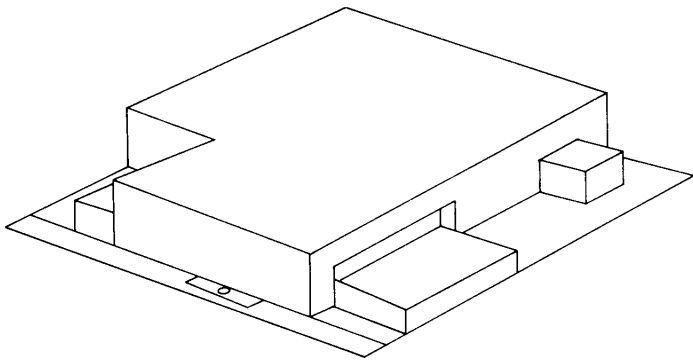


**Building Air Conditioning Control System**

# **Serial Interface Unit**

## **Model: IFU-1000SA**

*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 IFU-1000SA Serial interface unit and wiring to the Gateway unit, personal computer and Bldg. control system. For the information about how to install the Gateway unit, personal computer and Bldg. control system, see the installation manual for them.

For your safety, first be sure to read "1. Safety Precautions" described below thoroughly and then install the IFU-1000SA correctly.



After reading this installation manual, keep it in a location that is easy to find. If the IFU-1000SA Serial interface 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

 <b>WARNING</b>	statements identify condition or practices that could result in personal injury or loss of life.
 <b>CAUTION</b>	statements identify condition or practices that could result in damage to the unit or other property.

### Specific Precautions

 <b>WARNING</b>	
<p><b>Ask your dealer or technical representative to install.</b> Any deficiency caused by your own installation may result in an electric shock and fire.</p>	<p><b>Ensure that installation work is done correctly following this installation manual.</b> Any deficiency caused by installation may result in an electric shock or fire.</p>
<p><b>Install in a place which is strong enough to withstand the weight of the unit.</b> Any lack of the strength may cause the unit to fall down, resulting in a personal injury.</p>	<p><b>All electrical work must be performed by a licenced technician, according to local regulations and the instructions given in this manual.</b> Any lack of electric circuit or any deficiency caused by installation may result in an electric shock or fire.</p>
<p><b>Wire and connect using the desired cables securely so that any external force from the cable is imparted to the terminal connections.</b> Imperfect connection and fixed may result in heating or fire.</p>	<p><b>Do not move and re-install the unit yourself.</b> 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><b>Never modify or repair the unit by yourself.</b> Any deficiency caused by your modification or repair may result in an electric shock or fire. Consult with your distributor for repair.</p>	<p><b>This appliance must be earthed.</b> 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><b>Make sure that the unit is powered by dedicated line.</b> Other appearance connected to the same line could cause an overload.</p>	<p><b>The terminal block cover of each line must be firmly attached to prevent entry of dust and moisture.</b> Improper mounting of cover can cause an electric shock or fire.</p>
<p><b>Make sure that there is a main power switch.</b> 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>	

 <b>CAUTION</b>	
<p><b>Do not install any place exposed to flammable gas leakage.</b> Flammable gases accumulated around the body of unit may caused an explosion.</p>	<p><b>Do not install in any steamy place such as bath room or kitchen.</b> Avoid any place where moisture is condensed into dew. Doing so may cause an electric shock or a malfunction.</p>

## ⚠ CAUTION

**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 other be used.**

Doing so may cause an electric shock or a malfunction.

**Wire so that it does not received any tension.**

Tension may caused wire breakage, heating or fire.

**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.

**Do not wash with water.**

Doing so may cause an electric shock or a malfunction.

**Use only a fuse of specified capacity.**

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

**Use standard wires in compliance with the current capacity.**

A failure to this may result in an electric leakage, heating or fire.

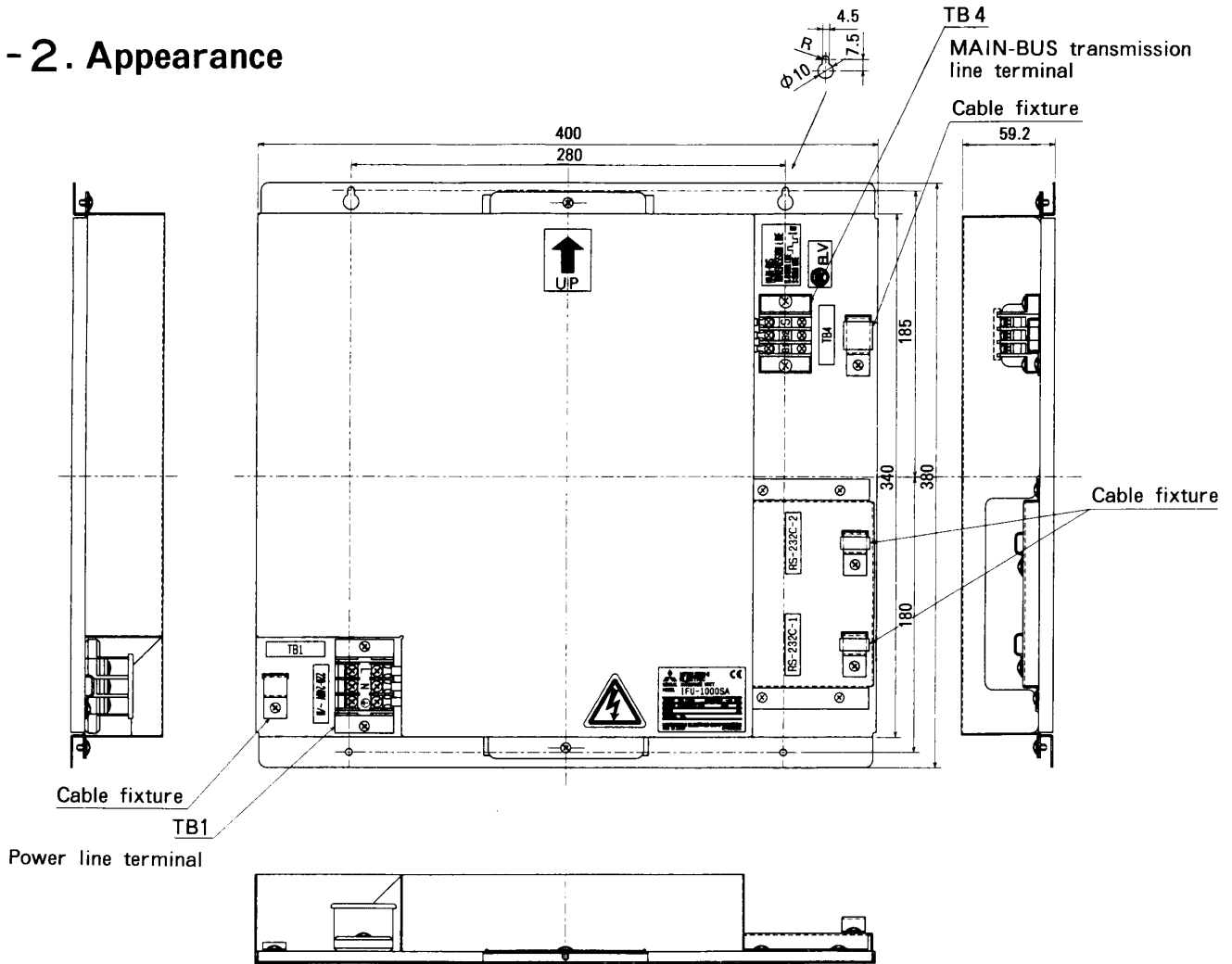
**Do not install in any place at a temperature of more than 40°C or less than 0°C or exposed to direct sunlight.**

## 2. Product feature

### 2-1. Specification

Source power requirement	Input voltage AC220V~AC240V, 0.1A(Maximum loading)/50Hz, Single-phase	
	Fuse: 2.0A Time-delay type(IEC-127-2S.S.3)	
Interface condition for transmission line	MAIN-BUS transmission line ; AMI signal	
	RS-232C transmission line ; V.24/V.28 Pin Arrangement 1:FG, 2:SD, 3:RD, 4:RS, 5:CS, 6:DR, 7:SG, 8:CD, 20:ER	
Environmental condition	Temperature	Operating 0~40°C Non operating 0~70°C
	Humidity	30~90%RH(No condensation)
Dimensions	380(High) × 400(Width) × 59.2(Depth)	
Weight	3.6kg	

## 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, H03VVH2-F, H05VV-F, H05VVH2-F2)
Main power switch (Circuit breaker)	Qty.: 1pc Type: 250VAC Single-phase 50Hz 3A *Recommend type; CP-30-BA series(MITSUBISHI ELECTRIC) or equivalent.
Transmission cable	1. MAIN-BUS transmission line: Sheathed vinyl cords or cables which comply with the following specification or equivalent. <ul style="list-style-type: none"> <li>• CPEVS <math>\phi 1.2\text{mm} \sim \phi 1.6\text{mm}</math></li> <li>• CVVS <math>1.25\text{mm}^2 \sim 2.0\text{mm}^2</math></li> </ul> *CPEV ; PE insulated, PCV jacketed shielded communication cable *CVVS ; PVC insulated, PVC jacketed shielded control cable 2. RS-232C transmission line: Please prepare the RS-232C cable which compaly with the pin arrangement in "2-1. Specification" <b>NOTE</b> <ul style="list-style-type: none"> <li>• Cable length; There is a limitation for the transmission line. Please refer to section "7. System limitation".</li> </ul>

## 3-2. Installation space and direction

IFU-1000SA Serial interface 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 by arrow marking on the cover as shown in the Fig.3-1.

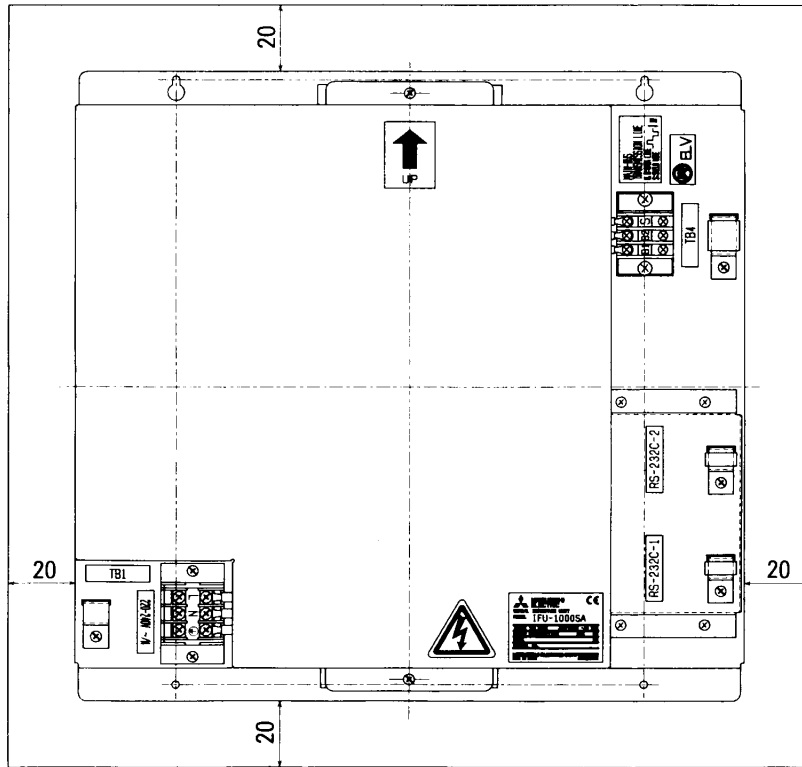


Fig. 3-1

## 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.

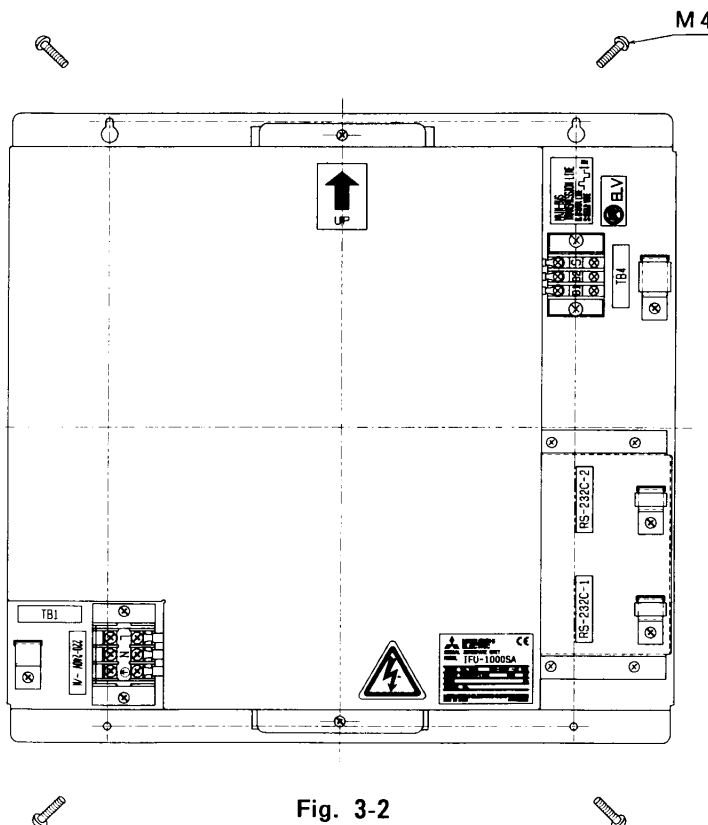


Fig. 3-2

## 4. Wiring

### ⚠ WARNING

- All electric work must be performed according to local 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 Serial interface 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 earth line terminals on the TB1 as shown in the Fig.4-1.

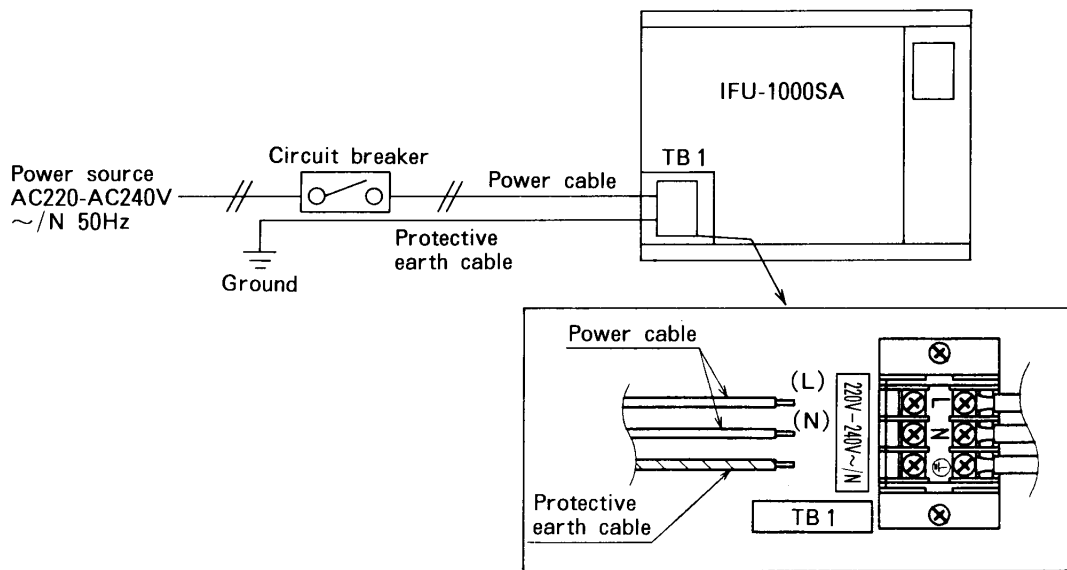


Fig. 4-1

### 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.

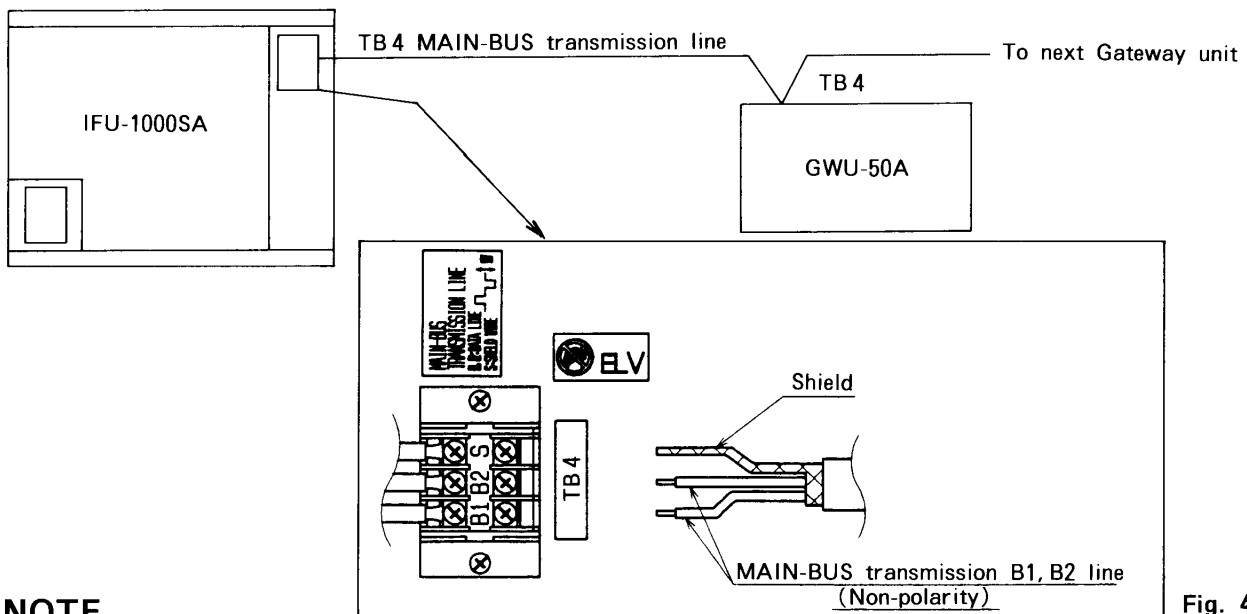
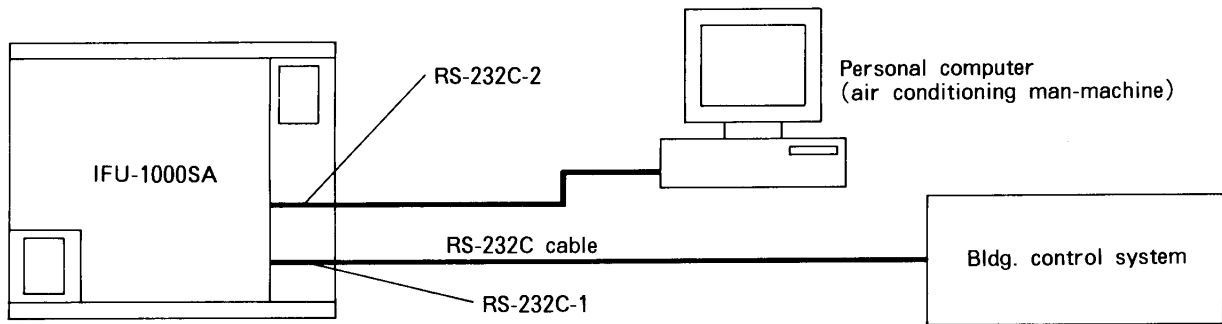


Fig. 4-2

### NOTE

- The shield wire of the MAIN-BUS 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.

## 4-3. RS-232C transmission line



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

## 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 which connected to the Serial interface unit 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.

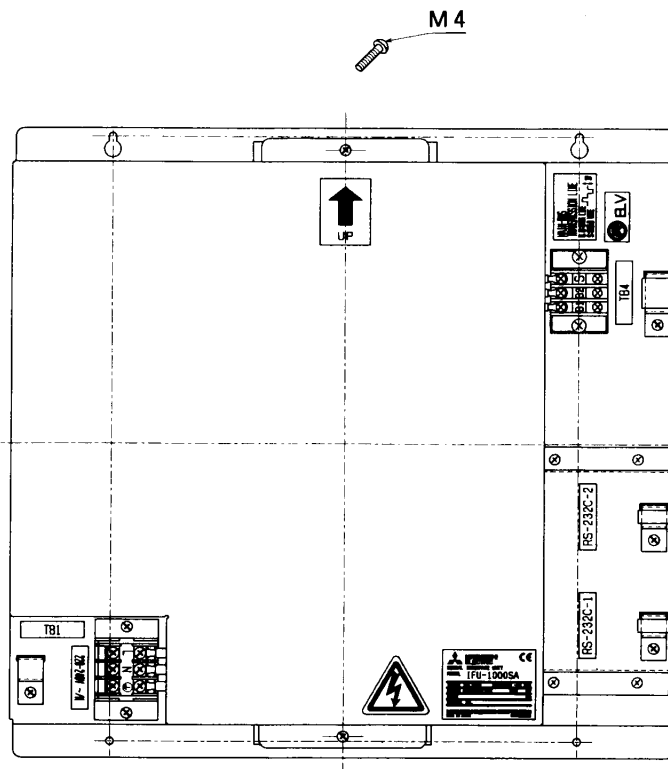


Fig. 5-1

The inside of Serial interface unit appears as shown in the Fig.5-2.

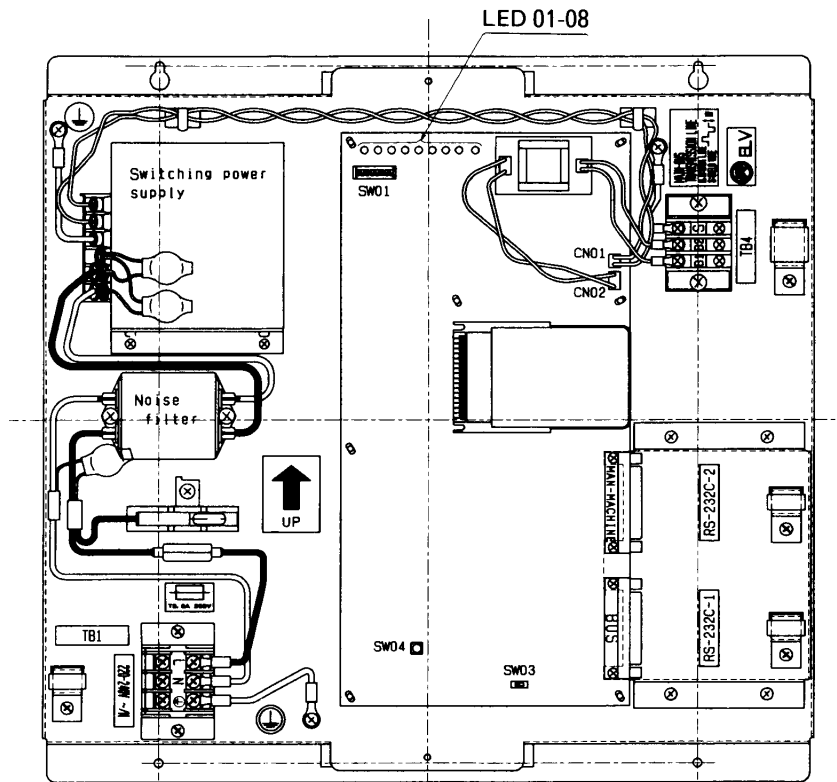
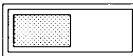


Fig. 5-2

## (2) Switch setting

Set the building control system communication speed selector switch(SW3) on the printed circuit board for the initial setting only when the building control system is connected.

Function	Symbol	Setting method
Bldg. control system comm. speed switching	SW03	9600  4800 Set to either 9600bps or 4800bps according to the system.

The blackened square shows the switch setting position.

(3) After the completion of switch settings, mount the reverse order of the dismantling.

## 6. Caution on handling

### (1) Switch setting

Only the appropriate service engineer can operate the switches on the printed circuit boards. (Dip switch, tact switch, and jumper wire)

Miss-setting will result in malfunction.

### (2) Serial interface unit power supply

Use the uninterrupted power supply unit for the Serial interface unit, and keep the power ON in the normal situation.

### (3) RS-232C disconnection

During the Serial interface unit power ON, NEVER disconnect the RS-232C cable that are connected to the Serial interface unit connector D-SUB1 and D-SUB2. The printed circuit board could be damaged.

Before disconnecting the cable, make sure the LED9 is OFF.

### (4) Printed circuit board connectors and wiring

NEVER disconnect the IC card and wiring connectors. The operation will go wrong.



## 7. Maintenance

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

○:OFF ●:Lighting

Function	Symbol	Status	Meaning	SW1 setting
Error data indication Transmit/receive status indication	LED01	○/●	Normal/Bldg. control system communication error	All OFF
	LED02		Normal/Man-machine communication error	
	LED03		Normal/Gateway unit communication error	
	LED04,05	—	Not defined	
	LED06	●	MAIN-BUS communication status indication	
	LED07		During receiving	
	LED08		During transmitting	
Main body power supply	LED09	○/●	Power OFF/ON	

## 8. System limitation

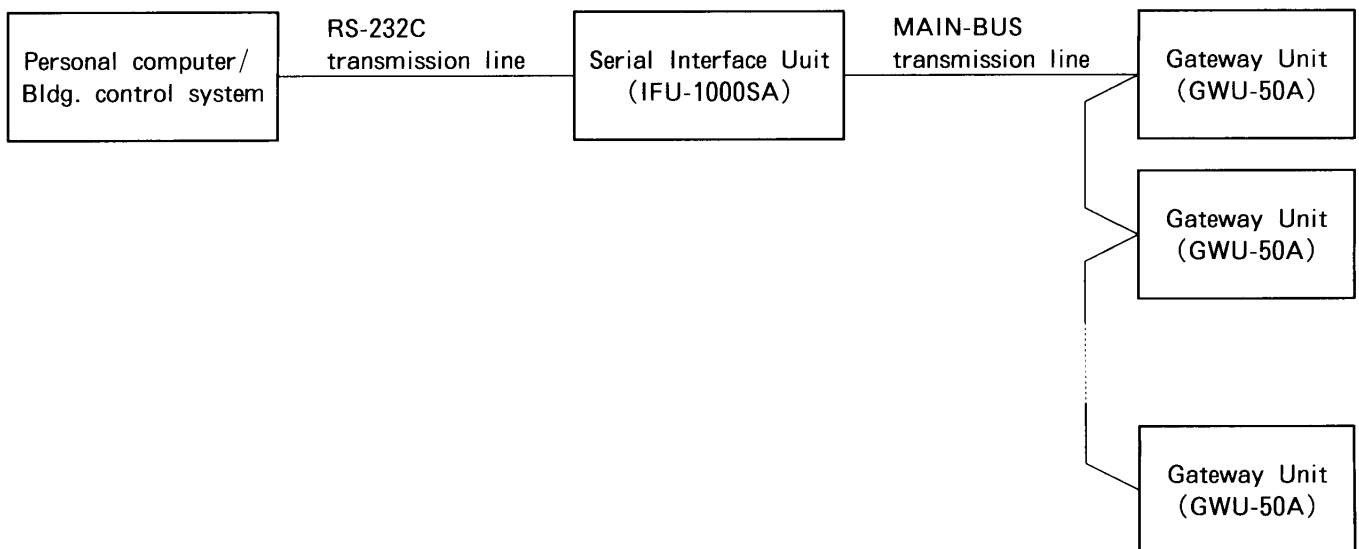
### 8-1. Allowable length of transmission line

#### (1) MAIN-BUS transmission line

- Maximum length of MAIN-BUS transmission  $\leq 500$ m

#### (2) RS-232C transmission line

- Maximum length of RS-232C transmission  $\leq 15$ m



### NOTE

- The Serial interface unit can connect up to 20 Gateway units in its standard specification.
- The Gateway unit can connect 50 indoor units.

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