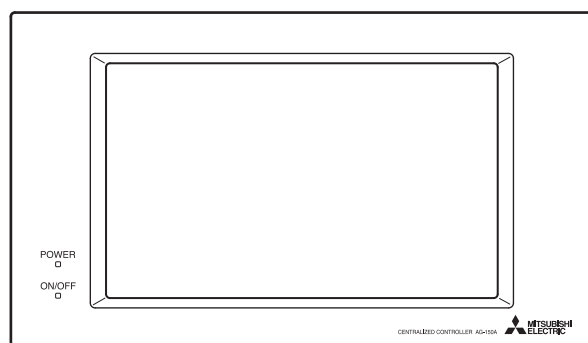


Air-conditioner Control System

Centralized Controller Model: AG-150A

Installation Manual



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Before installing the controller, please read this Installation Manual carefully to ensure proper operation. Retain this manual for future reference.



This manual describes how to install the centralized controller and wiring. Before installing the controller, read the

1 Safety Precautions section carefully to ensure proper installation.

1 Safety Precautions

Safety symbols used in this manual

The following symbols are used in this manual to indicate the type and severity of potential consequences that may result when given instructions are not followed exactly as stated.

 WARNING	Indicates a risk of death or serious injury.
 CAUTION	Indicates a risk of injury or damage to the controller.

Retain the Installation Manual and the Instruction Book for future reference. Make sure both the Installation Manual and the Instruction Book are passed to any future air condition system users.

WARNING

The controller must be professional installed.

Improper installation by an unqualified person may result in electric shock or fire.

Make sure the controller is securely mounted so that it will not fall.

Only use specified cables. Securely connect each cable so that the weight of the cable is not applied to the connectors.

Loose or improper connections may result in heat generation or fire.

Do not attempt to modify or repair the controller.

Modification or improper repair may result in electric shock or fire.

Consult your dealer when repairs are necessary.

Securely install the controller according to the installation manual.

Improper installation may result in electric shock or fire.

Electric work must be performed by authorized personnel according to the local regulations and the instructions detailed in the installation manual.

Inadequate circuit capacity or improper installation may result in electric shock or fire.

Ask your dealer or an authorized technician to move the controller.

Improper installation may result in electric shock or fire or damage to the controller.

CAUTION

Do not install the controller where there is a risk of flammable gas.

If the leaked gas accumulates around the controller, it may ignite and cause an explosion.

Do not use the controller in an environment high in oil, steam, or sulfuric gas.

These substances may have adverse effects on the performance of the controller or damage its parts.

When installing the controller in a hospital or communication facility, take appropriate measures to reduce electrical noise interference.

Inverter equipment, generators, high-frequency medical equipment, or radio communication equipment may interfere with the normal operation of the controller; or the electrical noise from the controller may interfere with the medical practice or cause image distortion and static.

To prevent over-heating and fire, wire so that the weight of the cable will not strain the connectors.

Seal the wire lead-in port with putty to prevent the entry of dew, water, and insects to avoid electric shock or malfunction of the controller.

Do not wet the controller.

Water may damage the controller and cause an electric shock.

Do not install this controller where the ambient temperature exceeds 40°C (104°F) or drops below 0°C (32°F).

To prevent the controller from being damaged and malfunctioning, install it out of direct sunlight.

To reduce the risk of electric shock, install and wire the unit with the power to the PAC-SC51KUA power supply unit turned off.

Consult an authorized agency for the proper disposal of the unit.

The unit contains mercury, which is harmful to the environment.

Do not install this controller in a place that has the potential for steam or dew formation.

Steam or dew formation may cause an electric shock or a unit malfunction.

Do not install this controller where an acid or alkaline solution or special chemical spray is used frequently to avoid electric shock or malfunction.

Use specified wires with the proper current carrying capacity to prevent current leakage, over-heating, or fire.

Do not touch the PCB (Printed Circuit Board) with your hand or a tool.

Keep the PCB dust-free to prevent fire or malfunction.

To avoid the risk of electric shock or damage to the controller, do not touch the touch panel or USB storage device connector with wet hands.


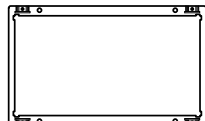
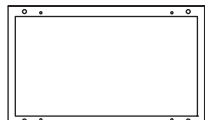



To avoid the risk of electric shock or damage to the controller, do not press the touch panel with sharp objects.

To avoid causing damage or fire, do not apply an AC voltage or a voltage higher than 32VDC to the M-NET or the Power (24VDC) terminal blocks on the controller.

Use a security device such as a VPN router when connecting the AG-150A to the Internet to prevent unauthorized access.

2 Parts List

* The Installation Manual and the parts listed below are included with the unit.

No.	Description	Usage	Qty.	
①	AG-150A Centralized controller		1	
②	A type Installation plate	Use to attach the AG-150A using the B type installation plate or the Electric box (PAC-YG83UTB; sold separately) on the wall or in the control board.	1	
③	B type Installation plate	Use to install the AG-150A on the wall using the A type installation plate.	1	
④	Wood screw (M4.1×25)*1	For mounting the controller directly on the wall	4	
⑤	M4 flathead screw (M4×40)*1, 2	For attaching the A type installation plate to either the B type installation plate or electric box (PAC-YG83UTB; sold separately)	4	
⑥	M4 roundhead screw (M4×12)*1	For attaching the AG-150A to the A type installation plate	4	
⑦	Instruction book		1	

*1 ISO metric screw thread

*2 If the enclosed screw for attaching the installation plate cannot be used because the wall is too thick, obtain a longer M4 flathead screw that matches the wall thickness.

* Besides the above parts, purchase a power supply unit (PAC-SC51KUA) that supplies power to the centralized controller (24VDC) and the M-NET transmission line.

AG-150A operates by receiving 24VDC power from PAC-SC51KUA.

A PAC-YG50ECA expansion controller (sold separately) is required to control 50 or more units of equipments (e.g., indoor units and LOSSNAY units).

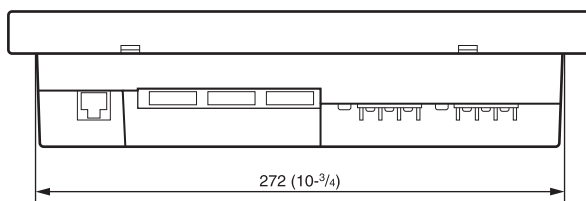
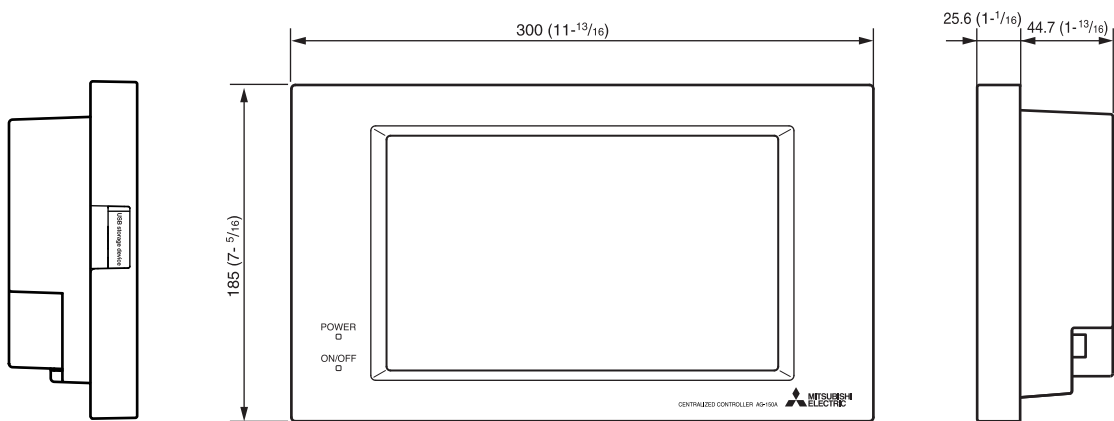
Up to three expansion controllers can be connected to a system, each of which can control up to 50 units of equipments.

To control 50 or more units of equipments, use AG-150A software version 2.10 or later.

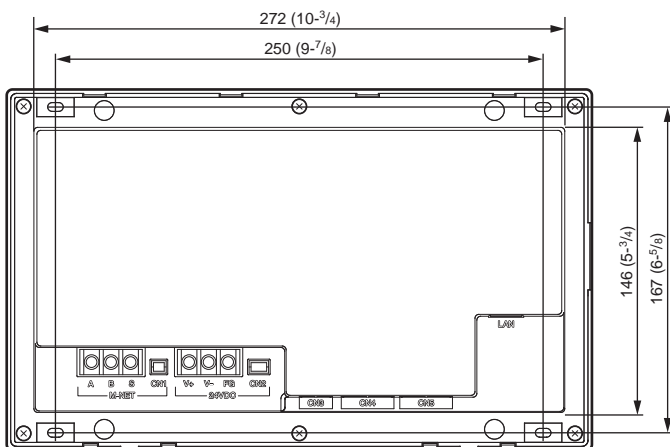
3

External Dimensions

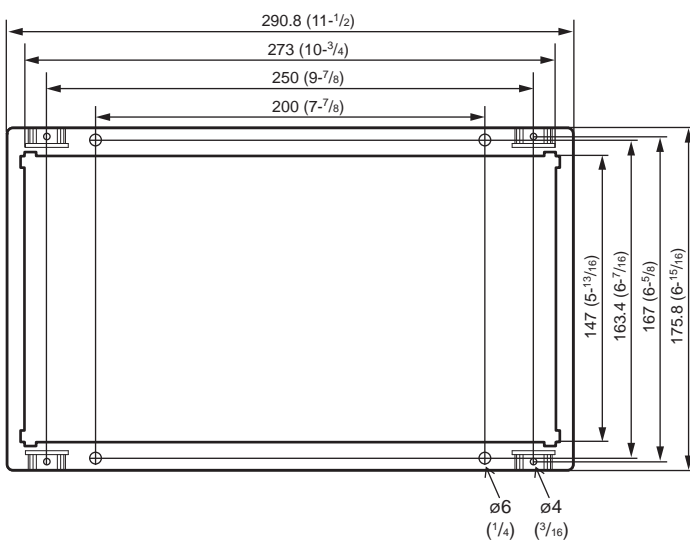
Unit: mm (in)



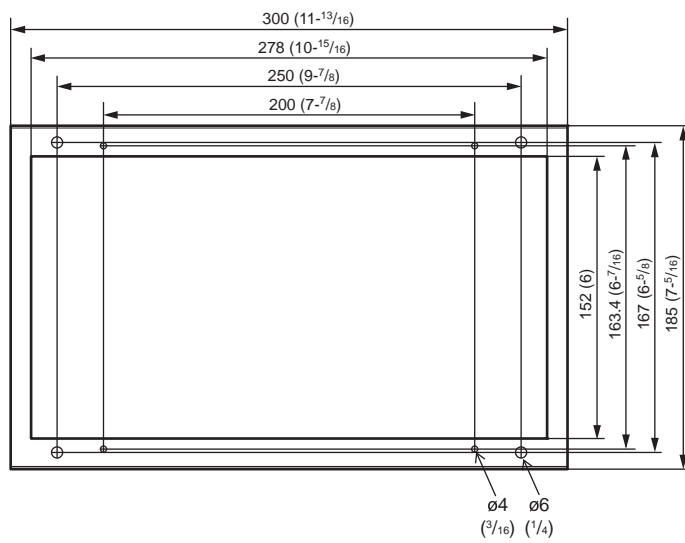
Back View



A type installation plate



B type installation plate



4 Product Features

AG-150A is a centralized controller that features advanced functions such as the Web function.

Air conditioning units connected to this controller can be operated or monitored directly from this controller or over the Web by purchasing a license, using a browser software on the computer.

Up to 50 indoor units and general equipment can be monitored and operated from an AG-150A unit.

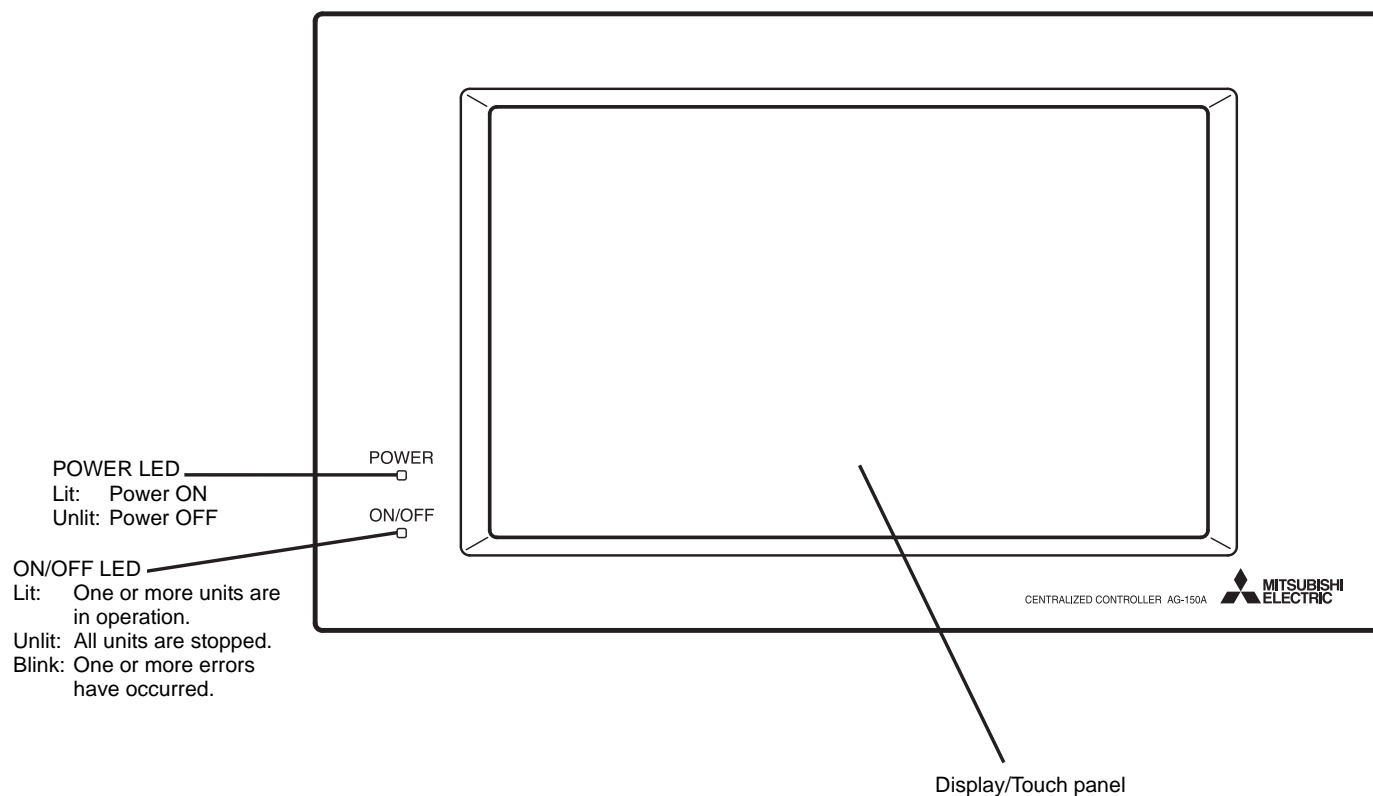
By connecting three PAC-YG50ECA expansion controllers (sold separately), a maximum of 150 units of equipments can be controlled.

1. Specification

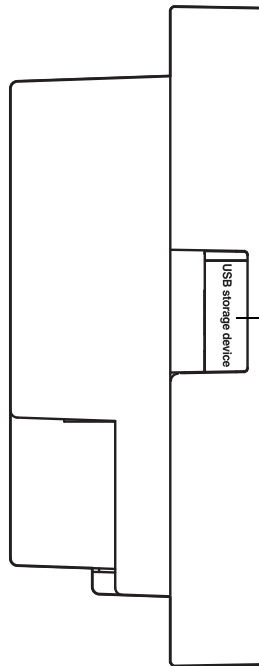
Item	Specifications		
Power supply	M-NET Terminal	17VDC~32VDC	* Power supply: PAC-SC51KUA
	Controller drive	24VDC	
Temperature	Operating	0~40°C [32~104°F]	For indoor installation only * To be used in an business office or similar environment
	Non operating	-20~60°C [-4~140°F]	
Humidity	30~90%RH (No condensation)		
Weight	2.1kg [4.6 lbs]		
Dimensions (W × H × D)	300 × 185 × 70.3 [25.6] mm 11- ¹³ / ₁₆ × 7- ⁵ / ₁₆ × 2- ¹³ / ₁₆ [1- ¹ / ₁₆] in * []: indicate the thickness from the wall.		

2. Parts names and functions

Front View

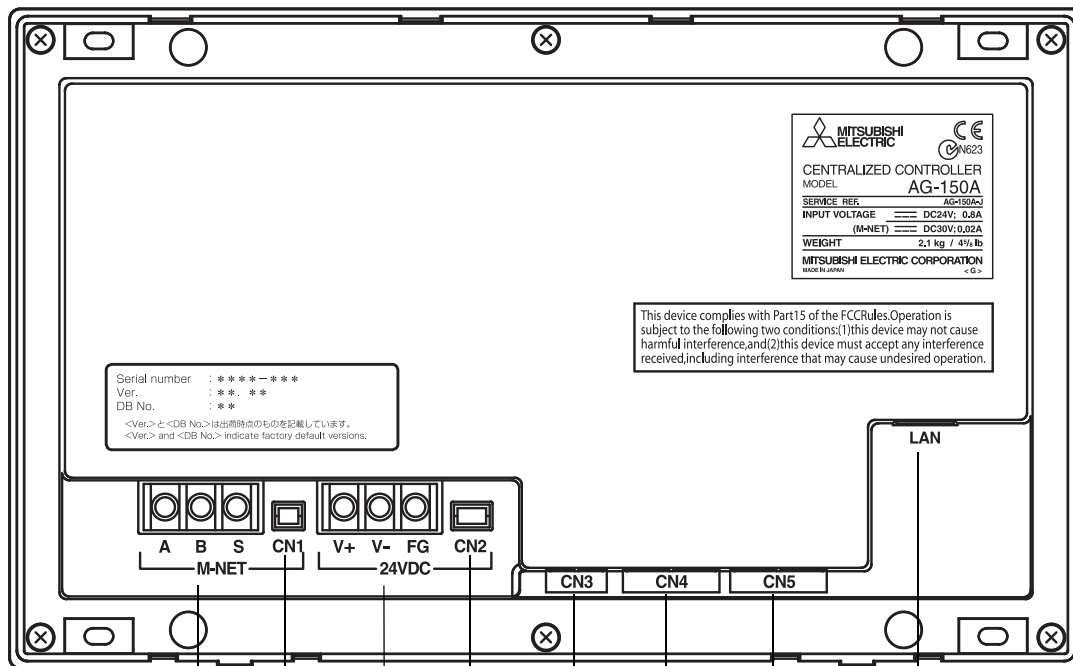


Left view



USB storage device
Connects to a USB storage device
to copy data from the AG-150A

Back View



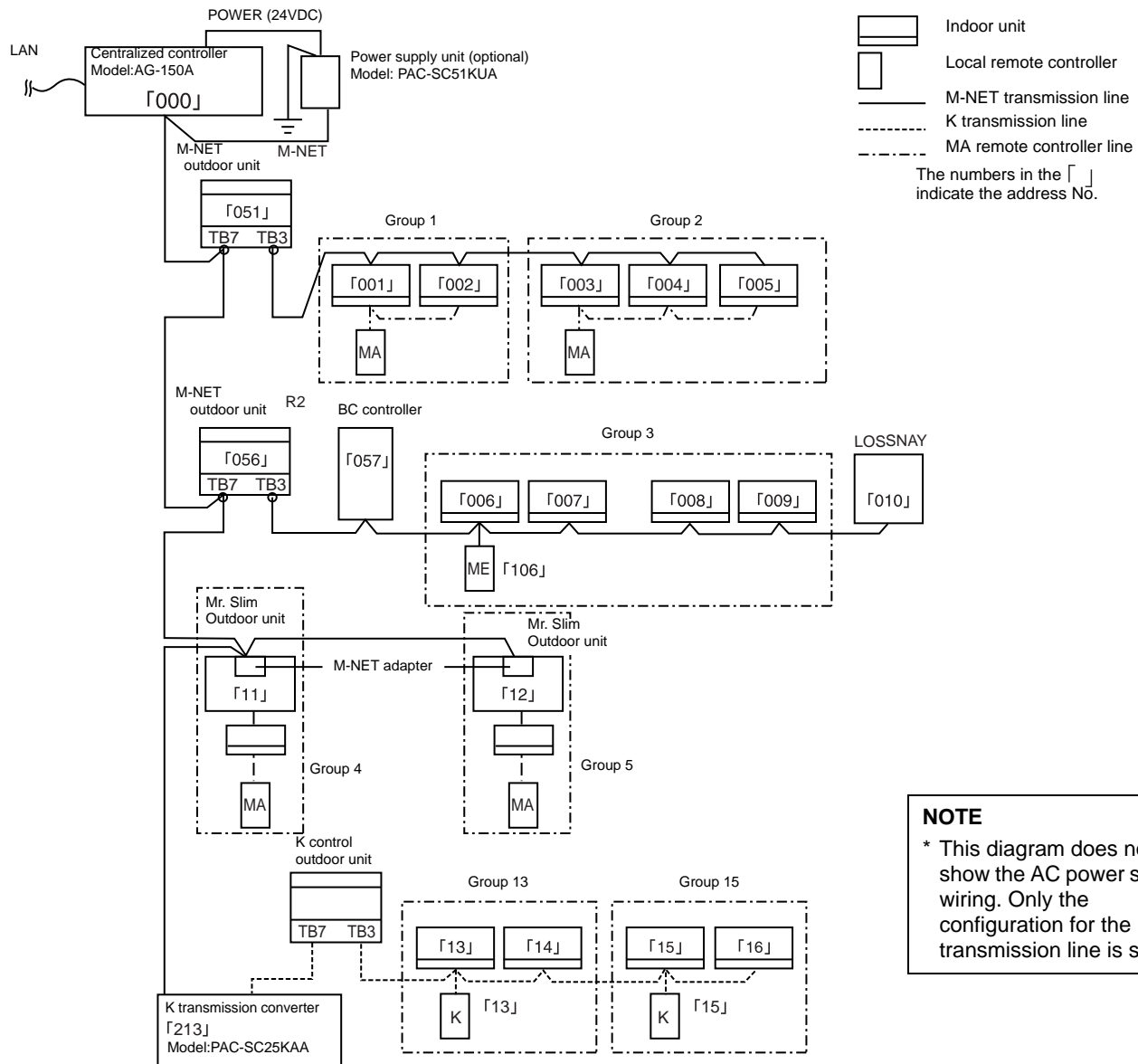
- CN3 Unused
- CN4 Unused
- CN5 Connects to PAC-YG10HA external input/output adapter
- LAN Connects to other units of equipments over the LAN via a HUB.
- CN2 Connects to the power cable when the mounting attachment A type (PAC-YG85KTB; sold separately) is used to attach the controller.
- V+, V-, FG Connects to power supply unit (PAC-SC51KUA) that supplies 24 VDC power. (V+: +24VDC terminal, V-: 0V terminal, FG: Functional earthing terminal; ground)
- CN1 Connects to the M-NET cable when the mounting attachment A type (PAC-YG85KTB; sold separately) is used to attach the controller. Do not use this terminal when a PAC-YG50ECA expansion controller is used.
- A,B,S Connects to the M-NET transmission cable from the power supply unit (PAC-SC51KUA). (A, B: M-NET transmission cable terminal: non-polarized, S: Shield terminal) Do not use this terminal when a PAC-YG50ECA expansion controller is used.

NOTE

- * M-NET terminal (A, B, S) and CN1 cannot be used simultaneously.
- * Power supply terminal block (V+, V-, FG) and CN2 cannot be used simultaneously.

5 System Diagram

1. Standard configuration (using the AG-150A to control a system with 50 or fewer units of equipments)



* Address setting for each M-NET device (Addresses cannot be duplicated).

	Address setting method	Address
Indoor unit	Set the indoor unit you want to make the main unit in the same group to the minimum address, then sequentially set the indoor unit addresses in the same group.	1~50
Outdoor unit	Minimum indoor unit address in same refrigerant system + No.50 unit.	51~100
BC controller/OS controller	Outdoor unit address in same refrigerant system + No.1 unit. However, for Sub-BC controller, the minimum indoor unit address that connects the local refrigerant piping should be + 50.	52~100
K control side remote controller	Same address as indoor unit main unit.	1~50
Mr. Slim Outdoor unit	Same address as indoor unit main unit. An M-NET adapter (sold separately) is required.	1~50
M-NET remote controller	Set to the minimum indoor unit main address in the same group + 100.	101~200
Sub system controller	Assign an address that equals the lowest group number plus 200.	201~250
DIDO controller (PAC-YG66DCA)	Assign an arbitrary but unused address to the PAC-YG66DCA DIDO controller after assigning an address to all units to be assigned an address between 1 and 50. The number of controllable units depends on the number of channels used.	1~50
PI controller (PAC-YG60MCA)	Assign an arbitrary but unused address to the PI controller after assigning an address to all units to be assigned an address between 1 and 50.	1~50
AI controller (PAC-YG63MCA)	Assign an arbitrary but unused address to the AI controller after assigning an address to all units to be assigned an address between 1 and 50.	1~50
MA remote controller	Address setting is unnecessary.	-
OA processing unit/LOSSNAY	After setting all the indoor units, set an arbitrary but unused address.	1~50
K transmission converter	Minimum address of K control indoor unit + 200.	201~250

NOTES

* Apply following precautions when using the K transmission converter (model PAC-SC25KAA; discontinued) and controlling the M-NET model and K control model with the same controller.

Refer to the K transmission converter (PAC-SC25KAA) installation manual for details.

① Centralized controller address

Always set the controller address to "000".

② Centralized controller function selects

Set the "K Converter Address" by using the "M-NET Settings" on the Initial settings screen.

③ Indoor unit address

Set all M-NET model indoor units from the No.1 unit, then set the K control model addresses.

Indoor unit No.1 unit ~M-NET indoor unit max. address> K control indoor unit minimum address ~50

④ K control model group No.

The minimum indoor address No. of that group becomes the group No. (Same for K control side local remote controller.)

⑤ The remote controller address does not need to be included in the K-control unit group settings.

NOTE

* Some types of units cannot be controlled from the AG-150A controller.

1-1. M-NET wiring configuration

(1) Types and maximum allowable length of M-NET transmission cables

Cable type	Facility type	All facility types
	Type	Shielded cable CVVS-CPEVS
	No. of cores	2-core cable
	Cable size	Minimum 1.25 mm ²
Maximum transmission line distance between the outdoor unit and the farthest indoor unit		200 m
Distance of the transmission line for the central control system and indoor-outdoor transmission line to the farthest indoor unit (Maximum line distance via outdoor unit)		500 m * The maximum line distance from the power supply unit on the transmission line for the central control system to each outdoor unit or to the system controller is 200 m.

The wiring diagram below shows a sample M-NET transmission wiring for a CITY MULTI system.

The maximum total line distance (centralized control and indoor-outdoor transmission lines) for each M-NET system is expressed in the formula below. Observe the maximum length to ensure proper signal transmission to and from the connected equipments over the M-NET transmission line.

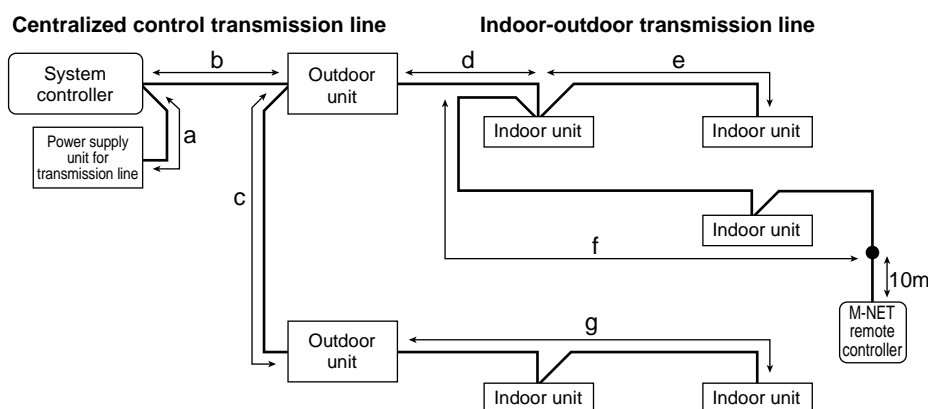
If the maximum line length is exceeded, the M-NET signals will be attenuated, resulting in communication error and control failure.

$$a+b+d+e(f) \leq 500m$$

$$a+b+c+g \leq 500m$$

$$e(f)+d+c+g \leq 500m$$

The local remote controller cable length should be 10 m or shorter. The part that exceeds the 10 m limit should be included in the maximum total line length of 500 m.



(A) Centralized control transmission line

The power supply distance for the centralized controller transmission line is expressed in the formula below.

This is the maximum length of the centralized control transmission line to which proper amount of power reaches. If the maximum line length is exceeded, those equipments at the end of the transmission line may not receive enough power, resulting in communication error and control failure.

$$a+b \leq 200m$$

$$a+b+c \leq 200m$$

(B) Indoor-outdoor transmission line

The power supply distance for the indoor-outdoor transmission line is expressed in the formula below.

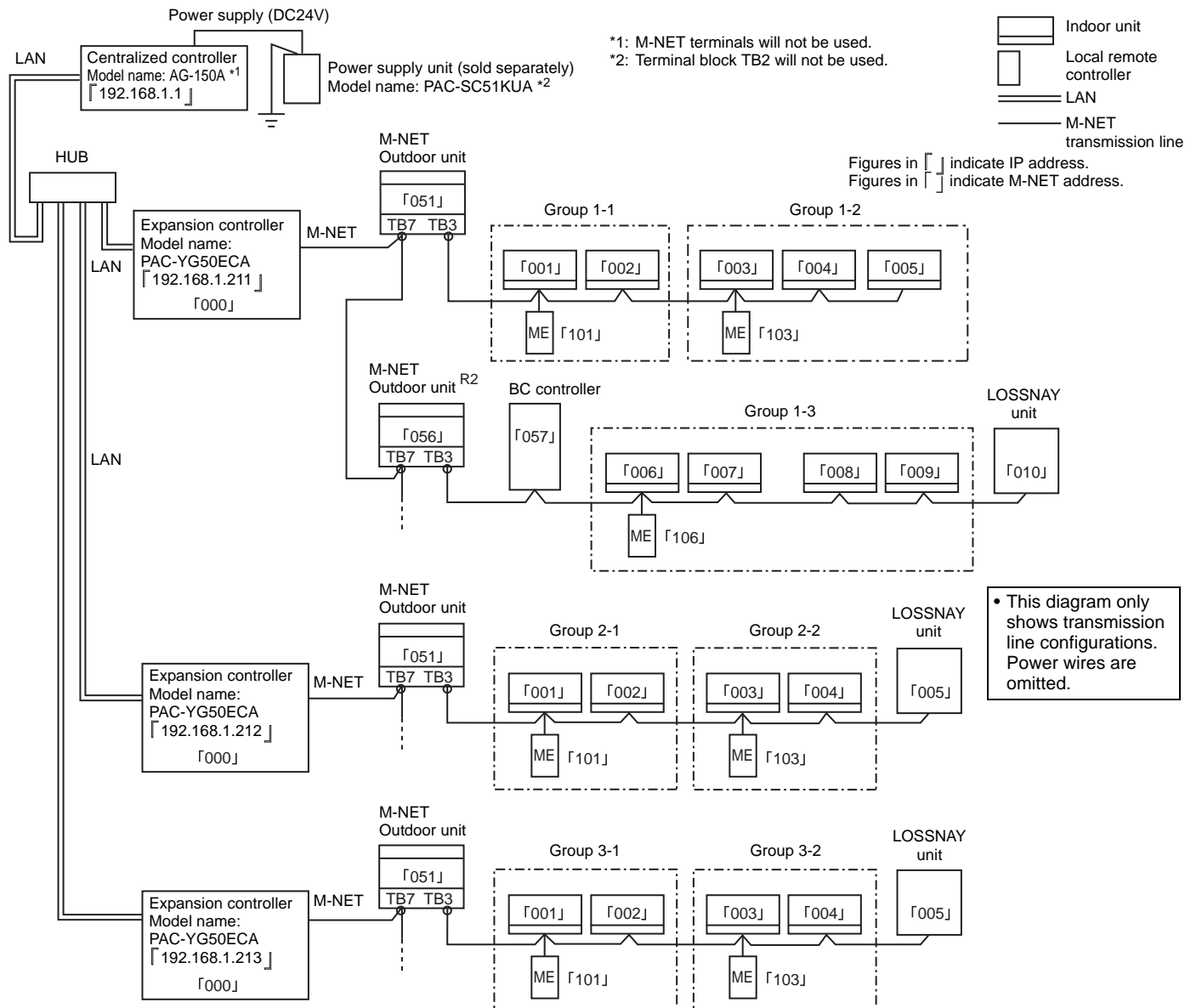
This is the maximum length of the indoor-outdoor transmission line to which proper amount of power reaches. If the maximum line length is exceeded, those equipments at the end of the transmission line may not receive enough power, resulting in communication error and control failure.

$$d+e(f) \leq 200m$$

$$g \leq 200m$$

The length of the local remote controller cable that exceeds the 10 m limit should be included in the maximum total line length of 500 m and in the power supply distance of 200 m.

2. System with connection to an expansion controller (system with 50 or more units)



- Refer to the PAC-YG50ECA expansion controller Installation/Instructions Manual for how to set the IP address.
- The same M-NET address cannot be used twice in the same M-NET system that connects to the same PAC-YG50ECA expansion controller.
See section 1 “Standard configuration” for how to set the addresses for the equipments that are connected to the expansion controller within an M-NET system.

NOTES

- * The DB No. of PAC-YG50ECA is found on the package box and the controller itself in the [DB No. : **] format. Only the expansion controllers with the same DB No. as the AG-150A can be connected to the AG-150A. Be sure to check the DB No. before connecting the expansion controller to the system.
If the DB numbers of the AG-150A and PAC-YG50ECA do not match, the software needs to be updated. Consult your dealer.

Label contents

Serial number : * * * * - * * *
Ver. : * * . * *
DB No. : * *

<Ver.> と <DB No.> は出荷時点のものを記載しています。
<Ver.> and <DB No.> indicate factory default versions.

DB No. appears here.

- * Provide “one-point grounding” for the M-NET transmission line (centralized control system) by grounding the shield of the an expansion controller. (Class-D grounding)
Ground the indoor-outdoor transmission line in each outdoor unit refrigerant system.
- * Set the centralized control switch (SW2-1) on the outdoor units on the M-NET line to ON.
(Refer to the outdoor unit Installation Manual for the details of the dipswitch settings.)

NOTES

- * Up to three PAC-YG50ECA controllers can be connected to each AG-150A unit.
- * Main system controllers (e.g., AG-150A) cannot be connected to an M-NET system that is controlled by an expansion controller.

* Main and sub system controllers (M-NET)

AG-150A is for exclusive use as a main SC. AG-150A cannot be used as a sub SC.

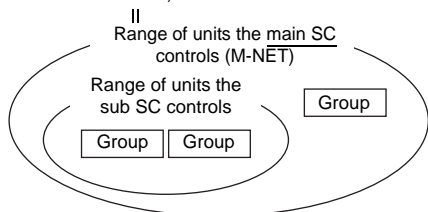
• Main system controller (Main SC)

Main SC refers to a controller that controls all other system controllers including the units they control. If a given system has only one system controller, that controller becomes the main controller. Group settings and interlock settings can only be made from a main controller.

• Sub system controller (Sub SC)

Sub controller refers to a system controller that is controlled (including the units it controls) by a main system controller.

AG-150A, PAC-YG50ECA etc.

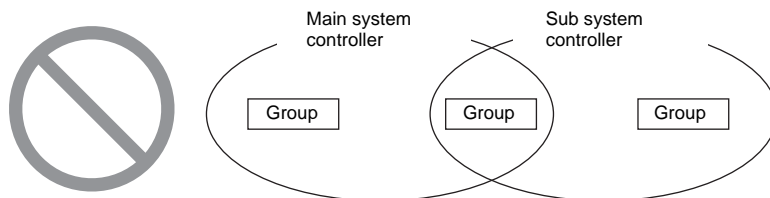


AG-150A is for exclusive use as a main SC. AG-150A cannot be used as a sub SC or controlled from another main SC.

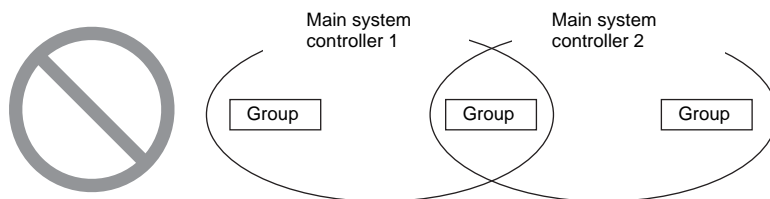
NOTES

The following types of configurations are not possible.

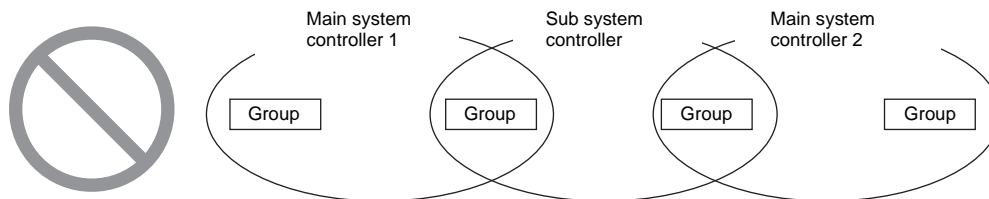
- A sub controller can only control the groups that are under the control of its main controller.



- No groups can be placed under the control of more than one main system controller.



- No sub system controllers can be placed under the control of more than one main system controller.



6 Installation

⚠ CAUTION

- * Install and wire the unit with the power to the power supply unit (PAC-SC51KUA) turned off.
- * Do not put the signal wire and power wire in the same conduit.
- * When routing the cable from the top of the controller, let the cable hang down below the connector before connecting it to the terminal block or connector as shown in the figure below to prevent water from running down the cable and causing electric shock or fire.



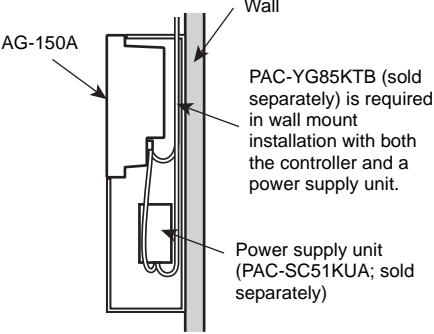
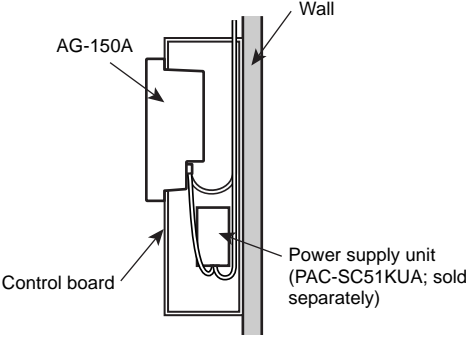
1. Field-supplied Parts

- ① Electric box: PAC-YG83UTB (sold separately) (When following installation method described in section “2. Installation” item ①.)
- ② Mounting attachment B Type: PAC-YG81TB (sold separately) (Required only when following installation method described in section “2. Installation” item ③.)
- ③ Mounting attachment A Type: PAC-YG85KTB (sold separately) (Required only when following installation method described in section “2. Installation” item ④.)
- ④ Locknuts and bushing for the conduit tube.
- ⑤ M-NET transmission cable. (Refer to Page 12.)
- ⑥ DC power cable. (Refer to Page 12.)

2. Installation

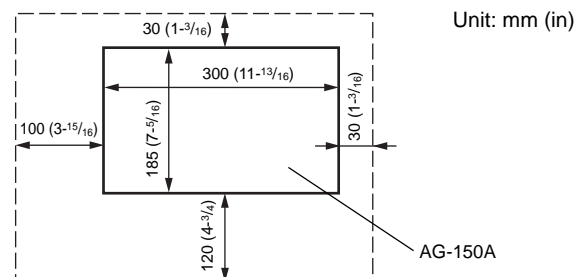
The controller can be installed by following one of the methods below:

①	By embedding the centralized controller in the wall. Method of using two plates included with AG-150A.	
②	By embedding the centralized controller in the wall and mounting it to an electric box. An electric box (PAC-YG83UTB; sold separately) is required.	
③	By installing the centralized controller directly on the wall. Mounting attachment B type (PAC-YG81TB; sold separately) is required.	

④	By installing the centralized controller and a power supply unit (PAC-SC51KUA; sold separately) inside the mounting attachment on the wall. Mounting attachment A type (PAC-YG85KTB; sold separately) is required.	
⑤	Attach the AG-150A to the control board.	

2-1. Embedding the centralized controller in the wall.

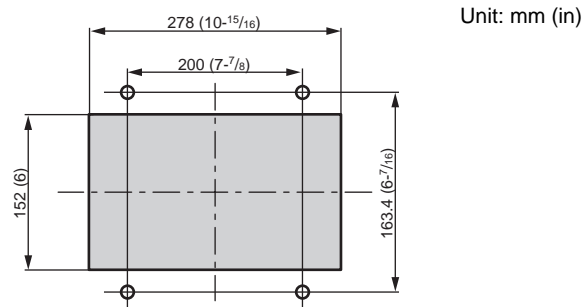
- ① Ensure there is enough space to install the controller as shown in the figure at right.



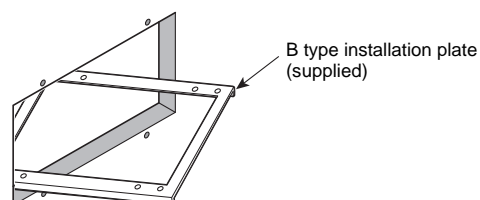
NOTES

- * When installing two or more controllers side-by-side and horizontally ensure that there is at least 130 mm (5-1/8 in) or more between the units.
- * When installing two or more controllers vertically, ensure that there is at least 150 mm (5-15/16 in) between units; otherwise, it will be hard to remove the cover.
- * The amount of space required on the left of the controller is the amount necessary to connect/disconnect the USB drive. (If the specified amount of space is not available, use a USB extension cable.)
- * The amount of space required under the controller is the amount necessary for the mounting/dismounting of the controller cover.

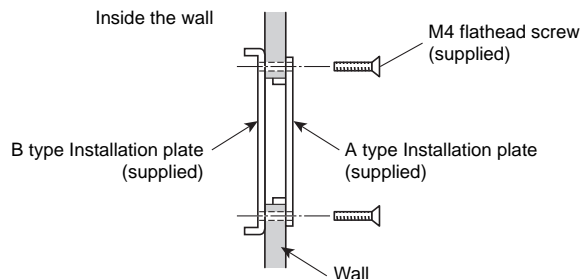
- ② Cut out an opening in the wall as shown in the shaded area in the figure at right. (W x H: 278 mm (11 in) x 152 mm (6 in))
Follow the dimensions in the figure exactly. If the opening is too large, it will be hard to properly install the unit.
Make mounting plate (A type and B type) screw holes on the hole as shown in the right figure. (Use the supplied M4 screws to mount the plates.)



- ③ Insert the B type installation plate (supplied) through the hole in the wall and hold it.



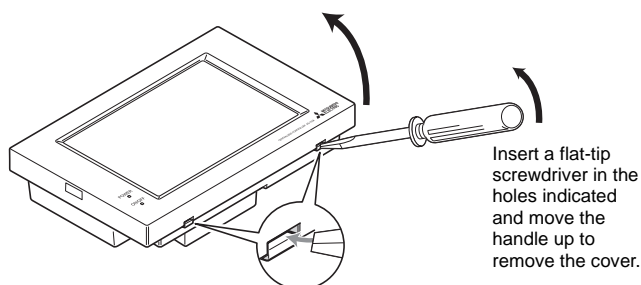
- ④ Attach the A type installation plate (supplied) to the B type installation plate (supplied) with the M4 flathead screws (supplied), sandwiching the wall between the two plates. Prior to installation, check that the wall is strong enough to support the weight of the controller to prevent the controller from falling.



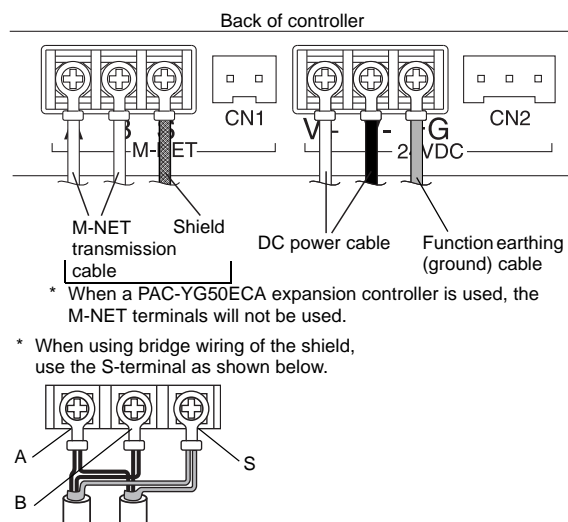
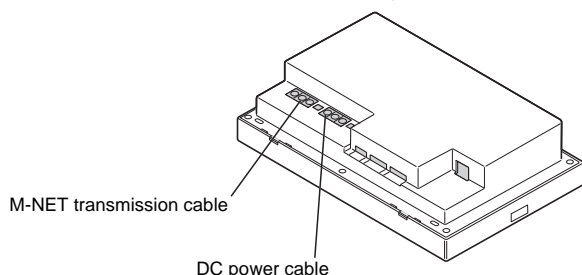
NOTE

* If the screw provided for the installation plate, cannot be used because of the wall thickness, use an M4 flathead screw that matches the wall thickness.

- ⑤ Remove the AG-150A surface cover.



- ⑥ Push the wire through the wall hole, and connect the M-NET transmission cable (centralized control cable that is connected to TB2 of the power supply unit (PAC-SC51KUA)) to M-NET transmission cable terminal A, B (both non polarity) and S. Connect the DC power cable from the power supply unit (PAC-SC51KUA) to the 24VDC power supply terminal block of the controller. There is V+ and V- polarity.



NOTE

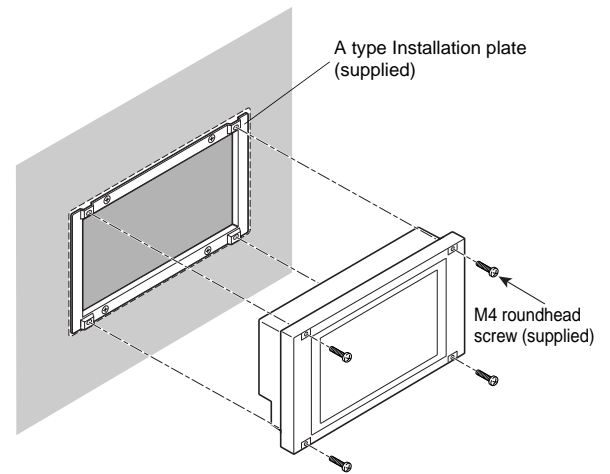
* When using an LAN and external signal I/O, refer to section [11 External input/output usage](#).

M-NET transmission cable	<p>Type of the cable; Shielded cable which comply with the following specifications or equivalent.</p> <ul style="list-style-type: none"> • CPEVS $\phi 1.2\text{mm}$ to $\phi 1.6\text{mm}$ • CVVS 1.25mm^2 to 2mm^2 (AWG16 to 14) <p>*CPEVS; PE insulated PVC jacketed shielded communication cable *CVVS; PVC insulated PVC jacketed shielded control cable PE: Polyethylene PVC: Polyvinyl chloride</p>
DC power cable	<p>The DC power cable should comply with both local standards as well as the power requirement of the unit.</p> <p>Recommended type: 0.75mm^2 to 2mm^2 (AWG18 to 14), 3-conductor power cable</p> <p>Cable length: Within 50m (164 ft)</p>

CAUTION

* Do not connect the AC power cable to the M-NET and POWER (24VDC) terminal blocks of the controller. It may cause a failure.

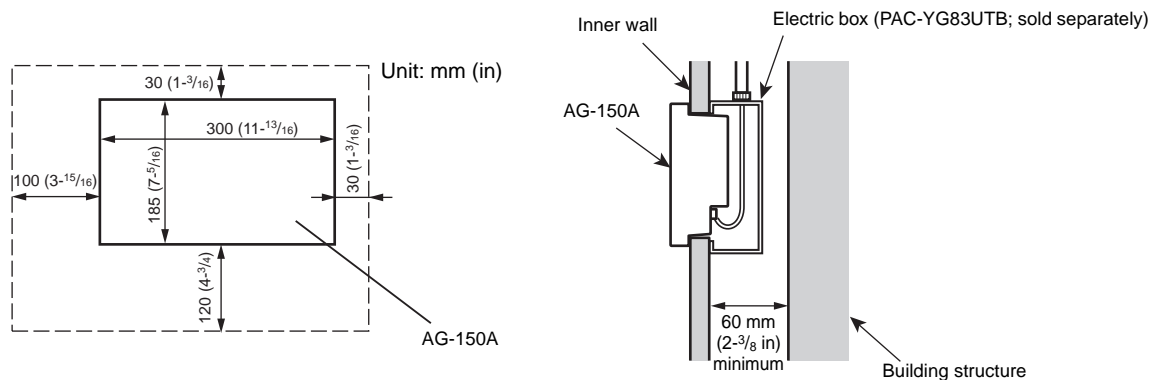
- ⑦ Attach the controller to the A type installation plate with the M4 roundhead screws (supplied).



- ⑧ Replace the AG-150A surface cover.

2-2. Wall-Embedded installation with an Electric box (PAC-YG83UTB; sold separately)

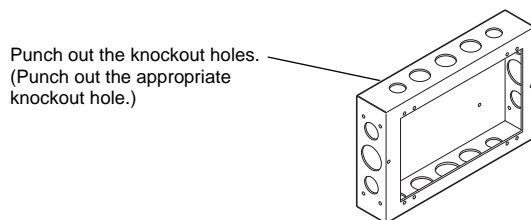
- ① Ensure there is enough space to install the controller as shown below. Wall space (see diagram below) and 60 mm (2-3/8 in) of clearance behind the wall are required to mount an Electric box.



NOTES

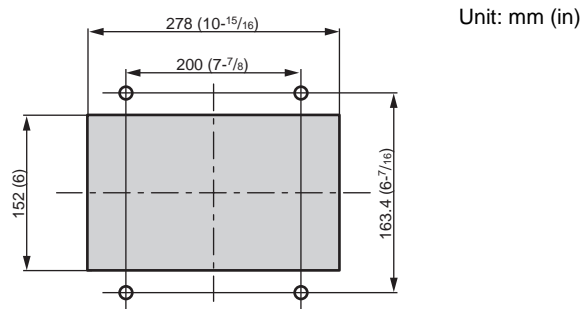
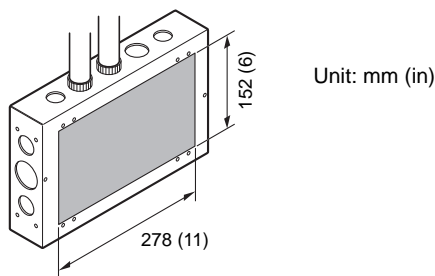
- * When installing two or more controllers side-by-side and horizontally ensure that there is at least 130 mm (5-1/8 in) or more between the units.
- * When installing two or more controllers vertically, ensure that there is at least 150 mm (5-15/16 in) between units; otherwise, it will be hard to remove the cover.
- * The amount of space required on the left of the controller is the amount necessary to connect/disconnect the USB drive. (If the specified amount of space is not available, use a USB extension cable.)
- * The amount of space required under the controller is the amount necessary for the mounting/dismounting of the controller cover.

- ② Punch out the appropriate knockout holes on the Electric box depending on how the cable is routed.



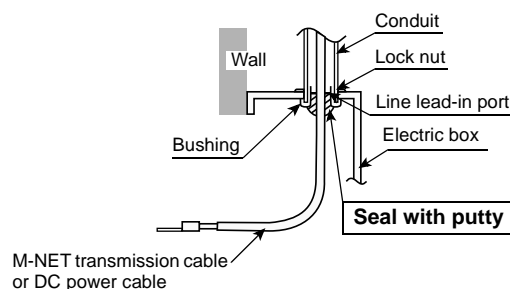
- ③ Install the Electric box in the wall.
Refer to the Installation Manual that came with the Electric box (PAC-YG83UTB) for details.

- ④ Cut out an opening in the wall as shown in the shaded area in the figure below. (Width × Height: 278 mm (11 in) × 152 mm (6 in)) Follow the dimensions in the figure exactly. If the opening is too large, it will be hard to properly install the unit. Make A-type mounting plate screw holes on the hole as shown in the right figure. (Use the supplied M4 screws to mount the plate.)

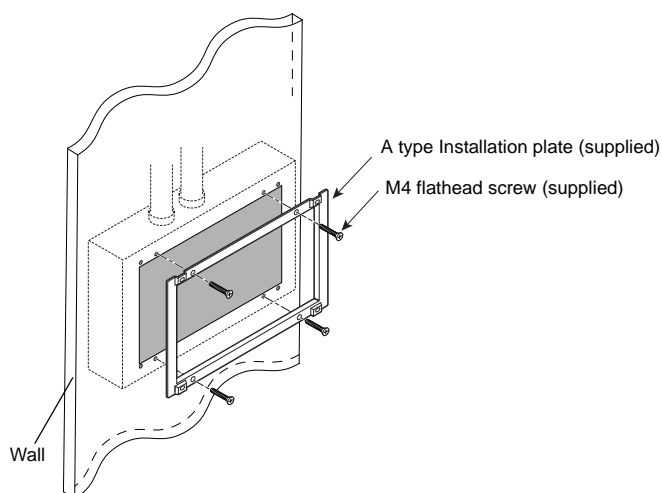


- ⑤ Securely seal the cable lead-in port with putty to prevent dew, water and insects, etc. from entering.

* Seal the space between the electric box and conduit with putty.



- ⑥ Attach the A type installation plate (supplied) with the M4 flathead screws (supplied) on the Electric box.

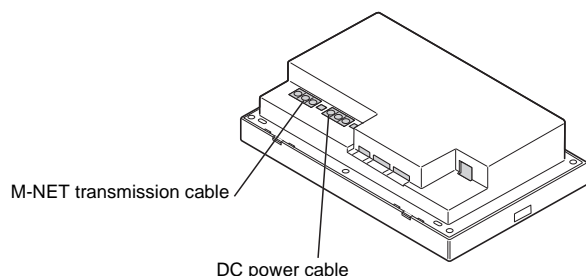


NOTE

* If the screw provided for the installation plate, cannot be used because of the wall thickness, use an M4 flathead screw that matches the wall thickness.

- ⑦ Remove the AG-150A surface cover.

- ⑧ Connect the M-NET transmission cable (centralized control cable that is connected to TB2 of the power supply unit (PAC-SC51KUA)) to M-NET transmission cable terminal A, B (both non polarity) and S. Connect the DC power cable from the power supply unit (PAC-SC51KUA) to the 24VDC power supply terminal block of the controller. There is V+ and V- polarity.

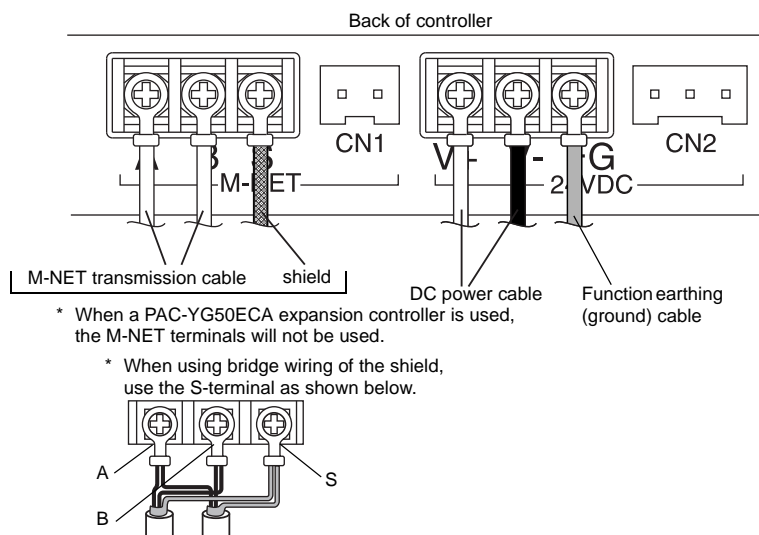
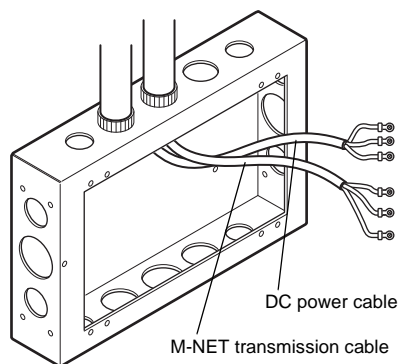


NOTE

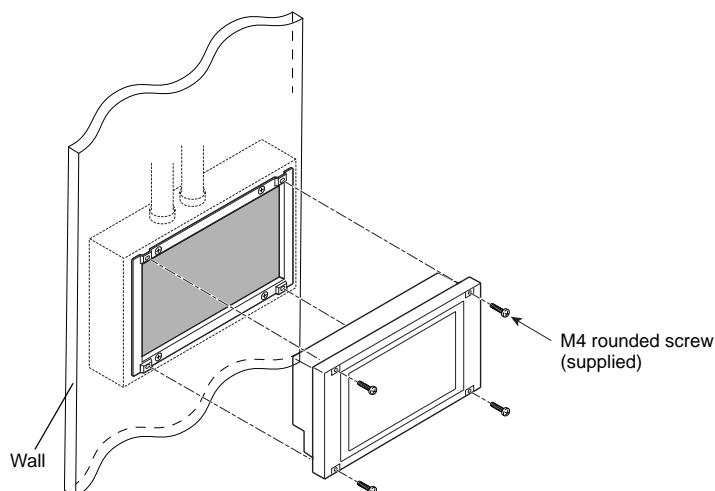
* When using an LAN and external signal I/O, refer to section (11) External input/output usage.

CAUTION

- * Do not connect the AC power cable to the M-NET and POWER (24VDC) terminal blocks of the controller. It may cause a failure.
- * When leading the cable out from above, seal the port so that water does not enter along the transmission cable and DC power supply cable.



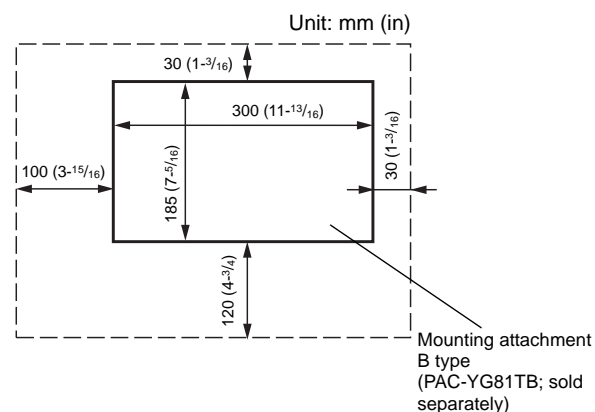
- ⑨ Attach the controller to the A type installation plate with the roundhead screws (supplied).



- ⑩ Replace the AG-150A surface cover.

2-3. Wall-mounting the centralized controller with the mounting attachment B type (PAC-YG81TB; sold separately)

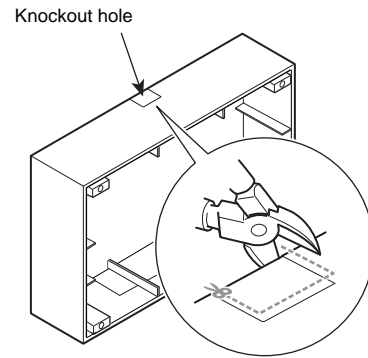
- ① Ensure there is enough space to install the controller as shown in the figure at right.



NOTES

- * When installing two or more controllers side-by-side and horizontally ensure that there is at least 130 mm (5-¹/₈ in) or more between the units.
- * When installing two or more controllers vertically, ensure that there is at least 150 mm (5-¹⁵/₁₆ in) between units; otherwise, it will be hard to remove the cover.
- * The amount of space required on the left of the controller is the amount necessary to connect/disconnect the USB drive. (If the specified amount of space is not available, use a USB extension cable.)
- * The amount of space required under the controller is the amount necessary for the mounting/dismounting of the controller cover.

- ② Punch out the appropriate knockout hole, depending on how the wiring is routed.



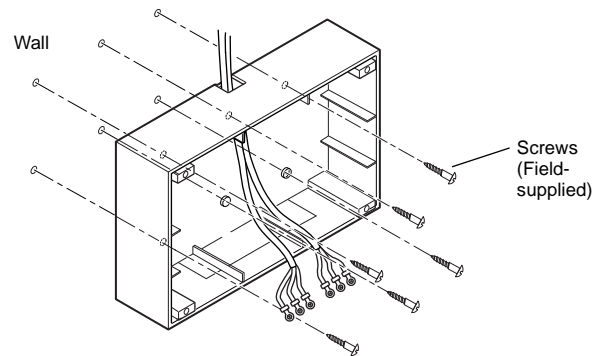
- ③ Sand the cut surface of the knockout hole smooth.

⚠ CAUTION

* Any rough edges that are left may damage the cable and cause electric shock or fire.

- ④ Push the M-NET transmission cable, DC power cable through the knockout hole.

- ⑤ Install the mounting attachment B type (PAC-YG81TB; sold separately) on the wall with the six screws (field-supplied; use screws that are suitable for the type of wall the AG-150A is installed on).
Prior to installation, check that the wall is strong enough to support the weight of the controller.

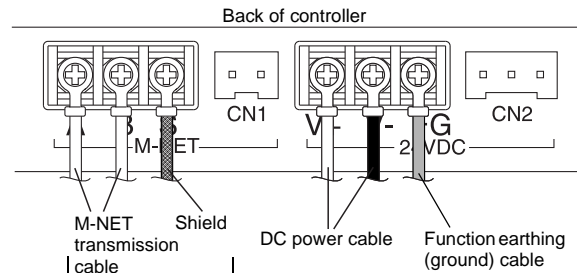


- ⑥ Remove the AG-150A surface cover.

- ⑦ Connect the M-NET transmission cable (centralized control cable that is connected to TB2 of the power supply unit (PAC-SC51KUA)) to M-NET transmission cable terminal A, B (both non polarity) and S.
Connect the DC power cable from the power supply unit (PAC-SC51KUA) to the 24VDC power supply terminal block of the controller. There is V+ and V- polarity.

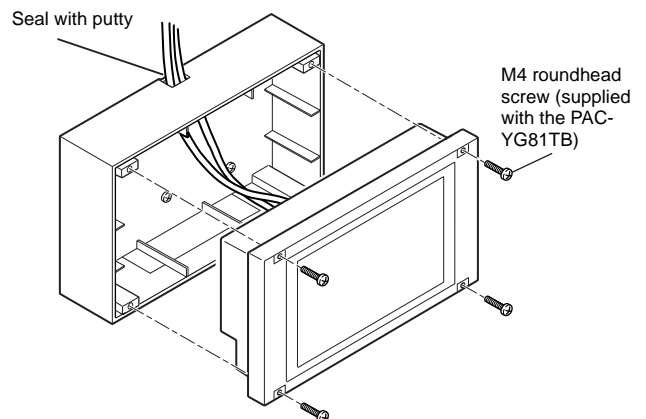
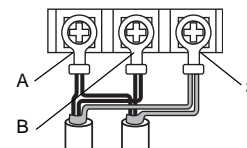
NOTE

* When using an LAN and external signal I/O, refer to section [\(11\) External input/output usage](#).



* When a PAC-YG50ECA expansion controller is used, the M-NET terminals will not be used.

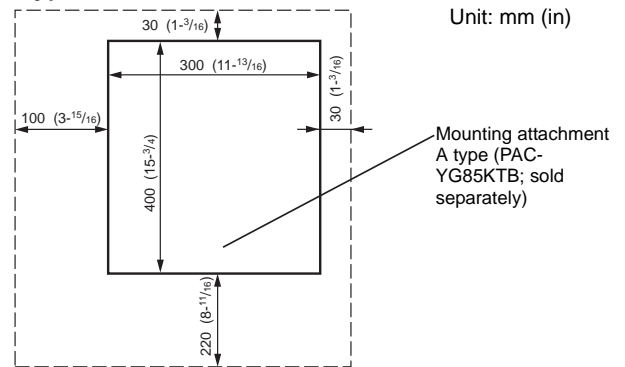
* When using bridge wiring of the shield, use the S-terminal as shown below.



- ⑩ Replace the AG-150A surface cover.

2-4. Installing the centralized controller and a power supply unit (PAC-SC51KUA; sold separately) inside the mounting attachment A type (PAC-YG85KTB; sold separately) on the wall

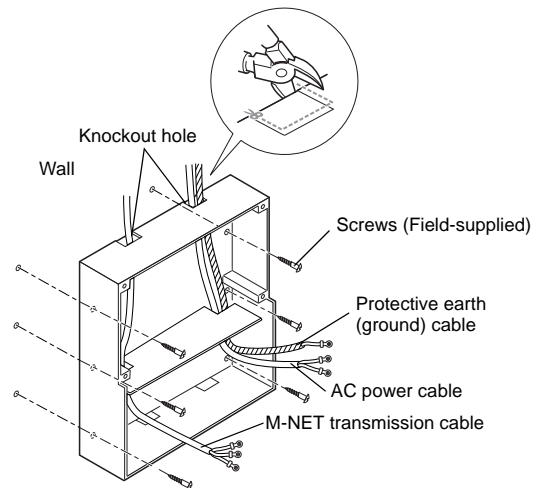
- ① Ensure there is enough space to install the controller as shown in the figure at right.



NOTES

- * When installing two or more controllers side-by-side and horizontally ensure that there is at least 130 mm (5-1/8 in) or more between the units.
- * When installing two or more controllers vertically, ensure that there is at least 250 mm (9-7/8 in) between units; otherwise, it will be hard to remove the cover.
- * The amount of space required on the left of the controller is the amount necessary to connect/disconnect the USB drive. (If the specified amount of space is not available, use a USB extension cable.)
- * The amount of space required under the controller is the amount necessary for the mounting/dismounting of the controller cover.

- ② Install the mounting attachment A type (PAC-YG85KTB; sold separately) on the wall with the six screws (field-supplied; use screws that are suitable for the type of wall the AG-150A is installed on).
Prior to installation, check that the wall is strong enough to support the weight of the controller.



- ③ Punch out the knockout holes on the mounting attachment A type (PAC-YG85KTB).

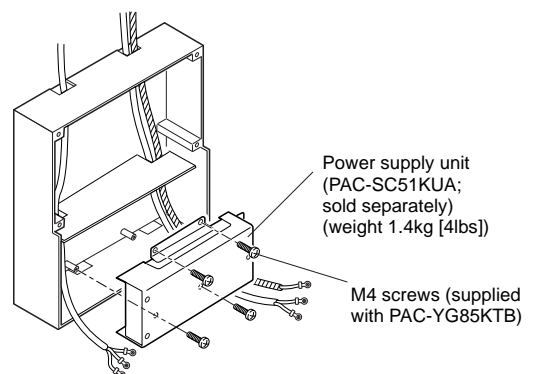
- ④ Sand the cut surface of the knockout holes smooth.

⚠ CAUTION

- * Any rough edges that are left may damage the cable and cause electric shock or fire.

- ⑤ Push the AC power cable, protective earth (ground) cable, and M-NET transmission cable through the knockout hole.
- ⑥ Install the power supply unit (PAC-SC51KUA; sold separately) inside the mounting attachment with the four M4 screws (Supplied with PAC-YG85KTB).

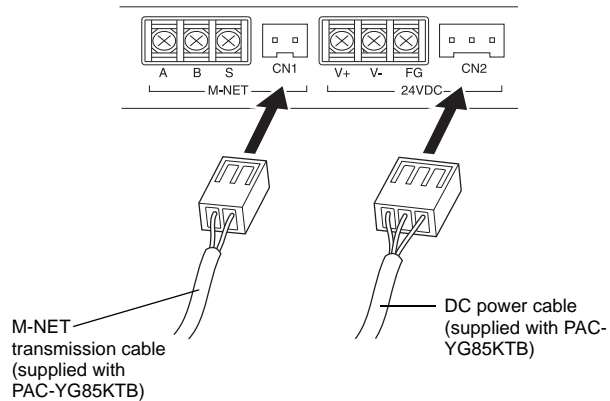
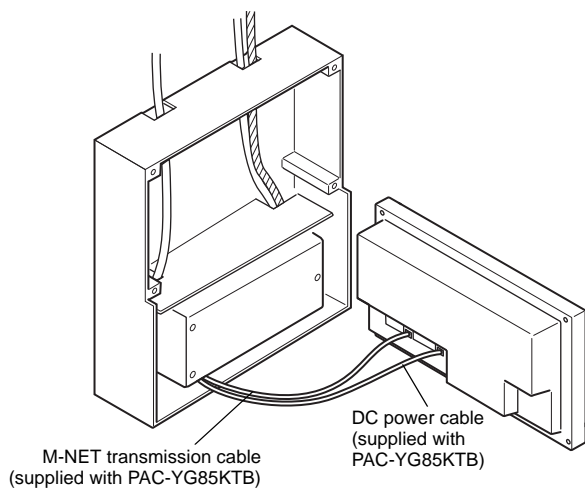
- ⑦ Connect the cables to the power supply unit (PAC-SC51KUA).
Refer to the PAC-SC51KUA Installation Manual for details.



- ⑧ Securely seal the cable lead-in port with putty to prevent dew, water and insect, etc. from entering.

- ⑨ Remove the AG-150A surface cover.

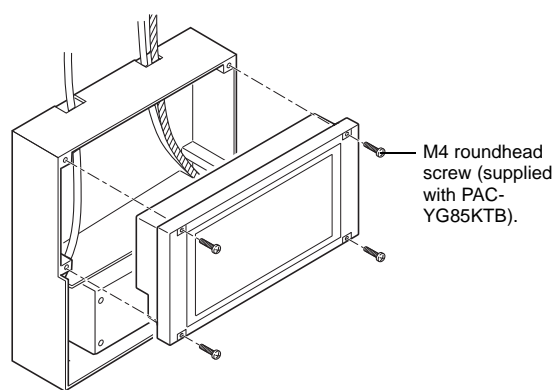
- ⑩ Connect the wiring from the power supply unit to the centralized controller.



NOTE

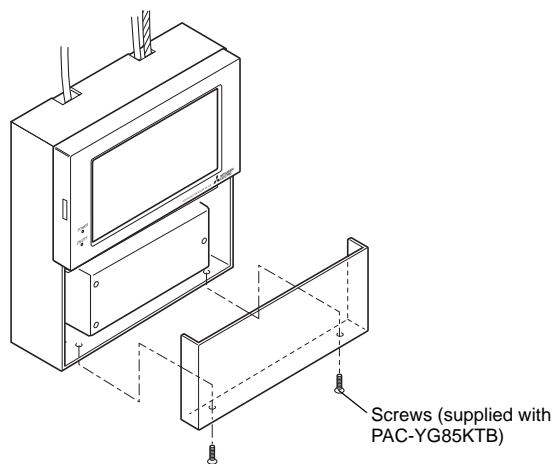
* When using an LAN and external signal I/O, refer to section ⑪ External input/output usage.

- ⑪ Install the controller inside the mounting attachment A type (PAC-YG85KTB) with the four M4 rounded screws (supplied with PAC-YG85KTB).



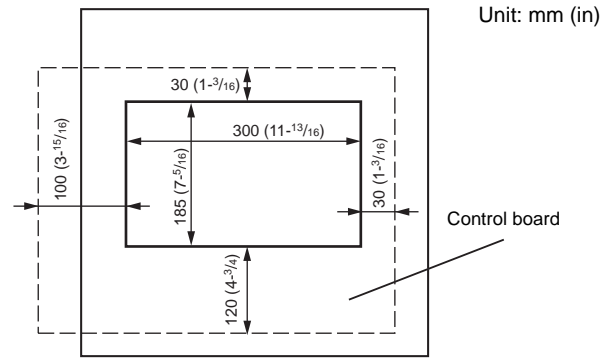
- ⑫ Replace the AG-150A surface cover.

- ⑬ Attach the power supply unit cover with the two screws. (Supplied with PAC-YG85KTB)



2-5. Installing the centralized controller on the control board

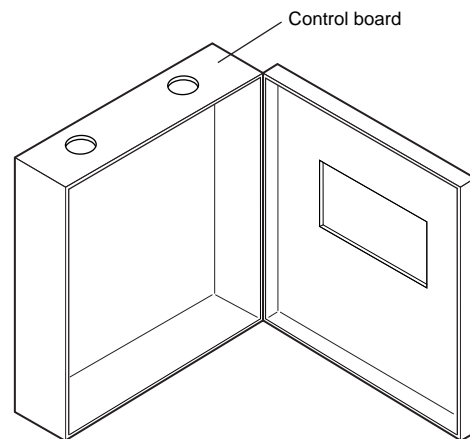
- ① Make sure that there is an adequate amount of space to install the controller as shown in the figure on the right.



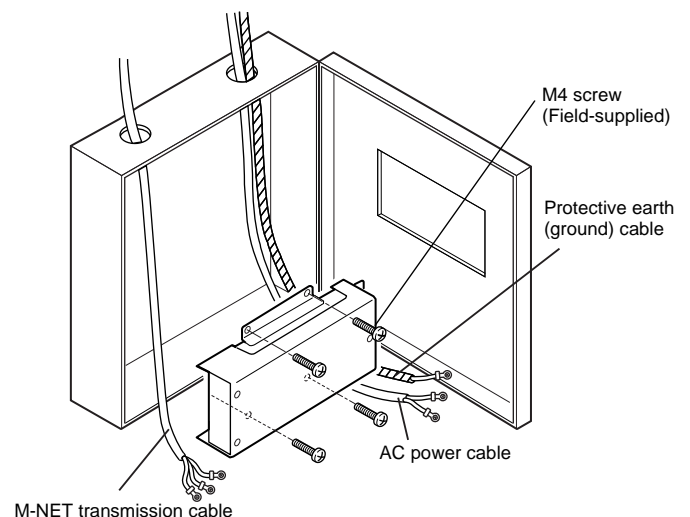
NOTES

- * When installing two or more controllers side-by-side and horizontally ensure that there is at least 130 mm (5-1/8 in) or more between the units.
- * When installing two or more controllers vertically, ensure that there is at least 150 mm (5-15/16 in) between units; otherwise, it will be hard to remove the cover.
- * The amount of space required on the left of the controller is the amount necessary to connect/disconnect the USB drive. (If the specified amount of space is not available, use a USB extension cable.)
- * The amount of space required under the controller is the amount necessary for the mounting/dismounting of the controller cover.

- ② Install the control board on the wall.
Refer to the Control Board Installation Manual for details.



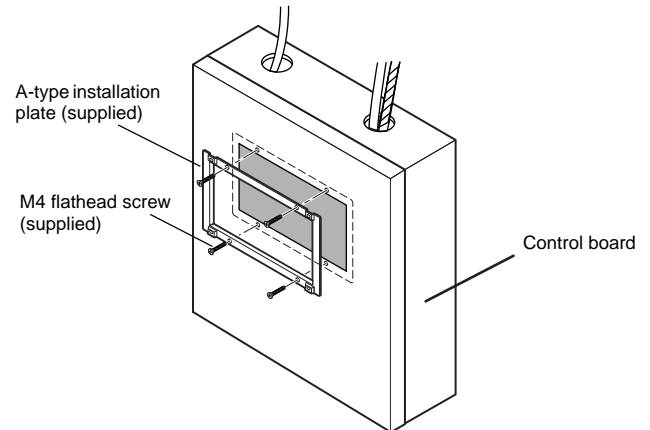
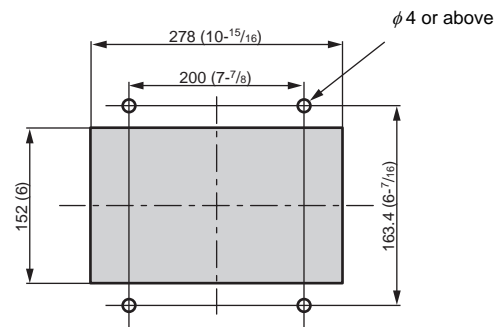
- ③ Punch out the appropriate knockout hole on the control board, and push the AC cable, protective earth (ground) cable, and M-NET transmission cable through the knockout hole.
- ④ Install the power supply unit (PAC-SC51KUA; sold separately) on the control board.



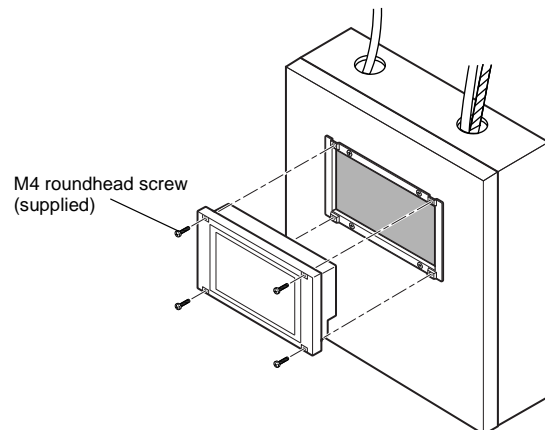
- ⑤ Connect the cable to the power supply unit (PAC-SC51KUA).
Refer to the PAC-SC51KUA Installation Manual for details.
- ⑥ Securely seal the cable lead-in port with putty to prevent dew, water and insects, etc. from entering.
* Seal the space between the control board and conduit with putty.

- ⑦ Screw down the A type installation plate (supplied) on the control board door with the M4 flathead screws (supplied). Drill four screw holes and a 278 mm [W] × 152 mm [H] hole on the control board door ahead of time.
(Cut screw threads in the control board screw holes, or use nuts to tighten screws.
Use the B type installation plate (supplied) if the above is not feasible.
Refer to section 2-1④.)

Unit: mm (in)



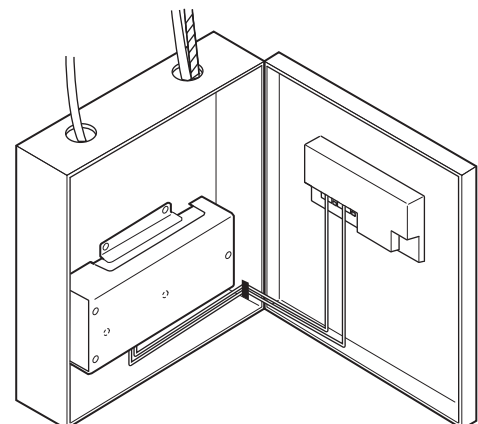
- ⑧ Remove the AG-150A surface cover.
⑨ Install the AG-150A on the A type installation plate with the M4 roundhead screws (supplied).



- ⑩ Replace the AG-150A surface cover.
⑪ Connect the power supply unit and centralized controller.

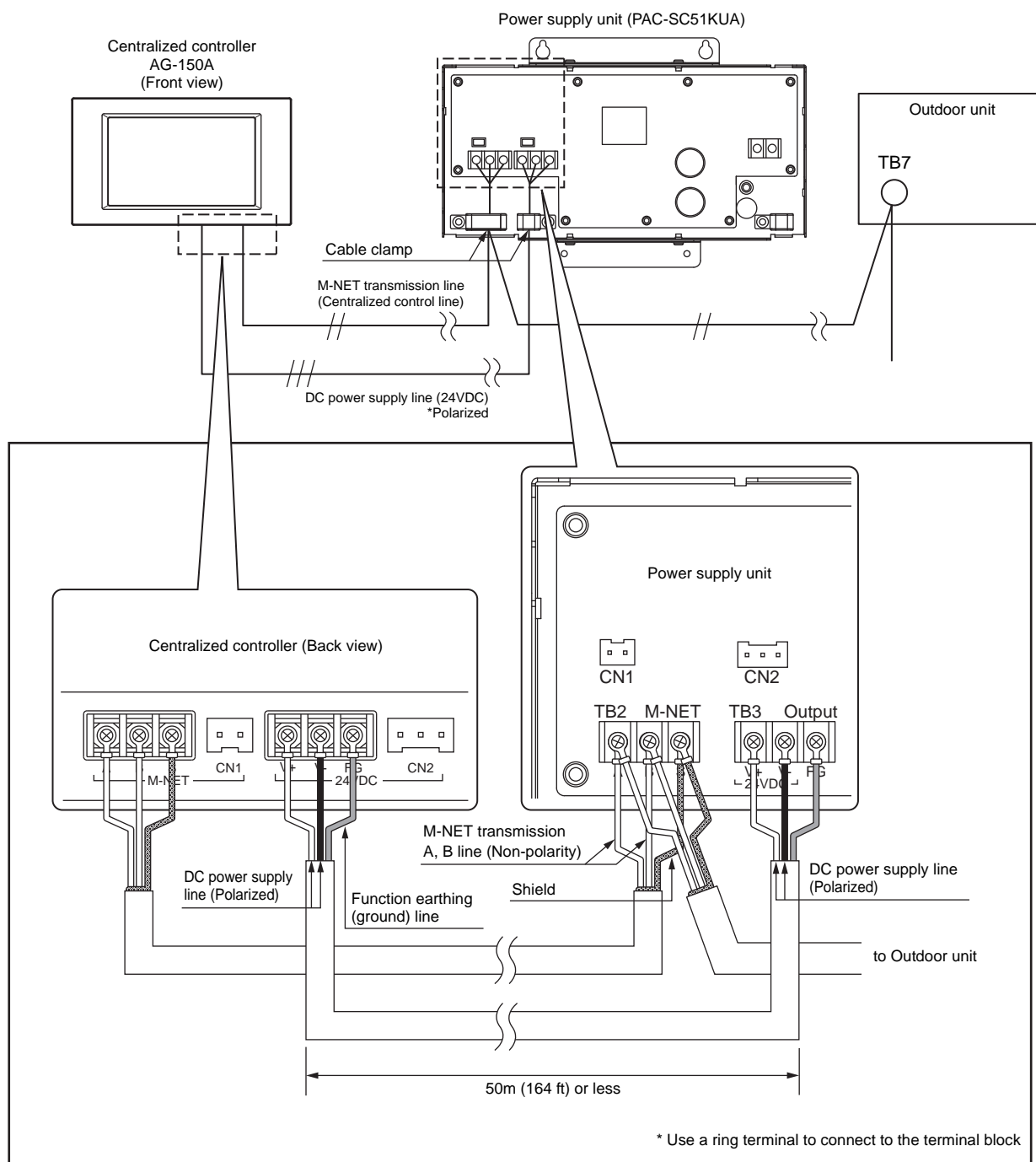
NOTE

* When using an LAN and external signal I/O, refer to section ⑪ External input/output usage.



7 Wiring

1. System without connection to a PAC-YG50ECA expansion controller



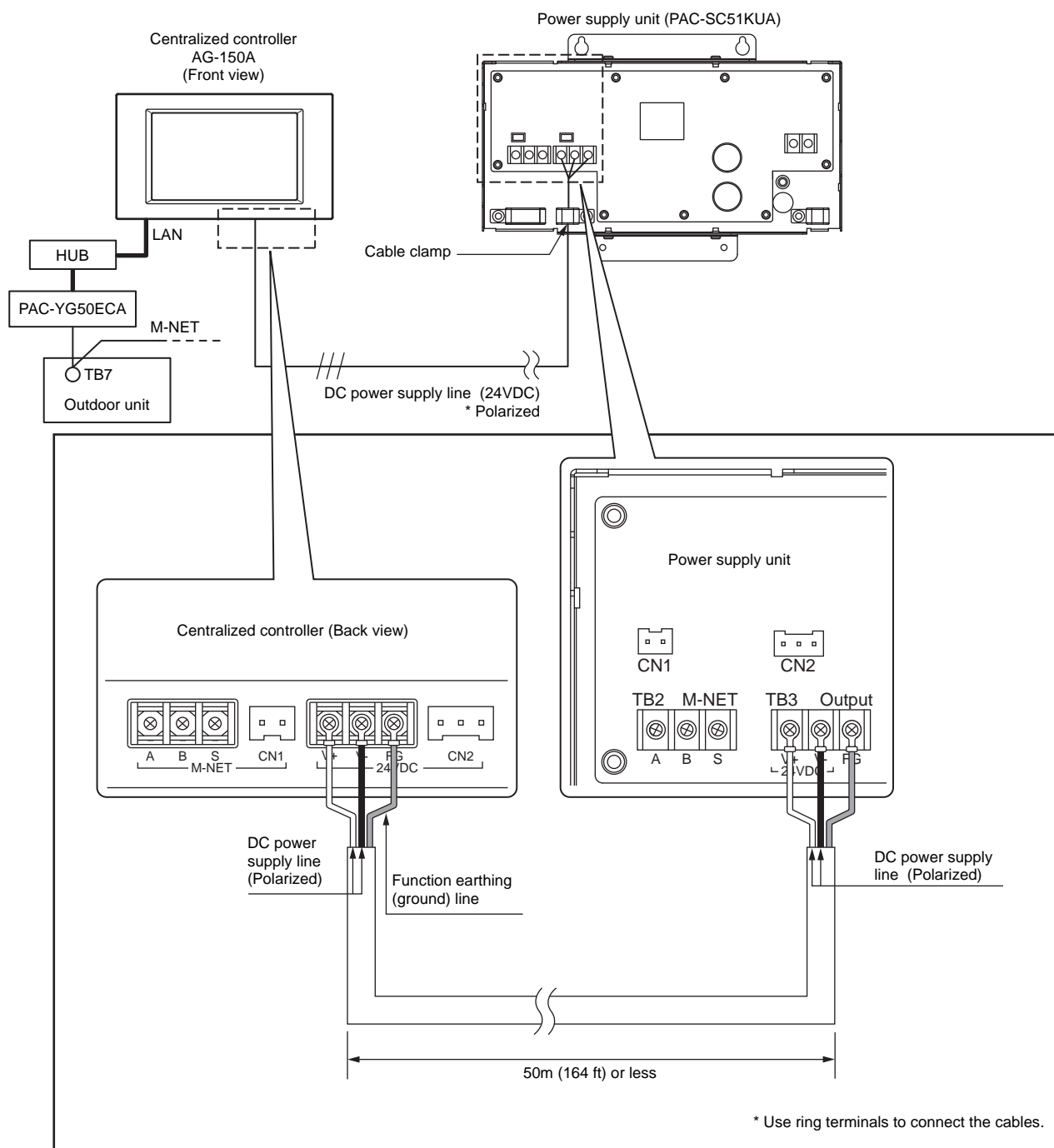
NOTES

Connecting the M-NET transmission line to the AG-150A.

* Connect the M-NET transmission to the centralized controller system side, and supply power to the M-NET from PAC-SC51KUA.

* Leave the power jumper connected to CN41 on all outdoor units.

2. System with connection to a PAC-YG50ECA expansion controller



NOTES

Connecting the PAC-YG50ECA expansion controller (sold separately)

* Supply 24 VDC power from PAC-SC51KUA to the AG-150A when using PAC-YG50ECA.

* M-NET transmission line does not need to be connected to the AG-150A or PAC-SC51KUA.

Signal communication from the AG-150A is performed entirely over the LAN.

Connect the LAN from the AG-150A to the PAC-YG50ECA via a HUB.

8 Initial Setting

NOTES



- * Choose from two initial setting methods: 1) Making the settings via AG-150A, 2) Making the setting via the LAN using the Initial Setting Web.
- This manual provides the instructions on making the initial settings from AG-150A.
- Please refer to AG-150A Instruction Book or the Instruction Book that are provided with Initial Setting Web.
- Refer to the PAC-YG50ECA expansion controller Installation/Instructions Manual for how to connect expansion controllers.

System 1: Standard configuration (system with 50 units of equipments or less)

System 2: System with connection to one or more expansion controllers (system with more than 50 units or equipments)

The startup procedures vary with system configuration.

The following table summarizes the initial setting procedures.

Initial setting procedures	System configuration		
	1	2	
1. Startup		①	Check that the version of the AG-150A software is 2.10 or later. Check that the DB No. of the AG-150A and the PAC-YG50ECA to be connected match.
		②	Set the IP address for the expansion controller with the dipswitch on PAC-YG50ECA.
	①	③	Turn on the power supply unit (PAC-SC51KUA) to start up the AG-150A.
	②	④	The display language selection window will appear. Select the desired language by touching the language.
	③	⑤	The Initial Setting screen will appear. (Once the initial settings have been made, the monitor screen will appear when the unit is turned on. Touch the  icon at the top right of the screen to bring up the Initial Settings window if necessary.)
2. Clock setting	①		Touch "Date and time" on the Initial Settings window.
	②		Change other settings as necessary by touching the desired items, and touch "Save Settings" to save the changes.
3. Unit information settings	①	①	Touch "Unit Info." on the Initial Settings window.
	②		Set the Expansion Controller setting to "Do not use".
		②	Set the Expansion Controller setting to "Use".
	③	③	Change other settings as necessary by touching the desired items, and touch "Save Settings" to save the changes.
4. Network settings	①	①	Touch "Network" on the Initial Settings window.
	②		Check that the AG-150A tab is selected.
		②	Touch the EC tabs, and make necessary settings for the EC-1 through EC-3.
	③	③	Change other settings as necessary by touching the desired items, and touch "Save Settings" to save the changes.
5. Group settings	①	①	Touch "Groups" on the Initial Settings window.
	②		Check that the AG-150A tab is selected.
		②	Touch the EC tabs, and make necessary settings for the EC-1 through EC-3.
	③	③	Change other settings as necessary by touching the desired items, and touch "Save Settings" to save the changes.
6. Miscellaneous settings	①	①	After completing the group setting, make the settings for other items as necessary by touching the item on the menu to be set. <ul style="list-style-type: none"> • Interlocked operation setting (interlocked operation between LOSSNAY and indoor units) • Refrigerant system monitor setting (monitoring of refrigerant piping connection between indoor and outdoor units) • Block settings • Floor layout settings • User settings
7. Clock setting		①	Touch "Date and time" on the Initial Settings window.
		②	Change other settings as necessary by touching the desired items, and touch "Save Settings" to save the changes.
8. Exiting the Initial Settings window	①	①	When all settings have been completed, touch the  icon to return to the Monitor/Operation window.

9 Test Run

- Before performing a test run, verify that the group setting has been performed and the startup sequence for the interlocked operation setting has been completed.
- It may take approximately 5 minutes from power on until the local remote controller becomes operable.

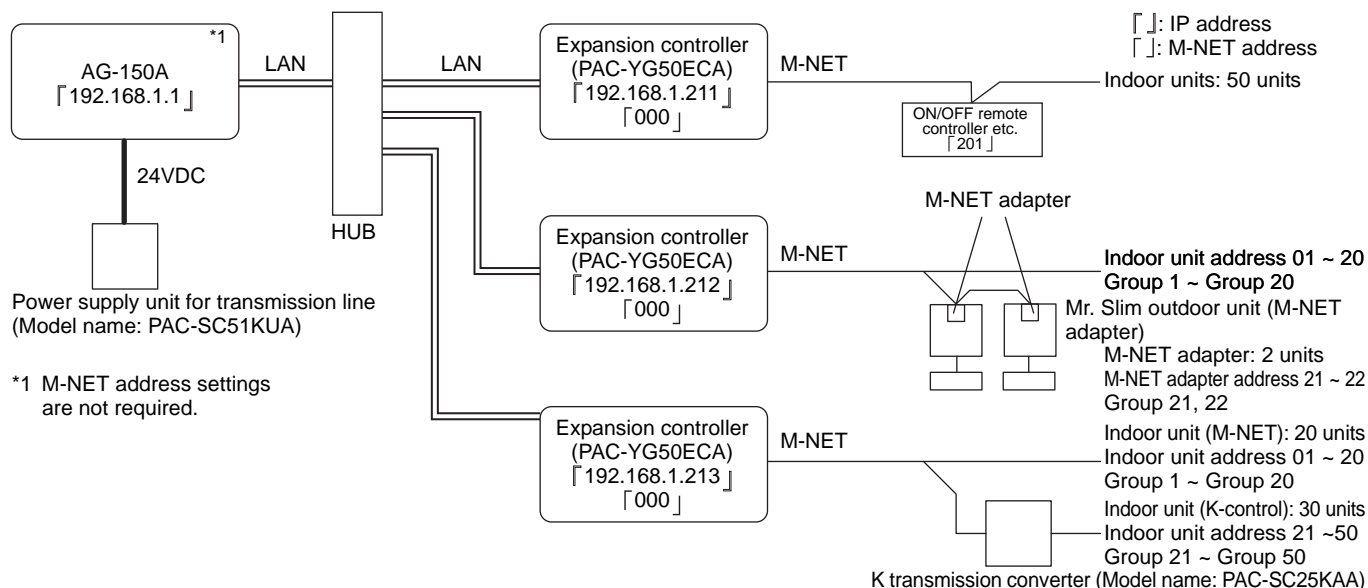
Test run procedure

- ① Turn the AG-150A and all air conditioning units on.
- ② Set the “Test run” to [In use] on the Unit info on the Initial settings screen. After the setting is completed, the [Test run] button will appear on the Operation screen.
- ③ Select the group to be tested on the Monitor/Operation screen and run the test.
- ④ Check for proper operation of each air conditioning unit during test run (e.g., check to see if cold (or warm) air comes out of the supply air outlet on each indoor unit)
- ⑤ After confirming that all units are operating properly, stop the units either from AG-150A or from the remote controllers.

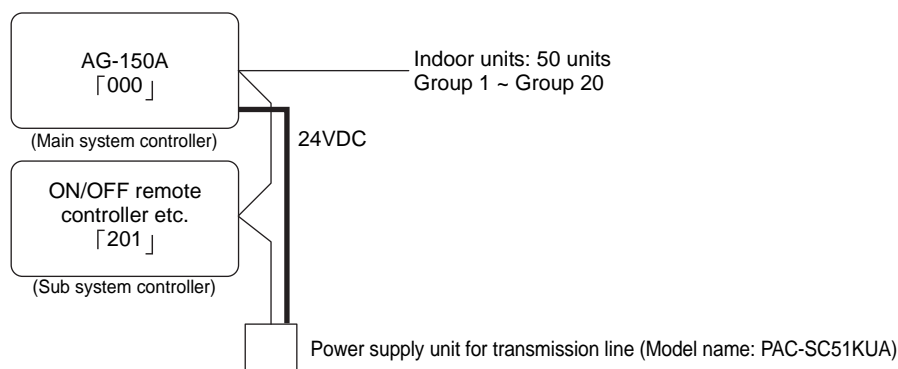
* Please refer to the Installation Manual that came with the indoor unit for further details on the test run method.

10 System Configuration Example

1. System with connection to a PAC-YG50ECA expansion controller



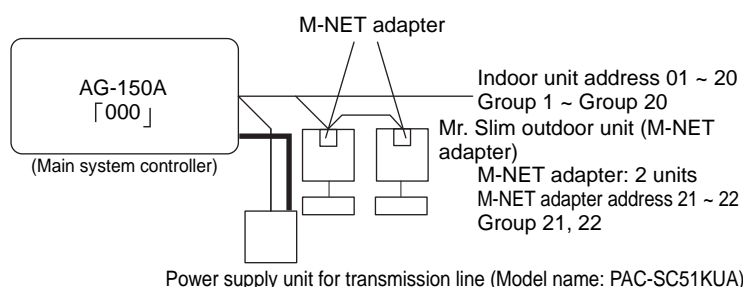
2. Using multiple system controllers



- Make the initial settings (e.g., group settings and interlock settings) from the AG-150A, which is a main system controller, or from the Initial Settings Web.
- Designate a single system controller in a given system from which operation prohibition signal can be sent.

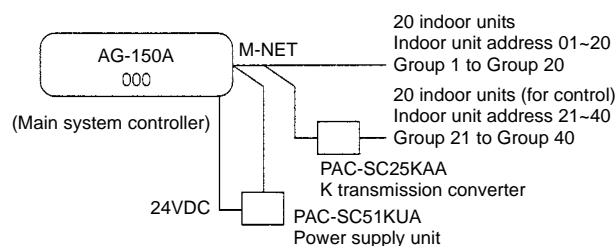
3. To control a Mr. slim

* An M-NET adapter (sold separately) is required to connect and control the Mr. Slim model of units to the M-NET.



4. To control a K control model

- * Set AG-150A address to "000" when a K transmission converter is connected. Always set to the main system controller when the address is "000".
- * Set the address of the K-control indoor units to a larger number than those of the M-transmission models of indoor units.
- * When using a group setting for the K control model, set only the indoor unit that belongs to that group.
- * Set the minimum indoor unit address in the group for the K control model group number.



11 External input/output usage

1. External signal input function

* External signal input requires the external I/O adapter (PAC-YG10HA) sold separately.

NOTES

- * When using a PAC-YG50ECA expansion controller, connect the external input/output adapter to the external input terminal on the expansion controller, not to the AG-150A.
- * Make necessary settings for each expansion controller from the AG-150A on the Network Settings window (external input settings).

(1) External input

Emergency stop/normal, run/stop and prohibit/enable operation of local remote controllers can be controlled for all air conditioners by using a voltage (12VDC or 24VDC) contact signal from an external source. (Select with an initial settings screen.)

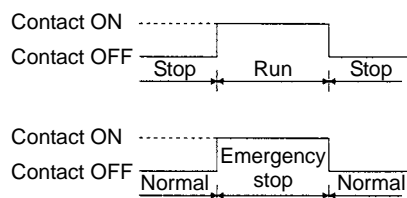
No.	External signal input function	Remarks
1	Do not use the external input signal (factory setting)	-
2	Perform emergency stop/normal with level signal	The local remote controller ON/OFF operation, the controller ON/OFF operation, and prohibit/enable change operation will be prohibited during emergency stop. Timer operation will also be prohibited.
3	Perform ON/OFF with level signal	The local remote controller ON/OFF operation, the controller ON/OFF operation, and prohibit/enable change operation will be prohibited. Timer operation will also be prohibited.
4	Perform ON/OFF, prohibit/enable with pulse signals.	Set the pulse width while the contact is ON to 0.5 to 1 second.

* DIDO controller (PAC-YG66DCA) cannot be collectively run or stopped by using the external input function.

But when [Perform emergency stop/normal with level signal] is selected, DIDO controller (PAC-YG66DCA) can be collectively stopped by setting the appropriate switches on the DIDO controller.

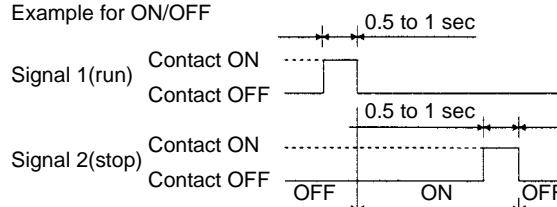
(2) Level signals and pulse signals (12VDC or 24VDC)

(A) Level signal



(B) Pulse signal

Example for ON/OFF



* The prohibit/enable input is the same.

(3) External input specifications

CN5	Lead wire	Emergency stop/normal level signal	ON/OFF, level signal	ON/OFF, prohibit/enable pulse signal
No.5	Orange	Emergency stop/normal input	ON/OFF input	ON input
No.6	Yellow	Not used	Not used	OFF input
No.7	Blue	Not used	Not used	Local remote controller operation prohibit input
No.8	Gray	Not used	Not used	Local remote controller operation enable input
No.9	Red	External DC source "+ 12VDC" or "+ 24VDC"		

(A) For level signal

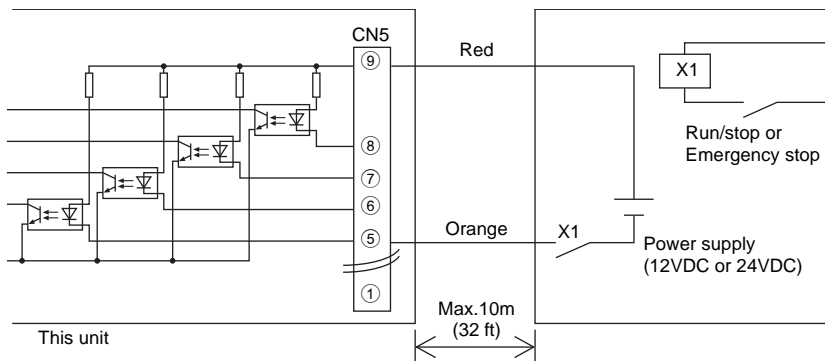
- ① When the emergency stop/normal signal is selected, the status will switch from normal to emergency stop when the external input signal contact changes from OFF to ON, and will change from emergency stop to normal when the contact changes from ON to OFF. Air conditioning units that are stopped will remain off after the emergency stop is cancelled. Start up each indoor unit to manually restore the previous operation.
- ② When the ON/OFF signal is selected, the status will change from OFF to ON when the external input signal contact changes from OFF to ON, and will change from ON to OFF when the contact changes from ON to OFF.

(B) For pulse signal

- ① Even if the ON signal is input during ON, the status will remain ON.
- ② If local remote controller operation is prohibited, the ON/OFF operation mode, temperature setting operations, and filter reset from the local remote controller will be prohibited.
- ③ Set the pulse width (contact ON time) to 0.5 to 1 sec.

(4) Recommended circuit

(A) For level signal



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

Contact rating

Rated voltage $\geq 12\text{VDC}$

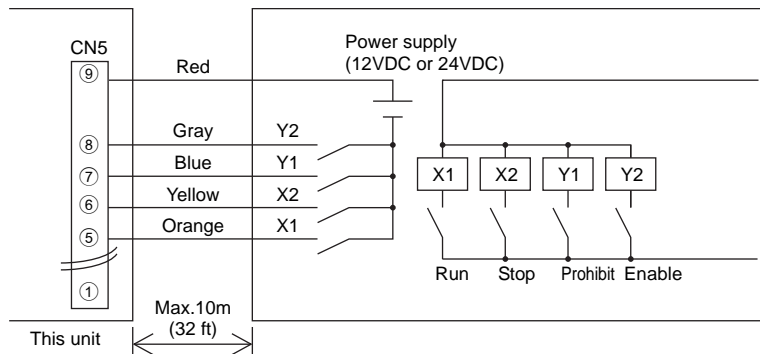
Rated current $\geq 0.1\text{A}$

Minimum applicable load $\leq 1\text{mA}$ at DC

Important

- Be sure to use 12VDC or 24VDC for a power supply.
 - Connect the power supply with correct polarity.
- Improper connection may result in malfunctions.

(B) For pulse signal



- ① The contact relay, DC power source, extension cable, etc., must be prepared on site.
- ② The connection cable can be extended up to 10m (32 ft). Use a 0.3mm^2 (AWG 22) or larger wire.
- ③ Strip the extra cable near the connector, and insulate the exposed section securely with tape, etc.

2. External signal output function

* External signal output requires the external I/O adapter PAC-YG10HA (sold separately).

NOTE

* When using a PAC-YG50ECA expansion controller, connect the external input/output adapter to the external input terminal on the expansion controller, not to the AG-150A.

(1) External output

When one or more air conditioners are operating, the "ON" signal will be output, if a malfunction occurs in one or more air conditioners, the "Malfunction" signal will be output.

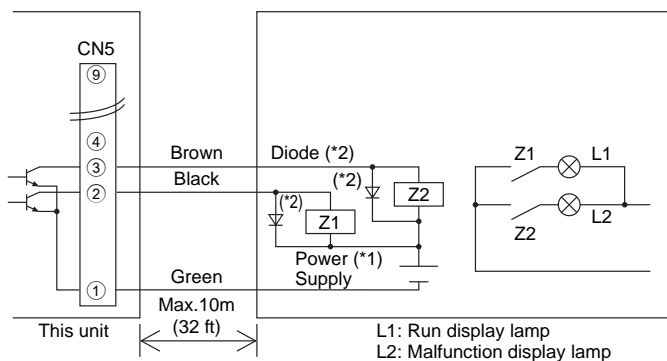
(2) External output specifications

CN5	Lead wire	Details of each terminal
No.1	Green	Common (External ground)
No.2	Black	ON/OFF*
No.3	Brown	Malfunction/normal

* The operation status of DIDO controller is not output.

* Operation signal is output during an error.

(3) Recommended circuit



Use Z1 and Z2 relays that meet the following specifications.

Operation coil

Rated voltage: 12VDC, 24VDC

Power Consumption: 0.9W or less

(*1) Prepare a power supply separately according to the relay being used (12VDC or 24VDC).

(*2) Always include a diode on both ends of the relay coil.

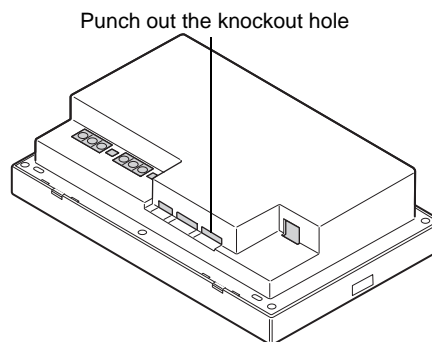
Important

- Be sure to use 12VDC or 24VDC for a power supply.
 - Connect the power supply with correct polarity.
 - Do not connect the power supply without relays being connected to the controller. (no load)
- Improper connection may result in malfunctions.

- ① Each element will turn on while in ON operation or if a malfunction occurs.
- ② The connection cable can be extended up to 10m (32 ft).
- ③ The relays, lamps, diodes and extension cables, etc., must be prepared separately on site.

NOTE

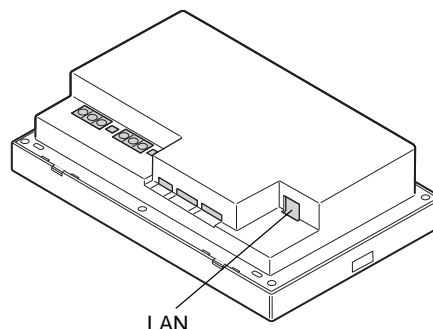
- When connecting the external input/output cables to connector CN5 on the controller, punch out the knockout hole.



3. LAN connection function

When using the LAN connection function, insert the LAN cable to the LAN connector of the controller.

- * Connect the LAN cable from the AG-150A to other equipments via a HUB.
- * The maximum LAN cable distance from the AG-150A is 100 m (328 ft).
The line can be extended up to 500 m (1640 ft) by connecting the hubs in cascade.
- * When using a PAC-YG50ECA expansion controller, do not connect more than four devices (gateway, router, layer 3 switch, HUB, and etc.) in series between AG-150A and PAC-YG50ECA. (Transmission delay time must not exceed 2 seconds.)
- * Procure the LAN cable on site, and use 100 BASE-TX Straight cable. (Category 5 or later)
- * For a description of the IP address setting method, refer to section [8 Initial Setting](#).
- * LAN is 100 BASE-TX specification.



⚠ CAUTION

- * Perform the LAN wiring before controller installation, and wire up to the body by the same method as wiring the M-NET transmission cable.
- * When a LAN is already connected, choose the IP address after consulting with the system administrator, and connect to the LAN body after changing the IP address.
- * Connect AG-150A to a private network.
Use a security device such as a VPN router when connecting to the Internet.
(Configure the system in the way that does not allow access from the external sites.)

12 Optional Accessories

Parts	Model	Usage	Note
Power supply unit	PAC-SC51KUA	Supplies power to the controller and M-NET transmission line.	
Expansion controller	PAC-YG50ECA	Enables the connection of up to 150 indoor and LOSSNAY units to an AG-150A.	Each expansion controller can control up to 50 units. (Up to three expansion controllers can be connected to a system.)
Electric box	PAC-YG83UTB	Use for wall-embed installations	
Mounting attachment A type	PAC-YG85KTB	Use when both the controller and a power supply unit (PAC-SC51KUA) for a transmission line are mounted on a wall.	
Mounting attachment B type	PAC-YG81TB	Use for wall-mount installations	
External input/output adapter	PAC-YG10HA	Enables the use of the external input/output function	Required when using the external input/output function
Black surface cover	PAC-YG71CBL	Surface cover	

NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

This product is designed and intended for use in the residential,
commercial and light-industrial environment.

The product at hand is
based on the following
EU regulations:

- Low Voltage Directive 2006/95/EC
- Electromagnetic Compatibility Directive,
2004/108/EC

Please be sure to put the contact address/telephone number on
this manual before handing it to the customer.



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