



Instructions for the Electrical Installer (CZ-CFUNC2)

For your safety

- Read the following instructions carefully, and carry out secure installation and electrical work.
- The precautions given in this manual consist of specific “Warnings” and “Cautions”. They provide important safety-related information. Be sure to strictly observe all safety procedures. The labels and their meanings are as described below.

 Warning	This symbol refers to a hazard or unsafe procedure or practice that can result in severe personal injury or death.
 Caution	This symbol refers to a hazard or unsafe procedure or practice that can result in personal injury or product or property damage.

- * After installation is completed, perform a test run to check for operating trouble. Explain operating procedures to the customer following the central control device Operation Manual and then request the customer to store this Instructions for the Electrical Installer together with the central control device Operation Manual.

Warning

- Be sure to arrange installation by the dealer where the system was purchased or by a professional installer. Electric shock or fire may result if an inexperienced person performs any installation or wiring procedures incorrectly.
- Be sure that this unit is securely installed in accordance with this Instructions for the Electrical Installer. Electric shock or fire may result if any installation or wiring procedures are incorrectly performed.
- Only a qualified electrician should attempt to connect this system, in accordance with the instructions in this manual. Insufficient electrical circuit capacity or incorrect installation may cause electric shock and fire.
- Use the specified cables for the electrical connections, and connect the cables securely. 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.
- Depending on the installation conditions and location, an earth leakage breaker may be required. If an earth-leakage breaker is not installed, there is a danger of electric shock or fire.
- The installation location requires the use of a circuit breaker. Failure to use a circuit breaker may result in electric shock or fire.
- Circuit breaker must be incorporated in the fixed wiring in accordance with the wiring regulations. The circuit breaker must be an approved 10-16 A, having a contact separation in all poles.

Caution

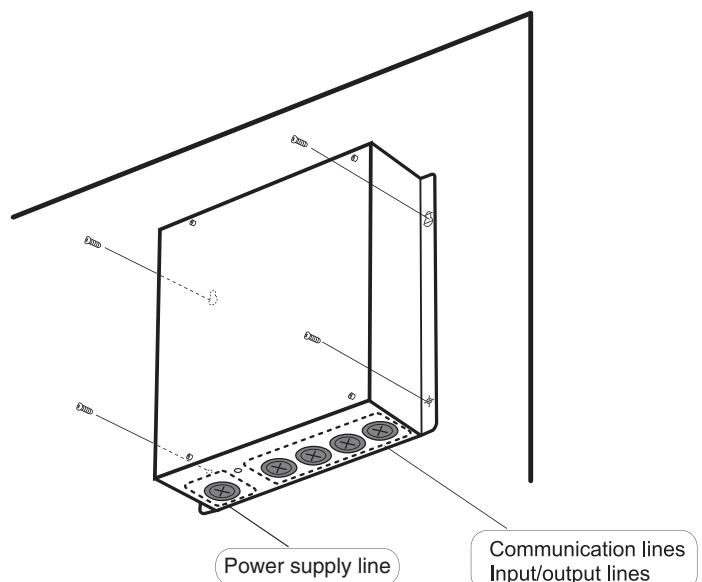
- Ground yourself to discharge static electricity before performing any wiring.

1 Installing

Note

- Do not run the indoor/outdoor communication lines, input/output lines, and power cables through the same conduit, or twist those cables together, or place the cables near one another. It can cause malfunction.
- Install the main unit away from any sources of electrical noise.
- Avoid installing in any locations where the unit may come into contact with water, or in any extremely humid locations.
- Avoid installing in any location that is subject to excessive vibration or physical impacts.

- (1) After determining the attachment position, secure the installation hardware as shown in the dimensions diagram. If the included screws will not work for the installation, prepare appropriate screws (such as metric ones) for use at the site.
- (2) Attach the main unit and fasten the installation hardware as illustrated.
- (3) If the installation hardware is loose or appears like it will fall out, remove the upper case on the unit and secure with screws in the failsafe screw holes.

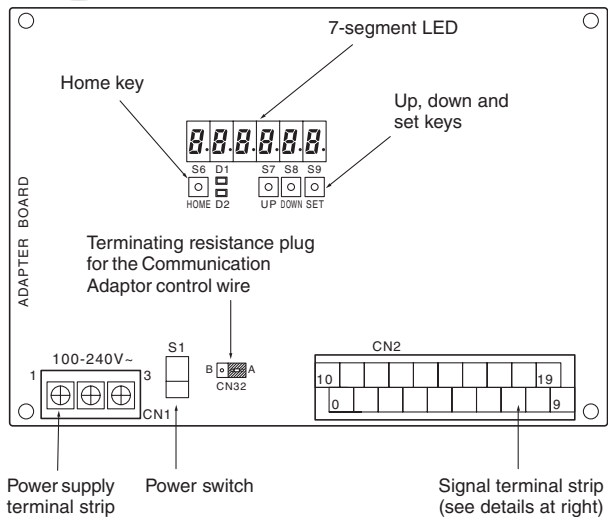


2 Wiring

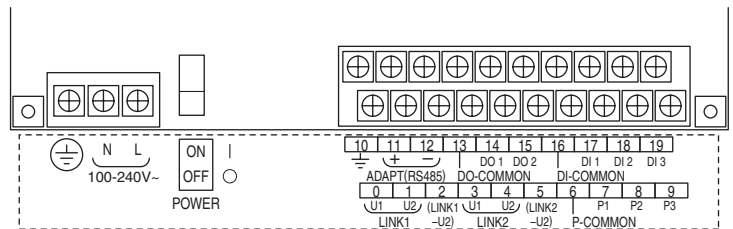
Always shut off the power supply (breaker) before installing or uninstalling the Communication Adaptor.
Remove the two screws at the front of the unit and remove the upper case.

Arrangement of the terminal board and switches

Detailed board illustration



Detailed terminal assembly illustration



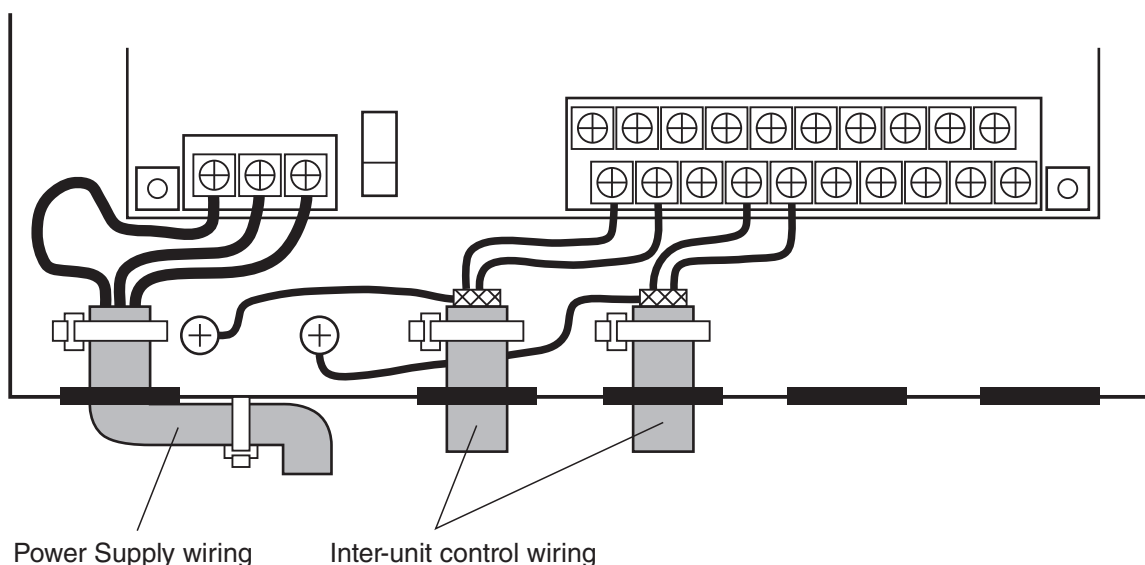
- ADAPT +/- : Communication Adaptor control wire (RS-485)
 - LINK 1/2: Inter-unit control wiring (HBS)
 - P1: Pulse meter inputs (gas flow meter and fuel flow meter) (*)
 - P2 and P3: Pulse meter input (power flow meter) (*)
 - DI1: All stop input (*)
 - DI2: All operation input (*)
 - DI3: Reserved
 - DO1: All alarm output (*)
 - DO2: All operation output (*)
- (*) Input/output function when connecting to the Intelligent Controller

(1) Connecting the power supply

The unit can use AC power sources between 100 and 240 V.
Connect the power supply to terminals 2 (N) and 3 (L) on the power terminal strip CN1. (Connect the AC neutral end to N.)
Connect the ground line securely.

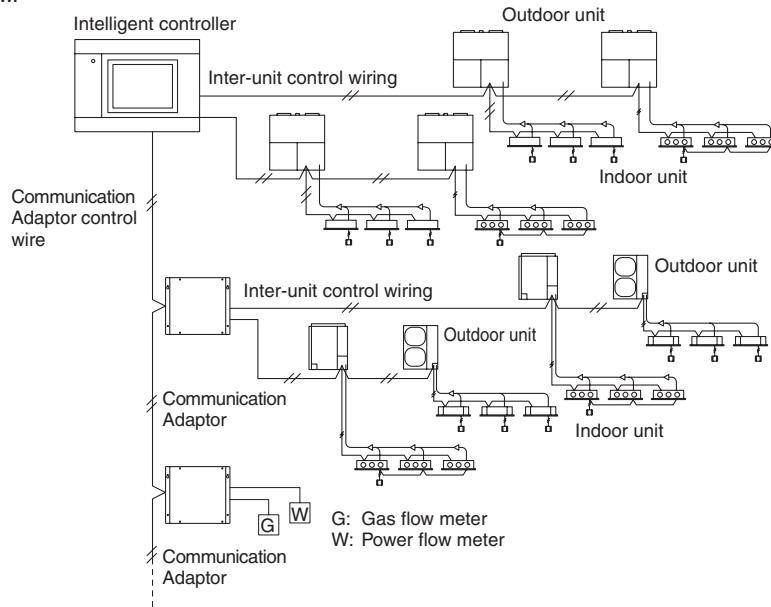
(2) Connecting the communication line

- For the Communication Adaptor control wires, use only two-conductor **shielded wire** with a cross-section between 0.5 and 2.0 mm² (MVVS or CPEVS).
- Be sure to ground only one end of the shielding.
- The overall length of each line should be 1 km or less.
- Do not run the communication line through the same conduit as the power supply, use the same cable as the power supply, or run close to the power supply line (maintain at least 30 cm separation).
- Do not run the LINK1 and LINK2 signal lines through the same conduit, use the same cable for wiring, or run them close together.
- Use different communication and power cables so they can be differentiated visually.



Basic wiring diagram (Example using an Intelligent Controller)

Wire up the Communication Adaptor control wire and Inter-unit control wiring as shown in the figure below.



Wiring procedure

● Inter-unit control wiring

Use the shielded wire for inter-unit control wiring. Connect terminals 0 and 1 (LINK1) on the Communication Adaptor signal terminal strip CN2 to the inter-unit control wiring terminals of the indoor or outdoor unit. There is no polarity. If connecting two inter-unit control wiring systems, connect terminals 3 and 4 (LINK2) on CN2 in the same manner.

● Communication Adaptor control wire

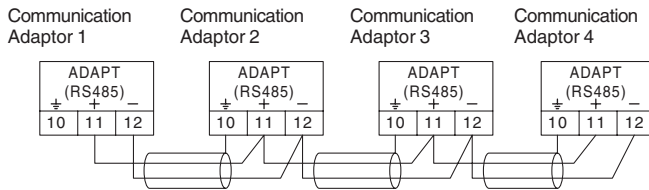
Connect terminals 11 and 12 (ADAPT + and -) on the Communication Adaptor signal line terminal strip CN2 with the same terminals on the other Communication Adaptor. **The terminals have polarity.** Connect so the positive and negative elements are correct.

When connecting, **be sure to use crossover wiring, not a branching configuration.**

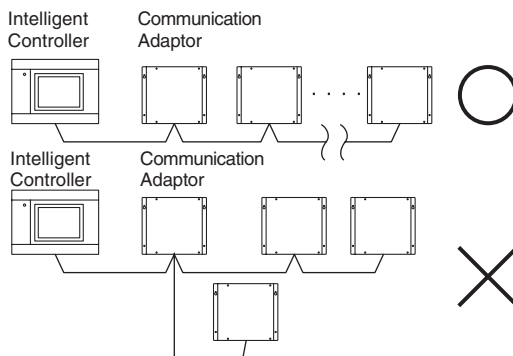
3 Precautions for the Communication Adaptor control wire

(Some items are duplicated in other sections.)

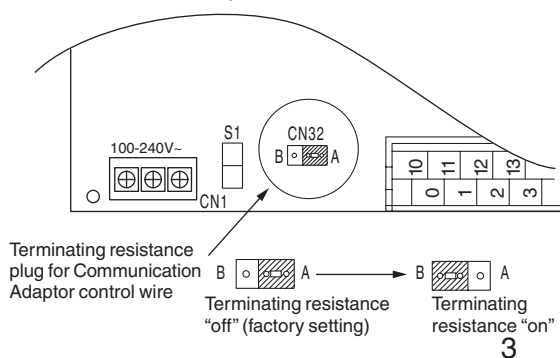
- (1) The overall length should be 1 km or less.
- (2) The communication wire has polarity. Connect so the positive and negative elements are correct.
- (3) Use only shielded wire. Be sure to ground only one end of the shielding.



- (4) Be sure to use crossover wiring, not a branching configuration.
 - * Connect the Intelligent Controller to the end of the crossover configuration.



- (5) Change the terminating resistance plug CN32 to the "B" side (with terminal resistance) on the board for the Communication Adaptors at the terminal end of the configuration.



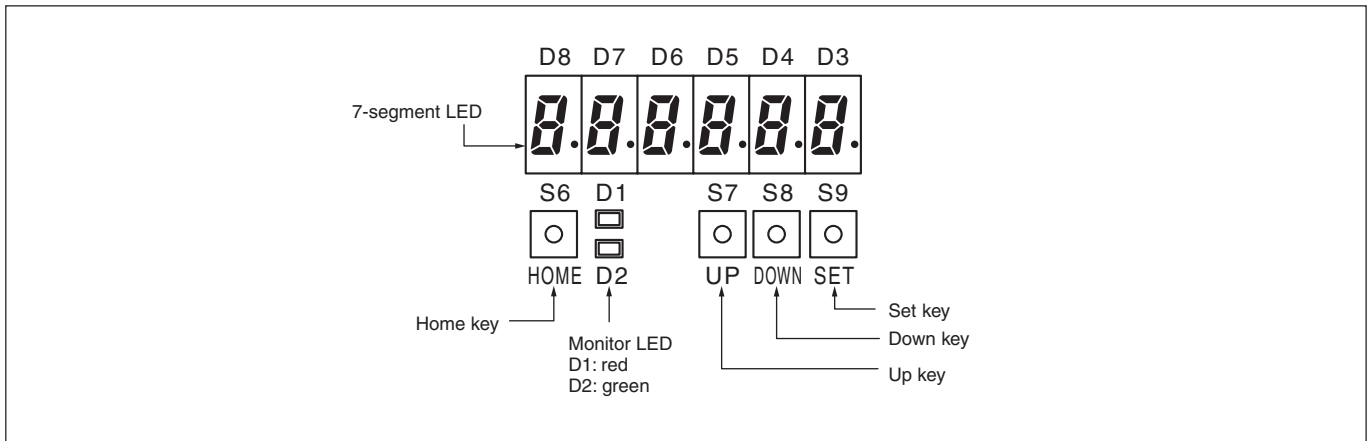
- (6) Do not hook more than 16 units up to the Communication Adaptor. The system you are using (such as an Intelligent Controller) may have further restrictions. Consult the installation manual for your system.
 - * The Intelligent Controller has a maximum restriction of seven units.
- (7) Make sure that high voltage (ex. 230 V) AC lines are not connected to the Communication Adaptor control wire or the inter-unit control wiring terminals.

* If high voltage AC is accidentally applied to the inter-unit control wiring terminals, a fuse will blow to protect the controller board. If this happens, disconnect the AC line, and connect the U2 terminal wire of the inter-unit control wiring to the spare terminal. (Do not change the U1 terminal wire.) Spare terminals are located right next to U2.

Change terminal number 1 LINK1-U2
→ to terminal number 2 (LINK1-U2)
Change terminal number 4 LINK2-U2
→ to terminal number 5 (LINK2-U2)

4 Setting the Communication Adaptor board

The switches on the board control the adaptor numbers, turn the inter-unit control wiring connection on and off, and control other settings.



(1) Switch operation overview

Turn on the Power switch(S1) on the board.

① Item selection

Use the and keys to find the desired item, then press the key to select.

② Changing the settings

Use the and keys to change the setting, then press the key to confirm.

Hold down the key for at least two seconds to reset to the default setting (Any settings in progress will be lost.)



(Any settings in progress will be lost.)

(2) Adaptor number setting procedure

① Hold down the key for at least two seconds so the initial display shows as follows:



(no.00)



After 2 seconds



(AdP.dt)

② Press the key five times so the following display appears:



(no.05)

This automatically switches to the below display after 2 more seconds. (Operation is not necessary.)



(FirSt)

③ Press the key so the below display appears. (Only the green monitor LED is on.)



(1.Ano.00) (Factory setting)

④ Hold down the key for at least 1 second so the "00" part blinks, indicating that the setting can be changed. (The green and red monitor LEDs are both on.)

Use the and keys to set the adaptor number.

For example, to set number 3, press the key three times. The following will display:

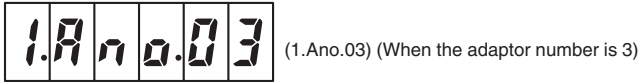



(1.Ano.03)

⑤ Press the key for at least 1 second to confirm. (Only the green monitor LED is on.)


(3) Setting the inter-unit control wiring connection on/off



① Repeat steps ① to ③ in section (2) “Adaptor number setting procedure” above. The following will display:



② Press the  key once so the following display appears:




③ Hold down the  key for at least 1 second so the “0” part blinks, indicating that the setting can be changed. (The green and red monitor LEDs are both on.)

Use the  and  keys to turn the inter-unit control wiring connection on or off as shown in the table below.



Setting value	Inter-unit control wiring connection
0	LINK1: On, LINK2: On (factory setting)
1	LINK1: On, LINK2: Off
2	LINK1: Off, LINK2: On
3	LINK1: Off, LINK2: Off

For example, to connect the inter-unit control wiring only to LINK1, press the  key once. The following display will result:







④ Press the  key for at least 1 second to confirm. (Only the green monitor LED is on.)

(4) Other settings

With the display status showing as in number ③ in section (2) “Adaptor number setting procedure”, press the  and  keys to select the setting items shown in the table below. Set as needed.









The setting procedure is the same as above.

(Press the  key for at least 1 second, press the  and  keys to change, then press the  key at least one second to confirm.)

Note

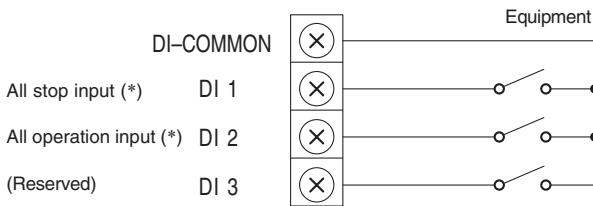
- ① When configuring, do not set the same adaptor number more than once.
* Use numbers between 1 and 7 for connecting to an Intelligent Controller.
- ② Turn the inter-unit control wiring connection on/off as appropriate.
(Set to “Off” for LINKs with no connection.)
- ③ For connecting the inter-unit control wiring to only one link, use the “LINK1” side.

Table 1 Communication Adaptor setting items

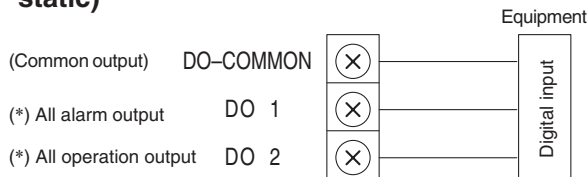
	Display	Setting item (grayed in areas indicate factory setting)
	 <p>(1.Ano.xx)</p>	<p>[1] Adaptor number setting xx = 00 to 15: adaptor number Sets the Communication Adaptor number. Set 1 to 7 for the Intelligent Controller, making sure the same number is not used twice. When actually communicating from a master system, the link system address LINK1 is 2n and LINK2 is 2n + 1, where n is the Communication Adaptor number. Thus, when the adaptor number is 2, the LINK1 address is 4 and the LINK2 address is 5.</p>
	 <p>(2.AdYu.x)</p>	<p>[2] Inter-unit control wiring connection settings x = 0: LINK1 on, LINK2 on x = 1: LINK1 on, LINK2 off x = 2: LINK1 off, LINK2 on x = 3: LINK1 off, LINK2 off Set so any LINK (inter-unit control wiring) connected to the air conditioner is "on", and any LINK not connected is "off". * For solo installation (pulse meter dedicated), use x = 3: LINK1 and 2 both set to off.</p>
	 <p>(3.Cont.x)</p>	<p>[3] Base unit settings Always use 0 (the initial value).</p>
<p style="text-align: center;">↑ DOWN UP ↓</p>	 <p>(4.CAn1.x)</p>	<p>[4] Settings for the number of Communication Adaptor units in one link, part 1 x = 0 to 7 x = 0: First Communication Adaptor in the LINK1 link x = 1: Second Communication Adaptor in the LINK1 link x = 7: Eighth Communication Adaptor in the LINK1 link</p>
	 <p>(5.CAn2.x)</p>	<p>[5] Settings for the number of Communication Adaptor units in one link, part 2 x = 0 to 7 x = 0: First Communication Adaptor in the LINK2 link x = 1: Second Communication Adaptor in the LINK2 link x = 7: Eighth Communication Adaptor in the LINK2 link Set the Communication Adaptor unit number for each LINK system when connecting multiple Communication Adaptors to one inter-unit control wiring.</p>
	 <p>(6.PUL.xx)</p>	<p>[6] Minimum pulse input detection time setting x = 03: 30 msec x = 10: 100 msec If connecting a pulse meter with a pulse width between 30 and 100 msec, set to 30 msec.</p>
	 <p>(7.LoCA.x)</p>	<p>[7] Interface Adaptor connection settings x = 0: LINK 1 on, LINK2 on x = 1: LINK 1 off, LINK2 on x = 2: LINK 1 on, LINK2 off x = 3: LINK 1 off, LINK2 off Set whether there is a Interface Adaptor (for turning off and on) for each LINK system. If the setting is "off", startup will be faster as no Interface Adaptor detection is run. Use the setting "x=0" for devices other than the Intelligent Controller.</p>
	 <p>(8.SCA.n.x)</p>	<p>[8] Initial communication setting Always use 0 (the initial value).</p>

5 Connecting to external equipment

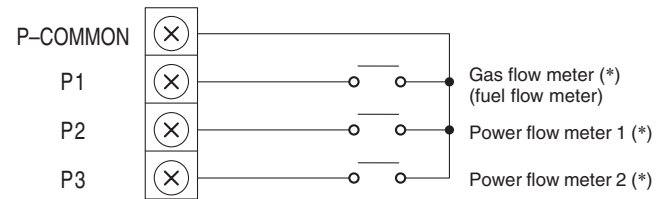
(1) External all input (No-voltage a-contact static)



(2) External all output (No-voltage a-contact static)



(3) Pulse meter input (No-voltage a-contact pulse)

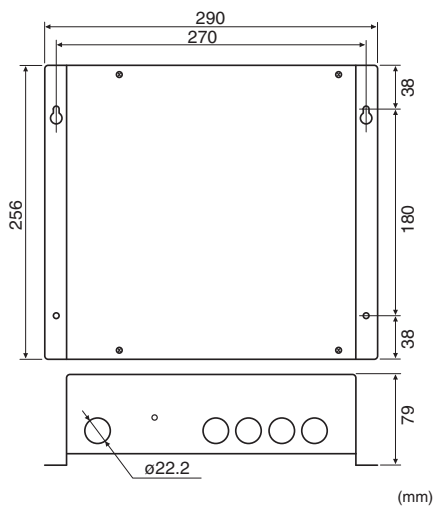


- Minimum pulse width: 100 msec
- Minimum pulse interval: 1 sec

(*) Input/output function when connecting to the Intelligent Controller

- Keep the signal input line lengths to 20 meters or less. For distances greater than this, install a standalone Communication Adaptor or use a relay.
- For use in areas that may be susceptible to electrical noise, use a two-conductor shielded cable (with one line grounded), with a cross-section at least 0.5 mm².
- Do not apply external voltages to the input terminals.
- About 10 mA of 5 V DC voltage is applied to the contact point for input terminal detection.
- The output terminal allowable contact voltage and current are 30 V DC and 0.5 A.

6 Outer dimensions



7 Specifications

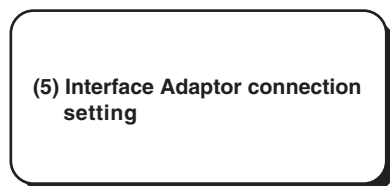
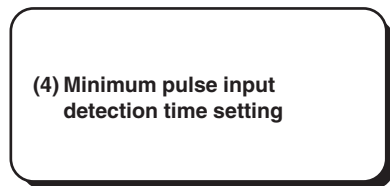
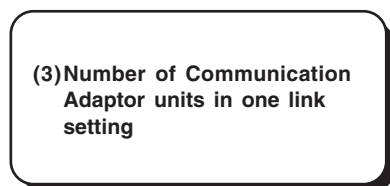
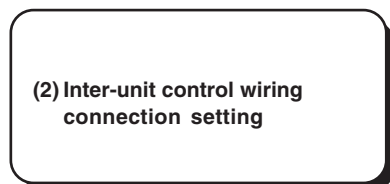
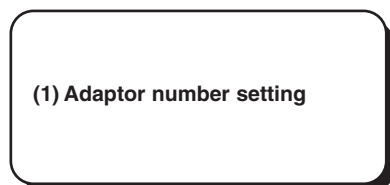
Rated voltage	Single phase 100-240V~
Rated frequency	50-60 Hz
Power consumption	5.6 W max
Operating temperature	-10 to +50°C
Operating humidity	20 to 80% (no condensation)

Appendix A. Connecting to an Intelligent Controller

Before making the initial settings for the Communication Adaptor, check to ensure the below operations are complete.

- (1) Is the air conditioner test operation complete?
- (2) Is the wiring for the air conditioner and the Communication Adaptor complete?

To set, follow steps 1 to 5 below in sequence.



Complete!

- **This is a required setting.**
- Set the address for the Communication Adaptor control wire.
For the Intelligent Controller internal board, the address is 0. Set a value between 1 and 7 for the external adaptor, ensuring no value is used twice.
Refer to the number (2) "Adaptor number setting procedure" in section [4] "Setting the Communication Adaptor board".

* Refer to Table 1 [1].

- **This setting is required for two or more Communication Adaptors.**
- Two links can be connected to a Communication Adaptor.
For links without an air conditioner or other such connection, set the LINK to "off".
- The Intelligent Controller can be connected to only four links that are set to be active.
Refer to the number (3) "Setting the inter-unit control wiring connection on/off" in section [4] "Setting the Communication Adaptor board".

* Refer to Table 1 [2].

- **This setting is required only for using an Intelligent Controller in conjunction with a AMY Software.**

- When adding another Communication Adaptor to the inter-unit control wiring, the adaptor address for the added unit needs to be changed.

* Refer to Table 1 [4] and [5].

- **This setting is not required if pulse input (P1, P2, P3) is not used.**
- Use a pulse meter whose minimum pulse width is normally at least 100 msec.
If and only if a pulse meter 30 msec or higher must be used, use this setting.

* Refer to Table 1 [6].

- By not using a Interface Adaptor, the configuration confirmation time can be shortened.

- **Not using this setting will not affect operation of the device.**

* Refer to Table 1 [7].