

Air-Conditioner Control System

Power supply unit Model: PAC-SC51KUA

Installation Manual

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Before using the controller, please read this Installation Manual carefully to ensure correct operation. Retain this Installation Manual in a location that is easy to find.

This manual describes how to install the PAC-SC51KUA Power supply unit and wiring to the centralized controller and the air conditioner units. For the information about how to install the centralized controller or the air conditioner units, see the installation manual for them. For your safety, first be sure to read (1) Safety precautions described below thoroughly and then install the PAC-SC51KUA correctly.



After reading this installation manual, retain it in a location that is easy to find. If the PAC-SC51KUA Power supply unit is going to be operated by another person, make sure that this manual is given to them.

1 Safety precautions


Before installing this unit, make sure you read all the "Safety precautions".


The "Safety precautions" provide very important points regarding safety. Make sure you follow them.

Symbols and Terms

 WARNING	Statements identify condition or practices that could result in personal injury or loss of life.
 CAUTION	Statements identify condition or practices that could result in damage to the unit or other property.

Specific Precautions

 WARNING	
<p>Ask your dealer or technical representative to install. Any deficiency caused by your own installation may result in an electric shock and fire.</p>	<p>Ensure that installation work is done correctly following this installation manual. Any deficiency caused by installation may result in an electric shock or fire.</p>
<p>Install in a place which is strong enough to withstand the weight of the unit. Any lack of the strength may cause the unit to fall down, resulting in a personal injury.</p>	<p>All electrical work must be performed by a licensed technician, according to local regulations and the instructions given in this manual. Any lack of electric circuit or any deficiency caused by installation may result in an electric shock or fire.</p>
<p>Wire and connect using the desired cables securely so that any external force exerted on the cable is not imparted on to the terminal connections. Imperfect connection and fixing may result in heating or fire.</p>	<p>Do not move and re-install the unit yourself. Any deficiency caused by installation may result in an electric shock or fire. Ask your distributor or special vender for moving and installation.</p>
<p>Never modify or repair the unit by yourself. Any deficiency caused by your modification or repair may result in an electric shock or fire. Consult with your distributor for repair.</p>	<p>This appliance must be earthed (grounded). Make sure to install a protect earth(PE)/grounding line. Do not connect the PE (grounding) line to gas or water pipes, lightning conductors or telephone grounding lines. Improper grounding may cause an electric shock.</p>
<p>Make sure that the unit is powered by a dedicated line. Other appliances connected to the same line could cause an overload.</p>	<p>Securely install the cover (panel) of the PAC-SC51KUA. If the cover(panel) is not installed properly, dust or water may enter the unit and fire or electric shock may result.</p>
<p>Make sure that there is a main power switch. A ready accessible breaker for power source line helps reduce the risk of electric shocks. Installation of a breaker is mandatory in same area.</p>	

 CAUTION	
<p>Do not install any place exposed to flammable gas leakage. Flammable gases that accumulates around the body of the unit may caused an explosion.</p>	<p>Do not install in any steamy place such as bath room or kitchen. Avoid any place where moisture is condensed into dew. Doing so may cause an electric shock or a malfunction.</p>
<p>Do not use in any special environment. If use in any place exposed to oil (including machine oil), steam and sulfuric gas may degrade performances significantly or damage the component parts.</p>	<p>Do not install in any place where acidic or alkaline solution or special spray or other similar substances are used. Doing so may cause an electric shock or malfunction.</p>
<p>Wire so that it wires do not received any tension. Tension may caused wire breakage, heating or fire.</p>	<p>Use standard wires in compliance with the current capacity. A failure to do this may result in an electric leakage, heating or fire.</p>
<p>Do not wash with water. Doing so may cause an electric shock or malfunction.</p>	<p>Do not touch any PCB (Printed Circuit Board) with your hand or tools. Do not allow dust to collect on the PCB. Doing so may cause fire or an electric shock.</p>
<p>Do not install in any place at a temperature of more than 55°C (131°F) or less than -10°C (14°F) or exposed to direct sunlight.</p>	
<p>Use only an earth leakage breaker and fuse of the specified capacity. If no earth leakage breaker is installed, it may cause an electric shock. Using fuse and wire or copper wire with too large a capacity may cause a malfunction to the unit or fire.</p>	

2 Product feature

This unit supplies DC power to the centralized controller AG-150A by means of the centralized controller system M-NET transmission line and DC power cable. G-50A cannot be connected.

1. Specification

Source power requirement	Rated input voltage and current	100-240VAC ±10%; 0.8A - 0.4A 50Hz/60Hz Single-phase	
	Fuse: 6.3A Time-delay type (IEC127-2 S.S.5)		
Output voltage/current	M-NET	23.0 - 32.0VDC	
	DC power supply	24VDC ±5% 0 - 0.75A	
Load capacity (24v)	Number of the loading unit: AG-150A Centralized Controller 1 unit		
Environmental condition	Temperature	Operating range	-10 to 55°C / 14 to 131°F
		Storage range	-20 to 60°C / -4 to 140°F
	Humidity	30~90%RH (No condensation)	
Dimensions	169 (H) × 271 (W) × 72 (D) mm (6-11/16 (H) × 10-11/16 (W) × 2-7/8 (D) in)		
Weight	1.4 kg (3-1/8 lb)		
Installation Environment	In the control board or in the mounting attachment A type (PAC-YG85KTB) (sold separately) *This unit is installed and used in a business office or equivalent environment.		

2. Power supply capacity

2-1. 24V power supply (TB3)

Supplies power to one AG-150A unit.

Not connectable to multiple AG-150A units.

Not usable with G-50A.

2-2. M-NET power supply (TB2)

PAC-SC51KUA is capable to supply equivalent power up to 5, therefore the maximum connectable number of system controller is as follows.

Table1 Equivalent power consumption of controllers

Centralized controller			Other system controllers	
AG-150A	G-50A	GB-50A	ON/OFF remote controller	PAC-SF44SRA, PAC-YT34STA, PAC-SC30GRA
0.5	-*1	3	1	0.5

*1. Not connectable to G-50A. Use PAC-SC50KUA to connect G-50A.

Table2 Max. connectable quantity of controller when using PAC-SC51KUA

Centralized controller			Other system controllers	
AG-150A	G-50A	GB-50A	ON/OFF remote controller	PAC-SF44SRA, PAC-YT34STA, PAC-SC30GRA
1 unit	-*1	1 unit	5 units	10 units

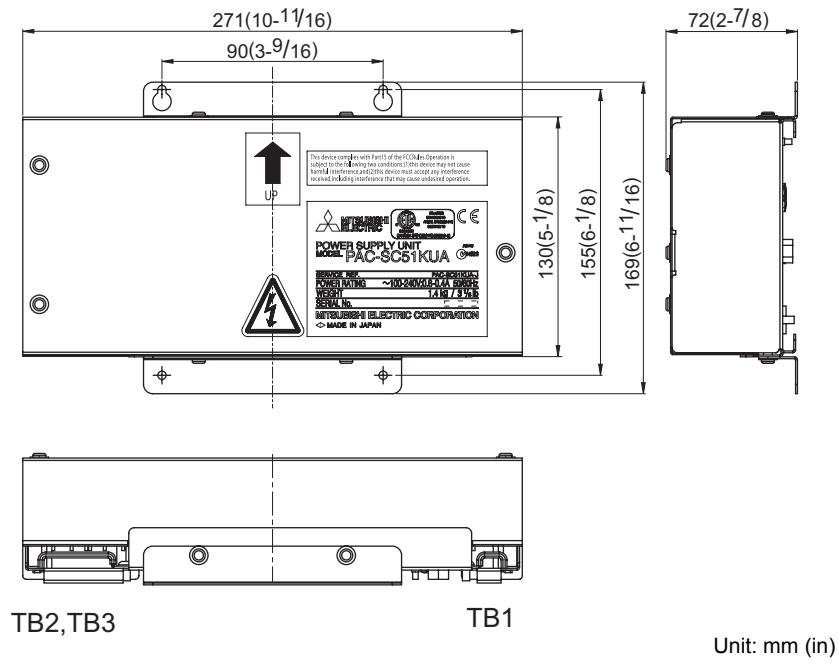
*1. Not connectable to G-50A. Use PAC-SC50KUA to connect G-50A.

Table3 Connectable number of system when 1 AG-150A is used.

V: Connectable

		Total number of ON/OFF remote controller (AN)					
		0	1	2	3	4	5
Total number of System remote controller (SR) Schedule timer (ST) Group remote controller (GR)	0	V	V	V	V	V	
	1	V	V	V	V	V	
	2	V	V	V	V		
	3	V	V	V	V		
	4	V	V	V			
	5	V	V	V			
	6	V	V				
	7	V	V				
	8	V					
	9	V					

3. Appearance



3 Installation

1. Package contents

Check that the following parts are included in the package.

- ① PAC-SC51KUA 1 unit
- ② L-shaped mounting brackets 1 set
- ③ M4 screw (4 pcs. for fixing PAC-SC51KUA and mounting bracket)
- ④ Installation Manual (this document)

2. Parts prepared at site

Please prepare the following parts before installation of the unit.

Preparation parts	Specification
Unit fixing screw	M4 screw × 4 pcs Prepare screws to mount the unit on the wall.
Power cable/ Protective earth cable (Ground cable)	Use sheathed vinyl cord or wire. Wire type: Wire should not be lighter than ordinary PVC sheathed flexible cord IEC 60227 (designation 60227 IEC 53) Wire size: 0.75mm ² to 2mm ² (AWG18 to 14)
Main power switch** Breaker for wiring	<ul style="list-style-type: none"> • Local switch: Capacity 3A, Fuse 3A* * Use B type fuse. • Molded case breaker for wiring (NFB): Capacity 3A
Ground-fault interrupter	Level of earth leakage: 30mA, 0.1 sec or less
Transmission cable	Type of the cable; Sheathed vinyl cords or cable which comply with the following specifications or equivalent. <ul style="list-style-type: none"> • CPEVS φ1.2mm to φ1.6mm • CVVS 1.25mm² to 2mm² (AWG16 to 14) * CPEVS; PE insulated PVC jacketed shielded communication cable * CVVS; PVC insulated PVC jacketed shielded control cable PE: Polyethylene PVC: Polyvinyl chloride Cable length: Please refer to section (5) Allowable length of M-NET Transmission Lines
DC power cable	The DC power cable should comply with both local standards as well as the power requirement of the unit. Recommended type: 0.75mm ² to 2mm ² (AWG18 to 14) Cable length: Within 50m (164 ft)

*1 When installing the unit, use the switch having a contact separation of at least 3mm (1/8 in) in each pole.

3. Installation space and the direction

(1) To install the unit inside the control board

Attach the mounting brackets to PAC-SC51KUA as shown in Fig. 3-1.

PAC-SC51KUA Power supply unit is not waterproof.

PAC-SC51KUA shall be installed in a control panel box (steel: thickness 1mm (1/16 in) or more).

Please prepare the control panel box in consideration with installation space as shown in the Fig. 3-1.

(Install in an area capable of withstanding a 1.4 kg (3-1/8 lb) load.)

The unit shall be also installed in vertical direction only indicated by arrow making on the cover as shown in the Fig. 3-1.

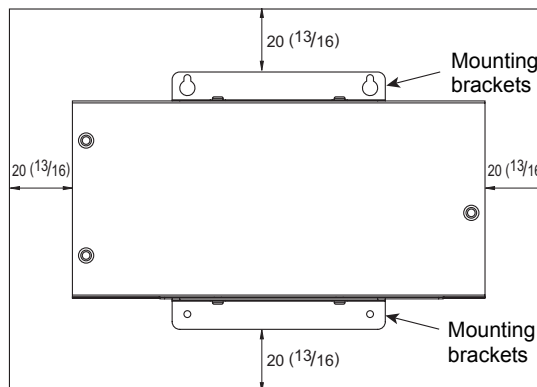


Fig. 3-1

Unit: mm (in)

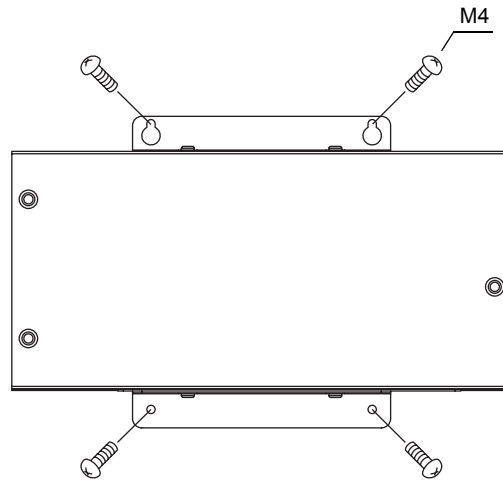
(2) To install the unit inside the mounting attachment A type (PAC-YG85KTB) (sold separately).

PAC-SC51KUA can be installed inside the mounting attachment A type (PAC-YG85KTB) (sold separately).

Refer to the Installation Manual that came with AG-150A for details.

4. Unit installation

Fix the unit to the control panel box using M4 screws as shown in the Fig. 3-2.



Refer to the Installation Manual that came with AG-150A for how to install the unit inside the mounting attachment A type (PAC-YG85KTB) (sold separately).

Fig. 3-2

⚠ CAUTION

The unit should be fixed with 4 positions to prevent from unit falling down.

4 | Wiring

⚠ WARNING

- All electric work must be performed according to local regulations. Improper electrical work may result in electric shock or fire.
- Be sure to shut off the power source of the unit and the all other unit to be connected to the power supply unit before wiring.

⚠ CAUTION

Do not connect the AC power line to the M-NET and POWER (24VDC) terminal blocks of this device. Otherwise, the unit may fail.

1. Cover Removal and Installation

When removing the cover, remove the 3 mounting screws and remove the cover.
When installing the cover, install the cover by tightening the 3 screws.

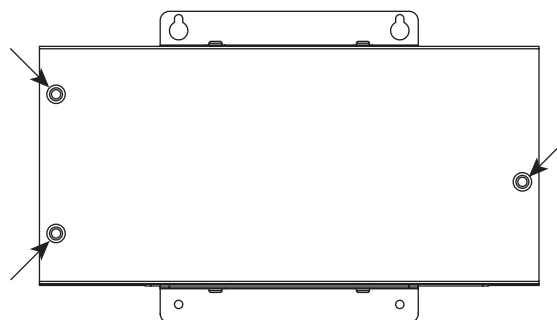
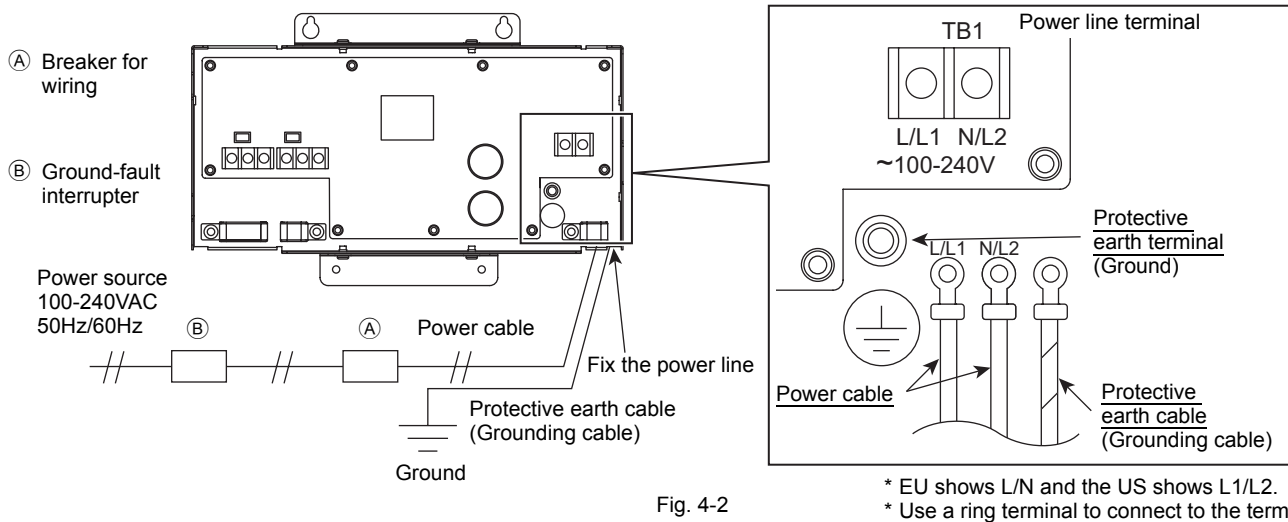


Fig. 4-1

2. Power line

Wire the power cable and protective earth cable (grounding cable) to L/L1, N/L2 and the earth line (grounding line) terminals on the TB1 as shown in the Fig. 4-2.



*1 Install ground-fault interrupter and breaker for wiring on the power supply.

*2 Do not use anything other than a breaker and fuse with the correct capacity. Using a fuse or wire of too large capacity may cause malfunction or fire.

*3 When installing the unit, use the switch having a contact separation of at least 3mm (1/8 in) in each pole.

3. DC Power Supply and M-NET Transmission Line

There are two ways to connect the unit as follows.

(1) Connected via terminal block

The DC power cable and M-NET transmission line connect as shown in Fig. 4-3. The DC power cable has a 24VDC and a GND polarity. Connect it to the terminals in accordance with the polarity. Connect the M-NET transmission line to the A, B (non-polarity) and S (shield) terminal block.

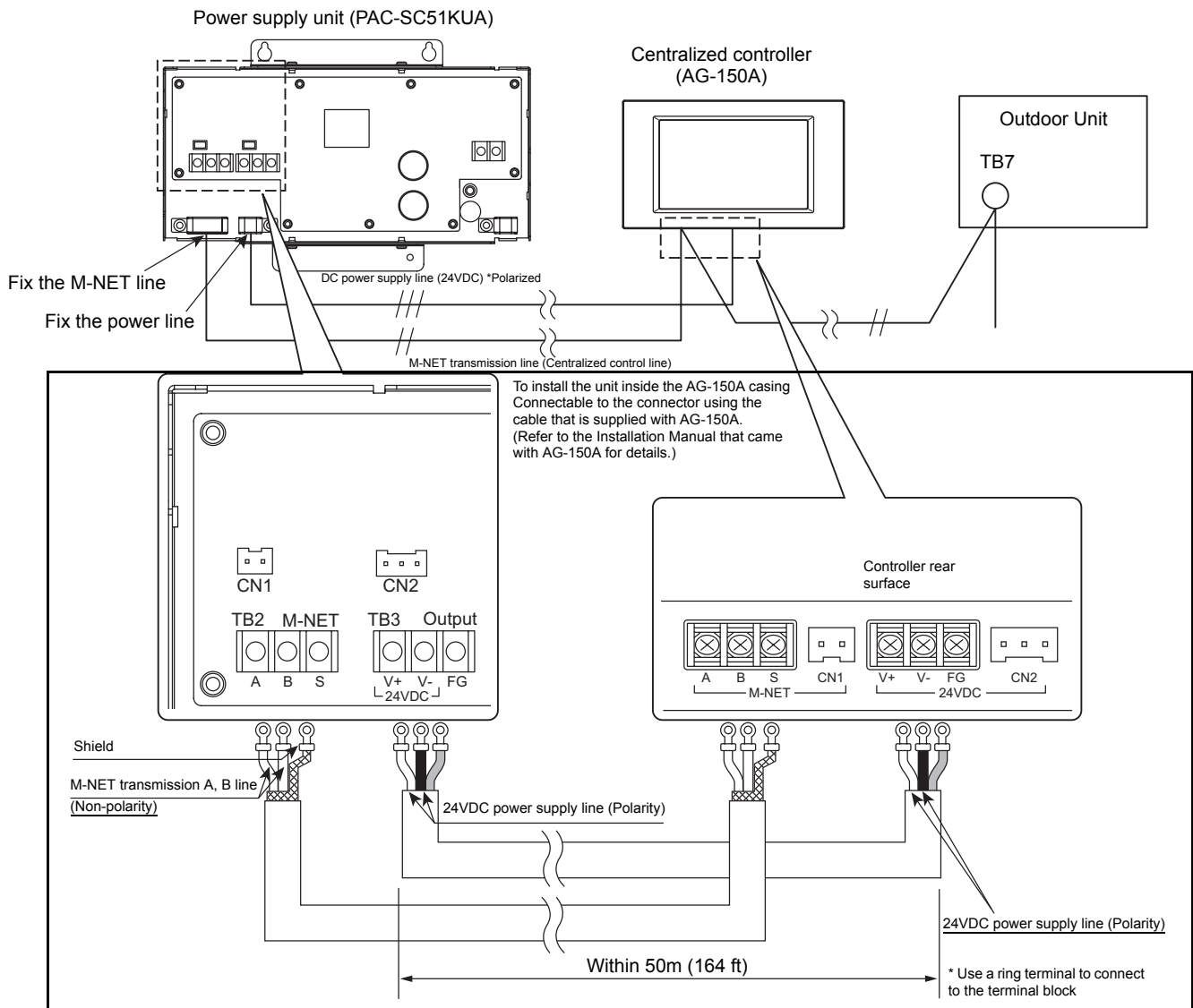


Fig. 4-3

(2) Connecting the connector

When installing the unit in the mounting attachment A type (PAC-YG85KTB) (sold separately), DC power cable and M-NET transmission line can be connected with the connector as shown in the Fig. 4-4. Connectable to the connector using the cable that is supplied with AG-150A (Refer to the Installation Manual that came with AG-150A for details.)

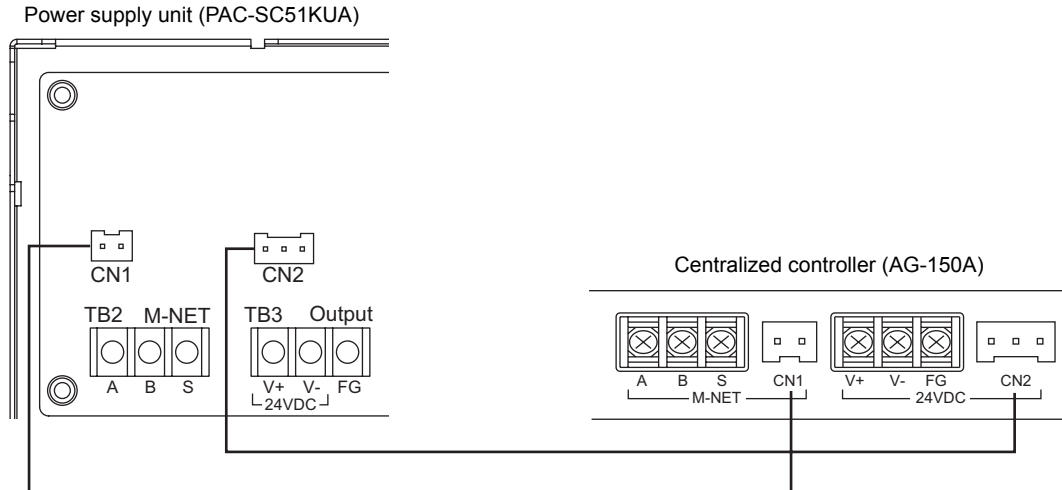


Fig. 4-4

CAUTION

- Both of PAC-SC51KUA and Outdoor unit can supply DC power to the M-NET transmission line. Set the outdoor unit central control system transmission line power supply to the factory setting CN41 (no supply). For further details, refer to the installation manual of the outdoor unit. Not doing so may cause unit failure or fire.

After connection for the each cable, fasten each cable with the cable fixture.

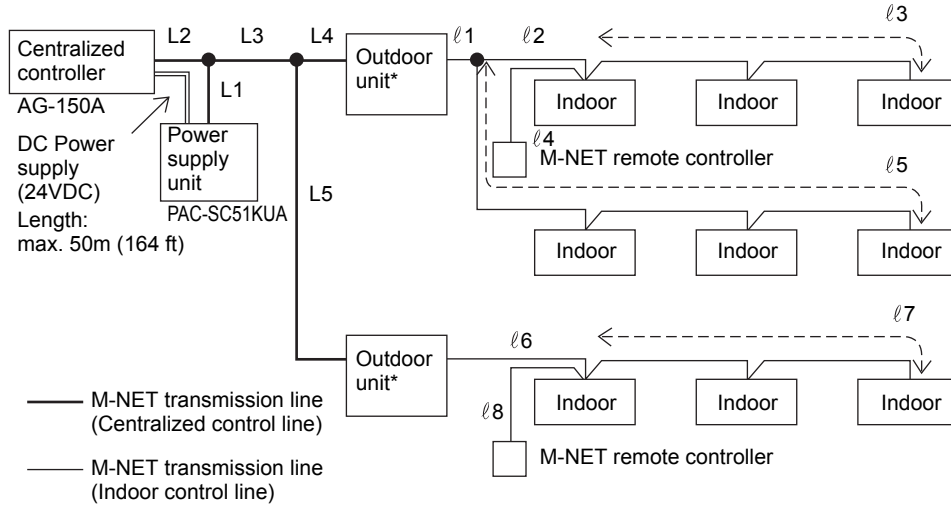
5 Allowable length of M-NET Transmission Lines

- Maximum length of M-NET transmission $\leq 500\text{m}$ (1640 ft) *1
- Maximum power feeding length $\leq 200\text{m}$ (656 ft)

NOTE

- * 1: Not including the remote control cables up to 10m (32 ft) in length. If the remote control cable exceeds 10m (32 ft), the excess must be added to the total length in order to avoid exceeding the maximum length.

Example



1) Maximum length of M-NET transmission

- ① $L2+L3+L4+l1+l2+l3$ ($l4$) $\leq 500\text{m}$ (1640 ft)
- ② $L2+L3+L4+l1+l5$ $\leq 500\text{m}$ (1640 ft)
- ③ $L2+L3+L5+l6+l7$ ($l8$) $\leq 500\text{m}$ (1640 ft)
- ④ $l3$ ($l4$) $+l2+l1+L4+L5+l6+l7$ ($l8$) $\leq 500\text{m}$ (1640 ft)
- ⑤ $l5+l1+L4+L5+l6+l7$ ($l8$) $\leq 500\text{m}$ (1640 ft)

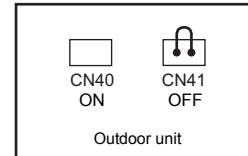
2) Maximum power feeding length for the indoor control line

- ① $l1+l2+l3$ ($l4$) $\leq 200\text{m}$ (656 ft)
- ② $l1+l5$ $\leq 200\text{m}$ (656 ft)

3) Maximum power feeding length for the centralized control line

- ① $L1+L2$ $\leq 200\text{m}$ (656 ft)*
- ② $L1+L3+L4$ ($L5$) $\leq 200\text{m}$ (656 ft)

- * To supply power to the M-NET line from PAC-SC51KUA, connect the power jumper on outdoor unit to CN41.



NOTE

If the remote control cable ($l4$, $l8$) do not exceed 10m (32 ft) in length, the length for $l4$, $l8$ may not consider to the total length.

*The total length of DC power cable must not exceed 50m (164 ft).

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.

 **MITSUBISHI ELECTRIC CORPORATION**

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