

Signal Amplifier

INSTALLATION INSTRUCTION SHEET

For authorized service personnel only.

⚠ DANGER!	This mark indicates procedures which, if improperly performed, are most likely to result in the death of or serious injury to the user or service personnel.
① Do not attempt to install this controller by yourself.	
② This unit contains no user-serviceable parts. Always consult authorized service personnel for repairs.	
③ When moving, consult authorized service personnel for disconnection and installation of the unit.	
④ In the event of a malfunction (burning smell, etc.), immediately stop operation, turn off the electrical breaker, and <u>consult authorized service personnel</u> .	
⑤ If the power supply cord becomes damaged, do not attempt to repair it. Contact your service representative for instructions.	

⚠ WARNING!	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
① For the air conditioner to operate satisfactorily, install it as outlined in this installation instruction sheet.	
② Installation work must be performed in accordance with national wiring standards by authorized personnel only.	
③ Do not turn on the power until all installation work is complete.	
④ Avoid installing the signal amplifier near a fireplace or other heating apparatus.	
⑤ When installing the signal amplifier, take precautions to prevent access by infants.	
⑥ Do not use inflammable gases near the signal amplifier.	

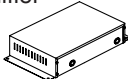
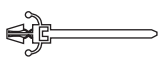
- Let the customer keep this installation instruction sheet because it is used when the air conditioner is serviced or moved.

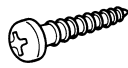

⚠ CAUTION!	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.
① Never bundle the power supply cord, transmission cord and remote controller cord together. Bundling these cords together will cause misoperation.	
② When installing the bus wire near a source of electromagnetic waves, use shielded wire.	
③ Details of the operation methods refer to the operating manual.	
④ Do not set either the dip switches or rotary switches, either on the air conditioner or the signal amplifier, in any way other than indicated in this sheet or the manual that is supplied with the air conditioner. Do not change any switch setting in any way other than indicated. Doing so may result an accident.	

1

STANDARD PARTS

The following installation parts are supplied. Use them as required.

Name/Illustration	Qty.	Application
Signal amplifier 	1	
Binder (Push Mount) 	3	For mounting the power supply cord, and transmission cord.

Name/Illustration	Qty.	Application
Wood screw (ø4 × 20) 	4	For mounting the signal amplifier.
Terminal resistor 	1	

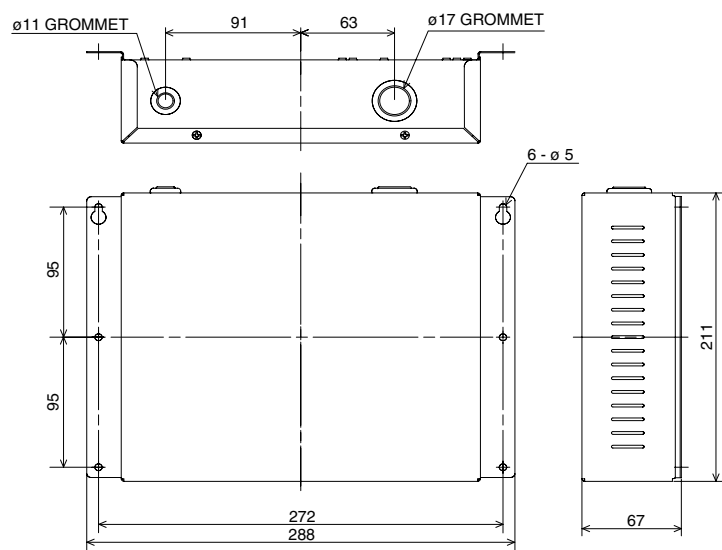
2

EXTERNAL DIMENSIONS

The signal amplifier is comprised of a main body and cover.

External Dimensions

Unit [mm]



Power supply		220 – 240V A.C. 50/60 Hz
Power consumption (W)		4.5 (50 Hz /240V)
Temperature (°C)	Operating	0 – 46
	Packaged	-10 – 60
Humidity (%) ^{*1}	Operating	10 – 90 (RH)
	Packaged	95 (RH)
Size (H × W × D) (mm)		67 × 288 × 211
Weight (g)		1500

*1 There should be no condensation during operation or when packaged.

3

ELECTRICAL REQUIREMENT

Use	Size		Wire type	Remarks
Power supply cord (mm ²)	Maximum	1.25	H07RN-F or equivalent	Single phase 50Hz 220-240V * 2 wire + Ground
	Minimum	0.5		
Transmission cord (mm ²)	0.33		Shielded Level 4 22 AWG (0.65 mm)	Non-polar, One twisted pair, Solid core diameter 0.65 mm
Fuse capacity (A)	3			

* Always ground the unit.

⚠ WARNING

- ① Install a leakage circuit breaker to power supply line in accordance with the related laws and regulations and electric company standards.
- ② The circuit breaker is installed in the permanent wiring. Always use a circuit that can trip all poles of the wiring and has an isolation distance of at least 3 mm between the contacts of each pole.

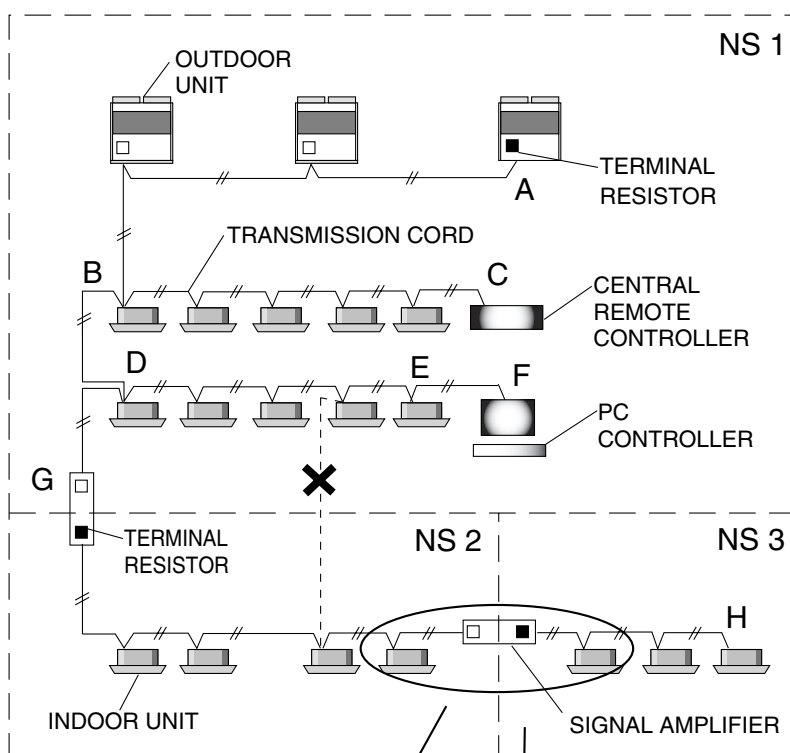
⚠ WARNING

- ① The rated voltage of this product is 220-240V A.C. 50-60Hz.
- ② Match the terminal board numbers. Erroneous wiring may cause burning of the electric parts.
- ③ Perform wiring work in accordance with standards so that the room air conditioner can be operated safely and positively.

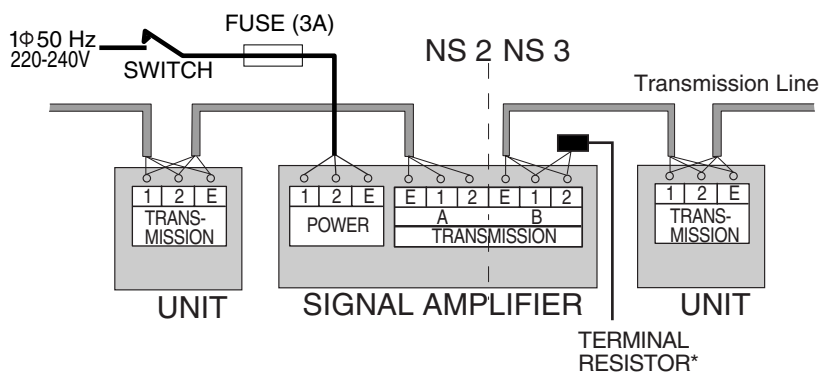
⚠ CAUTION

- ① Use care to wire properly. (Miswiring will result in damage.)
- ② Never connect the power supply cord (220-240V) to transmission terminal board as this cause a unit failure.

- In the following case, signal amplifier is required.
 - (1) When the total length of the transmission cord exceeded 500 m.
 $AB+BC+BD+DE+EF+DH > 500 \text{ m}$
 - (2) When the number of total unit* is over 64.
- Transmission cord length between each unit*: MAX 400 m
- Total transmission cord length: MAX 2000 m
 $AB+BC+BD+DE+EF+DG+GH < 2000 \text{ m}$
- When a signal amplifier is installed, network is divided into two network segments. In a network segment (NS), divided by a signal amplifier, have to keep the following facts.
 - (1) Total transmission cord length: MAX 500 m
 $AB+BC+BD+DE+EF+DG < 500 \text{ m}$
 - (2) The number of total units*: MAX 64
 - (3) The number of terminal resistor: 1
 - (4) The number of total control units*: MAX 2
- The number of signal amplifiers connected to a network: MAX 8
- * Unit means indoor unit, outdoor unit, signal amplifier, central remote controller, PC controller and so on.
- * Control unit means central remote controller, PC controller and so on.

**CHECK POINT**

- Arrange so that there is no transmission cord between each network segment except the transmission cord which passed through the signal amplifier.
- Arrange so that there is only one terminal resistor for each network segment.
 Check the number of terminal resistors in each segment. If there are more than one terminal resistor connected to the outdoor units and signal amplifiers in a network segment, remove the additional terminal resistors.
- Do not install a signal amplifier between two outdoor units in the same refrigerant system.



⚠ WARNING

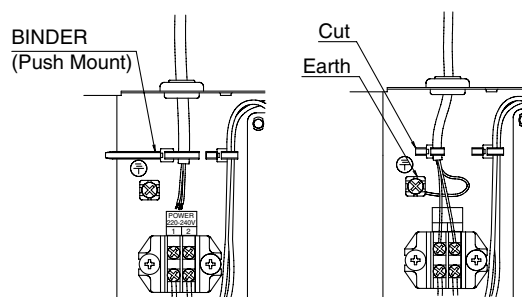
- ① Before starting work, check that power is not being supplied to all of the units.
- ② Connect the connection cord securely to the terminal board. Imperfect installation may cause a fire.
- ③ Always fasten the outside covering of the connection cord with the cord clamp.
(If the insulator is chafed, a short circuit may occur.)
- ④ Always connect the earth wire.

⚠ CAUTION

- ① Never bundle the power supply cord and transmission cord together.
Bundling these cords together will cause misoperation.
- ② Do not touch the circuit board and circuit board parts directly with your hands.
- ③ Align the connections of the connector and push in until securely fastened.
- ④ Always provide a trap and take other such measures when wiring the power supply cord and transmission cord so that water does not travel along them and into the signal amplifier.

INSTALLATION PROCESS**1. CONNECTING THE POWER SUPPLY CORD**

- (1) Remove the four tapping screws (M4 × 6L), and then remove the cover.
- (2) Pass the power supply cord through the bushing and pull it into the signal amplifier.
- (3) Form the binders (push mount) provided into a ring shape and pass the power supply cord through it.
- (4) Route the power supply cord to their respective terminal board and ground properly.
- (5) After the wiring of the cords, press the binder (push mount) that had been shaped into a ring and insert it in the hole in the box for securing the binder (push mount).
- (6) Securely tighten the binders (push mount) and then confirm that the cord will not come out.



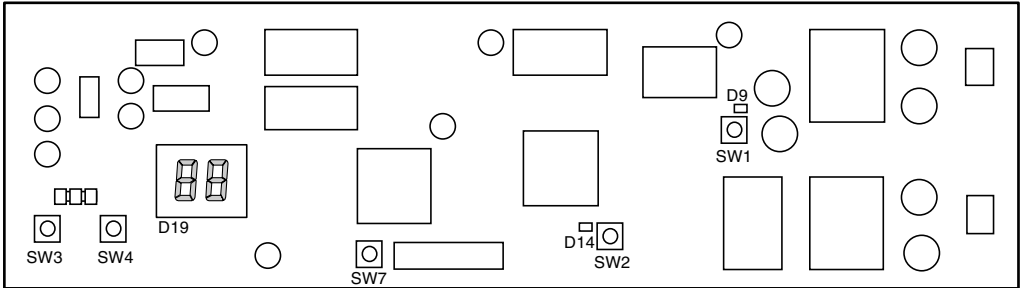
2. ADDRESS SETTING

When connecting multiple signal amplifiers, perform the following address setting.




⚠ CAUTION

Do not connect the transmission cords when performing the address setting.

CIRCUIT BOARD LAYOUT




1. Turn on the power for the signal amplifier.



D19D19


2. While holding down the set button (SW4), press and release the reset button (SW7) to enter the address setting mode. The address setting mode is activated only if the set button is held down when the reset button is released.



D19

Address setting mode


3. Press the set button (SW4) to display the current address. The address is set to A1 at the factory.



D19

4. Press the mode button (SW3) to select the address*. The displayed address changes as follows each time the mode button is pressed.

A1 → A2 → A3 → A4 → A5
← A8 ← A7 ← A6 ←




D19

Ex.) Address No. 5 is selected.

* If connecting multiple signal amplifiers, be sure to select a different address for each amplifier.
If the same address is used for different signal amplifiers, communication cannot occur.

5. Press the set button (SW4) to set the selected address.




D19

Ex.) Address No. 5 is set.


6. Turn the power off and on or press the reset button (SW7) to exit the address setting mode and return to the normal mode.

If an address setting error occurs ("f" is displayed on the right side of the D19 LED display), the address will not be set. Perform address setting again.



D19

Normal mode



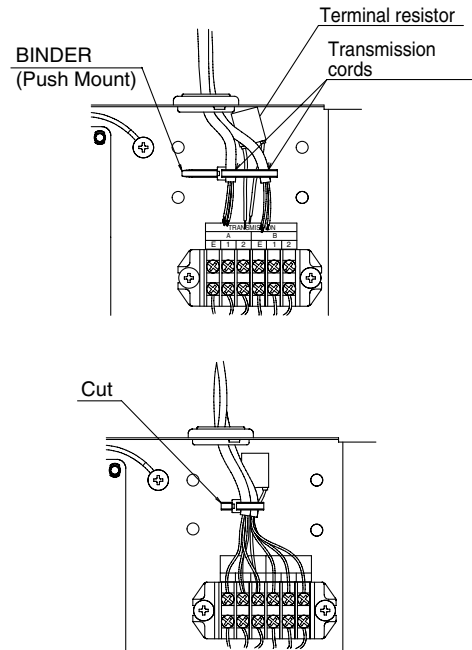
D19

Address setting error

5

3. CONNECTING THE TRANSMISSION CORDS

- (1) Pass the transmission cords through the bushing and pull it into the signal amplifier.
- (2) Form the binder (push mount) provided into a ring shape and pass the transmission cords and terminal resistor (if connected) through it.
- (3) Route the transmission cords and terminal resistor to their respective terminal board properly.
- (4) After the wiring of the cords, press the binder (push mount) that had been shaped into a ring and insert it in the holes in the box for securing the binder (push mount).
- (5) Securely tighten the binder (push mount) and then confirm that the cord will not come out.
- (6) Once the wiring of the cords has been completed, mount the cover to the signal amplifier. Use the tapping screws (M4 × 6L) to mount the cover.
- (7) Use the four wood screws (M4 × 20L) provided to mount the signal amplifier to the behind ceiling, wall, floor or other suitable location.



6

TURNING ON POWER

- (1) Check the signal amplifier wiring.
 - (2) Check the wiring and switch settings for the VRF system and turn on the power for the VRF system. For the wiring and switch setting method, refer to the installation instruction sheet of each unit.
 - (3) Turn on the power for the signal amplifier.
- The signal amplifier is initialized for a period of approximately 5 seconds after the power is turned on. **88** is displayed on D19 during this period.
 - After initial setting completely, the operation mode will be started. **88** is displayed on D19.
 - * Signal amplifier does not operate during initialization.
 - * If an error occurs, the D9 or D14 LED lights or flashes, or the error code is displayed on the right digit of the D19 LED display.

ERROR CODE DISPLAY

LED DISPLAY	Error contents
88	Address setting error
88	Parallel communication error B
88	Parallel communication error A
D9 LED lit or flashing □ □ □ □ D9 D9	Communication error B
D14 LED lit or flashing □ □ □ □ D14 D14	Communication error A

⚠ CAUTION

- ① The rated voltage of this product is 220-240V A.C. 50-60Hz.
- ② Before turning on the verify that the voltage is within the 198V-264V range.
- ③ When the voltage is low and the signal amplifier is difficult to start, contact the power company the voltage raised.