

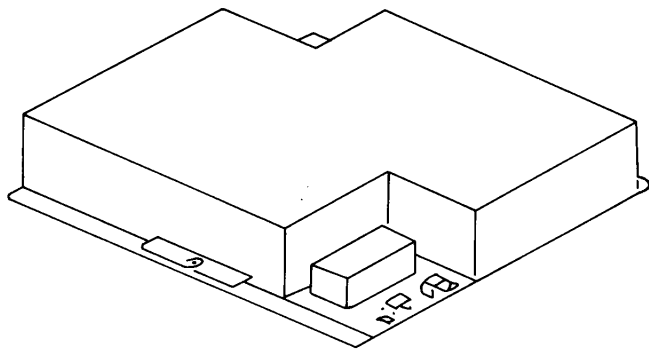


Building Air Conditioning Control System

Gateway Unit

Model: GWU-50A

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 GWU-50A Gateway unit 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 GWU-50A correctly. After reading this installation manual, keep it in a location that is easy to find. If the GWU-50A Gateway unit is going to be operated by another person, make sure that this manual is given to him or her.


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 that 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 licenced 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 from the cable is imparted to the terminal connections. Imperfect connection and fixed may result in heading 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. Make sure to install a protective earth(PE) line. Do not connect the protective earth 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 dedicated line. Other appearance connected to the same line could cause an overload.</p>	<p>The terminal block cover of each line must be firmly attached to prevent entry of dust and moisture. Improper mounting of cover can cause an electric.</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 areas.</p>	

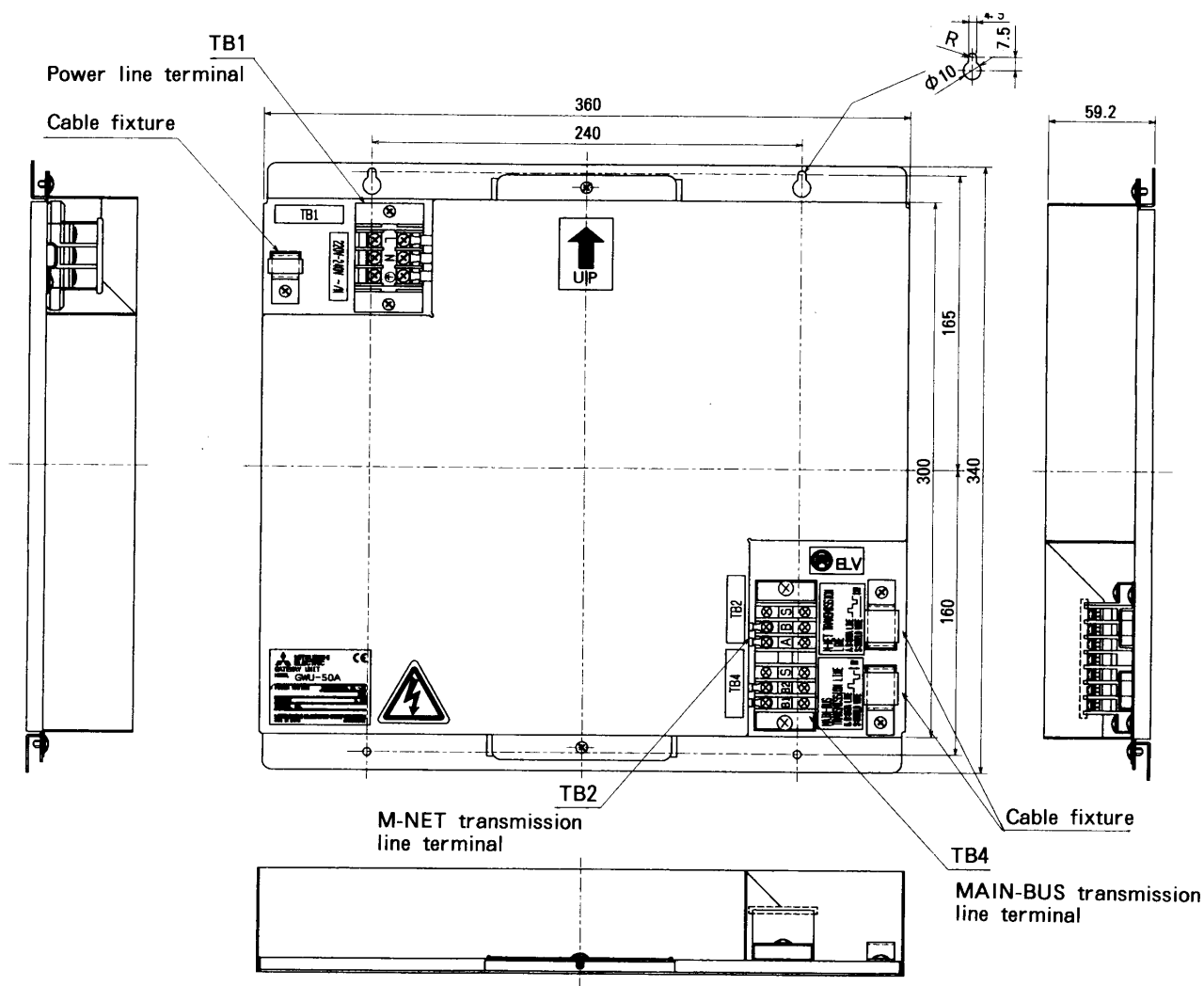
 CAUTION	
<p>Do not install any place exposed to flammable gas leakage. Flammable gases accumulated around the body of unit may caused an explosion.</p>	<p>Do not install in any steamy place such as bath room or kitchen. Avoid any place where moisture is condensed into dew. Doing so may cause an electric shock or a malfunction.</p>
<p>Do not use in any special environment. Using in any place exposed to oil(including machine oil), steam and sulfuric gas may deteriorate the performances significantly or given damage to the component parts.</p>	<p>Do not install in any place where acidic or alkaline solution or special spray are other be used. Doing so may cause an electric shock or a malfunction.</p>
<p>Wire so that it does 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 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 a malfunction.</p>	<p>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 an electric shock or fire.</p>
<p>Do not install in any place at a temperature of more than 40°C or less than 0°C or exposed to direct sunlight.</p>	<p>Use only a fuse of specified capacity. A fuse of large capacity or a steel or copper wire could cause a malfunction or fire.</p>

2. Product feature

2-1. Specification

Source power requirement	Input voltage AC220V~AC240V; 0.1A/50Hz Single-phase	
	Fuse: 2.0A Time-delay type(IEC-127-2 S.S.3)	
Interface condition for transmission line	MAIN-BUS transmission line ; AMI signal M-NET transmission line ; DC30V+ AMI signal	
Environmental condition	Temperature	Operating 0~40°C Non operating 0~70°C
	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 × 4pcs
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; $\phi 1.6\text{mm} \sim \phi 2.0\text{mm}$ (H03VV-F, H03VVH-2F, 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	Type of the cable; Sheathed vinyl cords or cables which comply with the following specification or equivalent. <ul style="list-style-type: none"> ● CPEVS $\phi 1.2\text{mm} \sim \phi 1.6\text{mm}$ ● CVVS $1.25\text{mm}^2 \sim 2.0\text{mm}^2$ *CPEV; PE insulated PCV jacketed shielded communication cable. *CVVS; PVC insulated PVC jacketed shielded control cable. NOTE <ul style="list-style-type: none"> · Cable length; There is a limitation for the transmission line. Please refer to section "7. System limitation".

3-2. Installation space and direction

GWU-50A gateway unit 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 Fig. 3-1. The unit shall be also installed in vertical direction only indicated an arrow marking as shown in the Fig. 3-1.

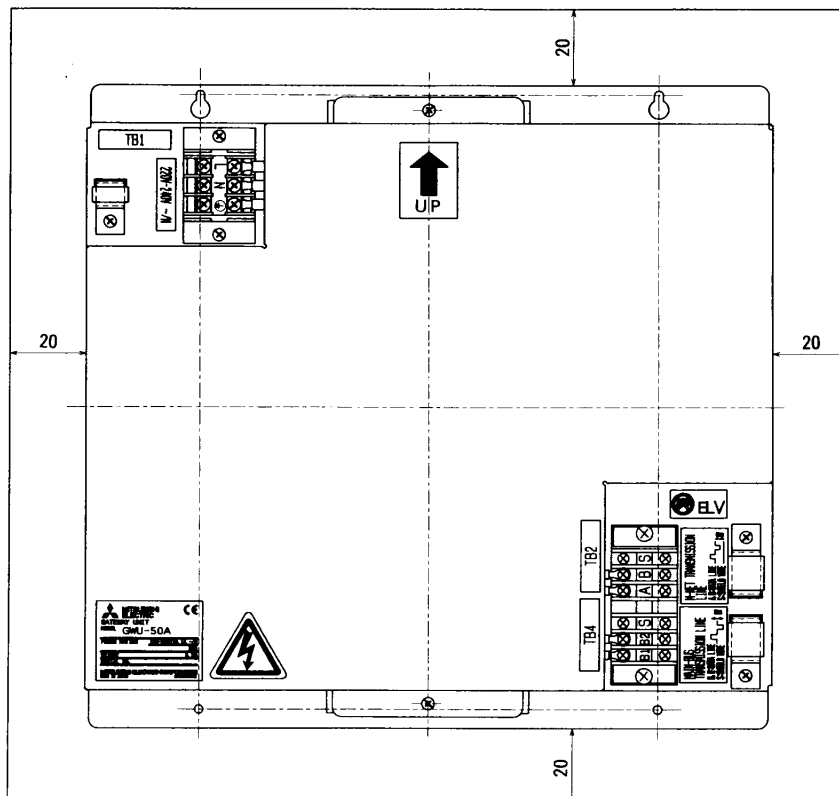


Fig. 3-1

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.

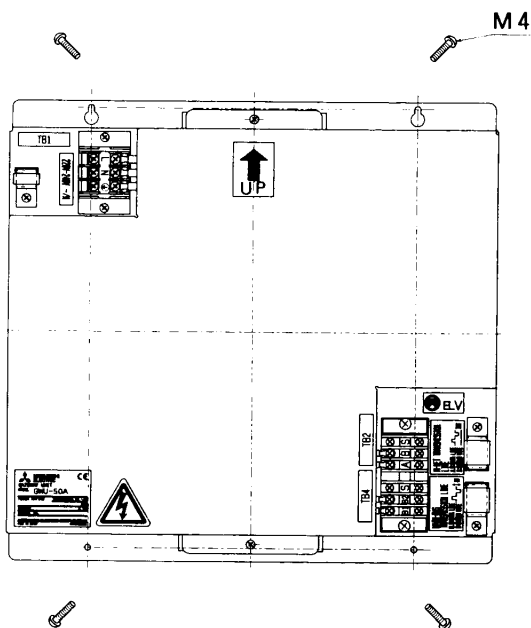


Fig. 3-2

4. Wiring

WARNING

- All electric work must be performed according to local regulation. Improper electrical work may result in an electric shock or fire.
- Be sure to shut off the power source of the unit and all the other unit to be connected to the Gateway 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 terminal on the TB1 as shown in the Fig. 4-1.

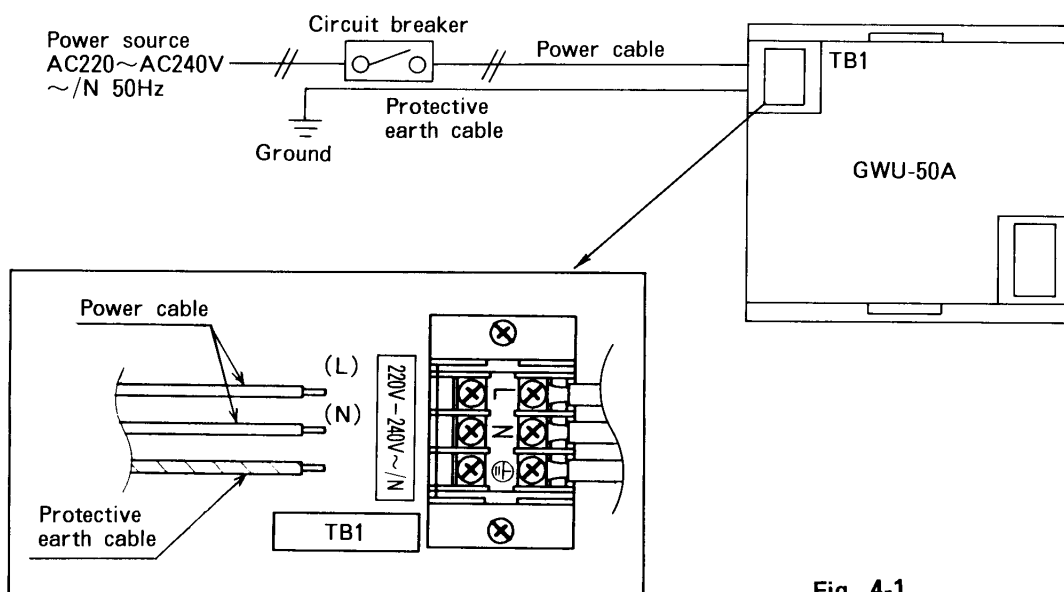


Fig. 4-1

4-2. MAIN-BUS transmission line

Wire the MAIN-BUS transmission cable to B1, B2(non-polarity data) and S(shield) terminals on the TB4 as shown in the Fig. 4-2.

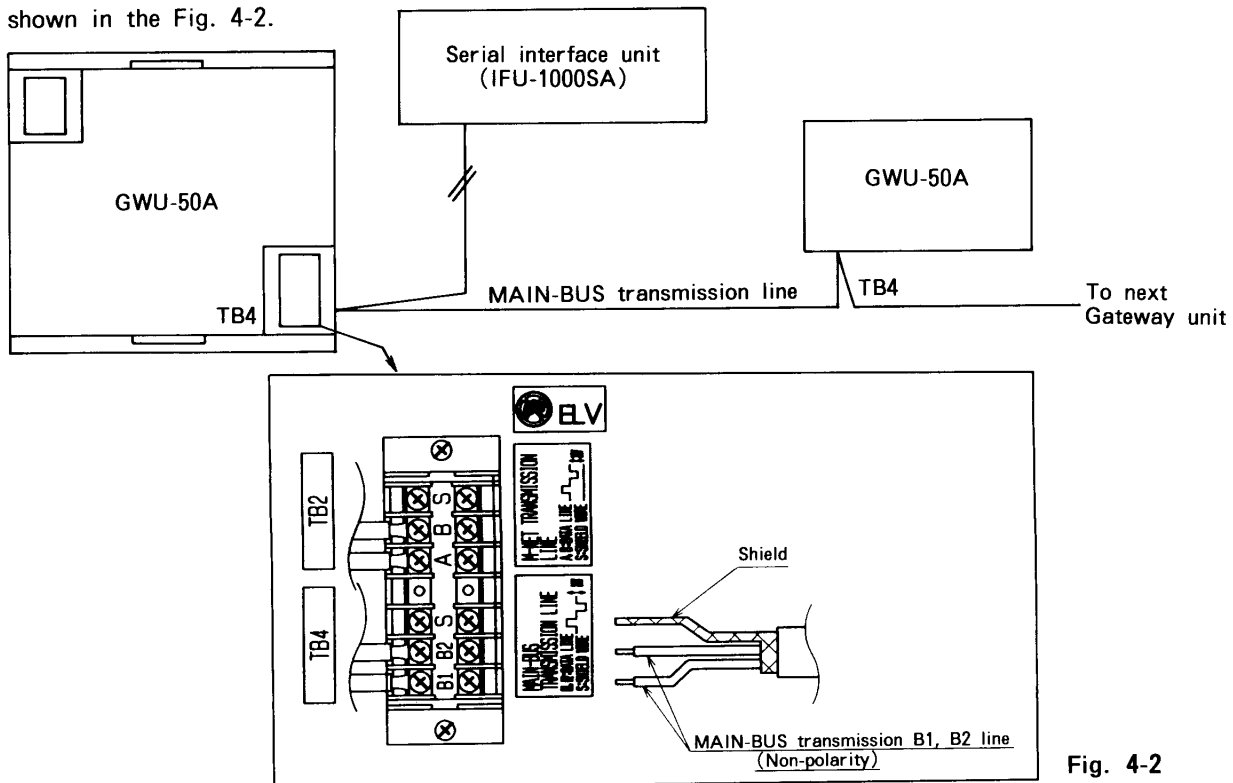


Fig. 4-2

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.

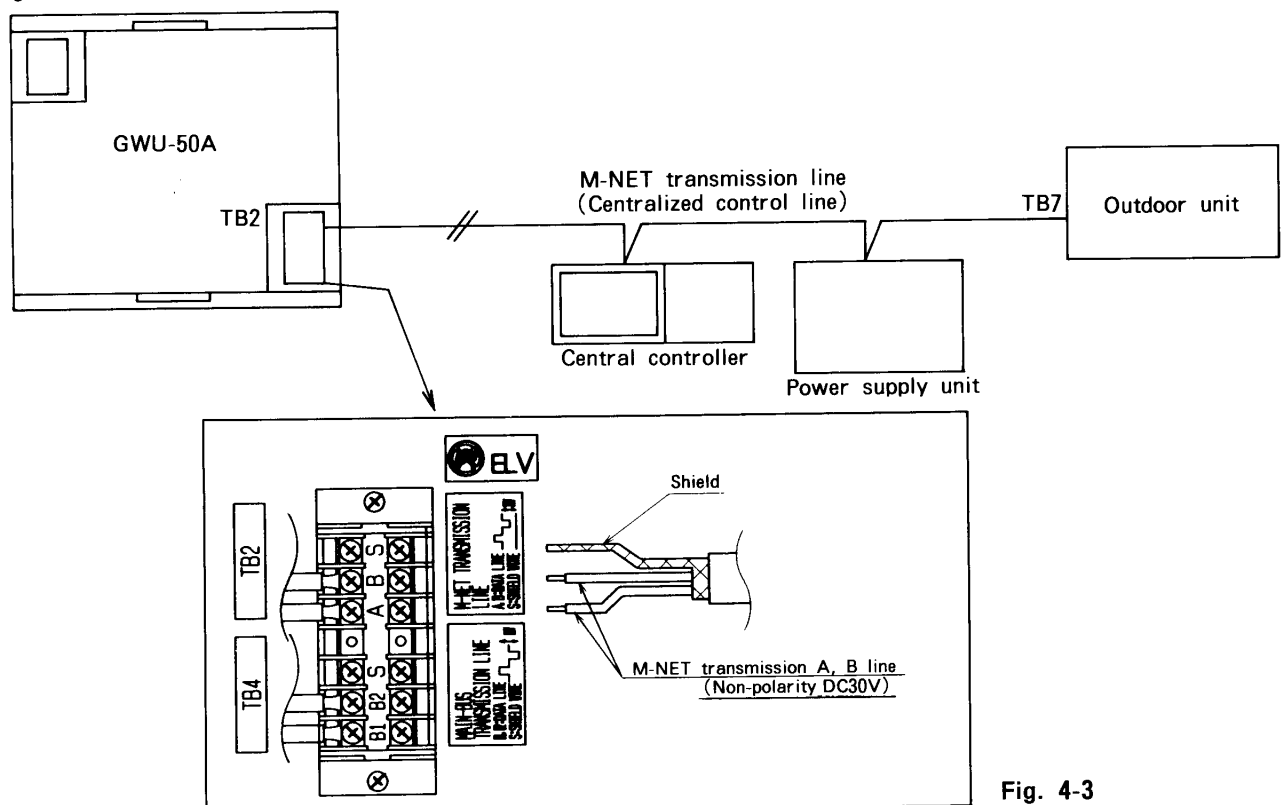


Fig. 4-3

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 fixrture.

5. Initial settings

(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 Gateway unit before initial setting.

⚠ 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.

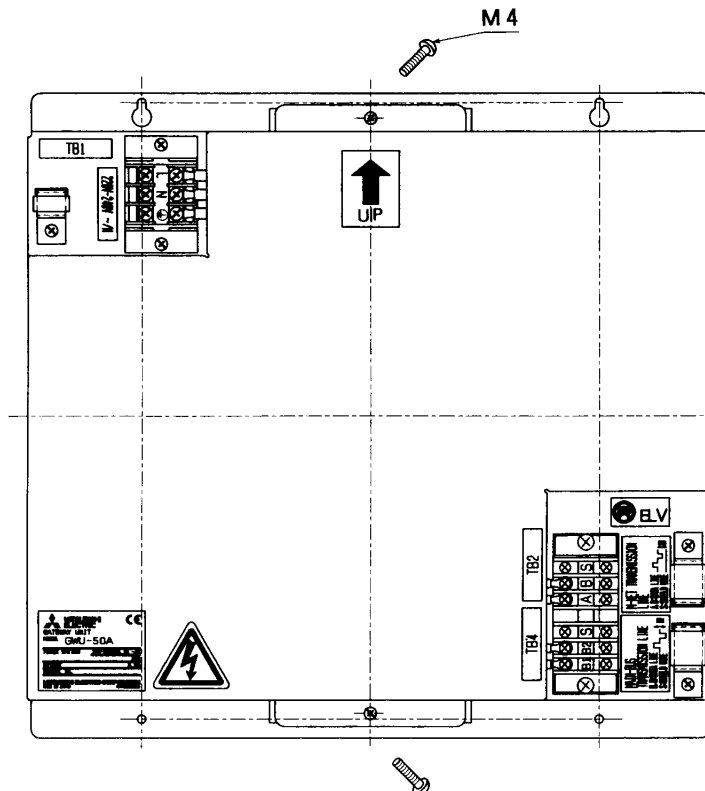


Fig. 5-1

The inside of Gateway unit appears shown in the Fig. 5-2.

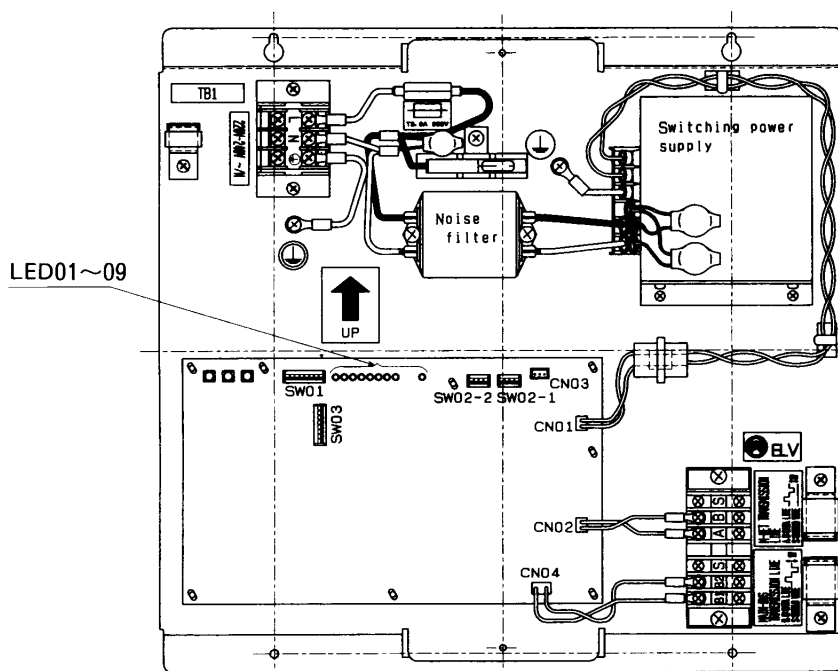
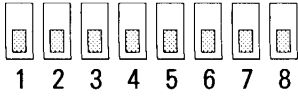
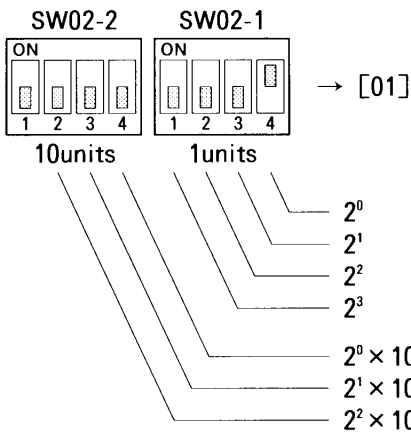


Fig. 5-2

(2) Gateway board switch setting

Symbol	Standard	Remark
SW02-1	MAIN-BUS system address setting (one units)	Refer to (3) for setting
SW02-2	MAIN-BUS system address setting (ten units)	
SW03	For function setting ON  <p>1 2 3 4 5 6 7 8</p> <ul style="list-style-type: none"> 8: Start up allowance <ul style="list-style-type: none"> ● OFF : No ● ON : Yes 6: K transmission converter <ul style="list-style-type: none"> ● OFF : Not provided ● ON : Provided 1: Priority command transmission range <ul style="list-style-type: none"> ● OFF : SC and RC ● ON : Only RC <p>All other OFF</p>	Refer to (4) for function setting SC: System controller · Gateway · Centralized controller etc. RC: Remote controller

(3) MAIN-BUS address setting (EXAMPLE)



- As for left-hand figure, MAIN-BUS address represents a state in "01" things.
- MAIN-BUS address establish it between "20" thing from "01".

(4) Function setting

- a) Priority command transmission range setting (SW03-1)
 - Determines the range to transmit the remote controller operating prohibition command given from the host system. (host system; Building control system or air conditioner man-machine).
 - OFF : Prohibit all the system controllers and local remote controllers.
 - ON : Prohibit only the local remote controller connected.
- b) K transmission converter (SW03-6)
 - OFF : Set this the packaged air conditioner to be used is only an M-NET model.
 - ON : Set this when a K control model is included in the packaged air conditioner being used. Prepare the K transmission converter(PAC-SC25KAA) separately.
- c) Start-up allowance (SW03-8)
 - Use this switch when entering power to the Gateway unit.
 - OFF : Set to OFF when the connected air conditioner have already started up.
 - ON : Set to ON when starting the Gateway unit together with the connected air conditioners.

(5) After the completion of switch setting, mount the cover in the reverse order of the dismantling.

NOTE

Switch setting

Only the appropriate service engineer can operate the switch setting on the P.C.B. (Dip switch, tact switch, and jumper wire)

Miss-setting will result in malfunction.

6. Maintenance

Gateway unit equipped with LED for power and self diagnosis indications. LED indication details are as follows:

○:OFF ●:Lighting

Function	Symbol	Status	Meaning	SW01 setting
Gateway normal status Transmit/receive status indication Error point indication	LED01	●	M-NET transmitting	ALL OFF
	LED02		M-NET receiving	
	LED03		MAIN-BUS transmitting	
	LED04		MAIN-BUS receiving	
	LED05		Not defined	
	LED06	○/●	Unit normal/abnormal	
	LED07		M-NET communication normal/error	
	LED08		MAIN-BUS communication normal/error	
Gateway boot status in- dication Error point indication	LED01	●	MAIN-BUS address not registered	Only SW01-8 ON
	LED02		M-NET booting not completed	
	LED03		Booting on standby	
	LED04-06	—	Not defined	
	LED07	○/●	M-NET communication normal/error	
	LED08		MAIN-BUS communication normal/error	
MAIN-BUS communica- tion error indication	LED01	○/●	Address normal/duplicated (6600)	Only SW01-7 ON
	LED02		Polarity normal/not settled (6601)	
	LED03		Hardware normal/error (6602)	
	LED04	—	Not defined	
	LED05	○/●	Command normal/incorrect (6606)	
	LED06		Normal/No ACK (6607)	
	LED07		Normal/No response (6608)	
	LED08		Normal/Polling time out	
M-NET communication error indication	LED01	○/●	Address normal/duplicated (6600)	Only SW01-4 ON
	LED02		Polarity normal/not settled (6601)	
	LED03		Hardware normal/error (6602)	
	LED04		Bus normal/busy (6603)	
	LED05		Command normal/incorrect (6606)	
	LED06		Normal/No ACK (6607)	
	LED07		Normal/NO response (6608)	
	LED08	—	Not defined	
M-NET communication error address	LED01-08	●	Address 0~255 LED 8 7 6 5 4 3 2 1 2 ⁷ 2 ⁶ 2 ⁵ 2 ⁴ 2 ³ 2 ² 2 ¹ 2 ⁰	SW01-4,8 ON
Day of the week indica- tion	LED01-08	●	Indicates the day of the week in BCD based on the Gateway built-in clock. SUN MON TUE WED THU FRI SAT 0 1 2 3 4 5 6	SW01-6,7 OFF
Year indication	LED01-08	●	Indicates year in BCD based on the Gateway built-in clock. LED8(MSB)-LED5(LSB)···Tens digit LED4(MSB)-LED1(LSB)···Units digit	SW01-6,8 OFF
Month indication	LED01-08	●	Indicates month in BCD based on the Gateway built- in clock. LED8(MSB)-LED5(LSB)···Tens digit LED4(MSB)-LED1(LSB)···Units digit	SW01-6 OFF
Date indication	LED01-08	●	Indicates date in BCD based on the Gateway built-in clock. LED8(MSB)-LED5(LSB)···Tens digit LED4(MSB)-LED1(LSB)···Units Digit	SW01-7,8 OFF
Hour indication	LED01-08	●	Indicates hour in BCD based on the Gateway built-in clock. LED8(MSB)-LED5(LSB)···Tens digit LED4(MSB)-LED1(LSB)···Units digit	SW01-7 OFF
Minute indication	LED01-08	●	Indicates minute in BCD based on the Gateway built- in clock. LED8(MSB)-LED5(LSB)···Tens digit LED4(MSB)-LED1(LSB)···Units digit	SW1-8 OFF
Second indication	LED01-08	●	Indicated second in BCD based on the Gateway built- in clock. LED8(MSB)-LED5(LSB)···Tens digit LED4(MSB)-LED1(LSB)···Units digit	ALL ON
Main body power supply	LED09	○/●	Power OFF/ON	—

7. System limitation

(1) MAIN-BUS transmission line

- Maximum length of MAIN-BUS transmission $\leq 500\text{m}^{\star 1}$

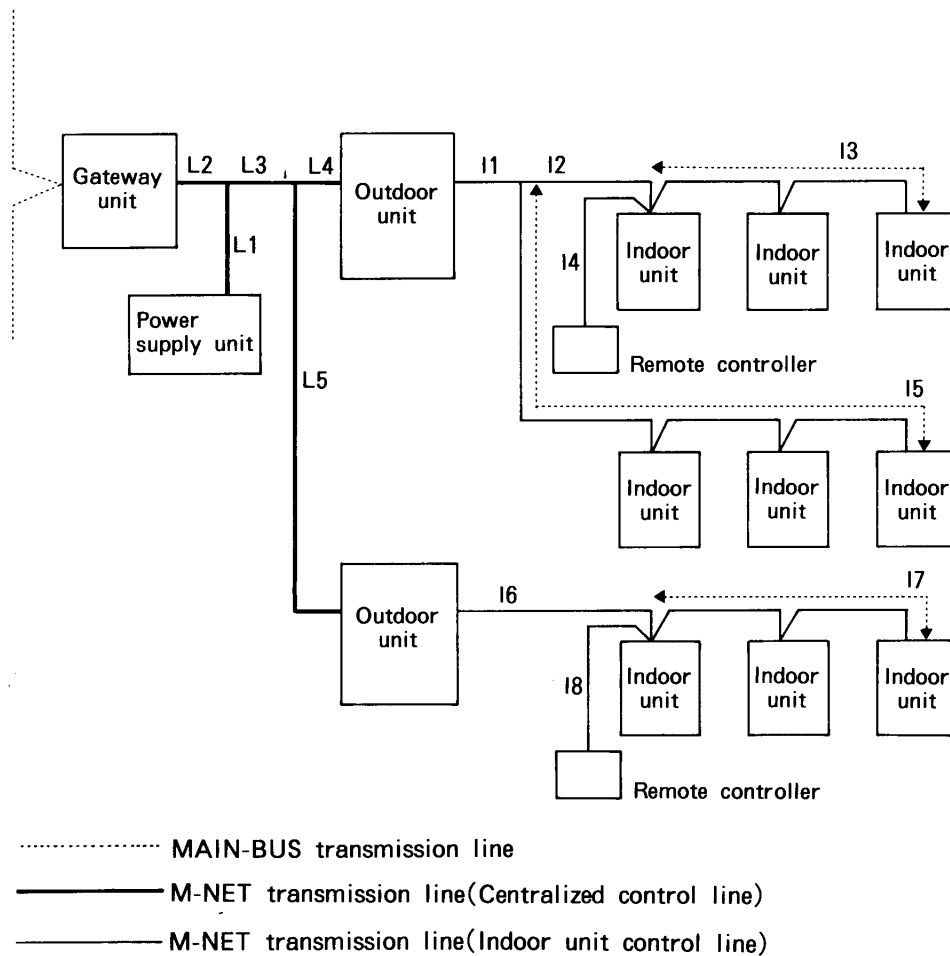
(2) M-NET transmission line

- Maximum length of M-NET transmission $\leq 500\text{m}^{\star 1}$
- Maximum power feeling length $\leq 200\text{m}^{\star 1}$

NOTE

\star^1 : Not including the remote control cables up to 10m in length. If the remote control cable exceeds 10m, the maximum length must be the added the excess length.

Example



1) Total extended length of M-NET transmission line.

- ① $L2+L3+L4+I1+I2+I3(I4) \leq 500\text{m}$
- ② $L2+L3+L4+I1+I5 \leq 500\text{m}$
- ③ $L2+L3+L5+I6+I7(I8) \leq 500\text{m}$
- ④ $I3(I4)+I2+I1+L4+L5+I6+I7(I8) \leq 500\text{m}$
- ⑤ $I5+I1+L4+L5+I6+I7(I8) \leq 500\text{m}$

2) Length of the indoor unit control line. (power feeling length)

- ① $I1+I2+I3(I4) \leq 200\text{m}$
- ② $I1+I5 \leq 200\text{m}$

3) Length of the centralized control line. (power feeling length)

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

4) Maximum length of MAIN-BUS transmission line $\geq 500\text{m}$

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