following models have been confirmed. (1) Manufacturer:Transcend Model:TS4GJF300 4G Bytes (2) Manufacturer:Transcend Model:TS16GJF300 16G Bytes (3) Manufacturer:Transcend Model:TS32GJF700 32G Bytes (4) Manufacturer:Sony Model:USM8GU B 8G Bytes (5) Manufacturer:Sony Model:USM16GR B 16G Bytes (6) Manufacturer:imation Model:Nano-f 16G Bytes
6	Can AE-200/AE-50 be locked to avoid accidental operation?	They can be locked on the login screen by selecting Initial setting screen – Unit information screen and enabling the screen lock function. When the screen lock function is enabled, they will be automatically locked if they are not operated for a certain period (3 minutes). * However, when an error occurs, the screens will not be automatically locked.
7	How many icons can be arranged on one floor?	One area on a floor can contain 30 groups (icons). When a floor is divided into 6 areas, up to 180 groups can be arranged on the floor.
8	If some of the schedules for the first to fifth weeks are set on the same day, which schedule will be executed?	Priority will be given to the schedule of week 1, and the schedule will be executed. The order of priority is shown below (higher priority for the left). Schedule on current day > Annual schedule > week 1 > week 2 > week 3 > week 4 > week 5
9	Is it necessary to register the ME remote controller?	It is necessary to register it in a group. (The ME remote controller and system remote controller must be registered in a group. However, it is unnecessary to register the MA remote controller in a group.)
10	Can the display or non-display of the indoor (suction) temperature be selected?	It is possible to select one of “Display”, “Non-display” and “Display only during operation”. When “Display” is selected, the indoor (suction) temperature will be displayed constantly. When “Display only during operation” is selected, it will be displayed on the upper right of the group icon only during operation.
11	Can the plan view of TG-2000A be used as the plan view of AE-200/AE-50?	No. Since the plan view of AE-200/AE-50 differs in size and format from that of TG-2000A, prepare the plan views separately.
12	What measures should be taken when we forget the administrator login password?	Inform the agency or distributor of the serial number of AE-200/AE-50. You will be informed of the login password. After logging in, change the password.
13	Can restrictions on temperature setting range be imposed for Slim from AE-200/AE-50 through the M-NET adapter?	The restrictions on temperature setting range cannot be set through the M-NET adapter. Perform the setting for the MA remote controller on the MA remote controller. The setting for the ME remote controller can be performed because it is connected not through the M-NET adapter.
14	Can restrictions on temperature setting range be imposed for PAC-SF44SRA from AE-200/AE-50?	The restrictions cannot be set for the system remote controller (44SR). They can be set only for the remote controllers (ME and MA) (depending on the model).
15	Can the night mode (low noise mode) be set in schedules?	The mode can be set from the Web browser and the general control software (TG-2000A).
16	When a fire occurs, can we stop the system only on the floor of the origin without stopping the whole system?	This is possible if AE-200/AE-50 is connected according to the floor range to input the fire alarm signal only to the relevant AE-200/AE-50.
17	Is the billing license necessary for output of the electric energy data and billing parameters to the USB memory of AE-200/AE-50?	The license is necessary. The data cannot be output without registration of the license. However, energy management data can be output without license.
18	Can the schedule settings be backed up to a USB memory?	Yes.
19	Can Slim Air Conditioner and LOSSNAY be interlocked by setting on AE-200/AE-50?	Yes. They can be interlocked also by connecting LOSSNAY directly with Slim (MA remote controller is required) through the LOSSNAY interlock cable.
20	The error codes of Slim are two-digit codes. How will they be displayed when it is connected to AE-200/AE-50?	For models (Slim, RAC/HAC) which can be connected with AE-200/AE-50, errors will be displayed with the error codes (4-digit) for AE-200/AE-50.
21	Is there a method for deleting the suction temperature displayed on AE-200/AE-50 during stop?	It is possible to select the room temperature display mode from “Constantly displayed”, “Displayed during operation” and “Not displayed” in Unit information of Initial setting of the main unit of AE-200/AE-50. When “Displayed during operation” is selected, the temperature will not be displayed during stop.
22	How long will the backup data be retained when power is disconnected from AE-200/AE-50 owing to power failure?	The present time will be backed up for 1 week and then reset. The peak cut control data will be deleted. Other settings will be retained. However, 24 hours of charging time is required for AE-200/AE-50.

No.	Question	Answer
23	When four indoor units are controlled by one ME remote controller, can the icons of the individual four units be placed in the floor layout of AE-200/AE-50 not by group, but by unit?	No. To place the icons individually, it is necessary to divide the group for each unit. However, the ME remote controller can control only one group, and the remaining three indoor units cannot be controlled.
24	If AE-200/AE-50 goes down after the setting for prohibiting operation of remote controller is performed from AE-200/AE-50, can the prohibition of operation of remote controller be canceled?	The prohibition will be canceled approx. 15 minutes after communication from AE-200/AE-50 is interrupted.
25	How will the air conditioners operate if power is disconnected from AE-200/AE-50 owing to power failure?	They will stop. However, they can be operated continuously if the remote controller or system controller is available. If not, they will stop after 13 minutes or less.
26	Can the peak cut control be performed on the AE-50 system by connecting a demand controller to the external input of AE-200?	Yes. Set the conditions in accordance with the following procedure. (1) Select [Function setting 1] – [Peak cut setting] – [System setting] on the Web browser for initial setting of AE-50, and select [Other AE]. (2) The IP address input field will be displayed. Input the IP address of AE-200 to which the external input is connected. Note: The peak cut control of AE-200/AE-50 for which [Other AE] has been selected will be started with a delay of up to 1 minute.
27	If AE-200/AE-50 goes down during emergency stop caused by the external input of AE-200/AE-50, can the emergency stop be canceled?	The emergency stop will be canceled after 30 minutes or less.
28	Is the optical cable length limited?	The length varies depending on the optical media converter. For more information, see the instruction manual for the optical media converter to be used.
29	Can AE-200/AE-50 be connected with TG-2000A?	Yes. However, update the version of TG-2000A to 6.50 or later.

4. About energy management

No.	Question	Answer
1	Can the energy management data be output from the main unit screen?	The data cannot be output from the LCD. Click Download on the energy use status screen of the administrator Web browser, or click CSV file output on the CSV output screen.
2	Can the electric energy from the PLC (electric energy counting software) be displayed by the energy management function?	The electric energy cannot be displayed by the energy management function even if the PLC (electric energy counting software) is connected. To use the energy management function, use the PI controller.
3	Can the energy management graphs be printed?	No. However, the CSV data can be output from the Web browser, and the CSV data can be processed on Excel and displayed and printed in graphs.
4	Why are graphs not displayed even if the energy use status and ranking conditions are set?	The initial setting on the Web browser must be done. For details, see Ⅳ [5] “Initial Setting of Energy Management Function.”
5	When the apportionment mode is changed (from the capacity save amount mode to the thermo ON time mode) on 13:15, in which apportionment mode is the electric energy from 13:00 to 13:30 calculated?	The electric energy will be calculated in the apportionment mode which is active at the time of apportionment calculation (0 min or 30 min). Therefore, that from 13:00 to 13:30 will be calculated in the thermo ON time mode.
6	When an air conditioner is added on 13:15, when will the air conditioner be subject to apportionment?	The electric energy will be apportioned to the air conditioner at next 1 minute after it is registered in a group and a block (as needed) and the setting stated in Ⅳ [5] “Initial Setting of Energy Management Function” is completed.

5. About optional functions

No.	Question	Answer
1	In which are the energy saving license and the energy saving (peck cut) license different?	The energy saving license is required to use the energy saving control. With the energy saving (peak cut) license, both the energy saving control and the peak cut control can be used.
2	Can the energy for other manufacturers’ air conditioners and lights be saved?	No. The energy saving control performed by the AE-200/AE-50 system can cover only Mitsubishi’s air conditioners (products provided with M-NET).
3	What is the energy saving/peak cut control unit?	The control of indoor units is performed by group in the operation block. The control of outdoor units is performed by outdoor unit.
5	Can the power consumption be reduced to 80 % when the capacity save amount of outdoor unit is reduced to 80 %?	The maximum frequency of compressor will be saved to 80 %. The electric energy will not be reduced to 80 %.
7	Is the outdoor unit capacity saving function applicable to all of room air conditioners, Slim and Multi air conditioners?	It is not applicable to room air conditioners. It is applicable to the inverter outdoor units of CITY MULTI and Slim. It is not applicable to City Multi S.
8	Can only the energy saving control be performed when the PI controller is not connected?	If the energy saving control license has been registered, the control can be performed.

No.	Question	Answer
9	Can the temperature setting of the ME remote controller or MA remote controller be changed while the temperature is controlled within the temperature setting ± 2 °C by the demand controller.	The temperature setting can be changed. However, if the temperature setting is changed during peak cut control, the temperature will be controlled again within the new temperature ± 2 °C. After the completion of peak cut, the temperature will become the new setting. (Example) (1) The peak cut control (+2 °C) is started at a cooling temperature of 26 °C. → The temperature setting is 28 °C. (2) The temperature setting is changed to 24 °C on the remote controller. → The temperature setting is 26 °C. (3) The peak cut is ended. → The temperature setting is 24 °C.
10	Why cannot the peak cut control and energy saving control save the capacity of Multi S?	The units of Multi S air conditioners, which are inverter models, do not cope with the capacity save setting.

Air Conditioning Control System
AE-200A/AE-50A
AE-200E/AE-50E(1st edition)

2014 version

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