



Air Conditioning Control System AHC ADAPTER PAC-IF01AHC-J Installation and Instructions Manual

Safety notes are marked with **⚠WARNING** or **⚠CAUTION**, depending on the severity of possible consequences that may result when the instructions are not followed exactly as stated.

Proper installation is important for your safety and proper functioning of the units.

Thoroughly read the following safety precautions prior to installation.

To ensure safety and proper operation of the unit, the unit should only be installed by qualified personnel.

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

The users 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 users.

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About Advanced HVAC CONTROLLER (AHC)

Advanced HVAC CONTROLLER (hereafter referred to as AHC) comprises of MITSUBISHI ELECTRIC's AHC ADAPTER (PAC-IF01AHC-J) and α 2 SIMPLE APPLICATION CONTROLLER* (hereafter referred to as ALPHA2).

* α 2 SIMPLE APPLICATION CONTROLLER is one of the Programming Logic Controllers that are manufactured by MITSUBISHI ELECTRIC CORPORATION.

AHC allows for the connection of MITSUBISHI ELECTRIC's air conditioning network system (hereafter referred to as M-NET) to other systems, which was not possible with the use of ALPHA2 alone. AHC provides the following functions.

- ① Controls external devices using the sensor data of the air conditioning units connected to M-NET.
- ② Interlocks the operation of air conditioning units and external devices that are connected to ALPHA2.
- ③ Controls air conditioning units that are connected to M-NET.
- ④ Allows for the combined use of the items ①-③ above.
- ⑤ Monitors the input/output status of ALPHA2 via a remote controller or a centralized controller.

Compatible controllers [As of April 2013 (North America); June 2013 (outside North America)]



- Remote Controller: PAR-U01MEDU, PAR-U02MEDA
- Centralized Controller: EB-50GU-A, EB-50GU-J

* Refer to the manual that came with ALPHA2 for information about ALPHA2.

* The use of AHC ADAPTER requires either a remote controller or a centralized controller.

1. Safety precautions

- Thoroughly read the following safety precautions prior to installation.
- Observe these precautions carefully to ensure safety.

 WARNING	Indicates a risk of death or serious injury.
 CAUTION	Indicates a risk of injury or structural damage.

• Nomenclature




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

All electric work must be performed by qualified personnel.


General precautions


WARNING


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.




Do not install AHC in a place where large amounts of oil, steam, organic solvents, or corrosive gases, such as sulfuric gas, are present or where acidic/alkaline solutions or sprays are used frequently. These substances can compromise the performance of AHC or cause certain components of AHC to corrode, which can result in electric shock, malfunctions, smoke, or fire.




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


To reduce the risk of injury or electric shock, stop the operation and switch off the power supply before cleaning, maintaining, or inspecting AHC. 


To reduce the risk of shorting, current leakage, electric shock, malfunctions, smoke, or fire, do not wash AHC with water or any other liquid. 


CAUTION


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


To reduce the risk of damage to AHC, do not directly spray insecticide or other flammable sprays on AHC. 

To reduce the risk of electric shock, malfunctions, smoke or fire, do not operate the switches/buttons or touch other electrical parts with wet hands. 

Properly install all required covers to keep moisture and dust out of AHC. Dust accumulation and water can cause electric shock, smoke, or fire. 


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


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


To reduce the risk of injury, wear protective gear when working on AHC. 


Precautions during installation

WARNING

Do not install AHC where there is a risk of leaking flammable gas. If flammable gas accumulates around AHC, it may ignite and cause a fire or explosion. 

Take appropriate safety measures against earthquakes to prevent AHC from causing injury. 

Properly dispose of the packing materials. Plastic bags pose suffocation hazard to children. 

To prevent injury, install AHC on a flat surface strong enough to support its weight. 

CAUTION

To reduce the risk of shorting, current leakage, electric shock, malfunctions, smoke, or fire, do not install AHC in a place exposed to water or in a condensing environment.



AHC must be installed by qualified personnel according to the instructions detailed in this manual. Improper installation may result in electric shock or fire.



Precautions during wiring

WARNING

To reduce the risk of damage to AHC, malfunctions, smoke, or fire, do not connect the power cable to the signal terminal block.



Properly secure the cables in place and provide adequate slack in the cables so as not to stress the terminals. Improperly connected cables may break, overheat, and cause smoke or fire.



To reduce the risk of injury or electric shock, switch off the main power before performing electrical work.



All electric work must be performed by a qualified electrician according to the local regulations, standards, and the instructions detailed in this manual. Capacity shortage to the power supply circuit or improper installation may result in malfunction, electric shock, smoke, or fire.



To reduce the risk of current leakage, overheating, smoke, or fire, use properly rated cables with adequate current carrying capacity.



Proper grounding must be provided by a licensed electrician. Do not connect the protective ground wire to a gas pipe, water pipe, lightning rod, or telephone wire. Improper grounding may result in electric shock, smoke, fire, or malfunction due to electrical noise interference.



CAUTION

To reduce the risk of electric shock, shorting, or malfunctions, keep wire pieces and sheath shavings out of the terminal block.



To reduce the risk of shorting, current leakage, electric shock, or malfunctions, keep the cables out of contact with the AHC edges.



To reduce the risk of electric shock, malfunctions, or fire, seal the gap between the cable access holes with putty.



Precautions for moving or repairing AHC

WARNING

AHC should be repaired or moved only by qualified personnel. Do not disassemble or modify AHC. Improper installation or repair may cause injury, electric shock, or fire.



CAUTION

To reduce the risk of shorting, electric shock, fire, or malfunction, do not touch the circuit board with tools or with your hands, and do not allow dust to accumulate on the circuit board.



Additional precautions

To avoid damage to AHC, use appropriate tools to install, inspect, or repair AHC.

AHC is designed for exclusive use with the Building Management System by Mitsubishi Electric. The use of AHC for with other systems or for other purposes may cause malfunctions.

Take appropriate measures against electrical noise interference when installing the air conditioners in hospitals or facilities with radio communication capabilities. Inverter, high-frequency medical, or wireless communication equipment as well as power generators may cause the air conditioning system to malfunction. Air conditioning system may also adversely affect the operation of these types of equipment by creating electrical noise.

To avoid malfunctions, do not bundle power cables and signal cables together, or place them in the same metallic conduit.

To reduce the risk of electric shock, turn off the power to AHC before installing or wiring AHC.

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

To avoid damage to AHC, do not overtighten the screws.

To avoid damage to AHC, do not make holes on the AHC cover.

Do not use solderless terminals to connect cables to the terminal block. Solderless terminals may come in contact with the circuit board and cause malfunctions.

To avoid deformation and malfunction, do not install AHC in direct sunlight or where the ambient temperature may exceed 55°C (131°F) or drop below -10°C (14°F).

Do not install AHC on the panel door of the metal control box. Vibrations or shocks to AHC may damage AHC or cause AHC to fall.

Do not use AHC for security or disaster prevention purposes. Have a backup system ready in case of power outage or AHC malfunction if AHC is to be used for these purposes.

To reduce the risk of erroneous signal output, malfunctions, and resultant accidents, provide an external safety circuit to ensure a safe operation of the entire system in case problems occur with external power supply or with AHC.

To reduce the risk of erroneous signal output, malfunctions, and resultant accidents, turn on the power to AHC first before turning on the power to external devices.

To reduce the risk of smoke and fire that may result from overcurrent continuously transmitted to the output circuit for an extended period of time due to overload current above the rated current or due to overload short-circuit, provide an external safety circuit (e.g., fuse).

When error signals are input through the Digital Input on ALPHA2, controllers connected to M-NET will display the detection of an error upon detection of an ON-signal at the Digital Input. Do not connect a device that would output an ON-signal during normal operation and an OFF-signal during an error. When connecting such devices, reverse their circuits.

To ensure proper operation, when temperature signals are input through the Analog Input on ALPHA2, make sure that the temperature unit (Celsius/Fahrenheit) settings on the ALPHA2 program and the dipswitch settings on the circuit board of AHC ADAPTER match.

Do not use AHC in the way that would put lives at risk.

Do not connect control or communication cables to the main circuit or power wires, and do not run them in close proximity. To reduce the risk of electrical noise interference and resultant malfunctions, keep them apart by at least 100 mm.

When controlling heaters or pumps with AHC, a large current (10 times the normal current) may pass through these units when the output signal turns from OFF to ON. Select units that can tolerate such current flow.

When controlling heaters or pumps with AHC by inputting error signals from external devices through the Digital Input on ALPHA2, a large current (10 times the normal current) may pass through these units when the output signal turns from OFF to ON. Select units that can tolerate such current flow.

Do not turn off the power to AHC or reset AHC while making the settings. Doing so will corrupt the settings data on the Flash ROM and require re-setting of data. It may also result in malfunctions.

After the completion of initial setting, perform a test run and make sure that the control settings and other settings are properly set and that the system is functioning properly.

Note: Be sure to read all the restrictions and cautionary notes in the technical manual that came with the AHC, and use AHC correctly.

2. Important notice

- Read this manual before installing or using AHC, and follow all the instructions.
- This manual contains explanations and figures to help the user to properly install, program, and operate AHC.
- All the examples and figures contained in this manual are there for the sole purpose of clarification. It is not guaranteed that AHC will properly work in the types of applications used as examples or are shown in figures. MITSUBISHI ELECTRIC shall not be held responsible for any damage or loss that may result from the use of AHC in the manners shown in the examples and figures contained in this manual.
- Thoroughly read the technical manual, and check the surrounding for safety before changing the settings of AHC in operation (e.g., changing programs or parameters, forcing signal output, or changing the operation status).

3. Functions

AHC comprises of an ALPHA2 and an AHC ADAPTER. The use of AHC ADAPTER requires the use of ALPHA2.

The following ALPHA2 are compatible with AHC. Other types of ALPHA2 do not support AHC.

- AL2-14MR-A
- AL2-14MR-D
- AL2-24MR-A
- AL2-24MR-D

Compatible controllers [As of April 2013 (North America); June 2013 (outside North America)]

- Remote Controller: PAR-U01MEDU, PAR-U02MEDA
- Centralized Controller: EB-50GU-A, EB-50GU-J

AHC enables the connection of M-NET with other systems, which was not possible with the use of ALPHA2 alone. AHC supports the functions listed in Table 1.

Table 1 AHC function list


AHC function	Example	Supplemental Inf.
① Controls external devices using the sensor data of the air conditioning units connected to M-NET.	<ul style="list-style-type: none"> External heaters are controlled, using the temperature sensors on air conditioning units or on remote controllers. 	By using the sensor on the air conditioning unit connected to the M-NET, no other external sensors will be required. *1
② Interlocks the operation of air conditioning units and external devices that are connected to ALPHA2.	<ul style="list-style-type: none"> The operation of external heaters is interlocked with the operation of air conditioning units in heating operation. The operation of external humidifiers is interlocked with up to 16 air conditioning units. Humidifiers will go into operation whenever at least one air conditioning unit is in operation. 	Operation status data of a maximum of 2 groups of units can be simultaneously collected. Each group can contain a maximum of 16 units. Error status of a maximum of 50 units can be simultaneously collected.
③ Controls air conditioning units that are connected to M-NET.	<ul style="list-style-type: none"> The ON/OFF operation of air conditioning units is interlocked with the insertion/removal of a card into or out of a card reader. 	A maximum of 2 groups of units can be simultaneously controlled. Each group can contain a maximum of 16 units.
④ Allows for the combined use of the items ①-③ above.	<ul style="list-style-type: none"> Drying operation of air conditioning units is controlled, using the built-in humidity sensor on the remote controller. 	
⑤ Monitors the input/output status of ALPHA2 via a remote controller or a centralized controller.		

*1 The sensor on the air conditioning unit connected to the M-NET will collect data at 70-second intervals. If a real time control at intervals shorter than 70 seconds is required, connect a sensor to the Analog Input on ALPHA2.

Note: For detailed information about the functions supported by AHC, refer to the technical manual that came with the AHC.

4. Package contents

The following items are included in the package of AHC ADAPTER.

	Package contents	Qty.
①	AHC ADAPTER (PAC-IF01AHC-J)	1
②	L-fitting	2
③	DIN rail attachment	1
④	M3 (6 mm (1/4 in)) roundhead screw (for fixing L-fittings ② or DIN rail attachment ③)	4
		
⑤	Cable tie	1
⑥	Installation and Instructions Manual (this manual)	1
⑦	CD-ROM <ul style="list-style-type: none"> └ Installation and Instructions Manual └ Technical Manual (English only) └ Basic AHC program 	1
	<p>Note</p> <ul style="list-style-type: none"> ● The Installation and Instructions Manual is available in English, French, German, Italian, Russian, Spanish, and Swedish. ● The CD-ROM can only be played on a CD-drive or a DVD-drive. Do not attempt to play the CD-ROM on an audio CD player as this may damage your ears and/or speakers. ● Each document is in PDF format. Viewing documents requires a computer with Adobe® Reader® or Adobe® Acrobat® installed. “Adobe® Reader®” and “Adobe® Acrobat®” are registered trademarks of Adobe Systems Incorporated. 	

* Other than the items listed above, some items must be field-supplied. Refer to section 7-2 "Installation" for details.

* To fulfill all functions, ALPHA2 is required. ALPHA2 can be purchased on site. (sold separately)

* Refer to the ALPHA2 manual for ALPHA2 performance and other options.

5. Specifications

5-1. Product specifications of AHC ADAPTER

Item		Specifications	
Power supply	M-NET	17-32 VDC	
Interface	M-NET transmission terminal	Exclusively for connection to M-NET	
	Connector for ALPHA2	Exclusively for connection to ALPHA2	
Ambient conditions	Temperature	Operating temperature range	-10°C – +55°C [+14°F – +131°F]
		Storage temperature range	-20°C – +60°C [-4°F – +140°F]
	Humidity	30%–90% RH (Non-condensing)	
Dimensions (W x H x D)		116 x 90 x 40 mm [4-9/16 x 3-1/2 x 1-9/16 in]	
Weight		0.4 kg (0.9 lbs)	
Installation conditions		Inside the metal control box * To be used in a business office or similar environment	

5-2. External dimensions of AHC ADAPTER

* Refer to the ALPHA2 manual for the dimensions of ALPHA2.

Unit: mm (in)

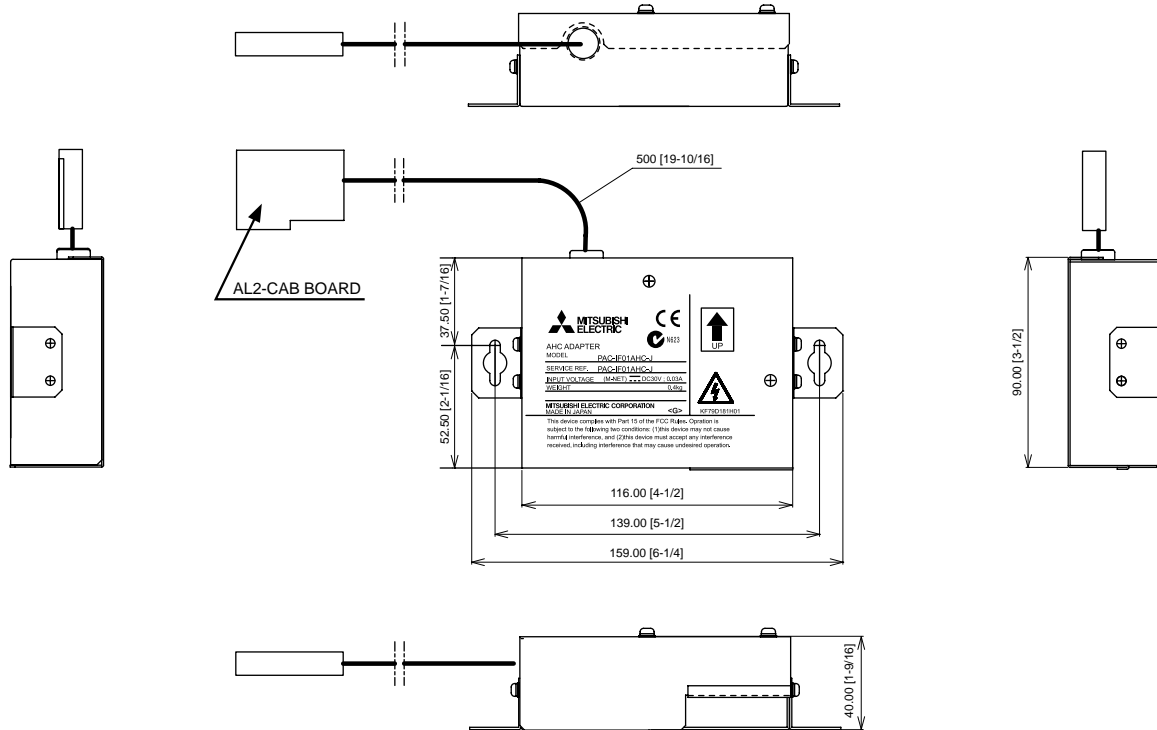


Fig. 5-1

6. System configuration

The figure below only shows the transmission cable connections. Power cables are omitted.

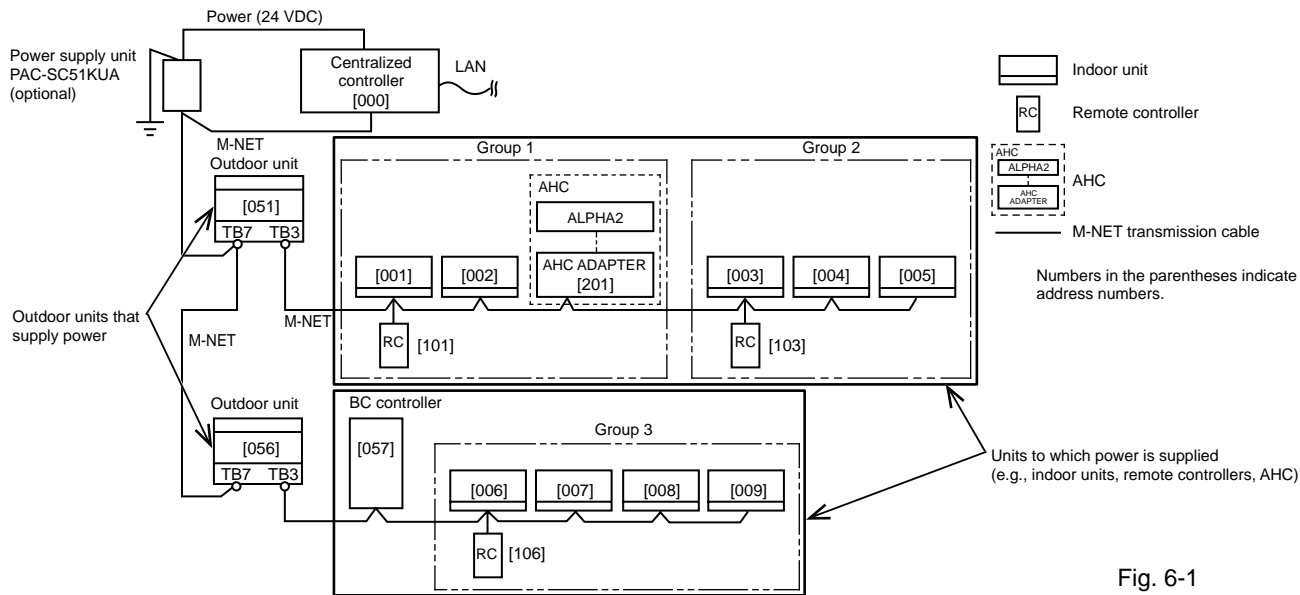


Fig. 6-1

* AHC ADAPTER requires either an outdoor unit or a power supply device as a power source.

* The power consumption coefficient of AHC ADAPTER (PAC-IF01AHC-J) is "0.5."

If the total power supply that the units such as indoor units, remote controllers, and AHC require exceeds the outdoor unit's ability to supply power, a Transmission booster (PAC-SF46EPA) will be required.

Outdoor unit	Transmission booster	Indoor unit	Remote Controller (PAR-U01MEDU, PAR-U02MEDA)	AHC ADAPTER
32	25	1 *1	0.5	0.5

*1 "7" for P200 and P250 models

7. Installation procedures

The table below summarizes the procedures for using AHC.

	Steps	Location	Necessary tools	Reference section
Programming	① Programming of ALPHA2 using PC's programming tool	Office	PC, programming tool (ALVLS Programming Software)	7-1
	② Programming verification (simulation function) using PC's programming tool	Office	PC, programming tool	
	③ Downloading the program to ALPHA2	Office or on site	ALPHA2 *1, ALPHA2-PC connection cable (AL-232CAB) *2, PC, programming tool	
Installation	④ On-site installation of AHC	On site	AHC (ALPHA2 + AHC ADAPTER)	7-2
Initial settings and Test run	⑤ Initial setting of AHC ADAPTER using Maintenance Tool	On site (office)	AHC, Maintenance Tool *3, PC, MN converter (CMS-MNG) or Centralized Controller *4	7-3
	⑥ Test run	On site	AHC, Maintenance Tool *3, PC, MN converter or Centralized Controller *4, ALPHA2-PC connection cable, programming tool	

*1 Includes the power supply to ALPHA2. (A separate power supply is required for AC and DC types.)

*2 ALPHA2-PC connection cable (AL-232CAB) is an optional part of ALPHA2. Refer to the ALPHA2 manual for details.

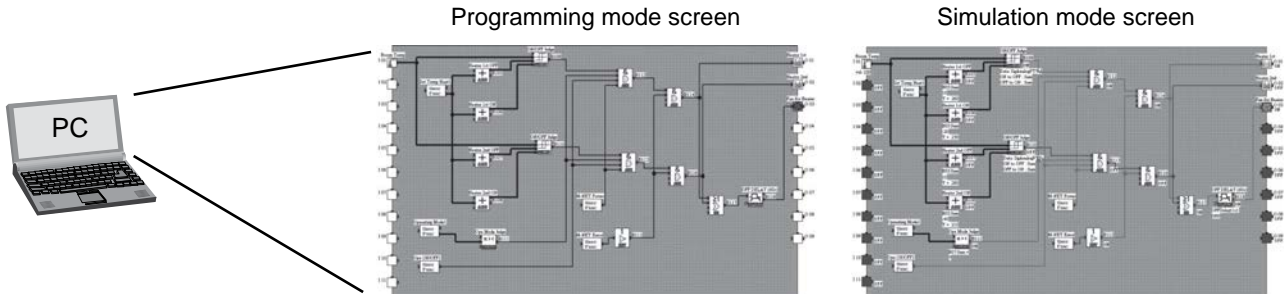
*3 Use Maintenance Tool ver. 5.08 or later.

*4 Systems with a Centralized Controller do not require an MN converter (LAN connection). Systems without a Centralized Controller require an MN converter.

Note: For the details of installation process, refer to the technical manual that came with AHC.

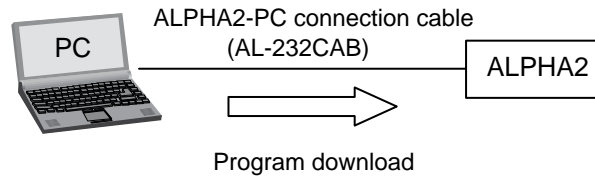
7-1. Programming

①② Programming and programming verification (simulation function) of ALPHA2 using PC's programming tool



* Proper operation of what is shown on the programming screen above is not guaranteed.

③ Downloading the program to ALPHA2



7-2. Installation

④ On-site installation of AHC

To reduce the risk of shorting, current leakage, electric shock, malfunctions, smoke, or fire, do not install AHC in a place exposed to water or in a condensing environment.



To reduce the risk of electric shock, malfunctions, or fire, seal the gap between the cable access holes with putty.



To prevent injury, install AHC on a flat surface strong enough to support its weight.



Do not install AHC on the panel door of the metal control box. Vibrations or shocks to the controller may damage AHC or cause AHC to fall.

IMPORTANT

- Leave the AL2-CAB BOARD (Fig. 5-1) wrapped in bubble wrap until after AHC ADAPTER has been installed in the metal control box.

7-2-1. Field-supplied items

The following items are required to install AHC ADAPTER.

* Two types of installation options (A and B in the table below) are available for AHC ADAPTER. Select the one that is best suited for a given environment.

Field-supplied items		Specifications
A	Unit fixing screw (required when using L-fittings)	M4 x 2 pcs.
B	DIN rail and fixing screw (required when using DIN rails)	DIN rail width: 35 mm (1-13/32 in) Applicable type (IEC 60715/DIN 60715): TH35-7.5Fe, TH35-7.5Al
Functional ground wire		* Use a wire with an appropriate diameter so that the wire can be fixed with the cable strap below the terminal block. A diameter of 10 mm is recommended.
Sleeved ring terminal		M3.5 ring terminal (for M-NET transmission cables (A, B, S)) M4 ring terminal (for functional ground wire)
Transmission cable		Type: Sheathed vinyl cable <ul style="list-style-type: none"> ● CVVS Min. 1.25 mm² (Min. AWG 16) * CPEVS: PE*¹ insulated PVC*¹ jacketed shielded communication cable * CVVS: PVC*¹ insulated PVC*¹ jacketed shielded control cable * Use cables with an appropriate diameter so that the cables can be fixed with the cable strap below the terminal block. A diameter of 10 mm is recommended.

*1 PE: Polyethylene; PVC: Polyvinyl chloride

7-2-2. Installation method

AHC must be installed inside the metal control box.

Either the supplied L-fittings or DIN rail attachment can be used for the installation.

Leave adequate space between ALPHA2 and AHC ADAPTER as shown in the figure below so as not to strain the cables.

* Secure the cable that connects ALPHA2 and AHC ADAPTER in place with the supplied cable tie regardless of whether L-fittings or DIN rails are used. (Fig. 7-1 and Fig. 7-2)

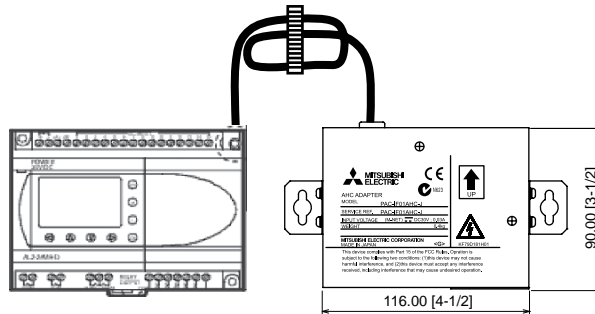


Fig. 7-1

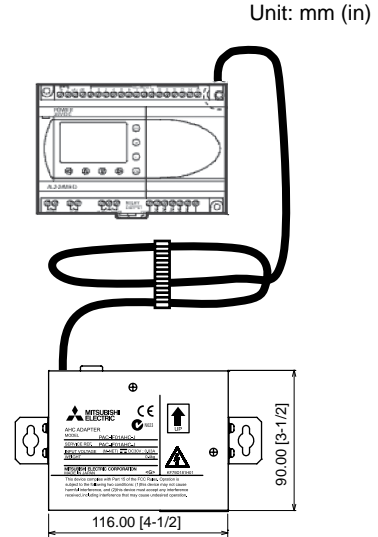


Fig. 7-2

Method 1: Installation using L-fittings

1. Have a metal control box ready. (Minimum steel thickness: 1 mm (3/64 in))
2. Attach the supplied two L-fittings to the AHC ADAPTER with the supplied M3 screws. (Fig. 7-3)
3. Properly install the AHC ADAPTER with the M4 screws (field-supplied) horizontally inside the metal control box. (Fig. 7-3)

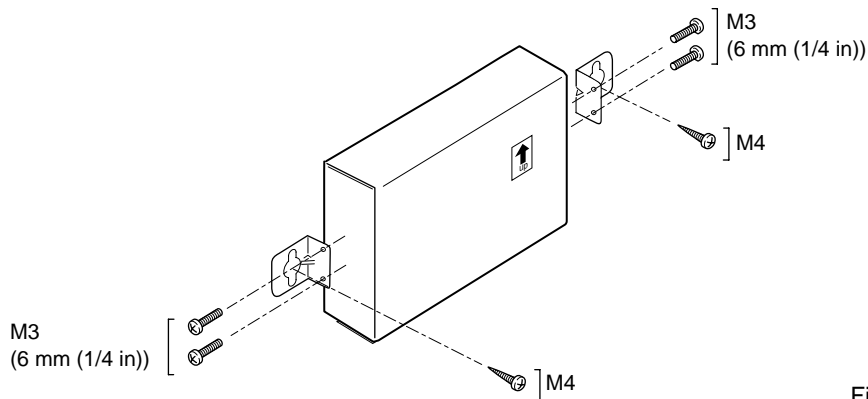


Fig. 7-3

Note

- Each L-fitting must be attached to the AHC ADAPTER with two M3 screws.
- The AHC ADAPTER to which the L-fittings are attached must be fixed to the metal control box with total of two M4 screws to prevent it from falling.
- The surface on which the AHC ADAPTER will be installed needs to be strong enough to support its weight.
- Fix the AHC ADAPTER in place with the dedicated fixtures if the AHC ADAPTER slides aside.
- Leave the AL2-CAB BOARD (Fig. 5-1) wrapped in bubble wrap until after AHC ADAPTER has been installed in the metal control box.

Method 2: Installation using DIN rail

1. Have a metal control box ready. (Minimum steel thickness: 1 mm (3/64 in))
2. Attach the supplied DIN rail attachment to the AHC ADAPTER with the supplied M3 screws. (Fig. 7-4)
3. Properly mount the AHC ADAPTER on the DIN rail vertically. (Fig. 7-5 and Fig. 7-6)

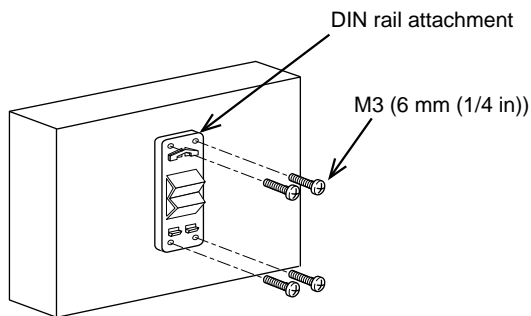


Fig. 7-4

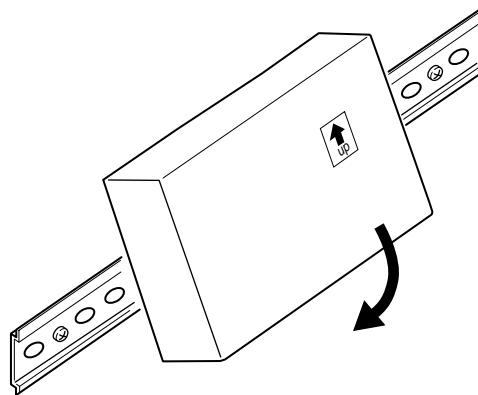


Fig. 7-5

Note

- The DIN rail attachment must be fixed to the AHC ADAPTER with four M3 screws.
- The surface on which the AHC ADAPTER will be installed needs to be strong enough to support its weight.
- Do not install the AHC ADAPTER where it may receive vibration. Use studs to fix the AHC ADAPTER as necessary.
- Leave the AL2-CAB BOARD (Fig. 5-1) wrapped in bubble wrap until after AHC ADAPTER has been installed in the metal control box.

[Mounting/removing the AHC ADAPTER on/from the DIN rail]

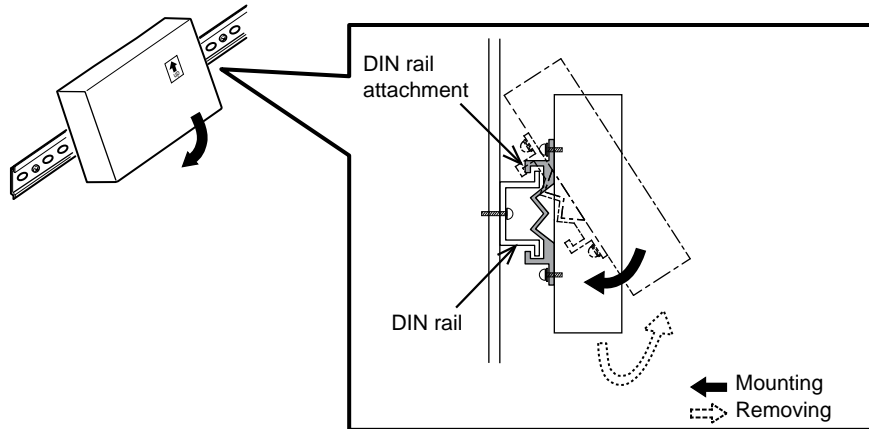


Fig. 7-6

(1) Mounting

1. Hook the upper side of the attachment to the DIN rail.
2. Push the lower part of the AHC ADAPTER until it snaps into place.

Note

- Ensure that the DIN rail attachment is fixed securely in place to the DIN rail.

(2) Removing

1. Push the AHC ADAPTER downwards.
2. Pull it up toward you.

7-2-3. Wiring connections

To reduce the risk of injury or electric shock, switch off the main power before performing electrical work.



To reduce the risk of damage to AHC, malfunctions, smoke, or fire, do not connect the power cable to the signal terminal block.



All electric work must be performed by a qualified electrician according to the local regulations, standards, and the instructions detailed in this manual. Capacity shortage to the power supply circuit or improper installation may result in malfunction, electric shock, smoke, or fire.



IMPORTANT

- To avoid damage to AHC, do not connect an AC power cable to the terminal block.
- Be careful not to injure your hands with sharp edges of the AHC ADAPTER cover.

7-2-3-1. Removing the cover to access the wiring

Unscrew the two screws on the cover to remove it as shown in the figure below.

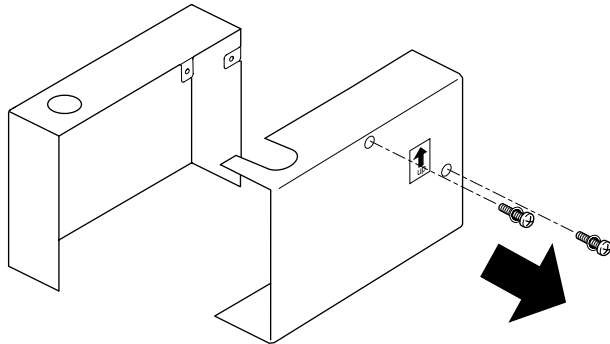


Fig. 7-7

7-2-3-2. Connecting functional ground wire

Connect an M4 ring terminal to the functional ground wire, and connect it to the ground terminal as shown in Fig. 7-8.

* Tighten screws to a torque of 1.47 N•m.

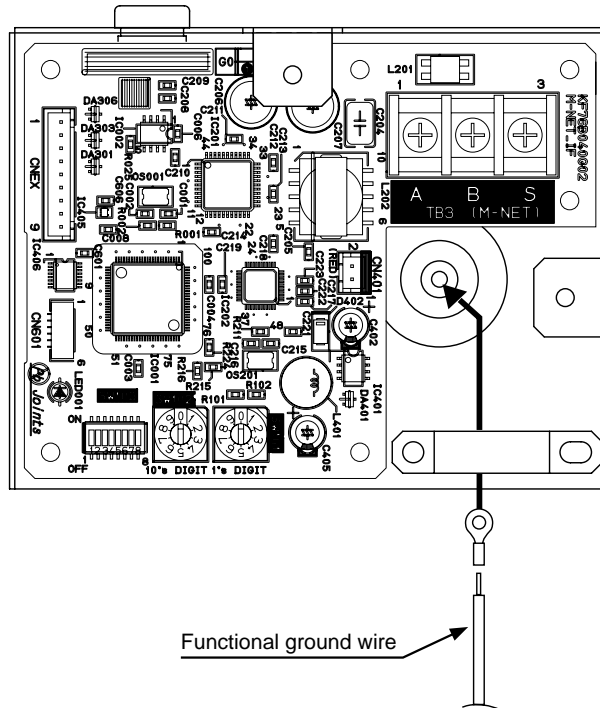


Fig. 7-8

7-2-3-3. Connecting M-NET transmission cables

Connect the M-NET transmission cables as shown in Fig. 7-9.
(M-NET transmission cables A and B: Non-polarized; S: Shield)

* Tighten terminal screws to a torque of 0.78 N·m.

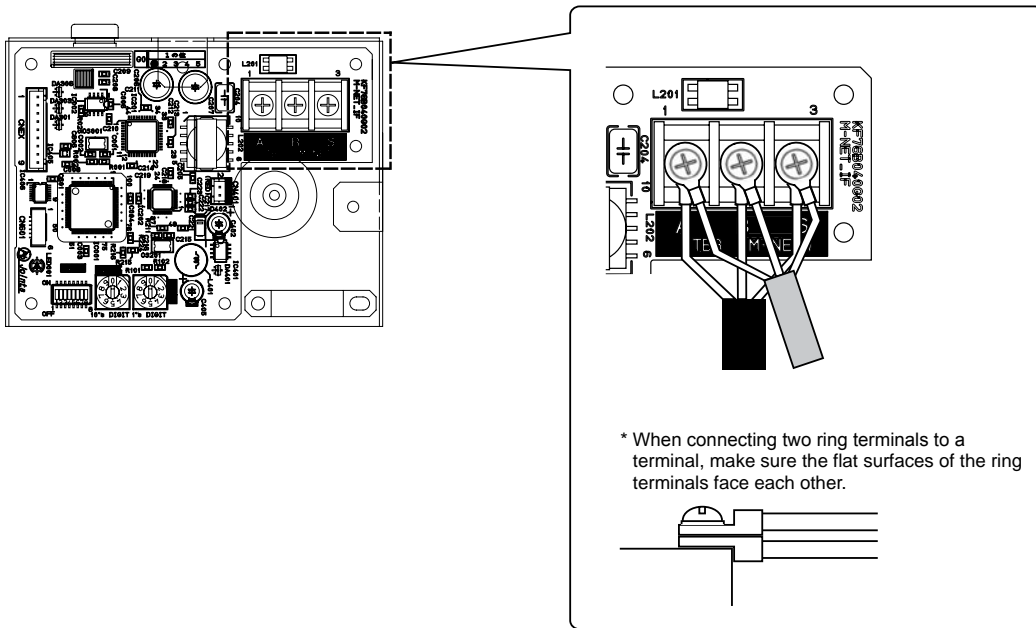


Fig. 7-9

7-2-3-4. Securing the cables in place

Hold the M-NET transmission cable and functional ground wire with the cable strap so as not to strain the cable connections.

Unit: mm (in)

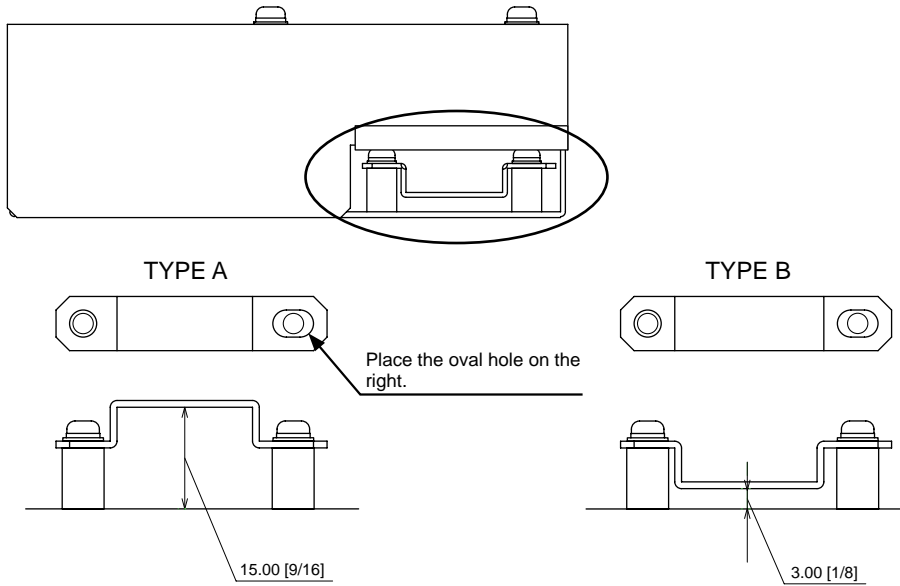


Fig. 7-10

* Depending on the cable thickness, secure the cables in one of the two ways (TYPE A or B) shown above.

7-2-3-5. Reinstalling the cover

Reinstall the cover using the two screws that were unscrewed.

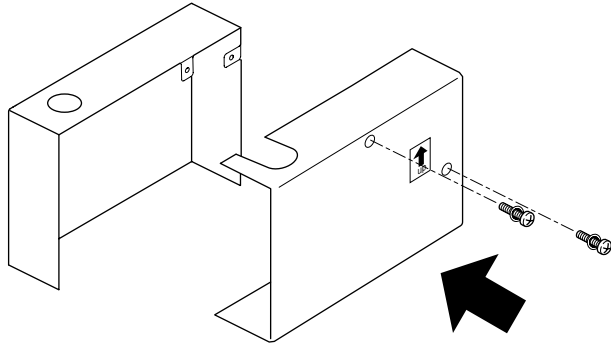


Fig. 7-11

7-2-4. Connecting AHC ADAPTER with ALPHA2

Connecting AHC ADAPTER and ALPHA2 using an AL2-CAB BOARD that is built in inside the case

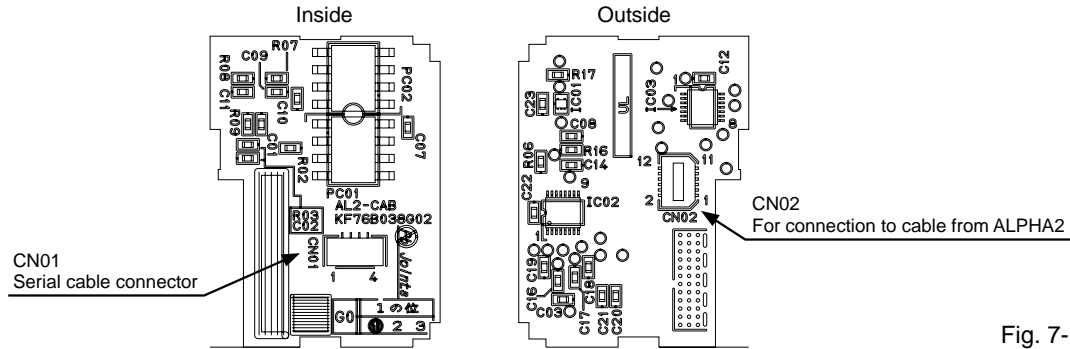
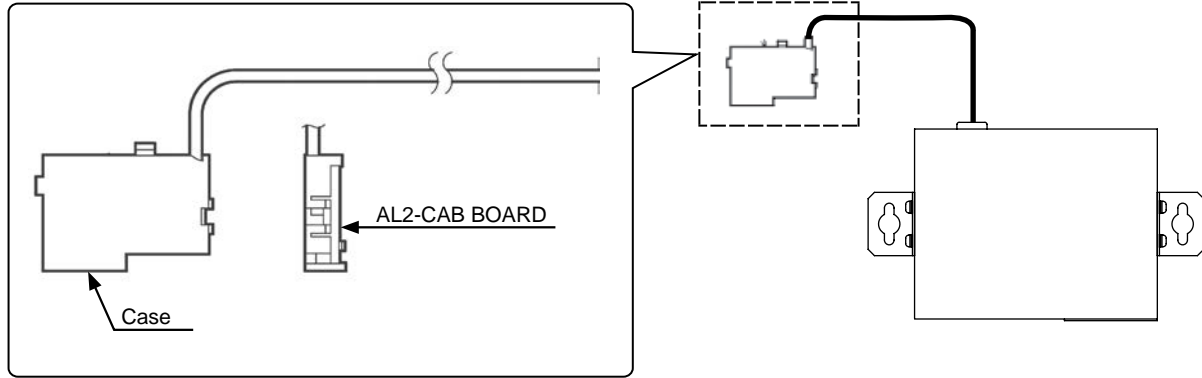
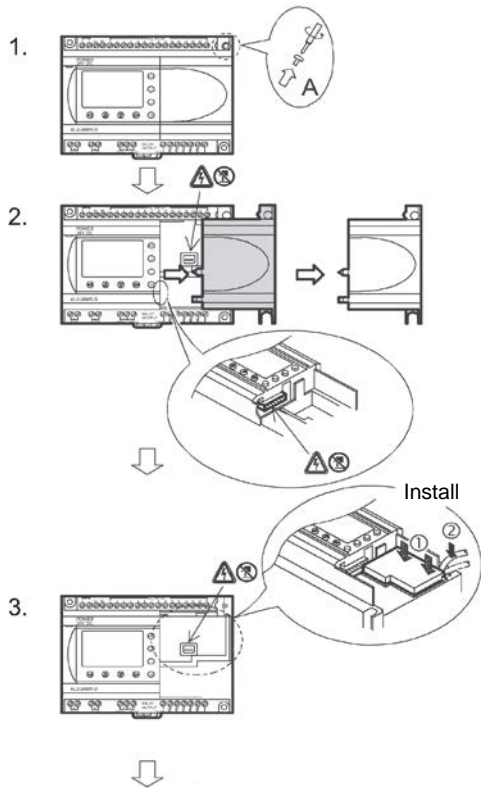
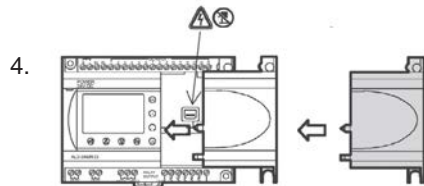


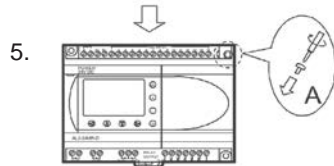
Fig. 7-12



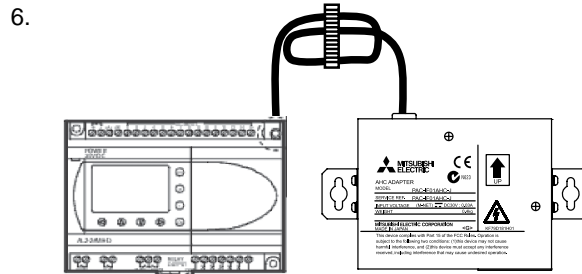
1. Release screw A from ALPHA2.
2. Carefully remove the factory-fitted ALPHA2 expansion port cover or the special module cover.
3. Install the AL2-CAB BOARD into the cavity, carefully placing the cable from the AL2-CAB BOARD in the cable channel located on the input terminal side.



4. Attach the ALPHA2 expansion port cover or the special module cover, taking care that the cover does not interfere with the AL2-CAB BOARD.

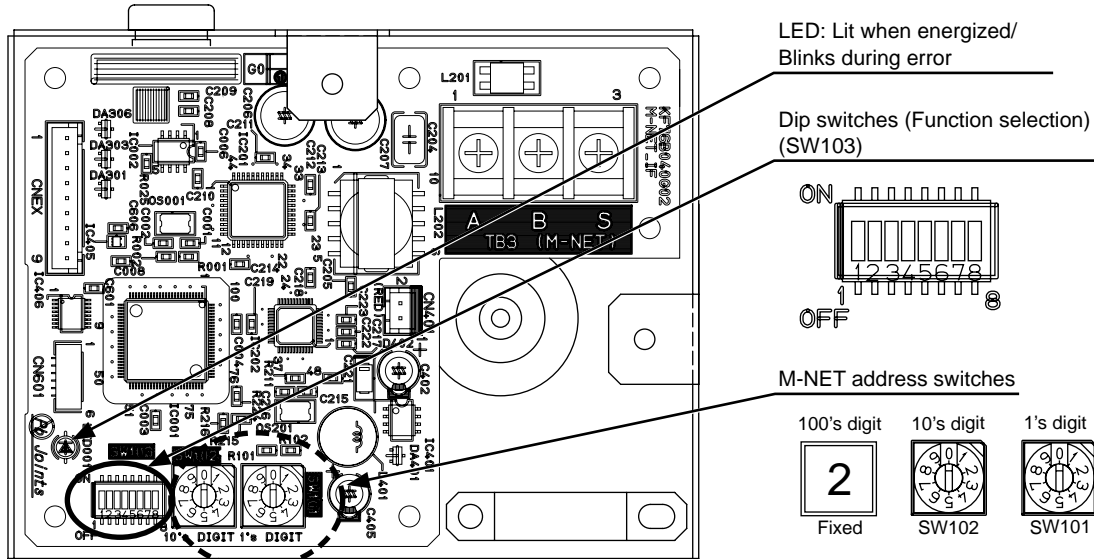


5. Tighten screw A to a torque of 0.4 N•m.



6. Secure the cable in place with the cable tie.

7-2-5. H/W information (Switch types and display contents)



Note

- Refer to section 7-2-6 for function setting with Dip SW103.
- Only the 10's and the 1's digits need to be set to set the addresses. (The 100's digit is fixed to 2.)
- Set the address switches to values between 201 and 250. (The 100's digit is fixed to 2.) All values from 251 and up will be treated as 250.
- The factory setting for the address switches is 200. Do not leave it to 200, or the controller will not be able to display AHC status.

7-2-6. Function selection (SW103)

Switch	Switch name	Function according to the switch setting		Switch setting timing		Notes	
		OFF	ON	OFF	ON		
SW103	1	Temperature unit setting	Celsius (°C)	Fahrenheit (°F)	Before turning on the power		
	2	Emergency stop setting	Disabled	Enabled	Before turning on the power		*1
	3	-	-	-	-		Do not change the switch settings.
	4	-	-	-	-		
	5	-	-	-	-		
	6	-	-	-	-		
	7	-	-	-	-		
	8	-	-	-	-		

*1 If the switch is set to ON (Enabled), when the centralized controller receives emergency stop signal, the ALPHA2 program will stop, and any output signal or operation signal from ALPHA2 will be ignored.

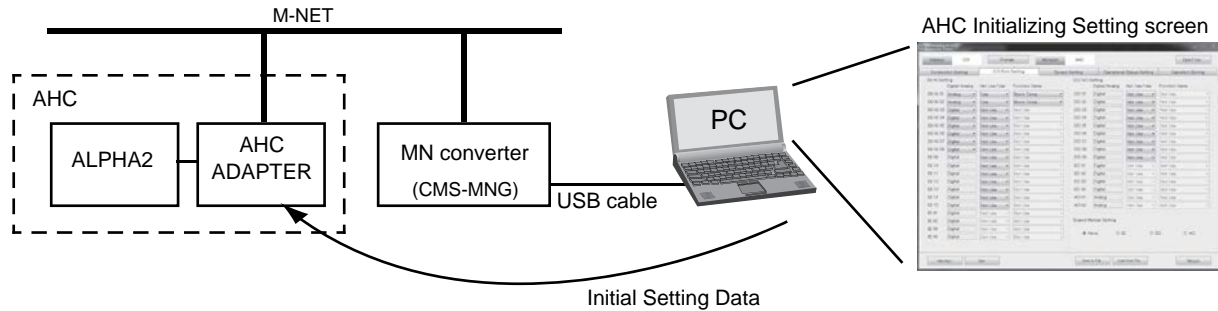
*2 The settings indicated in the shaded cells are factory settings.

7-3. Initial settings and Test run

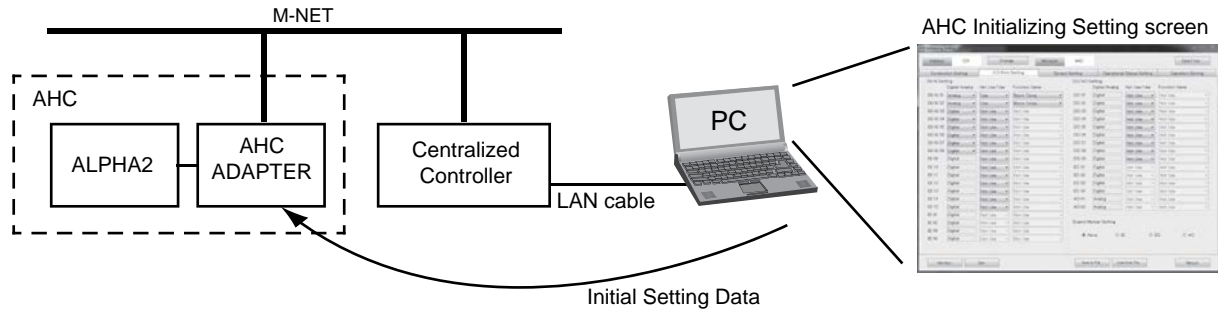
7-3-1. Initial settings

⑤ Initial setting of AHC ADAPTER using Maintenance Tool

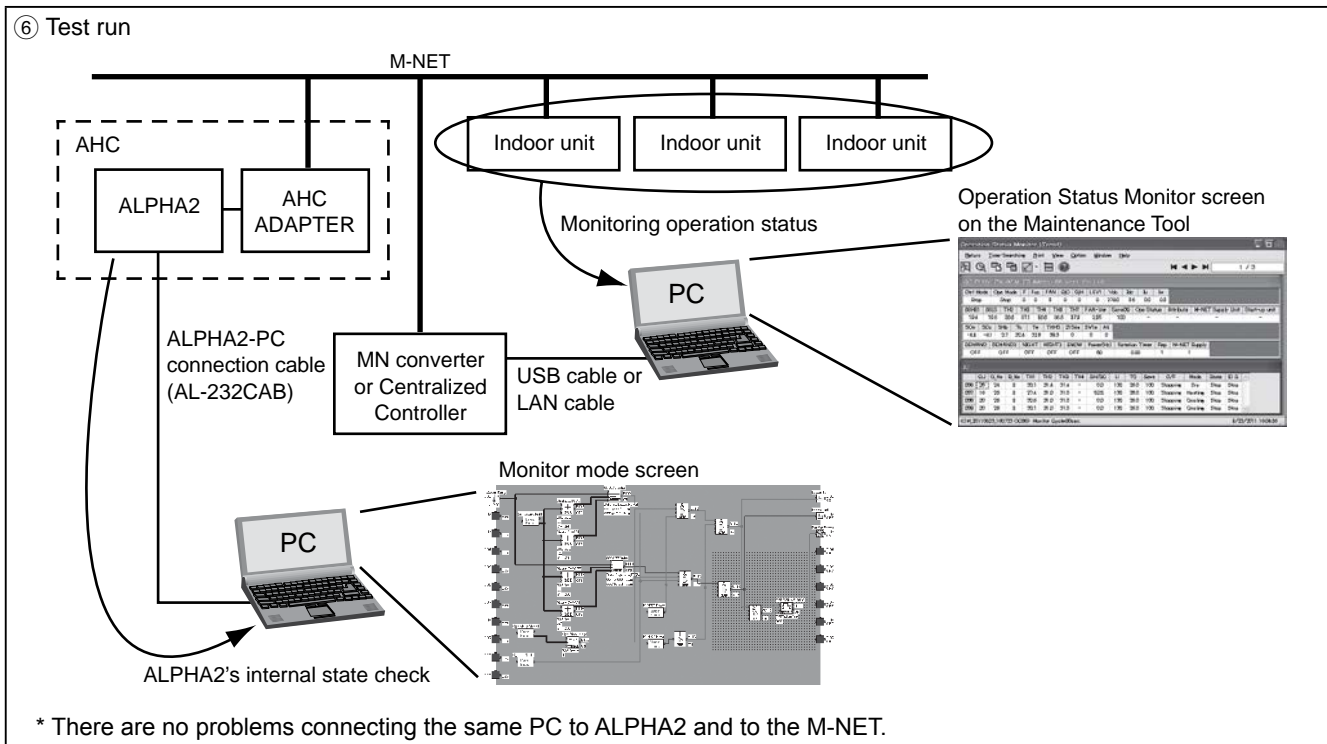
(a) System without a Centralized Controller (MN converter connection)



(b) System with a Centralized Controller (LAN connection)



7-3-2. Test run



7-3-3. Diagnostics with the LED light on the AHC ADAPTER circuit board

LED status	Description	Cause	Troubleshooting
Lit	AHC ADAPTER is operating properly.	Normal	
Unlit	AHC ADAPTER is not energized.	Power is not supplied.	Check the voltage at the M-NET terminal block.
		AHC ADAPTER is in failure.	Replace the AHC ADAPTER.
Blinking	AHC ADAPTER is in error.	AHC is malfunctioning.	Check the error code that is displayed on the controller, and take appropriate actions.

8. Error code list

When an error occurs within AHC, the error code will appear on the remote controller and the centralized controller, and the LED indicator on the circuit board will blink.

The table below summarizes the types of errors that AHC detects.

Error code	Definitions
0101	Equipment abnormality in system (DI01)
0102	Equipment abnormality in system (DI02)
~	
0115	Equipment abnormality in system (DI15)
0116	Equipment abnormality in system (EI01)
~	
0119	Equipment abnormality in system (EI04)
0403	Serial transmission trouble
6600	M-NET communication error - Address duplicate
6601	M-NET communication error - Polarity unsettled
6602	M-NET communication error - Transmission processor hardware error
6603	M-NET communication error - Transmission line busy
6604	M-NET communication error - No ACK return
6605	M-NET communication error - No return of response frame
6606	M-NET communication error - Transmission processor communication error
7130	System abnormality - Different unit model error (Program compatibility error)

Note: For detailed information about the error codes and their definitions, refer to the technical manual that came with AHC.

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:

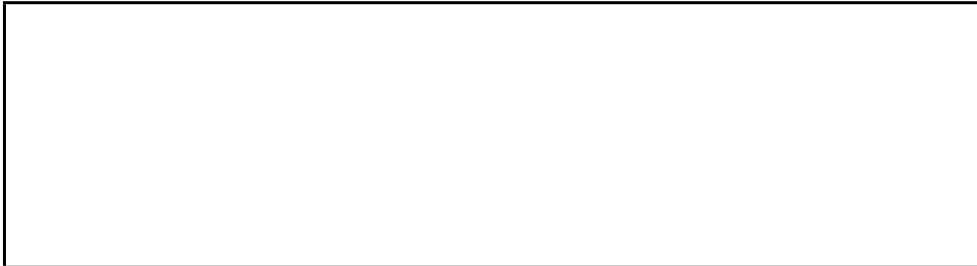
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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:

- Electromagnetic Compatibility Directive 2004/108/EC
- Restriction of Hazardous Substances 2011/65/EU

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



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