

# Installation Instruction

## Safety Precautions

- The following is intended for the installer responsible for installation and test operations of the Communication Adaptor, and should be carefully read before beginning.
- The precautions given in this manual consist of specific “⚠ Warnings” and “⚠ Cautions.” They provide important safety-related information and are important for your safety, the safety of others, and trouble-free operation of the system. Be sure to strictly observe all safety procedures. The labels and their meanings are as described below.

 <b>Warning</b>	This symbol refers to a hazard or unsafe procedure or practice which can result in severe personal injury or death.
 <b>Caution</b>	This symbol refers to a hazard or unsafe procedure or practice which can result in personal injury or product or property damage.

※ After installation is completed, perform a test run to check for any operating trouble. As you do, use the *Operation Manual* for the central control device and explain the operating procedures to the customer. In addition, request the customer to store the *Procedures and Technical Points for Installation of Communication Adaptor (Electrical Work)* together with the central control device's *Operation Manual*.

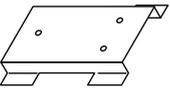
### ⚠ Warning

- Be sure to arrange installation at the dealer where the system was purchased or use a professional installer.  
Electric shock or fire may result if an inexperienced person performs any installation or wiring procedures incorrectly.
- Please install and ensure construction according to *Procedures and Technical Points for Installation of Communication Adaptor (Electrical Work)*. Incorrect installation can cause electric shocks or fire.
- Only a qualified electrician should attempt to connect this system, in accordance with the instructions in this manual. Be sure to use a dedicated electrical circuit.  
Insufficient electrical circuit capacity may cause electric shock or fire.
- Use the specified cables (type and wiring diameter) for the electrical connections, and securely connect the cables. Run and fasten the cables securely so that external forces or pressure placed on the cables will not be transmitted to the connection terminals. Overheating or fire may result if connections or attachments are not secure.

### ⚠ Caution

- Depending on the installation conditions and location, an earth-leakage breaker may be required. If an earth-leakage breaker is not installed, electric shock or fire may occur.
- The cable installer must ground and discharge any static electricity that may have become charged in his clothes or body.

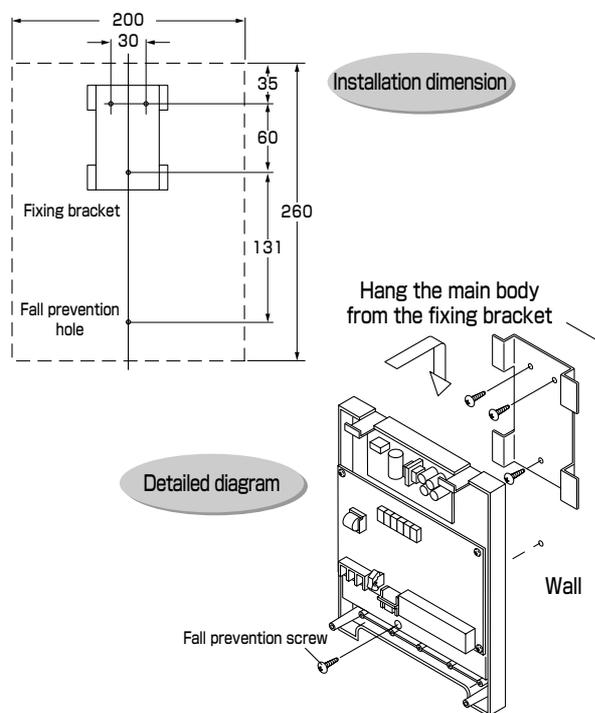
## Attachment

No.	Part name	Q'ty	No.	Part name	Q'ty	No.	Part name	Q'ty
①	Fixing bracket 	1	②	Tapping screw (4×12) 	4	③	Nylon clamp 	4
④	Nylon-clamp-fixing screw (3×8) 	4	⑤	Tie wrap 	6			

# 1 Installation procedures

## Caution

- Laying the communication or input/output cables close to (or twisted with) the power cables or enclosing them in the same duct as the power cables can result in faulty operation, so this should be avoided.
  - Install the communication adaptor sufficiently far from sources of electrical noise.
  - Avoid locations that are wet or where the humidity is very high.
  - Avoid locations that are subject to excessive vibrations or receive physical shocks.
- ① When the installation location is chosen, secure the fixing bracket referring to the installation dimension diagram shown at right. In places where the screws supplied are not effective, provide metric thread screws or other appropriate screws that can be used on site.
  - ② Hang the main body from the fixing bracket, as shown in the diagram.
  - ③ If there is looseness in the fixing bracket, with a possibility that it might fall, remove the upper case of the main body and attach securely to the wall as shown in the diagram.

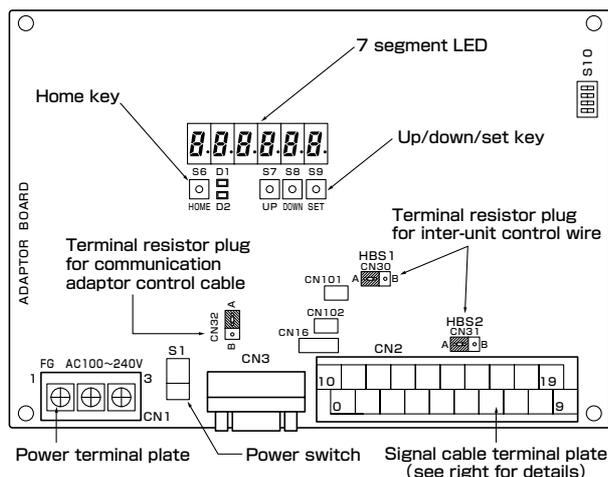


# 2 Cabling procedures

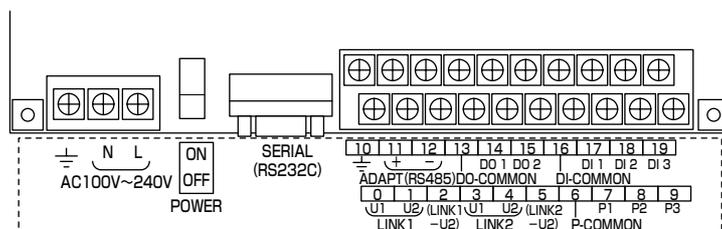
Installation or removal of the cable should be carried out after shutting off the mains power supply (breaker) for safety reasons. Remove the two screws from the front of the main body and remove the upper case.

## Terminal plate layout diagram and switch layout diagram

Detailed diagram of board



Detailed diagram of terminal plate



ADAPT+/-	:Communication adaptor control cable (RS-485)	SERIAL	:Not used
LINK1/2	:Inter-unit control wire (HBS)	DO1	:All warning output
P1	:Pulse meter input (gas flow meter, fuel flow meter)	DI2	:All operation output
P2~P3	:Pulse meter input (electrical power meter)	DI3	:Not used
DI1	:All stop input	DO2	:All operation output
DI2	:All operation input		
DI3	:Not used		

## (1) Power supply connection

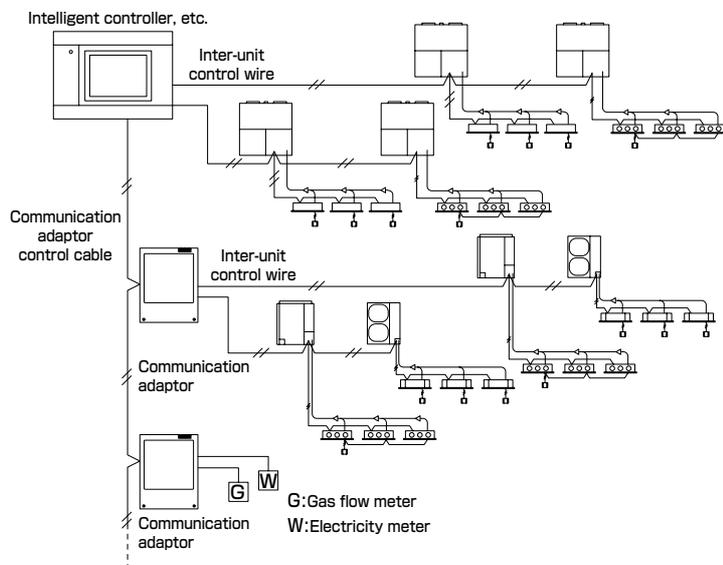
Use a power supply in the range AC 100V to 240V.  
Connect to Nos. 2 and 3 (N, L) of CN1 on the electrical power terminal board. (Connect the AC neutral side to N)  
Securely connect the ground cable.

## (2) Communication cable connection

- **Use 0.5 to 2.0mm<sup>2</sup> 2-core shielded cable** for the communication adaptor control cable.
- The shield shall be securely connected on one side only to the ground.
- The total length of each cable must be 1km or less.
- Do not lay the cables in the same cable duct as power cables, connect with power cables, or run near power cables (separate by more than 30cm).
- LINK1 and LINK2 cables must not be laid in the same cable duct or run through the same power conduit. Also, keep the two cables away from each other.
- Communication and power cables that can be visually distinguished from each other should be used.

## Basic layout diagram (example with intelligent controller)

The communication adaptor control cable and the inter-unit control wire should be arranged as shown in the following diagram.



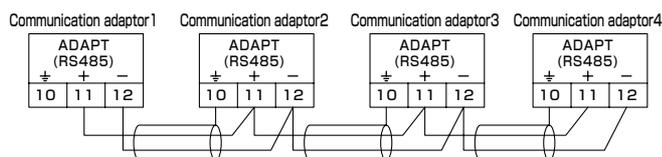
## Cabling procedure

- **Inter-unit control wire**  
Connect to numbers 0 and 1 of CN2 on the communication adaptor signal cable terminal plate (LINK 1), and to the connection terminal of the outdoor or indoor unit inter-unit control wire. There is no polarity.  
If two systems of inter-unit control wire are connected, connect to numbers 3 and 4 (LINK2) of CN2 in the same way.
- **Communication adaptor control cable**  
Connect to numbers 11 and 12 (ADAPT +, -) of CN2 on the communication adaptor signal cable terminal plate, and the same terminal as the other communication adaptor.  
**There is polarity, so do not mistake the “+” and “-”.**  
In this case, **connect using a bus system (branch cabling is not permitted).**
- Fix the power cable and communication cables to the mount with holes located below the bottom case with the attachments such as Nylon clamps, Tie wraps and Tapping screws (3x8).  
When power cable is not installed threading through the holes of the wall to the behind, fix the cable on the wall with clamps not to get pulling force to the cable.

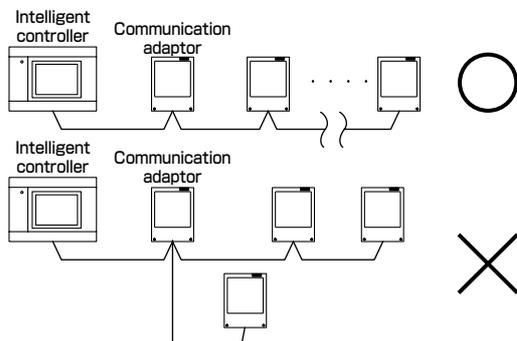
## 3 Cautions regarding the communication adaptor control cable

(There is duplication with items contained elsewhere)

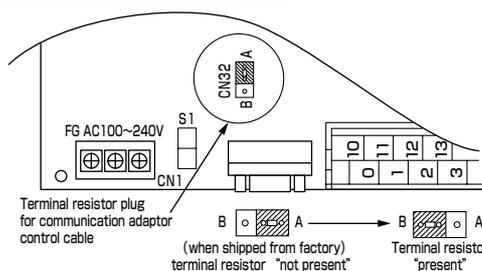
- (1) The total length of the cable must be 1km or less.
- (2) The communication cable has polarity. Do not mistakenly connect the “+” and “-”.
- (3) Only use shielded cable. The shield should be securely connected to ground on one side only.



- (4) Connect using a bus system. Branch cabling is not permitted.  
※The intelligent controller must be connected to the end of the bus.



- (5) Switch the terminal resistor plug CN32 to the “B” side (terminal resistor present) on the board of the **2 communication adaptors** on both ends of the loop.

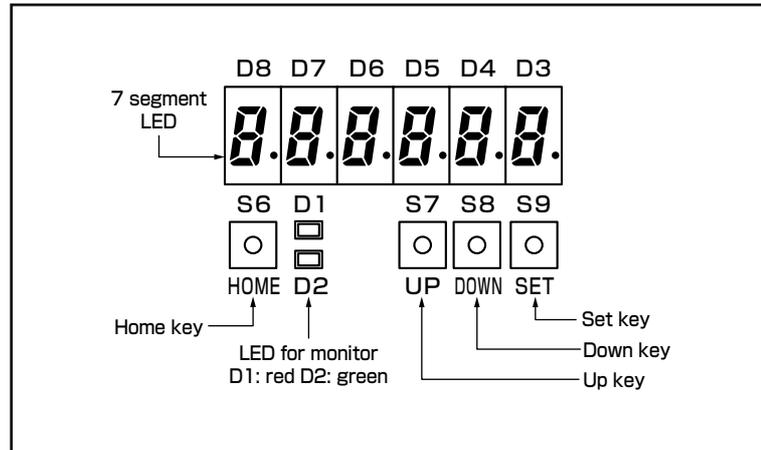


- (6) The maximum number of communication adaptors that can be connected is 16. However, depending upon the system being used (intelligent controller, eco-store system, etc.) there may be a limit lower than 16, so consult the installation instruction manual for the system for details.  
※The maximum number for the intelligent controller is 7.
- (7) Confirm that the connection terminals to the communication adaptor control cable and the inter-unit control wire are not connected to AC 230V.  
※If AC 230V is mistakenly applied to the inter-unit control wire, a fuse will blow to protect the board. After removing the AC 230V cable, change the U2 terminal of the inter-unit control wire to the spare terminal. (The U1 terminal can be left as-is.)  
The spare terminal is the one beside the U2 terminal.

- Terminal No. 1 LINK1 \_ U2  
→ Terminal No. 2 (LINK1 \_ U2)
- Terminal No. 4 LINK2 \_ U2  
→ Terminal No. 5 (LINK2 \_ U2)

# 4 Method for setting the communication adaptor board

The various types of setting, such as adaptor number and whether an inter-unit control wire is connected or not, etc., are set using the switches on the board. The method is shown below. There are other functions apart from setting, but these are omitted here.



## (1) Outline of switch operation

Item selection is done with and , and setting with .

Change the setting using and , and confirm the setting with .

If is pressed for longer than 2 seconds the initial status is returned .

(The contents input while changing are lost.)

## (2) Procedure for setting the adaptor number

① Press for longer than 2 seconds, and the following will be displayed (initial status).

(no.00)

After 2 seconds the display will change to the following.

(AdP.dt)

② Press 5 times, and the following will be displayed.

(no.05)

After 2 seconds the display will change to the following.

(FirSt)

③ Press , and the display changes to the following. (Only the green monitor LED lights up.)

(1.Ano.00) (status at time of shipment from factory)

④ Press for longer than 1 second, and the “00” part starts to blink, indicating that it can be changed. (The green and red monitor LEDs light up.)

Press and to set the adaptor number.

For example, for “No. 3” press 3 times.

(1.Ano.03)

⑤ To confirm the setting, press for 1 second. (Only the green monitor LED lights up.)

### (3) Setting whether the inter-unit control wire is connected or not

① Items ① to ③ of “(2) Procedure for setting the adaptor number” are the same. At this point the following is displayed.

1.Ano.03

(1.Ano.03) (when the adaptor number is 3)

② Press  once and the following will be displayed.

2.AdYu.0

(2.AdYu.0) (status at time of shipment from factory)

③ Press  for 1 second, and the “0” part will blink, indicating that it can be changed. (The green and red monitor LEDs light up.)

Press  and  to input the setting for the inter-unit control wire as follows.

Setting value	Inter-unit control wire connection
0	LINK1: present, LINK2: present (status at time of shipment from factory)
1	LINK1: present, LINK2: not present
2	LINK1: not present, LINK2: present
3	LINK1: not present, LINK2: not present

For example, if an inter-unit control wire is only connected to LINK1, press  once and the following will be displayed.

2.AdYu.1

(2.AdYu.1)

④ Press  for 1 second to confirm the setting. (Only the green monitor LED lights up.)

### (4) Other settings

When the status is at ③ in “(2) Procedure for setting the adaptor number” above, by pressing  and  it is possible to select the setting items shown in the following table. Carry out these settings as required.

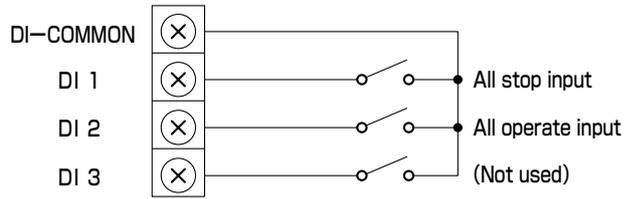
Procedure for setting is the same.

(  (After pressing  for 1 second, use  and  to make the changes, and confirm by pressing  for 1 second)

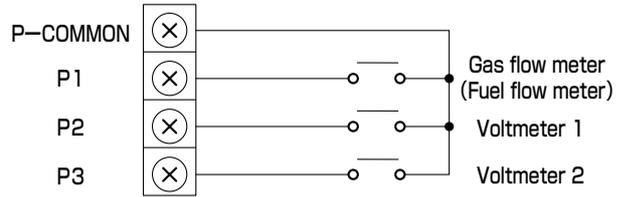
	Display	Setting item ( setting at time of shipment from factory is shown shaded )
<p style="text-align: center;">↑ DOWN U P ↓</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>1.Ano.00</p> <p>(1.Ano.xx)</p> </div>	<p>xx = 00 to 15: Adaptor number</p> <p>Set the communication adaptor number. The address (link system address) when actually transmitting from a high position, is 2n for LINK1 and 2n+1 for LINK2, where the communication adaptor number is n.</p> <p>For example, if the adaptor number is “2”, the address of LINK1 is “4”, LINK2 is “5”.</p>
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>2.AdYu.0</p> <p>(2.AdYu.x)</p> </div>	<p>Inter-unit control wire connection</p> <p>x = 0: present on LINK1, present on LINK2</p> <p>x = 1: present on LINK1, not present on LINK2</p> <p>x = 2: not present on LINK1, present on LINK2</p> <p>x = 3: not present on LINK1, not present on LINK2</p> <p>Set links with the air conditioner (inter-unit control wire) connected to “present”, and links not connected to “not present”. For an independent installation set both LINK1 and LINK2 to “not present” (x = 3).</p>
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>3.Cont.0</p> <p>(3.Cont.x)</p> </div>	<p>x = 0: LINK1 is group parent unit, LINK2 is group parent unit.</p> <p>x = 1: LINK1 is group parent unit, LINK2 is group slave unit.</p> <p>x = 2: LINK1 is group slave unit, LINK2 is group parent unit.</p> <p>x = 3: LINK1 is group slave unit, LINK2 is group slave unit.</p> <p>If several group units (including communication adaptors) are connected to one inter-unit control wire, for each system one unit is set to Parent, and the rest are set to Slave.</p>
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>4.CAn1.0</p> <p>(4.CAn1.x)</p> </div>	<p>x = 0 to 7</p> <p>x = 0: First communication adaptor within LINK1</p> <p>x = 1: Second communication adaptor within LINK1</p> <p style="text-align: center;">}</p> <p>x = 7: Eighth communication adaptor within LINK1</p>
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>5.CAn2.0</p> <p>(5.CAn2.x)</p> </div>	<p>x = 0 to 7</p> <p>x = 0: First communication adaptor within LINK2</p> <p>x = 1: Second communication adaptor within LINK2</p> <p style="text-align: center;">}</p> <p>x = 7: Eighth communication adaptor within LINK2</p> <p>When several communication adaptors are connected to one inter-unit control wire, for each LINK system set the communication adaptor number.</p>
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>6.PuL.10</p> <p>(6.PuL.xx)</p> </div>	<p>Pulse input minimum detection time</p> <p>x = 03: 30 msec</p> <p>x = 10: 100msec</p> <p>Set to “30 msec” when a pulse meter with a pulse width shorter than 100msec (longer than 30msec) is connected.</p>
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>7.LoCA.0</p> <p>(7.LoCA.x)</p> </div>	<p>Local adaptor</p> <p>x = 0: present on LINK1, present on LINK2</p> <p>x = 1: not present on LINK1, present on LINK2</p> <p>x = 2: present on LINK1, not present on LINK2</p> <p>x = 3: not present on LINK1, not present on LINK2</p> <p>For each LINK system, set whether local adaptors (for ON/OFF, and communication changing) are present or not. If “not present” is set, then the system will not detect a local adaptor, so start up will be faster.</p>
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>8.SCA.0</p> <p>(8.SCA.x)</p> </div>	<p>Initial communication upon turning on the power.</p> <p>x = 0: not present on LINK1, not present on LINK2</p> <p>x = 1: present on LINK1, not present on LINK2</p> <p>x = 2: not present on LINK1, present on LINK2</p> <p>x = 3: present on LINK1, present on LINK2</p> <p>Set to “present” when you wish to do a compulsory check (initial communication) on the connected equipment when the communication adaptor power is turned on.</p>

# 5 Connection to external equipment

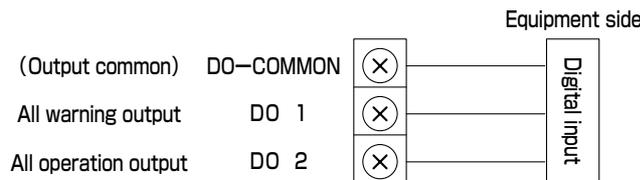
(1) External total input (no-volt contact point static a)



(3) Pulse meter input (no-volt contact point pulse a)



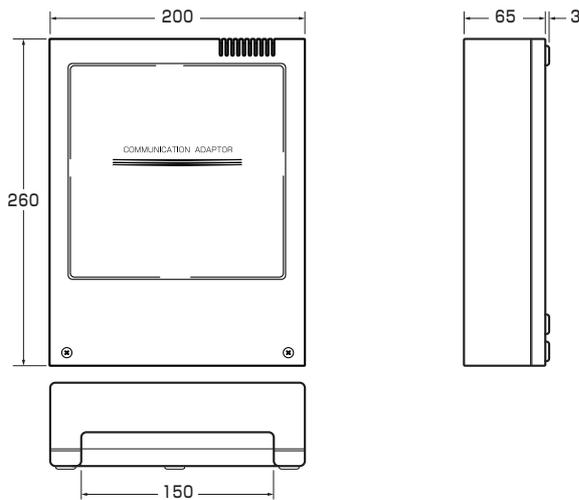
(2) External total output (no-volt contact point static a)



- Minimum pulse width 100msec
- Minimum pulse interval 1 sec

- The length of each signal cable should be kept to less than 20m. If this length is exceeded, then either individual communication adaptors should be installed, or use relay receivers.
- When used in places where there is a possibility of being affected by electrical noise, use 2-core shielded cable greater than 0.5mm<sup>2</sup> (one side grounded).
- Do not apply external voltage to the input terminal.
- In order to detect the input terminal, DC 5V approximately 10mA is applied to the contact point.
- The allowable input terminal contact point voltage and current is DC 30V, 0.5A.

# 6 External dimensions



# 7 Specifications

- Rated voltage ..... 100~240V
- Rated frequency .....50/60Hz
- Power consumption .....Maximum 3W
- Operating temperature ..... -10~50°C
- Operating humidity .....20~80%  
(no condensation)