MITSUBISHI ELECTRIC

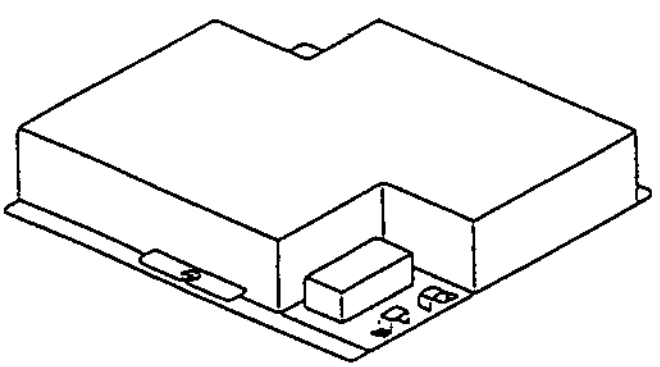
CE

Building Air Conditioning Control System

K transmission Converter

Model: PAC-SC25KAA

Installation Manual



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

This manual describes the installation of the PAC-SC25KAA K transmission converter and wiring to the air conditioner units. For the information about how to install the air conditioner , 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-SC25KAA correctly.
After reading this installation manual, keep it in a location that is easy to find. If the PAC-SC25KAA K transmission unit is going to be operated by another person, make sure that this manual is given to him or her.

1.Safety precaution

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

Ask your dealer or technical representative to install.
Any deficiency caused by your own installation may result in an electric shock and fire.

Ensure that installation work is done correctly following this installation manual.
Any deficiency caused by installation may result in an electric shock or fire.

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.

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.

Wire and connect using the desired cables securely so that any external force from the cable is imparted to the terminal connections.
Imperfect connection and fixing may result in heating or fire.

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.

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.

This appliance must be earthed.
Make sure to install a protective earth(PE) line.
Do not connect the protective earth line to gas or water pipes,lighting conductors or telephone grounding lines.
Improper grounding may cause an electric shock.

Make sure that the unit is powered by dedicated line.
Other appearance connected to the same line could cause an overload.

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 areas.

The terminal block cover of each line must be firmly attached to prevent entry of dust and moisture. Improper mounting of cover can cause electric shock or fire.

⚠ CAUTION

Do no install any place exposed to flammable gas leakage.
Flammable gases accumulated around the body of unit may cause an explosion.

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.

Do not use in any special environment.
Using in any place exposed to oil (including machine oil), steam and sulfuric gas may deteriorate the performances significantly or give damage to the component parts.

Do not install in any place where acidic or alkaline solution or special spray are often be used.
Doing so may cause an electric shock or malfunction.

Wire so that it does not received any tension.
Tension may caused wire breakage, heating or fire.

Use standard wires in compliance with the current capacity.
A failure to this may result in an electric leakage,heating or fire.

⚠ CAUTION

Do not wash with water.
Doing so may cause an electric shock or malfunction.

Do not touch any PCB(Printed Circuit Board)with your hand or tools. Do not have dust collected on the PCB.
Doing so may cause fire or an electric shock.

Do not install in any place at a temperature of more than 40℃ or less than 0℃ or exposed to direct sunlight.

Use only a fuse of specified capacity.
A fuse of large capacity or a steel or copper wire could cause a malfunction or fire.

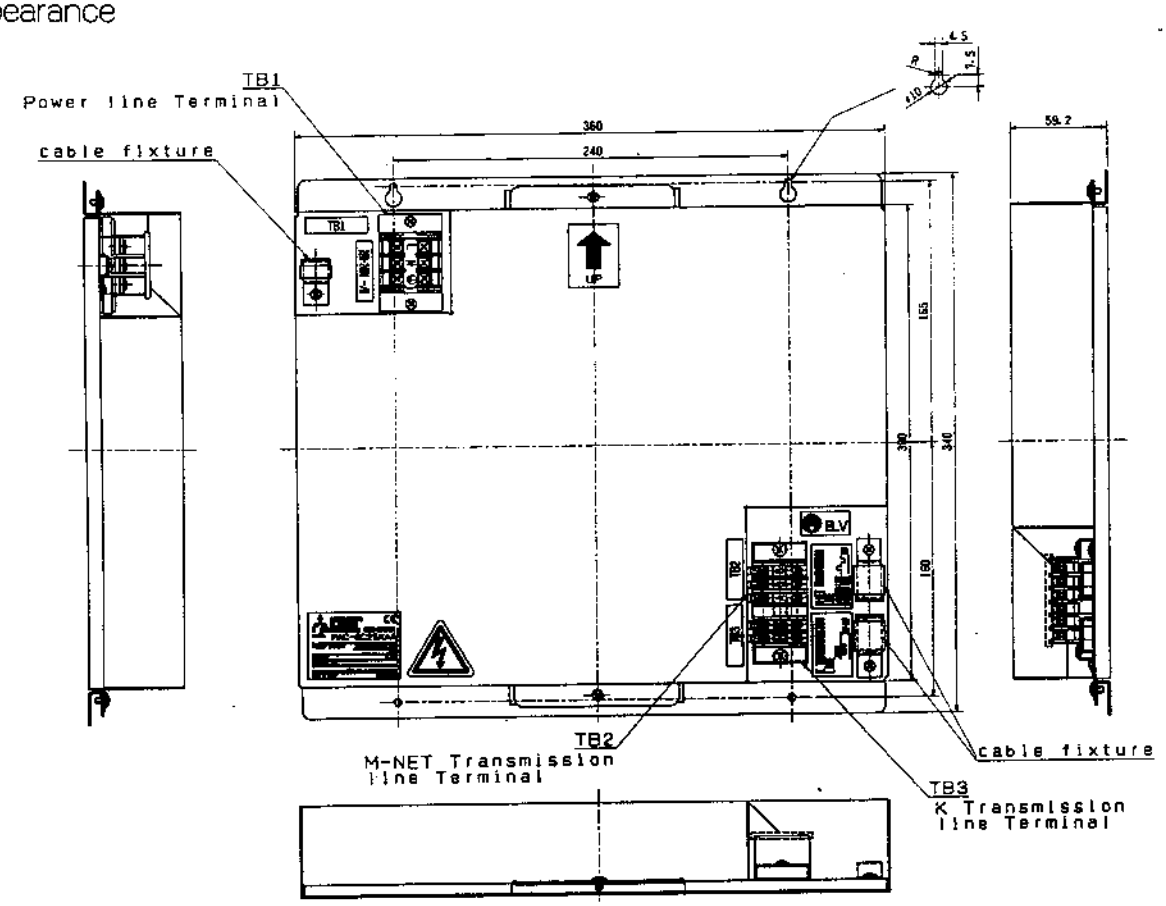
2. Product feature

PAC-SC25KAA K transmission converter permits centralized control system of K-control models using the M-NET system controller(MJ-103MTRA central controller etc.).

2-1. Specification

Source power requirement	Input voltage AC220V～AC240V ; 0.3 A(Maximum loading)／50Hz Single-pnase		
	Fuse : 2.0A Time-delay type(IEC127-2 S.S3)		
Interface condition for transmission line	M-NET transmission line : DC30V+AMI signal K-transmission line : DC12V～DC18V+AM signal		
Number of K-controlled indoor unit controlled by PAC-SC25KAA	1～50		
Load capacity	DC supply voltage／current to the K transmission line	DC15V,0.5 A(maximum)	
Environmental condition	Temperature	Operating 0～40℃ Non operating 0～70℃	
	Humidity	30～90%RH(No condensation)	
Dimensions	340(High)× 360(Width)× 59.2(Depth)		
Weight	3.2Kg		

2-2. Appearance



3.Installation

3-1. Parts prepared at site

Please prepare the following parts before installation of the unit.

Preparation parts	Specification
Unit fixing screw	M4 screw × 4 pcs
Power cable Protective earth cable	Please prepare the power cable complied with your applicable technical standard in consider with power requirement of the unit. * Recommend type ; φ 1.5mm ~ φ 2.0mm (H03VVH2-F,H05VV-F,H05VVH2 (H03VV-F,H03VVH2-F,H05VV-F,H05VVH2-F2)
Main Power switch (Circuit breaker)	Qty. : 1pc Type : 250VAC Single-phase 50Hz 3A * Recommend type : CP30-BA series(MITSUBISHI ELECTRIC)or equivalent.
Transmission cable	1.M-NET transmission line : Sheathed vinyl cords or cable which comply with the following specifications or equivalent. · CPEVS φ 1.2mm ~ φ 1.6mm · CVVS 1.25mm² ~ 2mm² * CPEVS : PE insulated, PCV jacketed shielded communication cable * CVVS : PVC insulated, PVC jacketed shielded control cable 2.K-transmission line : Sheathed vinyl cords or cable which comply with the following specifications or equivalent. · VVF φ1.6mm * VVF ; PVC-insulated, PVC-sheathed flat cable NOTE Cable length ; There is a limitation for the transmission line. Please refer to the section 7.System limitation.

3-2. Installation space and the direction

PAC-SC25KAA K transmission converter is not waterproof type. Therefore this unit shall be installed in a control panel box or the like. Please prepare the control panel box in consider with installation space as shown in the Fig3-1.
The unit shall be also installed in vertical direction only indicated by the arrow marking on the cover as shown in the Fig 3-1

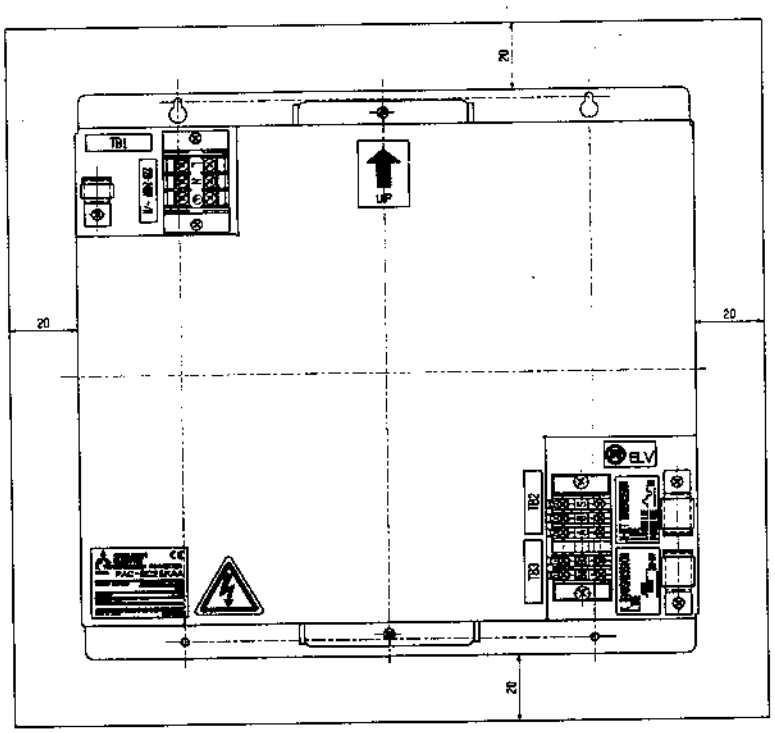


Fig.3-1

3-3 Unit installation

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

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

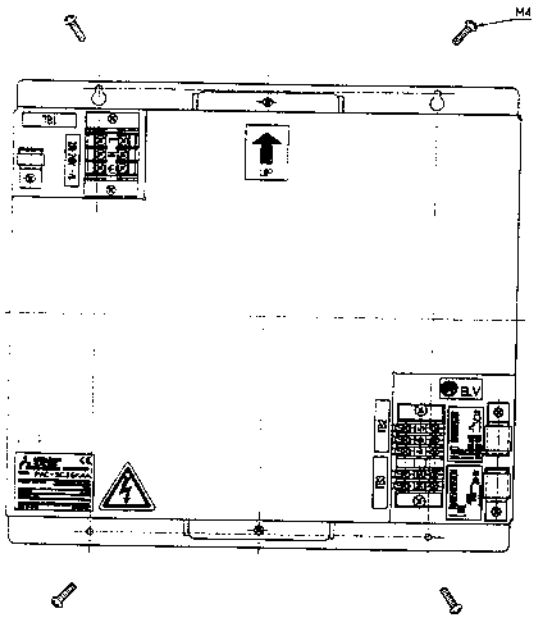


Fig.3-2

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 K transmission unit before wiring.
>
> ⚠ CAUTION
> Never connect the power source to the transmission line, as this will cause a unit failure.

4-1 Power line

Wire the power cable and protective earth cable to L,N and the earth line terminals on the TB1 as shown in the Fig.4-1.

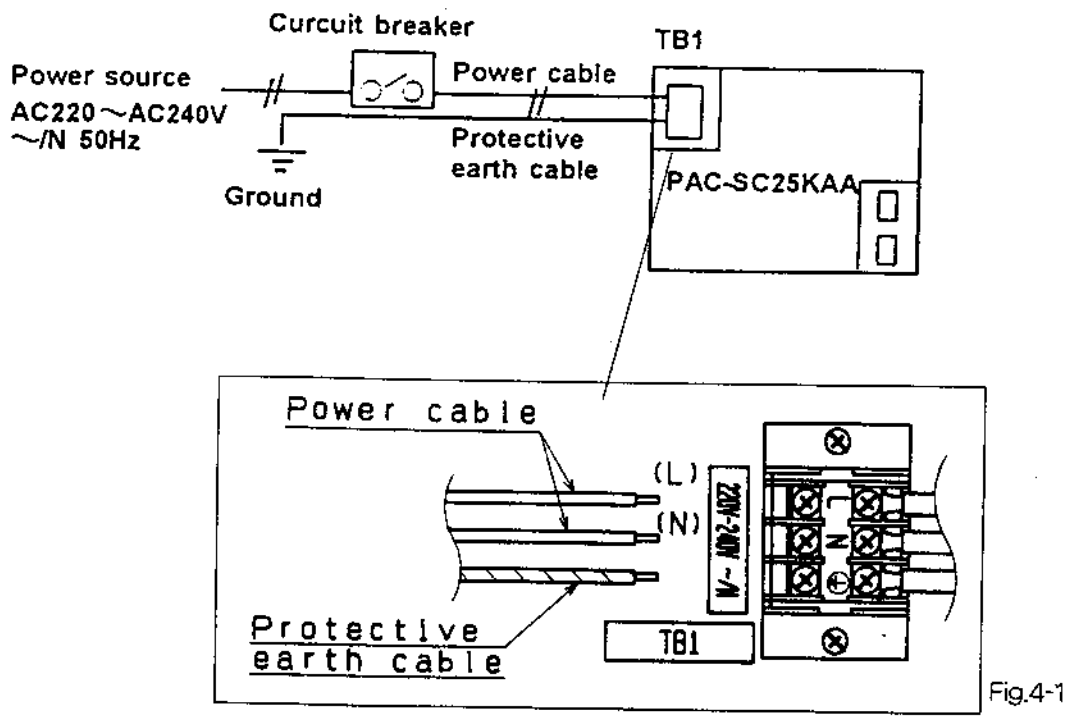


Fig.4-1

4-2 K transmission line

Wire the K transmission cable to B1.B2(non-polarity data)terminals on the TB3 as shown in the Fig. 4-2.

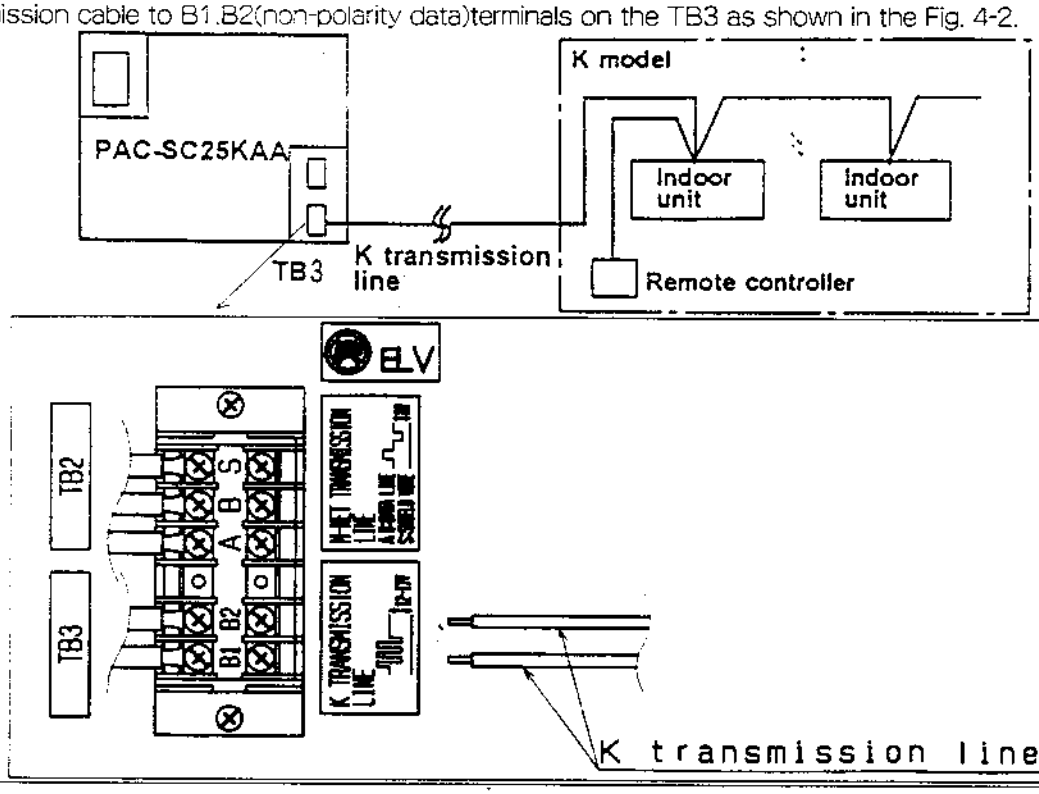


Fig.4-2

⚠ CAUTION

Both of PAC-SC25KAA and Indoor unit can supply DC power to the K transmission line. To prevent from the collision of the power feeding, CN40 of the indoor unit should be removed and be set so that no power is supplied to the K transmission line from the outdoor unit. For the more details, see the installation manual of the indoor unit.

Not doing so may cause unit failure or fire.

4-3 M-NET transmission line

Wire the M-NET transmission cable to A,B(non-polarity data) and S(shield)terminals on the TB2 as shown in the Fig.4-3.

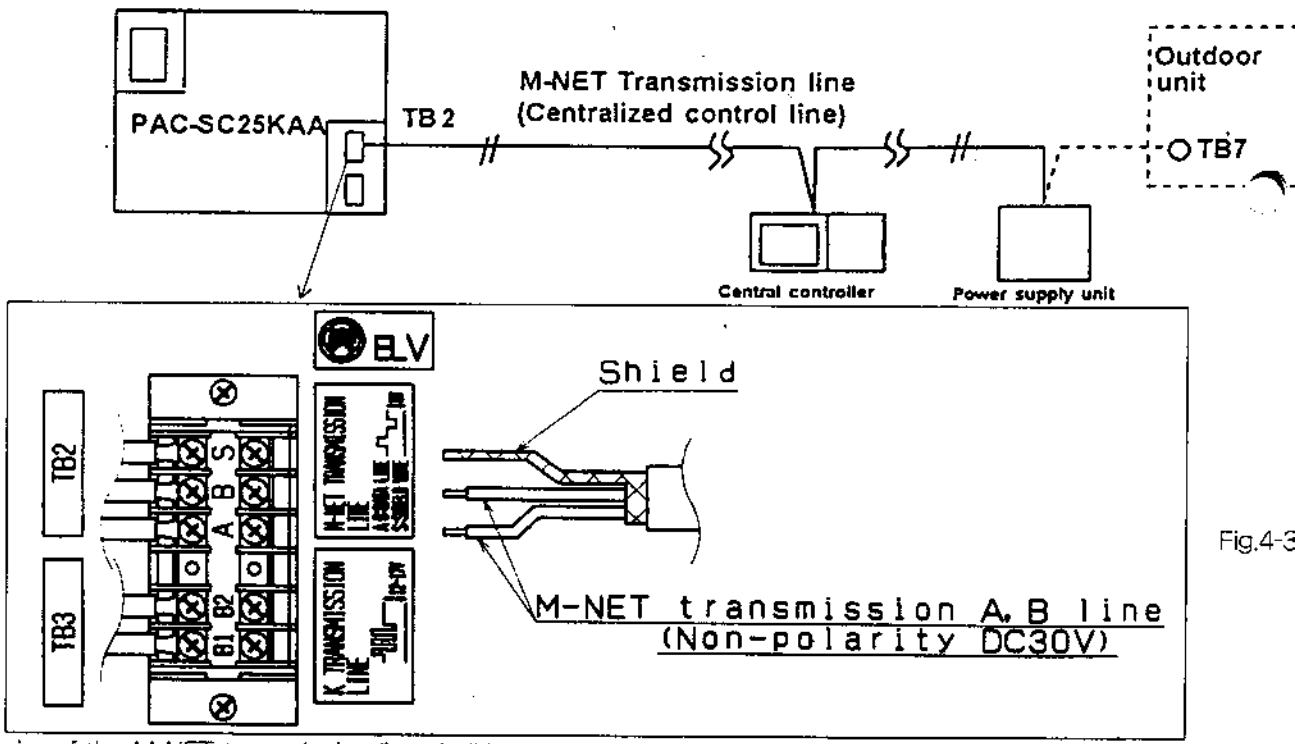


Fig.4-3

NOTE

The shield wire of the M-NET transmission line shall be grounded by one point earthing method.

The shield wire shall be connected to the S terminal of the only one unit on the common transmission line.

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

5.Initial settings

5-1.Address setting for air conditioner units and system controller

(1) Setting unit address

1)Set indoor unit address to between 1 to 50.

2)Set addresses from the lowest and work upward, with M-NET controlled indoor units followed by k-controlled indoor units. The highest M-NET controlled indoor unit address must be lower than the lowest K-controlled indoor unit address.

3)Set the M-NET controlled unit address in accordance with the following table.

M-NET controlled unit	Address setting method	Address
Indoor unit	Group configurations are independent of address settings	1 ~ 50
Outdoor unit	Lowest indoor unit address in same refrigerant system + 50	51 ~ 100
BC	Address of outdoor unit in same refrigerant system + 1	52 ~ 100
Remote controller(Master)	-	101 ~ 150
Remote controller(Slave)	-	151 ~ 200
OA processing unit	-	1 ~ 50

(2) Setting controller address

Set the system controller(SC) address in accordance with range of adress(000,201 ~ 250).

The system controller that can be recognized by the K transmission converter is the only SC having an address set to [000] in the system. For detail, refer to the section 7. System limitation.

NOTE

For details on setting method, refer to the installation manual for each unit.

5-2. Switch setting for the K transmission converter

(1) Remove the screw(2pcs) holding the cover to dismount the cover as shown in the Fig.5-1

⚠ WARNING

· Be sure to shut off the power source of the unit and the controller or other unit which connected to K transmission converter before initial settings.

⚠ CAUTION

· Be careful not to cut finger on the edge of sheet metals

· Do not touch any Printed circuit board with your hand or tools.

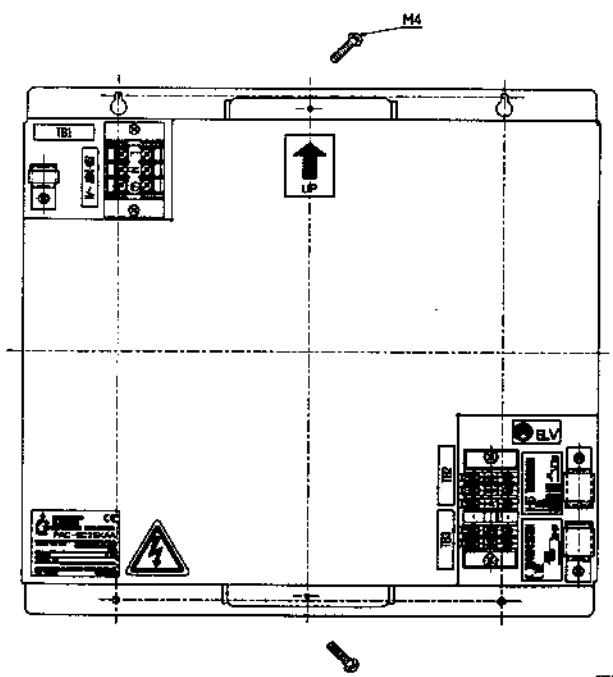


Fig.5-1

The inside of K transmission converter appears as shown in the Fig.5-2

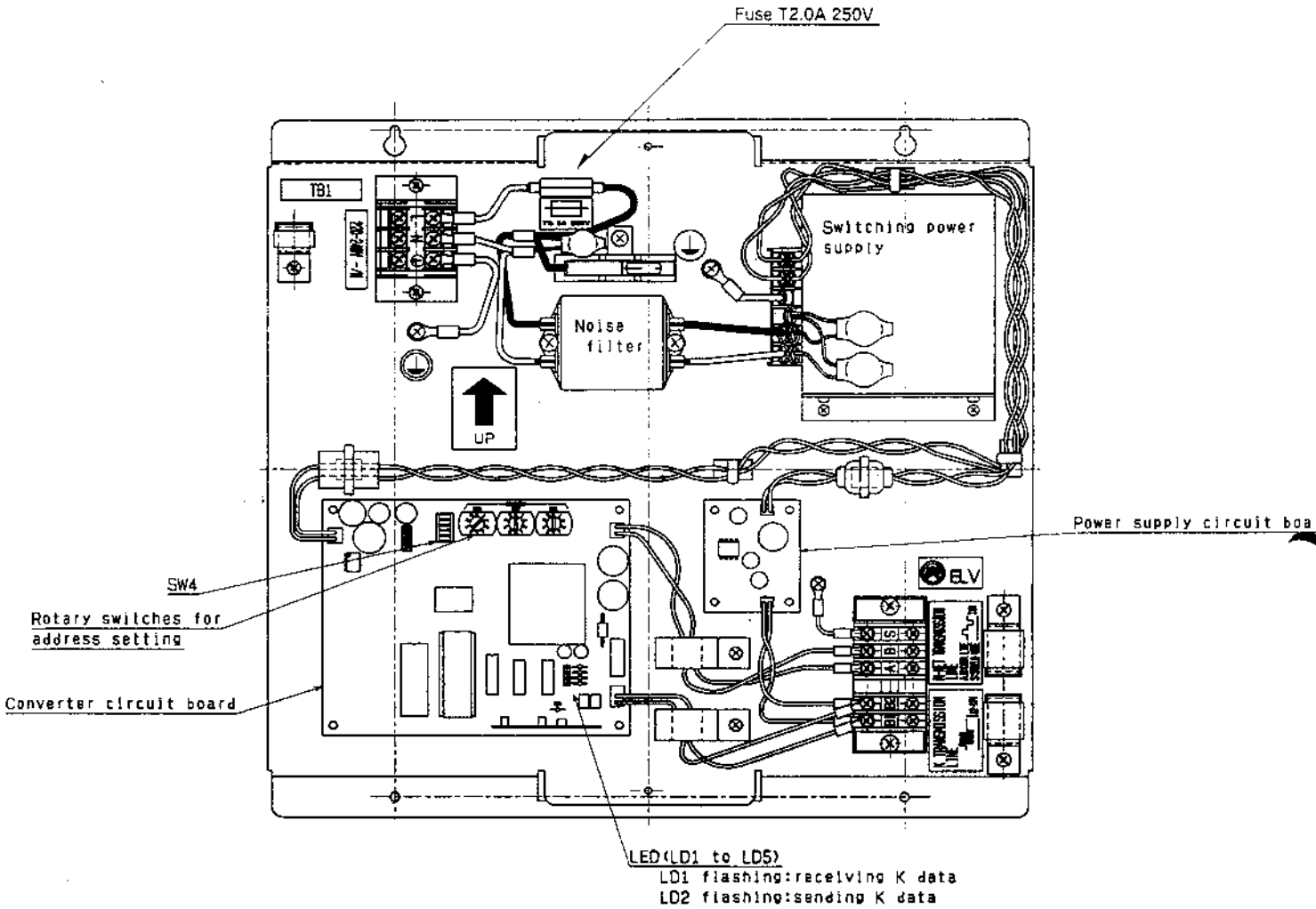


Fig.5-2

(2)Switch setting

1)Address setting

Addresses of the K transmission converter should be set with rotary switches on the converter circuit board as shown in the Fig.5-2. For rotary switches are provided for setting of first digit(SW1), second digit(SW2) and third digit(SW3) as shown in Fin.5-3.

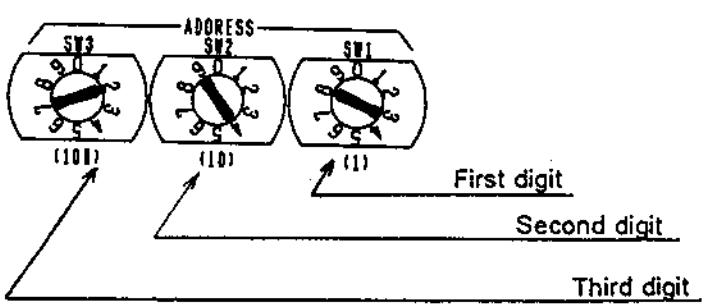
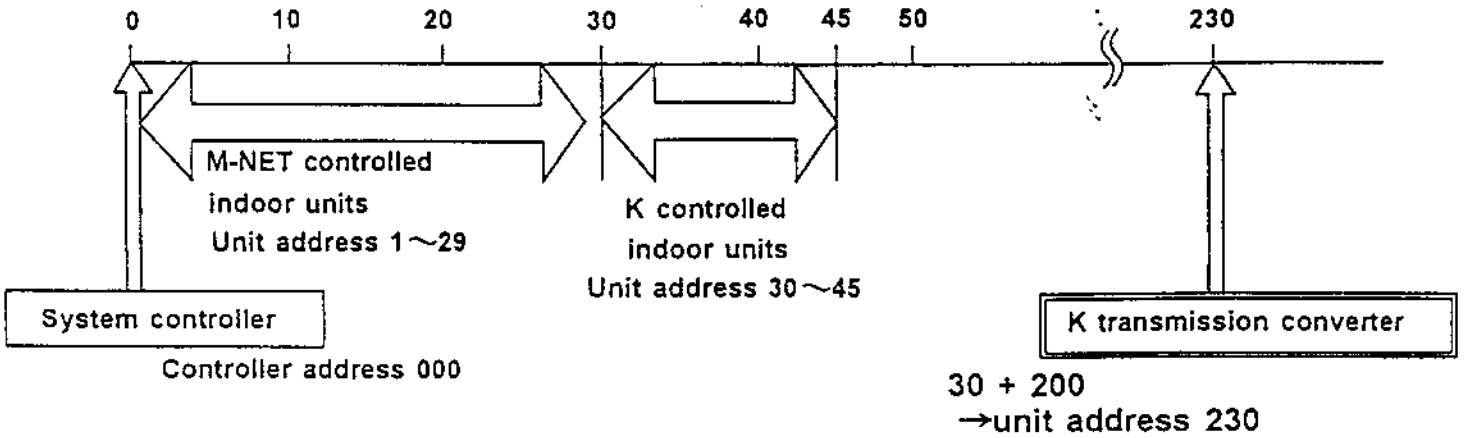


Fig.5-3.

The address of the K transmission converter should be set between 201 and 250 and equal to the address of the lowest K -controlled indoor unit plus 200.

Example for address setting

System with 29 M-NET controlled indoor units and 16 K-controlled indoor units.



NOTE

1. The M-NET controlled indoor unit address must be lower than the lowest K-controlled indoor unit address. (In the example, the highest M-NET controlled indoor unit address is 29 and the lowest K-controlled indoor unit address is 30.)
2. The address of the K transmission converter should be set to the lowest K-controlled indoor unit address (30 in the example) plus 200(230 in the example).
3. If there is a possible that addition M-NET controlled indoor units may be added to the system later,leave a gap between the highest M-NET controlled indoor unit address and the lowest K-controlled indoor unit address(30-34 in the example). This will allow more units to be added later. In such as case, the address of the K transmission converter should be set to 235.(In this example,unit addresses 46 through 50 may not be assigned to M-NET controlled indoor unit.)

2)Dip switch setting

The setting of the SW4 dip switch is not needed on site.

Please conform to the setting under the state at factory shipment(all "OFF").

(3)After the completion of switch settings, mount the cover in the reverse order of the dismounting.

5-3 Group configuration setting

The group configuration setting is done by the Master system controller(Central controller, etc.).

Please refer to the instruction manual and installation manual of the system controller for the group configuration setting.

NOTE

- After all units and controller have been powered on, wait 10 minutes before set the group configuration. Attempting to set the group configuration less than 10 minutes after turning power on will result in some units not going recognized by the system controller and therefore unassignable to groups. Should this occur, wait for at least 10 minutes and try again.
- When setting the group configuration, M-NET controlled and K-controlled indoor units can not be assigned to the same group.

6.Malfunctions / Checking

If the M-NET system controller (MJ series) does not operate, check the following items.

(1)If all of the K-controlled indoor units detect the M-NET transmission error status(error code 6607)

1)Power not turnd on the K-transmission converter or K-controlled unit.

2)Break, short or loose connection in transmission line.

3)Incorrect address setting for the K transmission converter or K-controlled unit.

4)Microprocessor malfunction in the K transmission converter.

(Reset power supply)

(2)If some of the K-controlled units detect the M-NET transmission error status.

1)Power not turned on the affected unit or system.

2)Break, short or loose connection in transmission line of affected unit or system.

3)Less than 10 minutes has passed since the affected system was powered on.

4)Incorrect address setting for the affected unit.

(3)If none of the M-NET and K-controlled indoor unit operate.

1)Power supply short in the M-NET transmission line.(Two or more units are supplying a DC30V power supply)

2)No DC 30V power supply is being supplied to the M-NET transmission line.

3)Break, short or loose connection in the M-NET transmission line.

The M-NET system controller will display the check code, if malfunction occur in the system.
The error code of the K-controlled unit will be transfer to M-NET error code on the M-NET system controller in accordance with the table 6-1.

Table 6-1 M-NET / K-controlled error code translation table

M-NET error code	K-controlled error code	Detecting unit
6751 6761	P1 Intake sensor error	Indoor unit
6752 6762	P2 Piping sensor error	
6753 6763	P3 System error(send / receive)	
6754 6764	P4 Drain sensor error	
6755 6765	P5 Drain pump error	
6756 6766	P6 Freezing / overheating protective device operation	
6757 6767	P7 System error	
6758 6768	P8 Outdoor unit error	
6771	U1 High pressure error	Outdoor unit
6772	U2 Shell thermostat operation or outflow temperature error	
6773	U3 Heat sink thermostat error	
6774	U4 Thermistor error	
6775	U5 Pressure sensor error	
6776	U6 Over-current cut off	
6777	U7 System error	
6778	U8 No error	Indoor unit
6779	U9 Refrigerant overcharge error	Outdoor unit

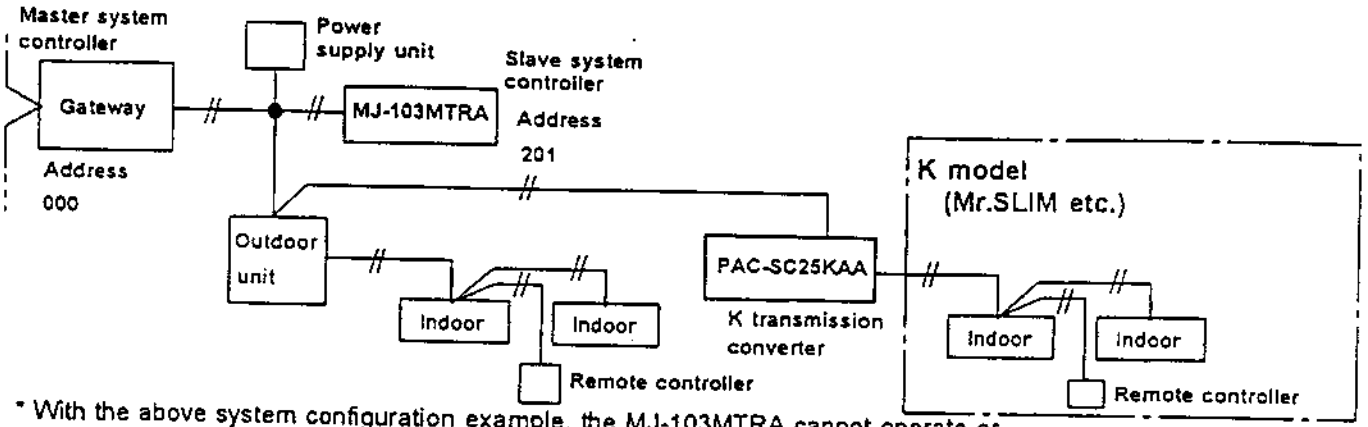
NOTE

Refer to the instruction manuals accompanying the air conditioner unit for details.

7. System limitation

7-1. The system controller assign

The only M-NET System controller (SC) that can recognized by the K transmission converter is the SC having an address set to [000] .Even if multiple SC are connected, only one SC operate and control the K-controlled unit.



* With the above system configuration example, the MJ-103MTRA cannot operate or monitor K-controlled units.

2. Allowable length of transmission line

(1) M-NET transmission line

- Maximum length of M-NET transmission ≦ 500m*1
- Maximum power feeding length ≦ 200m*1

(2) K transmission line

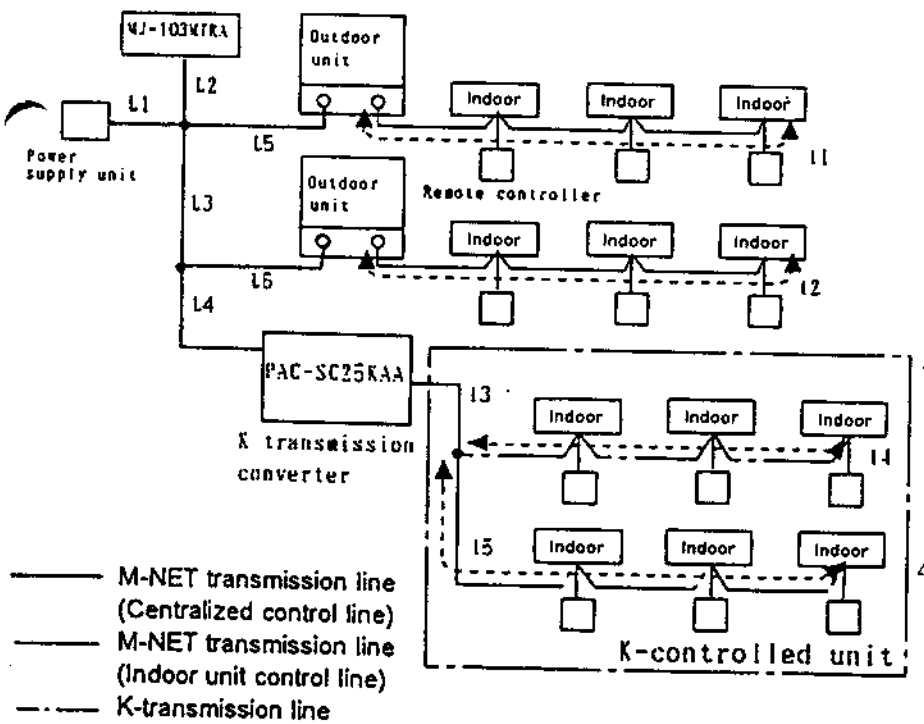
Depend on the number of units and remote controllers connected to K transmission line.

- Number of Indoor unit is 20 or less / remote controller is 10 or less → Total extended length ≦ 500*1
- Number of Indoor unit is 50 or less / remote controller is 25 or less → Total extended length ≦ 200*1

NOTE

*1 : Not including the remote control cables up to 10m in length. If the remote control cable exceeds 10m, the maximun length must be the added the excess length.

Example



1) Maximum length of M-NET transmission
   ① L2 + L5 + l1 ≦ 500m
   ② L2 + L3 + L6 + l2 ≦ 500m
   ③ L2 + L3 + L4 ≦ 500m
   ④ l1 + L5 + L3 + L6 + l2 ≦ 500m
   ⑤ l1 + L5 + L3 + L4 ≦ 500m
   ⑥ l2 + L6 + L4 ≦ 500m
2) Maximum power feeding length for indoor control line.
   l1 or l2 ≦ 200m
3) Maximum power feeding length for centralized control line
   ① L1 + L2 ≦ 200m
   ② L1 + L5 ≦ 200m
   ③ L1 + L3 + L6 ≦ 200m
   ④ L1 + L3 + L4 ≦ 200m
4) Maximum length of K-controlled line
   l3 + l4 + l5 ≦ 500m

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 73/23/EEC
- Electromagnetic Compatibility Directive 89/336/EEC

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