

3. SYSTEM CONTROLLER

3-2. Centralized Controller [AE-200A/AE-50A]

*AE-200A is indicated as AE-200

*AE-50A is indicated as AE-50



- A. The use of AE-200 combined with AHC will allow the use of external signal, making it possible to use integrated control of air conditioning systems including third-party HVAC products.
- B. The centralized controller of AE-200 combines Web function, which enable the air conditioner system management on a PC browser screen. *1. The management can even be carried out remotely.
- Microsoft® Internet Explorer 8.0
Microsoft® Internet Explorer 9.0
* Java execution environment is required.
(Oracle® Java Plug-in Ver. 1.7.0_11)
* Install Oracle® Java Plug-in that is appropriate for your operating system.
When using a 64-bit Internet Explorer, install a 64-bit Java Plug-in.
* The version of the Oracle® Java Plug-in can be verified by clicking [Java] in the Control Panel.
- Note: Connect AE-200 to a private network. Use a security device such as a VPN router when connecting the AE-200 to Internet to prevent unauthorized access.
- C. One AE-200 can control a maximum of 50 indoor units (including LOSSNAY) by itself, but with the use of three AE-50A expansion controllers the AE-200 can control up to 200 indoor units. The integrated centralized control software TG-2000A (*2) can manage maximum of 40 AE-200's or 10 AE-200 and 30 AE-50 with a maximum of 2000 units (including LOSSNAY).
- *2 TG-2000A Ver.6.40B or later is required to control AE-200.
- D. Taking advantage of AE-200's Web functions, alarm E-mail containing address and error code can be sent to appointed E-mail address upon any fault occurring at the air conditioner system. This could release standby personnel and save operation costs.
- E. Together with integrated centralized control software TG-2000A, and/or other controllers (DIDO, AI, PI controller), many optional functions like "Charging", "Peak-cut", "Energy saving" etc, can be carried out.
- F. The following licenses are pre-registered. "Annual Schedule/Weekly Schedule", "Sending Error Mail", "Maintenance Tool Advanced", "Interlock Control", and "Outdoor Unit Status Monitor."
- G. AE-200 features a 10.4"-wide color LCD touch panel. The settings for air conditioning units can be changed by touching the corresponding icons on the display.

■ Functions

□ : Each unit ○ : Each group ● : Each block
△ : Each floor ◎ : Collective X : Not available

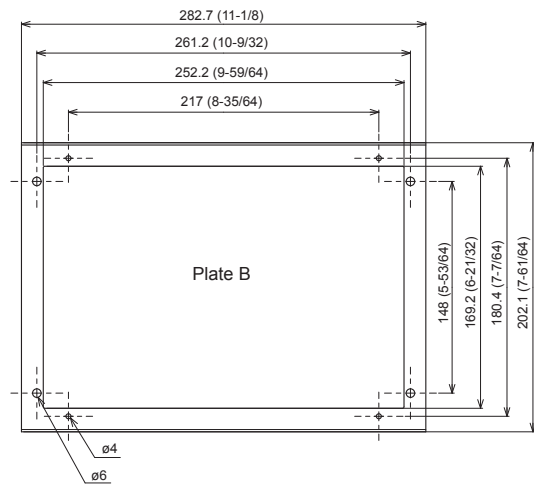
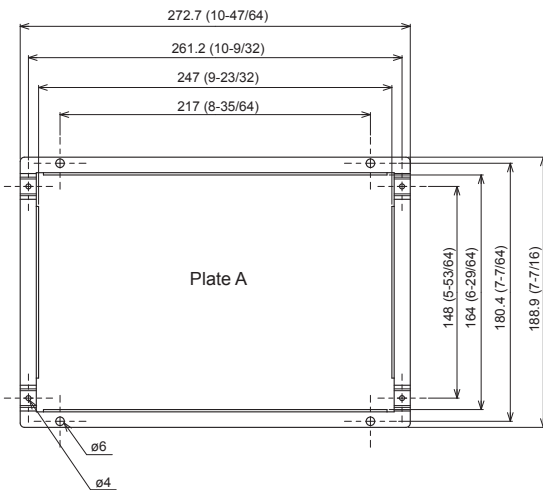
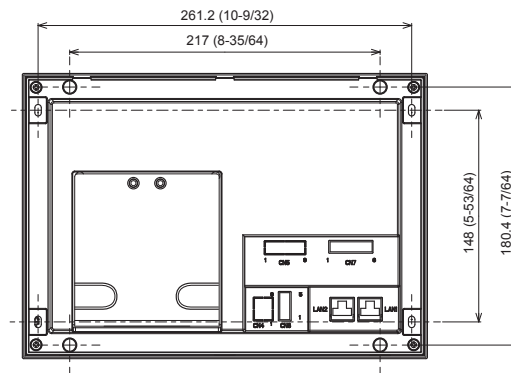
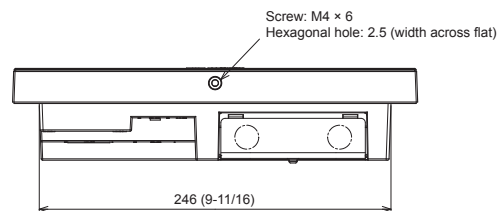
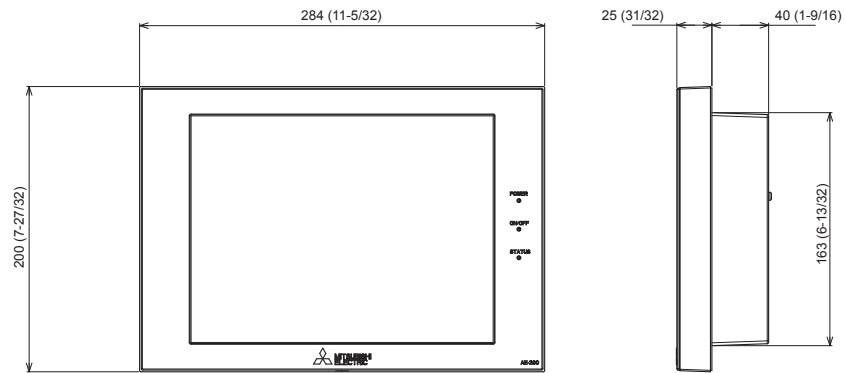
Item	Description	Operations	Display
ON/OFF	Run and stop operation for the air conditioner units	○ ● ◎	○ ◎
Operation mode switching	The switch operation for the operation mode setting can be performed as a collective, per group, or per block. (Available modes depend on the model of indoor units or outdoor unit.) [Selectable operation mode for the indoor unit] COOL/DRY/FAN/AUTO/HEAT/SETBACK [Selectable operation mode for the independent ventilation] HEAT RECOVERY/BY-PASS/AUTO [Selectable operation mode for AIR TO WATER(PW/FY)] HEATING/HEATING ECO/HOT WATER/ANTI-FREEZE/COOLING.	○ ● ◎	○
Fan speed setting	Models with 5 air flow speed settings: Hi/Mid-1/Mid-2/Low, Auto Models with 4 air flow speed settings: Hi/Mid/Low, Auto Models with 2 air flow speed settings: Hi/Low *Fan speed settings vary depending on the model.	○ ● ◎	○
Air flow direction setting	Air flow direction angles, 4-angle or 5-angle, Swing, Auto *1: Lower cannot be set *Air flow direction settings vary depending on the model.	*1 ○ ● ◎	○
Ventilation equipment	The interlocked system settings can be performed by the master system controller. When setting the interlocked system, you can use the ventilation switch to switch the free plan LOSSNAY settings between "Hi", "Low" and "Stop". When setting a group of only free plan LOSSNAY units, you can switch between "Normal ventilation", "Interchange ventilation" and "Automatic ventilation".	○	○
Temperature setting	The temperature can be set within the following range. Cool/Dry: 67°F - 95°F/19°C - 35°C Heat: 40°F - 83°F/4.5°C - 28°C Auto (single set point): 67°F - 83°F/19°C - 28°C Auto (dual set points) [Cool]Same as the set temp. range for Cool mode. [Heat]Same as the set temp. range for Heat mode. Setback (dual set points) [Cool]Same as the set temp. range for Cool mode. [Heat]Same as the set temp. range for Heat mode. *The settable temperature ranges and items vary depending on the indoor and outdoor unit models.	○ ● ◎	○
Temp range limit settings	Sets the temperature range for the local remote controllers. *2: The item and range that can be operated or monitored depend on the function of the indoor unit.	*2 ○	○
External Temperature Interlock	This function shifts the preset temperature by the preset increment to reduce the temperature difference between the indoor and outdoor air temperatures during cooling or heating operation. The maximum shifting temperature(±1°C, ±2°C, ±3°C, ±4°C) can be set for each group.	○	○
Schedule operation	Annual/Weekly (5 types)/Today schedule can be set for each group of air conditioning units. Optimized start setting is also available. *3: The system follows either the current day, annual schedule, or weekly, which are in the descending order of overriding priority. Twenty-four events can be scheduled per day, including ON/OFF, Mode, Temperature Setting, Vane Direction, Fan Speed and Operation Prohibition. Five types of weekly schedule(Summer/Winter/etc.) can be set. Settable items depend on the functions that a given air conditioning unit supports.	*3 ○ ● ◎	○
Night setback setting	The function keeps the indoor temperature in a set temperature range once the unit off and during the time this function is effective.	○	○
Permit / Prohibit local operation	Individually prohibit operation of each local remote control function (ON/OFF, Change operation mode, Set temperature, Reset filter sign, Air Direction, Fan speed, Timer). *4: The settable items vary depending on the models.	○ ● ◎	*4 ○
Hold	When Hold function is enabled, the scheduled operations are disabled. The operations that have been scheduled from the remote controller/sub system controller will also be disabled. * Hold function vary depending on model. * The Hold function cannot be enabled on general equipments.	○ ● ◎	○
Indoor unit intake temperature	Measures the intake temperature of the indoor unit. *7: Displays the ambient temperature of either the return air temperature sensor on the indoor unit or the temperature sensor on the remote controller, whichever is selected on the indoor temperature display mode selection.	X	*7 ○
AHC status	Displays the status of input and output ports of each Advanced HVAC CONTROLLER (AHC).	X	□
Free Contact status	Displays the input/output status of the free contacts on the indoor units.	X	□
Measurement	Displays the temperature, humidity, and the reading of the watt-hour meter.	X	□
Outdoor Unit Status Monitor	Monitor the current outdoor unit status Data: Frequency (Compressor), high/low pressure (outdoor unit)	X	□
Energy Use Status	On the Energy Use Status screen, the energy-control-related status, such as electric energy consumption, operation time, and outdoor temperature, can be displayed in a graph. Operators can check the detailed status of given indoor units by specifying the date to display the data per group, block, or unit address.	X	□ ○ ●
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed. *5: The operation monitor screen shows the abnormal unit by flashing it. The error monitor screen shows the abnormal unit address, error code and source of detection. The error log monitor screen shows the time and date, the abnormal unit address, error code and source of detection.	X	*5 □
Filter sign reset/ Filter sign	Filter sign can be reset for each group or block of indoor units. /Indicates that the filter on the units in a given group is due for cleaning.	□ ○ ● □ ○ ●	□ ○ ●
Interlock setting	Operation of indoor groups or general equipment can be interlocked by the change of state (ON/OFF, mode, error of indoor groups and general equipment). (AE-200 will execute interlocking control depending on the interlocked setting.)	○	○
Test run	This operates air conditioner units in test run mode.	○ ◎ △ ●	○
External input/output	By using accessory cables you can set the following. Input: By level signal: "Batch run/stop", "Batch emergency stop" By pulse signal: "Batch run/stop", "Enable/disable local remote controller" *6: Requires the external I/O cable (PAC-YG10HA) sold separately and external power supply. By using accessory cables you can monitor the following. Output: "Run/stop", "Error/Normal" *6: Requires the external I/O cable (PAC-YG10HA) sold separately and external power supply.	*6 ◎	X
M-NET	The "M-NET" LED lights, when M-NET power supply is turned ON. The LED blinks during M-NET communication.	X	◎ (LED)
Collective ON/OFF	All units can operate / stop with the switch. (For test run)	◎	—
Data back-up (PC)	The initial setting data, operation data (charge parameter, power consumption data) can be stored in the PC.	◎	—

3. SYSTEM CONTROLLER

■ External dimension

* The dimensions of AE-200 and AE-50 are the same.

Unit: mm (in)



3. SYSTEM CONTROLLER

1. Power supply to AE-200

This section explains the examples of the following system configurations.

- (1) System without connection to an AE-50 controller (controlling 50 or fewer units of equipment)
- (2) System with connection to one or more AE-50 controllers (controlling more than 50 units of equipment)
- (3) System with connection to a sub system controller (System in which power is supplied from an outdoor unit)
- (4) System with connection to a sub system controller (System in which power is supplied from the power supply unit (PAC-SC51KUA))

Note

- The figures in (1) through (4) below only show the transmission cable connections. Power cables are omitted.
- Connect the M-NET power jumper as shown in the table below, depending on the system configuration.

System configuration		AE-200	Outdoor unit	
		CN21	CN41	CN40
At factory shipment		V	V	x
System without connection to a sub system controller	—	V	V	x
System with connection to a sub system controller	System in which power is supplied from an outdoor unit	x	x	V
	System in which power is supplied from the power supply unit (PAC-SC51KUA)	x	V	x

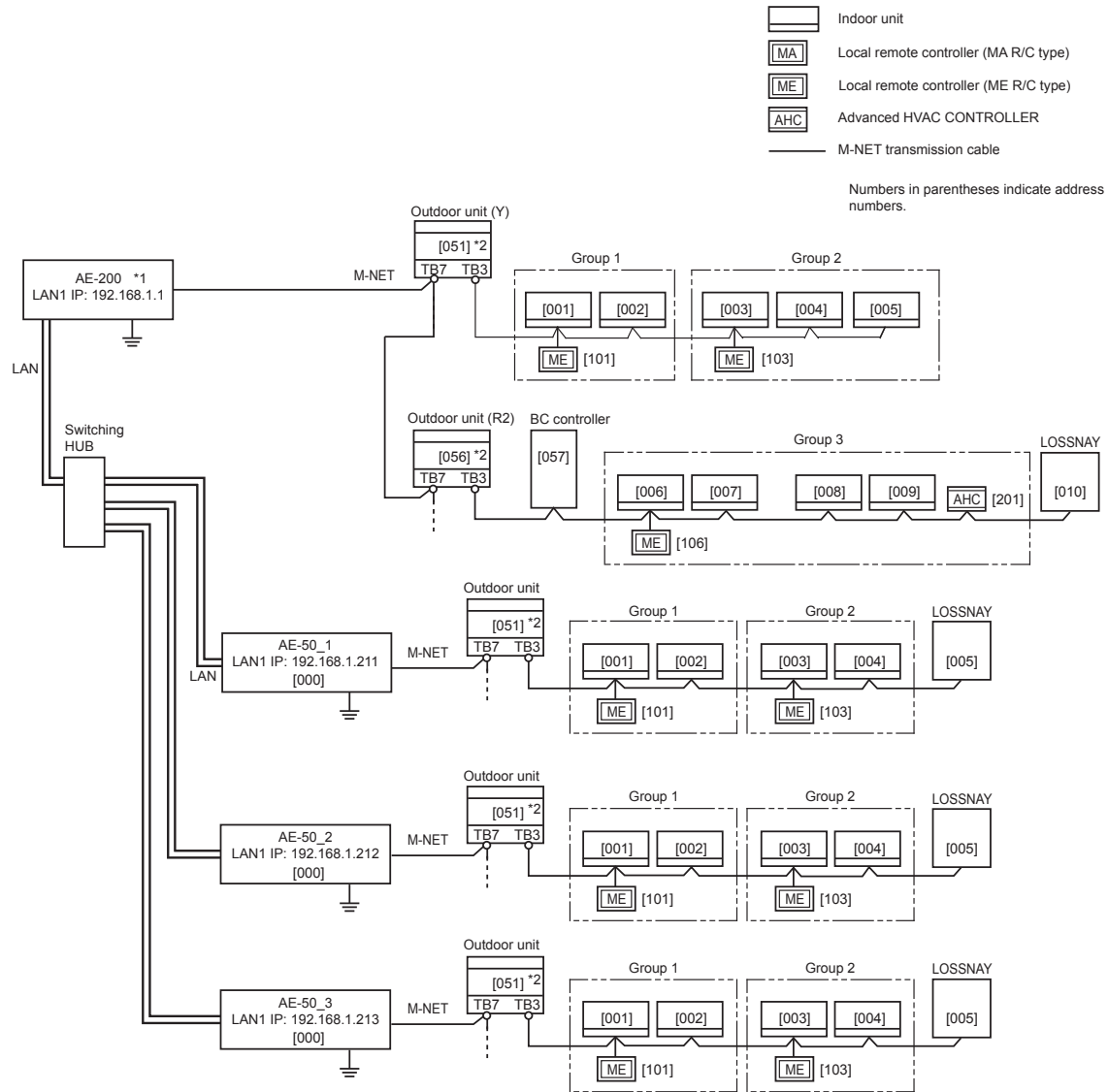
(V) Connected, (x): Disconnected

- Provide a ground point for the indoor-outdoor transmission cable for each outdoor unit. (Provide the appropriate grounding according to local standards.)
- Set the centralized control switch (SW5-1 (or SW2-1, depending on the unit model)) on the outdoor unit connected to the M-NET transmission cable to ON.

3. SYSTEM CONTROLLER

2. System configuration example

(2) System with connection to one or more AE-50 controllers (controlling more than 50 units of equipment)



*1 Leave the M-NET power jumper connected to CN21 on the AE-200.

*2 Leave the M-NET power jumper connected to CN41 on all outdoor units.

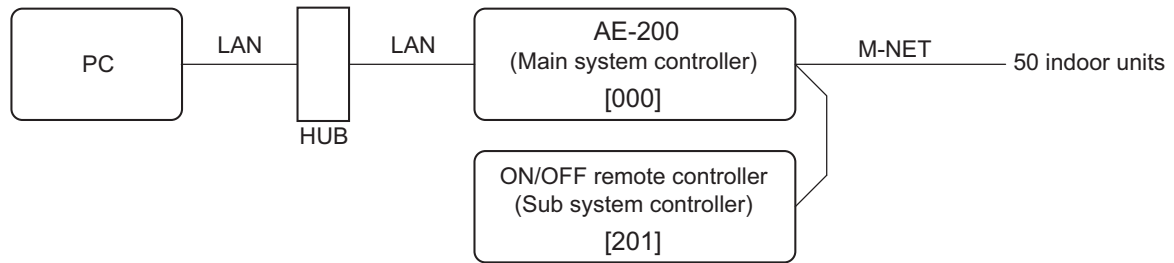
Note

- The same M-NET address cannot be used more than once in an M-NET system that directly connects to each AE-200/AE-50. See (1) above for the addresses for the equipment that are connected to the AE-50 within an M-NET system.

3. SYSTEM CONTROLLER

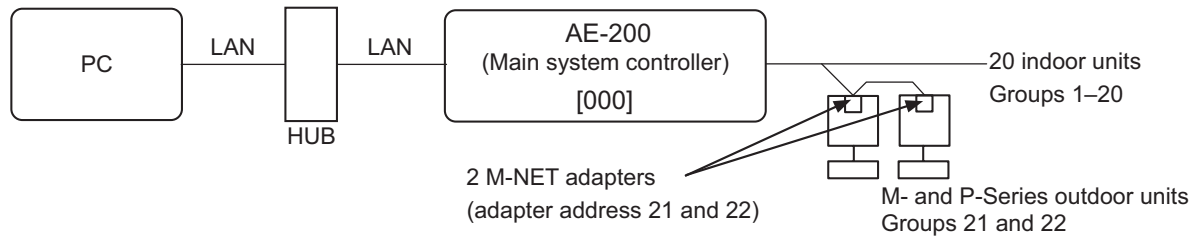
3. M-NET system setting example

(1) Setting example for connecting multiple M-NET system controllers



- Make the initial settings such as group settings and interlock settings on the Web browser. Refer to the Instruction Book (Web Browser for Initial Settings) for details.
- Designate a system controller within the system as the only controller from which operation prohibit setting can be made.

(2) Setting example for controlling Mr. Slim units (M-series/P-series models)



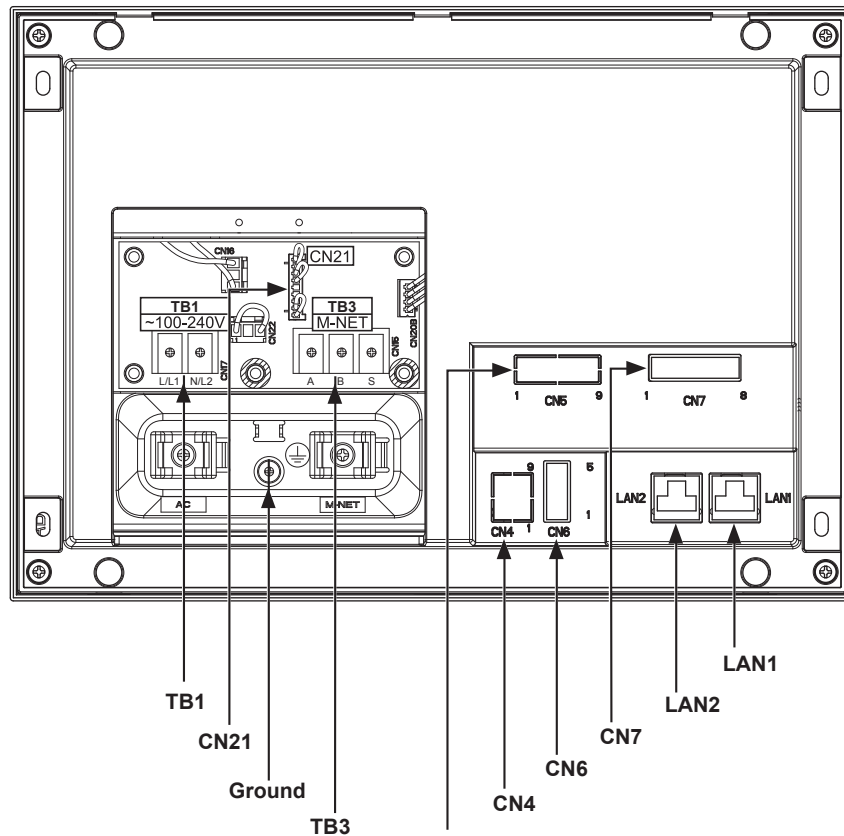
- An M-NET adapter (sold separately) is required to connect the M- and P-Series model of units to the M-NET.

3. SYSTEM CONTROLLER

4. External input/output

To use external input/output, a separately-sold external input/output adapter (PAC-YG10HA) and external power supply (12 or 24 VDC) are required.

* Back side with the service cover removed



CN5 (External I/O)

Connects to an external input/output adapter PAC-YG10HA-E.
(When connecting an external input/output adapter PAC-YG10HA-E,
cut out the knockout hole.)

[External signal input function]

Using external contact signals (12 or 24 VDC), the following collective operations for all connected air conditioning units can be controlled: Emergency stop, ON/OFF operation, and Prohibit/Permit local remote controller operation.

(1) External signal input function setting

Setting mode	Description
Not in use (Factory setting)	External input signal will not be used.
Emergency Stop (Level signal)	Using a level signal, all the air conditioning units connected to the AE-200 will be stopped collectively in emergency. During an emergency stop, the ON/OFF operation from the local remote controllers will be prohibited, and the ON/OFF operation and Prohibit/Permit settings on the AE-200 will be prohibited. Scheduled operations will not be performed.
ON/OFF (Level signal)	Using a level signal, all the air conditioning units connected to the AE-200 will be run or stopped collectively. The ON/OFF operation from the local remote controllers will be prohibited, and the ON/OFF operation and Prohibit/Permit settings on the AE-200 will be prohibited. Scheduled operations will not be performed.
ON/OFF/Prohibit/Permit (Pulse signal)	Using a pulse signal, all the air conditioning units connected to the AE-200 will be run or stopped collectively, or the operation from the local remote controllers will be prohibited or permitted collectively.

* General equipments connected via DIDO controller (PAC-YG66DCA) cannot be collectively run or stopped by using the external signal input function unless [Emergency Stop (Level signal)] is selected and relevant switches on the DIDO controller are set.

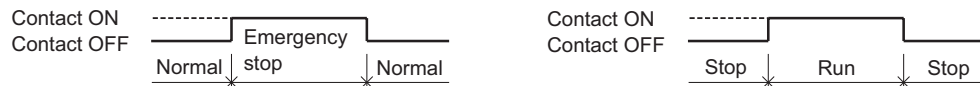
3. SYSTEM CONTROLLER

(2) External signal input specifications

CN5	Lead wire from PAC-YG10HA	Emergency Stop (Level signal)	ON/OFF (Level signal)	ON/OFF/Prohibit/Permit (Pulse signal)
No. 5	Orange	Emergency stop signal, Normal operation signal	ON signal, OFF signal	ON signal
No. 6	Yellow	—	—	OFF signal
No. 7	Blue	—	—	Prohibit signal
No. 8	Gray	—	—	Permit signal
No. 9	Red	External power supply (+12 or +24 VDC)		

(3) Level signal and pulse signal

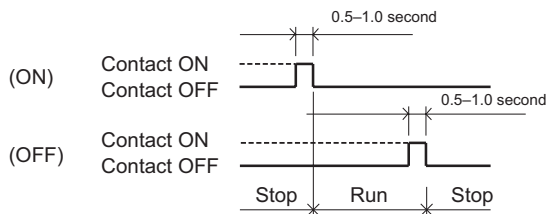
(A) Level signal



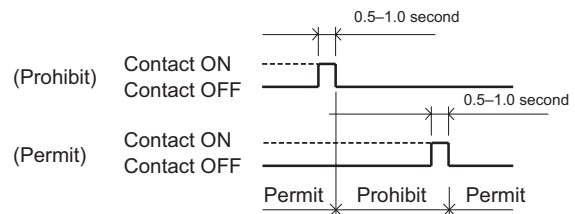
- 1) If "Emergency stop (Level signal)" is selected, the air conditioning units in normal operation will stop when the contact turns on. Even when the contact turns off, these units will remain stopped. They must be started up manually after the emergency stop is reset.
- 2) If "ON/OFF (Level signal)" is selected, the air conditioning units that are stopped will start operation when the contact turns on. Conversely, the units that are in operation will stop when the contact turns off.

(B) Pulse signal

(Example) ON/OFF



(Example) Prohibit/Permit

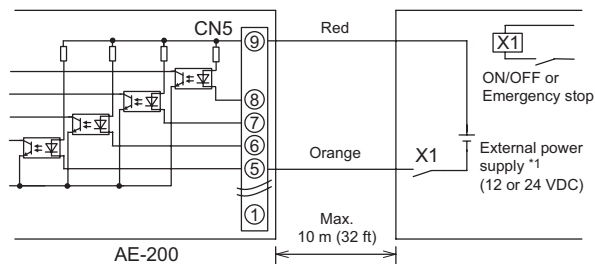


- 1) If input pulse signal is the same as the current operation status of the air conditioning units, no status change will occur. (For example, if an ON signal is input while the air conditioning units are in operation, the units will continue their operation.)
- 2) If the operation from the local remote controller is prohibited, ON/OFF status, operation mode, or temperature setting cannot be changed and filter sign cannot be reset from the local remote controller.
- 3) The pulse width (contact ON) should be between 0.5 and 1.0 second.

3. SYSTEM CONTROLLER

(4) Recommended circuit

(A) Level signal



Use relays X1, X2, Y1, and Y2 that meet the following specifications.

Contact rating

Rated voltage: 12 VDC or above

Rated current: 0.1 A or above

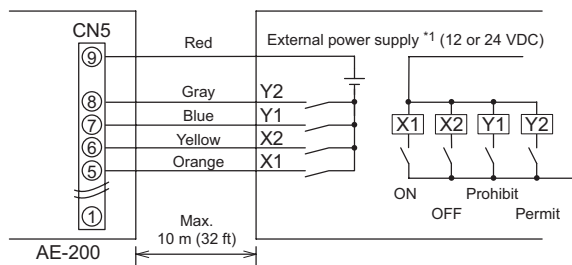
Minimum applied load: DC 1 mA

*1 Select an external power supply suitable for the relays used. (12 or 24 VDC)

Connect the external power supply in the correct polarity to input and output the signals.

Connect ⑤ – ⑧ (see the figure at left) to the negative side.

(B) Pulse signal



Important

- Be sure to use an external power supply (12 or 24 VDC) to avoid malfunctions.
- Connect the external power supply in the correct polarity to avoid malfunctions.

Note

- The relays, external power supply, and extension cables are field supplied.
- The total length of the lead wire and extension cable should not exceed 10 m (32 ft). (Use an extension cable of 0.3 mm² or thicker.)
- Cut the excess cable near the connector, and insulate the end of unused cable with tape.

[External signal output function]

An ON signal is output when one or more units are in operation, and Error signal is output when one or more units are in error.

(1) External signal output specifications

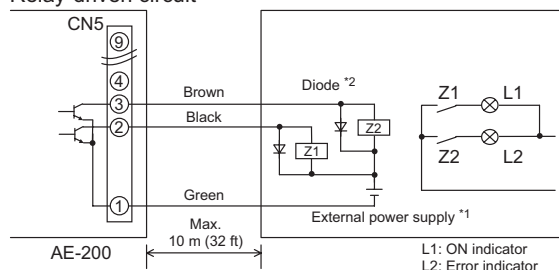
CN5	Lead wire from PAC-YG10HA	Signal
No. 1	Green	Common ground for external output (Ground for external power supply)
No. 2	Black	ON signal*, OFF signal
No. 3	Brown	Error signal, Normal signal

* The operation status of general equipments (via DIDO controller (PAC-YG66DCA)) will not be output.

* The ON signal will be output even during an error.

(2) Recommended circuit

Relay-driven circuit



Use relays Z1 and Z2 that meet the following specifications.

Operation coil

Rated voltage: 12 or 24 VDC

Power consumption: Max. 0.9 W

*1 Select an external power supply suitable for the relays used. (12 or 24 VDC)

Connect the external power supply in the correct polarity to input and output the signals.

Connect ① (shown in the figure at left) to the negative side.

*2 Use a diode at both ends of the relay coils.

Important

- Be sure to use an external power supply (12 or 24VDC) to avoid malfunctions.
- Connect the external power supply in the correct polarity to avoid malfunctions.
- Do not connect the external power supply without relays being connected to the controller (no load).

Note

- The relays, lamps, external power supply, diodes, and extension cables are field supplied.
- The total length of the lead wire and extension cable should not exceed 10 m (32 ft). (Use an extension cable of 0.3 mm² or thicker.)
- Each element will turn on during operation and when an error occurs.

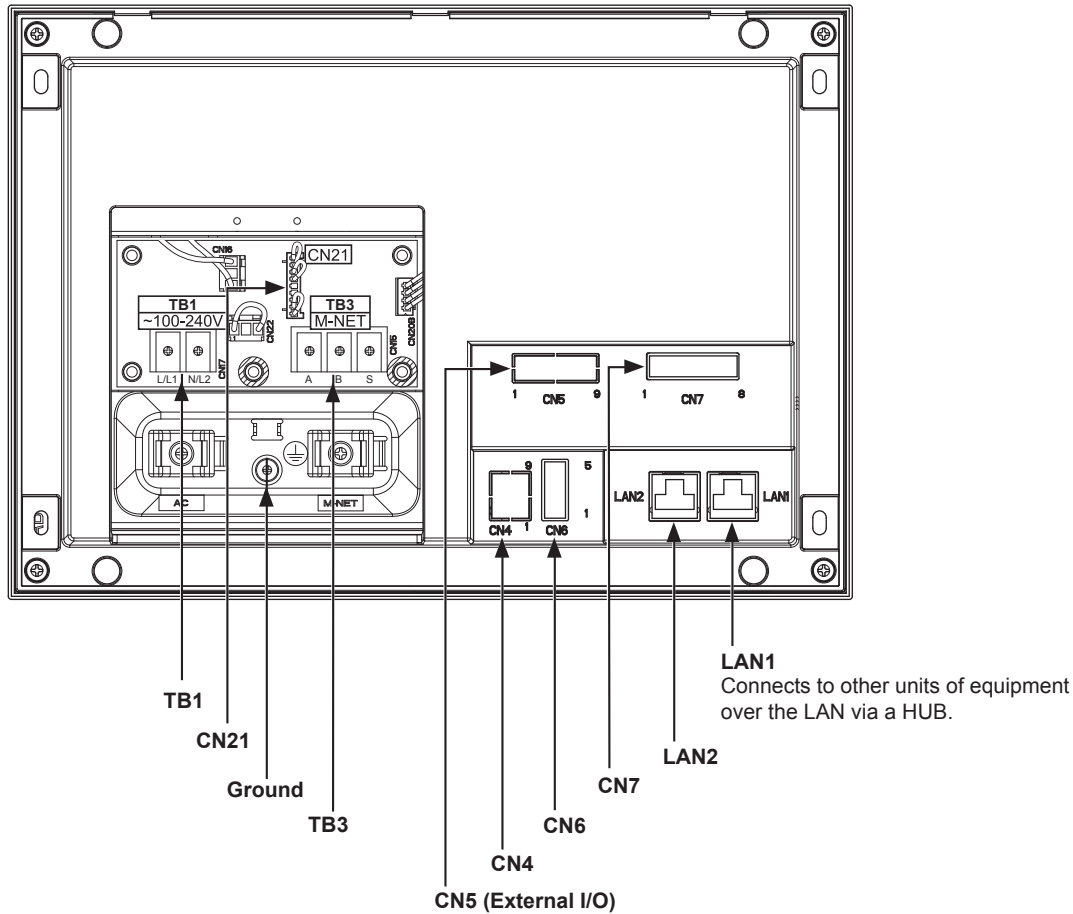
3. SYSTEM CONTROLLER

5. Connecting LAN cable

Connect the LAN cable to the LAN port on the AE-200/AE-50.

- The LAN cable is field supplied. Use a category 5 or above straight LAN cable.
- Use a switching HUB.
- The maximum distance between the switching HUB and AE-200/AE-50 is 100 m (328 ft).

* Back side with the service cover removed

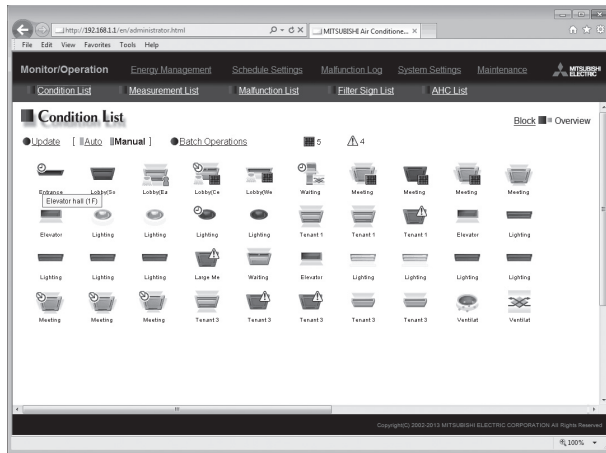


Note

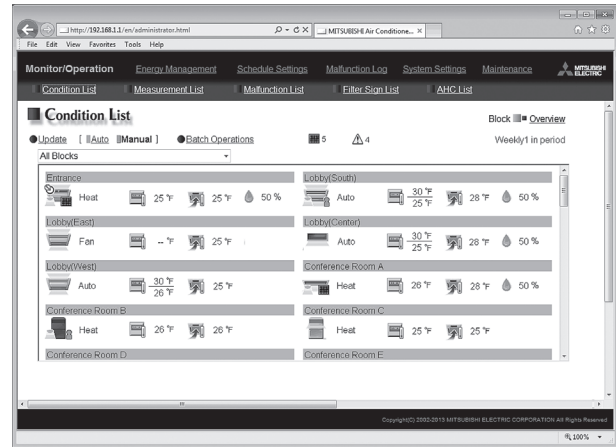
- LAN must be installed before the unit installation. Route the LAN cable to the AE-200/AE-50 in the same way as the M-NET transmission cables.
- Leave enough space around the LAN port on the AE-200/AE-50 to allow for the connection of the cables. Refer to Installation and Instructions Manual.
- When connecting the AE-200/AE-50 to an existing LAN, consult the system administrator to decide the IP address. The IP address can be changed with the dipswitch or from the Web browser.
- To prevent unauthorized access, always use a security device such as a VPN router when connecting the AE-200/AE-50 to the Internet.

3. SYSTEM CONTROLLER

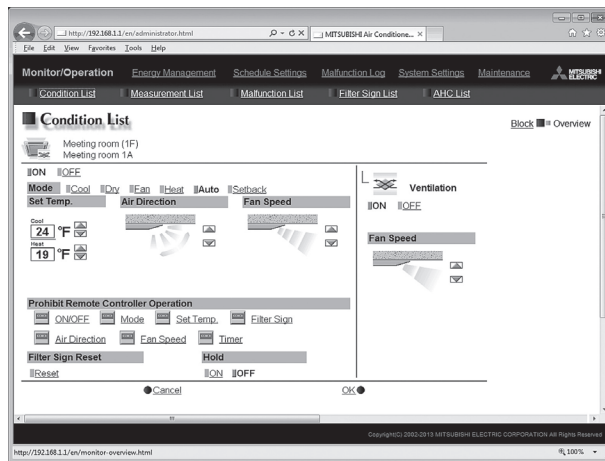
6. Browser screens of AE-200/AE-50



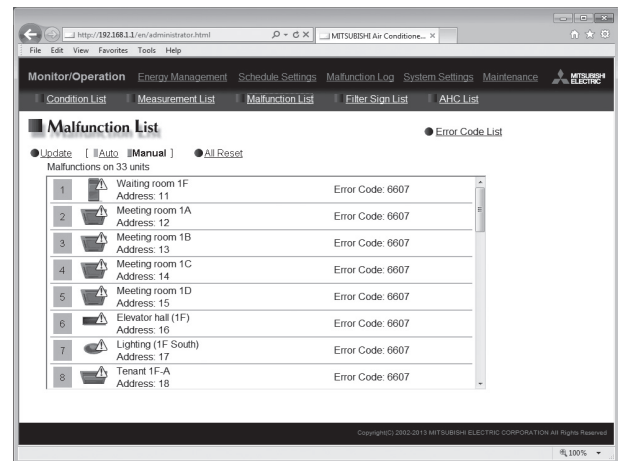
Condition List (Overview)



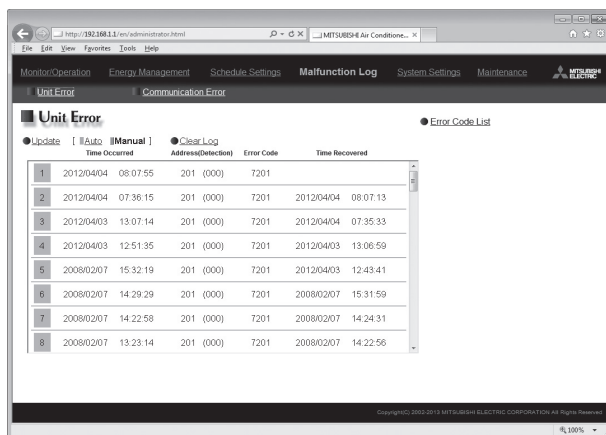
Condition List (Block)



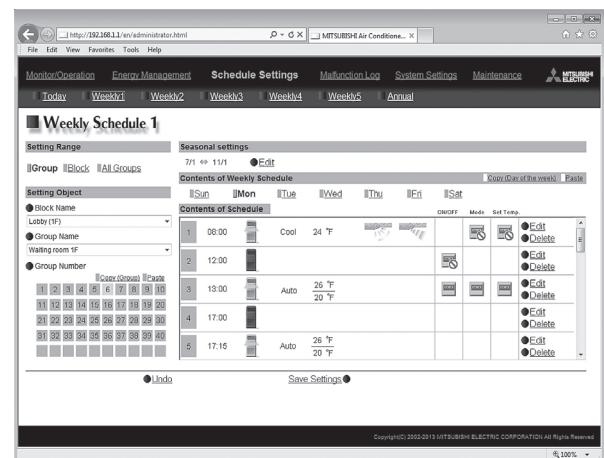
Operation



Malfunction List

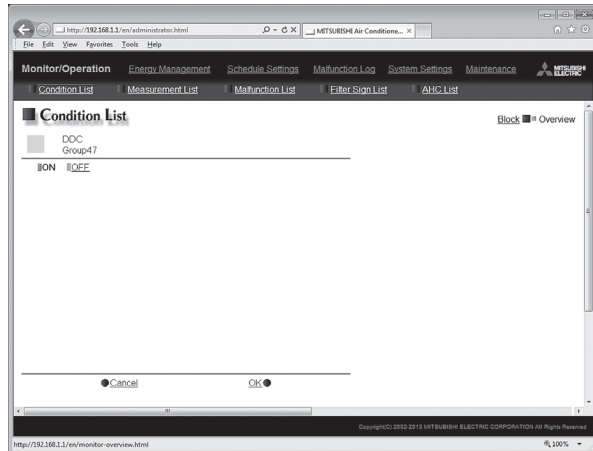


Malfunction Log

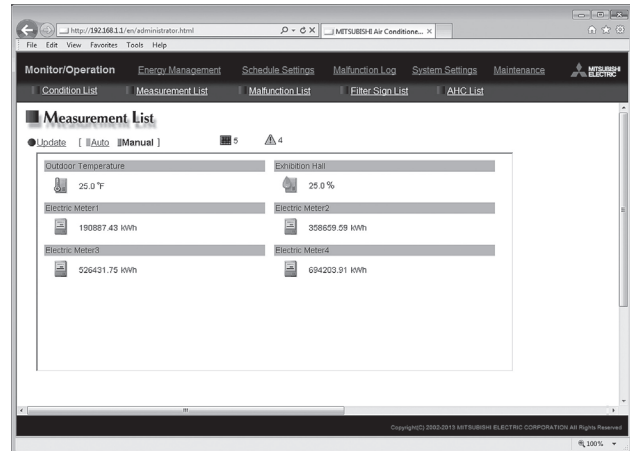


Weekly 1 Schedule

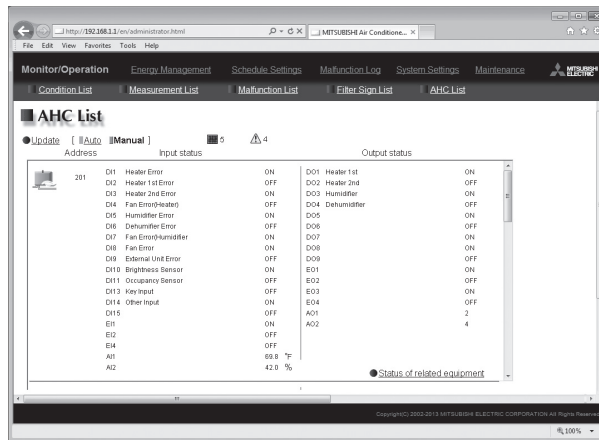
3. SYSTEM CONTROLLER



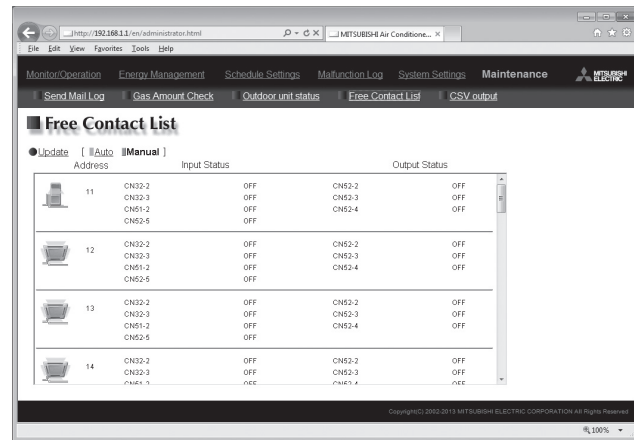
Operation (DIDO Controller)



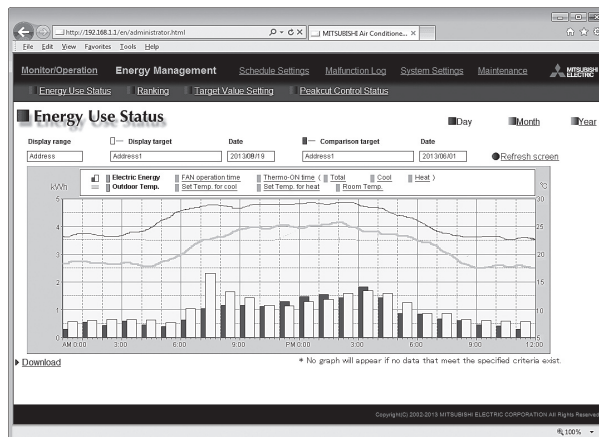
Measurement status monitor (temperature sensor/humidity sensor /measurement meter)



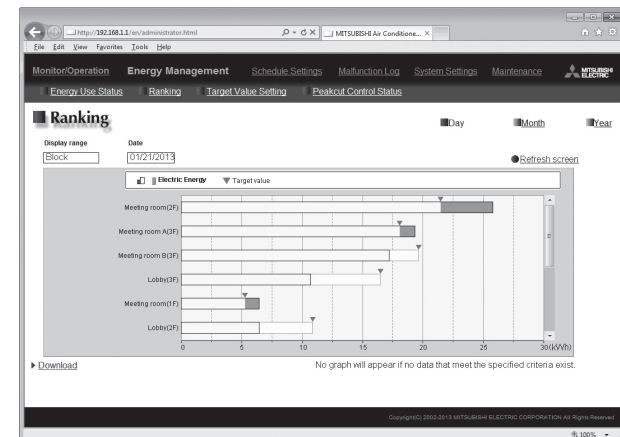
Advanced HVAC CONTROLLER Status monitor



Free Contact Status monitor



Energy Management monitor (Energy use status)



Energy Management monitor (Ranking)